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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

Reduction of European Search Fee for PCT Cases

The following letter dated December 21, 1979 from Dr. J. B. van Benthem, the President of the European Patent Office, was received by the Commissioner of Patents and Trademarks and is being published to provide the information to applicants using the Patent Cooperation Treaty (PCT). The effect of the decision of the Administration Council of the European Patent Organization is to reduce the search fee required by the European Patent Office by 20% if the application was filed under the PCT and was searched by the United States Patent and Trademark Office acting as an International Searching Authority.

The letter and accompanying annex are reproduced below.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

"Dear Mr. Diamond:

Pursuant to Article 157, paragraph 3, EPC, the Administrative Council of the European Patent Organization is entitled to decide under what conditions and to what extent:

a) the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with

b) the search fee as provided for in Article 157, paragraph 2b, EPC is to be reduced.

Up to the present, the Administrative Council of the EPO has taken decisions in regard to Article 157, paragraph 3, in respect of international applications for which the international search report has been drawn up by the following Offices: the European Patent Office, the Swedish Patent Office, the Austrian Patent Office, the United States Patent and Trademark Office, the Japanese Patent Office and the USSR State Committee for Inventions and Discoveries.

The decisions concerning the Swedish and Austrian Patent Offices are based on the agreements concluded between these Offices and the EPO pursuant to Section III, paragraph 2 and Section IV, paragraph 2 of the Protocol on the Centralisation of the European Patent System, which is an integral part of the EPC. These agreements prescribe that the searches to be carried out by these Offices are to meet the same criteria and be of the same standard as applied at the EPO.

For these reasons the Administrative Council has decided that in respect of Sweden and Austria the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with and a search fee as provided for in Article 157, paragraph 2b, EPC shall not be charged.

As far as those States are concerned which are not members of the European Patent Organization, the Administrative Council of the EPO decided on 14 September 1979, that the search fee provided for in Article 157, paragraph 2b, EPC, shall be reduced by one-fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries. This reduction reflects the economy expected to be made in drawing up the supplementary European search report according to EPO standards.

Annexed you will find a copy of the Decision of 14 September 1979. It applies to all international applications filed since 1 June 1979.

Yours sincerely.

J. B. Van Benthem.
(President)."

ANNEX

The Administrative Council of the European Patent Organization

Having regard to the European Patent Convention (hereinafter called "the Convention"), and in particular Article 157, paragraph 3, thereof,

Has decided as follows:

ARTICLE 1

The search fee provided for in Article 157, paragraph 2(b), of the Convention shall be reduced by one fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries.

ARTICLE 2

This decision shall enter into force on 14 September 1979. It shall apply to all international applications filed since 1 June 1978.

Done at Berlin, 14 September 1979.

For the Administrative Council
The Chairman.
G. VIANES.

END OF ANNEX

Patent Suits

Notices under 35 USC 290; Patent Act of 1952

2,800,631, Vereinigte Oesterreichische Eisen- und Stahlwerke Aktiengesellschaft, METHOD OF CARRYING OUT MELTING PROCESSES, **filed** Sept. 6, 1968, D.C., W.D. Pa. (Pittsburgh), Doc. 71–819, *Kaiser Industries Corp. et al.* v. *National Steel Corp.* Stipulation of dismissal with prejudice and without costs to either parties filed Nov. 21, 1979. **Same, filed** Oct. 15, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. 71–816, *Kaiser Industries Corp. and Brassert Oxygen Technik AG* v. *Granite City Steel Company et al.* Stipulation of dismissal with prejudice and without costs to either parties filed Nov. 21, 1979. **Same, filed** Mar. 5, 1974, D.C., W.D. Pa. (Pittsburgh), Doc. 74–217, *Kaiser Industries Corp. et al.* v. *Jones & Laughlin Steel Corporation.* Stipulation of dismissal with prejudice and without costs to either parties filed Dec. 13, 1979. **Same, filed** Sept. 18, 1961, D.C., W.D. Pa. (Pittsburgh), Doc. 61–551, *Kaiser Industries Corp.* v. *Jones & Laughlin Steel.* Stipulation of dismissal with prejudice and without costs to either parties filed Dec. 14, 1979. **Same, filed** Apr. 13, 1962, D.C., W.D. Pa. (Pittsburgh), Doc. 62–272, *Kaiser Industries Corp. et al.* v. *Jones & Laughlin Steel Corp.* Stipulation of dismissal with prejudice and without costs to either parties filed Dec. 14, 1979.

2,887,220, Chester P. Hankus, PACKAGING DEVICE; **2,889,650,** same, ARTIFICIAL TREE; **2,996,181,** same, PACKAGING DEVICE FOR ARTIFICIAL CHRISTMAS TREE; **3,067,797,** same, FOIL SLITTING MECHANISM; **3,069,192,** same, SEPARABLE JOINT FOR POLES; **3,477,897,** same, ARTIFICIAL TREE, **filed** Dec. 12, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c5040, *Chester P. Hankus* v. *Revlis, Inc.*

2,889,650. (See 2,887,220.)

2,996,181. (See 2,887,220.)

3,009,149, Ramsey McDonald, AUTOMATIC DIAL RADIO TELEPHONE SYSTEM, **filed** Dec. 13, 1979, D.C., S.D.N.Y., Dec. 79–C–6765 MJL, *Ramsey McDonald* v. *Motorola Communications and Electronics, Inc.*

3,055,904, Geigy Chemical Corp., NEW ISOINDOLINE DERIVATIVES, **filed** May 31, 1979, D.C., S.D.N.Y., Doc. 79–C–2824 RO, *Premo Pharmaceutical Laboratories, Inc.* v. *USV Laboratories, Inc.* Judgment and order dismissing claims and counterclaims with prejudice filed Nov. 9, 1979.

3,055,988, Shure Brothers, Inc., MAGNETIC PHONOGRAPH PICKUP; **3,077,521,** same, STEREOPHONIC MOVING MAGNET PHONOGRAPH PICKUP; **3,077,522,** same, STEREOPHONIC PICKUP CARTRIDGE, **filed** May 11, 1976, D.C., N.D. Calif. (San Francisco), Doc. C–76–964 SW, *Shure Brothers, Incorporated* v. *Tower Records, Inc.* Case reopened on Jan. 3, 1980.

3,067,797. (See 2,887,220.)

3,069,192. (See 2,887,220.)

3,077,521. (See 3,055,988.)

3,077,522. (See 3,055,988.)

3,081,230, Smith, Kline & French Laboratories, DIURETIC AND ANTIHYPERTENSIVE TRIAMINOARYLPTERIDINES, **filed** Nov. 29, 1979, D.C.N.J. (Newark), Doc. C–79–3434, *SK & F. Co.* v. *Premo Pharmaceutical Laboratories, Inc.* **Same, filed** Dec. 19, 1979, D.C.N.J. (Newark), Doc. 79–3611, *SK & F., Co.* v. *Pharmadyne Laboratories, Inc.*

3,081,379, Jerome H. Lemelson, AUTOMATIC MEASUREMENT APPARATUS, **filed** Sept. 21, 1979, U.S. Court of Claims (Washington, D.C.), Doc. 427–79C, *Jerome H. Lemelson* v. *The United States.*

3,087,663, James K. Anderson, APPARATUS FOR ADJUSTING PRINTING WEB TENSION, **filed** Dec. 28, 1979, D.C., S.D. Ohio (Dayton), Doc. C–3–79–445, *James K. Anderson* v. *Harris Corporation.*

3,136.676, Voplex Corporation, METALLIZED PLASTIC EXTRUSION PRODUCTS AND METHOD OF MAKING SAME, **filed** Sept. 26, 1979, D.C. Del. (Wilmington), Doc. 79–458, *Voplex Corporation* v. *Pantasote, Inc.* Stipulation and order dismissing case without prejudice filed Oct. 22, 1979.

3,169,142, Stephan Chemical Company. METHOD FOR SULFONATION AND SULFATION OF ORGANIC COMPOUNDS, **filed** Dec. 21, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c4732, *Stephan Chemical Company* v. *Onyx Chemical Company.* Substitution of dismissal with prejudice pursuant to settlement agreement for the order of Aug. 10, 1979, entered Nov. 2, 1979.

3,173,694, Hamilton Kent Manufacturing Co., Inc., GASKET. **filed** Nov. 13, 1979, D.C., N.D. Ohio (Cleveland), Doc. C79–2130, *Hamilton Kent Manufacturing Co., Inc.* v. *Indian Head, Inc. and Carlon.*

3,204,495, James Matthews, INSULATION REMOVING TOOL; **3,572,189,** same, INSULATION JACKET SHAVING TOOL, **filed** May 9, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c1809, *Ripley Co.* v. *Ideal Industries.* Dismissal without prejudice and without costs filed Oct. 3, 1979.

3,216,674, William B. McLean, PROPORTIONAL NAVIGATION SYSTEM FOR A SPINNING BODY IN FREE SPACE; **3,758,051,** Donald D. Williams, VELOCITY CONTROL AND ORIENTATION OF A SPIN-STABILIZED BODY; **Re. 26,887,** William B. McLean, PROPORTIONAL NAVIGATION SYSTEM FOR A SPINNING BODY IN FREE SPACE, **filed** June 18, 1979, D.C., S.D.N.Y., Doc. 79–C–3169 LBS, *Messerschmitt-Boelkow-Blohm GmbH* v. *Hughes Aircraft Co.* Defendants motion to dismiss is granted. Nov. 20, 1979.

3,231,785, Anthony D. Calabro, CIRCUIT BOARD MOUNTING DEVICE, **filed** Feb. 18, 1976, D.C.N.J. (Trenton), Doc. C–76–297, *Anthony D. Calabro* v. *Taurus Corporation.* Action dismissed without costs and without prejudice on Dec. 19, 1979.

3,295,507, Aaron D. Carter, LUBRICATION SYSTEM FOR INTERNAL COMBUSTION ENGINES, **filed** June 14, 1979, D.C., W.D. Okla. (Oklahoma City). Doc. C–79–0685–T. *Aaron D. Carter* v. *Caterpillar Tractor Co.* Cause and counterclaim dismissed with prejudice on Oct. 5, 1979.

3,327,664, Detexomat Machinery Limited, AUTOMATIC TOE-CLOSING OF STOCKINGS; **3,429,284,** same; **3,908,874,** same, HOSIERY MANUFACTURE, **filed** Nov. 26, 1979, D.C., W.D.N.C. (Charlotte), Doc. C–C–79–0355, *Detexomat Machinery Limited* v. *Speizman Industries, Inc.*

3,332,327, Elastic Stop Nut Corporation of America, PAVEMENT MARKER, **filed** Sept. 19, 1979, D.C., N.D. Tex. (Dallas), Doc. CA3–79–1184–D, *Amerace Corporation* v. *Ferro Corporation.*

3,336,694, IMS Corporation, AIR CURTAIN TYPE INSECT TRAP; **3,753,040,** same, FLUORESCENT LAMP STROBING CIRCUIT; **3,755,666,** same, END CAP CONSTRUCTION, **filed** Dec. 5, 1979, D.C., N.D. Tex. (Dallas), Doc. CA–3–79–1491–C, *Texas Western Financial Corp. and Holly Springs Inc.* v. *Texaco, Inc.*

3,339,419, Doyle E. Wilcox, ACCELEROMETER, **filed** Dec. 21, 1979. D.C., N.D. Ill. (Rockford), Doc. 79c20105, *Rockwell International Corp.* v. *Sundstrand Data Control Inc. and Sundstrand Corporation.*

3,345,458, Radio Corporation of America, DIGITAL STORAGE AND GENERATION OF VIDEO SIGNALS, **filed** May 23, 1978, D.C. Del. (Wilmington), Doc. 78–198, *RCA Corporation* v. *Applied Digital Data Systems, Inc.* **Same, filed** May 17, 1979, D.C. Del. (Wilmington), Doc. 78–198, *RCA Corporation* v. *Hazeltine Corporation.* **Same, filed** May 25, 1979, D.C. Del. (Wilmington), Doc. 79–491, *Lear Siegler, Inc.* v. *RCA Corp.*

3,362,357, J. A. Vance Company, ARCUATED TABLE SLIDE FOR EXPANDABLE TABLES, **filed** Apr. 4, 1979, D.C., W.D.N.C. (Statesville), Doc. ST–C–79–11, *Sun Metal Products, Inc.* v. *Acme Metal Slide, Inc.* Plaintiff's action against defendant is dismissed on Nov. 19, 1979.

3,377,908, E. H. Stau, BLIND RIVET ASSEMBLY WITH LOCKING MEANS, **filed** Nov. 8, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–04341, *Olympic Fastening Systems, Inc.* v. *Monogram Industries, Inc.*

3,383,487, Robert Wiener, THIN FLEXIBLE MAGNETIC SWITCH; **4,066,851,** White and Seeger, KEYBOARD SWITCH ASSEMBLY HAVING FOLDABLE PRINTED CIRCUIT BOARD, INTEGRAL SPACER AND PREFORMED DEPRESSION-TYPE ALIGNMENT FOLD, **filed** Oct. 30, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–4174–DWW, *Chomerics, Inc.* v. *Telaris Telecommunications.*

3,416,984, Sealed Air Corporation, METHOD AND APPARATUS FOR MAKING CELLULAR MATERIAL FROM THERMOPLASTIC SHEETS, **filed** Aug. 27, 1979, U.S. Court of Customs and Patent Appeals (Washington, D.C.), Doc. 79–35, *Sealed Air Corporation* v. *U.S. International Trade Commission et al.* **Same, filed** Sept. 10, 1979, U.S. Court of Customs and Patent Appeals (Washington, D.C.), Doc. 79–38, *Tong Seae Industrial Co., Ltd. et al.* v. *U.S. International Trade Commission and Sealed Air Corp.* **Same, filed** Oct. 26, 1979, U.S. Court of Customs and Patent Appeals (Washington, D.C.), Doc. 80–4, *Unipak (H.K.) Ltd.* v. *U.S. International Trade Commission et al.* **Same, filed** Nov. 13, 1979, D.C., N.D. Calif. (San Francisco), Doc. C79–3283 WAI, *Sealed Air Corp.* v. *USA Polyinternational, Inc. et al.*

3,429,284. (See 3,327,664.)

3,444,007, Hooker Chemical Corporation, PROCESS OF FORMING PAINT-BASE COATINGS ON ZINC AND ZINC ALLOY SURFACES, **filed** Sept. 27, 1979, D.C. Md. (Baltimore), Doc. T–79–1805, *Oxy Metal Industries Corporation* v. *Roper Corporation.*

3,446,199, Arthur Saveca, SPRING ACTUATED BALL PROJECTING DEVICE, **filed** July 14, 1978, D.C., N.D.N.Y. (Utica), Doc. 78–CV–342, *Arthur Saveca* v. *K-Tel International, Inc.* **Same, filed** July 14, 1978, D.C., N.D.N.Y.. (Utica), Doc. 78–CV–343, *Arthur Saveca* v. *Barker's Department Stores, Inc.* **Same, filed** July 14, 1978, D.C., N.D.N.Y. (Utica), Doc. 78–CV–344, *Arthur Saveca* v. *Rod Crew.*

3,472,714, Brad Ragan, Inc., METHOD OF REBUILDING PREVIOUSLY USED TIRES, **filed** Dec. 7, 1979, D.C., S.D. Ohio (Dayton), Doc. C–3–79–426, *Brad Ragan, Inc.* v. *Schrader's Incorporated.*

3,477,897. (See 2,887,220.)

3,499,302, Spain, Oliver, Flora and Powell, CYLINDER LOCK, **filed** Dec. 5, 1979, D.C., W.D. Va. (Roanoke), Doc. 79–0313–R, *Medeco Security Locks, Incorporated* v. *KIS.*

3,521,588, Gerald D. Atlas, MOVABLE FLOATING BOAT ANCHORAGE, **filed** Nov. 20, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c4892, *Paragon Poll Enterprises, Inc.* v. *Chicago Park District.*

3,531,017, LeBron, Inc., HOT CANNED FOOD VENDING MACHINE, **filed** Nov. 9, 1978, D.C. Nebr. (Omaha), Doc. CV–78–0–489, *LeBron Internationale', Inc.* v. *CAB Enterprises, Inc. et al.* Defendant's motion to dismiss is granted without prejudice on Oct. 24, 1979.

3,552,469, B & J Manufacturing Co., TIRE BEAD SEATER; **3,675,705,** same, TIRE BEAD SEATING AND INFLATION APPARATUS, **filed** Aug. 29, 1979, D.C., E.D. Mich. (Detroit), Doc. 79–73373, *B & J Manufacturing Co.* v. *Brown-Hutchinson, Inc. et al.* Defendants are permanently enjoined from infringing plaintiffs patents. Oct. 19, 1979.

3,559,383, COE Laboratories, Inc., BENCH STRUCTURE WITH BUILT-IN DUST COLLECTOR, **filed** Nov. 13, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c4743, *COE Laboratories, Inc.* v. *St. Charles Manufacturing Corporation.*

3,572,189. (See 3,204,495.)

3,583,596, Solo Cup Company, LID; **Re. 28,797,** same, **filed** July 7, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2441, *Solo Cup Corporation* v. *Sweetheart Cup Corporation.* Order of dismissal without prejudice filed Oct. 31, 1978.

3,589,495, Aircraft Mechanics, Inc., BRICK MAKING MACHINE; **3,716,264,** same, INFLATABLE GRIPPERS FOR BRICK MAKING MACHINES OR THE LIKE, **filed** Aug. 2, 1977, D.C., W.D.N.C. (Asheville), Doc. A–C–77–87, *AMI Industries, Inc.* v. *EA Industries, Inc.* Judgment filed May 25, 1979.

3,594,762, Stewart-Warner Corp., DISPLAY SYSTEM; **3,941,926,** same, VARIABLE INTENSITY DISPLAY DEVICE; **4,009,335,** same, GRAY SCALE DISPLAY SYSTEM EMPLOYING DIGITAL ENCODING; **4,148,073,** same, HIGH SPEED VIDEO DISPLAY SYSTEM INCLUDING ZOOM FEATURE, **filed** Sept. 13, 1979, D.C., E.D. Mich. (Detroit), Doc. 79–73536, *Stewart-Warner Corp.* v. *The City of Pontiac, Mich. et al.* **Same, filed** Oct. 26, 1979, D.C., W.D. Wash-(Seattle), Doc. C79–1264M, *American Sign & Indicator Corp.* v. *Stewart-Warner Corp.*

3,630,505, Byron R. MacKay, SILVER RECOVERY; **3,692,291,** Michael T. MacKay, same; **3,744,995,** Byron R. MacKay, same, **filed** Dec. 21, 1979, D.C., N.D. Iowa (Sioux City), Doc. 2C 79–4100, *Byron R. MacKay, Michael T. MacKay & B. R. MacKay & Sons, Inc.* v. *Robert Hoff and Tri-State Refining Company.*

3,675,705. (See 3,552,469.)

3,692,291. (See 3,630,505.)

3,711,085, Earnest R. Bunch, FOLDER FOR BUSINESS FORMS, **filed** Dec. 14, 1979, D.C. Ariz. (Phoenix), Doc. 79–1017–PHX–WPC, *B. Bunch Company* v. *Form Flo Equipment Manufacturers, Inc. et al.*

3,714,905, Franklin D. Barber, DAMPENED RAILING CAR TRUCK, **filed** Dec. 12, 1979, D.C., E.D. Pa. (Philadelphia), Doc. 79–4525, *Railroad Dynamics, Inc.* v. *Standard Car Truck Company.*

3,716,264. (See 3,589,495.)

3,738,217, Omark Industries, Inc., INSULATION HANGER, **filed** Apr. 30, 1979, D.C.N.J. (Camden), Doc. 79–1350, KSM, *Division of Omark Industries, Inc.* v. *H. S. Jones Company Incorporated.* Order of dismissal filed Nov. 28, 1979.

3,744,995. (See 3,630,505.)

3,753,040. (See 3,336,694.)

3,755,666. (See 3,336,694.)

3,756,139, John Wolens, POPCORN POPPER, **filed** Oct. 16, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c4291, *John Wolens* v. *Woolworth and J. C. Penney.* **Same, filed** Aug. 30, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c3576, *John Wolens* v. *K-Mart Corporation et al.* Cause dismissed with prejudice and without costs on Oct. 23, 1979.

3,758,051. (See 3,216,674.)

3,761,647, Kabushiki Kaisha Audio-Technica, CARTRIDGE FOR DETECTING VIBRATIONS REPRESENTING STEREOPHONIC SOUND; **4,075,418,** same, STEREOPHONIC PICKUP CARTRIDGE, **filed** Sept. 23, 1978, D.C. Del. (Wilmington), Doc. 78–400, *Atlantis Sound, Inc. et al.* v. *Kabushiki Kaisha Audio-Technica et al.* Minute order closing case for statistical purposes filed Sept. 20, 1979.

3,767,339, Denes B. Hunkar, INJECTION MOLDING CONTROL; **3,941,534,** same, INJECTION MOLDING CONTROL SYSTEM, **filed** Dec. 3, 1976, D.C., N.D. Ind. (South Bend), Doc. S76–206, *Hunkar Laboratories, Inc.* v. *Nyloncraft Incorporated.* Upon stipulation of dismissal pursuant to Rule 41(a)(1)(ii) FRCP, complaint and counterclaim dismissed without prejudice on Dec. 17, 1979.

3,794,922, Tocom, Inc., DATA SAMPLING COMMUNICATION SYSTEM; **3,803,491,** same, COMMUNICATIONS SYSTEM, **filed** Nov. 14, 1979, D.C., S.D. Tex. (Houston), Doc. H–79–2348, *Tocom, Inc.* v. *Houston Cable TV, Inc. and Warner Cable Corporation.*

3,797,779, Sony Corporation, TAPE CASSETTE; **3,900,170,** same; **3,900,171,** same; **3,900,172,** same; **3,921,927,** same, TAPE REEL; **3,934,839,** same, TAPE CASSETTE; **3,971,071,** same, TAPE CASSETTE WITH GUIDE MEANS FOR UNIDIRECTIONAL INSERTION AND HOLDER THEREFORE; **3,980,255,** same, TAPE CASSETTE; **4,091,168,** same, LEADER FOR MAGNETIC RECORDING TAPE HAVING COEXTENSIVE FLEXIBLE LAYERS WITH METAL LAMINATED THEREBETWEEN; **D. 247,778,** same, TAPE CASSETTE CASE, **filed** July 27, 1979, D.C., S.D. Fla. (Fort Lauderdale), Doc. 79–3310–C–NCR, *Sony Corporation* v. *Krimis Video, Inc.* Defendant is permanently enjoined from using plaintiff's patents. Sept. 18, 1979.

3,801,800, Valleylab, Inc., ISOLATING SWITCHING CIRCUIT FOR AN ELECTROSURGICAL GENERATOR, **filed** Sept. 27, 1979, D.C. Colo. (Denver), Doc. 79–Z–1336, *Valleylab, Inc.* v. *Aspen Laboratories, Inc.*

3,803,491. (See 3,794,922.)

3,806,852, The Stanley Works, SWITCH ACTIVATING HINGE, **filed** Dec. 4, 1979, D.C. Del. (Wilmington), Doc. 79–566, *The Stanley Works* v. *Rixson-Firemark, Inc.* **Same, filed** Dec. 4, 1979, D.C. Del. (Wilmington), Doc. 79–567, *The Stanley Works* v. *McKinney Manufacturing Company.*

3,839,640, John A. Rossin, DIFFERENTIAL PYROELECTRIC SENSOR, **filed** Dec. 21, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–4952 WPC, *Rossin Corporation* v. *Solfan Systems, Inc.* **Same, filed** Jan. 8, 1980, D.C., M.D. Fla. (Orlando), Doc. 80–0011 Orl-C–R, *Rossin Corporation* v. *Eltec Instruments, Inc.*

3,841,011, Marine Construction & Design Co., LONG-LINE SETTING, BAITING AND HAULING SYSTEM AND APPARATUS; **3,903,632,** same, LONG LINE HAULING AND REEL STORAGE SYSTEM; **Re. 28,380,** same, FISH LINE REELING AND BAITING APPARATUS, **filed** Oct. 29, 1979, D.C., W.D. Wash. (Seattle), Doc. C–79–1269S, *Marine Construction & Design Co.* v. *Paul Meyer.*

3,841,011, Marine Construction & Design Co., LONG-LINE SETTING, BAITING AND HAULING SYSTEM AND APPARATUS; **Re. 28,380,** same, FISH LINE REELING AND BAITING APPARATUS, **filed** Nov. 1, 1979, D.C. Oreg. (Portland), Doc. 79–1328, *Marine Construction & Design Co.* v. *William Szabo and Dennis Ruud.*

3,841,367, New England Log Homes, Inc., PLANING AND GROOVING MACHINE, **filed** Nov. 15, 1979, D.C. Conn. (New Haven), Doc. N–79–430, *New England Log Homes, Inc.* v. *Country Log Homes, Inc. et al.*

3,846,968, Bigelow-Sanford, Inc., YARN STRUCTURE AND METHOD FOR PRODUCING SAME, **filed** Oct. 4, 1979, D.C., E.D. Tenn. (Greenville), Doc. CIV–2–79–171, *Bigelow-Sanford, Inc.* v. *Richard W. Sheehan et al.*

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4,018,135, Lance and James, HYDRAULICALLY POWERED IMPACT DEVICE, **filed** Dec. 17, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c5285, *Consolidated Technologies Corporation* v. *Justus Manufacturing, Inc.*

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4,043,326, Little and Cloud, Jr., WATERPROOF CAST PROTECTOR; **4,139,003,** same, **filed** Apr. 20, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–1444 RJK (Kx), *Little & Co.* v. *Robert Wittman et al.*

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4,126,145, Raymond Boyd, LIGHTED COMPACT, **filed** Nov. 28, 1979, D.C.N.J. (Camden), Doc. 79–3411, *Raymond Boyd* v. *Strawbridge & Clothier.*

4,127,975, Thomas E. Judkins, CONCEALED FASTENERS FOR WALL PANELS, **filed** May 1, 1979, D.C., N.D.N.Y. (Utica), Doc. 79–CV–294, *Thomas E. Judkins* v. *Roger Neil Weinar et al.* Stipulation of dismissal filed Nov. 19, 1979.

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D. 226,388, Creative Creations Inc., TOY SPINNER WITH OPENABLE PETALS, **filed** Oct. 26, 1979, D.C., S.D.N.Y., Doc. 79–C–5821, *Creative Creations Inc.* v. *Walgreen Eastern Co. Inc.*

D. 237,141. (See 3,964,373.)

D. 247,778. (See 3,797,779.)

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,969,780, Re. S.N. 100,211, Filed Dec. 14, 1979, Cl. 8/149.1, CONTINUOUS CARPET DYING PROCESS, James M. Henderson, Owner of Record: *Inventor,* Attorney or Agent: Harold D. James Jr., et al., Ex. Gp.: 242

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4,062,170, Re. S.N. 102,815, Filed Dec. 12, 1979, Cl. 53/390, APPARATUS FOR LOADING BAGS, William George Orem, Owner of Record: *Mobil Oil Corporation, New York, N.Y.,* Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 324

4,064,918, Re. S.N. 100,119, Filed Dec. 4, 1979, Cl. 140/123.6, STRAP TENSION SENSING AND CUTOFF MECHANISM, Walter Pobuta, et al., Owner of Record: *Thomas & Betts Corporation, Elizabeth, N.J.,* Attorney or Agent: James J. Daley, et al., Ex. Gp.: 321

4,082,981, Re. S.N. 100,314, Filed Dec. 4, 1979, Cl. 315/97, ENERGY SAVING DEVICE FOR A STANDARD FLUORESCENT LAMP SYSTEM, Edward W. Morton, et al., Owner of Record: *Westinghouse Electric Corporation, Pittsburgh, Pa.,* Attorney or Agent: C. L. Mc Hale, et al., Ex. Gp.: 256

4,144,312, Re. S.N. 102,170, Filed Dec. 10, 1979, Cl. 423/178, DESULFURIZATION OF FLOURITE ORES, Claude H. P. Lupis, Owner of Record: *Inventor,* Attorney or Agent: Richard Wiener, Ex. Gp.: 113

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Certificates of Correction for March 4, 1980

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Dedications

3,077,971.—*Leon E. Palmer,* Lexington, Ky. CASE SHIFT INTERLOCK FOR TYPEWRITER. Patent dated Feb. 19, 1973. Dedication filed Dec. 5, 1979, by the assignee, *International Business Machines Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

3,512,723.—*Jacques A. Geoffroy,* Forbach, France. INSTALLATION FOR SIMULTANEOUSLY DRYING PULVERISING AND GRADING GRANULAR MATERIALS. Patent dated May 19, 1970. Dedication filed Dec. 20, 1979, by the assignee, *Charbonnages De France.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

3,078,172.—*Louis L. Libby,* Forest Hills, N.Y. PREPARED FROZEN FOOD FOR COOKING AND METHOD OF PREPARING THE SAME. Patent dated Feb. 19, 1963. Disclaimer filed Dec. 10, 1979, by the assignee, *Tra-Way Corp.*

Hereby enters this disclaimer to the remaining term of said patent.

4,052,320.—*Raymond F. Jakubowicz,* Manchester, N.Y. TELESCOPING SERUM SEPARATOR AND DISPENSER. Patent dated Oct. 4, 1977. Disclaimer filed Nov. 28, 1979, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to claims 2–5 and 8–13 of said patent.

4,164,417.—*Robert Abdon Gustison,* Reading, Pa. PROCESS FOR RECOVERY OF NIOBIUM VALUES FOR USE IN PREPARING NIOBIUM ALLOY PRODUCTS. Patent dated Aug. 14, 1979. Disclaimer filed Dec. 21, 1979, by the assignee, *Kawecki Berylco Industries, Inc.*

Hereby enters this disclaimer to claim 9 of said patent.

National Technical Information Service

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Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE AIR FORCE
AFJACP, 1900 Half St., SW., Washington, D.C. 20324

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U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administrative Service Division, Federal Bldg.. Science and Education Administration, Hyattsville, Md. 20782

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U.S. ENVIRONMENTAL PROTECTION AGENCY
Room W513, 401 M St., SW., Washington, D.C. 20460

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

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U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts., NW.
Washington, D.C. 20240

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OFFICE OF NAVAL RESEARCH
Field Support Group, Room 221,
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–4, Washington, D.C. 20546

Patent application 6–027.558. Direction Sensitive Laser Velocimeter. Filed Apr. 6, 1979.

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Patent 4,160,254. Microwave Dichroic Plate. Filed Feb. 16, 1978. Patented July 3, 1979. Not available NTIS.

Patent 4,160,508. Controller Arm for a Remotely Related Slave Arm. Filed Aug. 19, 1977. Patented July 10, 1979. Not available NTIS.

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U.S. DEPARTMENT OF THE AIR FORCE AF/JACP
1900 Half St., SW., Washington, D.C. 20324

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda. Md. 20205

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U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

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Patent 4,147,055. Apparatus for Determining Projectile Position and Barrel Pressure Characteristics. Filed Dec. 15. 1977. Patented Apr. 3, 1979. Not available NTIS.

Patent 4,147,124. Apparatus for Launching Stores From a Submerged Vehicle. Filed Sept. 26, 1977. Patented Apr. 3, 1979. Not available NTIS.

Patent 4.150,875. Pressure-Resistant Housing. Filed Sept. 23, 1977. Patented Apr. 24, 1979. Not available NTIS.

Patent 4,151,393. Laser Pile Cutter. Filed Feb. 13, 1978. Patented Apr. 24, 1979. Not available NTIS.

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Patent 4,158,322. Pyrotechnic Separation Device. Filed Aug. 22, 1977. Patented June 19, 1979. Not available NTIS.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

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Patent 4,151,800. Thermal Insulation Protection Means. Filed Apr. 15, 1977. Patented May 1, 1979. Not available NTIS.

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Patent 4,155,475. Bonding of Sapphire to Sapphire by Eutectic Mixture of Aluminum Oxide and Zirconium Oxide. Filed Dec. 30, 1975. Patented May 22, 1979. Not available NTIS

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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New York	Albany: New York State Library	(518) 474-5125
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
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	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 26, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-2-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-3-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-14-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	5-3-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-8-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-25-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	11-16-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-16-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-29-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	3-13-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-14-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	12-14-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	1-8-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	8-22-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	8-17-78

Expiration of patents: The patents within the range of numbers indicated below expire during January 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,070,801 to 3,076,194, inclusive
Plant Patents	Numbers 2,208 to 2,223, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 4, 1980

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T991,001

PREFORMED HOT-MELT SEALANT STRIP

Leonard D. Donovan, 12 High St., Southboro, Mass. 01772, and Matthew M. Sitter, 22 Colonial Dr., Convert Station, N.J. 07961

Filed Mar. 9, 1979, Ser. No. 19,270
Int. Cl.^{2} B32B *17/10;* **C09J** *7/02;* **C03C** *27/10*
U.S. Cl. 428—40
No Drawing. 7 Pages Specification

A preformed or prefabricated hot melt sealant strip of essentially any desired length and with any desired cross-sectional configuration is formed by hot extrusion, cooled, and coiled or spooled and may be subsequently used, for example, as a sealing means in the assembly of multiglazed windows, to seal and set automobile windshields and the like. The preferred cross-section is U-shaped if the sealant strip is to be utilized for multiglazed windows but the strip may have a T, E, L shape, or the like, depending on the intended end use. Any hot melt adhesive or sealant composition is suitable as long as it is not too tacky in the cooled state. Some tackiness is acceptable but it requires the use of an abherent or release liner if the strip is to be packaged in such a manner that it is in contact with itself. The sealant strip may then be placed about a dessicant filled spacer element and located between two panes of glass. The sealant may then be activated by subjection to thermal energy to seal the unit.

T991,002

COATING COMPOSITION

Don R. Leonard, Rte. 15, 421 Old Castle Rd., Kingsport, Tenn. 37660

Filed Feb. 21, 1979, Ser. No. 13,112
Int. Cl.^{2} C08L *1/14*
U.S. Cl. 260—15
No Drawing. 9 Pages Specification

Disclosed are aqueous emulsion coating compositions comprising a thermosetting polyester resin, cellulose ester, melamine-formaldehyde crosslinking agent, a combination surfactant-curing agent and a suitable organic solvent. The cellulose ester is preferably cellulose acetate butyrate. The combination surfactant-curing agent is preferably ammonia- or amine-neutralized salts of sulfonated, ethoxylated hydrocarbons. The concentrate is emulsified in water and used as a coating composition. The coating has low solvent emission to the atmosphere when drying, provides a hard but flexible coating having excellent appearance, good durability, and rapid drying properties.

REISSUES

MARCH 4, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,223

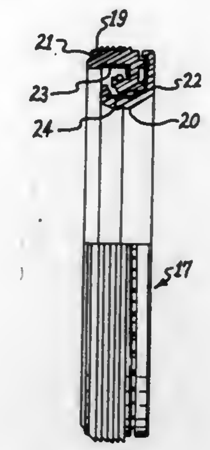
LUBRICANT SEAL

David B. Prescott, Littleton; Herbert H. Thumm, Denver, and Raymond L. Horner, Englewood, all of Colo., assignors to The Mechanex Corporation, Englewood, Colo.

Original No. 4,037,848, dated Jul. 26, 1977, Ser. No. 657,094, Feb. 11, 1976. Application for reissue Nov. 13, 1978, Ser. No. 959,941

Int. Cl.^{2} F16J *15/32*

U.S. Cl. 277—37 **13 Claims**



1. A seal for sealing between a bore and a shaft, said shaft being radially inwardly spaced from and coaxial with said bore and said bore and said shaft being subject to rotation relative to each other, said seal comprising;

a first substantially annular means having a first resilient elastomeric member adapted for sealingly engaging a continuous annular portion of said bore for preventing fluid flow between said bore and said resilient elastomeric member, said resilient elastomeric member being adapted for being installed into sealing engagement with said continuous annular portion of said bore by manual effort for enabling said seal to be sealingly engaged with said bore without installation tools;

a second substantially annular means having a second resilient elastomeric member adapted for sealingly engaging a continuous annular portion of said shaft for preventing fluid flow between said second resilient elastomeric member and said shaft, said resilient elastomeric member being adapted for being installed into sealing engagement with said continuous annular portion of said shaft by manual effort for enabling said seal to be sealingly engaged with said shaft without installation tools;

one of said first and second annular means further having a first rigid member, said first rigid member having a cylindrical band portion sealingly engaged with said one of said first and second annular means and a rigid wear surface radially facing toward said other of said first and second annular means, said cylindrical band portion of said first rigid member having a first side and a second side, said first rigid member further having a rigid side member affixed to said first [end] *side* of said cylindrical band portion of said first rigid member and extending radially toward said other of said first and said second annular means, said rigid side member extending radially beyond a continuous annular portion of an axial side of said other of said first and said second annular means for limiting axial movement of said first and said second annular means relative to each other in a first axial direction;

the other of said first and second means further having a second rigid member for supporting said resilient elastomeric member of said other of said first and second annular means;

said one of said first and said second annular means further having an assembly maintenance rim disposed adjacent said second side of said cylindrical band portion of said first rigid member, said assembly maintenance rim radially extending beyond said wear surface of said cylindrical band portion of said first rigid member toward said other of said first and said second annular means, said assembly maintenance rim having a terminal radially facing portion having a spaced relationship relative to said second rigid member of said other of said first and said second annular means to provide a continuous substantially annular space between said second rigid member and said terminal radially facing portion of said assembly maintenance rim for enabling said second rigid member to move axially past said assembly maintenance rim when said first and said second annular means are coaxially aligned and forced axially toward each other; and

the other of said first and said second annular means further having resilient seal means sealingly engaged with said other of said annular means and adapted for being sealingly engaged with a continuous annular portion of said wear surface for permitting relative rotational movement between said seal means and said wear surface and for preventing fluid flow between said seal means and said wear surface under static and dynamic conditions, said resilient seal means being adapted for resiliently deforming as it is forced axially into engagement with said assembly maintenance rim as said first and said second annular means are coaxially aligned with said seal means adjacent said assembly maintenance rim and forced axially toward each other whereby said seal means resiliently deforms to slide over said terminal radially facing portion of said assembly maintenance rim and upon being forced axially past said assembly maintenance rim said seal means resiliently returns toward its original shape for sealingly engaging said wear surface and for limiting axial movement of said first and said second annular means in a second axial direction, said second axial direction being opposite to said first axial direction, for maintaining said seal as a preassembled unit.

PLANT PATENTS

GRANTED MARCH 4, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,507

CN7 STRAWBERRY PLANT

Royce S. Bringhurst, Davis, and Victor Voth, Santa Ana, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 23, 1978, Ser. No. 954,005

Int. Cl.^{2} A01H *5/03*

U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above.

4,508

PEACH TREE

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Dec. 19, 1978, Ser. No. 774

Int. Cl.^{2} A01H *5/03*

U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree as described and illustrated, characterized by its large size, vigor, upright growth; and being a regular and productive bearer of large, firm, yellow flesh, freestone fruit with excellent eating and shipping quality; it is further characterized by having fruit that colors two to three weeks before maturity and having a more attractive red skin color than other late season varieties, ripening two weeks after O'Henry Peach (U.S. Plant Pat. No. 2,964).

PATENTS

GRANTED MAR. 4, 1980

ERRATA

For CLASS	See PATENT NO.
081–003 R	4,190,931
433–102	4,190,958
046–161	4,190,982
410–110	4,191,108
410–149	4,191,109
126–427	4,191,329
024–016 PB	4,191,334
280–166	4,191,388
430–037	4,191,566
430–064	4,191,567
430–066	4,191,568
430–305	4,191,569
430–302	4,191,570
430–325	4,191,571
430–260	4,191,572
430–166	4,191,573
430–387	4,191,574
430–418	4,191,575
430–512	4,191,576
435–188	4,191,613
585–483	4,191,632
548–207	4,191,689
525–102	4,191,713
525–102	4,191,714

PATENTS

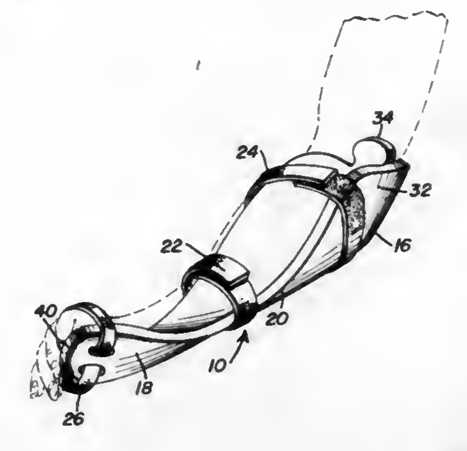
GRANTED MARCH 4, 1980

GENERAL AND MECHANICAL

4,190,902

PROTECTIVE DEVICE FOR THE ELBOW, ARM, PALM AND HAND

Jhoon G. Rhee, 4068 Rosamora Ct., Arlington, Va. 22207
Filed Mar. 9, 1978, Ser. No. 885,029
Int. Cl.^{2} A41D *13/08*
U.S. Cl. 2—16 **10 Claims**



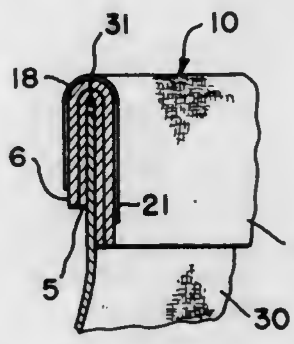
1. A flexible, unitarily molded, protective device for wearing on and protecting the elbow, arm, hand and palm of a person engaging in the sport of skateboarding comprising:

a. resilient means having a generally longitudinal contoured configuration adapted to extend between the elbow and palm of the wearer;
b. an elbow end comprising contoured portions adapted to cradle the person's elbow and to permit free movement of the upper part of the wearer's arm therein and to accommodate normal bending of the elbow;
c. a palm end comprising a flat portion adapted to cover the palm of the wearer's hand while permitting free movement of the fingers and thumb;
d. an intermediate narrower arm portion adapted to cover the back of the arm and to permit free movement of the wrist of the wearer;
e. securing means for retaining said device on the arm and on the hand of the wearer.

4,190,903

NECK PROTECTOR

Florence A. Kinsella, 2515 First St., Apt. 47, Ft. Myers, Fla. 33901
Filed Sep. 1, 1978, Ser. No. 938,868
Int. Cl.^{2} A41D *27/12*
U.S. Cl. 2—60 **1 Claim**



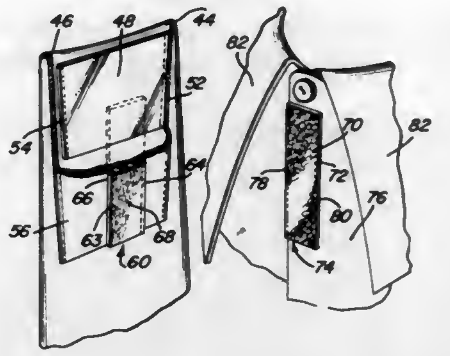
1. A neck protector comprising:

(a) a neck band of fluid absorbent material for placement about a neck in overlapping relationship at opposite ends thereof for at least a portion of said neck,
  (i) said band having a length along a longitudinal axis of said band greater than the circumference of said neck so that said neck band overlaps said neck at opposite ends thereof within a first region at one end of said band and a second region at the other end of said band,
  (ii) said band being foldable proximal to said longitudinal axis so that when said band is folded thereat its width is less than the length of said neck.
(b) at least one wire which may be bent along its longitudinal axis into a deformed state, and
(c) adhesive means for fixing said one wire to said band transverse to said longitudinal axis of said band at one of said ends in one of said first and second regions so that said band is retained in said overlapping relationship when said wire is deformed into said deformed state.

4,190,904

SASH TIE AND HOLDER

David J. Nelson, 306 S. 3rd St., Burlington, Iowa 52601
Filed Aug. 30, 1978, Ser. No. 937,995
Int. Cl.^{2} A41B *1/18;* **A41D** *25/10*
U.S. Cl. 2—137 **10 Claims**



1. An item of clothing for a wearer comprising in combination a sash tie, a holder for the sash tie with tie fastening means on the sash tie or holder, and a shirt having a collar and shirt fastening means attached to the front portion of the shirt and removably engageable with said tie fastening means when the shirt is buttoned to the collar, the sash tie comprising a folded portion and a front portion wherein the holder is stitched to the folded portion so as not to be visible from either the front or back of the sash tie, said sash tie having upper corners held in place by support from said fastening means so that the sash tie is held in place solely by engagement of said tie fastening means with said shirt fastening means by manual pressure on said holder, whereby only the front portion of the tie is visible on the wearer when the shirt is buttoned to the collar and the tie fastening means engages the shirt fastening means.

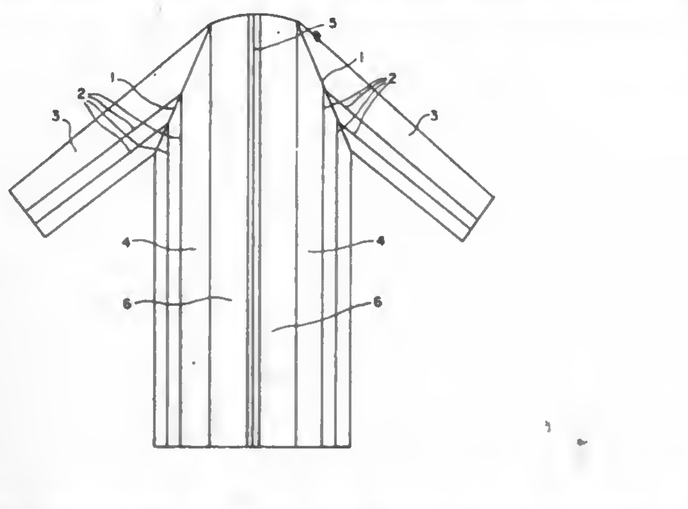
4,190,905

FOLDING GARMENT

Leo Reverberi, 5, passage de la Main d'Or, Paris, France (75011)
Filed Dec. 19, 1977, Ser. No. 862,132
Int. Cl.^{2} A41D *15/00*
U.S. Cl. 2—1 **8 Claims**

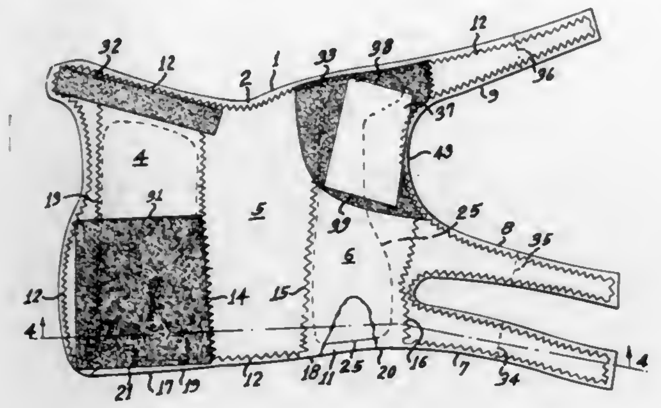
1. A foldable garment having a body portion and a pair of sleeve portions connected to said body portions whereby said sleeve portions are connected to said body portion along an oblique seam extending from the armpit to the neck, the improvement comprising said sleeve having a plurality of longitudinally extending foldlines formed therein, and said body portion having a plurality of longitudinally extending foldlines formed therein, the foldlines of said sleeves and said body portions being disposed on opposite sides of said oblique seam, wherein said longitudinal sleeve foldlines and body foldlines define a plurality of corresponding sleeve strips and body strips respectively, whereby the respective sleeve strips and corresponding adjacent body strips which join along said oblique

seam are each substantially equal in width, said sleeve being readily foldable along said oblique seam to overlap said body portion in a folded position of said garment whereby the foldlines of said sleeves are disposed congruently to the foldlines of said body portion so that said body portion and overlying sleeves can be further jointly folded along said congruent foldlines to define a finally folded elongated panel.



4,190,906
BOWLER'S GLOVE AND WRIST SUPPORT
Edward E. Patton, Jr., 7104 Merrill Rd., Jacksonville, Fla. 32211

Filed Mar. 3, 1978, Ser. No. 883,223
Int. Cl.^{2} A41D *19/00;* A63B *71/14*
U.S. Cl. 2—161 A **14 Claims**

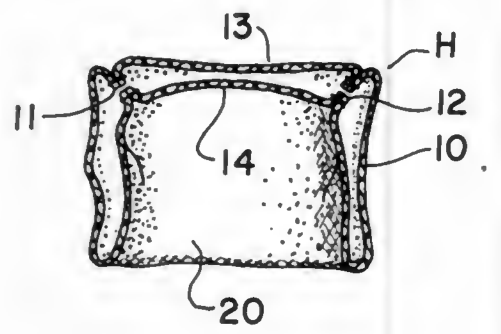


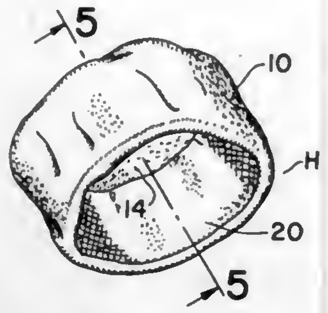
1. In a bowling glove and wrist support, a palm plate having a first end portion and a second end portion, hand-attachable means carrying said plate for disposing said plate with its said first end portion in and bridging the palmar arch of a wearer and terminating adjacently below the palm knuckle of the middle finger and with its said second end portion across the inner surface of the wrist spanning the wrist joint, and a prop carried by said means in a position overlying said first end portion.

4,190,907
TERRY HAIR DRIER
Ann M. Cruickshank, 6978 Maplewood Rd., Parma Heights, Ohio 44130

Filed Jun. 2, 1978, Ser. No. 912,019
Int. Cl.^{2} A42B *1/04*
U.S. Cl. 2—202 **4 Claims**

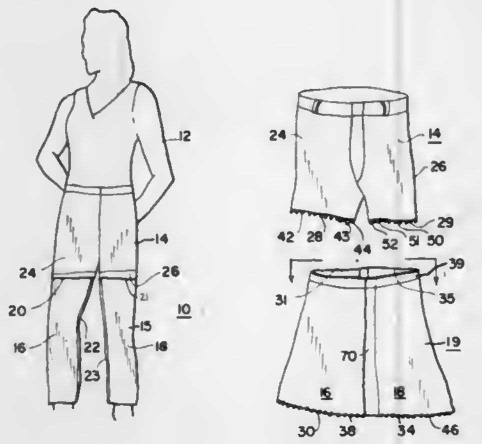
1. A hair dryer headpiece comprising a tubular body portion formed of an absorbent, foldable, sheet material and having end edge portions at either end; a pair of end closures made of absorbent, foldable, sheet material; said end closures having circumferential portions equal in length to said end edge portions, an end closure being sewed at said circumferential portions to said end edge portions at each said end of said body portion whereby said tubular body portion is closed at the ends; said tubular body portion being folded inwardly upon itself from either end in use thereof whereby one of said end closures is disposed within said body portion adjacent to the inside of the opposite end closure to provide a double-walled, absorbent headpiece for enveloping the head and controlling wet hair and whereby said headpiece can readily be reversed by folding said body portion inwardly from the opposite direction to turn the outer, dryer material inwardly toward the head.





4,190,908
CONVERTIBLE GARMENT
Boris A. Herskind, 6040 SW. 32nd St., Ft. Lauderdale, Fla. 33314

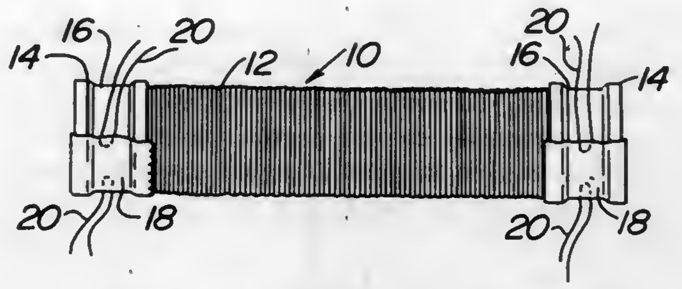
Filed Nov. 30, 1977, Ser. No. 855,835
Int. Cl.^{2} A41D *1/14, 1/06*
U.S. Cl. 2—213 **1 Claim**



1. A convertible garment for a wearer, convertible to long patns or to short pants and a skirt, said garment comprising said short pants, a pair of long leg enclosing sections, said short pants having a pair of short leg enclosing sections, each of said long leg enclosing sections being divided along its length to form two side edges, the lower edges of said pair of said long leg enclosing sections having a combined length substantially equal to the waist size of said wearer, said pair of long leg enclosing sections having a first mode with the upper edge of one of said long leg enclosing sections secured to the lower edge of one of said short leg enclosing sections and the upper edge of the other of said long leg enclosing sections secured to the lower edge of the other of said short leg enclosing sections and said two side edges of said one long leg enclosing section

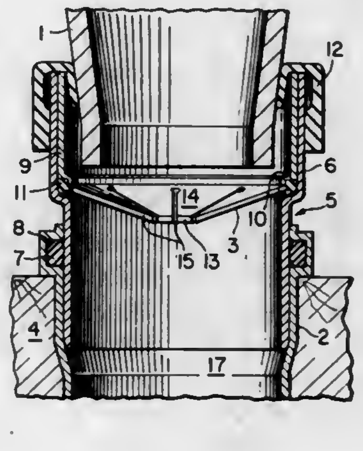
secured to each other and said two side edges of said other long leg enclosing section secured to each other to form said long patns, said pair of long leg enclosing sections having a second mode with one of said side edges of said one long leg enclosing section secured to one of said side edges of said other long leg enclosing section and the other of said side edges of said one long leg enclosing section secured to the other of said side edges of said other long leg enclosing section to form said skirt, said skirt having a waistband comprising said lower edges of said long leg enclosing sections, whereby said waistband has a size equal to the waist size of said wearer.

4,190,909
APPARATUS AND METHOD FOR SURGICAL REPAIR OF DISSECTING THORACIC ANEURYSMS AND THE LIKE
Sariel G. G. Ablaza, 1335 W. Tabor Rd., Philadelphia, Pa. 19141
Filed Mar. 31, 1978, Ser. No. 892,191
Int. Cl.^{2} A61F *1/24, 1/00*
U.S. Cl. 3—1.4 **6 Claims**



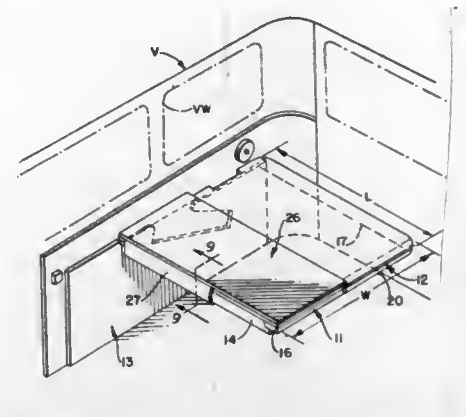
1. A prosthetic graft comprising a flexible tubular body having a rigid, non-flexible ring at each of its two opposed ends, each ring defining an opening into the tubular body, each of said rings having an annular groove on its outer periphery which is defined by an annular rib at each side thereof, a flexible cover encapsulating each of said rings, said tubular body being constructed of a woven fabric and said cover being constructed of a knitted velour fabric.

4,190,910
PLUMBING APPARATUS INCLUDING MEANS FOR PRODUCING A WATER-PLUG EFFECT IN SANITATION APPLIANCES
Lars Teglund, and Melchiorre Oldani, both of Gustavsberg, Sweden, assignors to AB Gustavsberg, Gustavsberg, Sweden
Filed Feb. 28, 1978, Ser. No. 882,180
Claims priority, application Sweden, Mar. 2, 1977, 7702341
Int. Cl.^{2} E03D *11/02, 11/18*
U.S. Cl. 4—421 **4 Claims**



1. Plumbing apparatus for producing a water-plug effect during the flushing of sanitation appliances comprising outlet pipe means extending in a substantially vertical direction, said outlet pipe means constituting the flow outlet for such sanitation appliance, and resilient diaphragm means mounted to extend across said pipe means and structured to stem the flow of flushing water flowing therethrough until a sufficient quantity of water has accumulated, said diaphragm means upon accumulation of such sufficient quantity operating to pass said water through said pipe means thereby to cause said accumulated water to act as a water-plug, said resilient diaphragm means comprising a diaphragm formed from resilient material having formed therein a central opening with slits extending radially outwardly from said central opening of said diaphragm material, said slits operating to divide said diaphragm into a plurality of radially arranged flaps surrounding said central opening.

4,190,911
CONVERTIBLE COUCH
Craig D. Wadsworth, 107 26 Ave., Apartment 9, St. Petersburg Beach, Fla. 33706
Filed May 17, 1978, Ser. No. 906,451
Int. Cl.^{2} B60P *3/338*
U.S. Cl. 5—44 R **16 Claims**

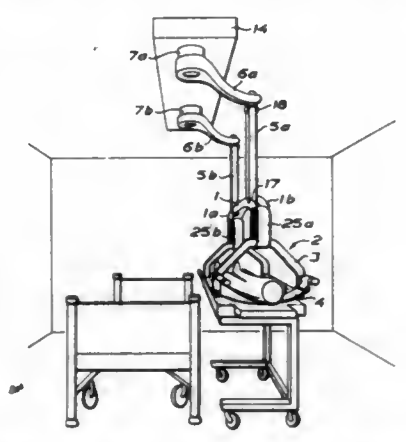


1. An article of furniture convertible from a seating position to a generally horizontal sleeping position, comprising: a seat portion and a backrest portion pivotally connected together; a pair of side support panels each having a plurality of support surfaces thereon engageable with opposite end portions of the seat portion and backrest portion to support the seat portion and backrest portion in the seating position and in the sleeping position, respectively, said support surfaces being of such size and shape in relation to one another and to the seat portion and backrest portion and bedding disposed in predetermined angular relationship to one another so that the seat portion and backrest portion are engaged therewith during movement between the seating position and the sleeping position and are thus balanced during their movement between a seating position and a sleeping position and very little effort is thus required, and wherein limit stops are associated with the support surfaces to engage both the seat portion and beckrest portion in the seating position and the sleeping position to limit fore and aft movement of the seat and backrest portions without requiring separate fasteners and the like.

4,190,912
LIFTING DEVICE
Lars A. H. Nilsson, Trollbergsvägen 3 S-572 00, Oskarshamn, Sweden
Filed Jun. 12, 1978, Ser. No. 914,455
Claims priority, application Sweden, Jun. 17, 1977, 7707055
Int. Cl.^{2} A47B *83/04;* B65G *67/12*
U.S. Cl. 5—83 **17 Claims**

1. A lifting device for lifting a load; comprising means for receiving the load, a rigid carrier arm to be placed over the load and supporting said means for receiving the load, and transfer means connected to said carrier arm for parallel movement thereof in its lateral direction, said carrier arm having two opposite ends and said transfer means including two separate but similar transfer assemblies associated with the two opposite ends respectively of the carrier arm and each including a link member having first and second opposite ends and a lever also having first and second opposite ends, said lever being pivotably supported at said first end thereof to be rotated

and being pivotably connected at said second end to said first end of said link member, and said link member being pivotably connected at said second end thereof to the associated end of said carrier arm, and said transfer assemblies being symmetrically arranged for pivoting said levers in opposite directions, thereby causing said second ends of the link members to be lifted and moved in lateral direction.



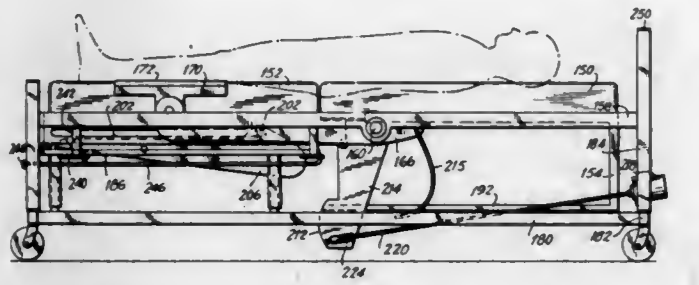
4,190,913
INVALID BED ARRANGEMENT

Paul L. DiMatteo, Melville, and Henry V. Diaferia, Brentwood, both of N.Y., assignors to Solid Photography Inc., Melville, N.Y.

Continuation-in-part of Ser. No. 806,777, Jun. 15, 1977, Pat. No. 4,085,471. This application Apr. 4, 1978, Ser. No. 893,467

Int. Cl.² A61G *7/07*

U.S. Cl. 5—81 R **11 Claims**



1. An arrangement for transferring a person from a reclined position to an upright seated position comprising: means for supporting the back side of the person with the person's posterior at a first location; means for raising the calves of the person and bending the knees of said person; means for freeing substantially the posterior of said person; means for moving the person to an upright seated position and placing said person onto a seating member so that the posterior of said person is directly in contact with said seating member; said supporting means comprising a bed member subdivided into first and second sections; means for raising said first section above said second section; means for moving said second section beneath said first section for freeing the posterior of said person; means on said first bed section abutting said seating member when said second bed section is beneath said first section for moving said seating member against the person's posterior after freeing thereof; said second bed section having means for actuating said seating member against said abutting means on said first section when said second bed section reaches its end of movement beneath said first section so that said seating member is moved upward for placement against said person's posterior; and means for actuating said means for raising the calves when raising said first bed section.

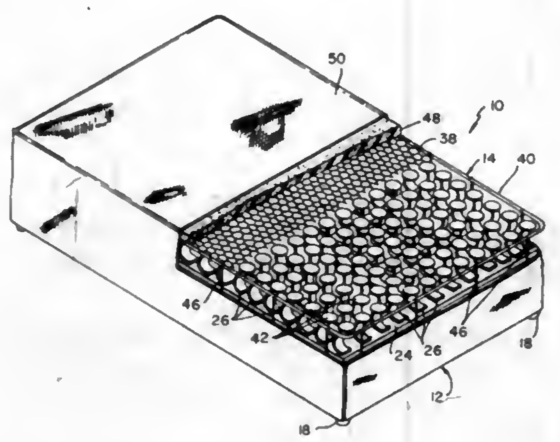
4,190,914
SLEEP UNIT

Souleymane Diallo, 19965 Snowden, Detroit, Mich. 48235

Filed Mar. 29, 1978, Ser. No. 891,211

Int. Cl.² A47C *27/08*

U.S. Cl. 5—247 **11 Claims**



1. A sleep unit comprising a support structure, a plurality of spaced apart springs secured on said support structure, cushioning material overlying said springs, said springs comprising leaf-springs having a lower portion secured to the support structure, an upwardly curved portion extending from said lower portion, and an upwardly angled straight portion extending from said curved portion.

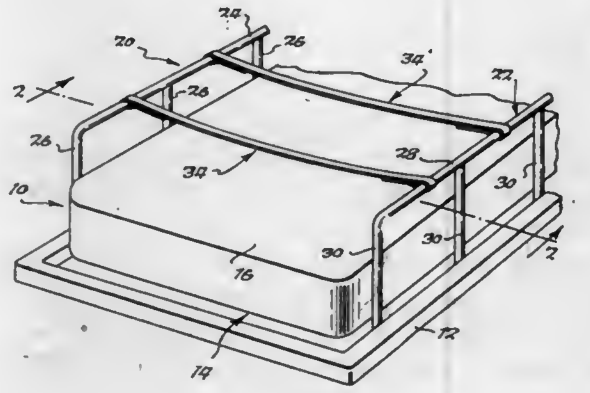
4,190,915
BED CLOTHING SUPPORT

Isobel J. Birt, 100 Indian Trail, Williamsville, N.Y. 14221

Filed Feb. 21, 1978, Ser. No. 879,093

Int. Cl.² A47C *21/00*

U.S. Cl. 5—505 **8 Claims**



1. A bed clothing support for use with a bed having an occupant supporting surface and a pair of opposite side rail assemblies located on said bed so that each rail assembly is located along one side of the occupant, each of said side rail assemblies having an upper portion normally located in a plane above said occupant supporting surface, said bed clothing support comprising:

(a) an elongated strip member having a length sufficient to span the distance across said occupant supporting surface between said side rail assemblies and with the opposite end portions of said strip member extending around the corresponding ones of said side rail upper portions and then extending further inwardly along the portion of said strip member spanning the space between said rail assemblies;

(b) said strip member being of a light weight material which is sufficiently strong to support the weight of bed clothing and which is sufficiently flexible to permit said strip member end portions to extend around and then inwardly relative to said side rail upper portions, said strip member having a surface for providing supporting contact with the bed clothing with no mechanical connection to the bed clothing; and

(c) fastening means adjacent each end of said strip member, each of said fastening means providing a releasable connection between the corresponding portion of said strip member which extends inwardly from the corresponding side rail and the portion of said strip member which spans the distance between said side rail assemblies so as to provide a releasable connection of each of said strip member end portions to the corresponding one of said side rail upper portions, said fastening means comprising a pair of mating fastening elements adjacent each end of said strip member, one of said fastening elements of each pair being located relatively near the corresponding end of said strip member and the other mating fastening element of each pair being spaced from said one fastening element longitudinally along said strip in a direction away from the corresponding end, the distance between said mating fastening elements being sufficient to permit the portion of said strip between said fastening elements to extend around said side rail upper portions with said mating fastening elements engaging each other inwardly of said side rail, each of said fastening elements being in the form of an elongated strip, said fastening elements being engagable at selectable various locations lengthwise along the portion of said strip member where the corresponding fastening element is located to accomodate some variations in dimensions and sizes of various beds;

(d) whereby said strip member is located in spaced relation to said bed supporting surface above the body of the occupant and is disposed generally laterally with respect to the occupant and bed clothing is placed over and on said strip member so as to be supported above the body of the occupant.

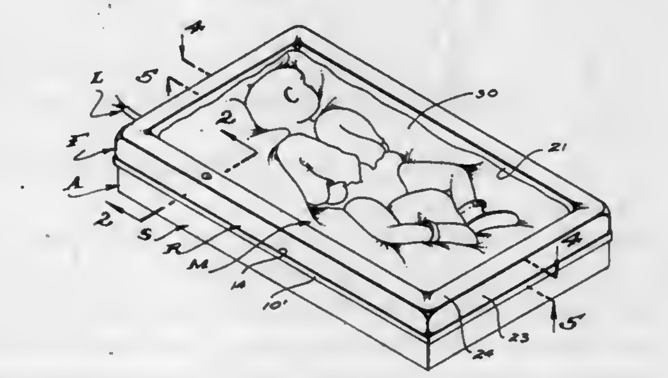
4,190,916
BASSINET

James P. McMullan, 2630 Seaman Ave., El Monte, Calif. 91753

Filed Oct. 25, 1978, Ser. No. 954,405

Int. Cl.² A47C *27/08*

U.S. Cl. 5—451 **12 Claims**



1. A water bed structure comprising a flat horizontal mattress including a bladder having vertically spaced horizontal top and bottom walls and vertical side walls of flexible water impervious sheeting and a volume of water within and filling the bladder, a flat horizontal pad of resilient reticulate material within the mattress and the water therein and positioned on the bottom wall and having a top surface normally spaced below the top wall, a retainer unit comprising a flat horizontal panel below and in supporting engagement with said bottom wall and a tubular frame about the panel with a portion projecting upwardly therefrom and cooperating therewith to define a basin in which the mattress is positioned; said frame has a vertical inside wall opposing and supporting the side walls of the mattress, said inside wall having openings communicating with the basin and the interior of the frame whereby water leaked or spilled from the mattress into the basin flows from the basin into the frame.

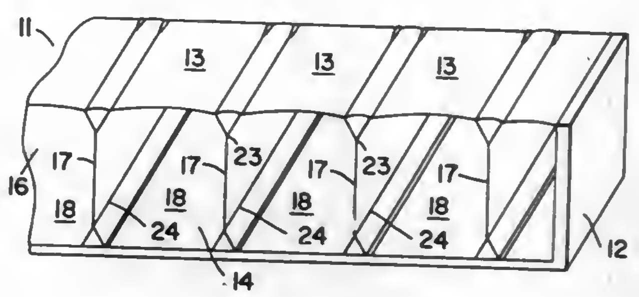
4,190,917
BAFFLED WATERMATTRESS CONSTRUCTION

David Calleance, 1945 - 23rd Ave., San Francisco, Calif. 94116

Filed May 9, 1978, Ser. No. 904,195

Int. Cl.² A47G *9/00*

U.S. Cl. 5—457 **9 Claims**



1. In a watermattress construction including upper and lower sheets joined to define a sealed, water-retaining envelope, and a plurality of baffles therein, the improvement comprising a pair of leg members having proximal ends extending from at least one upper or lower edge of each baffle to the respective upper or lower sheet, said leg members diverging angularly each from the other, and first seam means for joining the distal ends of said leg members to said respective upper or lower sheet, said leg members and said respective upper or lower sheet extending between said distal ends being disposed in triangular configuration.

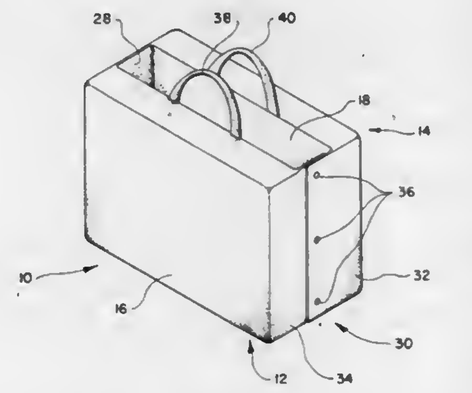
4,190,918
COMBINATION FOLDING CUSHION AND CARRYING ASSEMBLY

Glenn M. Harvell, 220 Baggett St., Raleigh, N.C. 27604

Filed Jul. 5, 1978, Ser. No. 921,968

Int. Cl.² A47G *7/62;* A47C *27/00*

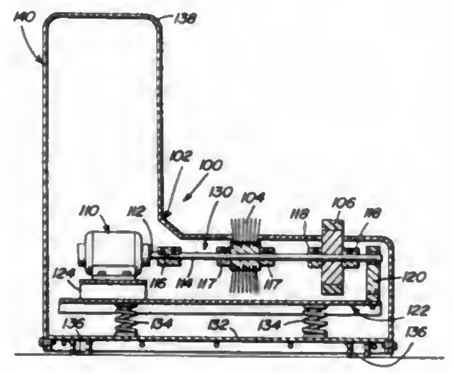
U.S. Cl. 5—465 **7 Claims**



1. A combination folding cushion and carrying assembly comprising: at least two cushions having front and back sides; an inner flexible panel interconnected between said two cushions for allowing said cushions to be folded in back-to-back spaced apart relationship; attaching means associated with said cushions and fastenable for holding said cushions in back-to-back spaced apart relationship so as to define an open area between the back sides of said cushions and said inner panel and said attaching means when fastened for accommodating carryables such as a blanket; blanket retaining means operatively associated about the back side of one cushion and operative to hold and confine a blanket about the back side thereof, said blanket retaining means including strap means supported about the back side of said cushion and extending therefrom and including fastening means for allowing said strap means to be confined and fastened about a blanket; and handle means secured to at least one cushion and extending therefrom for allowing the folded cushion and carrying assembly to be hand-carried.

4,190,919
SHOE CLEANING DEVICE

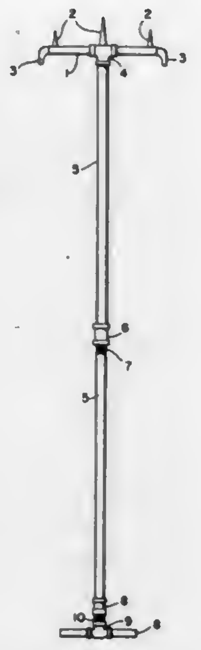
Roy T. Burford, 13715 Larkway, Sugar Land, Tex. 77478
Filed Oct. 5, 1978, Ser. No. 949,396
Int. Cl.^{2} A47L *23/22*
U.S. Cl. 15—4 **8 Claims**



1. In a shoe cleaning device comprising: first cleaning implement means including a brush for cleaning soles of shoes which soles have a first composition; second cleaning implement means comprising an elastomeric material for cleaning soles of shoes which soles have a second composition, said first and said second cleaning implement means being attached to a common shaft; drive means for activating said first and second cleaning implements, said drive means comprising a motor attached to said shaft for causing rotation thereof; and resilient mounting means for resiliently mounting said drive means, said first cleaning implement and said second cleaning implement.

4,190,920
GARBAGE CHUTE CLEARING DEVICE

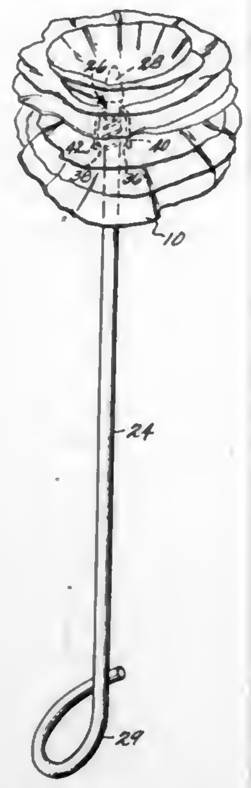
John T. Fikkers, 805 Rosita Rd., Pacifica, Calif. 94044
Filed Apr. 18, 1979, Ser. No. 31,186
Int. Cl.^{2} B08B *9/02*
U.S. Cl. 15—104.05 **4 Claims**



1. A garbage chute clearing device of generally "T"-shaped configuration comprising:
a vertical member;
a horizontal member positioned upon one end of said vertical member at ninety degrees thereto and forming a "T"-shape therewith;
a plurality of sharp pointed cutting members positioned upon and protruding upwardly above said horizontal member;
a pair of hook-shaped grasping members positioned on opposite ends of said horizontal member and pointing downward in a direction opposite that of said sharp-pointed members;
a handle positioned on the end of said vertical member opposite said horizontal member;
said handle being disposed for forcing said device into said chute while imparting a combined motion of rotation and translation to said device.

4,190,921
CLEANING DEVICE

Elizabeth H. Rose, 1026 Gate Mills Towers, 6805 Mayfield Rd., Mayfield Hghts., Cleveland, Ohio 44124
Filed Nov. 9, 1978, Ser. No. 959,364
Int. Cl.^{2} A47L *17/00*
U.S. Cl. 15—225 **12 Claims**

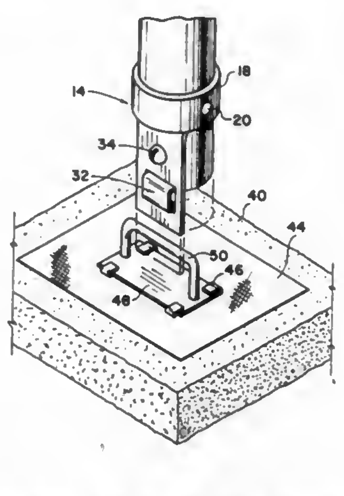


1. A mop-type device comprising:
an elongated strip of synthetic loose-weave net material of at least one thickness;
a handle having a peripheral groove near one end;
means for wrapping an elongated edge of said material in a spiral around said handle, said spiral wrapping of said edge around said handle forming multiple layers of said material;
means for maintaining at least one point of said material proximate said groove;
means for preventing said at least one point from rotating with respect to said groove; and
means for prohibiting said material from unwrapping from said handle, said prohibiting means comprising at least one stitch in at least one direction through said multiple layers, said at least one stitch maintaining the material pierced by said at least one stitch in each of said layers proximate the material pierced by said at least one stitch in the adjacent of said layers.

4,190,922
BATHTUB MOP

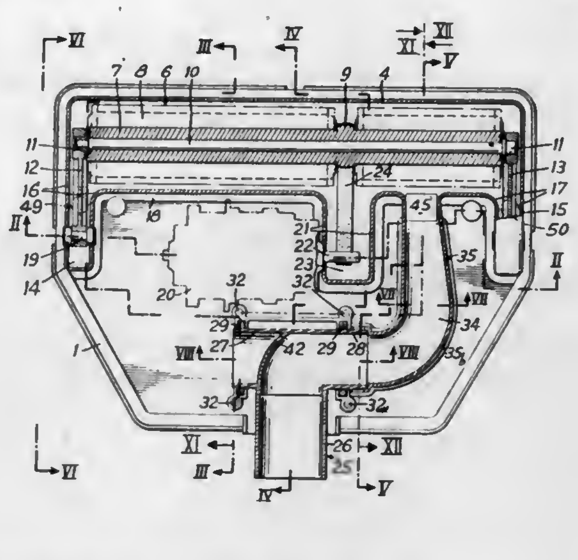
Pauline Elias, 202 W. 10th St., Bristow, Okla. 74010
Filed Nov. 27, 1978, Ser. No. 963,984
Int. Cl.^{2} A47L *13/46;* **A46B** *5/02*
U.S. Cl. 15—244 A **4 Claims**

1. A bathtub-cleaning mop comprising an elongated handle, scouring pad means disposed at one end of said handle, catch means secured to said one end of the handle and having yieldable releasable clasp means having a normal closed position and being openable upon the application of sufficient pressure thereagainst, and removable bar means provided on said scouring pad means and alternately engagable and disengagable with said clasp means upon the application of pressure against the clasp for removably securing said scouring pad means to the clasp means.



4,190,923
APPLIANCES FOR CLEANING VARIOUS TYPES OF FLOORS BY SUCTION OR MOTORIZED BEATING OR BRUSHING

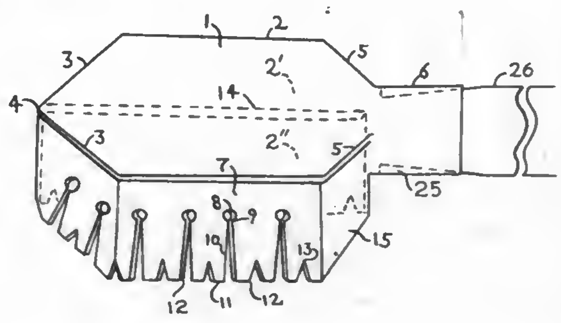
Michel A. Varin, Crepy en Valois, France, assignor to Societe Anonyme dite: Etablissements Georges Olivier, Paris, France
Filed Dec. 5, 1977, Ser. No. 857,251
Claims priority, application France, Dec. 16, 1976, 76 37947; Jul. 28, 1977, 77 23295
Int. Cl.^{2} A47L *5/30*
U.S. Cl. 15—383 **19 Claims**



1. In an appliance for cleaning floors and carpets by a combination of suction and motorized brushing having a rotating brush for brushing and beating the floor, a brush housing containing the brush, a motor connected to the brush for rotating the brush, channel means, extending from adjacent of the brush housing to a source of suction connected to the appliance, for routing the particles dislodged from the floor by the brush and the suction to the source of suction, and connecting means, adjacent to the downstream end of the channel means, for pivotally attaching the appliance to the suction source, the improvement comprising:
a platform containing surfaces for integrally mounting the brush, the motor, and the connecting means, with a portion of the platform forming the channel means and the brush housing;
a protective cover attached to the platform and being free of contact with the brush, the motor, the channel means, and the connecting means;
and a sliding base plate attached to the platform and being free of contact with the brush, the motor, the channel means, and the connecting means.

4,190,924
ANIMAL GROOMING DEVICE

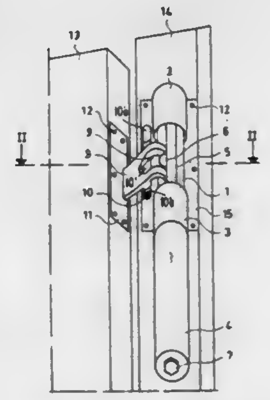
James A. Nicholson, 10600 Van Stralen Way, Rancho Cordova, Calif. 95670
Filed Oct. 11, 1977, Ser. No. 841,061
Int. Cl.^{2} A47L *9/06*
U.S. Cl. 15—402 **1 Claim**



1. An improvement in a grooming brush comprising a main section including a flat top portion formed with parallel sides, forward extensions of the sides extending diagonally inwardly toward each other and meeting to form a forward apex, rearward extensions of the sides extending diagonally inwardly toward each other but having spaced ends, all sides and extensions thus forming a generally hexagonally-shaped top portion,
a rigid skirt extending vertically downward from the sides and extensions of the top portion, the sides and forward extensions of the skirt being provided with a plurality of horizontally-disposed, spaced circular apertures, each aperture having a narrow opening ar its lower end leading into a triangular slot which extends to the base of the skirt,
a plurality of triangular notches disposed between said triangular slots at the base of the skirt,
a longitudinal center strip attached to and extending vertically downwardly from the flat top portion dividing said brush into twin chambers, said strip being provided with spaced apertures, open-ended triangular slots, and open-end triangular notches,
a triangular shaped plate attached to the rearward end of the skirt, said plate having a series of notches therein, and
a cylindrical nozzle extending horizontally from the rearward end of the rear extensions of the flat top portion and skirt to receive the end of a vacuuming hose.

4,190,925
DOOR-CLOSER AND HINGE COMBINATION

Mauno K. Koivusalo, 20200 Turku 20, Finland
Filed Apr. 4, 1978, Ser. No. 894,081
Int. Cl.^{2} E05F *3/20*
U.S. Cl. 16—54 **15 Claims**

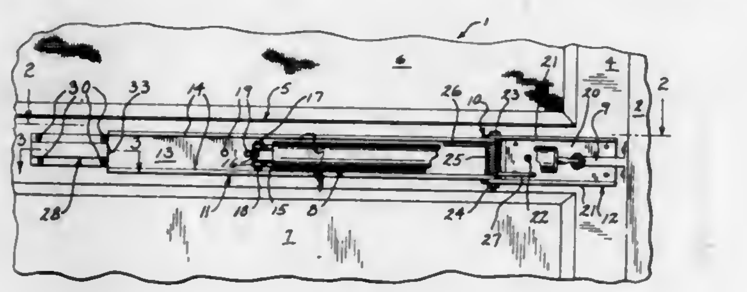


1. In a door-closer and hinge combination, a pair of hinge plate means respectively adapted to be fixed to a door and door frame, said pair of hinge plate means respectively fixedly carrying a pair of extension means which respectively extend from said pair of hinge plate means and which are situated along a predetermined hinge axis, said pair of extension means respec-

tively being formed with coaxial bores having a common axis coinciding with said hinge axis, and a hinge pin situated in said coaxial bores so that through said pair of extension means said pair of hinge plate means are hingedly connected to each other to provide for turning of the hinge plate means connected to the door about said hinge axis with respect to the hinge plate means connected to the door frame, elongated force-transmitting rod means having a rod axis which is parallel to said hinge axis, guide means carried by one of said hinge plate means and cooperating with said rod means for guiding the latter for movement along said rod axis, said rod means and the other of said hinge plate means forming a pair of means one of which carries a cam means and the other of which carries a cam-follower means which cooperates with said cam means, said cam means extending along part of a cylinder whose axis coincides with said hinge axis and having a camming surface which extends along a helix whose axis coincides with said hinge axis, so that during turning of the hinge plate means connected to the door with respect to the hinge plate means connected to the door frame, about said hinge axis, said cam means and cam-follower means cooperate for displacing said rod means along said rod axis thereof in a door-opening direction during opening of a door and in an opposite axial direction along said rod axis in a door-closing direction during closing of a door, and force means operatively connected with said rod means for storing a force when said rod means moves in said door-opening direction and for delivering the stored force through said rod means and said cam means and cam-follower means to the hinge plate means which is connected to the door for providing a door-closing force when said force means acts on said rod means to displace the latter in said door-closing direction, so that when a door is opened a force for closing the door is stored at said force means and when the door is to be closed said stored force will be utilized for closing the door.

4,190,926
DOOR GUARD

John Cronin, 8510 W. Layton Ave., Greenfield, Wis. 53228
Filed Feb. 27, 1979, Ser. No. 15,710
Int. Cl.^{2} E05F *3/00*
U.S. Cl. 16—65 **10 Claims**



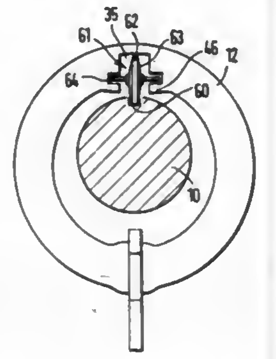
1. A door guard for a swingable door that is mounted in a doorway having a door closer affixed to the doorway comprising:

a flexible resilient arm for extension transversely across the inside of the door, said arm being adapted to be anchored at one end to the door and having its other end adapted for relative movement with respect to the door; and

connection means for pivotally connecting the arm to the door closer at a point intermediate the ends of said arm so that when the door opens to its normally widest open position the arm flexes to permit the door to continue opening and slows the rate of movement of the door to prevent damage to the door, door closer and doorway.

4,190,927
CURTAIN ROD TRACK FITTING

Erwin Hepperle, Hamletstr. 4, 7000 Stuttgart 80, Fed. Rep. of Germany
Filed Jan. 16, 1978, Ser. No. 870,036
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1977, 2700838; Jun. 6, 1977, 2726492
Int. Cl.^{2} A47H *15/00*
U.S. Cl. 16—96 D **7 Claims**



1. A curtain rod track fitting for slidably supporting a curtain or the like on a curtain rod comprising:

a closed ring member for completely encircling the curtain rod,

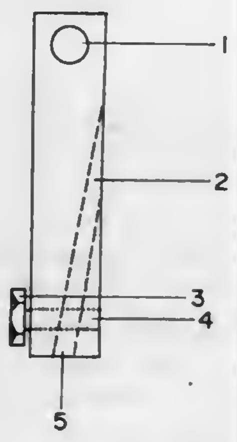
said ring member having a recess formed in an inner portion thereof and opening toward the center of said ring member for mounting a roller member therein,

said recess having a deep portion providing clearance for said roller member and a pair of notches for mounting an axle of said roller member such that said roller member is free to roll along the curtain rod and said axle is substantially transverse to the curtain rod,

said roller member having tapered radial faces for engaging a portion of the curtain rod along said tapered faces for minimizing friction with the curtain rod.

4,190,928
APPARATUS FOR THE EMERGENCY PULLING OF SMALL CABLES ON MOTORCYCLES, BOATS AND OTHER SMALL MACHINERY

William C. Hudgins, 9756 Beech Pl., Manassas, Va. 22110
Filed Oct. 11, 1977, Ser. No. 841,047
Int. Cl.^{2} G05G *1/02*
U.S. Cl. 16—111 R **1 Claim**



1. An emergency tool for the hand pulling of cables on motorcycles, boats and other small machinery comprising

a body including an elongate shank having a first end and a second end and a handle extending transversely to said shank at said first end;

an internally threaded hole disposed in said shank at said second end having an axis extending perpendicular to the longitudinal axis of said shank;

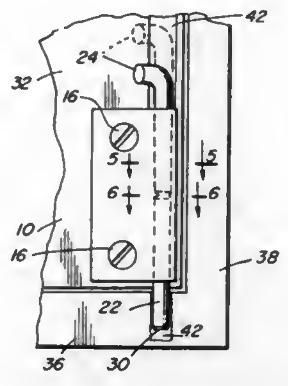
a set bolt threadedly engaging said hole; and

a through bore extending through a portion of said shank

and communicating with said hole, said bore being arranged at an acute angle to the longitudinal axis of said shank to extend from said second end to a lateral side wall of said shank whereby any length of cable can be passed through said bore and held in place by said set bolt.

4,190,929
PLASTIC HINGE

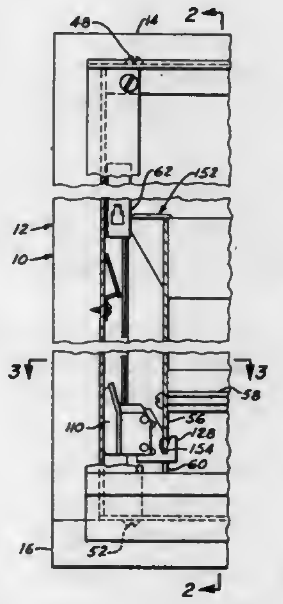
James J. Palka, Arlington Heights, Ill., assignor to General Bathroom Products, Inc., Elk Grove Village, Ill.
Filed Feb. 16, 1979, Ser. No. 12,863
Int. Cl.^{2} E05D *5/12*
U.S. Cl. 16—169 **2 Claims**



1. An all-plastic hinge for a door in a cabinet having a perforation adjacent the front upper and lower front frames, comprising a single plate secured to the rear of the door and a single split knuckle, a boss positioned medially of the ends of said knuckle and extending inwardly of the inner surface of said knuckle and around the inner surface thereof, a pin, an integral handle on one end of said pin extending at right angles to said pin, an annular groove in said pin cooperating with said boss in said knuckle, and the end opposite said handle extending well beyond the upper end of said knuckle when in operative position and in the perforation of the cabinet.

4,190,930
WINDOW AND SASH BALANCE

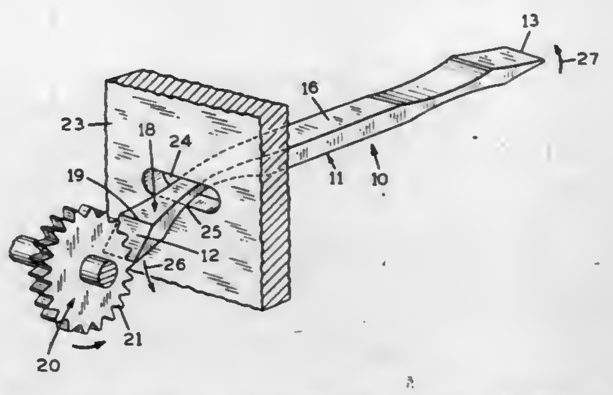
Dwight M. Prosser, 673 S. Lex-Springmill Rd., Mansfield, Ohio 44906
Division of Ser. No. 624,757, Oct. 23, 1975, Pat. No. 4,078,336. This application Feb. 17, 1978, Ser. No. 878,738
Int. Cl.^{2} E05D *17/00*
U.S. Cl. 16—197 **8 Claims**



1. A window comprising: a frame having opposing jambs with vertical sash receiving grooves which face each other, a sash having channel shaped stiles with outwardly extending legs received in said opposing vertical grooves, a pair of elongated balance housings of generally uniform cross section with respective ones being positioned in respective ones of said opposing vertical grooves, an extensible member projecting outwardly of each housing, retraction spring means in each housing for retracting said extensible members, first anchor means on each of said extensible members, second anchor means on each of said balance housings, a pair of sash guides for spacing the upper opposite sides of said sash from said balance housings, a pair of sash hooks respective ones of which are hooked to the respective bottom corner of said sash, a pair of slides respective ones of which are positioned in respective vertical sash receiving grooves, one of said first and second anchor means being fastened to said slides and the other of said first and second anchor means being fixed to the jambs of said window, and inclined slot and pin means connecting said sash hooks to said slides with the slots thereof extending upwardly and laterally ourwardly toward said jambs, and whereby the sash is centered between jambs and is kept from rattling.

4,190,931
BRAKE ADJUSTING SPOON

Cosmo Del Bianco, 1631 E. 37th St., Brooklyn, N.Y. 11234
Filed Jan. 3, 1978, Ser. No. 866,503
Int. Cl.^{2} B25B *13/48*
U.S. Cl. 81—3 R **3 Claims**



1. A tool for adjusting a rotatable means in a drum brake structure or the like, which comprises

(a) a longitudinally elongated, three-dimensional body having a predetermined width dimension,

(b) a relatively thin blade-like working end integral with at least one end of said body,

(c) said body including principal top and bottom surfaces generally spaced from one another said predetermined width and angled toward one another from an area of the body adjacent the working end to the thin blade-like working end, and

(d) a portion of at least one of said principal surfaces being formed to include an area disposed at an incline to the remaining portions of said one principal surface,

(e) said inclined portion forming an angle to the remaining portions of said one principal surface, which angle is at a slant reversely beveled with respect to the angled area of said one principal surface adjacent the working end,

(f) said working end being arranged for insertion through an opening in said drum brake structure for engagement with said rotatable adjusting means,

(g) said inclined portion of said one principal surface being arranged and configured whereby the inclined portion engages the drum brake structure adjacent said opening when the working end is in engagement with said rotatable means, thereby urging the working end further into engagement.

4,190,932
METHOD AND APPARATUS FOR OPENING TEXTILE FIBER BALES

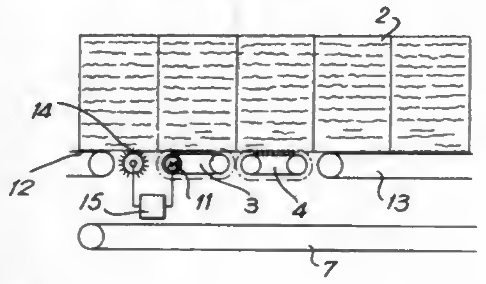
Hans Trützchler, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützchler GmbH & Co. KG., Menchen-Gladbach, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,370

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731811

Int. Cl.² D01G *7/04*

U.S. Cl. 19—81 **10 Claims**



7. Apparatus for opening textile fiber bales, comprising at least two needle tables for breaking up a row of textile fiber bales, said needle tables being placed small distances apart in a row from a bottom side of the fiber bales; said needle tables having needle points with distances between needle tables being continuously variable; means for changing said distance automatically depending on predetermined properties inherent to said bales during operation of said needle tables; means for weighing an amount of detached fiber; and control means connected to said weighing means for changing said distance between needle tables as a function of weight of detached fiber.

4,190,933
APPARATUS FOR BREAKING TEXTILE FIBER BALES

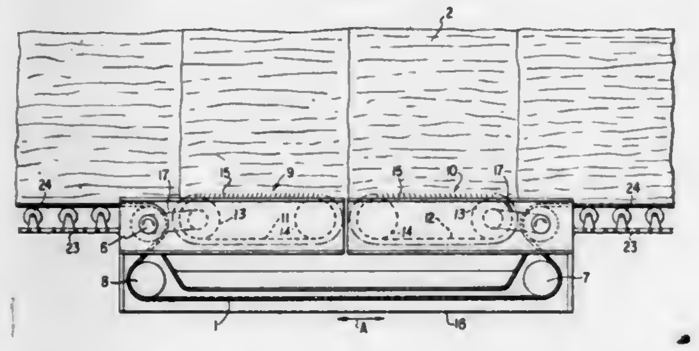
Peter Jagst, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trutzchler GmbH & Co. KG., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 885,895

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710962

Int. Cl.² D01G *7/04*

U.S. Cl. 19—81 **15 Claims**



1. In an apparatus for breaking textile fiber bales, including a plurality of spiked breaker members; rotating means for rotating each breaker member in a working direction generally parallel to a length dimension of the apparatus; the breaker members being spaced from one another parallel to the working direction; support means for receiving a series of bales juxtapositioned parallel to the working direction for exposing the underside of the bales to the breaker members; the improvement comprising

(a) a flexible underlay extending parallel to the working direction for engaging face-to-face the underside of the bales; said flexible underlay forming at least one part of said support means and being immobilized for substantially preventing displacement of said flexible underlay as a whole parallel to the working direction;

(b) means forming an upwardly open chamber of one part of said flexible underlay; said breaker members being accommodated in said chamber for engaging the underside of the bales situated at least in part within the outline of the chamber opening; and

(c) displacing means for moving said chamber and said breaker members as a unit parallel to the working direction.

4,190,934
SEPARABLE BUCKLE

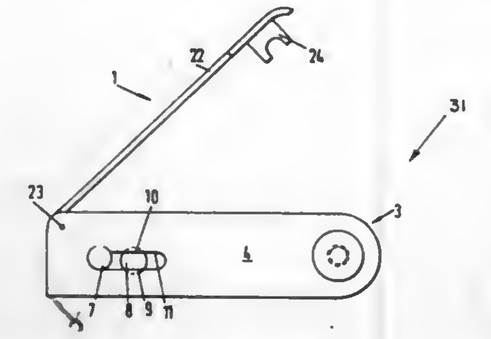
Leo J. Wildi, Radlett, England, assignor to Securiweb Limited, Bedfordshire, England

Filed Jun. 2, 1978, Ser. No. 912,100

Claims priority, application United Kingdom, Jun. 2, 1977, 23400/77

Int. Cl.² A44B *11/25, 13/00*

U.S. Cl. 24—77 R **8 Claims**



1. A buckling assembly for a safety belt or safety harness, comprising:

first and second interconnectable parts;

a transverse bar on said first part;

a hook on said second part for engaging around said bar;

locating means for locating said second part relative to said first part;

a larger diameter portion and a smaller diameter portion on the transverse bar;

said hook having an opening of a width larger than the smaller diameter portion of the bar but smaller than the larger diameter portion of the bar, and a centre having a width larger than said large diameter portion;

the larger and smaller diameter portions being movable longitudinally of the bar and relative to the locating means between a first position where the smaller diameter portion registers with the hook so that the hook can be received around the bar, and a second position where the larger diameter portion registers with the hook so that the hook cannot be disengaged from the bar; and

immobilising means for preventing movement of the larger and smaller diameter portions into said first position.

4,190,935
SLIDE FASTENER STRINGER

Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jan. 30, 1978, Ser. No. 873,489

Claims priority, application Japan, Feb. 8, 1977, 52/14115[U]

Int. Cl.² A44B *19/00*

U.S. Cl. 24—205.16 C **8 Claims**

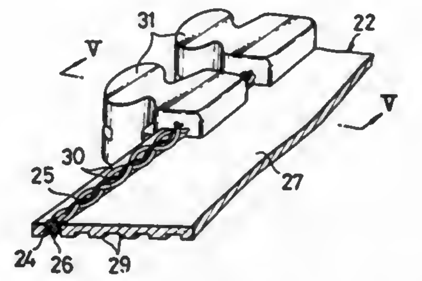
1. A slide fastener stringer comprising:

(a) a stringer tape of a warp-knit structure having on its one surface a plurality of longitudinal wales and a plurality of longitudinal grooves each extending between every adjacent wales, the other surface of said stringer tape being relatively flat;

(b) a single reinforcing cord disposed at one of said grooves which is located adjacent to one longitudinal edge of said stringer tape, said reinforcing cord extending longitudinally in said groove;

(c) sewing stitches extending across and through said reinforcing cord and stringer tape at spaced intervals along said stringer tape, said sewing stitches having portions which form protuberances on said other surface; and

(d) a series of discrete fastener elements mounted on and spaced along said one longitudinal edge of the stringer tape in clamping engagement with said reinforcing cord and sewing stitches including said portions over said one longitudinal edge of the stringer tape, said fastener elements being secured to the stringer tape solely by said clamping engagement.



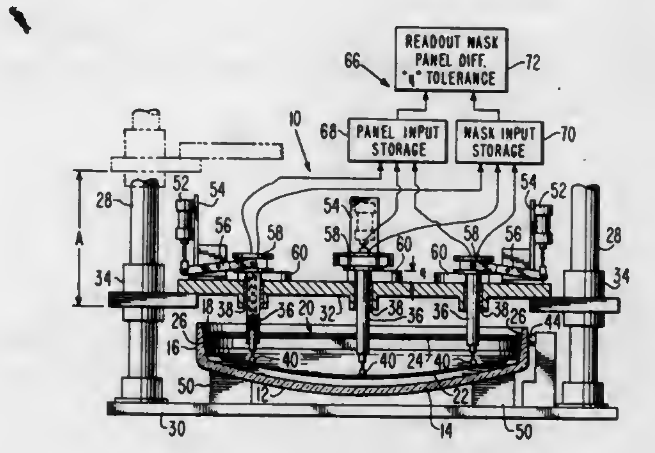
4,190,936
APPARATUS AND METHOD FOR DETERMINING DEVIATION OF MASK-TO-FACEPLATE SPACING IN A CATHODE-RAY TUBE

Marinus Van Renssen, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,938

Int. Cl.² H01J *9/18*

U.S. Cl. 29—25.15 **7 Claims**



1. A method for determining the deviation in shadow mask-to-faceplate spacing from a desired spacing during cathode-ray tube construction comprising the steps of,

sensing the position of the interior surface of a faceplate without a shadow mask being mounted adjacent said faceplate,

mounting a shadow mask adjacent said faceplate, and

sensing the position of a side of said shadow mask opposite said faceplate,

determining the difference in the two sensed positions minus the shadow mask thickness which is the deviation in the mask-to-faceplate spacing, and accepting or rejecting the assembly based on whether the deviation is within desired limits.

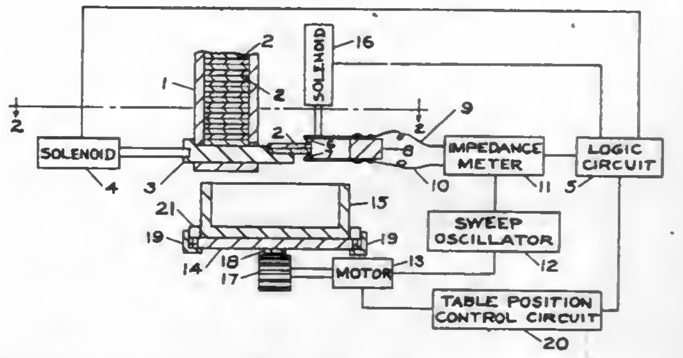
4,190,937
METHOD OF MANUFACTURING ELECTROACOUSTIC TRANSDUCER ELEMENTS WHICH OPERATE IN THE VICINITY OF RESONANCE

Frank Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Fred M. Dellorfano, Jr. & Donald P. Massa, Trustees, Choasset, Mass.

Filed Jan. 2, 1979, Ser. No. 135

Int. Cl.² H04R *31/00*

U.S. Cl. 29—25.35 **14 Claims**



1. A method for manufacturing electroacoustic transducers which incorporate in their design vibratile transducer elements which are required to operate within a specified frequency band in the vicinity of the resonant frequency region of said elements, including the following steps:

(a) adjust at least one of the resonant frequency controlling dimensions of a plurality of transducer elements to a uniform specified value which is greater than the dimension necessary to achieve the specified resonant frequency for said plurality of transducer elements,

(b) measure the motional impedance of each transducer element as a function of frequency over a frequency range which includes the resonant frequency region of the transducer elements,

(c) determine the frequency at which the motional impedance of each transducer element is a minimum,

(d) segregate the transducer elements into separate groups in which each particular segregated group contains selected elements whose minimum motional impedance lies within a particular specified narrow frequency band assigned to the particular segregated group,

(e) reduce the resonant frequency controlling dimension of the transducer elements within each particular segregated group by a prescribed specified amount to cause the frequency at which the minimum motional impedance occurs to change by the required amount needed to make the resonance frequency characteristics of all elements contained within each segregated group fall within the same specified operating frequency band.

4,190,938
MACHINE WITH PROCESSING HEADS

Hans Hillmann, Hirschgraben 19, D 6603 Sulzbach, Saar, Fed. Rep. of Germany

Division of Ser. No. 776,429, Mar. 10, 1977, Pat. No. 4,109,360. This application Jun. 22, 1978, Ser. No. 917,882

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610185

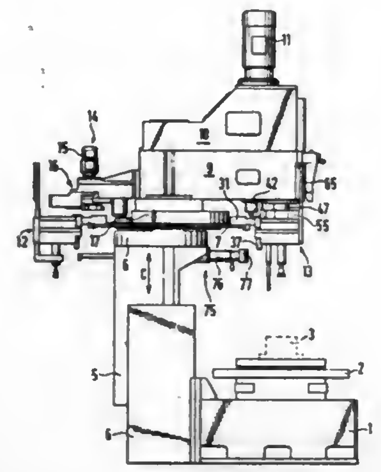
The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.² B23B *39/20;* **B23Q** *3/157*

U.S. Cl. 29—26 A **1 Claim**

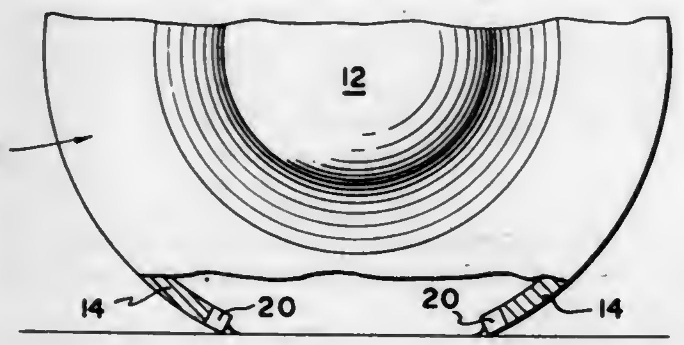
1. In a machine of the type having a base structure, a carrier rotatably mounted on said base structure, a plurality of processing heads each having a rotatable spindle mounted thereon, means for releasably mounting said heads on and with said carrier at locations such that the spindles are substantially equally spaced apart, carrier drive means mounted on said base structure and engaging said carrier to rotatably drive said

carrier, spindle drive means mounted on said base structure and angularly separated from said carrier drive means, the carrier drive means including means for securing said carrier in a preselected rotational position in which
- a selected one of said processing heads is located adjacent said spindle drive means such that said spindle drive means can be coupled to a spindle therein by a releasable coupling, the improvement wherein said carrier drive means comprises
- a rotatable shaft;
- a crank mounted on said shaft for rotation therewith;



- a slide member mounted in the plane of said crank, said slide member having means defining a recess shaped to receive said crank in either one of only two rotational positions of said crank, said two positions being separated by 180° of crank rotation;
- means for supporting said slide member for sliding movement toward and away from said shaft in a plane lying at an angle to the axis of said shaft; and
- means for moving said slide member into receiving engagement with said crank in said one of said positions to thereby fix said crank and said carrier drive means in the preselected rotational position.

4,190,939
VEHICLE TIRE SUN SHIELD AND METHOD OF INSTALLING SAME
Ervin J. Keller, 15 Long Point Rd., Germfask, Mich. 49836
Filed Sep. 14, 1978, Ser. No. 942,434
Int. Cl.² B23P *11/02;* **B65D** *85/04, 85/06;* **B62B** *9/16*
U.S. Cl. 29—451 **4 Claims**



1. A tire sun shield for use upon a load supporting wheel of a parked vehicle comprising a generally radially extending circular front face of a diameter substantially equal to the outer diameter of a tire to be shielded, an axially extending skirt fixedly joined to the outer periphery of said front face, said front face and said skirt being of opaque material and defining a shallow generally cup-shaped shield member conformed to snugly receive the tire of a vehicle wheel with said front face overlying the outer side portions of the tire and said skirt overlying at least the axially outer portion of the tire tread, said shield member having an opening therein through said skirt and the lower portion of said front face wherein the edges of said opening are defined by a horizontal edge extending along a chord of the circular front face and opposed gripping edges extending generally axially entirely across said skirt from the opposite ends of said horizontal edge, the distance between the opposed gripping edges being slightly less than the length of the normal "load flat" of the tire.

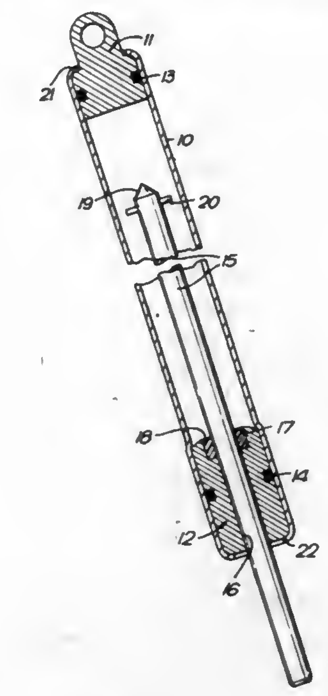
3. In combination with a normally inflated, load bearing, resilient vehicle tire having a deformed flattened ground engaging portion defined as a "load flat;" a tire sun shield comprising a generally radially extending circular front face of a diameter substantially equal to the outer diameter of a tire to be shielded with an axially extending skirt fixedly joined to the outer periphery of said front face, said front face and said skirt being of sun ray shielding material and defining a shallow generally cup-shaped shield member conformed to snugly receive the tire of a vehicle wheel with said front face overlying the outer side portions of the tire and said skirt overlying at least the axially outer portion of the tire tread, said shield member having an opening therein through said skirt and the lower portion of said front face wherein the edges of said opening are defined by an edge extending generally along a chord of the circular front face and opposed gripping edges extending generally axially across said skirt from the opposite ends of said horizontal edge, the distance between the opposed gripping edges being slightly less than the length of the "load flat" of the tire and the gripping edges of the skirt being incrementally forced apart so that the shield is stressed and the tire is tightly gripped by the shield.

4. A method of installing a tire sun shield upon the load-supporting inflatable, resilient tire on the wheel of a parked vehicle, which tire is flattened at its lower end by the load it bears, comprising: removing the load from the wheel so that it returns to its cylindrical non-loaded state; placing a sun shield having a generally radially extending circular front face of a diameter substantially equal to the outer diameter of the tire to be shielded with an axially extending skirt joined to the outer periphery of said front face over the front face of the wheel, in shielding relationship with the tire, said shield member having an opening of predetermined extent less than the "load flat" of the tire therein through said skirt and the lower portion of said front face wherein the edges of said opening are defined by a horizontal edge extending along a chord of the circular front face and opposed gripping edges extending generally axially entirely across said skirt from the opposite ends of said horizontal edge; and reapplying the load to the tire to incrementally separate the gripping edges and cause the tire to be tightly gripped by the shield.

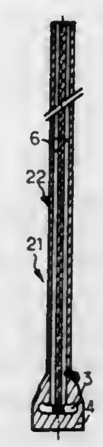
4,190,940
METHOD OF ASSEMBLING AN ACTUATOR
Anthony J. Lawrence, Teddington, Near Tewkesbury, England, assignor to Tungum Hydraulics Limited, Cheltenham, England
Filed Sep. 27, 1977, Ser. No. 837,210
Int. Cl.² B23P *15/00*
U.S. Cl. 29—156.4 R **3 Claims**

1. A method of assembling an actuator having a pressure cylinder comprising a tube, two end closure elements each secured to a respective end of the tube, a body of flowable material contained within the tube between the end closure elements, and a piston extending through a through-bore in one of the end closure elements and projecting into the body of flowable material, said method including the steps of securing to one end of the tube the end closure element through which the piston extends, fully extending the piston, inserting heated flowable material into the tube with the open end thereof uppermost, cooling the flowable material to a first temperature at which it hardens, inserting the other end closure element into the open upper end of the tube, securing said other end

closure element to the tube, and heating the body of flowable material to a second higher temperature whereby it expands and forces the end closure elements outwards from the positions in which they were initially secured.

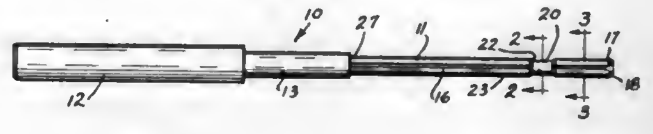


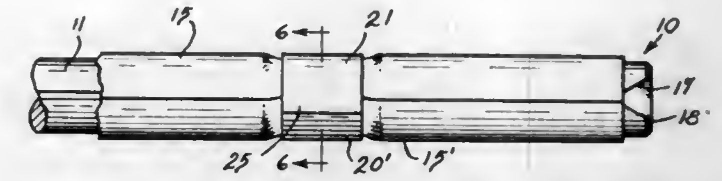
4,190,941
METHOD OF MAKING COOLED VALVES FOR INTERNAL COMBUSTION ENGINES AND VALVES OBTAINED THEREBY
Francis Charron, Croissy-sur-Seine, France, assignor to Basset Bretogne Loire-B.B.L., Sevres, France
Filed May 19, 1978, Ser. No. 907,699
Claims priority, application France, May 27, 1977, 77 16384
Int. Cl.² B21C *23/22*
U.S. Cl. 29—156.7 C **6 Claims**



1. A method of making unitary cooled valves such as for internal combustion engines, comprising the steps of:
- providing a first substantially cylindrical billet formed of an extrudable material and drilling an axial blind bore in said billet to form a valve blank therefrom;
- machining an inner circumferential groove at the blind end portion of said bore;
- providing a second substantially cylindrical billet formed of an extrudable material, forming a cylindrical rod-shaped core from said second billet with a diameter complementary of that of said blind bore and forming at least two longitudinally extending flow channels in said core, said channels opening at their opposite ends;
- inserting said core into the bore at said valve blank with said channels opening into said groove to form an assembly;
- filling said channels and said groove with a substance having a relatively low melting point, said substance being in its melted state;
- allowing said substance to solidify;
- extruding after solidification of said filling substance said assembly so as to form a valve having a desired size and at the same time provide a good cohesion between the first billet and the core;
- heating said valve so as to cause the filling substance to melt and to be removed from the channel and groove; and
- shaping the valve to form a valve head.

4,190,942
APPARATUS AND METHOD FOR WINDING AND INSERTING SHEET MATERIAL INTO A TUBE
Percy A. Tucker, P.O. Box 34357, Richmond, Va. 23234
Filed Jul. 10, 1978, Ser. No. 923,514
Int. Cl.² B31C *13/00;* **B23P** *15/00, 19/04*
U.S. Cl. 29—451 **5 Claims**





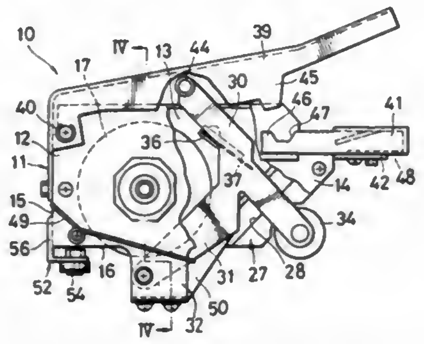
1. An apparatus for winding a relatively wide first sheet of material into a tube and winding a relatively narrow second sheet of material onto said tube in a fixed position intermediate the ends thereof, comprising an elongated mandrel, a generally cylindrical portion extending axially from one end of said mandrel, channel means extending along said cylindrical portion generally parallel with the axis thereof for receiving one edge of said first sheet, stop means on said mandrel in a position to stop said first sheet, at least one annular recess located intermediate said end of said cylindrical portion and said stop means, said recess having first and second annular walls in spaced and non contacting relationship with one another, said recess being at least as wide as said second sheet of material, and means for rotating said mandrel, whereby said first sheet may be inserted into said channel means in abutting relationship with said stop means so that rotation of said mandrel winds said first sheet into a tube located in a predetermined position on said cylindrical portion and thereafter said second sheet is aligned with said annular recess and wound onto said first sheet in a predetermined location relative to at least one end of the tube.

4,190,943
GASKET INSTALLING DEVICE
Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Apr. 25, 1978, Ser. No. 899,868
Claims priority, application Japan, May 4, 1977, 52/56890[U]
Int. Cl.² B23P *19/02*
U.S. Cl. 29—235 **6 Claims**

1. A device for installing an elongate gasket continuously along and surrounding an edge of a panel, comprising:
- (a) a hollow frame;
- (b) a circumferentially grooved guide roller rotatably mounted on said frame for rolling engagement in its groove with the panel edge for guiding said frame to move therealong;
- (c) a circumferentially grooved presser wheel rotatably disposed in said hollow frame, said wheel having means in its groove for engaging and pressing the elongate gasket

against the panel edge whereby the gasket becomes fully installed on the panel edge;

(d) a gasket guide disposed in said hollow frame and having a passage extending at an angle to an edge of said frame, said passage having a discharge opening adjacent to said presser wheel and to said frame edge;



(e) motor means for rotating said presser wheel in one direction; and

(f) flexible cable means interconnecting said motor means and said presser wheel for transmitting torque from said motor means to said presser wheel.

4,190,944
METHOD OF MANUFACTURING SLIDE FASTENERS

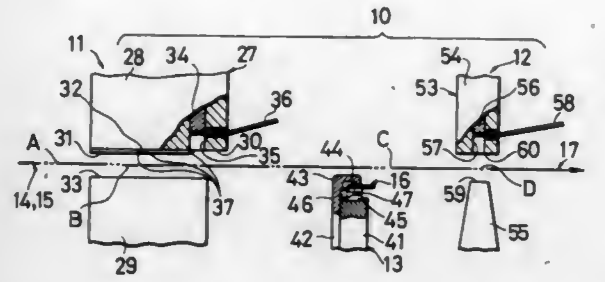
Hiroshi Yoshida, Uozu, and Shunji Akashi, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 19, 1978, Ser. No. 916,735

Claims priority, application Japan, Jun. 30, 1977, 52/78277

Int. Cl.² B23P ***11/00***

U.S. Cl. 29—408 **2 Claims**



1. A method of manufacturing individual slide fasteners from a pair of continuous slide fastener stringers having a pair of stringer tapes including thermoplastic synthetic fibers and a pair of interengaged rows of fastener elements made of thermoplastic synthetic resin and mounted on and along the confronting edges, respectively, of the stringer tapes, comprising the steps of:

(a) feeding said fastener stringers intermittently for a distance corresponding to a desired fastener length;

(b) producing an element-free gap in said fastener stringers at a first station by cutting with ultrasonic processing means while said stringers are at rest between intermittent movements;

(c) simultaneously with the gap producing step, cutting off said element-free gap at said first station with said ultrasonic processing means, thereby providing an individual slide fastener length;

(d) simultaneously with the gap producing step and the stringers cutting step, fusing the edges of the element-free gap and the cut ends of the fastener stringers and of the slide fastener length at said first station with said ultrasonic processing means;

(e) simultaneously with the gap producing step, forming a top end stop on the cut end portion of said individual slide fastener length at said first station with said ultrasonic processing means;

(f) thereafter, at an intermediate location between said first station and a second station, separating the fastener stringers of said individual slide fastener length apart from each other along a limited length portion of said stringers so as to disengage the rows of fastener elements at said intermediate location to permit the introduction of said disengaged rows of fastener elements into a slider;

(g) at said intermediate location introducing said disengaged rows of fastener elements into a slider respectively through a pair of throats thereof while said individual slide fastener length stringers are being advanced from said first station toward said second station;

(h) reengaging, by the action of said slider, the disengaged rows of fastener elements while said individual slide fastener length stringers are being advanced from said first station to said second station; and

(i) thereafter, mounting a bottom end stop on the rows of fastener elements that have been interengaged again after issuing from the mouth of said slider, at the cut end portion of said individual slide fastener length stringers while the latter are at rest at said second station.

4,190,945
METHOD OF MANUFACTURING SLIDE FASTENERS

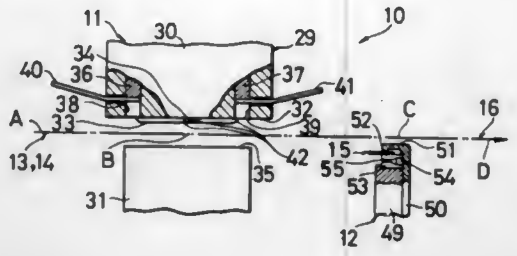
Hiroshi Yoshida, Uozu, and Shunji Akashi, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 19, 1978, Ser. No. 916,597

Claims priority, application Japan, Jun. 30, 1977, 52/78278

Int. Cl.² B23P ***11/00***

U.S. Cl. 29—408 **1 Claim**



1. A method of manufacturing individual slide fasteners from a pair of continuous slide fastener stringers having a pair of stringer tapes including thermoplastic synthetic fibers and a pair of interengaged rows of fastener elements made of thermoplastic synthetic resin and mounted on and along the confronting edges, respectively, of said stringer tapes, comprising the steps of:

(a) feeding said fastener stringers intermittently for a distance corresponding to a desired fastener length;

(b) producing an element-free gap in said fastener stringers by cutting with ultrasonic processing means while said stringers are at rest between intermittent movements;

(c) simultaneously with the gap producing step, cutting off said fastener stringers across said element-free gap with said ultrasonic processing means, thereby providing an individual slide fastener length and defining the top end boundary of one individual slide fastener and the bottom end boundary of the sequentially adjacent individual slide fastener;

(d) simultaneously with the gap producing step and the stringers cutting step, fusing the edges of the element-free gap and the cut ends of the fastener stringers and of the slide fastener length with said ultrasonic processing means;

(e) simultaneously with the gap producing step, forming with said ultrasonic processing means a pair of separated resilient top end stops on respective cut end portions of said fastener stringers associated with said one individual slide fastener, said top end stops each being formed with a configuration that permits each top end stop to pass through a slider upon flexure of said top end stop, and at the same time forming with said ultrasonic processing means a bottom end stop on the cut end portion of said sequentially adjacent individual slide fastener; and

(f) introducing said interengaged rows of fastener elements on said fastener stringers of said one individual slide fastener into a slider through a mouth thereof with portions of each top end stop being forcibly and resiliently flexed away from each other by the body of said slider while said stringers are being advanced, thereby allowing said top end stops to move past said slider.

4,190,946
PROCESS FOR FABRICATION OF A CONSUMABLE METALLIC ELECTRODE

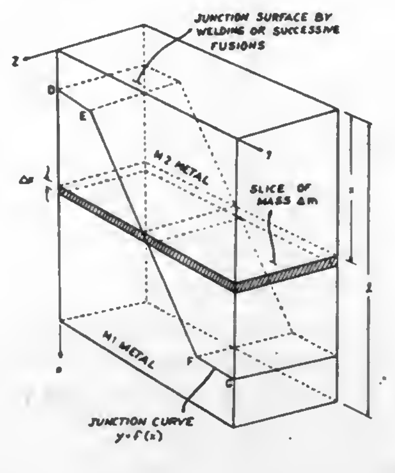
Jose D. De Souza, Sao Paulo, Brazil, assignor to Electrometal Acos Finos S. A., Brazil

Filed Nov. 4, 1977, Ser. No. 848,588

Claims priority, application Brazil, Apr. 22, 1977, 02533

Int. Cl.² B22D ***11/126***

U.S. Cl. 29—527.7 **7 Claims**



1. A process for the manufacture of a metal ingot having a chemical composition varying continuously along its axis, comprising the steps of: fabricating a metallic electrode by joining at least one pair of metallic segments of different chemical composition along a junction surface which follows a curve defined by an arbitrarily chosen equation, said segments having respective predetermined masses and dimensions, and remelting said electrode by the electroslag process to form an ingot having a chemical composition varying continuously along its axis, the concentration of each chemical element varying along an axis according to an equation defined by the manner in which the electrode is fabricated.

4,190,947
AUTOMATIC TOOL EXCHANGING APPARATUS OF MACHINE TOOL

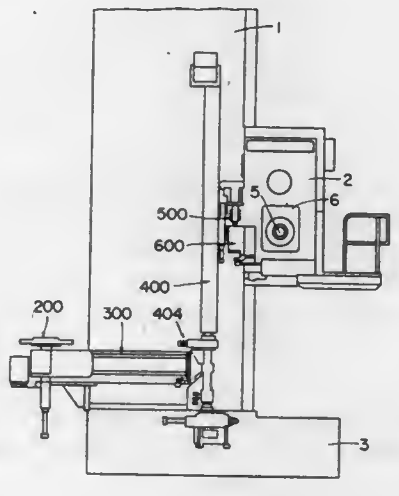
Mituharu Sato, and Katsuo Yamazaki, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,308

Claims priority, application Japan, Nov. 4, 1977, 52-132222

Int. Cl.² B23Q ***3/157***

U.S. Cl. 29—568 **7 Claims**



1. An automatic tool exchanging apparatus of a machine tool having a base, a column mounted on said base, a spindle head located on one of said column and movable therealong and a spindle supported by said spindle head to be movable in the axial direction comprising:

a tool storing magazine mounted on said base and provided with a number of tool holders in which tools are vertically supported with their shanks downwardly directed;

first tool exchanging means located in front of a selected tool exchanging holder of said tool storing magazine when tools are to be exchanged;

horizontal tool conveying means connected to said first tool exchanging means and extending horizontally with respect to said magazine for horizontally conveying a tool with its shank downwardly directed;

vertical tool conveying means connected to said horizontal tool conveying means and extending along said column of the machine tool for vertically conveying the tool;

an intermediate tool pot mechanism pivotably supported on one side of said spindle head for receiving the tool from said vertical tool conveying means with its shank downwardly directed; and

second tool exchanging means located on one side of said vertical tool conveying means for transferring the tool from said intermediate tool pot mechanism to said spindle after horizontally rotating the tool.

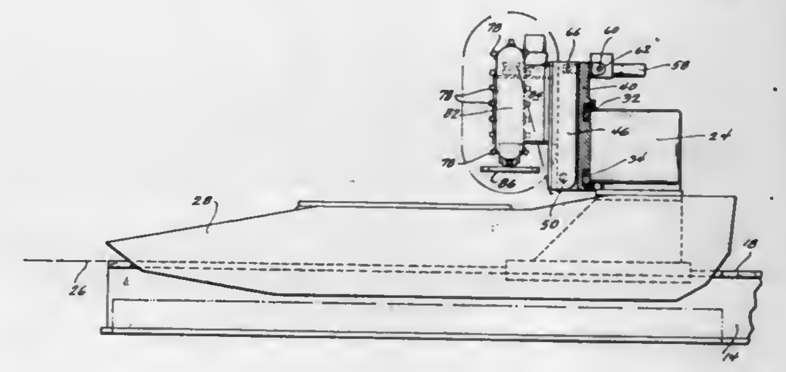
4,190,948
VERTICAL SPINDLE MACHINE TOOL WITH TILTABLE SPINDLE AND TILTABLE AUTOMATIC TOOL CHANGER

Ervin J. Kielma, West Allis, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Dec. 6, 1978, Ser. No. 966,906

Int. Cl.² B23Q ***3/157***

U.S. Cl. 29—568 **3 Claims**



1. A vertical spindle machine tool comprising:

a frame;

a spindle base pivotally mounted on said frame for rocking movement about a horizontal axis;

a spindle head slidably mounted on said spindle base for linear movement along a substantially vertical axis which tilts in response to rocking movement of said base about said horizontal axis;

a spindle rotatably mounted on said spindle head for rotation about said substantially vertical axis, said spindle being adapted to receive a toolholder and to clamp said toolholder therein;

a tool storage magazine mounted on said spindle base, said tool storage magazine being adapted to receive and to store a plurality of toolholders, and said tool storage magazine being tiltable along with said spindle to enable toolholders to be transferred between said tool storage magazine and said spindle at any spindle tilt angle; and

transfer means mounted for tiltable movement with said base and said magazine for transferring toolholders between said spindle and said tool storage magazine.

4,190,949
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

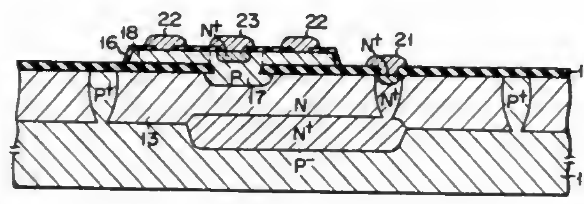
Masashi Ikeda, and Kazuo Kihara, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 14, 1978, Ser. No. 960,644

Claims priority, application Japan, Nov. 14, 1977, 52/135752; Nov. 14, 1977, 52/135753; Nov. 14, 1977, 52/135754

Int. Cl.² H01L *21/22*

U.S. Cl. 29—571 **5 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of forming a first insulating film on a semiconductor substrate of one conductivity type; boring an opening through said first insulating film to expose part of said substrate; forming a semiconductor layer of the other conductivity type on the exposed surface of said substrate and said first insulating film; selectively removing said semiconductor layer to leave a semiconductor region consecutively connected to said exposed surface on said first insulating film; covering said semiconductor region with a second insulating film; boring an opening through said second insulating film and introducing through said opening an impurity of said one conductivity type into said semiconductor region; and forming electrodes on said semiconductor region and said semiconductor substrate.

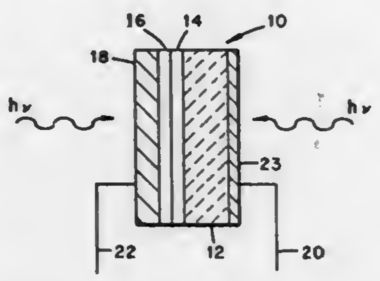
4,190,950
DYE-SENSITIZED SOLAR CELLS

Terje A. Skotheim, Berkeley, Calif., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Division of Ser. No. 802,399, Jun. 1, 1977, Pat. No. 4,105,470. This application Mar. 24, 1978, Ser. No. 889,688

Int. Cl.² B01J *17/00*

U.S. Cl. 29—572 **9 Claims**



1. A method of fabricating a solar cell, including the steps of:
applying an ohmic contact onto one face of a semiconductor;
adsorbing a sensitizer onto another face of the semiconductor, said sensitizer having a ground state within the bandgap of the semiconductor and a first excited state above the conduction band edge of the semiconductor;
applying a reducing agent over said sensitizer, said reducing agent having a ground state that is above the ground state of said sensitizer; and
coating said reducing agent with a metal.

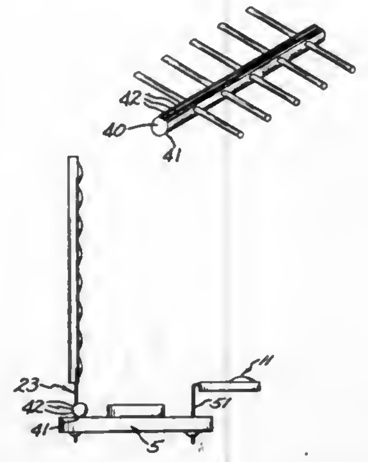
4,190,951
METHOD FOR FACILITATING ATTACHMENT OF WIRES TO A MOTHERBOARD

James J. Armstrong, Seekonk, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 747,653, Dec. 6, 1976, Pat. No. 4,104,702. This application Feb. 21, 1978, Ser. No. 879,181

Int. Cl.² H01R *43/04*

U.S. Cl. 29—628 **2 Claims**



1. A method of attaching a switching assembly to a motherboard, the switching assembly having a plurality of electrically conductive wires extending from the assembly in a direction parallel to a given axis comprising the steps of forming an elongated bar of deformable material, locating the bar a selected distance from and transversely across the free end of the wires, placing the wires into contact with the bar and then deforming the bar to at least partially embed each of the wires in the bar.

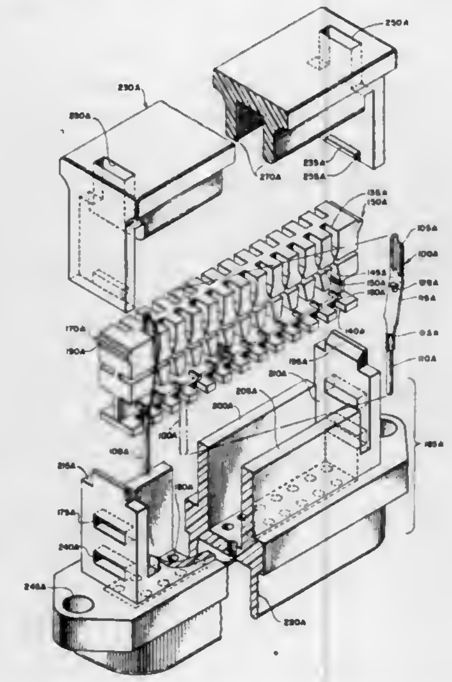
4,190,952
INSULATION DISPLACEMENT CONNECTOR ADAPTER

Philip J. Thomas, Costa Mesa, and John A. McAllister, Mission Viejo, both of Calif., assignors to Circuit Assembly Corp., Costa Mesa, Calif.

Filed Jun. 27, 1978, Ser. No. 919,462

Int. Cl.² H01R *43/00, 43/04*

U.S. Cl. 29—629 **5 Claims**



1. A method for fabricating a connector comprising:
forming a plurality of conductive inserts having a readily bendable central portion;
forming an insert guide having a plurality of insert receptacle areas, each of said receptacle areas having a different configuration from others of said receptacle areas and adapted to bend said central portion of any one of said conductive inserts to such configuration in an amount dependent upon its location in said guide; and
inserting any one of said plurality of conductive inserts into any one of said receptacle areas, said insertion forcing said central portion of said one insert to bend conforming to said configuration of said one receptacle area.

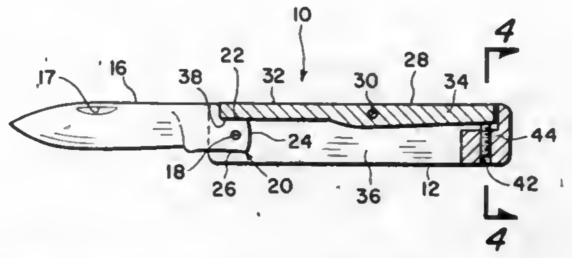
4,190,953
ADJUSTABLE SPRING TENSION POCKETKNIFE

Woodrow W. Naifeh, Rte. 13, Box 380, Tulsa, Okla. 74107

Filed Apr. 24, 1978, Ser. No. 899,502

Int. Cl.² B26B *1/02*

U.S. Cl. 30—155 **5 Claims**



3. An improvement in a folding blade knife having a pair of spaced apart elongated handle members, a knife blade having one end pivotally attached between the handle members at one end thereof, said blade having a cam surface partially surrounding the pivotal attachment, the improvement comprising:
an elongated leaf spring member pivotally attached near its midpoint between the handle members and along one edge thereof, one end of said spring member being in constant engagement with the blade cam surface, an end plate secured between the handle members at the end opposite the knife blade attachment, a threaded bore provided through the end plate substantially transverse to the spring member and perpendicular to the pivotal axis of the spring member, a recessed set screw threadably disposed in the bore, one end thereof being contactable with the end of the spring member.

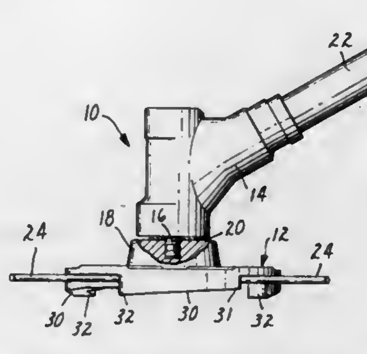
4,190,954
CUTTING HEADS

Joseph J. Walto, Chaska, Minn., assignor to The Toro Company, Bloomington, Minn.

Filed Jun. 29, 1978, Ser. No. 920,347

Int. Cl.² A01D *55/18;* A01G *3/06*

U.S. Cl. 30—347 **9 Claims**



1. Apparatus for cutting vegetation and the like comprising:
(a) a head member adapted to be removably affixed to a rotatable shaft and rotated about an axis generally perpendicular with a cutting plane;
(b) retaining means mounted on the underside of said head member;
(c) at least one non-metallic flexible line member removably retained on the underside of said head member by said retaining means, wherein at least a portion of said line member extends into said cutting plane; and
(d) at least one ramp member affixed to the periphery of the underside of said head member, said ramp member being adapted to protect said retaining means from hitting obstructions in said cutting plane during operation of said apparatus; wherein said retaining means comprise a plurality of opposed and cooperating ear members which are adapted to engage and secure said flexible line member against radial displacement from said head member.

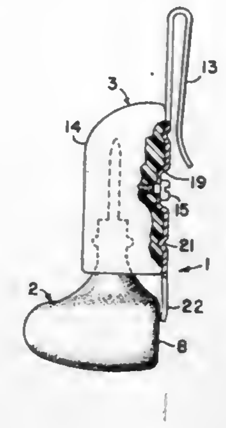
4,190,955
GOLF TEE AWL AND PIVOTED SHEATH

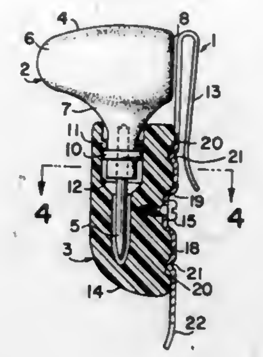
Harold E. Rushforth, 1981 Monument Rd., NW, Canton, Ohio 44709

Filed Sep. 11, 1978, Ser. No. 941,286

Int. Cl.² B26F *1/00*

U.S. Cl. 30—366 **7 Claims**





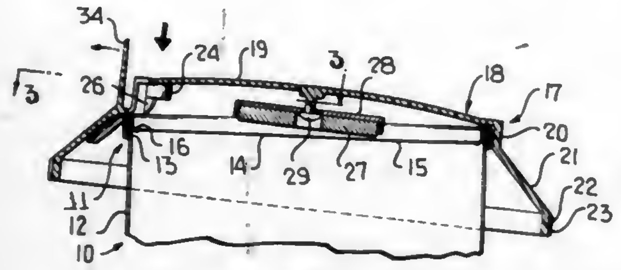
1. The combination of a golf tee awl for making holes the ground for inserting golf tees and a pivoted sheath comprising:
(A) a handle portion to be held in the hand of the user;
(B) a shank portion having one end thereof attached to the handle portion;
(C) the opposite end of the shank portion having a sharpened point to provide ease of penetration into the ground when pressure is exerted against the handle portion;
(D) the handle portion having at least one flat surface lying in a plane parallel to the longitudinal axis of the handle and shank portion; and
(E) a sheath for attachment to the golf tee awl comprising;
  (1) a substantially tubular member having an axial receptacle therein for receiving the shank portion;
  (2) an elongated clip having a first portion pivotally attached to the exterior of the tubular member in parallel alignment with the axis thereof and a second portion folded over against the first portion, the clip being adapted to receive the belt of a wearer between the first and second portion thereof,
  (3) the tubular member being rotatable about its pivotal connection with the clip from a first vertical position in which the shank receiving end is facing upwardly when the clip is placed on the belt of a person using the awl and sheath, to a second vertical position in which the shank receiving end of the tubular member is extending downwardly,
  (4) said tubular member being moved to the first position for receiving and carrying the awl in the sheath, and being moved to the second position for removing the awl from the sheath by pulling downwardly on the awl, and

(5) means releasably retaining the tubular member in either the first or second position with respect to the clip.
(6) wherein the means retaining the tubular member in the first or second position is at least one indentation in the surface of the tubular member and a dimpled projection on the first portion of the clip, said indentation being brought into register with the projection when the tubular member is rotated to one of the said positions.

4,190,956
CAN OPENER

Carmen T. Mascia, Clarendon Hills, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,619
Int. Cl.^{2} B67B *7/30*
U.S. Cl. 30—410 **10 Claims**

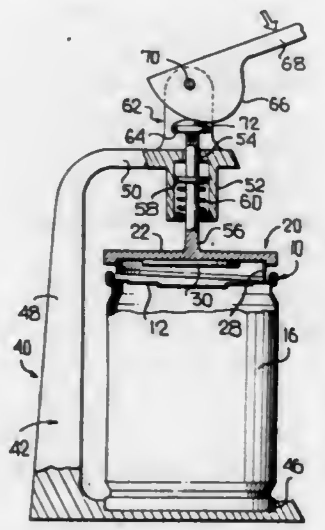


1. An opener for removing an end panel of a container end joined to a container body by a seam defining a peripheral projection, said opener comprising a housing of a generally inverted cup-shaped configuration and including an end wall and a depending annular skirt, said skirt being of an internal dimension to define guide means for telescoped engagement over a peripheral projection of an intended container size, a cutter depending from said end wall and projecting therebelow for penetrating and severing a container end panel, said skirt being interrupted and including a skirt portion resiliently mounted for radial movement and defining retaining means for movement into retaining engagement beneath a container peripheral projection, said skirt portion being disposed circumferentially adjacent said cutter.

4,190,957
CONTAINER OPENER AND METHOD OF UTILIZING THE SAME

Gary K. Hasegawa, Chicago, and Carmen T. Mascia, Clarendon Hills, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Jul. 28, 1978, Ser. No. 929,090
Int. Cl.^{2} B67B *7/30*
U.S. Cl. 30—411 **5 Claims**

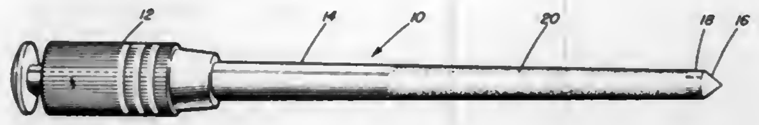


1. A method of opening a container comprising the steps of providing a container wall with a continuous line of weakening defining a removable panel, supplying a closure having a depending blade of a configuration corresponding to that of the line of weakening and tapering in height, positioning the closure in overlying relation to the container wall and aligning the blade with the line of weakening, and utilizing the closure both as a shield and a force applying member moving the blade in a straight line directly towards the container wall, and rupturing the container wall along the line of weakening, the continuous line of weakening being formed in a container end panel surrounded by a projecting seam, and the closure being engaged with the projecting seam to limit the penetration of the blade.

4,190,958
ENDODONTIC DRILL-FILE

Howard Martin, 909 Pershing Dr., Silver Spring, Md. 20907, and James P. Norris, 1207 Frederick Rd., Baltimore, Md. 21228

Filed Jan. 17, 1978, Ser. No. 870,109
Int. Cl.^{2} A61C *5/02*
U.S. Cl. 433—102 **6 Claims**



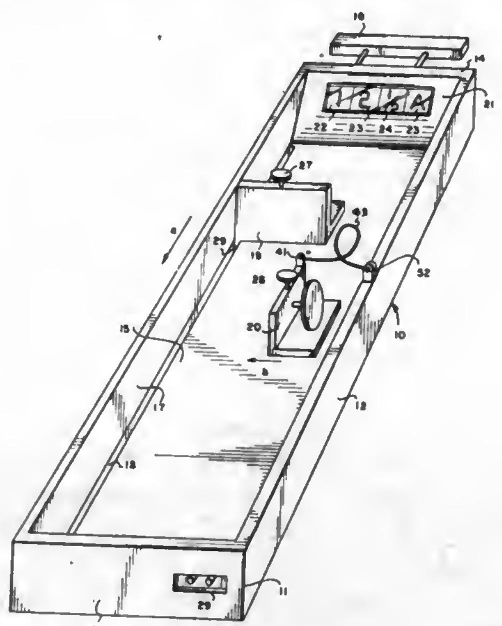
1. An endodontic drill-file, comprising:
a memoried flexible shaft means of very thin configuration, said memoried flexible shaft having a tapered end, said memoried flexible shaft means having a memory which returns said flexible shaft means to an original straight position of configuration from a curved position, said curved position being assumed when inserted in a curved root canal of a human tooth, when said flexible shaft means is removed from said curved root canal, and further, said memory to return said flexible shaft means to an original straight position of configuration being maintained when said flexible shaft means is rotated within said curved root canal of a human tooth and in said curved position, said curved position being assumed when inserted in said curved root canal, said curvature being transferred progressively in small increments around the periphery of said flexible shaft; and
a cutting means on the surface of said flexible shaft means.

4,190,959
FOOT MEASURING DEVICE

Herbert S. Darvin, 203 Oakwynne Rd., Broomall, Pa. 19008

Filed Sep. 25, 1978, Ser. No. 945,632
Int. Cl.^{2} A43D *1/00*
U.S. Cl. 33—3 B **3 Claims**

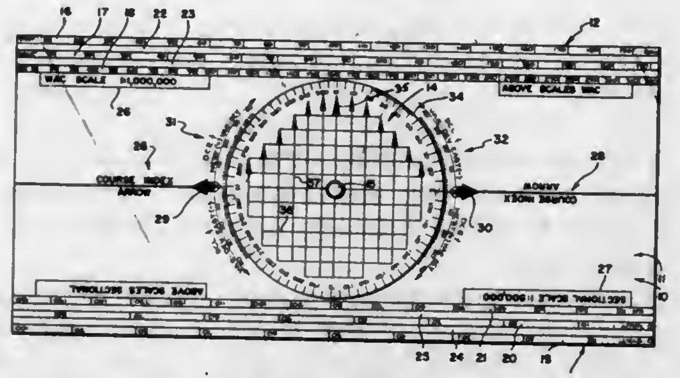
1. An electronic device for measuring and exhibiting the length and width of a human foot, said device comprising, a base, a first slidable member movable on said base and adapted to be placed in contact with the end of a foot supported by said base, a second slidable member movable on said base and adapted to be placed in contact with the side of said foot, said slidable members being independently slidable relative to each other, a first reference member located at one end of said base for positioning of the heel and a second reference member located on said base perpendicular to the first reference member for positioning of one side of the foot, said reference members establishing the reference planes for the measurement of the foot, electronic means responsive to the placement of said slidable members, and changeable character alpha-numeric display means responsive to said electronic means adapted to exhibit at a single location the various lengths and widths of a foot.



4,190,960
PLOTTER

Louis A. Warner, 5824 N. Ottawa, Chicago, Ill. 60631

Continuation of Ser. No. 827,164, Aug. 23, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 966,312
Int. Cl.^{2} G01C *21/20*
U.S. Cl. 33—1 SD **5 Claims**

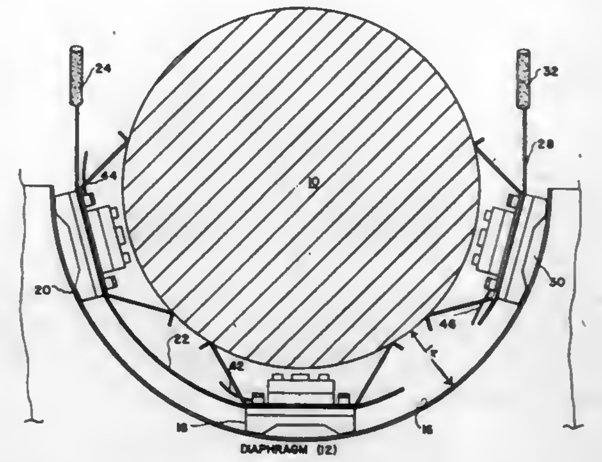


1. A navigational plotter comprising:
an elongated straight edge member having two parallel straight edges opposite one another, and
a circular protractor rotatably affixed thereto,
a first plurality of distance scales disposed along and adjacent to one of said parallel straight edges,
said first plurality of distance scales being calibrated in accordance with the scale of a first predetermined type of chart, said plurality of distance scales further being spaced apart so as to provide a clear, unobstructed course line window between adjacent ones of said plurality of distance scales, a second plurality of distance scales disposed along and adjacent to the other one of said parallel straight edges, said second plurality of distance scales along and adjacent said other one of said parallel edges being calibrated in accordance with the scale of a second predetermined type of chart and spaced apart so as to provide a clear, unobstructed course line window between adjacent ones of them,
said first and second plurality of distance scales being printed on one side only of said straight edge member,
said circular protractor having a compass rose thereon about its periphery and the diameter of said circular protractor being proportioned smaller than the distance between the most closely adjacent ones of said distance scales along and adjacent the opposite ones of said parallel straight edges, whereby none of the plurality of distance scales are obscured by the circular protractor, and a course line indicia on said straight edge member in operative relationship with said circular protractor, whereby said circular protractor can be used to determine a course direction when either one of the two straight edges and the associated plurality of distance scales are used.

4,190,961
METHOD AND APPARATUS FOR ALIGNING TURBINE INTERNAL COMPONENTS

Reginald S. James, Winchendon; Thomas M. Grier, and Robert D. Schmidt, both of Fitchburg, all of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 14, 1978, Ser. No. 933,176
Int. Cl.^{2} G01B *7/30*
U.S. Cl. 33—180 R **7 Claims**



1. A method of aligning a turbine rotor within a turbine casing relative to an annular surface comprising the steps of:
mounting the rotor in the lower casing half whereby a radial gap is defined between the rotor and the annular surface around a portion of the rotor circumference;
calibrating a plurality of test probes in order to obtain a common datum;
inserting said calibrated test probes into the radial gap around the circumference of the rotor for measuring the radial distance from each test probe to the rotor surface; and,
adjusting the position of the annular surface so that the radial distances between each test probe and the rotor surface are the same.

4,190,962
NAVIGATION DEVICES

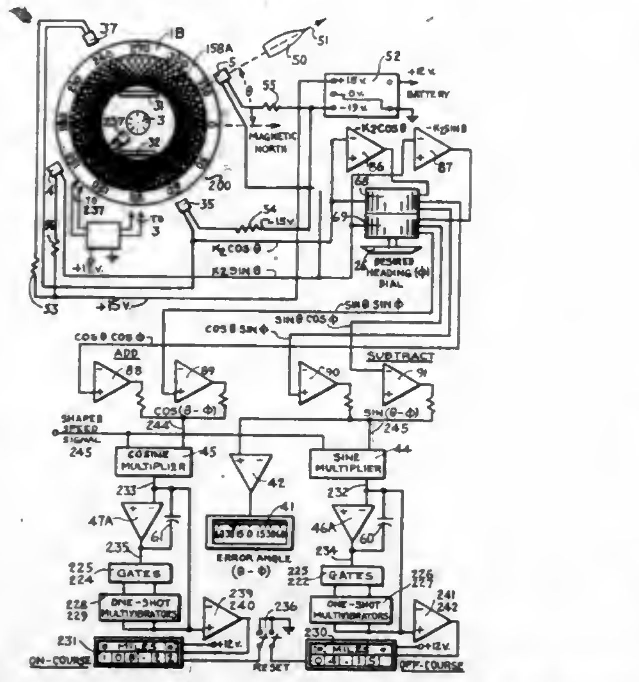
Harold T. Lyman, Jr., 75 Bryan Hill Rd., Milford, Conn. 06460

Filed Apr. 6, 1978, Ser. No. 894,103
Int. Cl.^{2} G01C *21/08*
U.S. Cl. 33—363 K **3 Claims**

1. Improved means for obtaining voltages proportional to the sine and cosine of the angle between the zero angle reference line on a rotatable card or dial and a fixed external reference line, said means comprising a prescribed variable density optical pattern cone on the card or dial, the angular density relation of the cone being expressed by the equation:

$$D' = K_1 + K_2 \cos \theta$$

Where K_1 and K_2 are constants of proportionality not necessarily equal to each other, and θ is the angle referenced to the darkest portion of the pattern, the pattern cone having sufficient extent in angle perpendicular to the plane of the card or dial that one-third of the angle can be used for trimming the sine signal and one-third can be used for trimming the cosine signal, with adequate provision for reasonable card or dial tilt without effect on sensor output, a light source illuminating the cone, orthogonal pairs of photo-sensors connected differentially in circuit so as to balance out constant voltages due to diffuse or background illumination or unavoidable minimum pattern density and yielding output voltages proportional to the sine and cosine of the above said angle, one sensor of the sine pair and one sensor of the cosine pair being located on the median plane of the light source and the cone pattern so as to be untrimmed, the second sensor of the sine pair being located for instance opposite the upper trimmed third of the pattern, and the second sensor of the cosine pair being located opposite the lower trimmed third of the pattern.

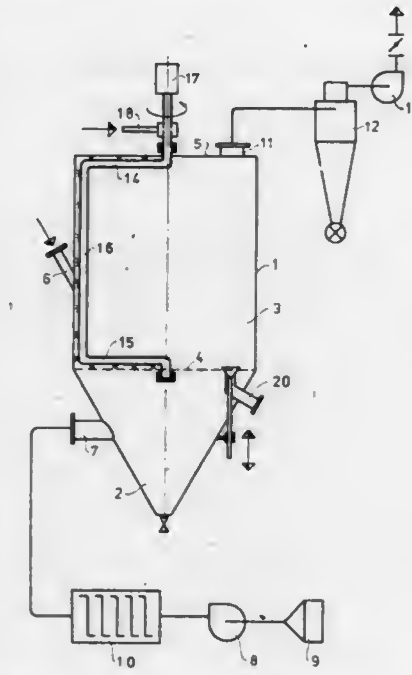


4,190,963

CLEANSING DEVICE FOR FLUIDIZED BED REACTORS

Mogens A. Christensen, Virum, Denmark; Svend Hovmand, Ellicott City, Md.; Jens K. Laursen, Holte, and Henrik B. Mortensen, Birkerod, both of Denmark, assignors to A/S Niro Atomizer, Soborg, Denmark

Filed Feb. 24, 1978, Ser. No. 880,744
Claims priority, application Denmark, Feb. 25, 1977, 830/77
Int. Cl.^{2} F26B *3/08*
U.S. Cl. 34—57 A **6 Claims**



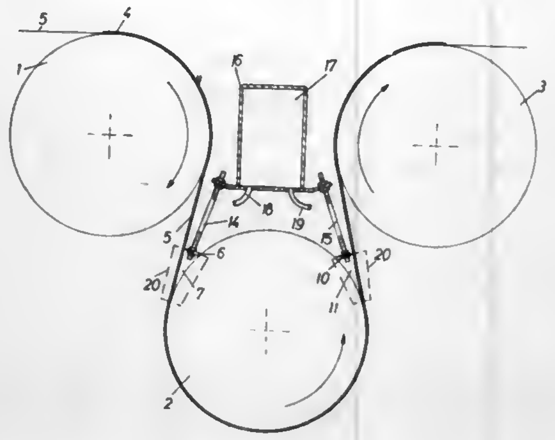
1. In a fluidized bed reacting apparatus for processing a powdered product and including a chamber having inlet means for said product, at least one perforated powder supporting plate arranged in a substantially horizontal plane in said chamber, and means arranged in a portion of the chamber below said plate for producing a flow of fluidizing gas upwardly through the perforations in said plate for the formation of a fluidized layer of said product through part of the height of said chamber overlying said plate, an improved movable pneumatic cleansing device for removing depositions of said product from one or more wall faces of said chamber by directing gas jets towards said wall faces, which cleansing device is connected with drive means and supply means for gas, characterized by: at least one pipe member disposed above said perforated plate in parallel relationship to and spaced a short distance from the upper side thereof, said pipe member being constructed for movement across the upper surface of said plate during operation of said reacting apparatus and having a plurality of nozzles for directing gas jets towards the upper side of said plate in a direction generally opposite to said flow of fluidizing gas upwardly through the perforations in said plate.

4,190,964

WEB DRYING SECTION FOR PAPER MACHINE

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 877,981
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712184; Aug. 12, 1977, 2736334
Int. Cl.^{2} F26B *13/08*
U.S. Cl. 34—114 **16 Claims**



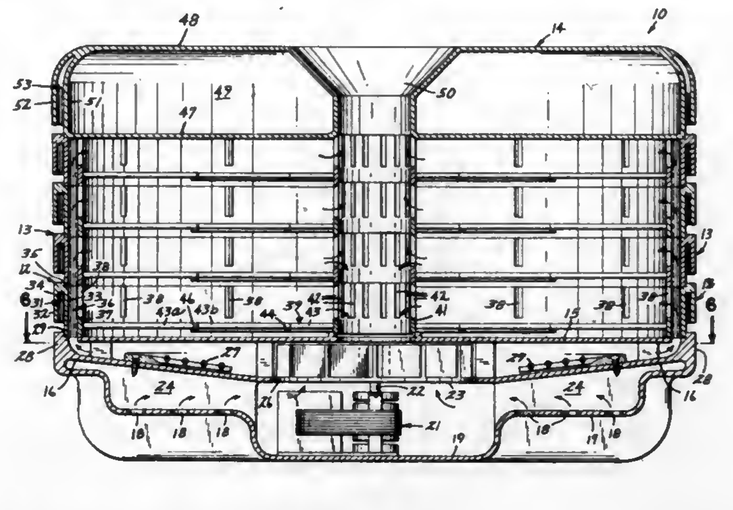
1. A drying section for a machine, said section for drying a web of paper, or the like; said drying section comprising:
- a plurality of drying cylinders over which the web to be dried is run;
- an air permeable feeder belt passing around said cylinders and being in engagement with the web being dried, wherein said belt is along one side surface of the web and said belt is on that said surface of the web for said belt to be between the web and one said drying cylinder;
- with respect to the motion of the web over said one cylinder, said one cylinder having an entrance side at which said belt first contacts said one cylinder and having an exit side at which said belt disengages from said one cylinder;
- at said entrance side of said one cylinder, an entrance side gusset being defined at and just before the line across said one cylinder of initial engagement between said belt and said one cylinder;
- entrance side air lock means extending substantially across the entire length of said one cylinder and placed at the entrance side of said entrance side gusset spaced from the line of initial contact between said belt and said one cylinder for preventing air from penetrating into the entrance side gusset space which is defined inside said entrance side gusset and which is defined by said entrance side air lock means, said belt and said one cylinder;
- said one cylinder and said feeder belt both inherently having respective air boundary layers over their surfaces which layers are carried along by them as they move and which layers would normally move with them into said entrance side gusset space; said entrance side air lock means being shaped to extend into and to block the air flow along at least one of the boundary layers entering said entrance side gusset space.

4,190,965

FOOD DEHYDRATOR

Chad S. Erickson, Minneapolis, Minn., assignor to Alternative Pioneering Systems, Inc., Minneapolis, Minn.

Filed Jan. 15, 1979, Ser. No. 3,473
Int. Cl.^{2} F26B *25/18*
U.S. Cl. 34—196 **6 Claims**



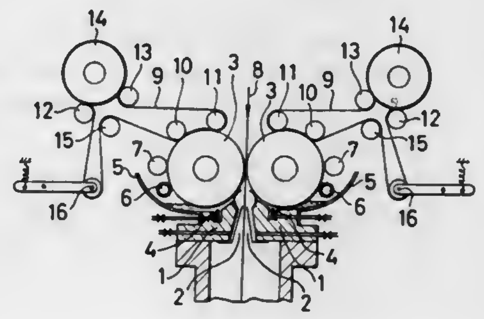
1. A food dehydrator comprising:
- base means including inlet means for receiving a flow of air from the atmosphere, means for positively moving said air flow through the food dehydrator, and means for heating said air flow;
- a plurality of circular vertically stackable trays;
- each of said trays including duct means along the circumference of each of trays to permit said air flow to pass from said base means to each of said trays, air inlet means along the circumference of each of said trays to provide that a portion of said air flow moves axially inwardly along each of said trays and air outlet means adjacent the axial center of each of said trays to exhaust at least a portion of said air flow to the atmosphere; and
- top means adapted for superimposing over the upper most of said trays to substantially close such tray to the atmosphere, said top means including air outlet means for cooperation with the outlet means of said trays to exhaust said air flow to the atmosphere.

4,190,966

WIPING AND DRYING DEVICE FOR AN INLET SEAL ROLLS ON A HIGH PRESSURE STEAMER

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works, Co. Ltd., Wakayama, Japan

Filed May 4, 1978, Ser. No. 902,688
Claims priority, application Japan, May 23, 1977, 52/59682
Int. Cl.^{2} D06B *23/18*
U.S. Cl. 34—242 **6 Claims**



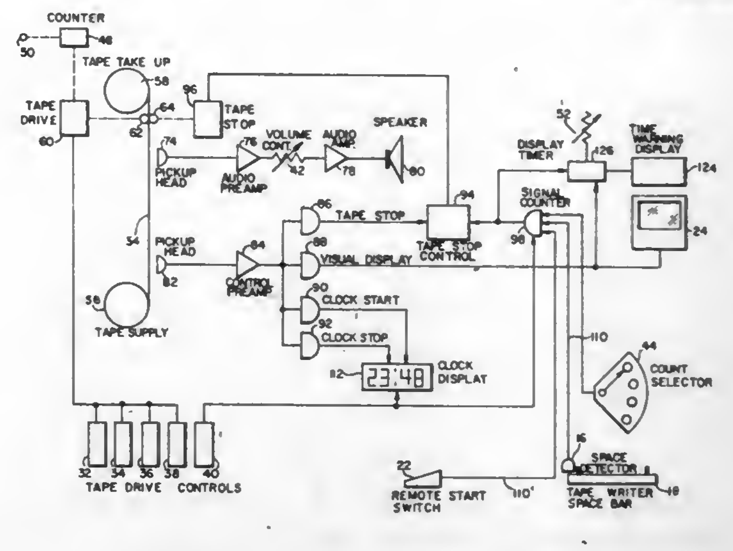
1. A wiping and drying device for an inlet seal roll located on a high pressure steamer which is utilized for treating fiber products, comprising cleaning and wiping means arranged to contact directly a part of the surface of the seal roll and means disposed in direct contact with said cleaning and wiping means and located in spaced relation to the inlet seal roll for drying said cleaning and wiping means so that the cleaning and wiping means are dry when said means contact the inlet seal roll.

4,190,967

KEYBOARD ATTACHMENT SYSTEM AND METHOD FOR KEYBOARD TRAINING

Robert J. Ruegg, 4 Foley Pl., Huntington Station, N.Y. 11746, and Elliott P. Smith, 2908 Mattahoon Rd., Wilmington, Del. 19808

Filed Jun. 12, 1978, Ser. No. 914,587
Int. Cl.^{2} G09B *13/04*
U.S. Cl. 35—6 **32 Claims**



1. A keyboard attachment system for keyboard training for use in conjunction with any existing keyboard device having an actuatable element designated to indicate end of response and means for providing a pre-set number of actuations of said designated element comprising, sequential feed means for recorded instructional material, means responding to a signal associated with recorded instructional material for periodically stopping the device, and start signal generating means connected to the sense stimulating instructional device to generate a start signal in response to said pre-set number of actuations of the designated element including means attachable to keyboard device and actuatable by the normal use of the designated actuatable element in conventional keyboarding activity.

26. The method of training a student in the use of a keyboard device comprising,
- providing a student with a device for attachment to any existing keyboard device having an actuatable element,
- designating said actuatable element to indicate end of response,
- setting a number of actuations of the designated element,
- providing dictation for the student to use the keyboard device including a final operation involving actuating the designated keyboard element,
- timing the student in his exercise of the instructions,
- terminating timing upon the student's completion of a timed learning segment.

4,190,968

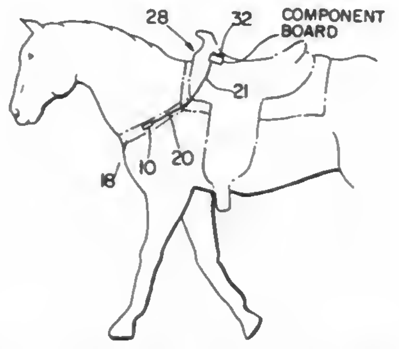
TRAINING DEVICE FOR HORSEMANSHIP

Ronald E. Clapp, 12918 Marine Ave., Creve Coeur, Mo. 63141, and David L. Cunningham, 2238 Murray Forest Dr., Maryland Heights, Mo. 63043

Filed Oct. 4, 1978, Ser. No. 948,420
Int. Cl.^{2} G08B *21/00*
U.S. Cl. 35—29 R **1 Claim**

1. A device useful in connection with teaching horsemanship comprising in combination:
- (a) a first pressure activated switch,
- (b) a second pressure activated switch,
- (c) means for supporting said first pressure activated switch closely adjacent the left chest-shoulder area of a horse and for supporting said second pressure activated switch closely adjacent the right chest-shoulder area of a horse,

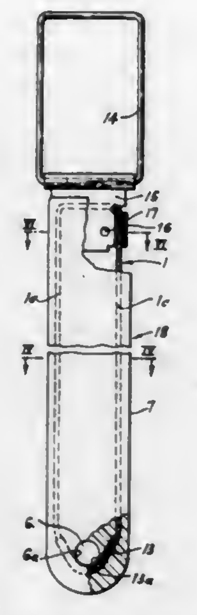
(d) an indicator means mounted on a portion of the horse where it can be easily viewed by a rider of the horse, and



(e) electrical circuitry interconnecting said indicator means and said pressure activated switches.

4,190,969
TENSION ELEMENT FOR A SKI BOOT FASTENER

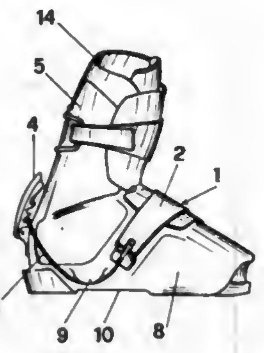
Loris Baso, Corso Milano Nr. 43, Padova, Italy
Filed Jun. 2, 1978, Ser. No. 911,835
Claims priority, application Italy, Jun. 3, 1977, 41616 A/77; Jul. 5, 1977, 41635 A/77
Int. Cl.^{2} A43B *11/00;* A43C *11/00*
U.S. Cl. 36—50 **9 Claims**



1. In a tension element for a ski boot fastener, comprising a cable which is formed into a loop and is surrounded at least partially with a flexible plastic, the ends of which cable are connected through a tube-shaped compressed-lock element and at one end of the loop there is provided a substantially U-shaped clasp of a rigid material for hanging on a tensioning lever which is mounted on the ski boot and a connecting means for connecting the loop to the ski boot engages on the second end of the loop, the improvement comprising the cable loop being arranged substantially inside of a plastic band which extends to the clasp such that the cable pieces which are provided between the ends extend substantially parallel and spaced from one another, the space which lies between the cable pieces being filled out with plastic, which also surrounds the cable pieces and forms a web between the same, the plastic band having a hole at the second end for passage of a rivet which serves as a joint, the cable loop being arranged near the edge of said hole and surrounding approximately half of the hole.

4,190,970
LEVER CLOSURE FOR SKI BOOTS

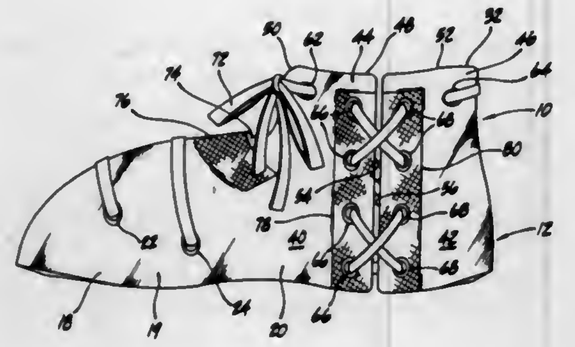
Giuseppe Annovi, Montebelluna, Italy, assignor to Calzaturificio Giuseppe Garbuio S.A.S., Treviso, Italy
Filed Jun. 13, 1978, Ser. No. 915,150
Claims priority, application Italy, Jun. 13, 1977, 84134 A/77
Int. Cl.^{2} A43B *11/00, 5/04;* A43C *11/00*
U.S. Cl. 36—50 **10 Claims**



1. A lever closure for ski boots comprising a transverse tension strap laying across the front portion of the boot forwardly of the leg, a closure lever mounted on the rear of the boot, and an element interconnecting opposite ends of the tension strap with said closure lever, said element being engaged with the boot between the lever and said tension strap in such a manner that tension forces transmitted through said element are directed to the tension strap longitudinally thereof and downwardly.

4,190,971
KARATE FOOT PROTECTOR

Fred H. Wren, Jr., and Frank H. Babcock, III, both of St. Louis, Mo., assignors to Pro-tect, Inc., St. Louis, Mo.
Filed Jul. 18, 1978, Ser. No. 925,807
Int. Cl.^{2} A43B *5/00;* A41D *17/00*
U.S. Cl. 36—106 **8 Claims**



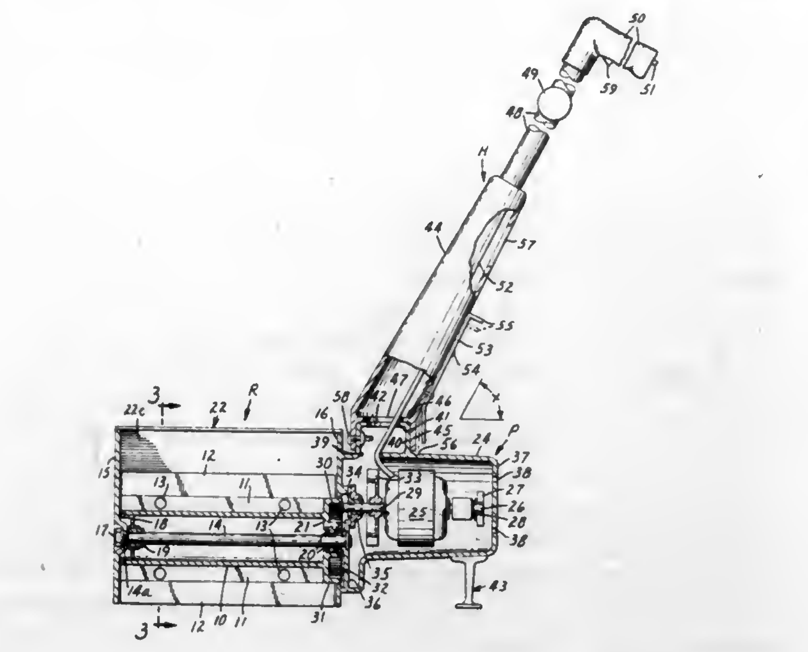
1. A foot protector for karate combat comprising:

(a) a unitary body formed from a resilient foam core having a flexible outer casing, the body including,
  (1) a front portion adapted to cover the upper portion of the foot and the front sides thereof,
  (2) a wrap-around rear portion adapted to cover the ankle portion of the foot and including a first side portion extending rearwardly from said front portion and having an upper portion defining an upper margin and a downwardly depending front margin, and a second side portion extending rearwardly from said front portion to join said first side portion and having an upper portion defining an upper margin and a downwardly depending front margin spaced from the front margin of said first side portion,
  (3) an open bottom portion defined by a lower margin,
  (4) said second side portion being formed into two at least partially separable parts to define adjacent substantially vertical margins disposed in side-by-side relation, and
  (5) said first side upper portion including spaced front and rear lace openings and said second side upper portion including spaced front and rear lace openings and a plurality of lace openings adjacent each vertical margin, and

(b) a lace received by said lace openings to connect the separable parts together and to substantially encircle the ankle and tie together adjacent front margins tending to pull said margins toward each other.

4,190,972
SNOW REMOVER

John M. Berner, Minneapolis, Minn., assignor to David H. Garven, Bloomington, Minn., a part interest
Filed Jun. 17, 1977, Ser. No. 807,375
Int. Cl.^{2} E01H *5/00*
U.S. Cl. 37—43 D **58 Claims**

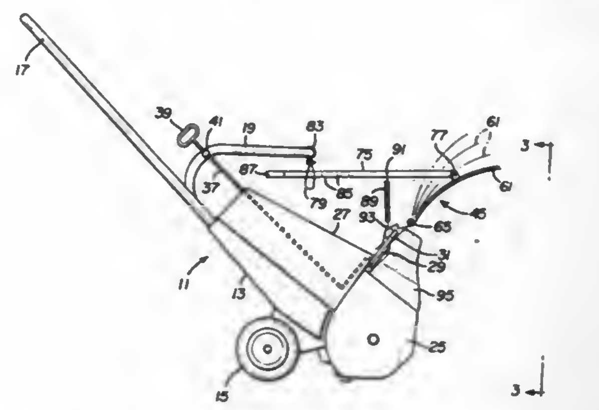


1. A powered device comprising supporting structure,
powered tool means supported by said structure having a predetermined operational direction with respect to its own operative components and structural design,
means supported by said structure for powering said tool means, and
main stem handle means supported by said structure for manually directing the movements of said structure,
said handle means having a longitudinal axis,
said tool means having a mounting means upon which said handle means is mounted to be movable relative to said tool means about a vertical axis between a first position in which said axis lies in a plane which parallels said operational direction and a second position in which said longitudinal axis lies in a plane which is substantially perpendicular to said operational direction, said longitudinal axis being offset in angular relationship with respect to said vertical axis,
said handle means being immovable relative to said tool means about a horizontal axis, and
releasable latch means holding said handle means against movement relative to said tool means in each of said positions.

4,190,973
SNOW BLOWER DEFLECTOR SHIELD

Robert D. Schmidt, 31606 Haldane, Livonia, Mich. 48152
Filed Sep. 29, 1978, Ser. No. 946,949
Int. Cl.^{2} E01H *5/00*
U.S. Cl. 37—43 R **11 Claims**

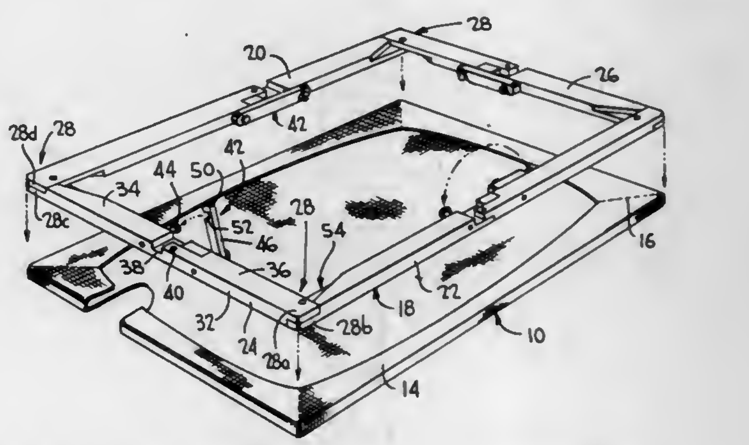
1. In a transportable snow blower having a framework with a lift handle, a laterally adjustable vane shifter plate, and a series of parallel spaced angularly shiftable upright vanes for delivering streams of snow forwardly and laterally between a pair of side plates;
the improvement of a snow deflector shield assembly comprising an elongated laterally extending vane cap plate overlying and secured to said vane shifter plate and laterally adjustable therewith;
a flexible forwardly arcuate deflector shield along one edge hingedly connected to said cap plate along one edge thereof;



overlying said vanes and extending laterally outward of said side plates;
and a pitch-adjusting handle at right angles to and at one end pivotally connected to said deflector shield and intermediate its ends adjustably supported and anchored upon said framework lift handle.

4,190,974
ARTISTS' CANVAS AND FRAME ASSEMBLY

Todd L. Siler, 43-49 10th St., Long Island City, N.Y. 11101
Filed Jun. 21, 1978, Ser. No. 917,565
Int. Cl.^{2} D06C *3/08*
U.S. Cl. 38—102.9 **10 Claims**



1. An artists' canvas stretching assembly comprising:

(a) a canvas having edges and a rear face and having a pocket formed at the edges and disposed on the rear face;
(b) an articulated frame composed of pivotally interconnected bars adapted to be disposed on the rear face and movable from a collapsed position into an expanded position wherein the bars are fitted into the pocket so as to apply a stretching force in all directions on the canvas;
(c) said bars having pivotally connected complemental outer ends, each bar being composed of at least two sections having outer ends constituting the outer ends of the bars and having inner complemental ends, means hingedly connecting the inner ends together for pivotal movement about an axis parallel to the axis of pivotal movement of the outer ends; and
(d) latching means carried by the bars for locking the frame in a fully expanded state within the canvas pocket.

4,190,975

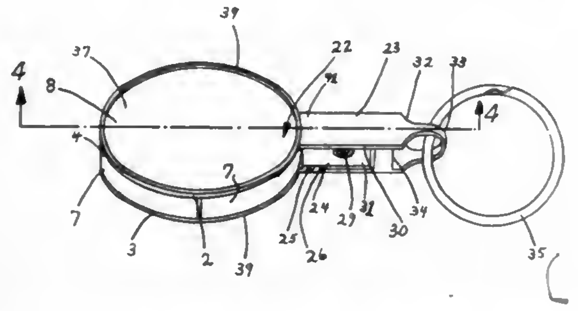
ADVERTISING OR NOVELTY DEVICE

Kent D. Murphy, 4716 Bradley Blvd., Apt. T-6, Chevy Chase, Md. 20015

Filed Dec. 23, 1977, Ser. No. 864,084

Int. Cl.² G09F *3/00*

U.S. Cl. 40—2 A **24 Claims**



1. An advertising or novelty device comprising, a pair of outer members connected together in spaced relation, at least one inner member positioned said pair of outer members, biasing means connected to normally resiliently bias said inner member into a rest position contained within said pair of outer members, cooperating parts on said inner member and at least one of said outer members, whereby upon squeezing said pair of outer members together, pressure on said cooperating parts moves said inner member laterally outward from said pair of outer members and upon release of squeezing pressure said inner member retracts into said rest position.

4,190,976

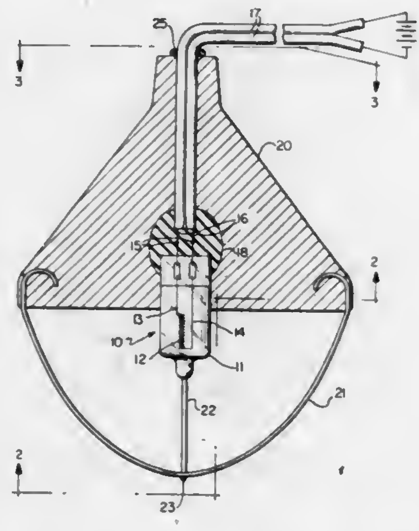
FISHING LIGHT

Brian D. Hurt, 712 Red River, Austin, Tex. 78701

Filed Jun. 29, 1978, Ser. No. 920,170

Int. Cl.² A01K *97/00*

U.S. Cl. 43—17.5 **8 Claims**



1. A submersible device having means for producing light and sound for attracting fish comprising

a lamp bulb with a quartz envelope, a filament within said envelope and conductive wires extending from said filament through one end of said said envelope; and

a body provided around a first portion of said envelope at said one end through which said wires extend, said body leaves at least a second portion of said envelope adjacent its other end exposed;

whereby, when the device is immersed in water and said wires are connected to an energy source, said second portion of said envelope is in contact with water to produce both light and sound tending to attract fish.

4,190,977

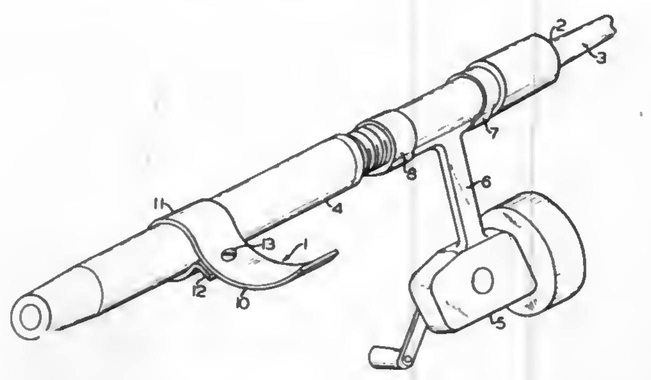
FOREARM REST FOR FISHING RODS

Robert S. Casper, 104 Maple La., Levelgreen, Trafford, Pa. 15085

Filed Feb. 3, 1978, Ser. No. 874,679

Int. Cl.² A01K *87/00*

U.S. Cl. 43—21.2 **10 Claims**



1. The combination of a fishing rod, a reel mounted thereon and a rest for aiding an angler in holding the fishing rod comprising, said rest formed from a strap-like member and having first means for connection between the reel and the rearward end of the handle of the fishing rod, said rest having second means adapted to extend laterally to one side of the handle of the fishing rod and being shaped as a single arcuate portion which forms a continuous smooth integral part with said first connection means, said second acruate means fitting and engaging the forearm of the angler so that the forearm forms an oblique angle with the longitudinal axis of the fishing rod for preventing stress and strain on the arm of the angler yet so that the forearm disengages and clears said second arcuate means for permitting unimpeded movement by the angler during casting.

4,190,978

COLLAPSIBLE PLAYHOUSE MADE OF TWO EQUAL PARTS

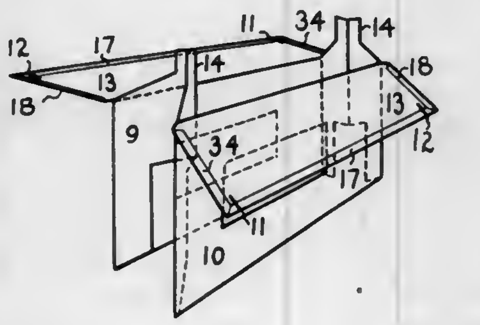
Donald C. Nelson, 312 Belmont Ave., Mt. Pocono, Pa. 18344

Continuation of Ser. No. 800,002, May 24, 1977, abandoned. This application Jan. 10, 1978, Ser. No. 868,309

The portion of the term of this patent subsequent to Aug. 31, 1993, has been disclaimed.

Int. Cl.² A63H *33/00*

U.S. Cl. 46—12 **1 Claim**



1. A simple collapsible playhouse:

made of two equal parts, each said part comprising one rectangular side wall, two half end walls connected by fold lines at respective ends of said side wall and a half roof connected by a fold line to the upper longitudinal edge of said sidewall, each said half end wall having a bottom edge perpendicular to its associated fold line, an end edge substantially parallel to but longer than said associated fold line and a straight upper edge portion inclined upwardly from said associated fold line, said upper edge portion terminating in a short rectangular projection parallel to said end edge, said half roof having a free edge parallel to and longer than its associated fold line, and having a slot at each end extending perpendicularly to said free edge, each said part having means at at least some of the free edges for finishing the edges to protect the user against cuts and the like; means permanently connecting both the end edges of said half end walls to one another so that the playhouse may be moved from a collapsed position, wherein the end walls are folded between the side walls, to an erected position wherein the end walls are perpendicular to said side walls and said half roofs overlie said end wall upper edges with the projections on said end walls received in said slots.

4,190,979

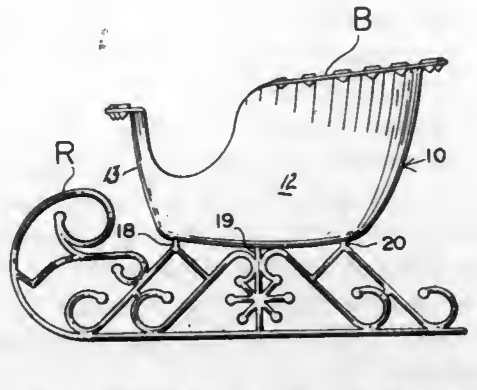
TOY SLEIGH

Monroe J. Singer, 9000 SW. 64th St., Miami, Fla. 33173

Filed Dec. 7, 1978, Ser. No. 967,644

Int. Cl.² A63H *33/06*

U.S. Cl. 46—17 **3 Claims**



1. In a toy sleigh having a body portion and a pair of runners and said body portion having a bottom wall and plurality of side walls joining said bottom wall, the combination comprising a plurality of substantially aligned bores adjacent to said side walls, said runners having a plurality of substantially aligned stems extending through said bores and a boss mounted on the free end of said stems forming a shoulder engaging the inner surface of said bottom wall whereby said runners are releaseably secured to said body portion.

4,190,980

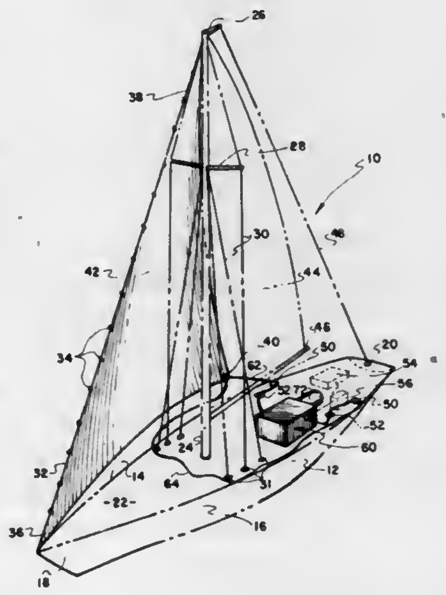
MODEL SAILBOAT SHEET WINCH

Felix J. Grycel, 1404 Jackson, Port Townsend, Wash. 98368

Filed Jan. 23, 1978, Ser. No. 871,344

Int. Cl.² A63H *23/02*

U.S. Cl. 46—93 **7 Claims**



1. A means to remotely manipulate at least one sail on a model sailboat to maneuver said sailboat upon a body of water comprising:

a housing,

at least one sheet winch rotatable on a powered shaft positioned within said housing, said at least one sheet winch is free-wheeling on said shaft, the end of a sheet wound on said at least one sheet winch being attached to the clew of said at least one sail, the other end being connected to said sheet winch,

at least one clutch mechanism means driven by said powered shaft positioned adjacent said at least one free-wheeling sheet winch to engage said at least one free-wheeling sheet winch with said powered shaft, said at least one clutch mechanism is a spring clutch connected at one end to a driving arbor connected to said powered shaft, the opposite end of said spring clutch concentrically overlapping a hub extending from said at least one sheet winch, said overlapping end of said spring clutch having an inside diameter slightly larger than the outside diameter of said hub to allow said at least one free-wheeling winch to rotate within said spring clutch when said clutch is disengaged with said hub of said winch, interference contact with said overlapping end of said at least one spring clutch by said means to simultaneously engage or disengage said winch results in the coils of the spring to retract thereby reducing the inside diameter of the overlapping end thus engaging the hub of said sheet winch,

means mounted to said housing to remotely start and stop said powered shaft to drive said at least one sheet winch, and

means to simultaneously engage or disengage said at least one free-wheeling sheet winch by said at least one clutch mechanism thereby reeling in or letting out or holding said at least one sail to port or starboard by said remote manipulating means.

4,190,981

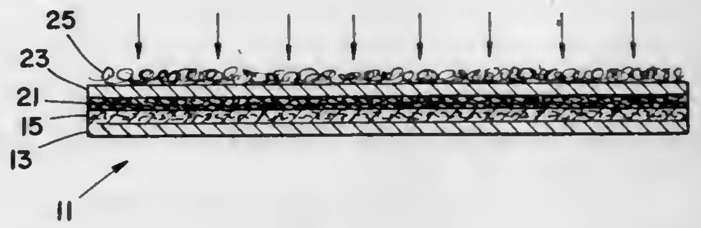
MAT FOR GROWING LAWNS OR OTHER VEGETATION

Lawrence C. Muldner, 13349 McCulloch Ave., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 828,177, Aug. 26, 1977, abandoned. This application Aug. 23, 1978, Ser. No. 936,052

Int. Cl.² A01G *31/00*

U.S. Cl. 47—56 **10 Claims**



1. An improved laminated mat for growing vegetation on soil, comprising,

an outer lower base sheet laminate of water pervious web material, said material being quickly biodegradable to become part of the soil after coming in contact therewith;

a bed of seeds and dried, compressed peat particles, wherein said peat particles are treated to remove dust entrained therewith, means for adhesively securing said bed to said base sheet, said particles being expandable upon wetting to surround and form a mulch for said seeds; and

an outer upper veil laminate of fibrous, unwoven, porous web material and means for adhesively securing said veil to said bed, said veil comprising means for expanding with said expandable peat particles and retaining said particles and seeds integrally in said mat after biodegradation of said base sheet, said veil being slowly biodegradable to become part of the soil after germination and rooting of said seeds.

4,190,982

ASSEMBLABLE TOY FIGURE

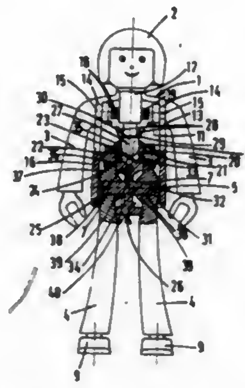
Dietmar Rahmstorf, Nuremberg, Fed. Rep. of Germany, assignor to Messrs. BIG Spielwavenfabrik Dipl.-Ing. Ernst A. Bettag, Fürth, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,221

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1977, 2700969

Int. Cl.² A63H *3/00*

U.S. Cl. 46—161 **12 Claims**



1. In an assemblable toy figure including a hollow trunk divided along a vertical transverse plane into a front portion and a rear portion, a vertical locking bar, a head mounted for rotation about the vertical locking bar which latter extends downwardly from the head and which serves to non-detachably fasten the trunk portions together, two arms and two legs each of which is mounted in the trunk for pivotal movement about a generally horizontal axis, a respective extension at the upper end of each arm serving as a pivotal axis, lateral openings defined in the trunk and traversed by the said transverse plane, said extensions of the arms engaging on assembly in said openings; an opening defined at the front of the trunk into which the legs engage from below and which enables pivotal movement of the legs, and pivot pins forming pivotal axes for the legs; the improvement comprising a journal recess defined in the bottom part of the trunk; and a pivot joint disposed in said recess means including said locking bar non-detachably supporting said pivot joint in the trunk, said pivot joint being journalled for rotation about a vertical axis, the pivot joint including the horizontal pivotal axis of the legs; and wherein the legs are mounted on the pivot joint by means of the said pivot pins and in the assembled use position are secured by a side wall of the journal recess.

4,190,983

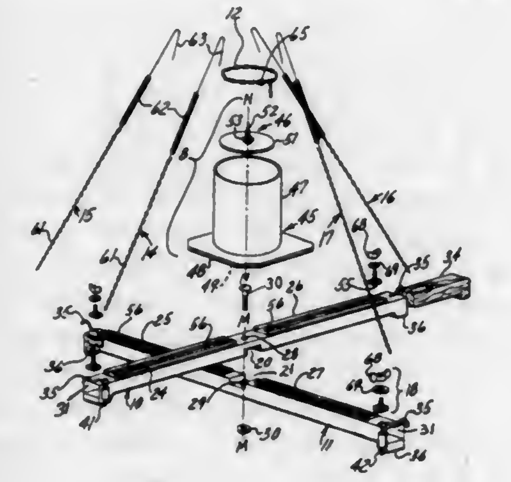
SEVERED-TREE SUPPORT DEVICE

Clifford R. Rostomily, 4429 Brainard Rd., Orange Village, Chagrin Falls, Ohio 44022

Filed May 11, 1978, Ser. No. 904,939

Int. Cl.² A47G *7/00*

U.S. Cl. 47—40.5 **2 Claims**



1. A device for supporting a severed tree or other article having a normally vertically extending trunk aligned along a first normally vertical axis of the device comprising:

- a platform having a second normally vertical axis and comprising a pair of sills in crossed separable interlocking relationship, said sills being notched at respective crossed portions intersected by said second axis to provide an interlock, fastening means extending axially through said crossed portions to secure and fix said sills in said interlock, each of said sills defining guide means along upper surfaces thereof, at opposite sides of the second axis providing longitudinal slots of inverted T-shaped cross section;
- receptacle means approximately centered in said first axis and comprising a top-opening liquid container having a cylindrical side wall and a bottom wall extending radially outwardly from the side wall to define a horizontally-protruding edge portion; and a separable plate member adapted to be inserted into said container onto the bottom wall in loose conformity with the inner surface of the sidewall, said plate member having an upstanding pin for insertion into a tree trunk;
- releasable fastening means comprising four nut and bolt assemblies of which end portions comprise a bolt head at one end and a nut at the other end enabling one of said end portions to be received in said T-shaped slot and the other to overlap said bottom-wall edge portion;
- elongate resiliently-extendable guy means having lower portions connecting with radially outward portions of all of said sills; and
- connecting means for attaching the upper portions of said guy means to a portion of a tree trunk spaced upwardly from said receptacle means.

4,190,984

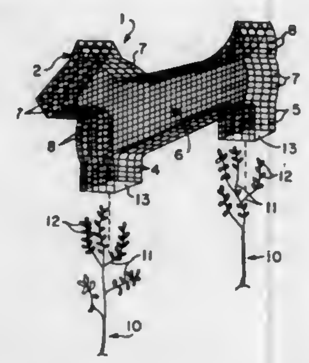
METHOD FOR CONSTRUCTING A SHRUBBERY SHAPER

Wendel D. Pierce, 704 Whittington, Bossier City, La. 71010

Filed May 11, 1978, Ser. No. 904,745

Int. Cl.² A01G *17/06*

U.S. Cl. 47—58 **6 Claims**



1. A method of constructing a shrubbery shaper for growing shrubbery in a selected configuration comprising:

- (a) cutting a pattern in said configuration;
- (b) shaping a first length of open mesh wire of selected width around the perimeter of said pattern to conform to said configuration and form a frame for said shrubbery shaper;
- (c) superimposing said pattern on a second length of open mesh wire and cutting said second length of open mesh wire into the shape of said pattern and said frame;
- (d) superimposing said pattern on a third length of open mesh wire and cutting said third length of open mesh wire into the shape of said pattern and said frame;
- (e) fastening said second length and said third length of said open mesh wire to said first length of said open mesh wire to close said frame; and
- (f) positioning said shrubbery shaper over shrubbery to be trained or shaped, whereby the branches of said shrubbery are located inside said shrubbery shaper.

4,190,985

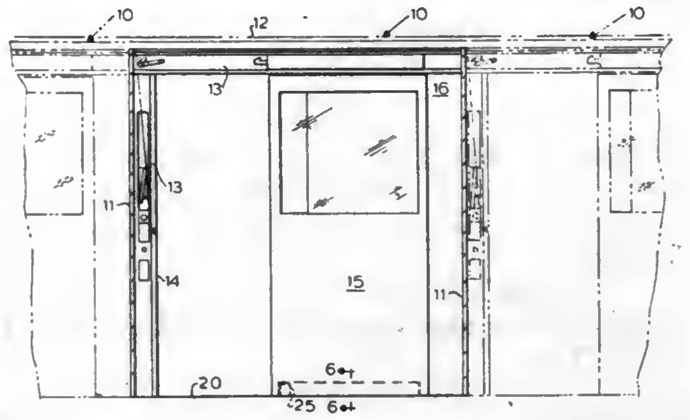
DOOR LOCKING ASSEMBLY

Lewis B. Richards, Oakland, and Kenneth R. Romick, Hayward, both of Calif., assignors to Washington Universal Security Products, Hayward, Calif.

Filed May 5, 1978, Ser. No. 903,209

Int. Cl.² E05B *47/00*

U.S. Cl. 49—16 **21 Claims**



1. A locking assembly for a door installation including a frame, a door mounted for movement between an open and a closed position with respect to the frame, and a jamb associated with the frame at the side of the door where opening occurs, said locking assembly comprising:

- locking means associated with the jamb and the adjacent edge of the door, including a lock dog portion associated with the jamb, protruding into the path of the door generally intermediate the top and bottom of the door and vertically movable from a lower locking position to an upper unlocking position;
- a vertically oriented drop bar associated with the jamb and fixedly supporting the lock dog portion of the locking means, said drop bar being mounted on the jamb and within an enclosure associated with the jamb for up-and-down travel to move the lock dog portion between the locking and unlocking positions;
- rotatable cam means for lifting the drop bar to raise the lock dog portion from locking to unlocking position; and
- remotely operable motor means for rotating the rotatable cam means to raise the drop bar and lock dog portion to unlocking position.

4,190,986

WAX TREATED GRINDSTONE

Oide Kunimasa, Kawanishi, Japan, assignor to Daichiku Co., Ltd., Kawanishi, Japan

Filed May 12, 1978, Ser. No. 905,356

Claims priority, application Japan, May 14, 1977, 52/55560

Int. Cl.² C09K *3/14;* **C08J** *5/14*

U.S. Cl. 51—295 **9 Claims**

1. In a grinder, an improvement comprising:

- a grindstone impregnated with a solution containing a higher aliphatic acid having 5 to 30 carbon atoms per molecule and a higher alcohol having 5 to 30 carbon atoms per molecule mixed together at a range of ratios by weight of 10:90 to 90:10;
- whereby grinding efficiency and quality of grinding performance is dramatically and surprisingly improved.

4,190,987

DOUBLE DOME HEAT AND SMOKE VENT STRUCTURE

Edward S. Naidus, Glen Rock, N.J., assignor to RCA Corporation, New York, N.Y.

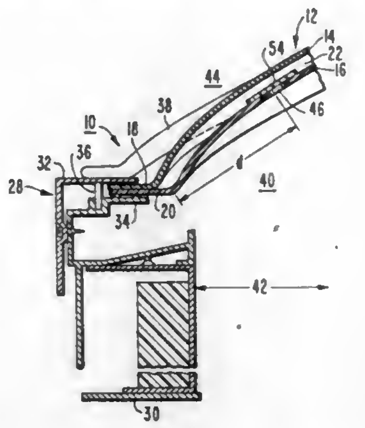
Filed Dec. 5, 1977, Ser. No. 857,760

Int. Cl.² E04B *7/18*

U.S. Cl. 52—1 **8 Claims**

1. A vent structure for enclosing a heat and smoke vent opening comprising:

- a first heat softenable and heat shrinkable sheet member having a peripheral edge circumscribing said opening,
- a second heat softenable and heat shrinkable sheet member having an edge over said peripheral edge of said first member, said second member being positioned spaced from and coextensive with said first member forming a dead space therebetween,
- the one of said members facing the heat to be vented through said vent opening and having a plurality of spaced holes for providing heat circulation to said dead space for softening the other of said members and the other of said members being continuous in the sense it prevents the escape of heat passing into the dead space prior to its softening, and
- heat softenable heat shrinkable means which opens said holes in response to said heat applied thereto enclosing said holes for enclosing said dead space to provide thermal insulation in the absence of said heat to be vented.



4,190,988

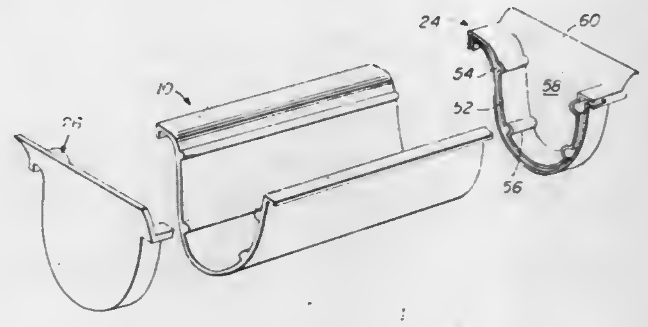
METHOD, SYSTEM AND COMPONENTS FOR PRESERVING WOODEN GUTTERS

Ronald Carreiro, 105 Stratford St., W. Roxbury, Mass. 02132

Filed Jan. 5, 1978, Ser. No. 867,030

Int. Cl.² E04D *13/00*

U.S. Cl. 52—16 **14 Claims**



1. A system for weatherproofing the trough of a wooden gutter, comprising

- (a) an elongated, waterproof, longitudinally and laterally flexible, soft plastic liner adapted to line the surface of the gutter trough when installed therein, said liner being characterized by a softness and flexibility sufficient for said liner to conform to the contour of said trough when installed therein, and
- (b) end caps connectable to the ends of said liner to close the ends thereof,
- (c) the lower surface of said liner being formed with longitudinal corrugations.

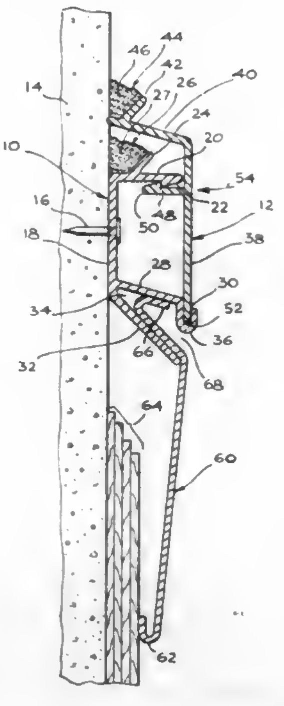
4,190,989
ROOF FLASHING SYSTEM

Albert Sakharoff, 13421 Cheltenham Dr., Sherman Oaks, Calif. 91429

Filed Nov. 15, 1978, Ser. No. 960,960

Int. Cl.^{2} E04D *1/36*

U.S. Cl. 52—60 **11 Claims**



1. A roof flashing system comprising:
- a first reglet attachable to a wall and forming a first longitudinally extending trough in conjunction with said wall for containment of a caulking compound; and
- a second reglet attachable to said first reglet and forming a second longitudinally extending trough in conjunction with said wall for containment of a caulking compound, said second trough being located substantially parallel to said first trough.

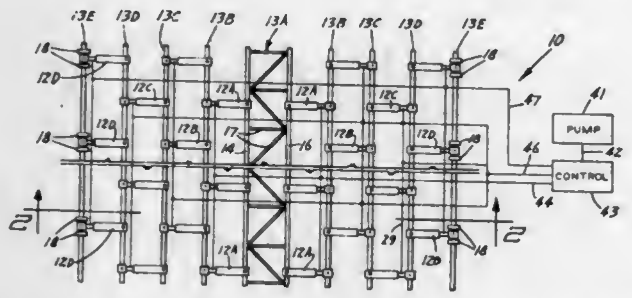
4,190,990
FRAME ASSEMBLY

Jack G. McAllister, 2701 N. Douglas Dr., Minneapolis, Minn. 55422

Continuation of Ser. No. 712,351, Aug. 6, 1976, abandoned, which is a division of Ser. No. 255,688, May 22, 1972, Pat. No. 3,973,370. This application Dec. 5, 1977, Ser. No. 857,435

Int. Cl.^{2} E04B *1/32*

U.S. Cl. 52—66 **24 Claims**



1. A frame assembly comprising: a plurality of elongated extended first means arranged over part of a surface, each extended first means having opposite ends and a first member and a second member movable relative to the first member, means for holding the first member and second member of the first means in a fixed elongated relationship relative to each other, anchor means located on said surface connected to each first member of the first means to hold the first member in a stationary location, a plurality of elongated extended second means arranged over said surface, each second means having opposite ends and a first member and a second member movable relative to each other, means for holding the first member and second member of the second means in a fixed elongated relationship relative to each other, first connector means coupling adjacent ends of the extended second means to provide a network of extended second means and first connector means, and second connector means coupling the second members of the first means to part of the second means whereby the first and second means are interconnected to form the frame assembly over said surfaces, said first member of each extended means is an elongated first cylinder and the second member of each extended means is an elongated second cylinder mounted in telescopic relation with the first cylinder.

4,190,991
EXPANDING FIXTURE AND HAMMERING DEVICE THEREFOR

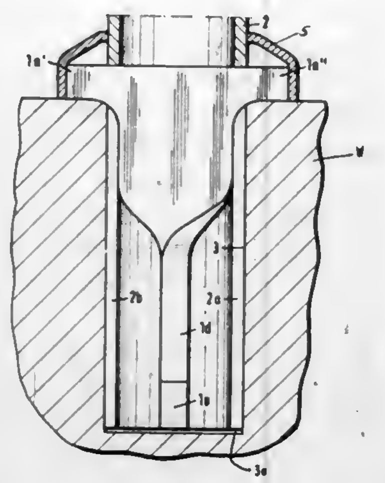
Wilhelm Nelles, Nesenhaus 2, D-4030Ratingen 6, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,521

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1977, 2713530

Int. Cl.^{2} E04F *11/00*

U.S. Cl. 52—127 **14 Claims**



1. An expanding fixture for securing an element to a wall or a ceiling by securing the element to a bore in the wall or ceiling, comprising:
- a socket adapted to be driven into the bore in the wall, said socket having a longitudinal slot and a hollow section;
- an expanding piece formed of a flat material to penetrate into said hollow section of said socket, said piece including a widening portion at one end and a slot engaging portion at the other end, said widening portion widening said socket and pressing said socket against the wall of the bore, said slot engaging portion including a section which is wider than the diameter of said socket and a part which projects beyond the peripheral portion of said socket on a side thereof opposite to the bore base, said slot engaging portion being supported on the edge of the bore; and
- said element to be secured being coextensive with said said socket and extending from said hollow section.

4,190,992
SPIRAL STAIRCASE

Senzo Takenaga, c/o Akebono Kikai Kabushiki Kaisha, Taura Minato-machi, Yokosuka-shi, Kanagawa-ken, Japan

Filed Sep. 18, 1978, Ser. No. 943,120

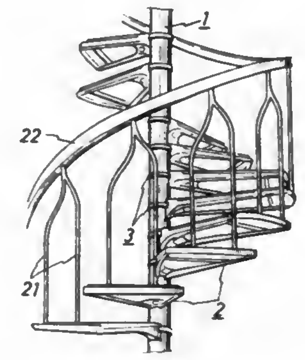
Claims priority, application Japan, Apr. 20, 1978, 53/45876

Int. Cl.^{2} E04F *11/00*

U.S. Cl. 52—187 **7 Claims**

1. A spiral staircase comprising a column of pipe, a plurality of footstep means fixed to the column in a spiral array, supporting means having a U-shaped bolt and nuts, whereby a plurality of footstep means are firmly fixed to the column by clamping the supporting means by the U-shaped bolt and the nuts,

said supporting means including a band-shaped support encircling the column, said U-shaped bolt engaging a pin of the band-shaped support and said nuts clamping the U-shaped bolt on a supporting plate of the footstep means.



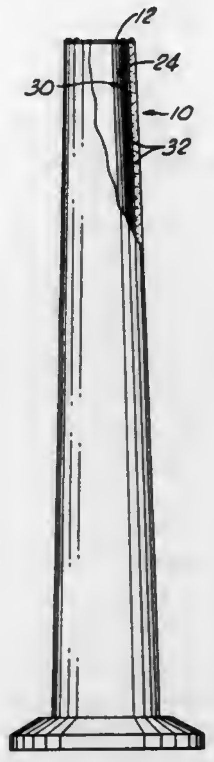
4,190,993
LINER CONSTRUCTION

Joe C. Pohlman, P.O. Box 15098, Pittsburgh, Pa. 15237, and James P. Romualdi, 5737 Wilkins Ave., Pittsburgh, Pa. 15213

Filed Aug. 7, 1978, Ser. No. 931,607

Int. Cl.^{2} E04B *1/32*

U.S. Cl. 52—249 **15 Claims**



1. In combination with a stack-like structure having at least an inner wall, a liner comprising:
- a plurality of circumferentially spaced elongated rod-like means spaced radially, inwardly from the inner wall of the structure and secured at one of their ends to an upper portion of the structure and extending downwardly within the confines of said structure and over a substantial length of the height of the structure;
- a plurality of longitudinally spaced hoop means secured to said rod-like means, whereby said hoop means and said rod-like means together define a framework of open sections;
- mesh means secured to said framework; and
- a tubular body of non-metallic settable material having the general physical properties of concrete encasing said mesh and extending over a substantial portion of the height of the structure; said framework, said mesh and said body of settable material constructed and arranged with respect to each other such that a stress-free liner is defined.

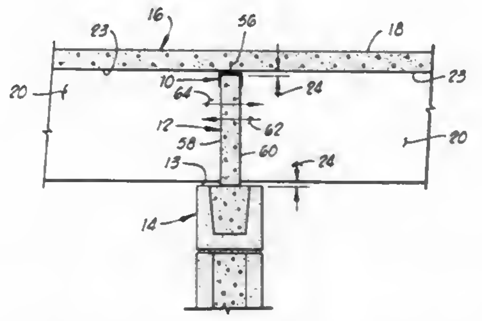
4,190,994
FILLER PANEL CLIP FOR PRESTRESSED CONCRETE DOUBLE-TEE ROOF OR FLOOR CONSTRUCTION

Paul A. Marsh, Jr., and Tom A. Thomas, III, both of 5500 S. High, Oklahoma City, Okla. 73129

Filed Dec. 8, 1977, Ser. No. 858,709

Int. Cl.^{2} E04C *1/36*

U.S. Cl. 52—262 **7 Claims**



1. In a structure having a double-tee construction member extending over a wall forming a cavity therebetween and a filler panel resting on the wall and positioned within the cavity, the improvement comprising:
- clip means connectable to the double-tee within the cavity for retaining the filler panel within the cavity so that the filler panel is retained in the cavity when the double-tee exerts flexing movement relative to the wall, the clip means comprising:
  - a first retaining portion supportable on the underside of the double-tee;
  - a second retaining portion; and
- locking connector means for connecting the first retaining portion and the second retaining portion in locking engagement so that the first retaining portion provides backup to one side of the filler panel and the second retaining portion provides a backup to the opposite side of the filler panel, the locking connector comprising:
  - a female connector portion connected to the first retaining portion, the female connector portion comprising a bifurcated clip, a first furcation thereof being connected to the first retaining portion, and the second furcation being connected to and generally parallel with the first furcation with a tab receiving slot being formed between the furcations;
  - a male connector portion connected to the second retaining portion, the male connector portion being lockingly engagable with the female connector portion, the male connector having a tab connected to the second retaining portion, the tab being insertable into the tab receiving slot; and
- tab retaining means for maintaining the tab positioned within the tab receiving slot.

4,190,995
COMPOSITE BUILDING UNIT, METHOD OF PRODUCING SAME

John A. Armistead, 4516-15 Randolph Rd., Charlotte, N.C. 28211

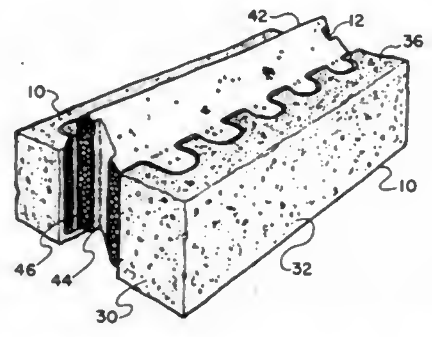
Filed Jul. 26, 1978, Ser. No. 928,164

Int. Cl.^{2} E04B *02/00*

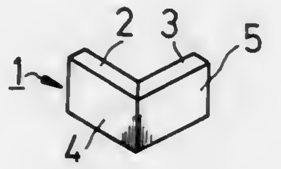
U.S. Cl. 52—309.9 **13 Claims**

1. A composite building unit for mortar joint wall construction comprising:
- (a) a pair of elements formed of brick-like material, each said element having a facing side with a plurality of inwardly extending recesses therein, each said recess having a constriction adjacent the facing side from which it extends and an enlarged portion spaced inwardly from said constriction said pair of brick-like elements being spaced with the facing sides thereof in opposed facing relationship,
- (b) an intermediate element formed of compressibly resilient insulating material disposed between said pair of spaced

brick-like elements and having two opposed side faces with a plurality of projections extending outwardly from each said side face, said intermediate element and said spaced brick-like elements being joined by a press fit with said projections of said intermediate element received within said recesses of said spaced brick-like elements and with said facing sides of said spaced brick-like elements and said side faces of said intermediate element being adjacent to one another, said projections being relatively compressed at the portions thereof adjacent said recess constrictions and being relatively expanded at the portions thereof located within said enlarged recess portions, said spaced brick-like elements and said intermediate elements being held together by frictional interaction between said projections and said recesses.

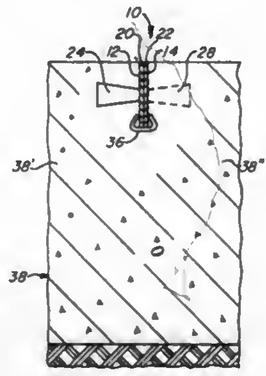


4,190,996
CORNERS OF STRUCTURAL MEMBERS
Rudolf Schindler, Ottobrunn, and Werner Hartmann, Munich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Fed. Rep. of Germany
Filed Dec. 13, 1977, Ser. No. 860,180
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657542
Int. Cl.² E04C *2/22*
U.S. Cl. 52—309.13 **7 Claims**



1. A corner of a structural member having a first wall, a second wall and a third wall, said first and second walls disposed at an angle to one another and an edge of each located at a common intersection line between said first and second walls, said third wall extending transversely of said first and second walls and of the common intersection line between said first and second walls, said third wall having one edge thereof forming a common intersection line with said first wall and another edge thereof forming a common intersection line with said second wall, the common intersection lines of said third wall with said first and second walls extend transversely of the common intersection line between said first and second walls, wherein the improvement comprises that each of said first, second and third walls are of equal wall thickness and strength and are formed of at least two fiber reinforced layers, each layer having parallel fibers extending in the same direction and the fibers in one layer extending transversely across the fibers in the adjacent layer.

4,190,997
MEANS FOR FORMING AN EDGE-PROTECTED CONTRACTION JOINT
Billie E. Holt, Rte. 1, Box 427, Graham, N.C. 27253
Filed Aug. 24, 1978, Ser. No. 936,563
Int. Cl.² E04B *1/62*
U.S. Cl. 52—396 **7 Claims**



1. An assembly for forming an edge-protected contraction joint in a concrete floor or similar structure which undergoes contraction-separation upon curing of the concrete, comprising:

first and second elongate, rigid, wear-resistant metallic members adapted to be embedded within the concrete while the same is in a plastic condition and while the members extend in substantially parallel abutting relationship to each other, and adapted upon curing of the concrete to extend in protective relationship along the length of respective ones of the opposite upper edges of a contraction joint then formed in the concrete by contraction-separation away from each other of first and second sections of the concrete respectively disposed on opposite sides of said first and second members;

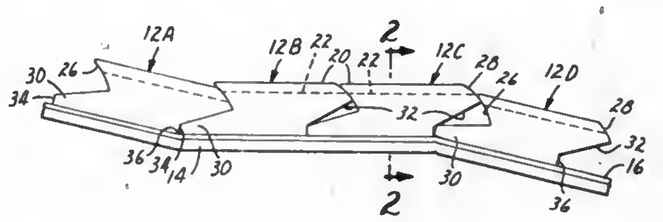
each of said members including anchor means extending laterally outwardly from the side thereof distal from the other of said members and into the thereto adjacent one of said concrete sections for, upon contraction-separation of said sections during curing of the concrete, causing each said member to remain in protective engagement with said adjacent one of said concrete sections and to undergo relative lateral movement away from the other of said members;

and interconnecting means for so interconnecting said members as to maintain the same in said abutting relationship to one another while the concrete is in a plastic condition, and as to permit relative lateral movement of said members away from each other during curing of the concrete and in response to then-transpiring contraction-separation of said concrete sections; said interconnecting means including at least one inner-connecting element fixedly secured to one of said elongate members and slidably engageable with the other of said members for preventing vertical and longitudinal relative movement between said members while permitting constrained lateral movement of said members relative to each other.

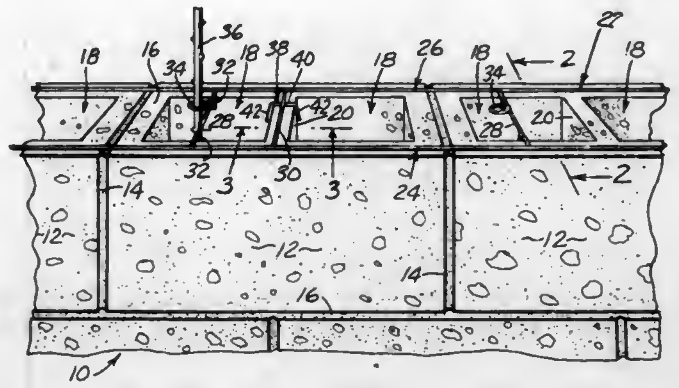
4,190,998
PIVOTABLY INTERLOCKING RIGID HEAT-RESISTANT TILES
Roger H. Keith, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 12, 1978, Ser. No. 905,152
Int. Cl.² E04B *5/04*
U.S. Cl. 52—591 **13 Claims**

1. A rigid, heat-resistant tile having generally rectangular and parallel broad faces which with identical tiles can form an interlocking train or field of tiles wherein the ends of contiguous tiles form knuckle joints comprising mating convex and concave cylindrical surfaces on substantially a common axis that extends parallel to the broad faces of the tile, the tile

having at one end (a) a protuberance which forms part of one face of the tile and (b) a concave cylindrical surface extending from a broad face of the tile to the protuberance and at the other end (c) an indentation and (d) a convex cylindrical surface extending from said broad face to the indentation which is contacted by the apex of the protuberance of a contiguous like tile and is spaced from the base of the protuberance when the contiguous tiles are in collinear alignment.



4,190,999
LOCATOR FOR VERTICAL REINFORCING BARS
Ralph C. Hampton, 18881 Gentian, Riverside, Calif. 92504
Filed Apr. 25, 1978, Ser. No. 899,829
Int. Cl.² E04C *5/16*
U.S. Cl. 52—687 **4 Claims**



1. A fixture for use in masonary construction utilizing hollow blocks having two longitudinally spaced cavities separated by a transverse web, wherein vertical reinforcing bars must be precisely located within a cavity that is subsequently filled with cement grout, said fixture comprising:

a horizontal supporting structure that is adapted to be placed on the top surfaces of the blocks at various levels of the masonry construction as the blocks are being laid, said supporting structure consisting of a ladder-like unit formed with laterally spaced, parallel wires that are connected together at intervals by cross-wires;

said horizontal supporting structure having a plurality of rings provided thereon at locations where the reinforcing bars are to be located, said rings of the supporting structures at different levels of the masonry construction being vertically aligned with respect to one another so as to receive the vertical reinforcing bars when the latter are passed downwardly into the cavity and through the rings from the top of the completed or partially completed construction; and

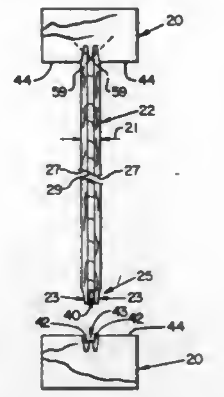
certain of said cross wires having cross pieces attached thereto, said cross pieces terminating in downwardly bent legs that are adapted to straddle the transverse webs of the blocks.

4,191,000
WOODEN I-BEAM
Larry R. Henderson, Portland, Oreg., assignor to Timjoist, Inc., Tualatin, Oreg.
Filed Feb. 27, 1978, Ser. No. 881,599
Int. Cl.² E04C *3/12*
U.S. Cl. 52—729 **5 Claims**

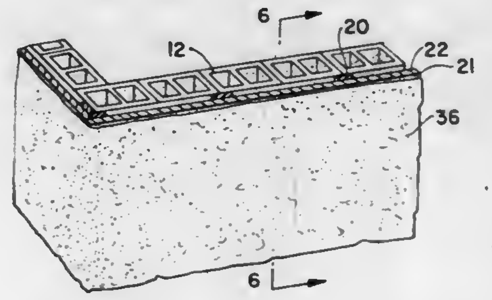
1. A wooden I-beam, comprising:

(a) an elongate, generally planar web member of laminated wood having a longitudinal axis, a pair of opposite edges which are generally parallel to said longitudinal axis, each one of said opposite edges having a base plane perpendicular to the plane of said web member and parallel to said one of said opposite edges and a pair of parallel ribs extending from said base plane and having sloping sides and an included groove therebetween, each said rib having a rib edge surface and said included groove having a bottom surface located closer to said rib edge surface than said base plane is located;

(b) a pair of elongate wooden flange members, said flange members being oppositely located along said opposite edges of said web member and each said flange member having a longitudinal surface comprising a pair of longitudinally-oriented parallel grooves located therein, said parallel grooves having shape and size closely corresponding to that of said ribs and included groove of said web member, and each said flange member being adhesively connected to said web member such that said ribs extend matingly into said parallel grooves with said base plane substantially aligned with said longitudinal surface, forming a joint defining a pair of oblique shear planes, each of said oblique shear planes extending through one of said ribs from the intersection of said longitudinal surface and said one of said ribs to the portion of said bottom surface of said included groove nearest to said intersection.



4,191,001
PROCESS FOR REINSULATING CONCRETE BLOCK HOMES
Gerard L'Heureux, 1506 Dixie Hwy., Holiday, Fla. 33590
Filed Jun. 1, 1978, Ser. No. 911,751
Int. Cl.² E04B *1/62*
U.S. Cl. 52—743 **10 Claims**



1. A process of insulating a concrete block building comprising the steps of fastening furring strips at spaced parallel positions along the exterior surface of the building; affixing rigid thermal insulating panels to said furring strips about the exterior surface of said wall to provide a moisture-proof wall structure with a dead air space between the panels and the existing concrete block wall; fastening a mechanical reinforcing metal mesh to cover substantially the entire surface of said rigid thermal insulating panels; and forming a concrete surface on said reinforcing metal mesh about the exterior surface of said panels to complete the insulation of the building.

4,191,002
DEMOUNTABLE MULTIPLE LEVEL BUILDING STRUCTURE

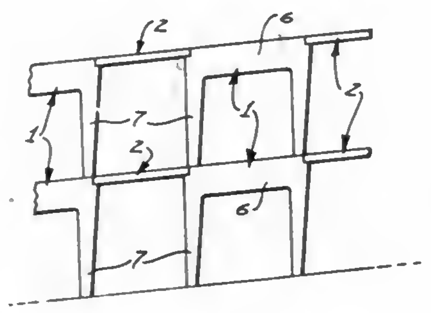
Edward K. Rice, Los Angeles, Calif., assignor to Unicon Parking Structures, Inc., Van Nuys, Calif.

Continuation of Ser. No. 340,689, Mar. 13, 1973, Pat. No. 4,065,907, which is a division of Ser. No. 93,097, Nov. 27, 1970, abandoned. This application Dec. 30, 1977, Ser. No. 865,785

The portion of the term of this patent subsequent to Jan. 3, 1995, has been disclaimed.

Int. Cl.^{2} E04C *3/00*

U.S. Cl. 52—747 **2 Claims**



1. A method of constructing a building structure characterized by:

(a) precasting a set of free-standing supporting modules, each comprising a slab and supporting legs at the extremities thereof, said slabs each having a set of horizontal transverse tendon guideways located therethrough;

(b) positioning said supporting modules in predetermined spaced relation;

(c) extending tendons through said guideways located in said slabs of said supporting modules;

(d) fitting sheaths over the portions of said tendons located between said supporting modules to form tendon guideways;

(e) providing forms and casting supported modules in the spaces between said supporting modules and around said tendons, each said supported module comprising a slab; and

(f) applying post-tensioning force to the extremities of said tendons accompanied with corresponding transverse compression force to and through said slabs of said supporting and supported modules,

whereby said supported modules are supported solely by said supporting modules.

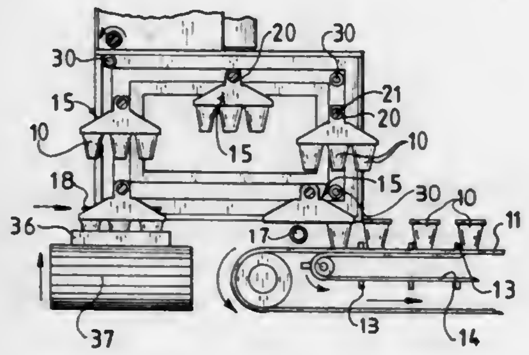
4,191,003
TRAY LOADER

Lawrence J. Talarico, 50 Sydney Ave., Deal, N.J. 07723

Filed Apr. 19, 1978, Ser. No. 897,576

Int. Cl.^{2} B65B *5/08, 5/06*

U.S. Cl. 53—247 **5 Claims**



1. Apparatus for loading as a unit a plurality of tapered lidded cups containing any of a variety of products into a receptacle comprising:

means for feeding said cups spaced in rows and across into the path of a carriage provided with forks aligned with said rows of cups with a pair of forks for each row of cups, each pair of forks being in fixed parallel relationship with the spacing between such pair of forks being less than the diameters of the tops of the bodies of the cups and greater than the diameters of the bottoms of the cups to permit the cups to be initially fed into the path of the carriage without the forks touching the bodies of the cups;

conveying means to which the carriage is affixed, which conveying means travels in one direction around the four sides of a generally rectangular path and

(a) vertically lifts said carriage when said unit of cups is positioned in the forks and moves the carriage and unit of cups upwardly along the one end of the rectangular path, said lifting causing the forks to contact the bodies of said cups and lift said unit of cups;

(b) moves the carriage and unit of cups along the horizontal top leg of the rectangular path;

(c) moves the carriage and unit of cups downwardly along the opposite end of the rectangular path and deposits the said unit of cups in a vertical discharge onto a receptacle positioned below the descending carriage, the said descent releasing the forks from the bodies of the cups; and

(d) then moves the empty carriage along the horizontal bottom leg of the rectangular path away from the loaded receptacle to the initial starting position to pick up another unit of cups;

the said carriage being conveyed at all times with the forks in a horizontal position; and

means for removing the loaded receptacle away from the point of discharge of the cups into the receptacle.

4,191,004
BAG FOLDING APPARATUS

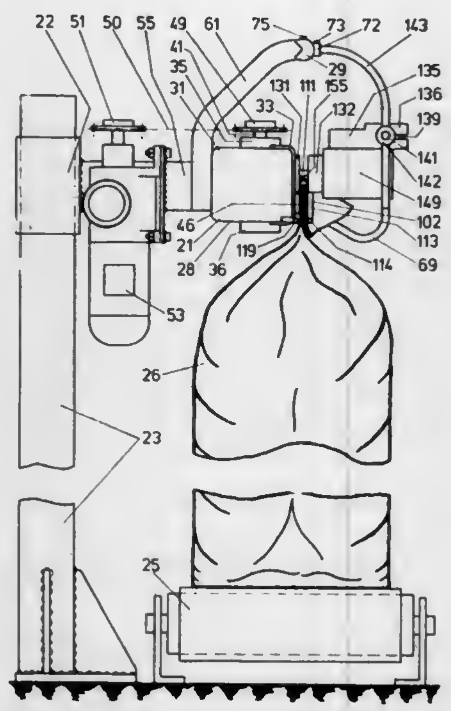
Bruno Gmuer, Boppartstrasse 32, 9014 Sankt Gallen, and Willy Grundbacher, Poststrasse 20, 9220 Bischofszell, both of Switzerland

Filed Feb. 23, 1978, Ser. No. 880,360

Claims priority, application Switzerland, Feb. 24, 1977, 2293/77

Int. Cl.^{2} B65B *7/08*

U.S. Cl. 53—378 **19 Claims**



1. A bag folding apparatus for folding the region adjacent the open end of a filled bag with the filled bag also having an oppositely located closed end and an axis extending through the closed and open ends, comprising means for conveying the filled bag through a bag closing station having an input and an output end spaced apart by a bag folding zone, said conveying means including a planar conveying surface for supporting the closed ends of the filled bag passing through the bag closing station, a pressure application device including a pressure application band arranged to engage the bag at the input end in the region adjacent the open end thereof for moving the bag in combination with said conveying means through the bag folding zone to the output end of the bag closing station, said pressure application device including driving and deflecting rollers for said pressure application band with one of said rollers located at the input end and the other located at the output end of said bag closing station and with said rollers being rotatable about axes extending generally parallel with the axis of the bag being moved through the bag closing station and transversely of said conveying surface, a folding device located in the bag closing station and positioned adjacent said pressure application band, wherein the improvement comprises that said folding device is at least partially co-extensive in the direction of the axis of the bag moving through the bag closing station with said pressure application band in contact with the bag, a housing for supporting said pressure application band and extending from the input to the output end of the bag closing station, said folding device comprises a bar serving as a curved cam for folding the open end of the filled bag and extending from said input end to said output end of said bag closing station, said bar connected to said housing at the input end and spaced in the axial direction of the filled bag on the opposite side of said rollers from said conveying surface, said bar comprises a first part fixed to and extending obliquely outwardly from said housing toward the output end in generally parallel relation with said conveying surface and extending across the path of the open end of the filled bag entering the input end, a second part extending from the end of said first part spaced from said housing toward the output end in generally parallel relation with both the path of the filled bag traveling from the input end to the output end and said conveying surface, a third part extending from the end of said second part spaced from said first part in generally parallel relation with the path of the filled bag traveling from the input end to the output end and in converging relation with said conveying surface toward the output end, and a fourth part extending from the end of said third part spaced from said second part toward said output end in generally parallel relation with both the path of the filled bag traveling from the input end to the output end and said conveying surface.

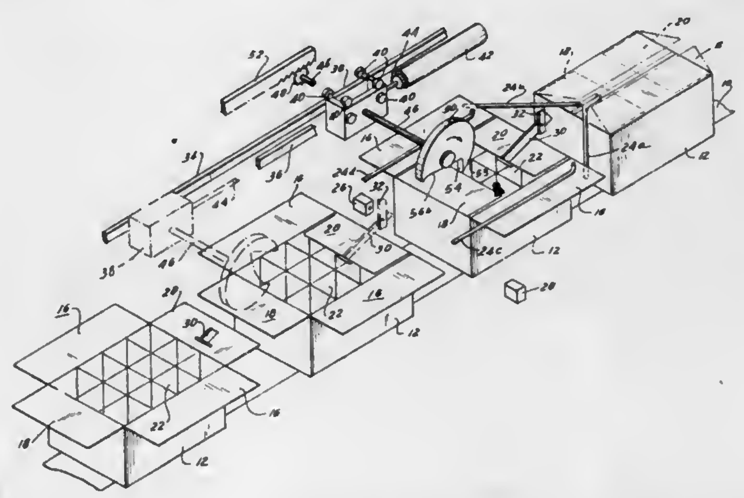
4,191,005
CASE OPENING APPARATUS

Adam V. Vinoskey, Forest, Va., assignor to Simplimatic Engineering Company, Lynchburg, Va.

Filed Jan. 4, 1979, Ser. No. 836

Int. Cl.^{2} B65B *43/39*

U.S. Cl. 53—382 **19 Claims**



1. Apparatus for opening the leading flap of a case or the like, said apparatus comprising a track, a rack fixedly mounted on said track and comprising a plurality of gear teeth, a carriage mounted on said track for movement with respect thereto, means for moving said carriage along said track, a pinion gear mounted on said carriage in operable engagement with said rack, said gear being rotated as said carriage is moved along said track; flap engaging means and means for operably connecting said flap engaging means to said pinion for rotation therewith, said carriage being movable relative to said track to cause said flap engaging means to be displaced and rotated relative to the case to engage the closed leading flap and to move same from the closed position to an opened position.

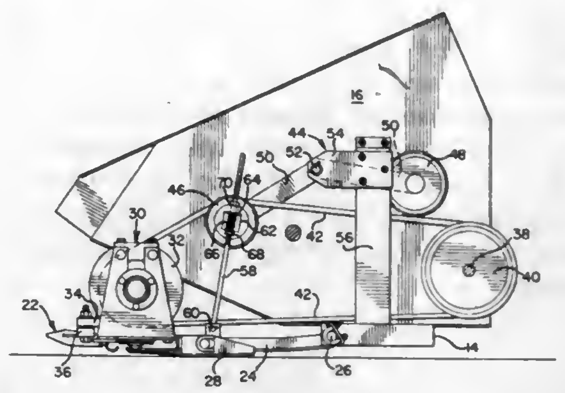
4,191,006
FLOATING CUTTERBAR KNIFE DRIVE

Dathan R. Kerber, Bettendorf, Iowa; Orlin W. Johnson, East Moline, Ill., and Robert D. Week, Bloomington, Minn., assignors to International Harvester Company, Chicago, Ill.

Filed May 8, 1978, Ser. No. 904,164

Int. Cl.^{2} A01D *69/08*

U.S. Cl. 56—11.6 **5 Claims**



1. A harvesting header for a mobile harvesting machine, comprising:

a header frame having opposite end walls;

a floating cutterbar for cutting a standing crop;

means mounting said cutterbar on said header frame for ground-induced vertical movement relative thereto to accommodate variable ground profile, said means including a fore-and-aft extending runner connected to the cutterbar and pivotally connected to the header frame, said runner being disposed adjacent to one of said side walls;

a drive system for the cutterbar including a wobble drive mounted on said end runner and a belt drive therefor mounted on said one side wall;

and means defining a positive interconnection between said end runner and said belt drive to provide continuous change in belt drive geometry created by and to compensate for cutterbar movement relative to the header in operation.

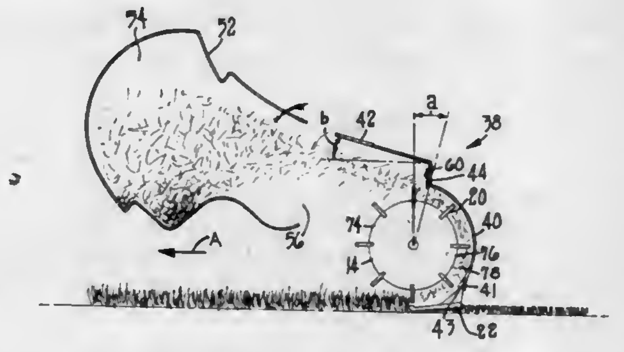
4,191,007
REEL MOWER SHIELD ASSEMBLY

Joseph M. Check, Minneapolis, and E. Smith Reed, Jr., Deephaven, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Jun. 23, 1978, Ser. No. 918,588

Int. Cl.^{2} A01D *35/22, 53/06*

U.S. Cl. 56—199 **9 Claims**



1. In a reel-type mower having an elongated cutting reel with a plurality of cutting blades, said reel mounted to a housing for rotation about a substantially horizontal axis, a bed

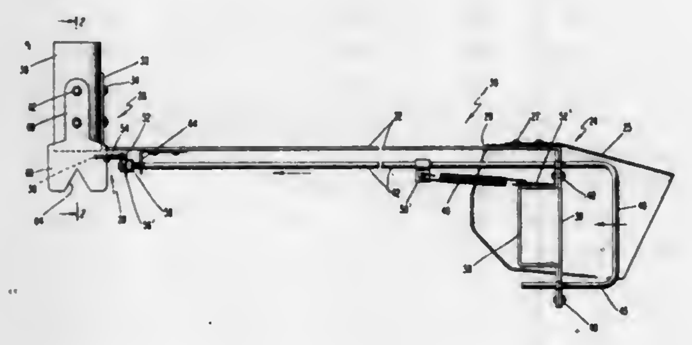
knife disposed proximate the ground and cooperating with the cutting blades for scissor-like cutting, and a grass clipping catcher spaced apart from the reel and positioned to receive the cut clippings, an improved shield means for directing cut clippings into the catcher, comprising:

(a) a shield member mounted to the housing and encompassing a portion of the circumference of the reel on the opposite side of the reel from the grass catcher, said shield member having a bottom end proximate the bed knife and a top end disposed generally above the reel, said shield member between said bottom and top ends also having an inner surface with a radius of curvature measured from the horizontal rotational axis of the cutting reel greater than the radial distance between the reel rotational axis and the outer edge of the cutting blades;

(b) a cut-off bar mounted to said shield member at said top end thereof and extending inwardly from said inner surface toward the reel and along substantially tne entire width of the reel, said bar disposed in a plane generally normal to the direction of discharge of the cut clippings by the reel, said shield member, said cut-off bar, and said reel cooperating to define a substantially closed cut-clipping discharge passageway with an opening at said top end, whereby the cut clippings are contained within said discharge passageway in the rotational path of the cutting blade to impel the clippings through said opening into the catcher.

4,191,008
APPARATUS FOR HARVESTING OKRA OR THE LIKE

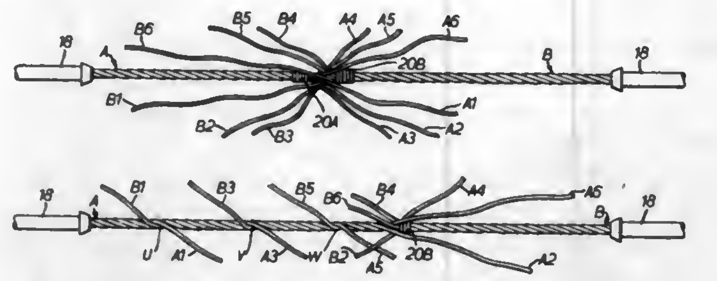
Archie O. Smith, 10169 Denton Rd., Jacksonville, Fla. 32226
Filed Mar. 10, 1978, Ser. No. 885,164
Int. Cl.^{2} A01D *46/00*
U.S. Cl. 56—327 R **13 Claims**



1. A fruit harvesting apparatus, comprising
an elongated frame member, one end of said frame member forming a handle;
a cylindrical guide member for receiving fruit to be harvested, said guide member being attached to the opposite end of said frame member and having an axis perpendicular to said frame member;
a cutter blade positioned adjacent a lower end of said guide member;
means for supporting said cutter blade to said frame member for longitudinal movement relative to said cylindrical guide member;
trigger means located at said handle for reciprocating said cutter blade between (1) a retracted position wherein a cutting edge of said blade is positioned adjacent a wall portion of said cylindrical guide member and (2) an extended, cutting position wherein the cutting edge is positioned adjacent a diametrically opposed wall portion of said cylindrical guide member;
spring means for biasing said cutter blade in the retracted position; and
stabilizing means attached to and extending below said cylindrical guide member, said stabilizing means adapted for contacting a branch beneath a fruit being cut by said cutter blade.

4,191,009
ROPES AND THE LIKE

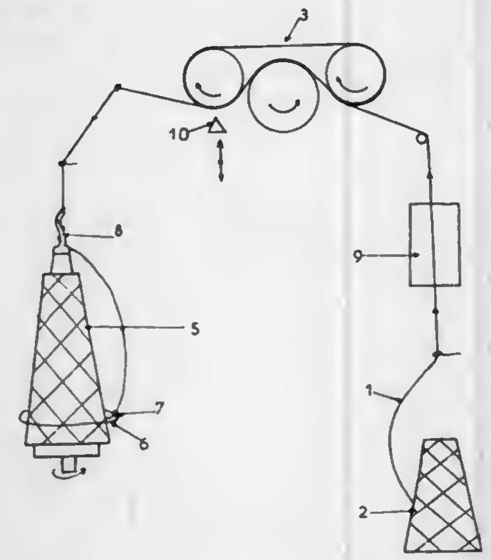
Ian M. Thomson, Wokingham, England, assignor to Cable Belt Limited, England
Filed Nov. 1, 1978, Ser. No. 956,607
Claims priority, application United Kingdom, Nov. 11, 1977, 46953/77
Int. Cl.^{2} B65H *69/06;* **D02G** *3/40*
U.S. Cl. 57—202 **10 Claims**



9. A rope splice, including two rope lengths spliced together, and in which:
each rope length comprises a plurality of strands each covered with an individual sheath of thermoplastic material,
each alternate strand of each rope length being unwound at the splice back to a predetermined point and in its place being wound one of the strands of the other rope length up to the predetermined point,
the predetermined points for each pair of strands being spaced apart along the splice, and
the end regions of the two strands of each pair being placed together at each said point and having their coverings of thermoplastic material bonded together such that the overall diameter of the splice at each said point is not substantially greater than elsewhere along the splice.

4,191,010
PROCESS AND DEVICE FOR PRODUCING FANCY YARN

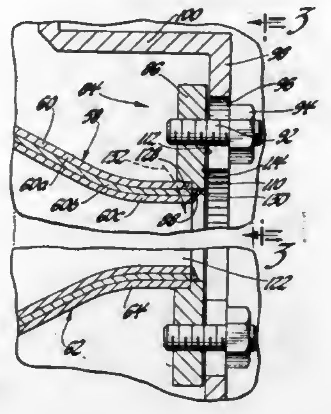
Robert Lehmann, L'Arbresle; André Lyonnet, Lyons, and Paul Rochas, St. Didier au Maur d'Or, all of France, assignors to Institut Textile de France and Agence Nationale de Valorisation de la Recherche, both of Boulogne sur Seine, France
Filed Jun. 29, 1978, Ser. No. 920,501
Claims priority, application France, Jul. 1, 1977, 77 21022
Int. Cl.^{2} D02G *1/10, 1/00*
U.S. Cl. 57—208 **22 Claims**



1. A process for the production of a fancy yarn having stable protuberances along its length, wherein at least one multi-filament yarn of continuous filaments which is essentially free from twist is delivered by means of a positive delivery device and then twisted and taken up by means of a spindle, and wherein, without varying the feed rate and the take-up speed of the yarn, some of the filaments of the multi-filament yarn are temporarily braked by means of an edge acting on the yarn at a position where the yarn is in contact with a surface of the delivery device, the twist imparted by the spindle extending back to the zone in which the edge acts on the yarn.

4,191,011
MOUNT ASSEMBLY FOR POROUS TRANSITION PANEL AT ANNULAR COMBUSTOR OUTLET

Ralph B. Sweeney, and Albert J. Verdouw, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 21, 1977, Ser. No. 862,859
Int. Cl.^{2} F02C *7/12, 7/20*
U.S. Cl. 60—39.32 **4 Claims**

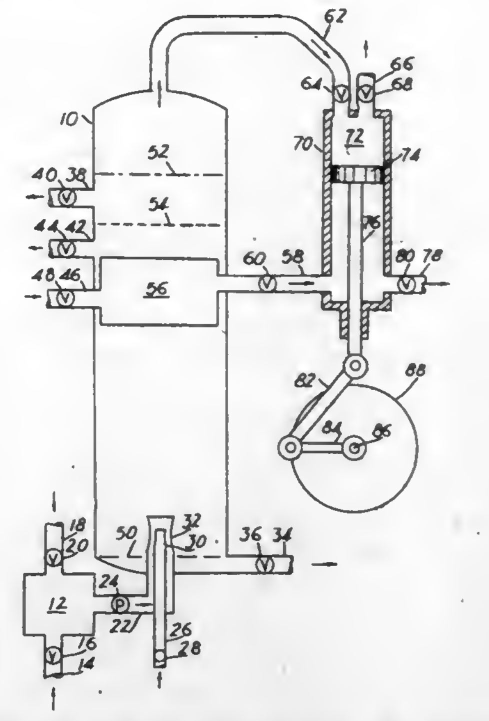


1. A gas turbine engine combustor mount assembly comprising an annular combustor outlet transition panel having an outer surface and at least one layer of porous material defining an outlet for exhaust flow from the combustor, said transition panel having an end face therearound and pores extending therethrough up to said end face for directing coolant through transition panel from the outer surface to said end face, a stiffener ring connected to said end face downstream thereof to permit unrestricted flow of coolant from said outer surface to said end face and furthermore to reinforce said transition panel, an annular weld joining said ring to said end face to transmit exhaust heat from the end face to said stiffener ring for dissipation from the combustor, a combustor pilot member located in axially spaced surrounding relationship to said end face, connector means for supporting said stiffener ring on said pilot member in free floating relationship therewith to compensate for both radial and axial thermal expansion of said transition member, said connector means including means for maintaining a controlled axial air gap between said stiffener ring and said pilot member at a point downstream of said end face for defining an air seal to maintain a high pressure coolant level at said outer surface all the way to said end face for forcing air through said pores in said transition panel for cooling said transition panel all the way to said end face and for flow of coolant outside of said transition member into cooling relationship with said stiffener ring and said weld to cool the end face against excessive heat build-up therein during flow of exhaust through said outlet.

4,191,012
WET OXIDATION ENGINE

Xerxes T. Stoddard, 4617 W. 27th Ave., Denver, Colo. 80215; Vesper A. Vaseen, 9840 W. 35th Ave., Wheat Ridge, Colo. 80033, and Ruel C. Terry, 3090 S. High St., Denver, Colo. 80210
Filed Jul. 10, 1978, Ser. No. 923,396
Int. Cl.^{2} F02G *3/00*
U.S. Cl. 60—39.05 **10 Claims**

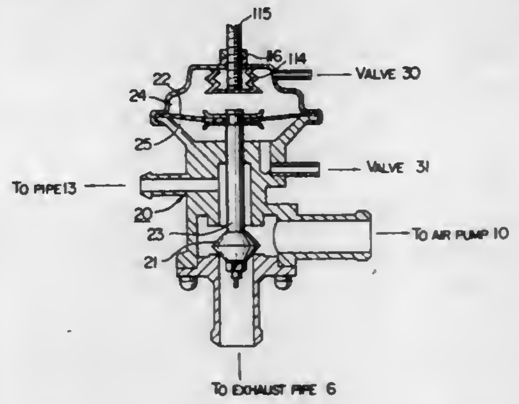
1. A method of coupling a wet oxidation reactor to an engine so that the gaseous products of wet oxidation reactions can be converted into mechanical work, comprising the steps of
injecting a mixture of fuel and an inert liquid into the reactor,
injecting an oxidizer into the reactor,
establishing superatmospheric pressure within the reactor,
establishing superambient temperature within the reactor,
wet oxidizing the fuel to residue,



withdrawing the gaseous products of wet oxidation reactions from the reactor, and
diverting the gaseous products of wet oxidation reactions through an engine with the resultant generation of mechanical work, wherein the said inert liquid is a fluorocarbon with eight or more carbon atoms.

4,191,013
DEVICE FOR PURIFYING EXHAUST GASES FROM INTERNAL COMBUSTION ENGINE

Eturou Katahira; Shunzo Yamaguchi, both of Okazaki; Masashi Kida, Nishio; Yasuhiko Ishida, and Hideo Miyagi, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan
Filed May 24, 1977, Ser. No. 800,071
Claims priority, application Japan, Jun. 2, 1976, 51-65063; Jun. 4, 1976, 51-65840; Jun. 25, 1976, 51-84270[U]
Int. Cl.^{2} F01N *3/10*
U.S. Cl. 60—276 **2 Claims**



1. A secondary air supply apparatus for an internal combustion engine of the type having an intake manifold for developing a negative pressure during operation of the engine, a combustion chamber, means for supplying an air-fuel mixture to said combustion chamber, an exhaust pipe for conveying exhaust gases to the atmosphere, and reactor means disposed in said exhaust pipe for purifying the exhaust gases, said apparatus comprising:

a source of air;

a three-way valve having a first port connected to said source of air, a second port connected to said exhaust pipe upstream of said reactor means, a third port connected to said source, a valve body for selectively communicating said first port with either of said second and third ports, a diaphragm connected with said valve body, first and second diaphragm chambers formed on opposite sides of said diaphragm, respectively, said first diaphragm chamber being connected with said intake manifold through a first tube, said second diaphragm chamber being connected with said intake manifold through a second tube, and means for adjusting the volume of one of said first and second diaphragm chambers thereby to balance the volumes of said first and second diaphragm chambers;

a first signal switching valve disposed in the first tube between said first diaphragm chamber and the intake manifold;

a second signal switching valve disposed in the second tube between said second diaphragm chamber and the intake manifold;

air-fuel ratio detecting means, disposed in said exhaust pipe downstream of a portion thereof which is in communication with said second port of said three-way valve, for detecting an air-fuel ratio in the exhaust gases; and

a control circuit electrically connected to said air-fuel ratio detecting means and to said first and second signal switching means for energizing the switching means in response to the output from said air-fuel ratio detecting means in such a manner that said first switching valve is switched to introduce said negative pressure to said first diaphragm chamber, while said second switching valve is switched to connect said second diaphragm chamber to the atmosphere, during a first condition wherein said air-fuel ratio detecting means detects a lower ratio than a predetermined value, and that said first switching valve is switched to connect said first diaphragm chamber to the atmosphere, while said second switching valve is switched to introduce said negative pressure to said second diaphragm chamber, in a second condition wherein said air-fuel ratio detecting means detects a higher ratio than said predetermined value, said second port of said three-way valve being connected with said first port to supply secondary air from said source to said exhaust pipe in the first condition, and said first port of said three-way valve being connected with said third port to return said secondary air to the source in said second condition, said switching operation of said three-way valve being performed only in response to differences in pressure occurring between said first and second diaphragm chambers.

4,191,014

POWER MODE AIR SWITCHING DIVERTER VALVE

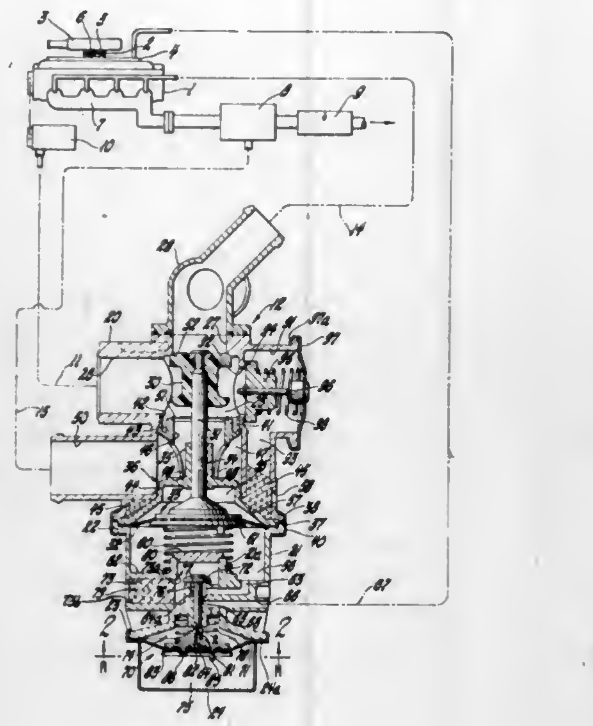
John E. Jones, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 14, 1977, Ser. No. 851,180

Int. Cl.^{2} F01N *3/10*

U.S. Cl. 60—290 **1 Claim**

1. An air switching diverter valve for use with an engine having an induction system with a throttle movable therein and an exhaust emission control system including an exhaust manifold connected to the engine for receiving exhaust gases discharged from the exhaust ports of the engine and, a driven air pump for providing secondary air to the exhaust emission control system, said air switching diverter valve including a housing having a valve chamber therein, an inlet passage opening into said valve chamber and adapted to be connected to the air pump for receiving secondary air, a primary discharge passage in said housing extending from said valve chamber and adapted to be connected to said exhaust manifold, a secondary discharge passage from said valve chamber and a bypass outlet passage extending from said valve chamber for discharging air to the atmosphere, a one-way pressure relief valve means positioned in said bypass outlet passage to control flow from said valve chamber out through said bypass outlet passage, one end of said primary discharge passage and one end of said secondary discharge passage being axially aligned in spaced apart relation to each other, a metering valve means including a metering valve movably supported in said housing, said valve being positioned in said valve chamber for movement between a first position blocking flow from said valve chamber out through said primary discharge passage and a second position blocking flow from said valve chamber out through said secondary discharge passage, actuator means including a diaphragm operatively connected to one end of said metering valve means opposite said metering valve, said diaphragm forming with a first portion of said housing a pressure chamber open to the atmosphere on one side of said diaphragm and on its other side a metering vacuum chamber, said actuator means further including a spring means positioned in said metering vacuum chamber to be in operative abutment against said diaphragm to normally bias said metering valve toward said first position, fluid passage means in said housing in communication at one end with said metering vacuum chamber and at its other end opening to the atmosphere, a timing valve means operatively positioned in said housing for movement to control fluid flow through said passage means, said timing valve means including a second actuator means having a second diaphragm with a timing valve means therein forming with a second portion of said housing a vacuum chamber on one side of said second diaphragm and a timing chamber on the opposite side of said second diaphragm, said timing chamber being in fluid communication with said vacuum chamber as controlled by said timing valve means, port means in said housing opening at one end into said vacuum chamber and at its other end being connectable to the engine induction system downstream of the throttle, said timing valve means including a valve and a valve stem, a valve stem guide bore means in said housing opening into said vacuum chamber, said valve stem being guided in said valve stem guide bore means to form therewith a metering control orifice passage means, said fluid passage means including a passage portion in fluid communication with said metering control orifice downstream of said valve in terms of flow from the atmosphere to said metering vacuum chamber through said fluid passage means and, said timing valve means including second spring means normally biasing said second diaphragm in a direction to effect movement of said valve in a direction blocking flow of atmospheric air through said fluid passage means to said metering vacuum chamber.



4,191,015

UNIVERSAL TOROIDAL CIRCUIT FOR HYDRAULIC TORQUE CONVERTERS

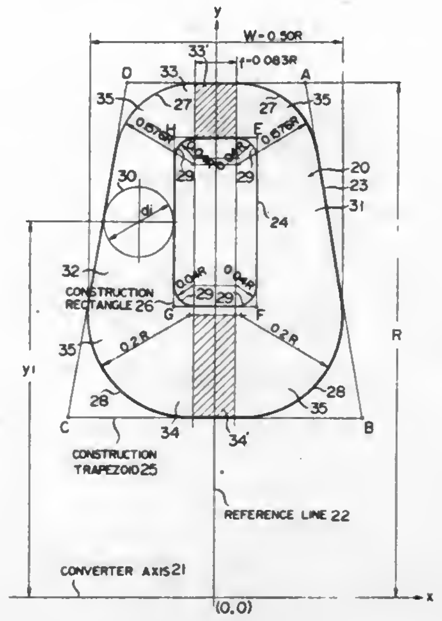
Mitsuaki Komatsu, and Akinori Yokoyama, both of Yokohama, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 7, 1978, Ser. No. 931,430

Claims priority, application Japan, Aug. 12, 1977, 52-96096

Int. Cl.^{2} F16D *33/00*

U.S. Cl. 60—361 **13 Claims**



1. A hydraulic torque converter comprising an impelller member, a turbine member, and a reactor member, each of the impeller, turbine and reactor members including a shell and a core and a plurality of blades bridged therebetween, the shells and cores of the impeller, turbine and reactor members forming at least parts of the outer and inner walls, respectively, of a toroidal circuit in which a working fluid is recirculated, the shape of the circuit in a radial plane of the converter being related by reference to a construction trapezoid and a construction rectangle which are determined by a system of rectangular coordinates with the axis of the converter taken as the X-axis and a line perpendicular thereto as the Y-axis, the construction trapezoid being bounded by lines connecting, in the order given, a series of design points A, B, C and D which are expressed approximately as A(0.1737 R, 1.0000 R), B(0.2883 R, 0.3500 R), C(−0.2883 R, 0.3500 R), and D(−0.1737 R, 1.0000 R), wherein R is the maximum radius of the circuit, the construction rectangle being bounded by lines connecting, in the order given, another series of design points E, F, G and H which are expressed approximately as E(0.0815 R, 0.8945 R), F(0.0815 R, 0.5677 R), G(−0.0815 R, 0.5677 R), and H(−0.0815 R, 0.8945 R), the shape of the outer wall of the circuit being defined by rounding the corners at the design points A and D of the construction trapezoid with arcs having radii of approximately 0.1576 R and by rounding the corners at the design points B and C of the construction trapezoid with arcs having radii of approximately 0.2000 R, the shape of the inner wall of the circuit being defined by rounding all the four corners of the construction rectangle with arcs having radii of approximately 0.0400 R, the outer and inner walls of the circuit being tangent to an infinite number of circles the diameter di of each of which is expressed approximately by the formula:

$$di = \frac{0.2\pi R^2}{2\pi yi}$$

wherein yi is the radial distance of the center of each circle from the converter axis.

4,191,016

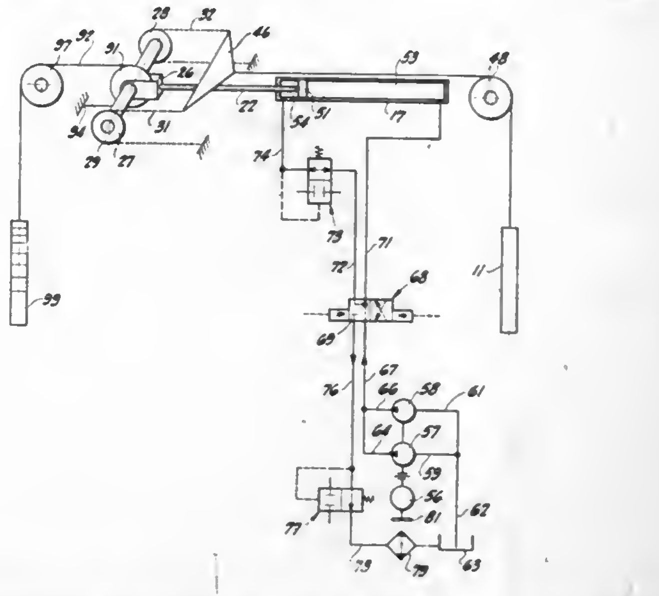
PUMPING JACK

Albert B. Roth, Lafayette, and Albert Louie, San Leandro, both of Calif., assignors to N L Industries, Inc., Hightstown, N.J.

Filed Jul. 7, 1978, Ser. No. 923,028

Int. Cl.^{2} F15B *1/02*

U.S. Cl. 60—371 **7 Claims**



1. A pumping jack for use with a vertically reciprocable polish rod comprising a base, a hydraulic cylinder having an axis, means for mounting said cylinder on said base with said axis horizontal, a plunger in said cylinder and having reciprocation along said axis, a block on said plunger, a first sheave on said block, a well sheave having a periphery, means for mounting said well sheave on said base with said well sheave periphery tangent to said polish rod, a first flexible line reeved around said first sheave and said well sheave, means for affixing one end of said first line to said polish rod, means for affixing the other end of said first line to said base, and hydraulic means for reciprocating said plunger in said cylinder.

4,191,017

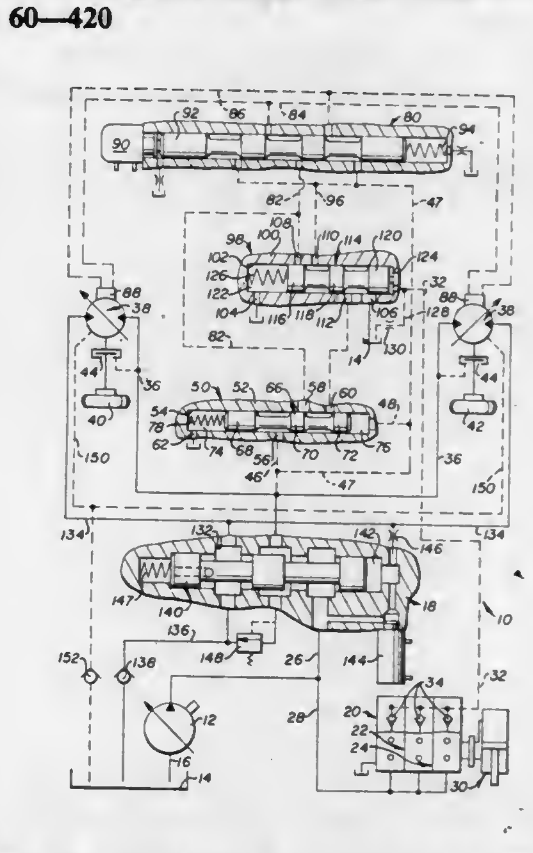
MOTOR DISPLACEMENT CONTROL SYSTEM

Joseph E. Dezelan, Western Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 8, 1979, Ser. No. 18,953

Int. Cl.^{2} F15B *11/20, 13/06*

U.S. Cl. 60—420 **11 Claims**



1. In a motor displacement control system (10) of the type having a variable displacement drive motor (38), an auxiliary

motor (**30**), a source (**12**) of fluid under pressure for operating the motors (**30, 38**), the improvement comprising:

first means (**50**) for controlling the displacement of the drive motor (**38**) and maintaining at least a preselected first pressure level thereto; and

second means (**98**) for controlling the displacement of the drive motor (**38**) in response to operation of the auxiliary motor (**30**) at a preselected second pressure level and overriding said first means (**50**).

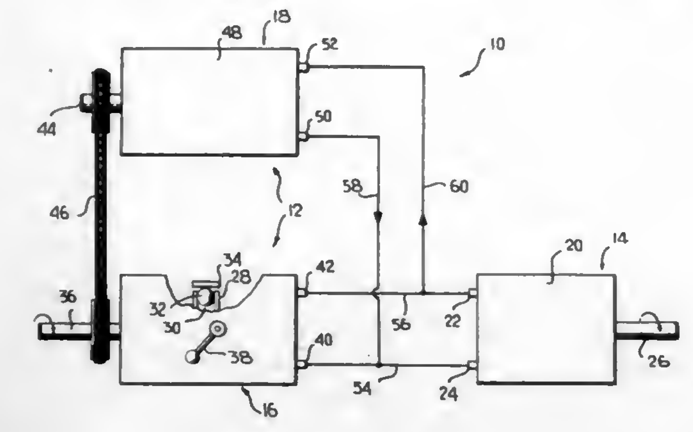
4,191,018
FLUID TRANSMISSION

George M. Barrett, R.R. #5, Galt, Ontario, Canada (N1R 5S6)

Filed Apr. 28, 1978, Ser. No. 901,073

Int. Cl.² F15B *13/09*

U.S. Cl. 60—428 **9 Claims**



1. A hydraulic pump combination for supplying hydraulic fluid under pressure to a hydraulic motor at variable rates and in reversible directions, said pump combination comprising first and second pumps constantly directly connected in parallel in fixed relation to first and second lines for a hydraulic motor, said first pump being a variable volume, variable direction pump, and said second pump being a constant volume, constant direction pump.

4,191,019
DOUBLE-ACTING HOT GAS ENGINE ASSEMBLAGE

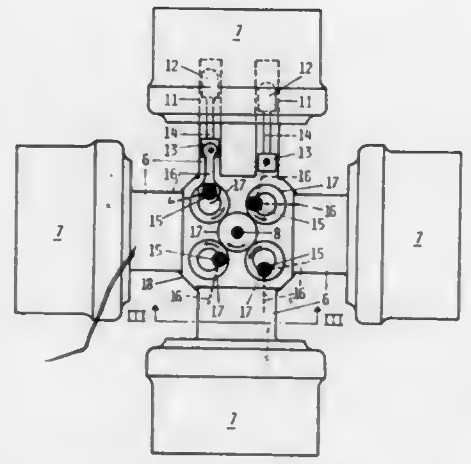
Jan C. Bratt, Malmö; Bengt-Ove M. Moodysson, Åkarp, and Nils K. G. Rosenqvist, Malmö, all of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmö, Sweden

Filed Apr. 14, 1978, Ser. No. 896,590

Claims priority, application United Kingdom, Aug. 26, 1977, 35837/77

Int. Cl.² F02G *1/04*

U.S. Cl. 60—525 **4 Claims**



1. A double-acting hot gas engine assemblage comprising in combination a central common power output shaft; four hot gas engine cylinder-and-piston units disposed symmetrically around the axis of the power output shaft, each unit including a plurality of individual cylinders and associated pistons, said cylinders and associated pistons in each of said units being parallel to each other and arranged in two parallel rows; four crank-shafts with axes parallel to and equidistant from the axis of the power output shaft; piston rods, cross-heads and connecting rods connecting the pistons in said units to said crank-shafts, the axes of said crank-shafts lying substantially on the respective intersections of the planes defined by the axes of the cylinders in adjacent ones of said rows in adjacent ones of said units, each of said crank-shafts being connected to those of said pistons associated with said cylinders defining the respective intersecting planes; and gear wheels connecting the crank-shafts to the power output shaft for interdependent rotation.

4,191,020
SERVO BRAKE SYSTEM

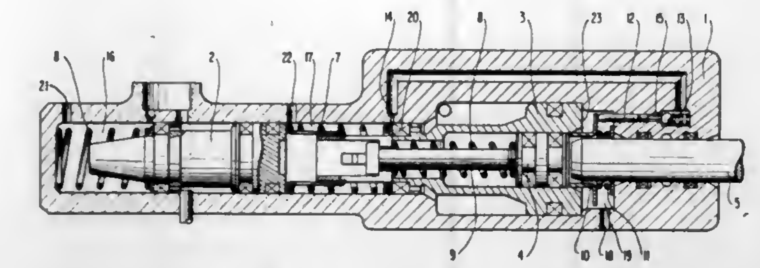
Hellmut Krohn, Esslingen; Werner Kruse, Schorndorf-Schornbach, and Reinhard Resch, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 7, 1977, Ser. No. 813,431

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631604

Int. Cl.² B60T *13/20*

U.S. Cl. 60—550 **5 Claims**



1. An at least two-circuit servo brake installation, the installation including a tandem master cylinder means including housing means, two working piston means arranged substantially coaxially behind one another in the housing means, an input piston means, a servo means operatively connected to the master cylinder means, and a transmission shifting means for automatically shifting to a larger pedal travel with a mechanically applied brake pressure reduced within permissive limits upon a failure of the servo means, characterized in that the two working piston means are hydraulically operatively connected to each other, a first of the working piston means is disposed on an actuating side of the master cylinder means and is provided with an end face adapted to be acted upon by a pressure medium supplied to a first pressure space means, said first working piston means is provided with a bore extending substantially coaxially to the other working piston means, a plunger piston means is guided within said bore and is actuatable by the input piston means, a second pressure space means is provided in the housing means for accommodating a pressure medium, the second pressure space means is disposed so as to be acted upon by the first working piston means, an equalization bore means is provided in the housing means for operatively connecting the second pressure space means with a pressure medium reservoir, said equalization bore means being open during both an unactuated condition of the brake installation and a mechanical actuation of the brake installation upon a failure of the servo means, said first working piston means being cooperable with a first end of said equalization bore means so as to close the same during a servo assisted actuation of the brake installation, means are provided for closing a second end of said equalization bore means with an actuation of the brake installation upon a failure of the servo means including a valve closure member, and means for positioning said valve closure member so as to open or close the second end of the equalization bore means in response to a predetermined condition of the brake installation, said positioning means including a spring means acting upon the valve closure member, a sleeve means operatively connected to the plunger piston means so as to be

displaceable therewith, and a displaceably mounted plunger arranged in the first pressure space means and cooperable with said sleeve means so as to maintain the valve closure member in an open position in an unactuated condition of the brake installation and in a closed position in an actuated condition of the brake installation, and in that means are provided for connecting the plunger piston means to said first working piston means.

4,191,021
SMALL POWER PLANT UTILIZING WASTE HEAT

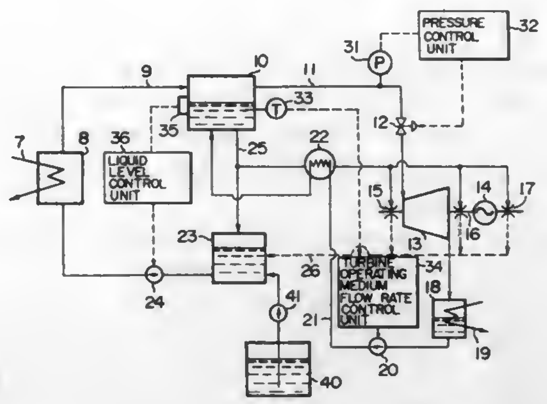
Shozo Nakamura, Hitachiota; Michio Kuroda, and Ryoichiro Oshima, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 15, 1977, Ser. No. 816,171

Claims priority, application Japan, Aug. 11, 1976, 51-94806

Int. Cl.² F01K *25/10*

U.S. Cl. 60—657 **4 Claims**



1. A small power plant utilizing waste heat characterized in that,

said plant comprises: an intermediate heat transfer medium heater for transferring heat from a heat source to an intermediate heat transfer medium; a direct contact heat exchanger for transferring heat from said intermediate heat transfer medium to a turbine operating medium; and a turbine generating plant driven by said turbine operating medium;

a material being capable of lubricating bearings, thermally stable and not chemically reactive with said turbine operating medium being used as said intermediate heat transfer medium; and

a material taking heat off said intermediate heat transfer medium in said direct contact heat exchanger and being changeable in phase from a liquefied turbine operating medium to a gaseous turbine operating medium being used as said turbine operating medium, wherein at least a part of the intermediate heat transfer medium from said direct contact heat exchanger is supplied to said intermediate heat transfer medium heater through an intermediate heat transfer medium tank and wherein an intermediate heat transfer medium pump is interposed between said intermediate heat transfer medium heater and said tank, and said pump is controlled based on the liquid level of the intermediate heat transfer in said direct contact heat exchanger.

4,191,022
CHEMICAL PLANT

John A. Williams, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 3, 1978, Ser. No. 892,968

Int. Cl.² F25B *39/00;* **B01D** *59/08*

U.S. Cl. 62—55.5 **18 Claims**

1. A plant in which the atmosphere is contained and continuously circulated in a closed circuit, circulation of the atmosphere being effected by the driving force obtained from the alternate condensation and evaporation of at least part of the atmosphere circulating in the plant, the plant comprising:

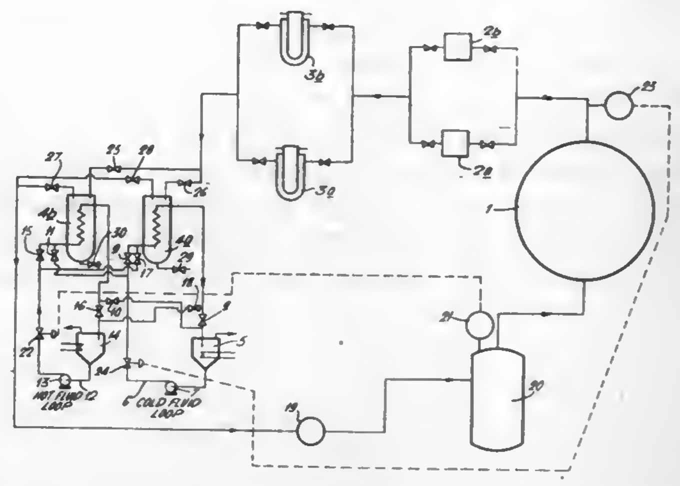
a first heat exchanger,

a second heat exchanger connected in parallel with the first heat exchanger,

first valve means for directing the atmosphere circulating in the plant into one of the heat exchangers,

second valve means for directing the atmosphere leaving the other of the heat exchangers so that it circulates around the plant.

first circulating means for passing a refrigerant through said one of the heat exchangers to effect condensation of at least part of the atmosphere in said one of the heat exchangers,



second circulating means for passing a liquid at a temperature above the evaporation temperature of the condensed atmosphere through said other heat exchanger to effect evaporation of condensed atmosphere in said other heat exchanger, and

switching means for operating the first and second valve means to alternately direct the atmosphere circulating around the plant into the heat exchangers said switching means also operating the first and second circulating means to direct the refrigerant so that is passes through the heat exchanger in which condensation is occurring and to direct the liquid to the heat exchanger in which evaporation of condensed atmosphere is occurring,

the heat exchangers being used alternately for condensation and evaporation to provide a continuous driving force to effect circulation of the atmosphere around the plant.

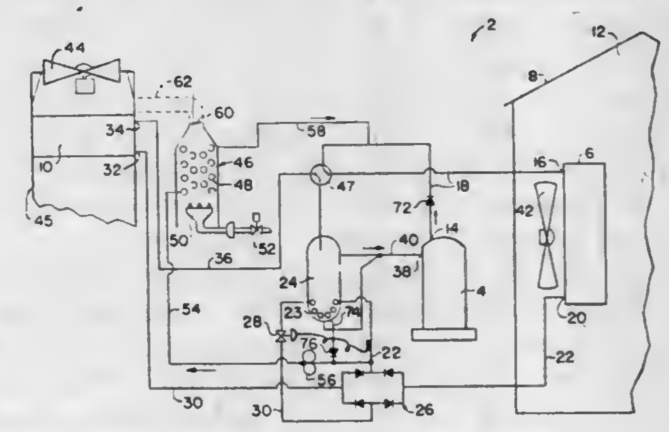
4,191,023
FUEL FIRED SUPPLEMENTARY HEATER FOR HEAT PUMP

Francis J. Sisk, Apollo, and Stephen E. Veyo, Murrysville, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 769,830, Feb. 18, 1977, Pat. No. 4,112,705. This application Jun. 23, 1978, Ser. No. 918,736

Int. Cl.² F25B *7/00, 27/02, 13/00, 29/00*

U.S. Cl. 62—79 **4 Claims**



1. A method for supplying a heat pump with additional,

auxiliary heat during operation of the pump for heating an indoor space while the outdoor temperature is too low to heat the space to the desired temperature, the heat pump including a compressor, an indoor condenser, an outdoor evaporator, and piping for flowing a refrigerant between the compressor, the condenser, and the evaporator, the method comprising the steps of: operating the compressor to flow high pressure, high temperature refrigerant vapor to the condenser; condensing the high pressure, high temperature vapor in the condensor to form liquid refrigerant; forming a first refrigerant flow by circulating the liquid refrigerant to the evaporator and hence circulating evaporated refrigerant back to the compressor; forming a second refrigerant flow bypassing the compressor by taking a portion of the liquid refrigerant from the condensor, heating the liquid refrigerant in the second flow, controlling the flow rate of the second refrigerant flow so that it exceeds the rate at which the refrigerant of the second flow is evaporated during the heating step to thereby maintain the refrigerant vapor in its wet state and prevent a decomposition of the refrigerant due to overheating, and flowing the heated refrigerant of the second flow back to the condenser; and releasing heat from the heated refrigerant of the second flow in the condenser to thereby heat the space to the desired temperature.

4,191,024

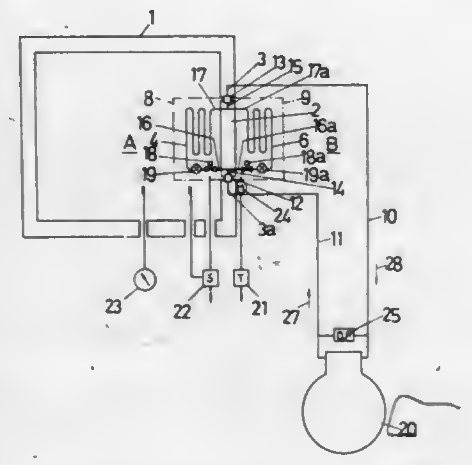
DEFROSTING METHOD AND COOLING APPARATUS IN A REFRIGERATION SYSTEM

Keisuke Machida, 123, Oaza Hagishima Oyama City, Tochige Pref., Japan

Filed Apr. 28, 1978, Ser. No. 901,260

Int. Cl.² F25D *21/00, 21/06, 19/00, 17/04*

U.S. Cl. 62—80 **7 Claims**



1. In a refrigeration system for preserving foods and others in an enclosure, a method of removing frost or ice accumulated during the refrigeration cycle on cooling means which are symmetrically provided on the opposite sides of a thermally shielding plate rotatably mounted in an opening in one side wall of the enclosure, the method comprising the steps of:

operating the thermally shielding plate at regular intervals for alternately placing cooling means inside and outside the enclosure such that one cooling means is placed inside the enclosure while the other is placed outside; and

actuating only the cooling means inside the enclosure to commence its refrigeration cycle for cooling the air inside, and deactuating the cooling means outside during the refrigeration cycle of the first-mentioned cooling means for being subjected to externally applied higher temperature and having the accumulated frost or ice removed by melting.

4,191,025

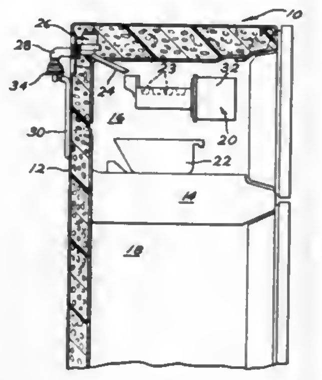
FLUID SUPPLY SYSTEM FOR A DOMESTIC APPLIANCE

William M. Webb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jul. 3, 1978, Ser. No. 921,427

Int. Cl.² F25C *1/00*

U.S. Cl. 62—135 **12 Claims**



10. In a refrigerator having a fresh food compartment, a freezer compartment, an automatic ice maker arranged in said freezer compartment, a fluid supply system for delivering a predetermined amount of fluid to said ice maker, including,

a first valve means;

control means operable for controlling the amount of fluid delivered by said first valve means;

a second valve arranged in series flow relationship with said first valve operable by said fluid supply independent of said first valve control means for terminating said fluid flow when said first valve means delivers more than said predetermined amount of fluid;

said second valve including a casing having a cylindrical wall and a transverse wall integrally joined to define a generally cup-shaped configuration with the open end providing an inlet and a substantially centrally arranged outlet in said transverse wall;

a valve member responsive to said fluid flow arranged in said casing having,

(a) a central member including a port,

(b) upstream and downstream bellows section having their opposite end portions respectively in sealed connection with the opposite faces of the central member so that said central member including said port is within the bellows section,

(c) liquid within the opposite bellows sections movable through said port from one bellows section to the other,

(d) a valve portion arranged on said lower bellows section arranged in cooperating relationship with said outlet;

means providing a passageway bypassing said valve member for allowing fluid flow between said inlet and outlet;

said passageway being dimensioned to provide a pressure differential between said inlet and outlet to allow said fluid supply to move said upper bellows section toward said central member to force said liquid through the port into the lower bellows section at a preselected rate thereby moving said valve portion into engagement with said outlet to stop the flow of fluid in said supply system after passing a predetermined quantity of fluid.

4,191,026

APPARATUS FOR DEFROSTING LOW TEMPERATURE HEAT EXCHANGER

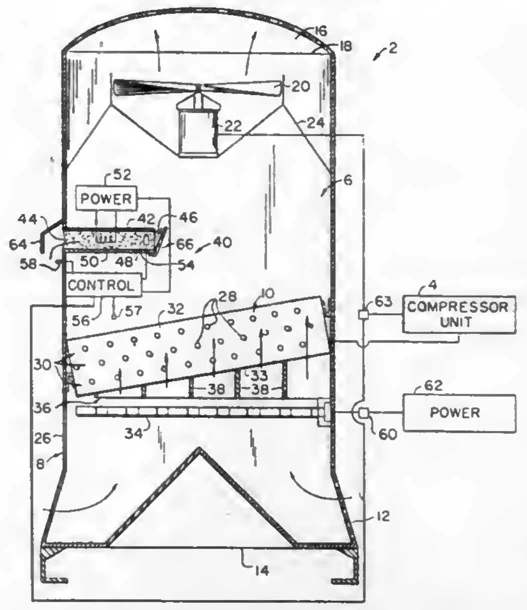
Francis J. Sisk, Apollo, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 14, 1977, Ser. No. 768,451

Int. Cl.² F25D *21/02*

U.S. Cl. 62—140 **15 Claims**

1. A heat exchanger defrosting system comprising in combination: a heat exchanger; an air duct surrounding the heat exchanger for flowing air through the duct past the exchanger; means in fluid communication with a portion of the duct downstream of the heat exchanger for inducing the airflow through the duct and past the exchanger; a relatively small cross-section conduit having an intake disposed outside the downstream duct portion and an outlet disposed inside the downstream duct portion; whereby the flow inducing means also induces the flow of an air current in the conduit; a constant energy output heater for heating the air current; a first temperature sensor disposed within the conduit between the heater and the downstream portion of the duct for sensing the temperature of



the heated air current; and initiator means responsive to the temperature sensor for initiating a defrost cycle for the heat exchanger in response to a predetermined decrease in the temperature of the heated air current; whereby a reduction in the airflow past the exchanger causes the airflow inducing means to increase the amount of air flowing through the conduit and thereby causes a corresponding reduction in the air current temperature and the initiation of the defrost cycle in response to a predetermined frost buildup on the heat exchanger.

4,191,027

APPARATUS FOR COOLING BRINE

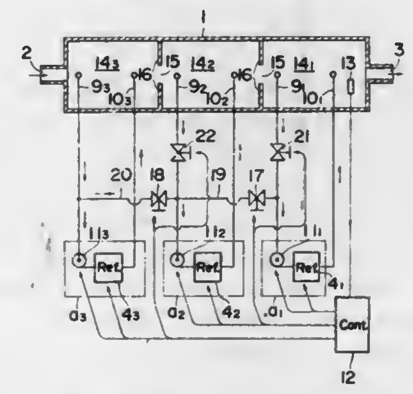
Wahei Inoue, Tokyo, Japan, assignor to Kabushiki Kaisah Maekawa Seisakusho, Tokyo, Japan

Filed Jul. 27, 1977, Ser. No. 819,267

Claims priority, application Japan, Jul. 29, 1976, 51-90509; Oct. 4, 1976, 51-119120; Dec. 23, 1976, 51-155216

Int. Cl.² F25D *17/02*

U.S. Cl. 62—185 **3 Claims**



1. An apparatus for cooling brine comprising a slow-current tank for brine having an inlet and an outlet between which brine flows in a slow current, a plurality of independently operable refrigerating units for cooling successive portions of brine from said tank, each unit having an evaporator located remote from said tank and having a suction pipe and a discharge pipe connected to the brine in said tank, temperature detecting means for detecting the temperature of brine in said tank near said outlet of said tank, and a controller responsive to said temperature-detecting means for controlling the operation of said plurality of refrigerating units to increase or decrease the number of said refrigerating units in operation and taking part in the cooling work in accordance with the temperature of brine to maintain said brine at a constant predetermined temperature.

4,191,028

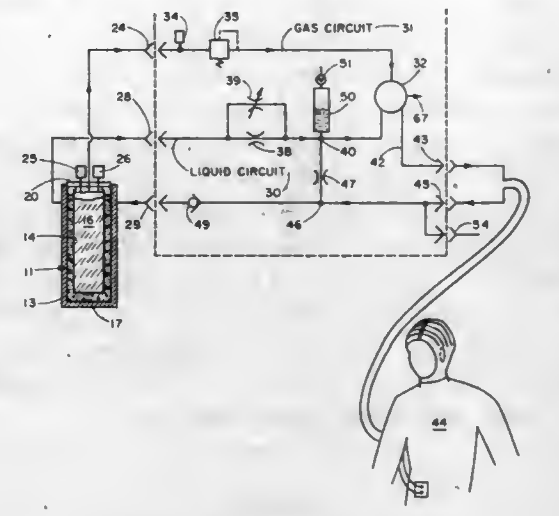
DRY ICE, LIQUID PULSE PUMP COOLING SYSTEM

Norman F. Audet, Southboro, and George M. Orner, Cochituate, both of Mass., assignors to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1978, Ser. No. 918,203

Int. Cl.² A25D *23/12;* **A62B** *7/00*

U.S. Cl. 62—259 **15 Claims**



1. A garment cooling system for cooling personnel such as when subject to heat stress comprising:

means combining a receptacle for refrigerant material and a liquid heat exchanger to provide the heat sink and motive power of said system;

a gas operated pump coupled to said receptacle and a liquid cooled garment coupled jointly to said pump and said heat exchanger to form a liquid circuit for continuously supplying heat exchange liquid to said garment,

said liquid circuit including means for limiting flow to one direction therein and fixed and variable flow control means in said circuit for permitting a minimum unidirectional flow therein and additional flow respective to demand from the wearer;

a liquid accumulator connected to said circuit for maintaining liquid under selected pressure therein;

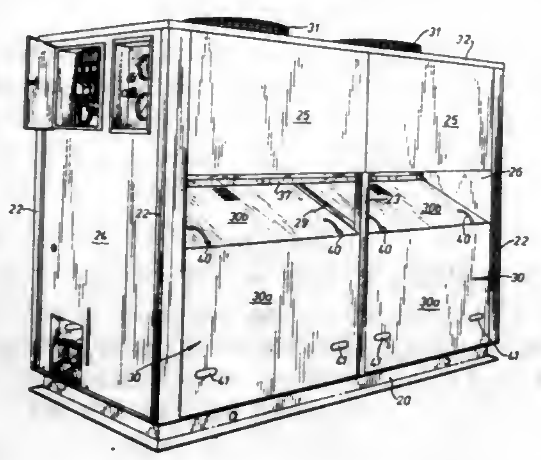
pressure release means connected to said receptacle for limiting the pressure therein and vent means connected to said accumulator for adjusting the pressure in said circuit; and

a sublimating refrigerant material in said receptacle and liquid heat transfer material in said heat exchanger and said circuit,

whereby gas sublimating from said refrigerant material will operate said pump and said pump will circulate heat transfer material in said circuit thereby supplying a cooling medium for dissipating a selected amount of excess heat emanating from the wearer of said garment.

4,191,029
WATER CHILLERS AND AIR COOLED REFRIGERATION UNITS

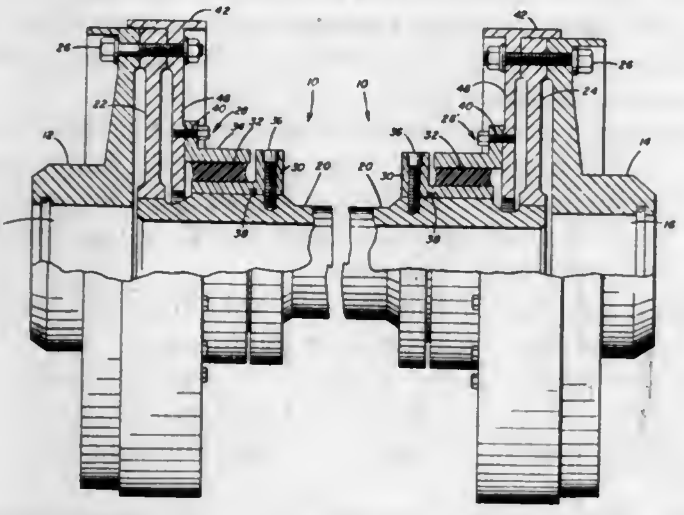
William A. Dunne, 164 West Way, Bournemouth, Dorset, England (BH9 3DY)
Filed Jun. 12, 1978, Ser. No. 914,429
Claims priority, application United Kingdom, Jun. 21, 1977, 25872/77
Int. Cl.² F25D *17/06*
U.S. Cl. 62—428 **8 Claims**



1. A chiller unit comprising means defining a main frame having an upper compartment, a fan mounted in said compartment, a condenser through which said fan drawns cooling air mounted in said compartment, and other components mounted beneath said condenser and in said main frame, removable covers for said other components, each of said removable covers comprising a generally vertical wall portion of sheet material, and, integral therewith, a roof portion of sheet material which slopes inwardly and upwardly from the upper edge of said generally vertical wall portion, each of said covers cooperating with another similar cover on the opposite side of the unit to provide a complete roof and side walls to enclose said other components beneath said condenser, and fixing means to retain said covers in position.

4,191,030
DIAPHRAGM COUPLING

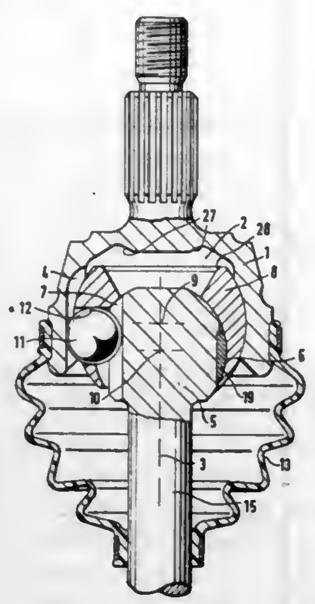
Michael M. Calistrat, Sykesville, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed Aug. 21, 1978, Ser. No. 935,581
Int. Cl.² F16D *3/78*
U.S. Cl. 64—13 **3 Claims**

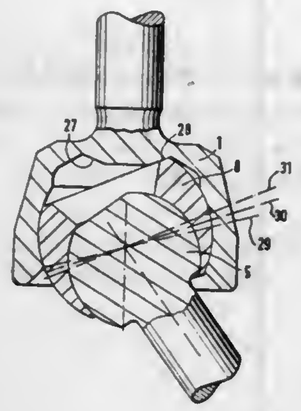


1. An improved metal diaphragm assembly for connecting a pair of axially spaced shaft mounted coupling hubs, the assembly including a pair of axially spaced flexible metal diaphragms, adjacent the hubs, said diaphragms being fixed to a floating shaft, and pilot ring means fixed to said diaphragms and said hubs, the improvement comprising:
a pilot and damper means including:
(i) first ring means fixed to said floating shaft,
(ii) second ring means fixed to said first ring means, said second ring means adapted to absorb vibrations of said assembly; and
(iii) third ring means fixed to said second ring means, said third ring means being operably connected to said pilot ring means.

4,191,031
SWIVEL JOINT

Sobhy L. Girguis, Troisdorf, and Werner Krude, Neunkirchen, both of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft, Lohmar, Fed. Rep. of Germany
Filed Dec. 16, 1977, Ser. No. 861,563
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657820; Dec. 21, 1976, 2657821
Int. Cl.² F16D *3/30*
U.S. Cl. 64—21 **10 Claims**

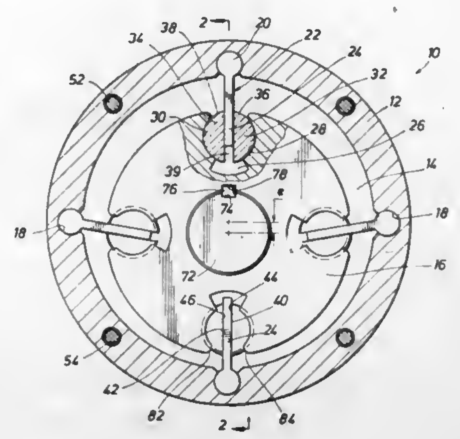


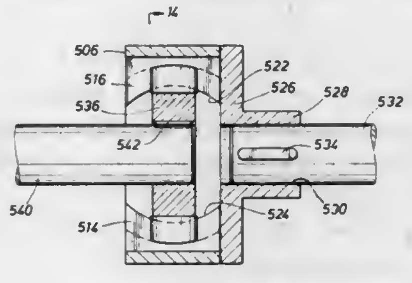


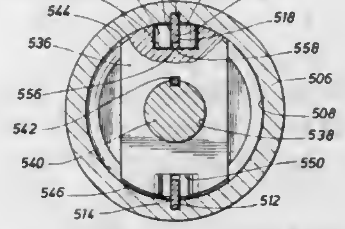
1. A swivel joint for transmitting torque between drive and driven members at a synchronized speed, comprising an outer joint member having an interior cavity, a first plurality of ball receiving grooves formed on the interior wall surface of said cavity, an inner joint member carried within said cavity, said inner joint member being capable of angular displacement relative to said outer joint member for a maximum permissible angle of displacement, a second plurality of ball receiving grooves formed on the exterior surface of said inner joint member, the number of grooves of said first plurality of ball receiving grooves corresponding to the number of grooves of the second plurality of ball receiving grooves, a ball carried between at least one pair of corresponding ball receiving grooves of said first and second plurality of grooves for transmitting torque between said inner and outer joint members, said ball in at least one pair of said grooves being subjected to a force caused by play when a diameter of said ball passes through a plane containing the axis of rotation of both said inner joint member and said outer joint member, a cage arranged between said inner and outer joint members, said cage having window recesses, said ball being retained in one of said window recesses, a stop face located on the inside of said outer joint member, and a cooperating bearing surface carried on said cage for engaging said stop face when said inner joint member is angularly displaced relative to said joint member for an angle smaller than the maximum permissible angle of displacement so that further angular displacement of said inner joint member relative to said outer joint member forces said ball out to its homokinetic plane in a direction causing an increase in the angle between a plane through the center of said ball and the intersection of the axes of said inner and outer joint members and the axis of said inner joint member which is greater than the bisecting angle between the axes of said inner and outer joint members.

4,191,032
ROTARY ENERGY-TRANSMITTING MECHANISM

Daniel A. August, 7162 Crown West, Houston, Tex. 77072
Continuation of Ser. No. 872,964, Jan. 27, 1978, abandoned. This application Aug. 23, 1978, Ser. No. 936,148
Int. Cl.² F16D *3/52, 3/56, 3/14*
U.S. Cl. 64—27 B **2 Claims**



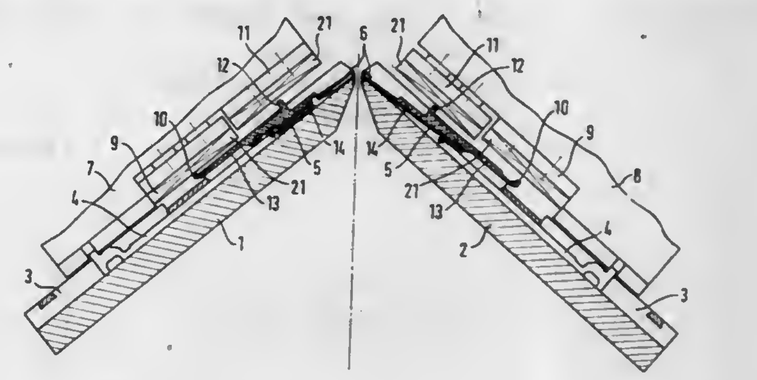




1. A rotary oscillatable energy-transmitting mechanism in the form of a universal coupling, and comprising:
a housing structure defining an outer force-transmitting element and being formed to define an inner surface of at least partially spherical configuration defining a shaft opening and an internal receptacle;
an inner force-transmitting element being located within said housing and being movable relative to said housing, said inner force-transmitting element being formed to define opposed, at least partially spherical external surfaces for mating engagement within said partially spherical inner surface;
an energy-transmitting shaft being connected to one of said inner and outer force-transmitting elements;
a plurality of bearing pad receptacles being defined by one of said inner and outer force-transmitting elements, said bearing pad receptacles defining internal generally cylindrical surface means and being positioned in opposed relation;
a pair of bearing pads being received by each of said bearing pad receptacles, said bearing pads having generally cylindrical external surfaces having mating engagement with the generally cylindrical surface means defining said receptacles, said bearing pads also being formed to define opposed generally planar bearing surfaces;
a plurality of rigid energy transfer vane elements being located in opposed relation and being immovably related to one of said inner and outer force-transmitting elements, said vane elements being interposed between said bearing surfaces and being in bearing engagement with at least one of said bearing surfaces;
said bearing pads and vane elements sliding one relative to the other upon oscillation of said inner force-transmitting element;
an input shaft being non-rotatably connected to one of said housing structures and said inner force-transmitting element and an output shaft being non-rotatably connected to the other of said housing structure and said inner force-transmitting element; and
one of said input and output shafts extending through said shaft opening and being of substantially smaller dimension than the dimension of said shaft opening to allow substantial axial misalignment between said input and output shafts.

4,191,033
ROCKER ARM CONSTRUCTION FOR KNITTING MACHINE NEEDLE

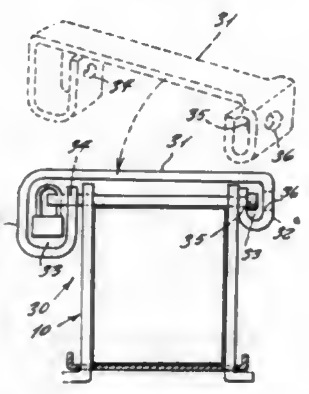
Werner Sommer, Westhausen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG, Westhausen, Fed. Rep. of Germany
Filed Aug. 31, 1978, Ser. No. 938,573
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1978, 2800186
Int. Cl.² D04B *7/04*
U.S. Cl. 66—64 **13 Claims**



1. A needle arrangement for machines for the manufacture of meshed fabric, including a needle shank provided with a needle hook, a rocker arm pivotably supported on the needle shank beyond a thread zone and controllable to open and close the needle hook, a spring element for biasing the rocker arm towards a position whereat the needle hook is open, and a projection on a first lever arm of the rocker arm remote from the needle hook for implementing the closing of the needle hook by means of a control element, characterized by: the projection on the first lever arm comprising a foot operated by a first lock element movable along a needle bed, a further foot on a second lever arm of the rocker arm proximate the needle hook for implementing the opening of the needle hook by means of a second lock element movable along the needle bed, and the rocker arm being constructed as wide as the needle shank and being held against lateral movement by side walls of a needle receiving channel.

4,191,034
BATTERY LOCK

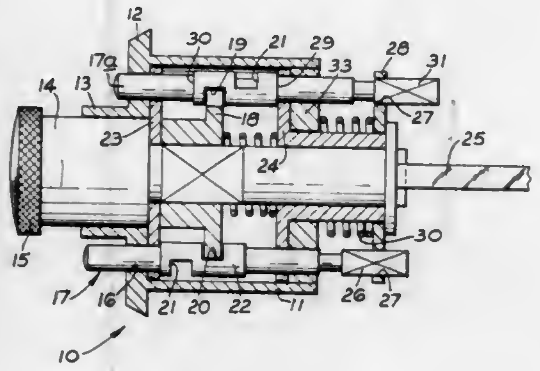
Jacob Froess c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Oct. 31, 1977, Ser. No. 846,808
Int. Cl.^{2} B60R *18/02*
U.S. Cl. 70—258 **1 Claim**



1. A battery lock comprising, in combination, a pair of vertical bars positioned adjacent opposite sides of the battery, the lower ends of said bars each having a hook adapted to be fitted into a slot in a bottom of a supporting tray for the battery, each said bar further including a transverse opening near the upper end thereof, said lock also including a crossbolt having an enlarged head at one end and a hole at the other end, wherein said crossbolt is received in said transverse openings of said bars spaced from and disposed across the top of the battery with said other end of said crossbolt extending beyond one of said bars with a padlock mounted through said hole, said lock also including a removable cover plate having a straight portion covering said bars, crossbolt and padlock, said coverplate including downwardly bent terminal portions removably secured to said crossbolt, said terminal portions encompassing both ends of said crossbolt and said padlock such that said cover plate obstructs access to said cross bolt and padlock.

4,191,035
LOCK

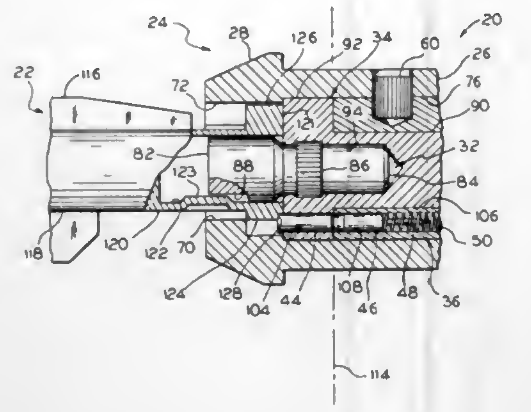
George Hatch, Manchester, England, assignor to Combi-Lock Enterprises Limited, Bolton, England
Filed May 24, 1978, Ser. No. 909,058
Int. Cl.^{2} E05B *37/16*
U.S. Cl. 70—298 **6 Claims**



1. A combination lock comprising:
a barrel **11**,
a plunger **14** rotatable and axially movable relative to the barrel,
a plurality of axially-displaceable pins **17** mounted relative to the barrel and circumscribing the plunger and each having a centrally enlarged portion defining inner and outer shoulders at respective ends,
a rotative ward disc **18** carried by the plunger,
an operator-selected number of the pins each having a slot **19** in its respective enlarged portion and alignable with the ward disc when the pins are displaced inwardly and the remaining non-operator selected number of the pins each having a slot **20** in its respective enlarged portion and alignable with the ward disc when the pins are not displaced inwardly,
inner and outer setting plates **24**, **23** carried by the plunger for engaging the inner and outer shoulders of the pins respectively,
with the ward disc cooperating with the pins to allow rotary movement of the plunger only when the selected pins are axially displaced relative to the non-selected pins.

4,191,036
AXIAL SPLIT-PIN TUMBLER-TYPE LOCK MECHANISM AND KEY THEREFOR

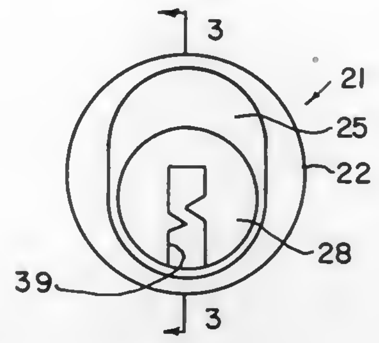
Robert L. Steinbach, Chicago, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Jan. 16, 1978, Ser. No. 869,851
Int. Cl.^{2} E05B *27/08*
U.S. Cl. 70—363 **1 Claim**



1. In a combination of an axial split-pin tumbler-type lock mechanism and a key therefor, said mechanism including a lock cylinder, and an operating part disposed forwardly within said cylinder and rotatable about a longitudinal axis extending between front and rear ends of the part, said cylinder including an annular flange on a front end thereof which extends radially inwardly and defines a central opening into the cylinder and a plurality of apertures extending radially outwardly from the opening therearound, said operating part including a cylindrical head and a key guide post having a reduced diameter with respect to the head and extending axially forwardly therefrom into said opening and spaced from said flange, said head having longitudinal tumbler bores extending therethrough and disposed radially outwardly of said opening, portions of said bores being aligned respectively with said apertures in an initial condition of the lock mechanism;
said key including a shank having a socket adapted for receiving said post therein and the shank also being insertable in the space between said flange and said post, and bittings on the outer periphery of said shank adapted for endwise engagement with tumblers carried by said bores to free the operating part for rotation;
the improvement which comprises means providing a longitudinal blind drive groove in said post and facing one of said tumbler bores substantially in a longitudinal plane therewith, said groove having a maximum depth of 0.030 inch,
a drive lug on said shank extending radially inwardly from the wall of said socket and substantially in a longitudinal plane with one of said bittings and adjacent thereto, said lug being adapted to be received in said groove for interengaging the key and the operating part to cause the latter to rotate when the key is turned, said one bitting being adapted to engage a tumbler carried by said one bore,
said groove depth being such that upon inserting the lug of a picking tool in the groove and attempting to apply lock-picking torque to said post by engagement with the lug during operation of the tool, the tool will tend to slip owing to a tendency of its lug to slip out of the groove, and
a plurality of tangs extending radially outwardly from the outer periphery of said shank, said tangs being equal in number to the number of said bittings and each being provided with one of said bittings, said tangs being insertable respectively through said apertures and internally of said cylinder beyond said flange in engagement with said tumblers when said bore portions are in said alignment, and the inserted tangs turning behind said flange as the key is turned.

4,191,037
CYLINDER LOCK WITH KEY RESPONSIVE REMOVABLE CORE

George P. Patriquin, Gardner, Mass., assignor to Hudson Lock, Inc., Hudson, Mass.
Filed May 1, 1978, Ser. No. 901,445
Int. Cl.^{2} E05B *27/00*
U.S. Cl. 70—369 **19 Claims**

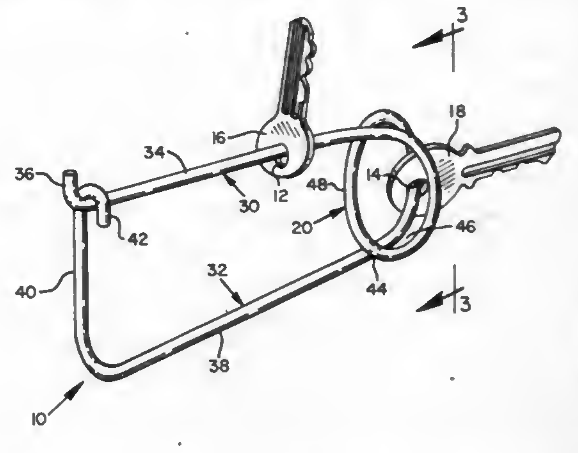


1. A cylinder lock comprising:
a housing defining a shell cavity;
a shell received by and longitudinally movable in said shell cavity and defining a plug cavity, said shell further defining a plurality of shell tumblerways;
a plug received by and rotatable in said plug cavity and defining a plurality of plug tumblerways aligned with said shell tumblerways, said plug further defining a keyway for receiving a proper key;
a plurality of locking tumbler means positioned in said aligned shell and plug tumblerways, said tumbler means being biased into locked positions and movable into open positions by a proper key in said keyway, said tumbler means preventing rotation of said plug in said plug cavity when in said locked positions and permitting rotation thereof when in said open positions;
a control tumbler means biased into a latched position and forced into a release position by a proper key in said keyway, said control tumbler means disposed so as to obstruct longitudinal withdrawal of said shell from said shell cavity when in said latched position and to permit said movement thereof when in said release position; and
means for preventing longitudinal movement of said plug in said plug cavity and permitting rotational movement thereof.

4,191,038
KEY HOLDER

Randy L. Vaughn, 1079 Fabry Rd., Salem, Oreg. 97302
Filed Sep. 15, 1978, Ser. No. 942,640
Int. Cl.^{2} A47G *29/10*
U.S. Cl. 70—457 **10 Claims**

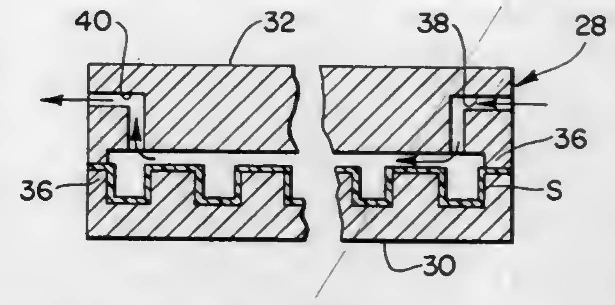
1. A key holder comprising an elongate, resilient member adapted to receive a plurality of keys thereon, which keys have respective member receiving apertures in their heads spaced from the peripheries of the heads a predetermined minimum distance and a predetermined maximum distance;
said member being configured to provide an intermediate portion which is coiled so as to have adjacent sections;
said adjacent sections being spaced apart a distance less than said minimum distance at a point and diverging from each other from said point so that they are spaced apart a distance greater than said maximum distance over a majority of their lengths;



whereby a single one of said plurality of keys can be isolated on a segment of said intermediate portion, sliding of said one key from said segment is substantially inhibited without manual aid, and said one key can slide relatively freely on said sections over a majority of their lengths.

4,191,039
SHEET SHAPING METHOD

Christopher G. Bradbury, Rumford, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Jan. 18, 1978, Ser. No. 870,925
Int. Cl.^{2} B21D *22/22;* **B29C** *17/04;* **C03B** *23/02*
U.S. Cl. 72—60 **5 Claims**



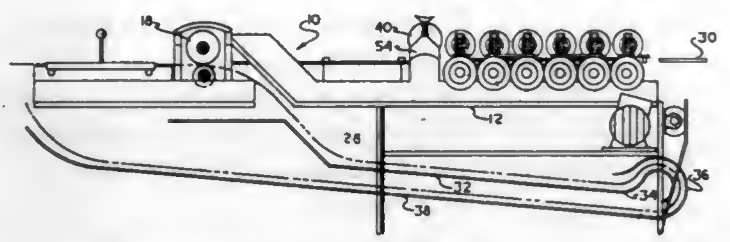
1. A method of shaping a sheet of thermoplastic material, comprising providing a sheet at a temperature sufficient to enable it to be shaped by the application of pressure thereto, placing the heated sheet material into an at least partially enclosed mold and disposed in proximity to a shaping member thereof and therafter directing liquid coolant under a pressure sufficient to maintain said coolant in a liquid state and to enable shaping of said sheet into said mold by the direct contact of said coolant with said sheet so as to force said sheet into contact with said member and thereafter depressurizing said mold so as to permit the vaporizing of at least a part of the same said coolant contacting said sheet material, thus quickly removing heat from the surface thereof by means of the heat of vaporization effect so as to form at least a solidified skin of cooled material on said sheet material surface opposite to that surface contacting said mold member and thereafter removing said sheet from said mold.

4,191,040
FERRULE ROLLING MACHINE

Herbert F. Dewey, 5110 Brookpark Rd., Cleveland, Ohio 44134
Filed Nov. 7, 1977, Ser. No. 848,830
Int. Cl.^{2} B21D *5/12*
U.S. Cl. 72—132 **1 Claim**

1. Apparatus for forming metal ferrules from a sheet metal strip comprising
edge guide means for a continuous sheet metal strip to feed it on a desired edge axis,

a pair of trim rolls to cut the metal strip to a desired width strip and to a residual edge section,
guide means engaging said edge section and guiding it through a controlled path to return it to said edge guide means,
notching roll means to notch the metal strip transversely at axially spaced portions but to leave the strip continuous,
a plurality of pairs of forming rolls for engaging said strip and rolling it to substantially cylindrical shape, said pairs of forming rolls being spaced longitudinally from each other less than the distance between the transverse notches on said strip whereby no separate guides are required for said strip as it moves through said rolls, drive means for said rolls, and where said notching roll means includes a pair of rolls each comprising a support shaft and where one of said rolls is cylindrical and the other of said rolls is cylindrical but also has a transversely extending surface notch member thereon,



a pair of support members for one of said rolls fixedly secured to support means for the other of said shafts and extending upwardly therefrom, and
adjustment means comprising a pair of set screws threadedly mounted on said support members to position the two ends of the support shaft for said one roll to adjust it vertically in relation to the support shaft for said other of said rolls and to retain it in a given position;
said forming rolls being adapted to work and shape said edge section to break it into individual pieces at the notch portions thereof for discharge of separate metal ferrules, said pairs of forming rolls being so spaced longitudinally from each other that a metal ferrule being processed is always engaged by two pairs of forming rolls, and
said adjustment means include brackets on said support members, said set screws threadedly engaging said brackets and extending therethrough to engage and extend unthreadedly through said one roll support shaft, and locking ring means securing said one roll support shaft to said set screws.

4,191,041
ROLLING MILLS

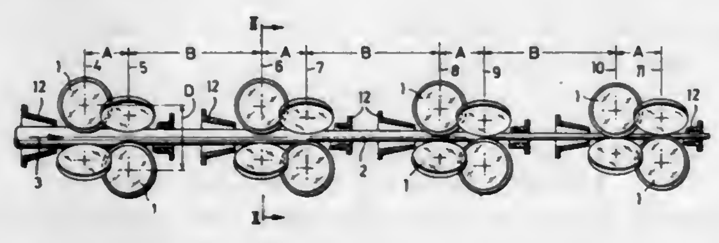
Hans Brauer, Leichlingen, and Werner Demny, Dusseldorf, both of Fed. Rep. of Germany, assignors to Friedrich Kocks GMBH & Company, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 20, 1978, Ser. No. 917,191

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741962

Int. Cl.² B21B ***1/18***

U.S. Cl. 72—235 **7 Claims**



1. A rolling mill for rolling wire or rod-shaped product without the use of guide elements abutting the work material to prevent rotation of the work material about its longitudinal axis between roll stands comprising a plurality of groups of stands which are arranged one after the other and each of which stands has at least three driven rollers, the distance between at least two adjoining stands forming a group is not substantially greater than the roller diameter of those stands and the last sizing pass of each such group of stands has a regular cross-sectional shape in relation to the first sizing pass of the next following group.

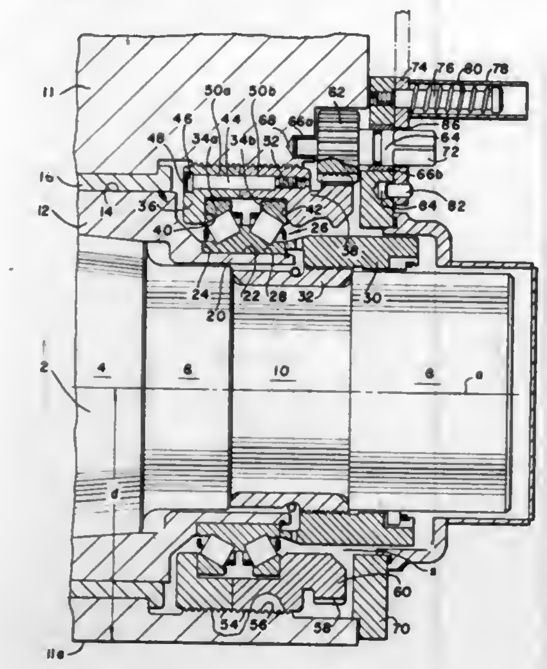
4,191,042
HEAVY DUTY AXIAL ADJUSTMENT MECHANISM FOR ROLLING MILL ROLLS

Lowell S. Salter, Jr., Shrewsbury, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Aug. 3, 1978, Ser. No. 930,748

Int. Cl.² B21B ***31/18***

U.S. Cl. 72—247 **5 Claims**



1. In a bearing assembly for a rolling mill roll neck, wherein axial adjustments are imparted to the roll relative to the bearing chock via a rolling element thrust bearing having its inner race axially fixed in relation to the roll neck, apparatus cooperatively associated with the outer thrust bearing race for axially adjusting the roll in relation to the bearing chock, comprising: retainer means for axially confining said outer thrust bearing race, said retainer means consisting of two separable components interconnected by fastening means received in aligned openings in said components, said separable components each having external threads in engagement with internal threads on the bearing chock, and operating means associated with at least one of said components for imparting rotation thereto.

4,191,043
METAL DUCT DRIVE BENDING TOOL

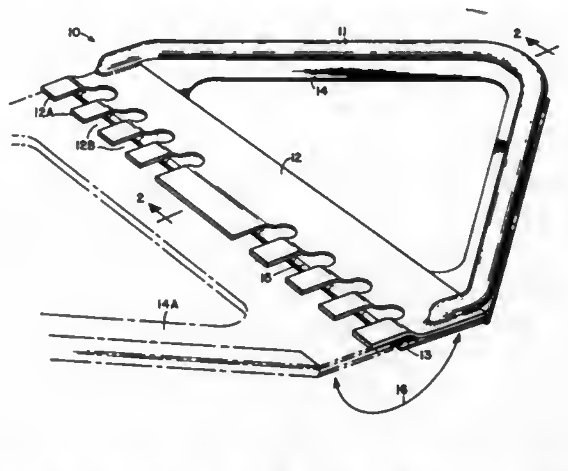
Ezra Schaffer, Scottsdale, Ariz.

Filed Jul. 21, 1978, Ser. No. 926,659

Int. Cl.² B21D ***11/20***

U.S. Cl. 72—319 **8 Claims**

1. A metal duct edge bending tool comprising, in combination, a first member having means for holding an edge portion of a metal duct, said holding means comprising a pocket portion located at one edge portion of said first member, a second member having means located at an edge portion of said second member adjacent said one edge portion of said first member for support against the metal duct held by the holding means of said first member while one of said members bend said held portion more than 90°, and pivoting means for permitting at least one of said first and second members to be pivoted to form a more than 90° bend on the edge portion of the metal duct held by the holding means of said first member,



said supporting means of said second member comprising a plurality of spaced apart teeth elements.

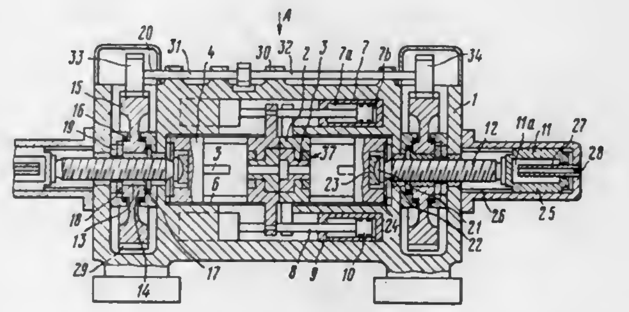
4,191,044
HYDRAULIC SCREW PRESS

Anatoly S. Grigorenko, ulitsa Tovstukho, 1, kv. 2; Jury A. Moroz, ulitsa Fugenfirova, 3, kv. 91; Leonid I. Kortusov, prospekt Mira, 57a, kv. 10, all of Omsk; Jury A. Bocharov, 15 Parkovaya ulitsa, 18, korpus 1, kv. 109, and Anatoly V. Safonov, Sevastopolsky prospekt, 51, korpus 1, kv. 11, both of Moscow, all of U.S.S.R.

Filed Jul. 27, 1978, Ser. No. 928,388

Int. Cl.² B21J ***1/18***

U.S. Cl. 72—354 **3 Claims**



1. A hydraulic screw press featuring double-ended pressing action upon the blank, comprising: a frame; female die halves; slides carrying said female die halves, said slides being reciprocatingly mounted on said frame; male dies; slides carrying said male dies, said slides being mounted on said frame so as to reciprocate against said slides carrying said female die halves; a traversing synchronization mechanism interconnecting said slides carrying said male dies; flywheels pivotally mounted on said frame and interconnected through a mechanical gearing; hydraulic power cylinders of said traversing actuator of said slides carrying said male dies, movable members of said hydraulic power cylinders mounted reciprocatingly with respect to said frame; lead screws adapted to interact through their threading, with said flywheels, said lead screws being articulated at one end thereof to said slides carrying said male dies and with the other end being locked-in with said movable members of said hydraulic power cylinders.

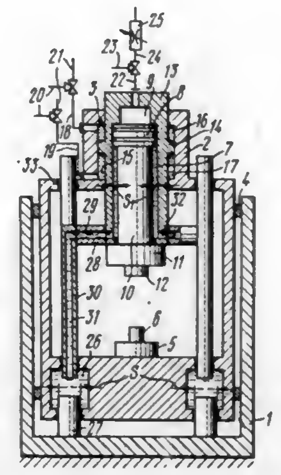
4,191,045
POWER HAMMER WITH OPPOSED MOVEMENT OF RAM AND BOLSTER

Georgy K. Stepantsov, ulitsa Belinskogo, 21, kv. 36; Valentin S. Abramov, ulitsa Dekabristov, 191, kv. 91, both of Kazan; Jury N. Bloschitsyn, Yasenevo, mikroraion 1, korpus 1, kv. 141, Moscow, and Raif R. Zaripov, ulitsa Gvardeiskaya, 24, kv. 74, Kazan, all of U.S.S.R.

Filed Jul. 11, 1978, Ser. No. 923,684

Int. Cl.² B21J ***7/22***

U.S. Cl. 72—407 **4 Claims**



1. A power hammer with opposed movement of ram and bolster comprising: a stationary main frame provided with guides; a power frame accommodated in the guides of said main frame with provision for vertical displacements; a bolster secured to said power frame and providing support for a blank; an actuating cylinder mounted on said power frame and having a piston positioned for movement therein; a space below the piston being filled with a fluid under a pressure for returning the piston into, and retaining it in, an initial position as well as with a space above the piston serving as a gas chamber; a ram carrying a top die and attached to a rod of the piston of said actuating cylinder; a means for accelerating said power frame by an additional force which is at least equal to the weight of the frame, serves to displace the power frame vertically and comprises spaces provided in lower portions of said power frame which are filled with a fluid and communicate with the space below the piston of said actuating cylinder; vertical plungers which rest on said main frame and extend inside said lower portion spaces of said means for accelerating the power frame, the ratio of the aggregate cross-sectional area of said plungers to the cross-sectional area of the space below the piston of said actuating cylinder being half as much again to twice the ratio of the mass of movable components of the hammer to the mass of the piston integrally with the piston rod, ram and top die.

4,191,046
PERMEABILITY METERS

Richard R. Baker, Dibden Purlieu, and Barry G. Bunn, Shirley, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Jun. 26, 1978, Ser. No. 918,708

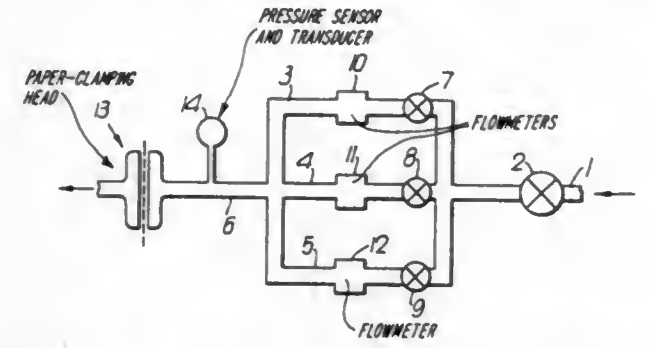
Claims priority, application United Kingdom, Jul. 1, 1977, 27629/77

Int. Cl.² G01N ***15/08***

U.S. Cl. 73—38 **4 Claims**

1. An instrument for measuring the gas permeability of a gas permeable paper of high permeability, the instrument including a clamping head having clamping faces and gas-flow passageway means and arranged to clamp paper between said clamping faces so that a portion of the paper extends across the cross-section of said gas-flow passageway means; gas supply means via which gas under pressure can be supplied to the passageway means of the clamping head, the gas supply means

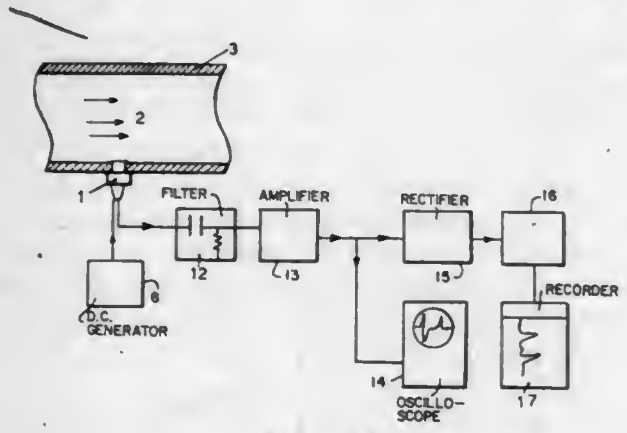
including a flow meter and an adjustable control valve to control the flow rate of gas in said supply means; and pressure indicating means including a pressure sensor responsive to gas pressure located adjacent to but upstream of the clamping faces to indicate gas pressure differential across said portion of the paper, the passageway between the clamping head and the pressure sensor being dimensioned to provide minimal impedance so that the gas flow impedance of the instrument from the pressure sensor onwards is less than 0.1% of the set pressure, that is 0.01 cm water at 50,000 cubic meters per minute gas flow so that, in operation of the instrument, the flow rate of gas, at a set reading of the pressure indicating means, can be determined by use of said flow meter with substantially no need for a correction factor to be applied to the flow rate reading to compensate for instrument impedance effects.



4,191,047
DEVICE FOR DETECTING THE INITIAL SETTLING OF THE SOLID PHASE IN SOLID-LIQUID SUSPENSIONS

Virgilio Arrigoni, San Donato, Milan, Dario Ercolani, Urbino, and Francesco Ferrini, Fano, all of Italy, assignors to Snamprogetti, S.p.A., San Donato Milan, Italy

Filed Apr. 27, 1978, Ser. No. 900,738
Claims priority, application Italy, May 5, 1977, 23192 A/77
Int. Cl.^{2} G01N *33/00*
U.S. Cl. 73—61.4 **4 Claims**



1. A device for detecting the degree of settling of the solid phase of a solid-liquid suspension in a long-distance conveying duct comprising:

a set of polarizing electrodes mounted to the duct and having a difference in potential maintained between said electrodes in order to induce an overall motion of the ions present in the suspension,

at least one detecting and measuring electrode mounted to the duct in a predetermined position relative to one of said polarization electrodes to receive a signal due to the modification of the ionic distribution which varies as the speed and flow of the suspension varies,

means to detect AC components of said signal,

means to process said AC components, and,

means using said processed components to indicate the degree of settling.

4,191,048
RED-VISIBLE DYE PENETRANT COMPOSITION AND METHOD EMPLOYING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

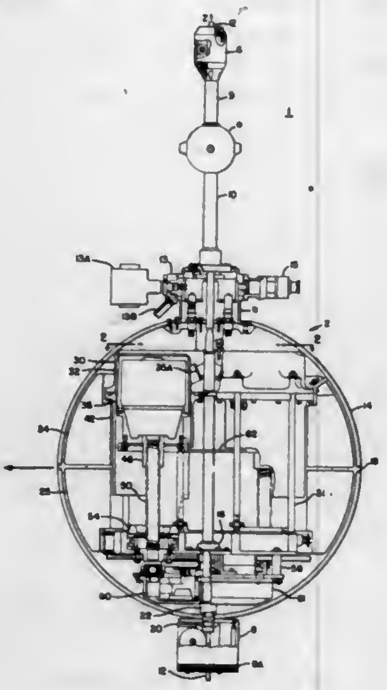
Filed Sep. 5, 1978, Ser. No. 939,551
Int. Cl.^{2} G01M *19/00*
U.S. Cl. 73—104 **35 Claims**

1. A method for detecting cracks and other defects in the surface of an object which comprises applying to said surface a liquid dye penetrant composition comprising a nonionic surfactant, and a liquid azo dye composition which is soluble or miscible in said surfactant, said dye composition consisting essentially of an azo dye containing C_5–C_{12} alkyl beta naphthols, or mixtures thereof, said dye composition being a single-phase liquid, removing excess dye penetrant composition from said cracks and defects in said surface, and viewing the surface of said object under lighting conditions to obtain colored traces from the dye in said cracks and other defects.

4,191,049
SYSTEM FOR MEASURING OCEAN CURRENT

Philip N. Bowditch, Cohasset; John M. Dahlen, Duxbury; John F. McKenna, Jr., Gloucester; John T. Shillingford, Jr., Milton; Frank J. Siraco, Malden, and William E. Toth, Bolton, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 16, 1978, Ser. No. 934,014
Int. Cl.^{2} G01W *1/00*
U.S. Cl. 73—170 A **7 Claims**



1. A system for measurement of ocean current near the surface wave field, comprising:

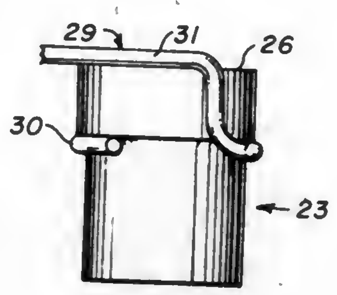
an adjustable buoyancy platform and associated current sensor affixed thereto, and

means to limit said platform to motion along a mooring line passing between two vertically displaced points, and to maintain said platform substantially free to move in the vertical direction in response to pressure gradients from said surface wave field, said means including an upper roller assembly affixed to the top of said platform and a lower roller assembly affixed to the bottom of said platform, said roller assemblies each including a plurality rollers adapted to freely track said mooring line.

4,191,050
LIQUID LEVEL INDICATING FLOATS

Eugene Kask, Willimantic, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Oct. 18, 1978, Ser. No. 952,497
Int. Cl.^{2} G01F *23/06*
U.S. Cl. 73—322.5 **3 Claims**

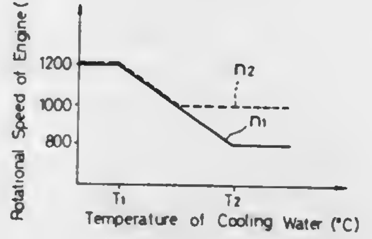


1. A liquid level indicating float comprising a generally cylindrical body portion terminating in an outwardly protruding cylindrical ledge having an upper surface and a lower surface, said ledge having a predetermined thickness, and a supporting arm having a loop which engages said lower surface and having an elongated end which engages said upper surface.

4,191,051
ENGINE IDLING SPEED CONTROL SIGNAL GENERATOR

Shoji Kawata, Okazaki, and Naoji Sakakibara, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 13, 1978, Ser. No. 924;321
Claims priority, application Japan, Jul. 20, 1977, 52/86787
Int. Cl.^{2} G01K *13/00*
U.S. Cl. 73—347 **8 Claims**



1. An engine idle speed control signal generator circuit comprising:

a thermometer circuit including a thermal sensor responsive to the temperature of the cooling water in an engine to produce an output signal level indicative of the temperature;

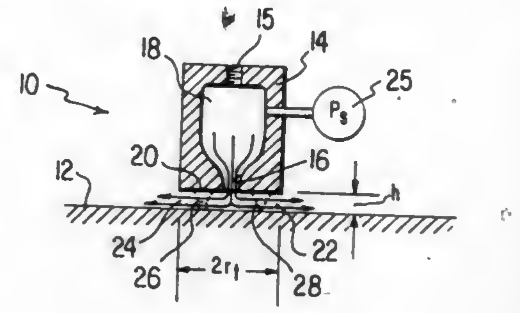
a first cut-off bias circuit limiting the output signal level of the thermometer circuit below a predetermined upper limit level representing one limit of desired engine idle speed; and

a second cut-off bias circuit maintaining the output signal level of the thermometer circuit above a predetermined lower limit level representing the opposite limit of desired engine idle speed.

4,191,052
NON-CONTACT FLUERIC TEMPERATURE SENSING METHOD AND APPARATUS

Tadeusz M. Drzewiecki, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 27, 1978, Ser. No. 963,720
Int. Cl.^{2} G01K *11/00*
U.S. Cl. 73—357 **19 Claims**



15. A method of sensing the temperature of an object without requiring physical contact therewith, comprising the steps of:

directing a flow of fluid through a nozzle opening onto a sensing head toward a surface of said object so that said fluid assumes the temperature of said object;

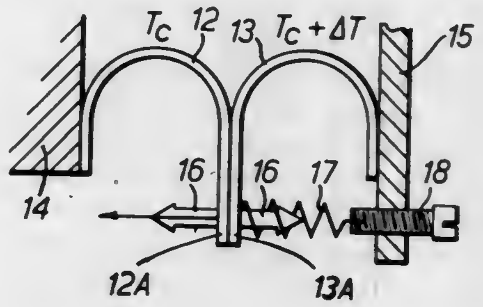
establishing the distance between said sensing head and said surface; and

sensing the back pressure developed by said fluid.

4,191,053
TEMPERATURE-RESPONSIVE ACTUATOR

William B. Hart, Ipswich, and Reginald T. Williams, Hadleigh, both of England, assignors to Delta Materials Research Limited, Ipswich, England

Filed Nov. 30, 1978, Ser. No. 964,935
Int. Cl.^{2} G01K *5/60*
U.S. Cl. 73—363.1 **11 Claims**



1. A differential temperature detector comprising

(a) a first resilient member having a fixed part and a relatively movable part; and

(b) a second resilient member having a fixed part and a relatively movable part;

(c) each of said first and second resilient members being made essentially of a shape memory effect material having an elastic modulus which varies significantly with temperature in a reversible manner over a transition temperature range,

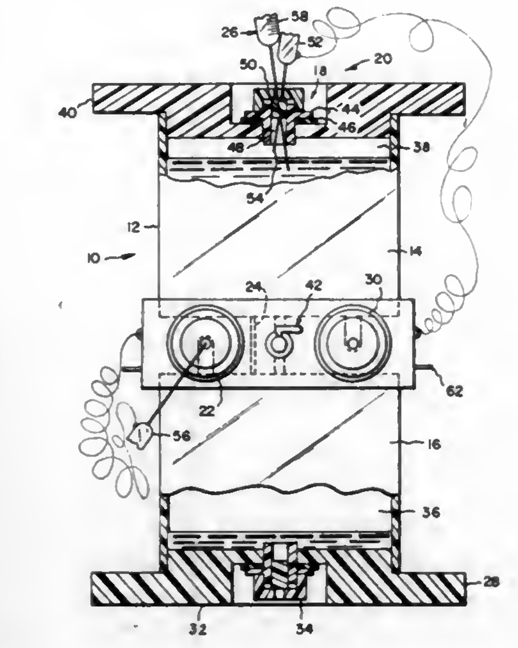
(d) said movable parts of said resilient members being coupled together with said members stressed in opposition,

(e) whereby the position of said movable part of one of said members relative to said fixed part is indicative of the difference in temperatures of said members.

4,191,054
ATMOSPHERIC SAMPLING APPARATUS

Marvin Jacoby, Rochester, N.Y.; Richard Jacoby, Haverford, Pa., and Robert Ellson, Rochester, N.Y., assignors to Air Test Labs, Inc., Rochester, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,349
Int. Cl.^{2} G01N *1/24*
U.S. Cl. 73—421.5 R 15 Claims



1. An improved apparatus for the collection of atmospheric samples, comprising:

a sealed first container member filled with liquid material therein;

a sealed second container member positioned below said sealed first container member;

first container venting means for the controlled introduction of the atmosphere surrounding said apparatus into said first container;

second container venting means for the controlled dispersal of the atmosphere within said second container into the surrounding atmosphere;

said first container venting means and said second container venting means comprising;

a plurality of septum holding members attached to said first container member and said second container member respectively and extending therein, said septum holding members forming an airtight seal with said container members;

said septum holding members each having a passageway therethrough into said container members;

a septum positioned within said passageway, said septum forming an airtight seal within said passageway; and

a hollow needle member having an aperture proximate its tip, said needle member being insertable through said septum whereby a gaseous atmosphere may pass into or out of the container member;

restrictive flow channel means between said first and second container members for the controlled passage of said liquid therethrough, said passage of liquid creating a vacuum in said first container member whereby a portion of said surrounding atmosphere is controlledly drawn through said first container venting means and into said first container member where it is retained;

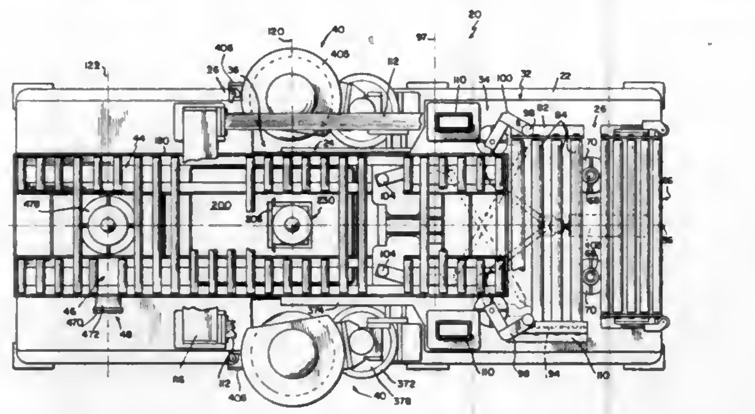
sample removal means for permitting the withdrawal of a desired quantity of said retained atmosphere from within said first container member; and

base means for the support of said apparatus.

4,191,055
DYNAMIC IMBALANCE DETERMINING SYSTEM

Donald E. Orem, Indianapolis; Vernon P. Holmes, Danville, both of Ind., and Thomas J. Bacsanyi, Novi, Mich., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Jul. 25, 1978, Ser. No. 927,760
Int. Cl.^{2} G01M *1/22*
U.S. Cl. 73—462 13 Claims



1. A drive mechanism for use with an apparatus for determining the amount and location of imbalance of an article having two planes in which it is to be balanced and an axis about which it is to revolve, the apparatus including a base, means for supporting the article for substantially free revolution with respect to the base, a lever extending generally parallel to the axis of revolution of the article, means for mounting the lever for movement with the article supporting means, means for generating input signals in response to force exerted between the lever and the base as the article is revolved, means for generating first output signals related to the imbalance in the first plane and second output signals related to the imbalance in the second plane in response to the input signals, and means for coupling the input signal generating means to the output signal generating means, the input signal generating means including first and second input signal generating means, means for mounting the first input signal generating means between the lever and the base, means for mounting the second input signal generating means between the lever and the base a first predetermined non-zero distance from the first input signal generating means measured along the axis, the second input signal generating means being mounted a second predetermined non-zero distance from the first plane measured along the axis, and the drive mechanism including a motor and drive wheel mounted for rotation by the motor, means for movably mounting the drive wheel on the base for selective movement between a driving position in engagement with the article and a storage position out of engagement with the article, excitation of the motor and engagement of the drive wheel with the article causing the article to accelerate to a desired rotation frequency, and subsequent movement of the drive wheel out of engagement with the article permitting said article to coast and permitting movement of the article relative to the base in response to dynamic imbalance in the article free of the effect of any dynamic imbalance in the drive wheel, said movement generating said output signals which are used to determine the amount and location of inbalance of said article.

4,191,056
PRESSURE GAUGE SPRING

Edward S. Holden, Cambridge, Mass., assignor to Tube Engineers, Inc., Waltham, Mass.

Filed Aug. 29, 1978, Ser. No. 937,852
Int. Cl.^{2} G01L *7/04*
U.S. Cl. 73—743 22 Claims

1. A spring assembly for a gauge comprising:

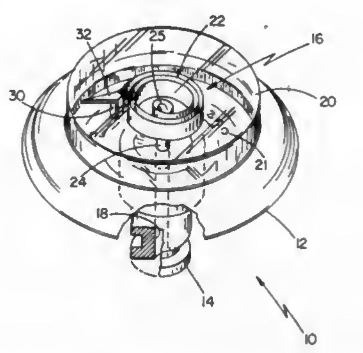
a hollow metal tube adapted to change in volume in response to differential pressures applied across the walls thereof, said tube having

a neck portion adapted to be connected to a fitting of the gauge,

a body portion connected at one end to said neck portion, the walls of said body portion being cold worked to a reduced thickness to thereby increase the yield point thereof to a spring temper, and

the other end of said body portion being sealed,

the interior of said neck portion adapted to be in pressure communication with the fitting, and the interior of said body portion adapted to be in pressure communication through its unsealed end with the interior of said neck portion,

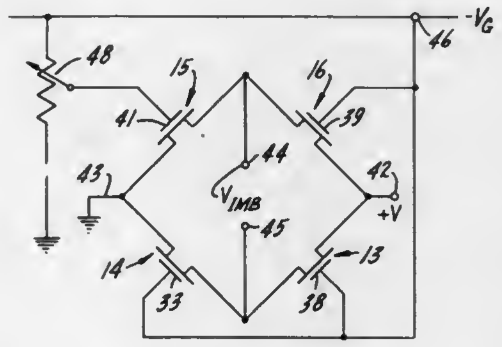


whereby a change in the pressure applied to the fitting is communicated to the interior of said body portion changing the differential pressure across the walls of said body portion and causing a corresponding change in the volume thereof, the increased yield point of the cold worked walls of said body portion providing improved resistance of said spring to cracking, fatigue, and permanent deformation of said tube otherwise caused by said changing pressure.

4,191,057
INVERSION LAYER SPRAIN GAUGE

Heinz H. Busta, Park Ridge, Ill., assignor to Gould Inc.

Filed Jun. 28, 1978, Ser. No. 920,137
Int. Cl.^{2} G01B *7/16*
U.S. Cl. 73—777 5 Claims

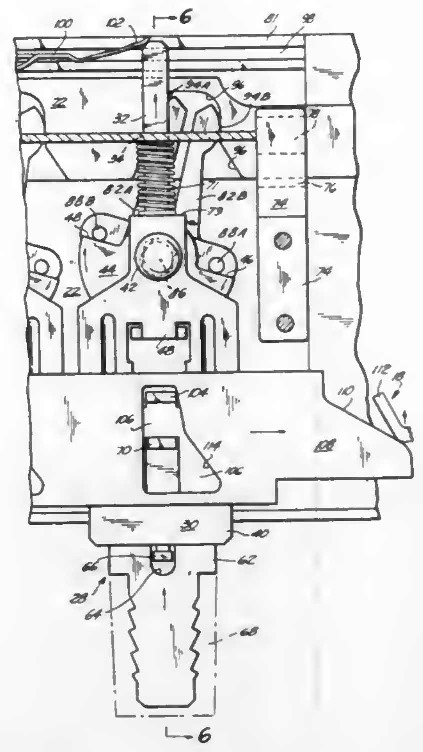


1. A strain gauge element comprising, in combination: a flexible beam having a layer of one charge-carrier-type silicon; four regions of the opposite charge-carrier-type silicon formed in said layer of said one charge-carrier-type silicon, said regions being disposed in a four corner pattern with each individual region being spaced from two of the other regions to define with said two of the other regions a pair of channels of said one charge-carrier-type silicon; electrically conductive layers deposited on each of said four regions; additional electrically conductive layers deposited on but insulated from said channels between said regions so that each adjacent pair of regions together with its intermediate channel and insulated electrically conductive layer defines a field effect transistor; means electrically coupling said transistors in a Wheatstone bridge circuit so that deformation of said flexible beam produces a proportional imbalance signal in said bridge circuit; and means for applying a gate biasing voltage to each of said insulated electrically conductive layers so as to render said transistors conductive, said voltage applying means permitting at least one gate bias voltage to be varied so as to electrically balance the bridge when there is no strain load.

4,191,058
LOW PROFILE PUSHBUTTON TUNER WITH IMPROVED CARRIAGE MOVING MECHANISM

Russell D. Stamm, El Paso, Tex., assignor to General Instrument Corporation, Clifton, N.J.

Filed Jun. 5, 1978, Ser. No. 912,410
Int. Cl.^{2} H03J *5/08*
U.S. Cl. 74—10.33 15 Claims



1. In a tuner assembly comprising a support, a part movably mounted on said support, a tuner, an operative connection between said part and said tuner whereby said tuner is tuned in accordance with the position of said part, and a plurality of manually actuated keys mounted on said support and individually movable in a given direction between operative and inoperative positions, each of said keys having a cam thereon adjustably positionable about an axis, a plurality of arm means, one for each key, articulately mounted on said support, said part having a plurality of apertures, a portion of each of said arm means being received in a corresponding aperture, each cam, when its key is in operative position, engaging and moving the corresponding arm means to position said part and thereby control the tuning of said tuner; the improvement which comprises said arm means normally loosely engaging said part, the cam of the operative key and the corresponding arm means comprising means effective to cause that arm means to firmly engage said part, thereby accurately to position said part substantially without lost motion; said arm means comprising a pair of arms independently articulately mounted on said support and each having a portion received in a corresponding aperture in said part, each of said cams having a pair of cam surfaces, each of said surfaces being effective to engage a different one of said arms and to urge said different one of said arms into said firm engagement with said part as the corresponding key moves to its said operative position.

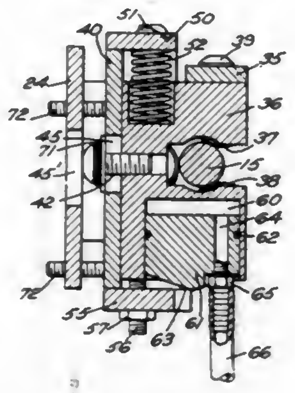
4,191,059
LINEAR ACTUATOR

Robert A. Vanslette, Medfield, Mass., assignor to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.

Filed Oct. 25, 1977, Ser. No. 844,582
Int. Cl.^{2} F16H *21/40*
U.S. Cl. 74—25 3 Claims

1. Transducer for transducing a rotational movement of a shaft into a linear movement of an actuator, the transducer having a rider assembly mounted for movement axially on the shaft, the rider assembly comprising two members and three rollers with their circumference in frictional contact with the shaft, the roller axes being disposed at an acute angle with respect to the shaft axis and spaced circumferentially around

the shaft, a means mounting these two members of the rider assembly relatively movable with respect to each other, one of these members carrying a roller on one side of the shaft axis and the other member carrying two rollers on the other side of the shaft axis, a spring arrangement for relatively moving these members until the rollers carried thereby are in frictional contact with the shaft, and a means to relatively move these members to relieve frictional engagement of one of the rollers with the shaft, characterized in that the means for relatively moving the two members of the rider assembly comprises a cylinder fixed relatively to the one member and a piston movable in the cylinder and engaging the other member, and a conduit to the cylinder for introducing a pressurized fluid for the relative movement of the two members.



4,191,060
CAR SIDE WINDOW LIFTING MECHANISM

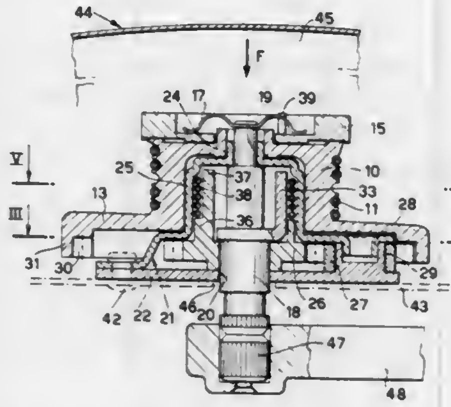
Terenzio Sessa, Via Albani 5, Varese, Italy

Filed Dec. 12, 1977, Ser. No. 859,546

Claims priority, application Italy, Mar. 31, 1977, 21949 A/77

Int. Cl.² F16H *29/02;* E05F *11/48;* F16D *67/00;* B66D *3/16*

U.S. Cl. 74—89.22 **10 Claims**



1. A wire-actuated car side window lifting mechanism, more particularly for motor cars, of the single-shaft control type having incorporated therein a wire-tensioning device comprising a wire-winding drum, a first grasping member for either end of the wire, integral with the drum and a second fastening member for the other end of the wire connected to the drum with a one-way clutch which permits the mutual sliding between said drum and said second fastening member, characterized in that the control shaft is connected to the drum via a reducing gear train and to the second fastening member via an automatically releasable mechanical linkage which is released as the stress impressed to the wire exceeds a preselected magnitude.

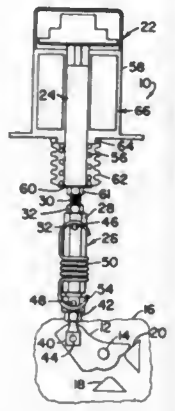
4,191,061
SOLENOID-OPERATED FUEL FLOW CONTROL FOR FUEL INJECTION SYSTEM

Wayne R. Miller; David D. Latham, and Joseph C. Spencer, all of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 12, 1978, Ser. No. 914,349

Int. Cl.² F16H *21/44*

U.S. Cl. 74—108 **8 Claims**



1. A solenoid-operated fuel flow control for a fuel injection system, comprising: first and second closely spaced stops; a fuel flow control lever pivotally mounted adjacent said stops for movement between a fuel-off position, wherein it engages the first stop, and a fuel-on position wherein it engages the second stop; a solenoid including a shiftably mounted plunger surrounded by first and second coils which are energizable to move the plunger to a retracted position and biasing means urging the plunger to an extended position which it occupies when the coils are de-energized; linkage means connecting the plunger to the fuel flow control lever for moving the latter from its fuel-off to its fuel-on position when the first and second coils are energized to effect retraction of the plunger; electrical control circuit means connected to the first and second coils for selectively effecting simultaneous energization thereof to, in turn, effect retraction of the plunger; and said electrical circuit means including a normally closed switch for completing a circuit to the second coil and operable to be opened in response to said plunger reaching its retracted position, whereby only the first coil remains energized to hold the plunger in its retracted position.

4,191,062
CHAIN DRIVE AND AUTOMATIC CHAIN TENSIONING UNIT

Lawrence R. Gardner, Aurora, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

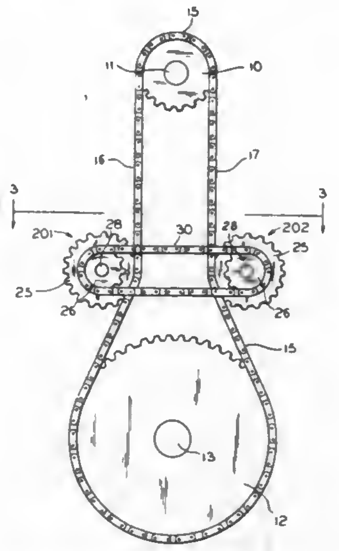
Filed May 1, 1978, Ser. No. 901,718

Int. Cl.² F16H *7/16*

U.S. Cl. 74—242.11 R **6 Claims**

1. An automatic drive chain tensioner, which comprises:

a pair of idler assemblies, with each idler assembly comprising an idler sprocket and an indexing sprocket on each side of, and concentrically connected to, the idler sprocket with each idler assembly being adapted to be positioned on the outside of a drive chain loop on a chain run between a drive and driven sprocket with the idler sprocket thereof adapted to be engaged in the drive chain and with the idler assemblies on different and opposite spaced-apart drive chain runs; and



a pair of indexing chain loops, each one of which is adapted to engage an indexing sprocket on each of the spaced-apart idler assemblies on the same side of the drive chain.

4,191,063
SERVO DEVICE, ESPECIALLY FOR REVERSIBLE GEARS IN MOTORBOATS

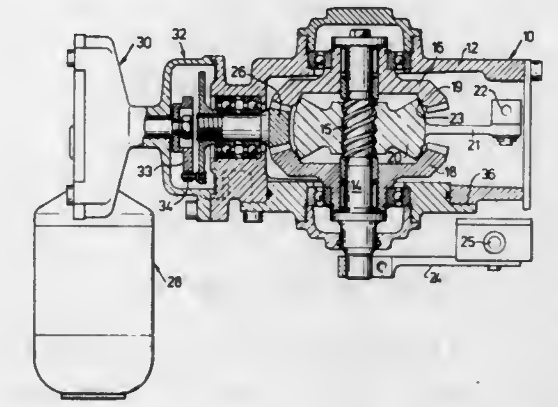
Kjell-Idar Borgersen, Hjalteby, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Oct. 6, 1977, Ser. No. 839,829

Claims priority, application Sweden, Oct. 7, 1976, 7611140

Int. Cl.² F16H *35/00*

U.S. Cl. 74—388 R **11 Claims**



1. Servo device for amplifying the force in a mechanical control apparatus, movable in two opposite directions, when said apparatus is displaced in either direction, comprising two gears rotatably disposed in a housing, and coaxial with a rotatable shaft, means comprising a servo motor and a driving connection therefrom to said gears for driving said gears in counterrotation, and a nut screwably arranged on screw splines on the shaft between the gears, said nut when screwed along said splines coming into frictional contact via annular friction surfaces with corresponding annular surfaces on the gears, said nut, said splines and one of the gears making a releaseable driving connection with one another, characterized in that radially directed arms are attached to the shaft and to the nut, with control cable attachment means for transmitting the input operating force to one arm, while an additional force is contributed from a respective one of said gears via the shaft and splines to the other arm.

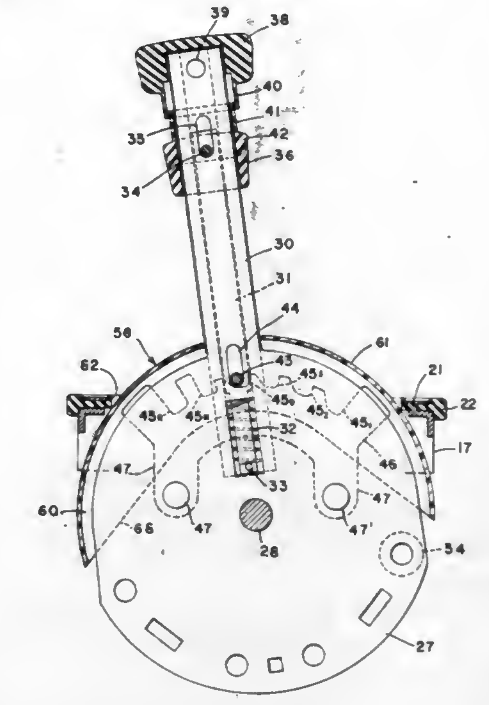
4,191,064
LEVER CONTROL

Richard D. Houk, Stow, and Marvin H. Jones, Wooster, both of Ohio, assignors to Samuel Moore and Company, Aurora, Ohio

Filed Mar. 27, 1978, Ser. No. 890,132

Int. Cl.² G09F *9/00;* G05G *1/04*

U.S. Cl. 74—475 **8 Claims**



1. Lever control mechanism comprising a frame having spaced-apart mounting plates and a substantially flat cover plate traversing the outer ends of said plates, a transverse shaft secured in said mounting plates, a control plate rotatable on said shaft, a handle lever connected to said control plate and extending through said cover plate, a gate plate having a series of indentations secured to one of said mounting plates, a detent slidable on said lever and biased to engage selectively in said indentations, and an arcuate channeled housing attached to said lever extending movably and outwardly through and in sealed relation to said cover plate and enclosing said gate and detent mechanism.

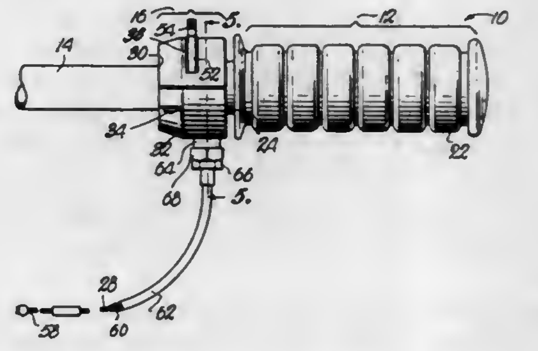
4,191,065
THROTTLE TWIST GRIP

Gary L. Golobay, R.R. #3, Box 252, Augusta, Kans. 67010; Ted E. Deubner, 3336 Bonn St., Wichita, 67217, and Anthony F. Beugelsdyk, 7509 Hale St., Wichita, both of Kans. 67212

Filed Feb. 7, 1978, Ser. No. 875,820

Int. Cl.² G05G *1/08, 5/04, 5/18*

U.S. Cl. 74—489 **9 Claims**



1. A twistable grip assembly for shifting a flexible control line and of the type supported on a handlebar or the like comprising:

an elongate, hand grip section;

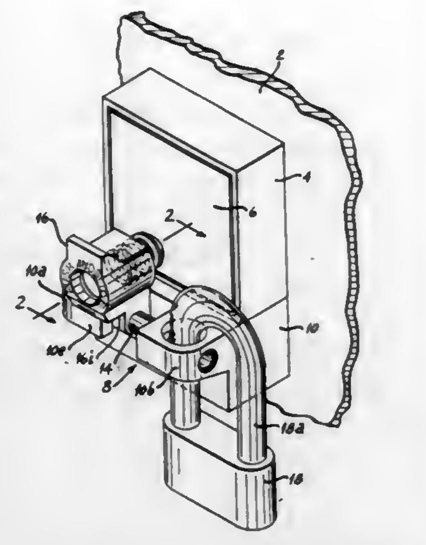
means adapted to be secured to said handlebar adjacent one extremity of said grip section and slidably engaging the latter for rotatably mounting said grip section on said handlebar;

spool means fastened to said grip section adjacent said one

extremity of the latter for winding and unwinding said line thereon in response to rotation of said grip section; and
latch means fastened to the combination of said spool means and said grip section for selectively controlling the displacement through which said grip section may be rotated,
said latch means including a manually operable, shiftable actuating portion, and a shiftable keeper portion under control of said actuating portion,
said keeper portion being rotatable along with said grip section and engageable with said mounting means upon rotation of said grip section in one rotational direction whereby to limit the rotation of said grip section to a first degree of displacement in said one direction,
said keeper portion being shiftable away from said mounting means in response to the operation of said actuating portion to allow further rotation of said grip section to a second degree of displacement in said one direction beyond said first degree of displacement.

4,191,066
PUSHBUTTON LOCKING ATTACHMENT WITH TOLERANCE COMPENSATING LATCH

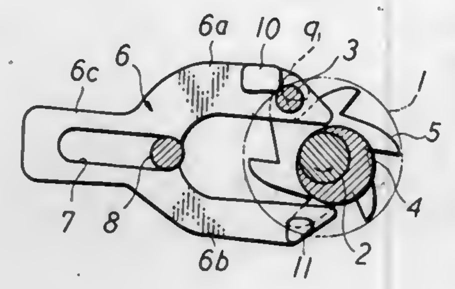
John J. Keranen, Sussex, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jul. 20, 1977, Ser. No. 817,361
Int. Cl.² G05G *5/06*
U.S. Cl. 74—527 **2 Claims**



1. A latching device for a control having a pushbutton comprising:
a base mounted to said control;
a latch having a biased plunger resiliently coupled thereto; and
means mounting said latch to said base such that said latch may be moved from an off position wherein said plunger is out of engagement with said pushbutton to a first position wherein said plunger depresses said pushbutton, whereafter said latch is movable to a second latched position to retain said pushbutton in a depressed position;
said resiliently coupled biased plunger affording compensation of tolerance deviations between said latched position of said latch and said depressed position of said pushbutton;
said latch pivots toward said pushbutton to said first position and slides translationally along its pivotal axis to said latched position;
said base has a pivot stop portion which engages said latch in said latched position to prevent pivoting of said latch away from said pushbutton;
said plunger is an elongated member having an enlarged generally hemispherical head portion at the rear for engaging said pushbutton, a central cylindrical portion, and a front smaller diametered cylindrical portion;
said latch has a generally tubular portion with an aperture therethrough of different diameters, a rear aperture section, a central constricted aperture section of smaller diameter, and a front aperture section;
said plunger is disposed in said aperture in said latch for forward-rearward sliding movement, said front plunger portion being of substantially the same diameter as and guidingly supported in said central aperture section;
said front plunger portion has retaining means at the front end thereof of a diameter larger than the diameter of said central aperture section, engagement of said retaining means with the forwardly facing shoulder formed by the interface of said front and central aperture sections providing a stop for limiting rearward movment of said plunger;
said central plunger portion has a diameter larger than said central aperture section, engagement of the forwardly facing shoulder formed by the interface of said central and front plunger portions with the rearwardly facing shoulder formed by the interface of said central and rear aperture sections providing a stop for limiting forward movement of said plunger;
said plunger is biased rearwardly away from said latch towards said pushbutton by a helical compression spring concentrically surrounding said plunger in said rear aperture section and bearing between the forwardly facing shoulder formed by the interface of said enlarged head and central portions of said plunger and said rearwardly facing shoulder formed by said interface of said central and rear aperture sections.

4,191,067
RATCHET FEED MECHANISM

Masaaki Oishi; Itaru Ashida, and Tetsuro Suzuki, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Japan
Filed Aug. 3, 1977, Ser. No. 821,503
Claims priority, application Japan, Aug. 3, 1976, 51-92488
Int. Cl.² G05G *1/00*
U.S. Cl. 74—577 M **7 Claims**

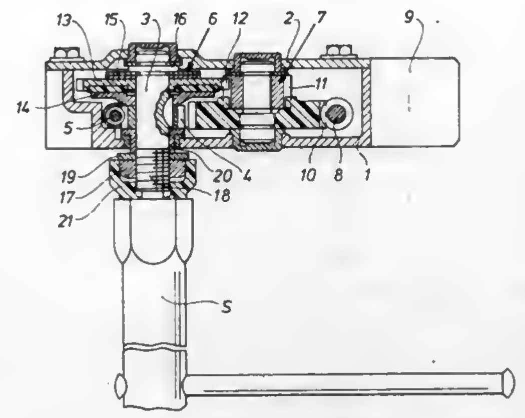


1. A ratchet feed mechanism comprising:
a rotary shaft,
a ratchet wheel rotatably supported by said rotary shaft,
a rotary member fixed on said rotary shaft and spaced axially from said ratchet wheel,
an operation pin fixed on said rotary member eccentrically on said rotary shaft so as to orbit about the axis of said rotary shaft, said pin projecting axially of said rotary shaft from a side of said rotary member facing said ratchet wheel,
an eccentric cam fixed on said rotary shaft between said rotary member and said ratchet wheel, and
a place shift-up lever supported so as to be capable of rocking and sliding movement in a plane perpendicular to said rotary shaft and having a forked leg plate with spaced legs receiving said eccentric cam between them,
one leg of said forked leg plate having on a first face a hook pawl engageable by said shift-up lever in a feed direction and on a second face a feed pawl engageable with said ratchet wheel to rack said ratchet wheel during movement of said place shift-up lever in said feed direction, and
the other leg of said forked plate having on said first face a return pawl engageable by said operation pin to move said place shift-up lever in a return direction,

said legs of said forked leg plate being engageable by said cam for rocking said place shift-up lever to bring said hook pawl and return pawl alternately into engagement with said operation pin and for bringing said feed pawl into engagement with said ratchet wheel during movement of said place shift-up lever in said feed direction.

4,191,068
DRIVE ARRANGEMENT FOR SLIDING ROOFS, WINDOW PANES AND OTHER SIMILAR MEMBERS IN MOTOR VEHICLES

Hans Jardin, Inning; August Hirschberger, Munich, and Karl-Heinz Isleif, Percha, all of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH and Co., Fed. Rep. of Germany
Filed Jun. 22, 1978, Ser. No. 918,270
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 7720015[U]
Int. Cl.² F16H *55/02*
U.S. Cl. 74—625 **12 Claims**

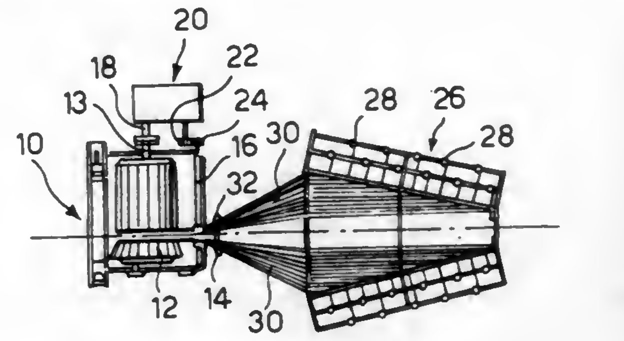


1. A drive arrangement for sliding roofs, window panes and other similar sliding members in motor vehicles comprising:
a motor drive;
a driving shaft;
a driving pinion for displacing the sliding member, said pinion being arranged on said driving shaft, and being constrained to rotate with said driving shaft;
a clutch having a first part constrained for movement with the driving shaft and a second part displaceably mounted relative to said first part for interconnecting said motor drive with said drive pinion in a first relative position of said first and second parts and for disengaging said drive pinion from said motor drive in a second relative position of the first and second parts;
adjustment means mounted on said driving shaft for adjusting the driving force transmittable between said first and second parts, said adjustment means being connectable to a manually operable handle; and
locking means for securing said adjustment means relative to said driving shaft in a plurality of positions for enabling emergency operation of the sliding member by said handle.

4,191,069
MULTI-SPEED GEAR TRANSMISSION ESPECIALLY FOR USE IN WARPING MACHINES

Luigi Sasso, Frazione Orazzo, Strona Biellese (Vercelli), Italy
Filed May 5, 1978, Ser. No. 903,335
Claims priority, application Italy, May 19, 1977, 68147 A/77
Int. Cl.² F16H *37/06*
U.S. Cl. 74—681 **3 Claims**

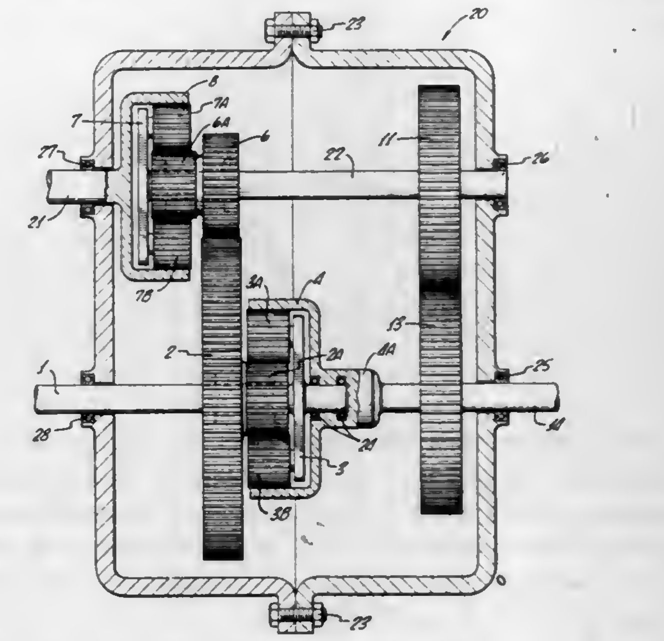
1. Multi-speed gear transmission of the type comprising a drive input shaft for connection to a warp cylinder of a sectional warping machine, having a displaceable thread carriage, a drive output shaft for connection to displacement means for effecting movement of the thread carriage, and a first gear mechanism having several gear ratios interposed between said drive input and drive output shafts,
wherein the improvement comprises:
a second gear mechanism with several gear ratios mechanically coupled to the drive input shaft in parallel with said first gear mechanism,



a diffenential gear having two crown wheels, a planet carrier and planet wheels carried by said planet carrier and meshing with said planet crown wheels,
means coupling the first and second gear mechanisms to said crown wheels of the differential gear,
and means coupling the other said crown wheel of the differential gear to the said output shaft.

4,191,070
PLANETARY TRANSMISSION WITH PLURAL POWER PATHS

Chester L. McKinniss, 117 S. Figuroa, Santa Ana, Calif. 92703
Filed Mar. 31, 1978, Ser. No. 892,143
Int. Cl.² F16H *37/06, 57/10*
U.S. Cl. 74—682 **3 Claims**



1. A transmission device comprising:
input shaft means;
output shaft means;
first planetary gear means connected to one end of said input shaft means;
first ring gear means connected to one end of said output shaft means;
said first planetary gear means and said first ring gear means arranged to be in meshing engagement;
first sun gear means rotatably mounted adjacent said one end of said input shaft means and in meshing engagement with said first planetary gear means;
retarding means for controlling the rotation of said first sun gear means in order to selectively engage said input shaft means and said output shaft means via the engagement of said first planetary gear means and said first ring gear means;

bearing means included in said first ring gear means for supporting said one end of said input shaft means;

intermediate shaft means;

secondary planetary gear means connected to one end of said intermediate shaft means;

second sun gear means rotatably mounted adjacent said one end of said intermediate shaft means, and in meshing engagement with said first sun gear means;

first output gear means connected to said output shaft means;

second output gear means connected to said intermediate shaft means and in meshing engagement with said first output gear means;

second ring gear means connected to said retarding means and in meshing engagement with said second planetary gear means; and

each of said first and second sun gear means includes first and second gear portions.

4,191,071

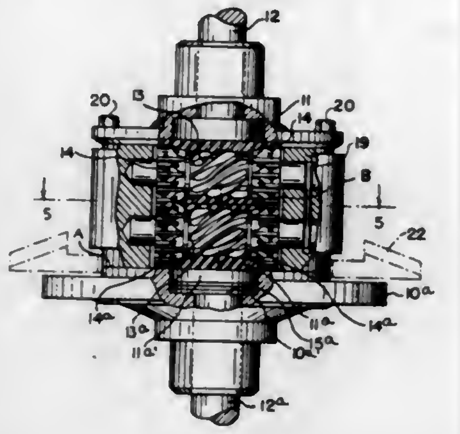
TORQUE EQUALIZER OR UNBALANCER FOR A CROSS-AXIS PLANETARY DIFFERENTIAL GEAR COMPLEX

Vernon E. Gleasman, 3808 Kirkwood Rd., Cleveland, Ohio 44121, and Robert N. Benjamin, 1830 Kathryn Dr., Westlake, Ohio 44145

Continuation-in-part of Ser. No. 433,741, Jan. 16, 1974, abandoned. This application Nov. 25, 1974, Ser. No. 526,635

Int. Cl.² F16H *1/38*

U.S. Cl. 74—715 **3 Claims**



1. In combination, a differential gear mechanism housed in a case and having a power input and having two substantially identical gear sets, each set including a traction side gear each connected respectively with an associated output shaft extending outwardly through said case for delivering drive torque respectively to said two shafts, each of said gear sets including a plurality of transfer gear complexes, each complex having a centrally located helical portion in mesh with its associated side gear, each complex having a reversible balancing gear at each end of its associated helical portion, each balancing gear rigidly connected with its associated helical portion and coaxial therewith, said side gears assembled in axially aligned contiguous relationship in said case and with the helix angle of said side gears in the same relative position with their teeth inclined in the same direction so that the end thrust of said two side gears is additive in one direction toward one output shaft when said differential mechanism is propelling an associated vehicle in a given direction, and a friction-modifying washer applied at the point of exit from said case of said one output shaft only, and said washer being between and in contact with the side gear connected with said one shaft on one hand and with said case surrounding said one shaft on the other hand, whereby to substantially modify the torque delivered to said two output shafts by said differential gear mechanism.

4,191,072

TRANSMISSION WITH HYDRODYNAMIC TORQUE CONVERTER AND RETARDER

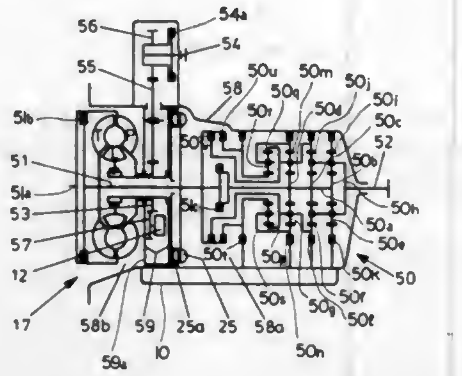
Friedrich J. Ehrlinger, Friedrichshafen, and Horst Böck, Immenstaad, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 14, 1977, Ser. No. 860,315

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656669

Int. Cl.² F16H *47/00;* B60K *41/26;* F16H *57/02*

U.S. Cl. 74—732 **10 Claims**



1. A transmission assembly comprising:

a speed-change gear transmission having an input shaft, an output shaft and selectively actuatable clutches for establishing respective transmission ratios between said input shaft and said output shaft;

a hydrodynamic torque converter having a driven input element and an output element connected to said input shaft;

a hydrodynamic retarder having a stator and a rotor and disposed between said torque converter and said gear transmission;

a common housing for said torque converter, said retarder and said gear transmission, said housing being separated by a partition into a first housing section containing said retarder and said gear transmission and a second housing section containing said converter, said partition directly sealing said sections from one another in a fluid-tight manner and being exposed to the interiors of both said sections, said stator being affixed directly to said partition, said partition exclusively closing off both said sections from one another;

a hydraulic pump mounted on said partition; and

a converter counterpressure valve, a lubricating valve and at least one control valve for the converter and the retarder formed directly in said partition, said partition being further formed directly with passages connected to said pump, said retarder, said converter, and said valves.

4,191,073

DRIVE ASSEMBLY HAVING AN IMPROVED SUN GEAR MOUNTING

Arthur J. Ritter, Jr., Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

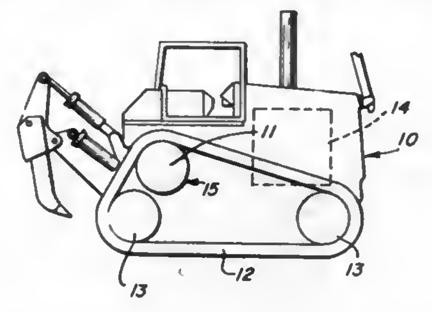
Filed May 26, 1977, Ser. No. 800,825

Int. Cl.² F16H *57/10*

U.S. Cl. 74—764 **4 Claims**

1. In a drive assembly having a driver shaft rotatably carried in a support for rotation about an axis, an output sprocket carried by a first carrier rotatably carried coaxially of said shaft, and a gear assembly for driving the carrier from the shaft including a first sun gear rotatable with said shaft about said axis, a second carrier, a plurality of first planetary gears on said second carrier driven by said sun gear, an outer ring fixedly disposed coaxially of said shaft in meshed association with said first planetary gears, a second sun gear, and a plurality of second planetary gears rotatably mounted to said first carrier and meshed with said outer ring gear and second sun gear, the improvement comprising:

mounting means for rotatably mounting the second sun gear to said first carrier coaxially of said shaft; and



seal means for sealing said second sun gear mounting means to said first carrier.

4,191,074

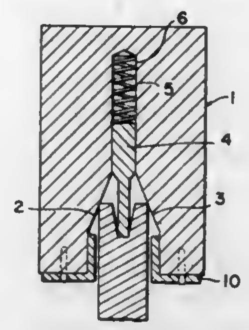
CHAIN SAW BAR GUIDE ALIGNMENT SYSTEM

William E. Sherman, P.O. Box 95, Silver City, N. Mex. 88061

Filed Jun. 2, 1978, Ser. No. 912,054

Int. Cl.² B23D *63/18*

U.S. Cl. 76—25 R **12 Claims**



1. A system for aligning and regapping a guide groove on a chain saw guide bar which includes a swaging tool comprising:

a U-shaped housing defining a longitudinal cavity, said housing having a striking surface;

a groove gauge which is movably mounted in said housing and which is adapted to fit into said guide groove and to conform said guide groove to its proper dimensions; and

a set of swaging surfaces positioned in said longitudinal cavity in such a manner as to engage the peripheral edges of said chain guide bar when downward force is applied to the striking surface of the said housing, forcing the guide groove in said bar against said groove gauge.

4,191,075

ROTARY CUTTING TOOL

Evgeny I. Morgunsky; Valery A. Sidorenko, and Vladimir A. Plotnikov, all of Minsk, U.S.S.R., assignors to Fiziko-Tekhnichesky Institut Akademii Nauk Belorusskoi SSR, U.S.S.R.

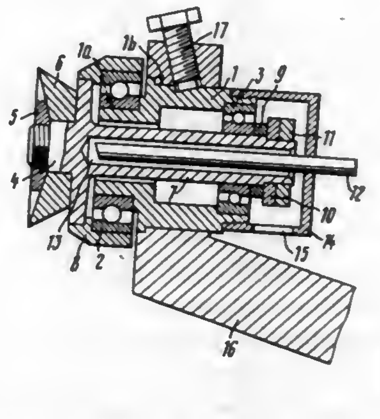
Filed Nov. 17, 1978, Ser. No. 961,741

Claims priority, application U.S.S.R., Dec. 8, 1977, 2547939

Int. Cl.² B23B *29/00;* B26D *1/12*

U.S. Cl. 82—36 R **2 Claims**

1. A rotary cutting-tool comprising: a stepped-diameter arbor having a central bore; a bearing accommodated on said stepped-diameter arbor; another bearing accommodated within the central bore of said stepped-diameter arbor; a cup-shaped cutting bit; a holder carrying said cup-shaped cutting bit and comprising a hollow shaft accommodated in the central bore of said stepped-diameter arbor, said shaft being journalled in said bearing accommodated within the central bore of said stepped-diameter arbor, and a sleeve encompassing said hollow shaft and journalled adjacent to said cutting bit in said bearing accommodated on said stepped-diameter arbor.



4,191,076

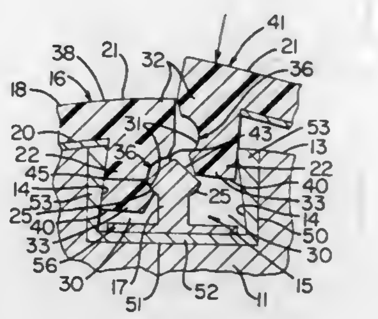
ROTARY ANVIL CONSTRUCTION

Jacob A. Bollmer; Joseph E. Stearns, both of Dayton, Ohio, and Alvin R. Brooks, Jr., Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Oct. 23, 1978, Ser. No. 954,063

Int. Cl.² B26D *7/20*

U.S. Cl. 83—13 **20 Claims**



1. In a rotary anvil construction comprising; a rotary anvil having an outer substantially cylindrical surface and having a pair of spaced holding surfaces extending radially inwardly from said cylindrical surface and defining opposed walls of a longitudinal groove in said anvil; a die-cutting mat attached against said anvil and having opposite end portions terminating in a pair of identical locking flanges extending from said end portions and being received within said groove; and a wedge for locking said flanges against said holding surfaces; the improvement wherein said wedge is an immobile locking wedge disposed within said groove and having fixed locking surface on each side thereof, each locking surface being spaced from an associated one of said holding surfaces to define a flange-receiving channel therebetween, and each of said flanges has an inner portion adjoining said mat and an outer portion adapted to be yieldingly compressed within an associated channel, each other portion having a cooperating locking surface which is snap-locked against an associated locking surface of said wedge to lock its flange in position once the associated outer end portion is yieldingly compressed within its associated channel.

4,191,077

BEARING BLOCK WITH AIR SUPPLY PASSAGE

Richard L. Edwards, Windsor Locks, and Martin Kesten, West Hartford, both of Conn., assignors to Preston Engravers, Inc., Windsor, Conn.

Filed Dec. 26, 1978, Ser. No. 972,894

Int. Cl.² B26D *7/06*

U.S. Cl. 83—99 **9 Claims**

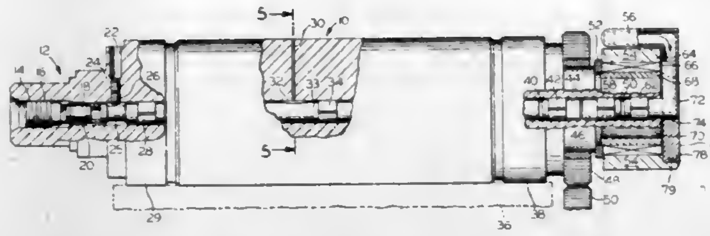
1. For use in die-cutting press, a die-cutting roll assembly comprising:

a die-cutting roll having a cylindrical cavity extending axially inwardly from one end thereof and having mounting means on the other end thereof adapted to be rotatably supported in the press, said roll having at least one aperture extending generally radially from said cavity to a location on the outside surface of said roll, said aperture enabling fluid flow between said cavity and said outside surface of said roll and comprising substantially the only outlet for fluid from said roll;

a generally cylindrical fluid-delivery manifold extending axially into said cavity from said one end of said roll for relative rotation therebetween, said roll preventing axial motion of said manifold with respect to said roll in the direction away from said one end of said roll, said manifold being dimensioned and configured to seat in said cavity with its outer surface in close proximity to the inner surface of said roll defining the corresponding portion of said cavity, said manifold having an axially extending passageway therein with an outlet comprising at least one generally radially extending port opening at a point on said outer surface thereof in a location for registry with said one aperture of said roll to permit fluid flow through said port and said aperture when in registry as a result of relative rotation therebetween, said manifold having an inlet communicating with said axial passageway thereof; and

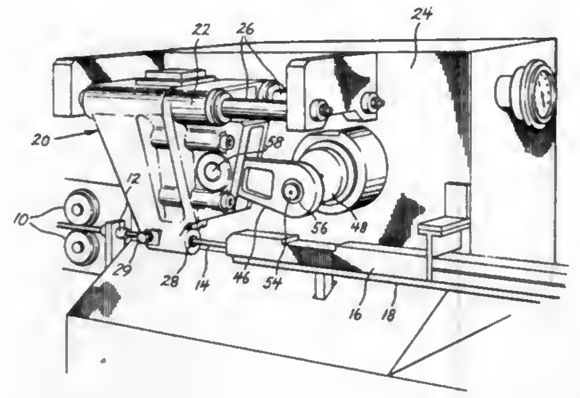
a bearing-block assembly adapted for mounting in the press and including:

(i) a bearing-block body member having a generally cylindrical bearing recess in one face thereof, said one end of said roll being journaled in said recess of said body member for rotation therein and for substantial retention of said roll in a predetermined axial position in the press, and



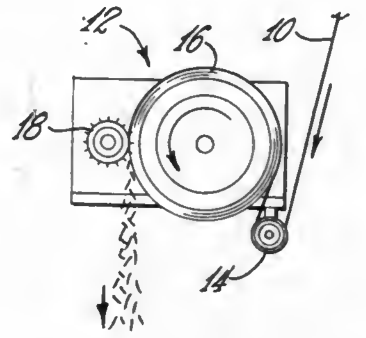
(ii) a couplant member seated in said bearing-block body member adjacent said bearing recess, fixed in position axially of said bearing-block body-member recess, and rotatably adjustable in said body member relative to said body-member recess, said couplant member including an elongated conduit having an axially extending portion that has an outlet communicating with said inlet of said manifold, said elongated conduit further including a transversely extending portion extending from said axial portion to the periphery of said couplant member, said transversely extending portion having an inlet adapted for fluid communication with a source of pressurized fluid, said couplant member having a fluid coupling at said outlet of said axially extending portion, said fluid coupling having means thereon about said outlet engaged with said manifold at said inlet thereof to prevent axial rotation of said manifold relative to said fluid coupling but to permit free axial withdrawal of said manifold from said fluid coupling, coupling of said outlet of said axial portion to said inlet of said manifold providing fluid communication between them and permitting fluid flow from the source of pressurized fluid through the conduit, manifold, and aperture to the outside surface of said roll when said inlet of said transversely extending portion communicates with the source of pressurized fluid, adjustment of the rotational position of said couplant member thereby adjusting the rotational position of said manifold and the rotational position of said roll at which said port and said aperture register with each other.

4,191,078
WIRE CUTTING FLYING SHEAR
Wilhelm A. Steinhilber, Guilford, Conn., assignor to Orion Machinery & Engineering Corp., Branford, Conn.
Filed Feb. 3, 1978, Ser. No. 875,076
Int. Cl.^{2} B23D *25/04*
U.S. Cl. 83—320 **2 Claims**



2. In a wire cutting-off machine having a frame and a feeding means for feeding wire longitudinally of itself in a straight line path continuously past a cutting station fixed relative to said frame, an improved flying shear mechanism for repeatedly cutting said wire without interrupting its feed by said feeding means, said flying shear comprising: a cutter head, means supporting said head for reciprocation relative to said frame along a first axis parallel to the straight line path of wire feed, said head having a horizontal bore through which said wire passes, a knife slide carried by said head for vertical reciprocation relative thereto, said slide having a knife portion which moves past one end of said bore to cut said wire as said slide is moved vertically between two different positions relative to said head, a crank shaft rotatable about a horizontal axis fixed relative to said frame and perpendicular to the vertical plane containing said straight line path of wire feed, a lever, means pviotally connecting said lever eccentrically to said crank shaft at one point along the length of said lever, means pivotally connecting said lever to said cutter head at another point along the length of said lever so that said head is horizontally reciprocated along said first axis as said shaft rotates, and means pivotally connecting said lever to said knife slide at still another point along the length of said lever so that said slide is also driven vertically between said two different positions relative to said head as said drive shaft rotates, said lever being connected at one of its ends to said crank, at the other of its ends to said knife slide, and at a point intermediate its ends to said cutter head, said means pivotally connecting said lever eccentrically to said crank shaft being such that the pivot axis of said lever relative to said crank shaft is fixed to both said lever and said crank shaft, said means pivotally connecting said lever to said cutter head being such that the pivot axis of said lever relative to said head is fixed both to said lever and said head, and said means pivotally connecting said lever to said knife slide including a pressure piece, means supporting the pressure piece on said knife slide for movement relative to said slide solely along an axis parallel to said path of wire feed, and means pivotally connecting said lever to said pressure piece for movement of said lever relative to said pressure piece about a pivot axis fixed both to said lever and said pressure piece, said means supporting said pressure piece on said knife slide including means defining a slide cavity in said slide having a constant cross-sectional size along an axis parallel to said path of wire feed, and said pressure piece being received in said slide cavity and having a complementary cross-sectional shape so as to be restrained to sliding movement relative to said slide along said axis of said cavity.

4,191,079
TEXTILE STRAND CONTROL DEVICE
Alex P. Symborski, Anderson, S.C., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Aug. 25, 1978, Ser. No. 937,005
Int. Cl.^{2} D01G *1/04*
U.S. Cl. 83—347 **4 Claims**



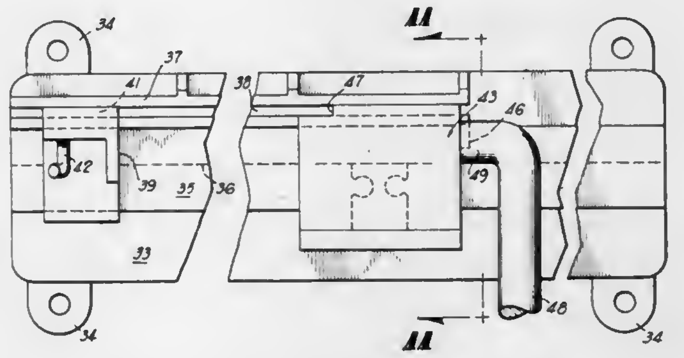
2. A chopper adapted to cut continuous strand into individual segments comprising:
- a rotatable cot roll;
- a rotatable cutter roll having a plurality of cutting edges adapted to cut said strand passing between the cutter roll and cot roll; and
- a rotatable idler roll adapted to position the strand on at least a portion of the circumferential periphery of the cot roll, the idler roll having
- a plurality of substantially parallel, spaced apart cylindrical rods adapted to contact said strand, the rods being positioned along a base circle wherein

D=diameter of the base circle
d=diameter of the rods
S=distance measured along the base circle between centerlines of adjacent rods

and said idler roll is fabricated according to the following parameters

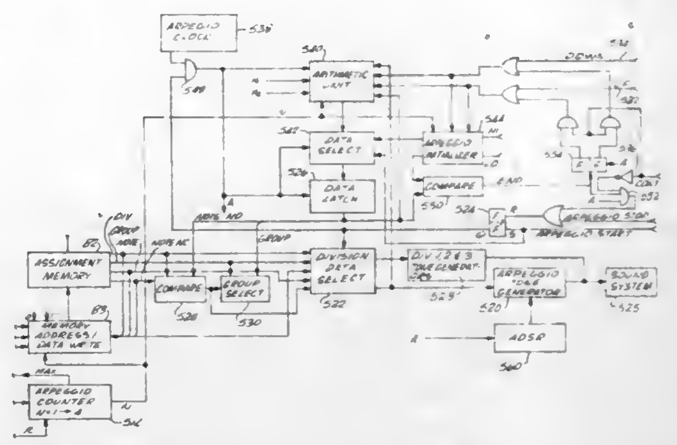
$d \leqq 0.08D$
$S \geqq 1.6D$.

4,191,080
APPARATUS FOR PUNCHING STORM SASHES
Lawrence L. Graham, 300 Great Oak Dr., Athens, Ga. 30605
Filed Mar. 9, 1978, Ser. No. 884,893
Int. Cl.^{2} B26D *5/10, 7/16*
U.S. Cl. 83—467 R **4 Claims**



1. An apparatus for fabricating a storm sash comprising a base having an elevated flange extending therealong and forming with the base a horizontal slot, a back rest rising vertically from one side of the base and having a top opening vertical slot formed therein longitudinally at right angles to said horizontal slot, a stop longitudinally adjustably mounted on the base and guidably engaging said horizontal and vertical slots, an opposing punch having a guide element engaging in the vertical slot, said punch having a bottom through passage engaging over said elevated flange and adapted to receive an extruded channel member which is engaged endwise over and along the elevated flange and on said base and held solidly by the flange and base, said vertical slot adapted to receive an accurately precut sash pane between said stop and said punch whereby said pane functions as a gauging element in said apparatus to establish the precise cut off length of said channel member, a vertically reciprocatory punch die means within the punch adapted to engage the channel member to cut off the same and simultaneously form locking tabs thereon at the cut off end of the channel member, and a manual operating member on the punch to move the punch die means relative to said channel member.

4,191,081
SELECTABLE AUTOMATIC ARPEGGIO FOR ELECTRONIC MUSICAL INSTRUMENT
Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan
Filed May 11, 1978, Ser. No. 904,733
Int. Cl.^{2} G10H *1/00, 5/00*
U.S. Cl. 84—1.03 **15 Claims**



1. In a keyboard operated electronic musical instrument having a plurality of tone generators and memory means for storing a plurality of tone generator control words, means responsive to actuation of the keys on the keyboard for coding a corresponding number of the control words to indicate the note and the associated octave of each actuated key, and means assigning the coded control words to a corresponding number of the tone generators to activate and set the pitch of the tone generators, automatic arpeggio apparatus comprising: means responsive to the activation of a group of keys forming an arpeggio chord for coding a corresponding number of control words in the memory means to indicate each of the notes of the chord, means counting the number of keys forming the chord, means storing the count number of each note in the chord, and means including an arpeggio clock for transferring each of the arpeggio chord note control words in synchronism with the arpeggio clock from the memory means to one of the tone generators sequentially according to said stored count numbers.

4,191,082
KEY RANGE DIVIDING TYPE ELECTRONIC MUSICAL INSTRUMENT
Masahiko Koike, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Oct. 11, 1978, Ser. No. 950,328
Claims priority, application Japan, Oct. 27, 1977, 52/128975; Oct. 27, 1977, 52/144426[U]; Oct. 27, 1977, 52/144427[U]; Nov. 1, 1977, 52/146960[U]
Int. Cl.^{2} G10H *1/02*
U.S. Cl. 84—1.19 **6 Claims**

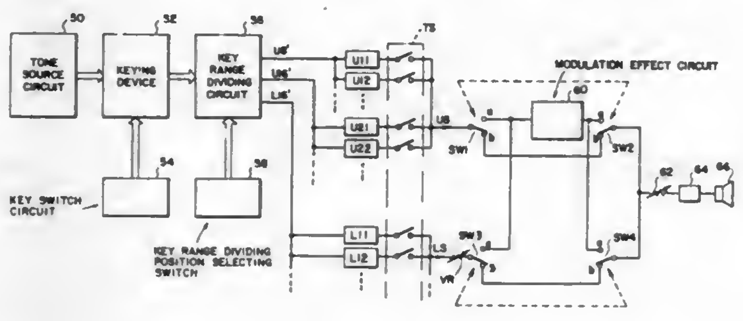
1. In an electronic musical instrument comprising:
- at least one continuous keyboard having a plurality of keys;
- a keyer coupled to said plurality of keys for producing, in response to actuation of a key among said keys, a keyed output of a tone signal having an amplitude envelope and corresponding to note name of said actuated key;

a first filter circuit for coloring keyed tone signals corresponding to keys of a first group;

a second filter circuit having a different characteristic from that of said first filter circuit for coloring keyed tone signals corresponding to keys of a second group other than said first group of keys;

means for changing a dividing position between said first and second groups to vary the keys belonging to each group;

means for transmitting the keyed tone signals of said first and second groups to said first and second filter circuits respectively; and


TONE SOURCE CIRCUIT
KEYING DEVICE
KEY RANGE DIVIDING CIRCUIT
MODULATION EFFECT CIRCUIT
KEY SWITCH CIRCUIT
KEY RANGE DIVIDING POSITION SELECTING SWITCH

means for mixing outputs of said first and second filter circuits to produce a sound through a sound system;

the improvement wherein said signal transmitting means includes a plurality of gate means each receiving at least one keyed tone signal from said keyer for selectively delivering it to either said first or second filter circuit, and said dividing position changing means includes a dividing position selecting switch and a logical circuit connected to said switch for selectively supplying gate conductive signals to said plurality of gate means in accordance with the operation of said selecting switch thereby controlling the conduction of said gate means to change the dividing position between said first and second groups.

4,191,083

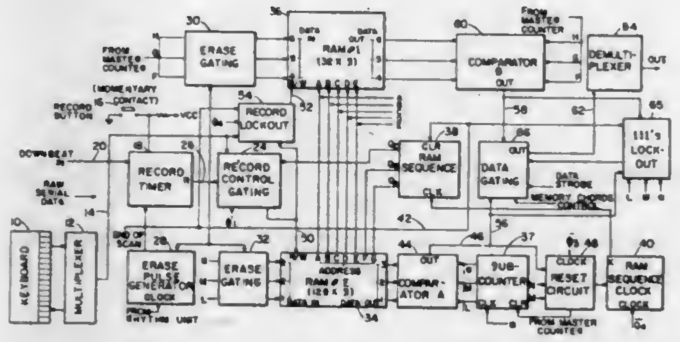
METHOD AND APPARATUS FOR MEMORIZING AN ACCOMPANIMENT PASSAGE

Brian N. Wilcox, Jasper; Melvin J. Schroeder, Ferdinand; Billy J. Whittington, and John W. Robinson, both of Jasper, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Aug. 2, 1978, Ser. No. 930,394

Int. Cl.^{2} G10H *1/00*

U.S. Cl. 84—1.28 **16 Claims**



1. In an electronic organ having a keyboard with playing keys and multiplexer means for scanning said keyboard and developing a multiplexed serial input data stream having keydown signals in time slots corresponding to depressed keys of said keyboard, the improvement being a programmable note pattern generator having a record mode and a playback mode and comprising:

counter means for producing a count sequence in synchronism with the scanning of the keys of said keyboard

a programmable memory,

record means responsive to said input data stream for writing in said memory data corresponding to said keydown signals in said input data stream, said record means being operable when said pattern generator is in the record mode,

playback means for reading the data stored in said memory in the same order in which it was written into said memory, and

comparator means for producing a keydown signal in an output data stream each time there is a match between said count and the data read out of said memory.

16. In an electronic organ having a keyboard, the method of memorizing and then playing back a musical passage comprising:

depressing a plurality of keys on the keyboard,

scanning the keyboard to develop a time division multiplexed serial data stream having a unique time slot for every key of the keyboard and a plurality of signals in said time slots corresponding to the depressed keys,

selectively writing into a programmable memory data corresponding to the location in the data stream of the first occurring keydown signal and then writing into said memory data corresponding to the respective intervals between at least some of the successively occurring keydown signals beginning with said first occurring keydown signal,

reading the data stored in the memory,

converting the data read out of the memory to a serial time division multiplexed data stream having key-down signals in time slots uniquely corresponding to certain keys of the keyboard, and

producing audible tones corresponding to said certain keys.

4,191,084

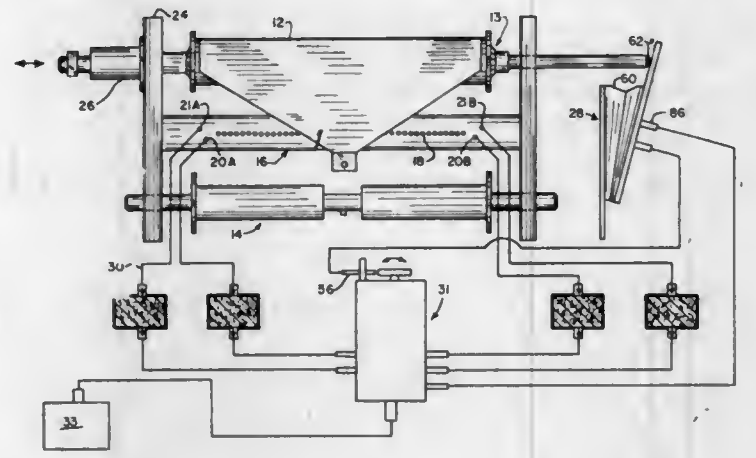
AUTOMATIC TRACKING APPARATUS

Lee Von Gunten, 1515 Crabtree, Arlington Heights, Ill. 60004

Filed Nov. 22, 1978, Ser. No. 962,861

Int. Cl.^{2} G10F *5/06*

U.S. Cl. 84—136 **8 Claims**



1. In an automatic alignment system wherein a feed roller passes perforated sheets over an intermediate tracker bar to a take up roller, and where the tracker bar has air flow sensors disposed near it's outer edges to provide control signals to pneumatic aligning devices, the improvement which comprises:

an air flow sensing device having an outer casing member;

multiple cylindrical inlet ports disposed in spaced relation about said casing and connected to receive air flow from the sensors on the tracker bar;

pistons slidably mounted for reciprocal motion in partial sealing contact within said inlet ports for providing motion responsive to the air flow in said ports;

a control arm pivotally mounted at one extremity of said casing and depending therefrom in cam contact with said pistons to provide motion of said control arm responsive to said piston movement;

a projection from said control arm protruding external to said casing to provide external control to the aligning device corresponding to the position of said control arm.

4,191,085

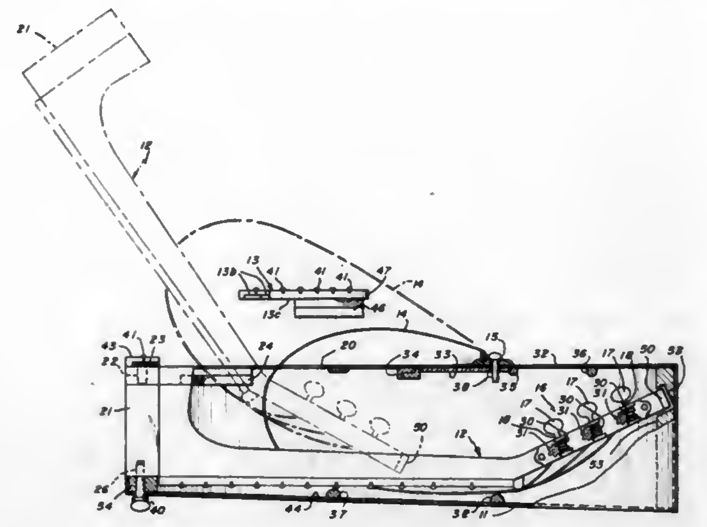
FOLD-AWAY STRINGED MUSICAL INSTRUMENT

Bradley N. Litwin, R.D. 4, Box 101 B, W. Brattleboro, Vt. 05301

Filed Sep. 25, 1978, Ser. No. 945,311

Int. Cl.^{2} G10D *1/08;* **G01D** *3/00*

U.S. Cl. 84—293 **6 Claims**



4. A collapsible guitar comprising;

a sound box portion;

a neck portion having connecting means contiguous with said sound box portion, said sound box portion having means for receiving said connecting means in a first position and a second position, said first position having said neck portion stored within said sound box portion and said second position having said neck portion outside of said sound box portion;

a detachable fingerboard end being contiguous with said sound box portion so that said fingerboard end is removed when said neck portion is moved from said first position to said second position.

4,191,086

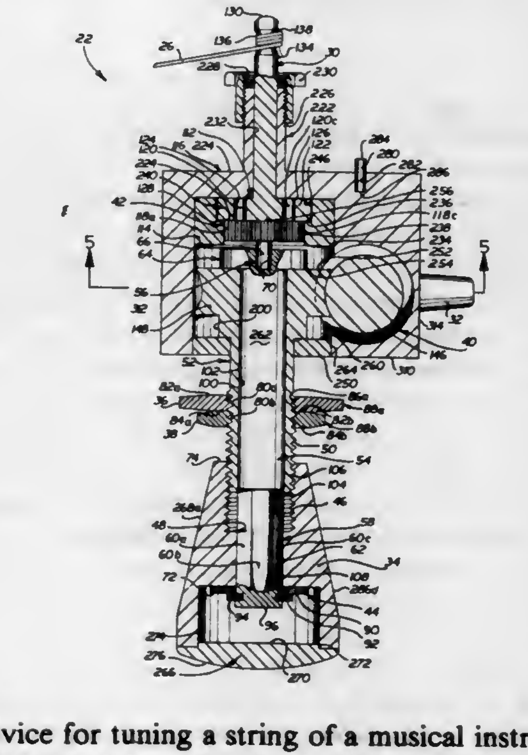
TUNING DEVICE

Robert J. Spercel, 3214 West 139th St., Cleveland, Ohio 44111

Filed Jan. 5, 1978, Ser. No. 867,164

Int. Cl.^{2} G10D *3/14*

U.S. Cl. 84—306 **26 Claims**



1. A device for tuning a string of a musical instrument to a first pitch and to a second pitch and for easily and repeatably changing between the two pitches, said device comprising a post having first and second end portions, said first end portion being adapted to be connected with the string, drive means for rotating said post, first input means connected with said drive means and rotatable about a first axis to cause said drive means to rotate said post to adjust the tension in the string to a tension corresponding to the first pitch, second input means connected with said drive means and rotatable about a second axis to cause said drive means to rotate said post to adjust the tension in the string from the tension corresponding to the first pitch to a tension corresponding to the second pitch, and adjustable stop means for limiting the extent to which said second input means is operable to adjust the tension in the string to limit the change in tension to a change between the tension corresponding to the first pitch and the tension corresponding to the second pitch.

4,191,087

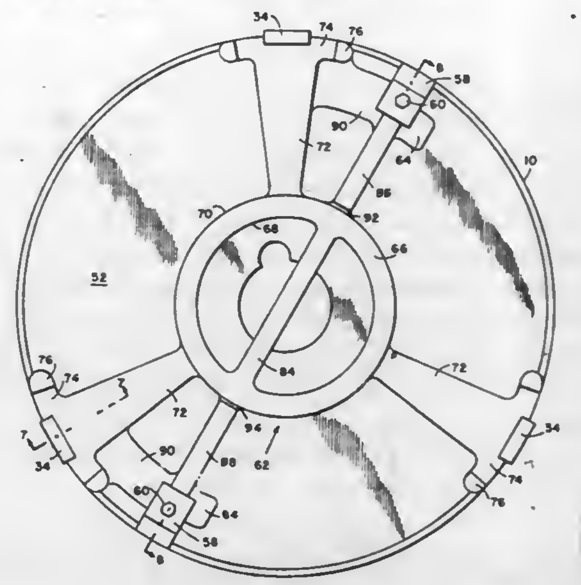
ROCKET DETENT AND RELEASE MECHANISM

Billy H. Campbell; Edward J. Debona, and William J. Laird, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1978, Ser. No. 933,312

Int. Cl.^{2} F41F *3/04*

U.S. Cl. 89—1.806 **17 Claims**



9. A frangible detent release mechanism comprising, a ring having inner and outer surfaces, radially extending arms from said outer surface that are of equal length and equally spaced about said outer surface of said ring and being made integral with said ring, and a rib integral with said ring and extending diametrically across a diameter of said ring and extending beyond said outer surface of said ring as rib ends, said radially extending arms and said rib ends being weakened relative to said ring, whereby when substantial force is applied to said ring, said ring will be broken away from said arms and said rib ends.

4,191,088

AMMUNITION FEEDER HAVING TWO FEED PAWLS

Arthur L. Gardiner, Tustin, and Tomas R. Castillo, Fountain Valley, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 10, 1978, Ser. No. 894,663

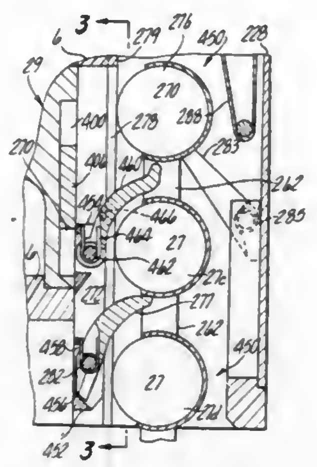
Int. Cl.^{2} F41D *9/02*

U.S. Cl. 89—33 C **1 Claim**

1. In a feeder for delivering ammunition rounds from a belt into the barrel of a gun, said feeder comprising a lower ammunition belt entry station (*27c*) below the level of the gun barrel, an upper ammunition round injection station (*27e*) at the level of the gun barrel, and an intermediate station (*27b*) equidistant from the upper and lower stations; a pawl carrier (272) mounted for vertical reciprocatory motion through a stroke

distance corresponding to the station spacing; and a feed pawl (**277**) located on the carrier to advance individual rounds of ammunition from the entry station to the intermediate station during each upstroke of the carrier:

the improvement comprising a second pawl (**460**) swingably mounted on the carrier directly above the feed pawl, whereby said second pawl feeds the last round of ammunition from the intermediate station to the injection station; a stationary abutment in line with the second pawl to limit upward movement of said second pawl and thereby prevent excessive upward movement of the ammunition belt at conclusion of each carrier upstroke; spring means (**464**) biasing the second pawl toward a position underlying a round of ammunition on the belt, and means (**466**) limiting movement of the second pawl by the spring means; said second pawl including a relatively thin arcuate wall having an undersurface conforming to the contour of the ammunition round therebelow, and an upturned tip extending from the arcuate wall to engage the undersurface of the next higher round; the arcuate contour of the second pawl being predetermined so that during each downstroke of the carrier the second pawl slides through the clearance space between the stationary abutment and the round of ammunition in the intermediate station.



4,191,089
BREECH-CLOSING MECHANISM FOR AUTOMATIC RIFLE

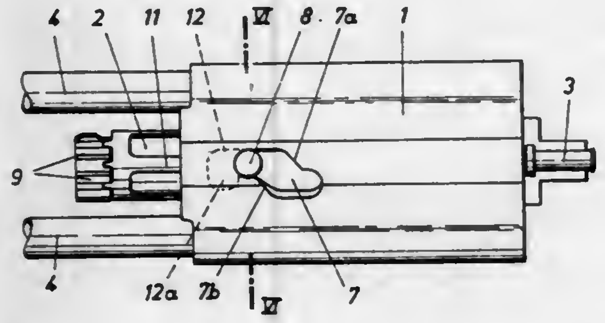
Ulrich Zedrosser, Steyr, Austria, assignor to Steyr-Daimler-Puch-Aktiengesellschaft, Vienna, Austria

Filed Apr. 10, 1978, Ser. No. 895,270

Claims priority, application Austria, Dec. 22, 1977, 9204/77

Int. Cl.² F41D *3/06*

U.S. Cl. 89—181 **2 Claims**



1. In an automatic rifle having a breech chamber and first locking and stop means near said chamber, the provision of a breech-closing mechanism, which comprises

a slide, which is longitudinally movable relative to said chamber and formed with a cam slot,

a bolt, which is longitudinally slidably mounted in said slide and rotatable relative to said slide between first and second rotational positions,

second locking means rigid with said bolt and adapted to cooperate with said first locking and stop means so that a longitudinal movement of said second locking means past said first locking and stop means is permitted in said first and prevented in said second rotational position of said bolt,

a locking member non-rotatably mounted in said slide and extending between said slide and bolt and longitudinally movable relative to said slide and bolt and formed with an angled slot having a longitudinally extending arm and at the forward end of the latter a transverse arm,

a radial cam follower pin rigid with said bolt and extending through said angled slot into said cam slot and

a spring which is disposed outside said bolt and interposed between said slide and said locking member and urges said locking member forwardly relative to said slide,

said locking member being adapted to be carried along by said slide forwardly into engagement with said first locking and stop means,

said slide being adapted to move forwardly relative to said locking member against the force of said spring when said locking member engages said first locking and stop means until said pin is at the forward end of said longitudinal arm,

said pin being adapted to cooperate with said cam slot to transmit a longitudinal movement of said slide to said bolt when said pin extends through said longitudinal arm and being adapted to enter said transverse arm from the forward end of said longitudinal arm and to cooperate with said cam slot so as to move said bolt between said first and second positions in response to a longitudinal movement of said slide when said pin extends through said transverse arm

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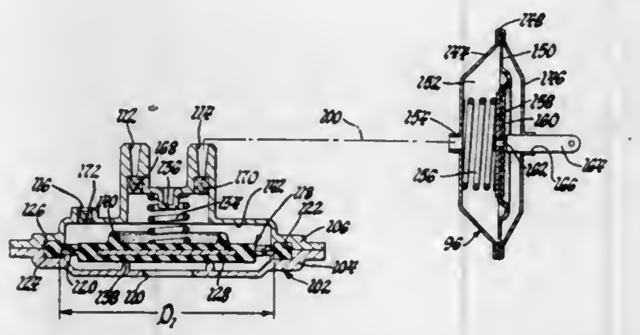
4,191,090
VACUUM TOGGLE

Ronald D. Freiberger, Kokomo, and Richard D. Reprogle, Greentown, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1978, Ser. No. 896,685

Int. Cl.² F15B *13/042*

U.S. Cl. 91—52 **2 Claims**



1. In combination, a source of variable vacuum pressure, a two-position vacuum-powered actuator movable between a rest position and a fully energized position by an increase of vacuum pressure applied thereto from a low level to a moderate level, and a vacuum switching device comprising: a housing with an interior space; a member in the interior space being movable in response to vacuum pressure changes from a first position to a second position, said member being cooperative with said housing to define an air flow passage; said housing having first and second inlets to said flow passage connected respectively to said variable source of vacuum pressure and to the vacuum powered actuator; said movable member in said first position having a predetermined large pressure responsive area exposed to vacuum pressures communicated through said first inlet, means defining a bleed inlet to said flow passage whereby vacuum pressure communicated to said flow passage through said first inlet is significantly reduced by air bleed resulting in an insufficient vacuum transmittal through said second inlet to said actuator to move it from its rest position until the vacuum pressure communicated to said first inlet substantially exceeds said moderate level whereby a predetermined high vacuum pressure communicated to said first inlet, even as reduced by air bleed, is sufficient to act on said large pressure responsive area to cause movement of said movable member into said second position; means operably associated with said housing and said movable member to prevent air bleed when said movable member is in its second position, thereby effectively increasing the vacuum pressure level communicated to said actuator sufficient to cause full movement from its rest position to its energized position; said air bleed preventing means simultaneously reducing the area of said movable member exposed to vacuum pressure to a predetermined small pressure responsive area when in said second position to thereby permit return of said movable member to its first position when the pressure level communicated to said first inlet is decreased a predetermined amount below said moderate level, thereby re-establishing air bleed to said first inlet and reducing the vacuum pressure level transmitted to said actuator permitting its full return to the rest position.

4,191,091
FEATHERING VALVE ASSEMBLY

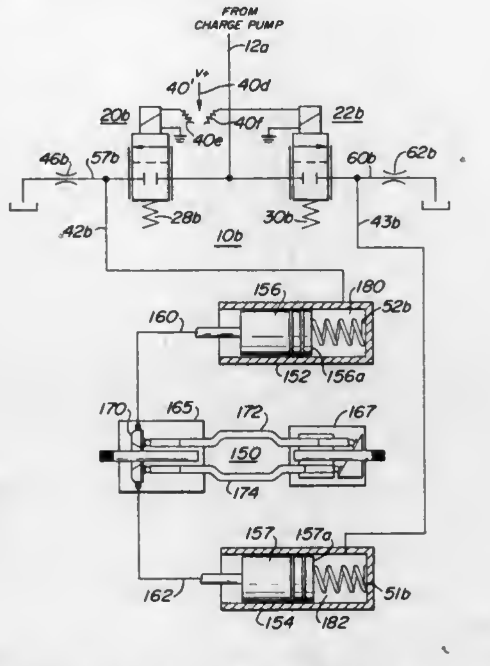
Kenneth W. Zeuner, New Hope, and Alonzo B. Jarman, Wrightstown, both of Pa., assignors to Control Concepts, Inc., Newtown, Pa.

Continuation-in-part of Ser. No. 705,920, Jul. 16, 1976, Pat. No. 4,126,293. This application Nov. 13, 1978, Ser. No. 958,349

The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.

Int. Cl.² F15B *13/06, 13/043*

U.S. Cl. 91—52 **10 Claims**



1. A feathering valve system for modulating the fluid inflow to first and second chambers of a movable assembly having biasing means comprising:

first and second electrohydraulically operated normally closed pilot valve assemblies respectively having first and second plug means movable between (1) valve normally closed states seating in and closing respective first and second pilot orifices for preventing any substantial flow of fluid through respective first and second pilot orifices and (2) valve open states, said first and second plug means being individually operated and not mechanically connected to each other,

controller means electrically coupled to said pilot valve assemblies for applying a predetermined value electrical signal for actuating a pilot valve assembly to an open position related to the value of said signal;

pilot source means for applying fluid under a substantially constant pilot pressure under said first and second plug means through said pilot orifices, and

first and second conduit means for providing modulating fluid flow from above the first or second plug means of an actuated valve assembly to a respective chamber tending to close the respective plug means thereby producing negative feedback, whereby said movable assembly moves against said biasing means to a position which is a function of the actuating signal value.

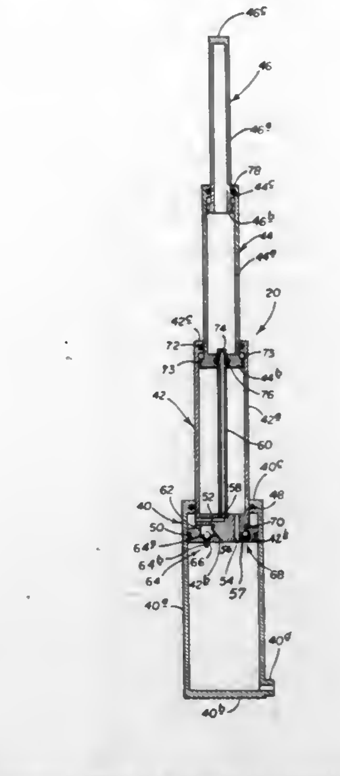
4,191,092
TELESCOPIC RAM

Stanley E. Farmer, Troutdale, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Nov. 16, 1977, Ser. No. 852,108

Int. Cl.² F15B *11/18;* **F01B** *7/20*

U.S. Cl. 91—189 R **4 Claims**



1. A three-stage, fluid-actuated, extensible-contractible device for an industrial lift truck or the like comprising

first, second, third and fourth nested, relatively reciprocable sections, said first, second and third sections being extensible from said second, third and fourth sections, respectively,

port means for introducing and exhausting pressure fluid to extend and contract said device, respectively,

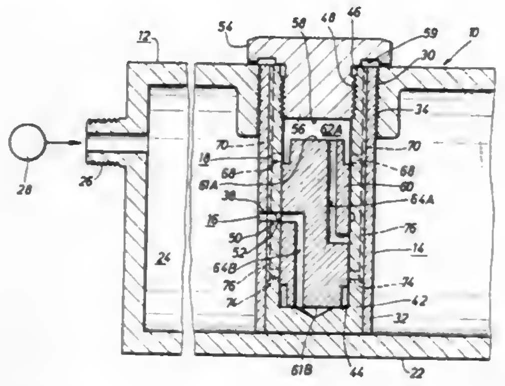
means on said first, second and third sections defining working surface areas on which pressure fluid acts to extend said sections, said area on said first section being less than that on said second section, and said area on said second section being less than that on said third section, and

fluid-flow control means within said device for controlling the distribution of fluid therein, said control means including first, second and third passage means provided within said third section, said first passage means accommodating throughout length-change in said device fluid communication between said second and fourth sections, said second passage means accommodating throughout length-change in said device fluid communication between said third and fourth sections, and said third passage means accommodating throughout length-change in said device communication between opposite end portions in said fourth section,

said second passage means causing said working surface area on said second section to be exposed, under all operating conditions, directly to the same pressure fluid acting on said working surface area on said third section,

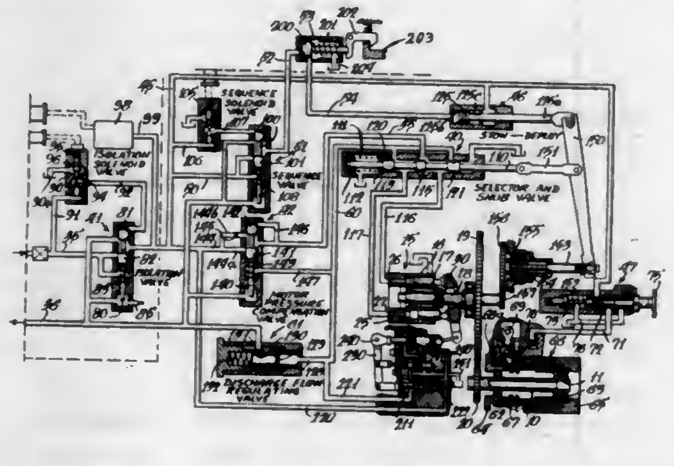
said control means, with pressure fluid supplied to said port means at a substantially constant rate, and in cooperation with said areas, producing a substantially uniform overall extension speed for said device.

4,191,093
CONCRETE STRIKE-OFF VIBRATOR
Marshall F. Compton, 114 Brandon, Conroe, Tex. 77301
Filed Sep. 19, 1977, Ser. No. 834,297
Int. Cl.^{2} F01L *21/02;* **F16J** *11/02*
U.S. Cl. 91—234 **7 Claims**



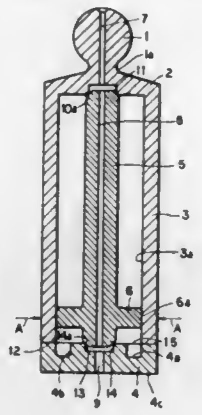
1. A concrete strike-off vibrator comprising:
a manifold having a presurrized fluid inlet adapted to permit the introduction of a pressurized fluid into a volume defined in the interior of said manifold;
a cylinder assembly disposed in a force-transmitting relationship within said manifold, said cylinder assembly including a piston adapted to define a first and a second volume within said cylinder assembly, said cylinder assembly comprising:
a barrel member having internal threads disposed adjacent the upper end thereof;
a flanged cap adapted for threaded interconnection with said barrel, said barrel and said cap cooperating to define an enclosed space wherein said piston is moveably disposed and from which said first and second volumes are defined;
a sleeve concentrically disposed in a close-fitting relationship about said barrel, said sleeve having external threads adapted for threaded interconnection with said manifold;
intake means for introducing a pressurized fluid from said interior volume of said manifold into said first and second volumes of said cylinder assembly; and,
exhaust means isolated from said intake means and from said interior volume of said manifold for venting said first and said second volumes of said cylinder assembly;
said piston being displaceable within said cylinder assembly in response to the introduction of pressurized fluid into said first and second volumes of said cylinder assembly to generate vibratory forces transmissible to said manifold.

4,191,094
POWER DRIVE UNIT
Robert V. Flippo, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Apr. 26, 1978, Ser. No. 900,313
Int. Cl.^{2} F01B *3/06;* **F04B** *1/30;* **F16D** *31/02*
U.S. Cl. 91—506 **10 Claims**



1. A power drive unit for imparting two-directional drive to a mechanism with different torque demands at different times in the cycle of operation with operation at the maximum speed possible for each load condition at a constant hydraulic flow through a bi-directional motor with displacement-varying means, comprising, in addition to said motor, a control cylinder having a piston connected to said displacement-varying means, a first conduit connected to said motor and including a valve for controlling the direction of flow to the motor, a second circuit connected to said control cylinder including servo valve means for controlling the position of the piston in the cylinder to control the position of said displacement-varying means, and motor torque sensing means including means for sensing the pressure drop across the motor without waste of energy in the hyraulic system and operable in both directions of motor rotation for positioning of said servo valve means.

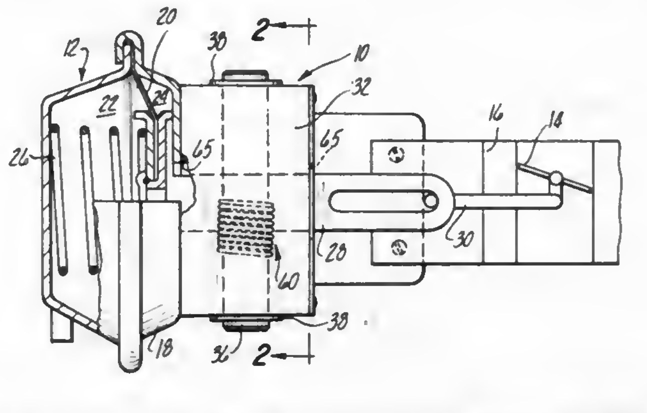
4,191,095
HOLLOW PISTON FOR HYDROSTATIC MACHINES
Walter Heyl, Johannesburg, Fed. Rep. of Germany, assignor to Linde AG, Höllriegelskreuth, Fed. Rep. of Germany
Filed Nov. 23, 1977, Ser. No. 854,053
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653868
Int. Cl.^{2} F15B *21/04;* **F16K** *1/00, 1/08*
U.S. Cl. 92—78 **6 Claims**



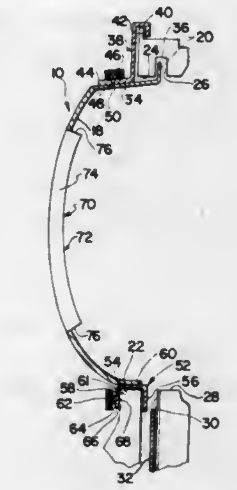
1. A hollow piston for an axial-piston machine comprising:
a hollow cylindrical body having a working end, a reaction end, and formed with an internal space closed at said reaction end and open at said working end;
a post extending centrally within the interior of said body and having an end part terminating at said working end, said post being formed with a central passage, said reaction end having a bore communicating with said passage in said post; and
a cover secured to said body at said working end, said cover having a part juxtaposed with said end part of said post, one of said parts being provided with a conical surface and the other of said parts having an edge engaging said conical surface, said cover having a further passage communicating with said central passage.

4,191,096
TIME DELAY ASSEMBLY
Benjamin C. Benjamin, Flint, Mich., assignor to Schmelzer Corporation, Durand, Mich.
Filed Nov. 28, 1977, Ser. No. 855,360
Int. Cl.^{2} F15B *15/22;* **F01B** *29/00*
U.S. Cl. 92—143 **7 Claims**

1. A time delay device comprising, a housing, a shaft rotatably mounted in said housing, a plate member mounted on said shaft for rotation therewith, a wall member disposed in said housing at one side of said plate member, said shaft being rotatable relative to said wall member, a layer of viscous material adhering to adjacent surfaces of said plate and wall member to retard rotation of said housing, a control member movable in opposite directions, a one-way clutch including a coil spring wound on said shaft for rotation relative to said shaft in one direction and rotation therewith in the other direction and connecting said shaft to said control member for movement of said control member independently of said shaft in one direction and with said shaft in the opposite direction, said control member forming part of a vacuum motor and being movable in one direction at a delayed rate and in the other direction at a normal rate, said housing being supported on the exterior of said vacuum motor.

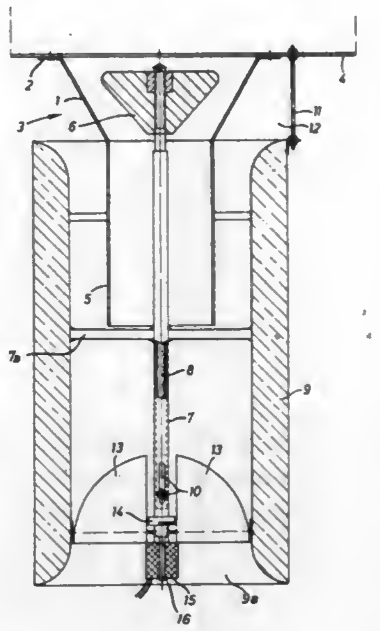


4,191,097
AIR DEFLECTOR FOR MOTOR VEHICLES
Don L. Groen, 1346 Blackhawk Trail - W, Jacksonville, Fla. 32225
Filed Sep. 11, 1978, Ser. No. 940,954
Int. Cl.^{2} B60J *1/20*
U.S. Cl. 98—2.12 **5 Claims**



1. An air deflector for motor vehicles having windows and frames therefor comprising a semiflexible sheet having a leading edge, a trailing edge, an upper edge, and a lower edge; first means for securing said upper edge to an upper edge of said window frame; second means for securing said lower edge to an lower edge of said window frame; and means for adjustably deflecting air, said air deflecting means disposed on said trailing edge, said semi-flexible sheet bowing outwardly from said motor vehicles when secured thereto, wherein said first securing means comprises substantially "L" shaped folded portion provided in said semi-flexible sheet adjacent said upper edge thereof, said substantially "L" shaped folded portion engaging an upper window slot provided by said frame, a bracket for engaging said window frame, said bracket affixed to said sheet, said bracket and said substantially "L" shaped folded portion partially encircling said frame and securing said upper edge of said semi-flexible sheet adjacent thereto, wherein said adjustable deflection means comprises a portion of said sheet adjacent said trailing edge thereof being partially severed by pair of spaced apart slits, said slits extending inwardly from said trailing edge, said portion between said slits being positionable in plane substantially transverse to said semi-flexible sheet.

4,191,098
NOZZLE FOR AIR CONDITIONING UNITS
Dietfried Gersch, Giessen, Fed. Rep. of Germany, assignor to Kessler & Luch GmbH, Giessen, Fed. Rep. of Germany
Filed May 8, 1978, Ser. No. 903,404
Claims priority, application Fed. Rep. of Germany, May 21, 1977, 2723006
Int. Cl.^{2} F24F *13/06, 13/08*
U.S. Cl. 98—40 N **7 Claims**



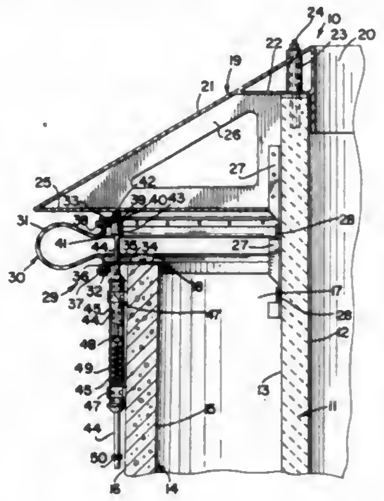
2. An air nozzle as outlet element of an air conducting tube of air conditioning units, said nozzle comprising:
(a) a primary nozzle in the form of a hollow cone fixedly mounted with its base on the air conducting tube;
(b) a secondary nozzle in the form of a sleeve, said sleeve having a larger diameter than the small end of the hollow cone and being arranged concentrically to the hollow cone, one end of the sleeve facing the air conducting tube but being spaced therefrom so as to define an annular opening between the outside of the hollow cone and the inner wall of the sleeve, the other end of the sleeve forming a blow-out end;
(c) a truncated cone arranged coaxially on the inside of the hollow cone so as to define an annular opening between the outside of said truncated cone and the inner wall of said hollow cone;
(d) means for displacing said truncated cone in axial direction comprising a pipe mounted stationarily and concentrically in said sleeve and an axially displaceable rod guided in said pipe, the truncated cone being mounted on the front end of said rod;
(e) blades at the blow-out end of the sleeve extending in radial direction between the inner wall of the sleeve and the outer wall of the pipe; said blades being supported on pins in the walls of the sleeve and the pipe so as to be pivotable in different directions; and
(f) means for angularly pivoting all blades simultaneously.

4,191,099
SEALING ARRANGEMENT FOR CHIMNEYS WITH AN ANNULAR PRESSURIZED SPACE
[illegible]ictor H. Strahl, Kansas City, Mo., assignor to Pullman Incorporated, Chicago, Ill.
Filed Mar. 23, 1978, Ser. No. 889,456
Int. Cl.^{2} F23L *17/02*
U.S. Cl. 98—60 **10 Claims**

1. In a chimney having an outer tubular shell the improvement comprising:
an inner tubular liner spaced and in axial alignment with said tubular shell to provide an annular space therebetween,
an upper hood cover member supported on said inner tubular liner above said annular space,
a flexible boot-like member having first and second annular

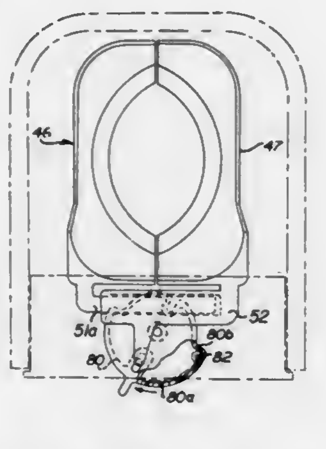
circumferential edges, said first edge connected to said outer tubular shell,

seal means for sealingly engaging said second edge means of said boot-like member, and



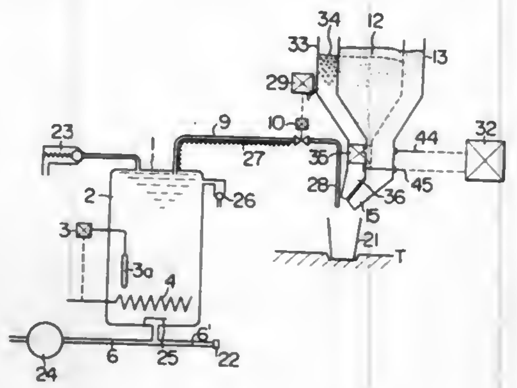
biasing means for supporting said seal means for sealing and sliding engagement of the seal means against said hood cover to substantially enclose said annular space.

4,191,100
BREWING APPARATUS FOR COFFEE AND THE LIKE
Vincent G. Marotta, Shaker Heights, Ohio, assignor to North American Systems, Inc., Bedford Heights, Ohio
Filed Nov. 15, 1976, Ser. No. 741,621
Int. Cl.^{2} A47J *31/10*
U.S. Cl. 99—299 **15 Claims**



1. An infusion apparatus for brewing coffee or the like comprising a receptacle comprising an infusion chamber for receiving infusion material to be infused into a liquid as the latter flows through the chamber from an inlet zone to an outlet zone, and means for changing the size of said chamber laterally of the path from said inlet zone to said outlet zone to change for a given quantity of infusion material in said chamber the thickness of infusion material along the path through which the liquid must flow, said receptacle having an outer side wall, a support portion extending outwardly from said side wall, said means for changing the size of said chamber comprising an actuating mechanism on said support portion, and a cover member on said support portion movable from a position covering said actuating mechanism on said support portion to a position exposing said actuating mechanism, and means for latching said cover in a closed position.

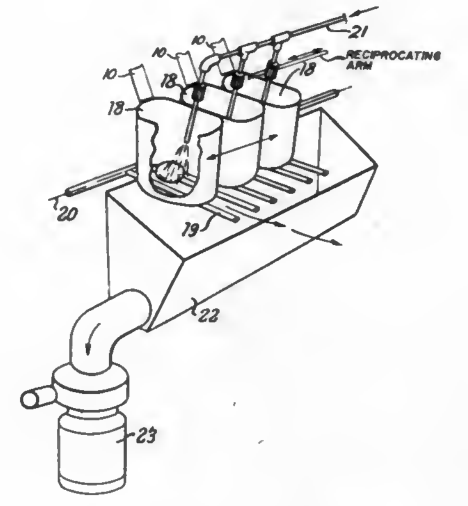
4,191,101
APPARATUS FOR PREPARING A CUP OF HOT DRINK
Akira Ogawa, Mishima; Toyoaki Masuda, and Osamu Miura, both of Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 19, 1978, Ser. No. 971,075
Claims priority, application Japan, Dec. 21, 1977, 52-154104; Dec. 27, 1977, 52-160823; Mar. 15, 1978, 53-33101[U]
Int. Cl.^{2} B01F *3/12*
U.S. Cl. 99—323.3 **6 Claims**



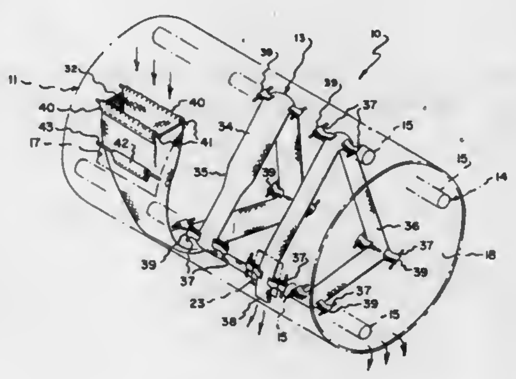
1. Apparatus for preparing a cup of hot drink comprising a tank for storing hot water, said tank being provided with means for constantly controlling temperature of the hot water contained therein and means for constantly controlling pressure of said hot water; a pipe having one end communicating with said tank for feeding said hot water from said tank; a nozzle connected to said pipe through valve means; a timer connected to said valve means for controlling the operation thereof; a hopper filled with a raw material for preparing said hot drink; powder measuring means connected to the bottom opening of said hopper; a chute connected to the bottom end of said powder measuring means, the outlet opening of said chute being arranged near the outlet of said nozzle; and means for supporting a cup for preparing hot drink beneath said outlet opening of said chute and said outlet opening of said nozzle, said powder measuring means comprising a powder measuring cylinder, upper and lower end openings of which are aligned with the lower end opening of said hopper and upper end opening of said chute, respectively, upper and lower shutters operated for alternately closing and opening said upper and lower end openings of said cylinder, and a rotary disc for driving said shutters through link members, one end thereof being pivotably connected to said shutters respectively and the other end thereof being connected to circumferentially spaced apart points of said disc.

4,191,102
EGG-DESHELLING APPARATUS
Cecil J. Cope, Berkshire, England, assignor to Cope Whelon and Company, Limited, Reading, England
Division of Ser. No. 725,768, Sep. 23, 1976, abandoned. This application Apr. 18, 1978, Ser. No. 897,455
Int. Cl.^{2} A23N *5/00;* **A47J** *43/14*
U.S. Cl. 99—580 **3 Claims**

1. Egg-deshelling apparatus for deshelling hard boiled eggs, comprising a plurality of open-top and open-bottom compartments each of which is adapted to receive an individual egg to be deshelled, each of said compartments comprising a continuous closed wall having curved surfaces which enclose a substantially oval area, said plurality of closed walls being interconnected to one another with the longitudinal axes of said oval areas being disposed substantially parallel to one another, means for feeding a plurality of hard boiled eggs to the open tops of said plurality of compartments respectively to deposit one of said eggs in each compartment, means located below the open bottoms of said compartments for supporting said eggs in their respective compartments, the longitudinal axis of each egg being oriented substantially along the longitudinal axis of the oval compartment area in which said egg is supported, means for reciprocating said interconnected compartments in a direction transverse to the longitudinal axes of said oval areas to cause the opposing interior curved surfaces of said continuous closed walls to apply a plurality of blows to the sides of the hard boiled eggs in said compartments, thereby to shatter the shells of said eggs, means for washing the broken shells out of said compartments, and release means for moving said supporting means away from the open bottoms of said compartments to discharge the deshelled eggs from said compartments.

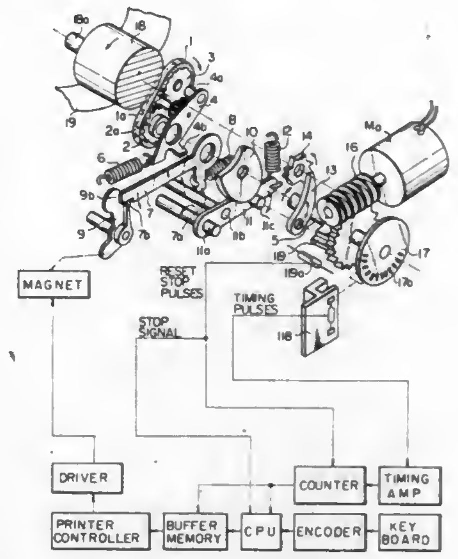


4,191,103
APPARATUS FOR EXTRACTING JUICE FROM POMACE
Dale E. Wettlaufer, East Aurora, N.Y., assignor to Terrier Machine Corporation, Buffalo, N.Y.
Filed Aug. 10, 1977, Ser. No. 823,221
Int. Cl.^{2} B30B *9/06*
U.S. Cl. 100—110 **11 Claims**



1. In a juice extractor adapted to separate the juice of a pomace from the pulp thereof, the improvement comprising: a bearing member having a bearing surface; an elongated flexible sleeve positioned adjacent said bearing surface and formed of a foraminous material permeable to said juice but substantially impermeable to said pulp, said sleeve having an entrance end adapted to receive said pomace and having an exit end through which said pulp may be discharged; roller means mounted for movement relative to said sleeve and arranged to press a proximate portion of said sleeve against said bearing surface; and drive means coupled to said roller means for moving said roller means lengthwise along said sleeve for causing said roller means to squeeze juice from said pomace through said sleeve and for causing said roller means to advance said pomace from said entrance end toward said exit end.

4,191,104
PRINTER HAVING SWINGABLE PRINTING CHARACTER SUPPORTING ENDLESS BELTS
Katsuhiko Okabe, Tokorozawa, Japan, assignor to Copal Company Limited, Tokyo, Japan
Filed Dec. 21, 1977, Ser. No. 862,831
Claims priority, application Japan, Dec. 24, 1976, 51-157184; Dec. 24, 1976, 51-157185; Dec. 27, 1976, 51-178164[U]
Int. Cl.^{2} B41J *1/20*
U.S. Cl. 101—93.14 **4 Claims**



1. Printer having a plurality of swingable and rotatable printing character bearing endless belts cooperating with a platen for the printing operation, wherein the improvement comprises:

a swingable supporting member for supporting each said printing belt so as to rotate said printing belt around itself on said supporting member;

a driving shaft for transmitting the driving force to the respective printing belt for the rotation thereof around itself, one of the plurality of printing characters born on the periphery of each of said printing belt being selected for the desired printing operation by virtue of the rotation of said printing belt around itself while said printing belt is swung toward said platen for effecting the printing operation by virtue of the swinging movement of said supporting member;

signal emitting means rotated in synchronism with said driving shaft;

signal receiving means cooperating with said signal emitting means so as to issue an electrical signal each time one cycle of the printing operation is effected by the rotation of said driving shaft, said electrical signal being applied to a control circuit for controlling the starting and stopping of the operation of said printer;

a detecting disc rotated in synchronism with said driving shaft and provided with a plurality of slits around the rotational axis thereof corresponding in number to that of the characters on the respective printing belt;

a detecting device cooperating with said slits in said detecting disc for issuing character synchronizing timing signals in timed relationship to the positions of the respective moving characters on each printing belt as it rotates around itself, said timing signals being applied to said control circuit for permitting a desired character of said plurality of characters on each printing belt to be selected for the printing operation during the rotation of the respective printing belt;

a driving member for swinging said supporting member toward said platen until shortly before the abutment of said belt on said supporting member against said platen, each said driving member cooperating with a select member adapted to be actuated to release said driving member for the driving of said supporting member upon issuance of a printing signal from said control circuit, said supporting member being further swung by the inertia thereof after disengagement from said driving member to cause said belt to abut against said platen for the printing operation, said supporting member being immediately returned by virtue of a spring cooperating with said supporting member so as to swing said belt apart from said platen;

stopper means for limiting the swinging movement of each said driving member to a position whereby said supporting member is swung further by virtue of the inertia thereof against the action of said spring after said driving member is stopped by said stopper means thereby permitting said printing belt to abut against said platen for the printing operation while the respective supporting member is swung back by said spring thereof after the abutment of said printing belt thereof against said platen so as to be held by said driving means which is held at said stopped position by said stopper means thereby clearing said printing belt from said platen; and,

reset means engageable with said stopper means and actuated in synchronism with the rotation of said driving shaft so as to cause each driving member to be swung back so that the respective driving member is arrested by said select member thereof so as to allow each printing belt to return to its initial position by the swinging of said supporting member by its spring.

4,191,105
PRINTING APPARATUS

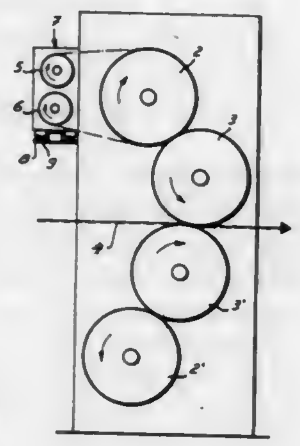
Jarl E. S. I. Ohlsson, St-Julien en Genevois, France, assignor to Sisenca S.A., Geneva, Switzerland

Filed Feb. 6, 1978, Ser. No. 875,624

Claims priority, application Switzerland, Feb. 7, 1977, 1436/77

Int. Cl.² B41F *1/28*

U.S. Cl. 101—415.1 **2 Claims**



1. A printing apparatus comprising at least one plate cylinder, at least one printing plate provided with printing regions, and means for setting in position and for automatically fixing at least one said printing plate around the cylinder, the plate cylinder being non-magnetic and comprising an axial slot and the printing plate having at each of its ends a fixing flange to be introduced into said slot, the apparatus also comprising means for storing the plate, means for transferring the plate from the storage means to a position around the plate cylinder, and positioning means disposed between the storage means and the cylinder, the storage means comprising a feed cylinder around which the plate is wound, the diameter of the feed cylinder being less than the diameter of the plate cylinder, a receiving cylinder for receiving the plate after use thereof, and a movable frame on which the feed cylinder and the receiving cylinder are rotatably mounted.

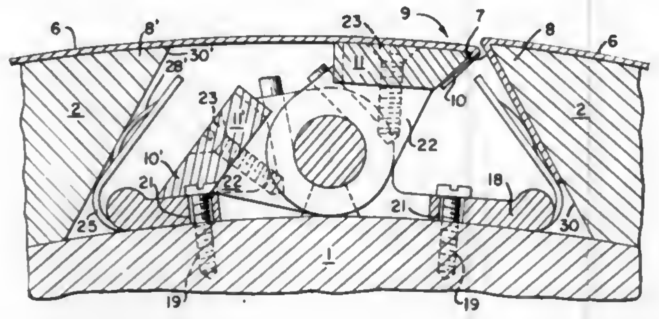
4,191,106
PRINTING PLATE CLAMPING ASSEMBLY

Rudy Fermi, South Bend; John Pickard, Elkhart; Alex Kocsis, Granger; David Bratton, Mishawaka, all of Ind., and Gerald Kasner, Union, Mich., assignors to K and Manufacturing Company, Inc., Granger, Ind.

Filed Dec. 1, 1975, Ser. No. 636,454

Int. Cl.² B41F *27/12, 27/14*

U.S. Cl. 101—415.1 **68 Claims**



1. Apparatus for detachably holding thin flexible printing plates in position on a cylindrically shaped press cylinder comprising:

shim means configured to accurately radially position a printing plate with respect to the cylindrical outwardly facing surface of the press cylinder,

shim attaching means for attaching said shim means to the press cylinder with respective oppositely circumferentially facing shim edge portions being spaced from one another to form a gap there between,

a clamping assembly for releasably clamping a first plate edge portion of said printing plate to said press cylinder with said printing plate engaged against an outwardly facing plate supporting surface of said shim means,

and clamping assembly attaching means for detachably attaching said clamping assembly to said press cylinder, said clamping assembly attaching means being separate from said shim attaching means,

said shim means and clamping assembly being dimensioned and configured such that said clamping assembly fits within said gap without protruding radially outwardly beyond the radial outward extent of said shim means when in an operating position clamped to said press cylinder,

wherein said clamping assembly includes a base member, and wherein said clamping assembly attaching means includes means for fixedly holding said base member directly against said outwardly facing surface of the press cylinder.

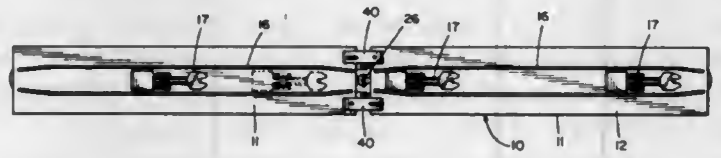
4,191,107
ARTICULATED RAILWAY CAR

Ray L. Ferris, Thornton, Ill., and Walter J. Marulic, Gary, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 2, 1978, Ser. No. 948,116

Int. Cl.² B61F *3/08, 5/14*

U.S. Cl. 105—4 R **9 Claims**



1. In an articulated railway car including a pair of car body units arranged in end to end relation,

a truck underlying adjacent ends at said body units for supporting the same and including a pair of wheeled axles positioned respectively under the adjacent ends of said units,

means projecting outwardly from the adjacent ends of said body units and being interconnected to provide a vertical articulated connection for said car; the improvement of a side bearing arrangement supported on the adjacent ends of said body units on opposite sides of said articulated connection, said arrangement comprising,

first male bearing element projecting outwardly from one of said adjacent ends,

second female bearing elements projecting outwardly from the other of said adjacent ends,

said bearing elements being in telescoping sliding engagement with one another and interconnected to prevent rotation of one body unit with respect to the other body unit about a longitudinal axis of said car.

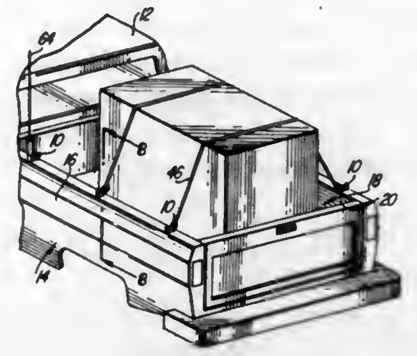
4,191,108
TIE DOWN ANCHOR

Jeffery C. Jones, Rte. 2, Dunlap, Tenn. 37327

Filed Mar. 6, 1978, Ser. No. 883,674

Int. Cl.² A62B *35/00;* B60P *7/06;* B61D *45/00;* F16B *13/08*

U.S. Cl. 410—110 **5 Claims**



1. A device for use with a hollow sidewall of a bed of a pick-up truck having a stake opening through said sidewall, said device comprising:

(a) first and second side portions joined at one end capable of being inserted in said stake opening,

(b) a projection on each of said side portions, said projections extending a distance away from said side portions to engage said sidewall of said bed to prevent removal of said device from said stake hole, and

(c) extension means associated with each of said first and second side portions to permit attachment of an object thereto.

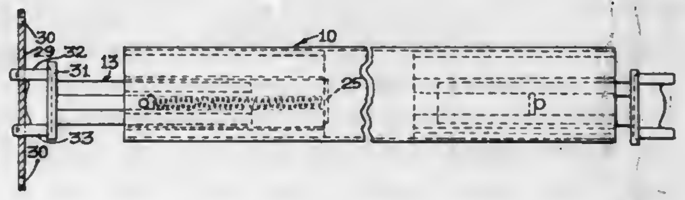
4,191,109
END FITTING FOR CARGO CONTAINERS

Chester H. Wickenberg, Elgin, Ill., assignor to Transco Inc., Chicago, Ill.

Filed Feb. 16, 1978, Ser. No. 878,326

Int. Cl.² B61D *17/08;* B60P *7/14*

U.S. Cl. 410—149 **3 Claims**



1. An end fitting for a cargo retainer such as a crossbar cooperating with parallel belt rails mounted on opposite walls of a freight vehicle providing side-by-side vertically extending slots formed throughout their longitudinal length comprising

(a) a crossbar in the form of a tubular member extending across the vehicle between the belt rails with said crossbar reversible through 180° about its longitudinal axis,

(b) a coupling means on each end of said crossbar with one of said coupling means yieldably biased endwise of the bar,

(c) said coupling means providing a hand gripping plate extending transversely of the longitudinal axis and to either side of the horizontal axis of the crossbar,

(d) a pair of spaced flanges extending outwardly of said hand gripping plate parallel to the longitudinal axis of said bar and adapted to be inserted into the vertical slots formed in the belt rails for connecting said crossbar thereto,

(e) oblate ellipsoid shaped means on the outermost ends of said flanges for aiding in camming said ends into the slots provided by the belt rails, and

(f) a retaining tongue extending between said flanges and of a length less than said flanges and disposed along a transverse center line extending therebetween and in the mid plane of the crossbar and adapted to be yieldably biased into full facial contact with one wall of the belt rail which faces the crossbar between the slots provided therein while spacing said hand gripping plate therefrom.

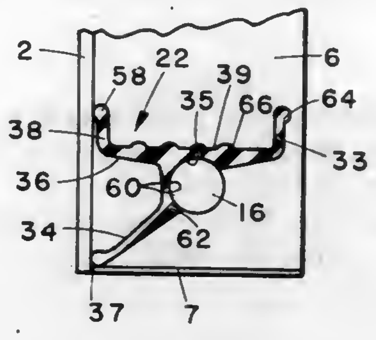
4,191,110
SHELF CONSTRUCTION

Edward O. Klukos, 3284 Roosevelt Rd., Muskegon, Mich. 49441

Filed Jan. 10, 1979, Ser. No. 2,243

Int. Cl.² A47B *17/00*

U.S. Cl. 108—27 **22 Claims**



1. A shelf construction for storing articles for mounting between a pair of vertically extending end supports mounted in spaced parallel relationship to a rear support surface and including a plurality of vertically spaced, horizontally extending support members extending between the end supports, said construction comprising:

at least one integrated shelf and bracket including means defining a support surface having a forwardly facing socket formed in said integral shelf and bracket for mounting to a support member and rearwardly extending means for engaging the rear support surface for forcibly compressing the socket into lockable engagement with the support member.

4,191,111
BENCH FOLDING LEG AND BRACE STRUCTURE

Raymond L. Emmert, 8112 NW. 19, Oklahoma City, Okla. 73127

Continuation of Ser. No. 870,159, Jan. 17, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 19,210

Int. Cl.² A47B *3/00*

U.S. Cl. 108—132 **11 Claims**

1. A collapsible bench or horizontal support having a top, comprising:

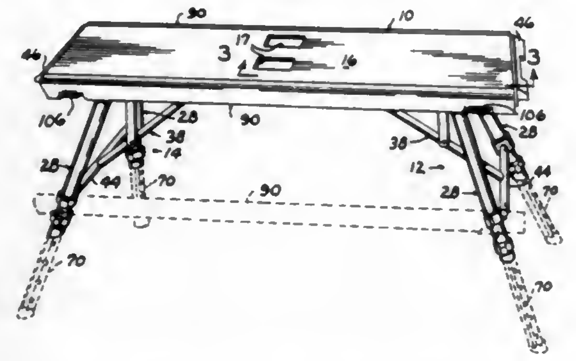
leg means including at least one leg extending longitudinally of the underside of said top and pivotally connected at one end portion to one end portion of said underside for vertical pivoting movement of the leg other end portion about a horizontal axis toward and away from said underside;

brace rod means including an elongated rod extending longitudinally of said underside and pivotally connected at one end portion to said underside in spaced relation with respect to the connected end of said leg for vertical pivoting movement of the rod other end portion about a horizontal axis toward and away from said underside,

said rod other end portion having an aperture;

link and bracket means interconnecting said leg means and said brace rod means with each other and with said underside for simultaneously pivoting said other end portions of said leg and said brace rod in opposing directions toward a downwardly converging juxtaposed position in response to movement of said rod other end portion away from said underside; and,

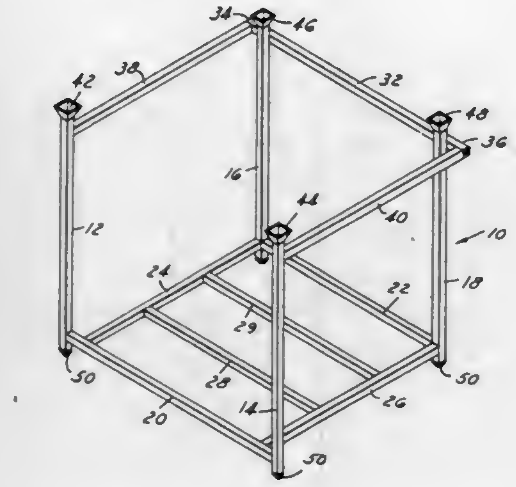
locking means including an outstanding lock pin secured to said leg other end portion for entering the rod aperture and connecting said leg with said brace rod at their convergent position for forming a load bearing structure.



4,191,112
INTERNESTABLE STORAGE RACK

Felipe Maldonado, Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed Jan. 10, 1979, Ser. No. 2,420
Int. Cl.^{2} B65D *19/38*
U.S. Cl. 108—53.3 **6 Claims**



1. A rigid internestable storage rack for accommodating the storage of goods and which is adapted for transport by a fork lift truck or the like comprising,

a series of four vertically extending support posts, with two posts being located at the front of the rack and with two posts being located at the rear of the rack, with the two posts at the rear being closer to one another than the two posts at the front of the rack,

horizontally extending front and rear lower brace members, said front lower brace member being located between and abutting the opposing surfaces of said front support posts and being secured thereto, said rear lower brace member being located between and abutting the opposing surfaces of said rear support posts and being secured thereto, said front lower brace member being longer than said rear lower brace member,

a pair of horizontally extending and parallel opposed lower cross brace members, each lower cross brace member having one end abutting one of the rear support posts and being secured thereto, with each such lower cross brace member extending towards the front of the rack where it perpendicularly intersects, abuts and is secured to said front lower brace member, each of said lower cross brace members being of generally the same length,

a rear horizontally extending upper brace member having intermediate portions secured to the rear surfaces of aid rear support posts, with the end portions of said rear upper brace member extending laterally outwardly beyond said rear support posts,

a pair of opposed horizontally extending upper cross brace members which are parallel and of the same length, each upper cross brace member having one end abutting and secured to one of the end portions of said rear upper brace member, with each upper cross brace member extending forwardly towards the front of the rack where it perpendicularly intersects, abuts and is secured to one of the front support posts,

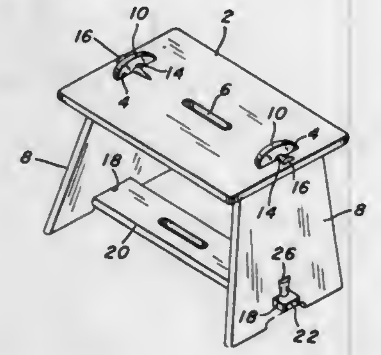
said upper rear brace member and said pair of opposed upper cross brace members being positioned externally of said rear support posts, and

a socket located on top of each of said vertical support posts, with the top surfaces of said sockets lying in a horizontal plane and forming abutments which are adapted to be engaged by lower surface portions of said upper rear brace member and said pair of opposed upper cross brace members when internested with other similar racks in a vertically offset stacking posture.

4,191,113
TABLE OR STOOL OF SEPARABLE COMPONENTS

Carl G. Hogberg, 26 Captains Cove La., North Chatham, Mass. 02650

Filed Feb. 23, 1978, Ser. No. 880,638
Int. Cl.^{2} A47C *4/02*
U.S. Cl. 108—157 **4 Claims**

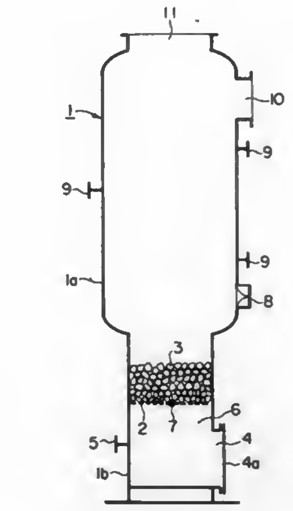


1. A piece of furniture comprising a top having a bottom surface, a pair of side pieces each having a surface engaging said bottom surface of said top to support said top, means for holding the top of said side pieces in fixed relationship with said top, said means including a pair of transverse grooves through said top, one associated with each of said side pieces, a top projection on each side piece projecting through and above the associated groove and means supported by each projections bearing against the top surface of said top, said side pieces having aligned openings therethrough adjacent their bottoms, a cross piece having a pair of shoulders one adjacent each end adapted to bear against the associated side piece and a portion extending beyond each shoulder through and beyond each of said aligned openings, and means supported by each of said portions of said crosspiece bearing against the outer surface of said side, said side pieces diverging downwardly and outwardly from said top, the distance between said shoulders being greater than the distance which would permit an easy fit of said top projections into said grooves so that said crosspiece is slightly bent when the top projections of said side pieces are inserted through said top thus providing an outwardly directed force on the tops of said side pieces in the grooves whereby the parts of said furniture are held rigid in assembly.

4,191,114
FURNACE ADAPTED FOR BURNING CITY-, INDUSTRIAL AND THE LIKE WASTES

Shigeru Saitoh, and Noboru Suzuki, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1977, Ser. No. 863,664
Claims priority, application Japan, Dec. 24, 1976, 51/155070; Feb. 10, 1977, 52/012976
Int. Cl.^{2} F23G *5/00*
U.S. Cl. 110—248 **8 Claims**



1. A furnace assembly adapted for combustion of wastes comprising:

wall means defining an enclosed space;

a perforated grating positioned in said enclosed space to divide said space into an upper combustion chamber and a lower chamber;

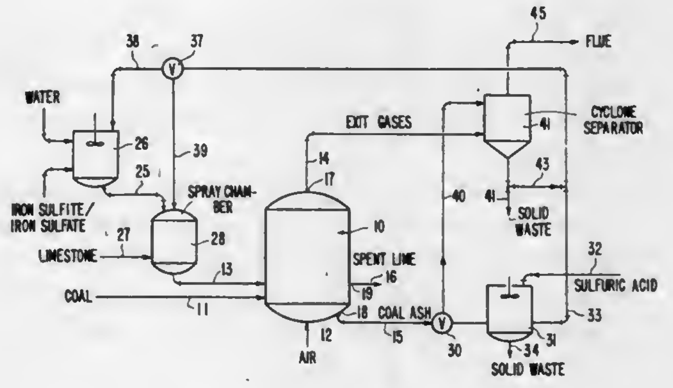
mounting means for pivotally connecting said grating to said wall means so that said grating is movable between a first, substantially horizontal, position, and a second position angularly spaced from said first position, said grating in said first position receiving a mass of mineral particles acting as a provisional, stationary air-permeable furnace bed for receiving wastes to be combusted; and

means for moving said grate from said first to said second position so that said grate is tilted thereby dumping the mass of mineral particles and combustion wastes into said lower chamber.

4,191,115
CARBONACEOUS FUEL COMBUSTION WITH IMPROVED DESULFURIZATION

Ralph T. Yang, Middle Island, and Ming-shing Shen, Rocky Point, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 23, 1978, Ser. No. 918,618
Int. Cl.^{2} F23B *7/00*
U.S. Cl. 110—347 **39 Claims**

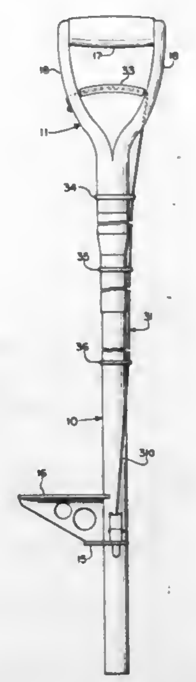


1. A method for desulfurization in the combustion of sulfur-containing carbonaceous fuel comprising, burning said carbonaceous fuel in the presence of limestone, said limestone being coated with a metal oxide.

4,191,116
INJECTION PLANTING TOOL

C. Jay Allison, Jr., and Kirk Willis, both of Chehalis, Wash., assignors to Illinois Tool Works Inc., Chicago, Ill.

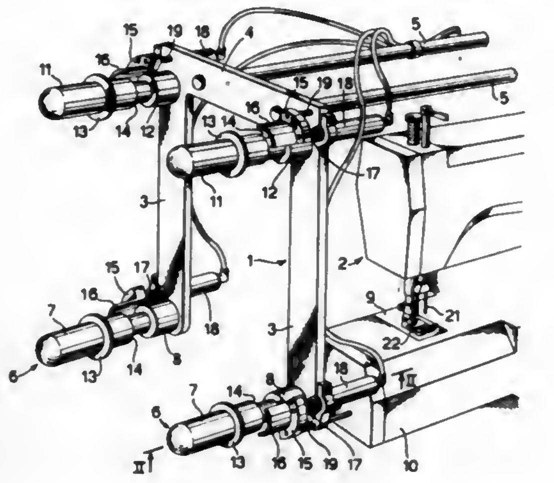
Filed Aug. 3, 1978, Ser. No. 930,790
Int. Cl.^{2} A01C *11/02*
U.S. Cl. 111—4 **3 Claims**



1. In a planting tool for inserting a seedling container in the ground in a planting operation wherein said seedling container comprises a bottom nose section having an annular shoulder formed on the upper end thereof and a plurality of ribs extending upwardly from said nose section radially within said shoulder with a ring connected across the upper ends of said ribs and a growing plant in said container having a stem and top growth extending upwardly therefrom, wherein said tool comprises an elongated member with one end thereof comprising a tubular section having an internal diameter substantially equal to the outer diameter of said ring and an outer diameter no greater than the outer diameter of said shoulder of said nose section and a length substantially greater than the length of said ribs, the improvement of manually operable means on said tool for selectively engaging said ring to hold said container against axial removal from said tubular section when said container is mounted with said ribs and ring in said tubular section and with the end of said tubular section against said shoulder wherein the other end of said elongated member is provided with handle means for manual use of said tool, said manually operable means on said tool comprising a detent pivotally mounted on said tubular section for pivotal movement from a first position where said detent is free of any engagement with said container to a second position where said detent engages said ring of said tubular section to hold said container against axial removal from said tubular section when said container is mounted with said ribs and ring in said tubular section and with the end of said tubular section against said shoulder, spring means biasing said detent to said first position, and a flexible cable extending from said detent to said handle means and operatively associated with said handle means to draw said cable to pivot said detent to said second position against the bias of said spring means.

4,191,117
METHOD AND APPARATUS FOR ATTACHING AN ELASTIC BAND TO A TUBULAR WORKPIECE

Giancarlo Della Torre, Biassono, Italy, assignor to Rockwell-Rimoldi, S.p.A., Milan, Italy
Filed Feb. 21, 1978, Ser. No. 879,299
Claims priority, application Italy, Mar. 3, 1977, 20844 A/77
Int. Cl.^{2} D05B *23/00*
U.S. Cl. 112—2 **6 Claims**



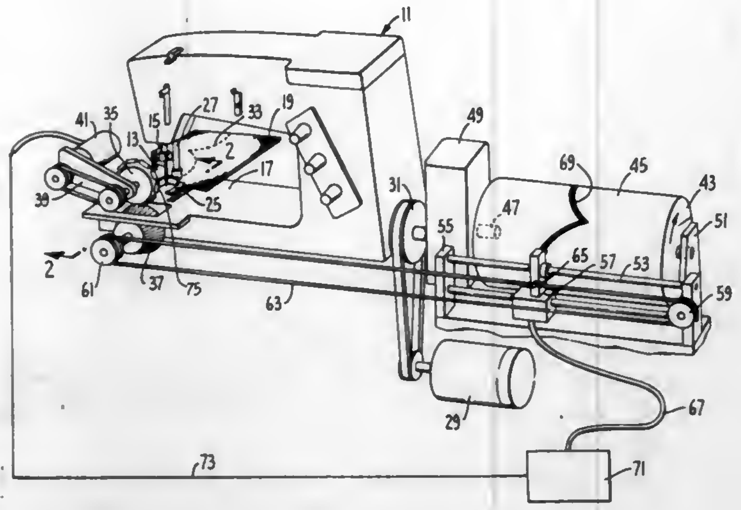
1. An apparatus for folding one end of a tubular workpiece over an elastic band and sewing the same therebetween in a sewing machine having a stitch forming needle and presser foot defining the sewing area thereof, said apparatus comprising:

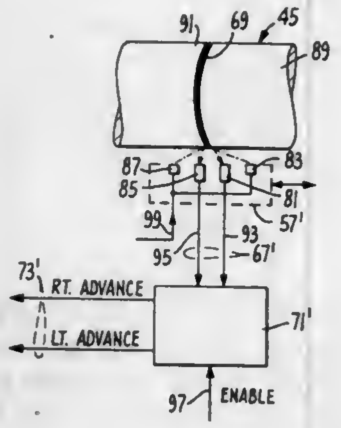
(a) a frame (1) operatively associated with the sewing machine and movable between positions of a workpiece loading station spaced from the machine and the sewing area thereof;
(b) a tensioning device (6) mounted on said frame which includes:
  (i) at least two rollers (7) for engaging the inner surface adjacent one end of the tubular workpiece;
  (ii) a positioning element (15) slidably mounted on said frame (1) adjacent each of said rollers for engaging the end of the workpiece;
  (iii) means defining a folding element (16) attached to said positioning element(15);
  (iv) means forming a part of each roller defining a location for positioning an elastic band on the workpiece; and
  (v) actuating means for simultaneously moving said positioning and folding elements from a rest position toward and parallel with the axes of said rollers to effect folding the end of the workpiece over the elastic band.

4,191,118
AUTOMATIC STITCHING PATTERN CONTROL SYSTEM AND METHOD FOR A SEWING MACHINE

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.
Continuation-in-part of Ser. No. 809,305, Jun. 23, 1977, Pat. No. 4,109,596. This application Jun. 5, 1978, Ser. No. 912,450
Int. Cl.^{2} D05B *19/00*
U.S. Cl. 112—121.11 **2 Claims**

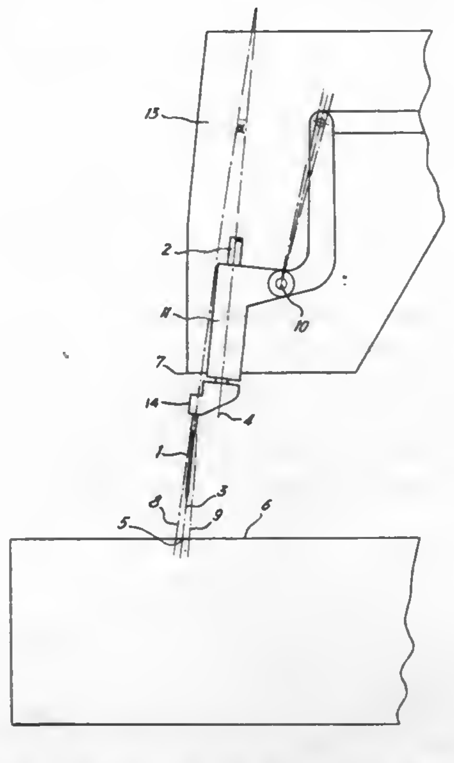
1. For a sewing machine of the type including:
a working surface adapted to carry fabric being sewn,
means holding a sewing needle for reciprocation back and forth in repetitive stitching cycles through the fabric across the working surface,
means as part of the sewing machine for advancing fabric across the working surface in one direction, and
a motor source connected to reciprocate the needle,
an improved stitching pattern control system, comprising:
fabric guide means positioned adjacent said working surface and responsive to an electrical control signal for controlling the orientation of the fabric with respect to the needle as the fabric is advanced over the working surface, thereby to change the direction of stitching being placed on the fabric,
fabric sensor means provided adjacent said work surface for sensing by contact with the fabric any such change of direction,
pattern means selectively driven in synchronism with said needle but independent of the fabric itself,
the pattern means including a desired, sensor readable, stitching pattern line, whose width exceeds the system accuracy, and means for moving the line pattern generally in the direction of its length past a detecting station,
pattern detector means mounted at the detecting station in a manner to be movable back and forth across the line pattern in a direction substantially orthogonal to the one direction of travel of the line pattern,
the pattern detector means including a pair of movable detectors mounted side by side so as to normally straddle the line pattern, each of the detectors producing one signal when it detects the line pattern and another signal when it does not,
means connecting the fabric sensor means to the pattern detector means for unitary movement of the pattern detector means back and forth in correspondence with movement of the fabric as detected by the fabric sensor means and
electrical means receiving the signals from the pattern detector means for generating the electrical control signal to the fabric guide means to cause it to move the fabric in a direction which, when coupled to the fabric sensor means through the fabric, maintains the pattern detector means in a position with respect to the stitching pattern so that the pattern detector means emit signals indicating that the pair of detectors are straddling the pattern line.





4,191,119
SEWING MACHINES

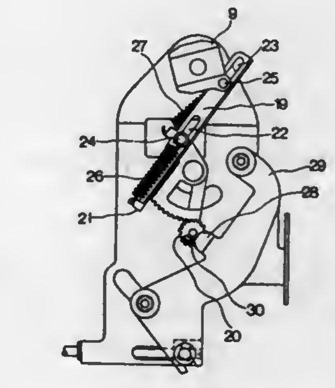
Tibor Arvai, Monte Carlo, Monaco, assignor to "Meci" Materiel Electrique de Controle et Industriel, Paris, France
Filed Jan. 25, 1978, Ser. No. 872,135
Claims priority, application Monaco, Feb. 2, 1977, 1228
Int. Cl.^{2} D05B *3/02*
U.S. Cl. 112—158 R **8 Claims**



1. In a sewing machine having a housing, a working surface and a needle attached for reciprocating movement on a rigid needle bar mounted for translation movement, the relative positions of said needle and needle bar remaining unchanged during operation of the machine, the improvement comprising positioning of said needle such that its longitudinal axis diverges downwardly from the axis of translation of said needle bar, and such that said longitudinal axis of said needle crosses the working surface of said machine at a point located outside the area lying beneath said housing, whereby said point is clearly visible to the operator of said machine.

4,191,120
STITCH FORMING ELEMENT CONTROL USING STEPPING MOTORS WHICH CAN BE CALIBRATED

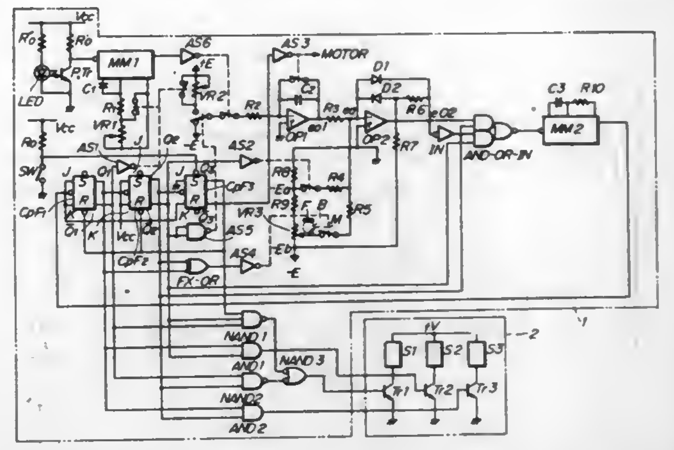
Bengt A. Bergvall, Jönköping, Sweden, assignor to Husqvarna AB, Sweden
Filed May 16, 1978, Ser. No. 906,572
Claims priority, application Sweden, May 17, 1977, 7705778
Int. Cl.^{2} D05B *3/00, 69/12*
U.S. Cl. 112—158 E **14 Claims**



1. A sewing machine comprising control elements influenced by electric signals for the setting of a link in the driving arrangement of the fabric feeder and/or the generation of swinging movements of a needle-bar in side direction, characterized in that each control element consists of a stepping motor driving arrangement comprising a stepping motor connected to electronic pattern data circuits in the machine and a setting arrangement for the calibration of the stepping motor in a defined initial position in the form of a mechanical stop and a dog, placed on an immovable part and a movable part respectively in the stepping motor driving arrangement, and a stepping feed circuit in the pattern data circuits, the signals emitted from which step the motor towards the said stop where it is stopped.

4,191,121
BUTTONHOLE STITCH CONTROL SYSTEM FOR A SEWING MACHINE

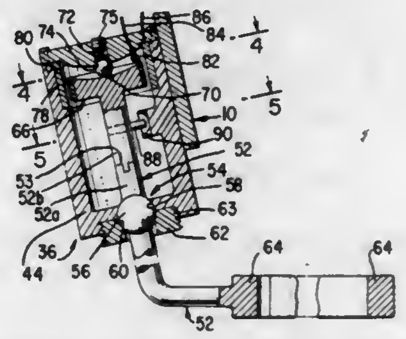
Yasukata Eguchi, Kunitachi, and Hachiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed May 23, 1977, Ser. No. 799,322
Claims priority, application Japan, May 27, 1976, 51-60672
Int. Cl.^{2} D05B *3/02, 3/06*
U.S. Cl. 112—158 B **16 Claims**



1. A buttonhole stitch control system for a sewing machine having a machine frame, a main shaft rotatably supported on the machine frame, and a stitch forming instrument including a needle bar with a needle and a feed dog and operatively connected to the main shaft, comprising a pulse generator (P.Tr, MM1) generating pulse signals in synchronism with the rotation of the main shaft; counter means (OP_1) counting the pulse signals generated by the pulse generated by the pulse generator; means (OP_2) receiving the signals counted by the counter means and dividing the process of stitching a buttonhole pattern; control means (2) receiving signals from the dividing means to control the stitch forming instrument, and means (VR_3) for sensing and electrically memorizing the size of a button employed.

4,191,122
SAFETY STOPPING DEVICE FOR A SEWING MACHINE

Howard D. Rogers, Tokyo, Japan, assignor to The Singer Company, New York, N.Y.
Filed May 16, 1979, Ser. No. 39,521
Int. Cl.^{2} D05B *83/00*
U.S. Cl. 112—261 **10 Claims**



1. A safety device for a sewing machine including an electric motor which drives the machine and control circuitry there-

for, said device comprising a ring to extend around the sewing needle of the machine; a housing securable on the machine; an elongated member which extends from the housing and supports the ring, the member being mounted in the housing for pivotal movement by the ring in any plane which includes the longitudinal axis of the member; means biasing the elongated member into a normal position in the housing; and contact means connectible with said motor control circuitry and operable by displacement of the elongated member from its normal position for discontinuing operation of the motor.

4,191,123

METHOD OF SHAPING A SCREW TYPE CLAMPING COLLAR

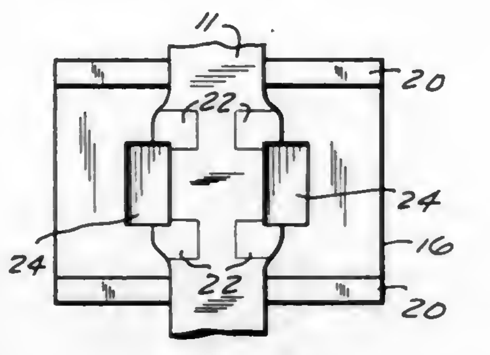
André R. Luc, Ozoir-la-Ferriere, France, assignor to Tridon-Serflex S.A., Bry-sur-Marne, France

Division of Ser. No. 850,358, Nov. 10, 1977, Pat. No. 4,103,637, which is a continuation of Ser. No. 692,335, Jun. 4, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 913,115

Claims priority, application France, Jun. 4, 1975, 75 18313

Int. Cl.² B21D *45/00*

U.S. Cl. 113—116 H **6 Claims**



1. The method of treating a flexible band for use in a screw-type clamping collar having a saddle housing including a pair of spaced legs thereon comprising the steps of forming the flexible band of malleable material in a predetermined width; stamping one end of said band along its edges to extend the material of the band beyond the edges thereof and form transverse shoulders on said band edges in spaced relation to each other, said stamping step comprising the step of positioning said band in a stamping press on an anvil shaped to allow lateral movement of the band material, with respect to the remainder of the band edges, at two spaced areas on each side of said one end of the band where the shoulders are to be formed; and striking the band on the anvil to force the material of the band laterally outwardly at said spaced areas to form said transverse shoulders while preventing outward flow of band material between said spaced areas without changing the thickness of the band therebetween, whereby the legs of said housing may be placed between the shoulders and bent under the band with said shoulders, integral with the band, resisting longitudinal movement of the housing along the band and the forces applied thereto when the clamp is used.

4,191,124

DOCKSHIP

Berend van der Laan, Schiedam, Netherlands, assignor to Scheepvaartbedrijf "Con Brio" N.V., Emmastad, Curacao, Netherlands Antilles

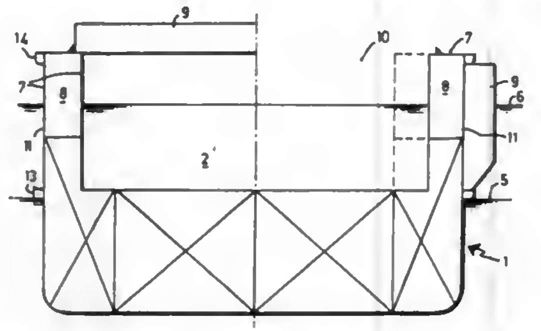
Filed Mar. 23, 1978, Ser. No. 889,574

Claims priority, application Netherlands, Mar. 25, 1977, 7703249

Int. Cl.² B63B *43/14*

U.S. Cl. 114—123 **7 Claims**

1. A dockship having an open hold extending from a forepeak bulkhead to a sterngate, for the transport of heavy cargo loads such as reactor vessels loaded and unloaded by a gantry crane running on double sideboards of the ship which form structural strength members, or lighters which can float in and out when the sterngate is opened and the ship is submerged, at least the upper portion of each of the double sideboards forming a buoyancy chamber, and said hold being provided with hatch covers, characterized by: (a) the hatch covers having a relatively thick, rectangular configuration and being watertight and buoyant, (b) two vertically spaced fenders mounted on each of the sideboard outer walls, and (c) the hatch covers being movable from their closed positions in which their width dimension is defined as lying in the longitudinal direction of the ship to opened positions wherein they are mounted in series along the upper portions of the outer walls of the sideboards between the fenders to function as buoyancy chambers, with their width dimension lying in a vertical direction.



4,191,125

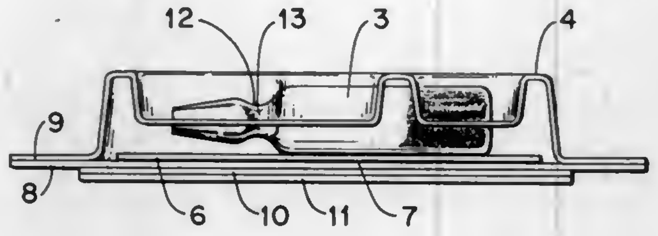
FREEZE INDICATOR

Claude D. Johnson, Arden, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Jul. 3, 1978, Ser. No. 921,940

Int. Cl.² G01K *11/08, 11/12, 11/14*

U.S. Cl. 116—219 **13 Claims**



1. A freeze indicator comprising:

a frangible container, said container housing a liquid which expands upon freezing, thereby fracturing said container, said liquid having a nucleating agent disbursed therein, said nucleating agent being substantially insoluble in said liquid, liquid responsive indicator means, said nucleating agent and said liquid having substantially similar molecular space groupings whereby undercooling of said liquid is substantially prevented; said container further housing a surfacant which is mixed with said liquid and said nucleating agent before freezing of said liquid for providing increased contact between said nucleating agent and said liquid and further providing a decrease in surface tension between said container, when fractured, and said liquid whereby a substantial immediate indication of freezing is provided on said liquid responsive indicating means.

4,191,126

APPARATUS FOR COATING CATALYST SUPPORTS

James, R. Reed; Terrance Way, and Richard A. Leal, all of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.

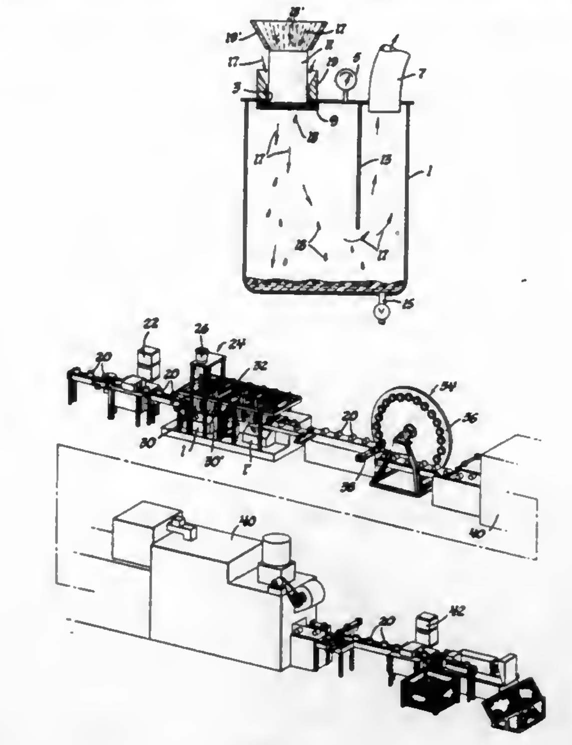
Division of Ser. No. 870,615, Jan. 19, 1978. This application Oct. 11, 1978, Ser. No. 950,382

Int. Cl.² C23C *13/08*

U.S. Cl. 118—50 **2 Claims**

1. A treating fixture for coating a ceramic monolith catalyst support which comprises a pair of tubular connecting members each member being adapted to be positioned in contact with

the upper and the lower ends of the support, the lower end of said connecting member positioned for contacting the lower end of said support being interconnected with a vacuum purge tank, the upper end of said connecting member positioned for contacting the upper end of said support being connected with a slurry feed tank, means positioned between said feed tank and connecting member positioned for contact with the upper end of the support for metering a charge of desired volume of coating slurry into said connecting member, and a plurality of vents in the upper wall of said connecting member having interconnection with said metering means, said vents being located to be above the upper level of the coating slurry charge to enable vacuum applied through said connecting member positioned for contact with the lower end of the support to draw the coating slurry down through the passageways of the support, and means for moving at least one of said connecting members to establish contact between said connecting members and the upper and lower ends of the support.



4,191,127

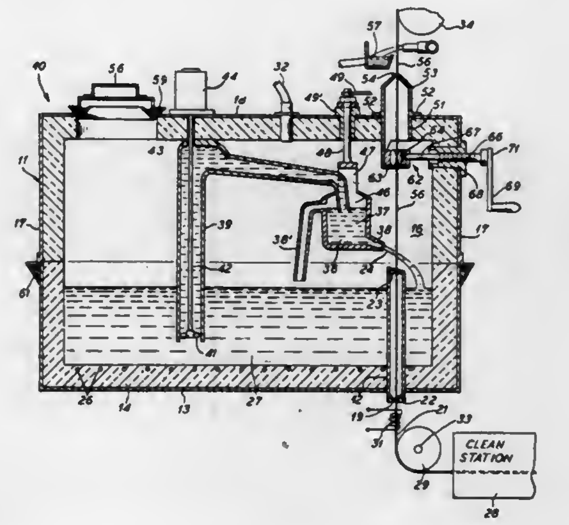
GALVANIZING APPARATUS FOR WIRE AND THE LIKE

Joseph L. Herman, Palos Park, Ill., assignor to The Joseph L. Herman Family Trust

Filed Nov. 4, 1977, Ser. No. 848,712

Int. Cl.² B05C *5/00, 11/04, 11/06, 11/08*

U.S. Cl. 118—57 **5 Claims**



1. Apparatus for galvanizing a wire of galvanizable iron material comprising:

(A) a generally gas tight vessel means having a wire entry port and a wire exit port, said exit port being located in a top portion of said vessel,

(B) gas charging means associated with said vessel means and adapted to supply the interior of said vessel with a substantially oxygen-free gas including gas flow regulating means,

(C) reservoir means having spigot means all located in said vessel and adapted to discharge from the spigot mouth thereof a stream of molten zinc moving in a generally transverse horizontal direction.

(D) supply means associated with said reservoir means and adapted to deliver thereto molten zinc,

(E) wire transport means adapted to position a length of said wire vertically and to move said wire vertically upwardly via said ports through said vessel means in spaced adjacent relationship to said spigot mouth and in a stream of molten zinc issuing therefrom, thereby coating said wire with said molten zinc, said wire transport means including two sheave means, which are in an aligned vertical spaced relationship relative to one another as respects a respective circumferential edge portion of each and which are adapted to move said wire vertically from one to the other of such circumferential edge portions, one of said sheave means being located below said vessel means, the other of said sheave means being located above said vessel means,

(F) said vessel means being divided into two chambers, one chamber being located substantially over and having an entrance portion extending partially into the other thereof, said spigot means said reservoir means and said supply means being in the other one of said chambers, said one chamber communicating with said other chamber through said entrance portion for passage of said wire from said entry port through said chambers and out said exit port.

(G) said upper chamber including means (adapted to) for maintaining said upper chamber at a generally cooler interval operating temperature than said lower chamber, and

(H) wire wipe means, including mounting means therefor, located in said upper chamber adjacent said lower chamber, and in fixed relationship to said vertically movable wire along the path of wire travel thereof, said wire wipe means having smoothing means for the molten zinc coating on said wire moving therethrough, said smoothing means comprising solid members defining an orifice having a generally vertically oriented axis and having a cross sectional configuration which is generally proportional to the cross sectional configuration of said wire, thereby adapting said orifice to conform exterior surface portions of such zinc coating on said wire to such cross-sectional configuration of said orifice,

(I) said vessel means, said supply means, said wire transport means, and said wire wipe means cooperating with one another to permit said wire so vertically positioned and so upwardly moving to be free from contact with any solid object except for said smoothing means until after said zinc coating on said wire has solidified.

4,191,128

VACUUM METALLIZING OF HOLLOW ARTICLES

Claude J. L. Hunt, Hinton Hall, Peterchurch, Herefordshire, England

Filed Nov. 7, 1978, Ser. No. 958,434

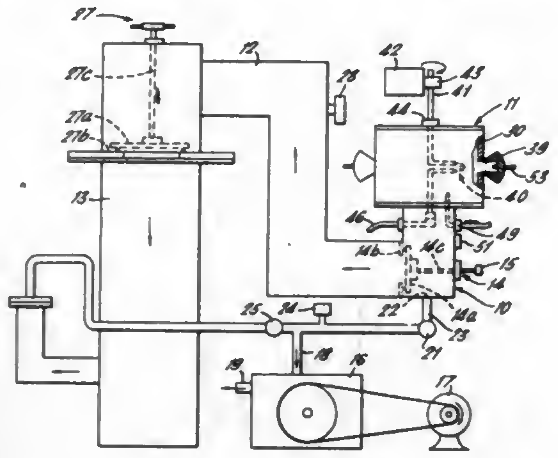
Claims priority, application United Kingdom, Nov. 19, 1977, 48253/77

Int. Cl.² C23C *13/02, 13/12*

U.S. Cl. 118—720 **10 Claims**

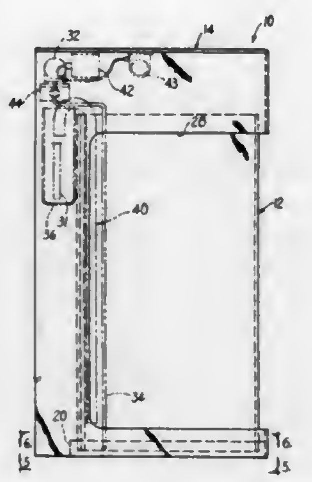
1. Vacuum metallising apparatus for coating the inside of hollow articles wherein a carrier for a plurality of said hollow articles has a plurality of seatings each for receiving one said hollow articles, said carrier being hollow and connected to a high vacuum source through suitable valve means, a filament assembly mounted inside said carrier for movement relative to

said carrier whereby a filament of said filament assembly and carrying the metal for coating said hollow articles can be moved past and adjacent to each of said seatings during evaporation of said coating metal under high vacuum when a plurality of said hollow articles are each engaged with a respective one of said seatings and the interior of each said hollow article is at high vacuum.



4,191,129
ART OF EXHIBITING FISH

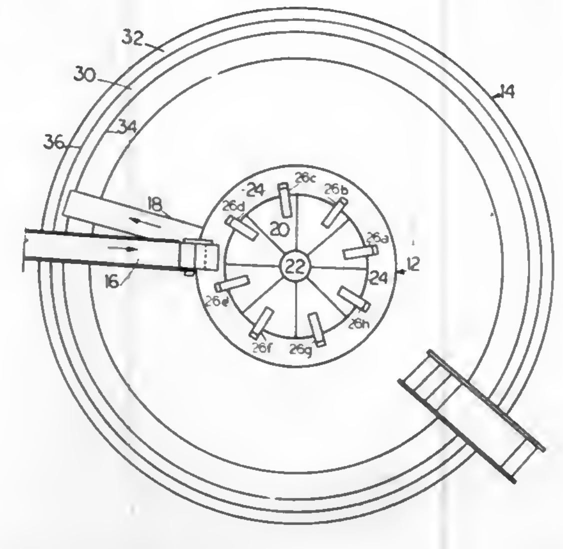
Arthur B. Renny, 11688 Wayburn, Detroit, Mich. 48224
Filed Feb. 17, 1978, Ser. No. 878,706
Int. Cl.^{2} A01K ***64/00***
U.S. Cl. 119—5 **6 Claims**



1. Improvement in the art of exhibiting fish comprising a vertical aquarium consisting of a transparent fish tank and a metal cowl, said aquarium requiring the usual accoutrements for proper operation thereof, said fish tank standing vertically and having a height greater than its width or depth, said cowl standing vertically and having a height, width, and depth greater than that of said fish tank, said cowl covering said accoutrements and silencing in part the noise from the operation thereof, said cowl having a cutaway portion in the front and side walls thereof so as to expose said fish tank to view, and said fish tank having radiused front corners and no seams therealong so as to present from the front and sides thereof a full and unobstructed view thereof, said cowl having vertically extending sheet metal stanchions at the rear corners of said fish tank, said cutaway portion extending continuously around the sides and front of said cowl from one rear corner stanchion thereof to the other, whereby said cowl is wholly devoid of any front corner stanchions resulting in the aforesaid full and unobstructed view of said fish tank.

4,191,130
CHICK PROCESSING APPARATUS

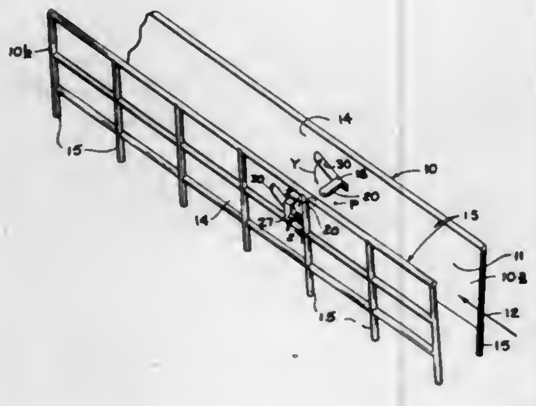
Harry J. Musgrave, P.O. Box 214, Nashville, Ark. 71852
Filed Aug. 14, 1978, Ser. No. 933,150
Int. Cl.^{2} A01K ***45/00***
U.S. Cl. 119—22 **12 Claims**



1. In chick processing apparatus including a rotatable turntable conveyor and a conveyor for transporting chicks from the turntable, the improvement comprising:
- an annular conveyor concentrically disposed around the rotatable turntable conveyor for receiving chicks transported by the conveyor from the turntable and moving the chicks along a horizontal, circular path;
- said annular conveyor being provided with a plurality of adjacent trough-like tray rings.

4,191,131
CATTLE CHUTE WITH DIRECTIONAL RESTRICTING MEANS

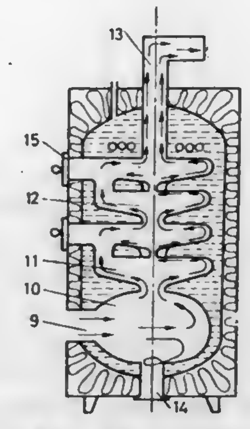
Don M. Farlow, 1305 Chicago Ave., Nampa, Id. 83651
Filed Mar. 20, 1978, Ser. No. 888,379
Int. Cl.^{2} A01K ***29/00***
U.S. Cl. 119—155 **2 Claims**



1. A cattle chute for guiding cattle therethrough in single file and in a desired direction along a prescribed path, comprising:
- guide means on opposite sides of the path for receiving cattle and directing the cattle along the prescribed path in single file; and
- complementary gravity-actuated directional restricting means associated with respective guide means at a prescribed location along the path for allowing the cattle to move in the desired direction past the prescribed location and for preventing the cattle from moving past the location in a direction opposite to the desired direction;
- wherein each of the gravity actuated directional restricting means comprises:
- a paddle;
- pivot means mounting the paddle to the guide means for pivotal movement about a fixed axis between an operative position wherein the paddle projects into the prescribed path and an inoperative position wherein the paddle is pivoted in the desired direction clear of the prescribed path; and
- stop means associated with the paddle for preventing pivotal movement of the paddle in a direction opposite to the desired direction beyond its operative position;
- wherein the fixed axis is tilted inward toward the path and rearward to the desired direction to define an off-horizontal swingpath for the paddle; said swingpath having a low point located at a point upstream of the operative position of the paddle with respect to the desired direction of travel to cause the paddle to automatically swing from its inoperative position to the operative position and firmly against the stop means under the influence of gravity to prevent cattle from moving in the opposite direction once the cattle have moved forward of the paddle.

4,191,132
THERMIC REACTOR

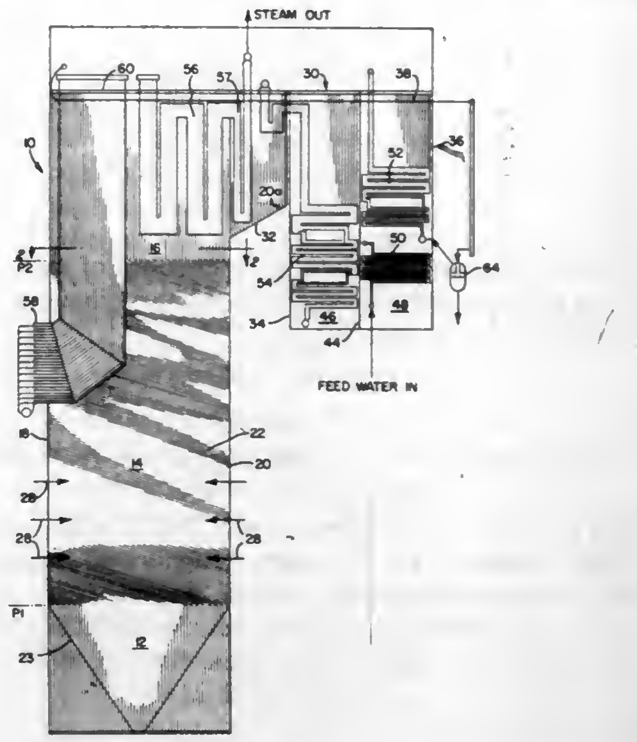
Veikko E. Rahikka, Kaksostentie 5A 73, Helsinki, Finland
Filed Nov. 29, 1977, Ser. No. 855,543
Int. Cl.^{2} F22B ***13/02***
U.S. Cl. 122—156 **5 Claims**



1. A thermic reactor utilizing turbulent flow to ensure good heat transfer between hot exhaust gases from a combustion chamber, and the walls of the thermic reactor, comprising a plurality of V-shaped chambers in serial communication with each other;
- a first said chamber having a first chamber inlet for receiving hot gases; a tangentially located first chamber outlet, and a centrally located first chamber outlet;
- a second said chamber having a centrally located second chamber inlet and a tangentially located second chamber inlet, said second chamber central inlet being in communication with said centrally located first chamber outlet and being disposed at an opposite end of said said second chamber, from said second chamber outlet; and a tangential conduit communicating said first chamber tangential outlet with said second chamber tangential inlet,
- to form two gas flow paths through said chambers, one path expanding and contracting in size as the gas passes from said first chamber to said second chamber through said central inlet and outlet, and a second path generally spiraling through said tangential conduit, said paths including combined intersecting and countercurrent flow patterns with respect to each other thereby to produce enhanced turbulent flow patterns in gas flow through said thermic reactor.

4,191,133
VAPOR GENERATING SYSTEM UTILIZING INTEGRAL SEPARATORS AND ANGULARLY ARRANGED FURNACE BOUNDARY WALL FLUID FLOW TUBES HAVING RIFLED BORES

William D. Stevens, North Caldwell, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.
Filed Nov. 7, 1977, Ser. No. 849,273
Int. Cl.^{2} F22B ***21/34***
U.S. Cl. 122—235 R **13 Claims**



1. A vapor generating system comprising an upright furnace section the boundary walls of which are formed by a plurality of tubes having fins extending outwardly from diametrically opposed portions thereof, with the fins of adjacent tubes being welded together to form a gas-tight structure, burner means associated with said furnace section, said tubes being directly exposed to heat from said burner means for the entire height of said boundary walls, said tubes extending vertically in the plane of each boundary wall in the lower portions and upper portions of said furnace section walls and extending at an acute angle with respect to a horizontal plane in the intermediate portions of said boundary walls extending between said upper and lower portions, at least a portion of each of said tubes having a rifled bore, and means for simultaneously passing said fluid through the tubes of all of said boundary walls to apply said heat to said fluid.

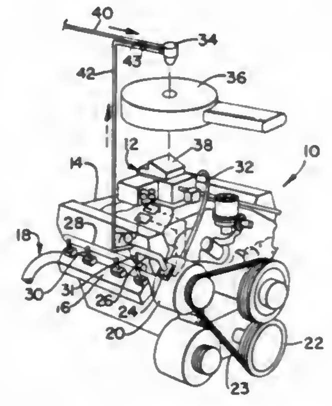
4,191,134
FLUID INJECTION SYSTEM AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Toronta P. Goodman, Summit Point, W. Va., assignor to The Goodman Systems, Inc., Armonk, N.Y.
Filed Aug. 10, 1979, Ser. No. 64,373
Int. Cl.^{2} F02M ***25/02***
U.S. Cl. 123—25 J **25 Claims**

1. A system for injecting fluid into a cylinder of an internal combustion engine having an output shaft and an exhaust system, said system comprising first means for receiving air and pressurizing said air, second means for introducing pressurized air from said first means to a source of said fluid for injecting said fluid into said cylinder, and third means in a responsive relation to said output shaft and said exhaust system for regulating the pressure of said latter pressurized air in response to engine speed and exhaust gas pressure before said pressurized air is introduced to said source of fluid.

19. A method for improving the efficiency of an internal combustion engine having a combustion chamber, an output shaft, an exhaust system and a air pressurizer driven by said output shaft for pressurizing air for passage to said exhaust

system; said method comprising the steps of introducing pressurized air from said pressurizer to a source of fluid, injecting said fluid into said combustion chamber in response to said step of introducing, and regulating the pressure of said latter pressurized air in response to engine speed and exhaust gas pressure before said step of introducing.



4,191,135
COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

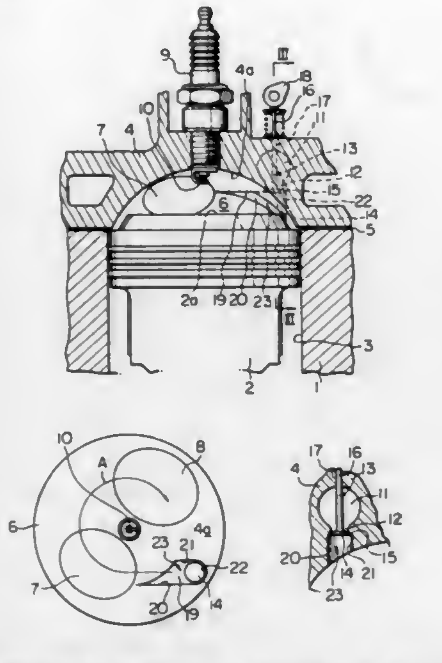
Hidetaka Nohira, Mishima; Sumio Ito, Susono, and Hisashi Ohki, Numazu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 6, 1977, Ser. No. 857,887

Claims priority, application Japan, Sep. 27, 1977, 52-115104

Int. Cl.^{2} F02B *23/00*

U.S. Cl. 123—30 C **31 Claims**



1. In a lean-mixture internal combustion engine having a cylinder block with a cylinder bore therein; a cylinder head mounted on said cylinder block, a piston reciprocally movable in said cylinder bore, a combustion chamber formed between said cylinder head and said piston, an intake valve movably mounted in said cylinder head for admitting a suction gas into said combustion chamber, an exhaust valve movably mounted in said cylinder head for discharging an exhaust gas from the combustion chamber into the atmosphere, and means for creating turbulent mixing during the combustion period in said combustion chamber, the improvement wherein said means for creating turbulence comprises:

a cavity in said cylinder head having a port connected to said combustion chamber;

valve means located in said port of the cavity;

means for actuating said valve means to shut said port near the end of each compression stroke of said piston to permit storage of the uncombusted suction gas accumulated in said cavity from said combustion chamber during the latter part of the compression stroke, at a pressure substantially equal to that in the combustion chamber just before said port is closed, and to reopen said port near the start of each compression stroke, to spout out a jet of said accumulated uncombusted gas under said pressure into said combustion chamber from said cavity during the first part of the compression stroke; and

guide means formed in said cylinder head to provide a channel leading from said port of the cavity into the combustion chamber for guiding said jet of the accumulated suction gas to enter the combustion chamber in a direction having a substantial component tangent to a surface thereof to create a swirl motion in said combustion chamber strong enough to be sustained during the combustion period.

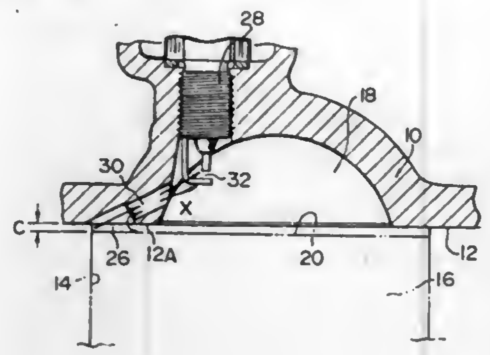
4,191,136
COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Hiromitsu Matsumoto, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 6, 1978, Ser. No. 883,827

Int. Cl.^{2} F02B *19/16*

U.S. Cl. 123—30 C **2 Claims**



1. A combustion chamber for an internal combustion engine cylinder which has a cylinder bore with an axis and a piston axially reciprocably mounted in said cylinder bore, said combustion chamber comprising: a cylinder head with a combustion recess, a mating surface on said cylinder head overhanging into the cylinder bore at least at a part of the circumference of the combustion recess to provide an overhanging surface portion whereby a squash area is formed between said overhanging surface portion and the upper surface of the piston, said combustion recess being dome-like and facing into said cylinder bore, and a spark plug disposed in the cylinder head at a position radially offset from said axis with a spark generating section disposed in said cylinder recess, said cylinder head having an aperture with one of its ends opening into the squash area on the overhanging surface portion and its other end opening into the combustion recess of the cylinder head and directed substantially at said spark generating section of the spark plug.

4,191,137
ELECTRONIC FUEL INJECTION CONTROL FOR AN INTERNAL COMBUSTION ENGINE

Malcolm Williams, Solihull; Albert R. Tingey, Whitacre Heath; John P. Southgate, Coventry, and Steven J. Russell, Braunton, Nr. Barnstable, all of England, assignors to Lucas Industries Limited, Birmingham, England

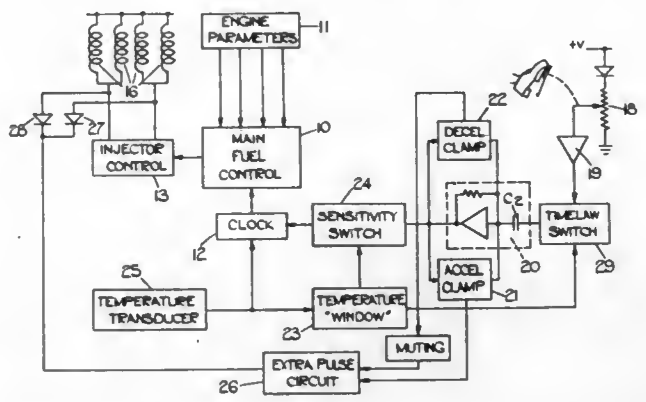
Continuation of Ser. No. 847,511, Nov. 1, 1977, abandoned. This application Feb. 7, 1979, Ser. No. 10,189

Claims priority, application United Kingdom, Nov. 4, 1976, 45859/76

Int. Cl.^{2} F02B *3/00*

U.S. Cl. 123—32 EH **8 Claims**

1. An electronic fuel injection control comprising a main control circuit sensitive to the value of at least one engine operating parameter and arranged to control the rate at which fuel is injected as a function of said parameter, means for generating an electrical demand signal, and an electronic differentiating circuit sensitive to the rate of change of said demand signal and arranged to increase or decrease the rate of fuel delivery to the engine according to the sign and magnitude of the rate of change of said demand signal, said differentiating circuit comprising an operational amplifier connected to operate in inverting mode and having an input capacitor and a feedback resistor, and clamping circuits for limiting the excursion of the output of the operational amplifier in both senses, each clamping circuit including a first transistor, a bias circuit imposing a bias voltage on the base of said first transistor, the collector of said first transistor being connected to divert some of the current flowing through the input capacitor so that such current does not flow through the feedback resistor, and a second transistor having its collector-emitter path connected between the emitter of said first transistor and a supply conductor and its base connected to an output terminal of said operational amplifier, whereby said first and second transistors turn on when the operational amplifier output terminal reaches a set voltage determined by said bias circuit so as to divert sufficient capacitor current to maintain the operational amplifier output terminal at said set voltage.



4,191,138
TWO-CYCLE INTERNAL COMBUSTION ENGINE

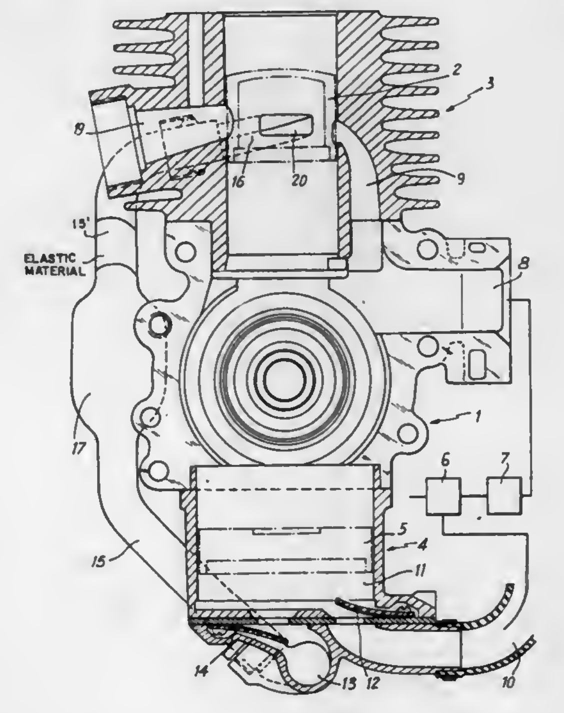
Eric Jaulmes, Paris, France, assignor to Ateliers de la Motobecane, S.A., Pantin, France

Filed Jul. 31, 1978, Ser. No. 929,231

Claims priority, application France, Aug. 22, 1977, 77 25558

Int. Cl.^{2} F02B *33/04, 1/08*

U.S. Cl. 123—73 R **10 Claims**



1. A two-cycle internal combustion engine wherein uncarbureted air is used to purge gases produced by combustion from a combustion chamber prior to feeding carbureted air into same, the engine comprising a first cylinder having an engine piston which moves therein and a second cylinder mounted 180° to the first cylinder in the engine, having a movable balancing device, which moves therein, the inner faces of said engine piston and movable balancing device delimiting the chamber of a crankcase pump, the outer face of said engine piston delimiting said combustion chamber having an inlet and the outer face of said movable balancing device delimiting an auxiliary compression chamber having an outlet, further comprising at least one transfer channel connecting said crankcase pump chamber to said combustion chamber for admitting carbureted air from said crankcase pump chamber to said combustion chamber; a first pure, uncarbureted air tube connecting said auxiliary compression chamber to said combustion chamber and having a buffer reservoir therein; pure air means for admitting pure, uncarbureted air into said auxiliary compression chamber and for pumping the pure, uncarbureted air through said first pure, uncarbureted air tube into said combustion chamber, at least one carbureted air intake port being connected to said transfer channel and at least one pure, uncarbureted air intake port being connected to said first pure, uncarbureted air tube disposed in the wall of said first cylinder in such a manner that said at least one pure, uncarbureted air intake port is uncovered by the movement of said engine piston from the top of said first cylinder towards the bottom thereof and pure, uncarbureted air flows into said combustion chamber to purge gases therefrom before said at least one carbureted air intake port is uncovered by the same movement of said engine piston piston to admit carbureted air into said combustion chamber which mixes with the pure, uncarbureted air which continues to flow into said combustion chamber via said at least one pure, uncarbureted air intake port.

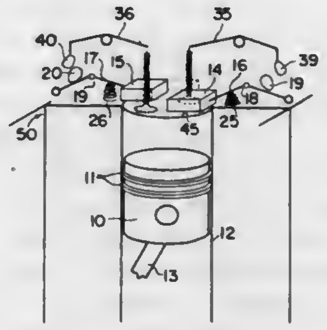
4,191,139
ENGINE WITH SECONDARY PISTONS

Vincent J. Tompkins, Allview Ave., R.D. 5, Brewster, N.Y. 10509

Filed Jun. 5, 1978, Ser. No. 912,179

Int. Cl.^{2} F02B *75/04*

U.S. Cl. 123—48 A **2 Claims**



1. In an engine having at least one conventional main engine cylinder with a piston mounted for travel within the chamber formed by the cylinder walls, the combination comprising:

a pair of opposed secondary pistons mounted side by side on the upper surface of the cylinder chamber, said pistons each including a chamber mounted over and coupled to the cylinder chamber and a plunger reciprocable therein and,

a piston rod coupled to each secondary piston at one end and fixedly mounted at the other end, said piston rod comprising two portions pivotable about an intermediate point, eccentric means engaging and driving said pistons in a reciprocal motion and spring means mounted opposite said eccentric means for returning said secondary pistons to their initial position,

separate means for operating said secondary pistons in conjunction with the main piston such that the plungers enter the respective chambers at a predetermined time interval to produce combustion of the fuel in the main engine cylinder by compression thereby eliminating the need for ignition of the fuel in the said cylinder.

4,191,140

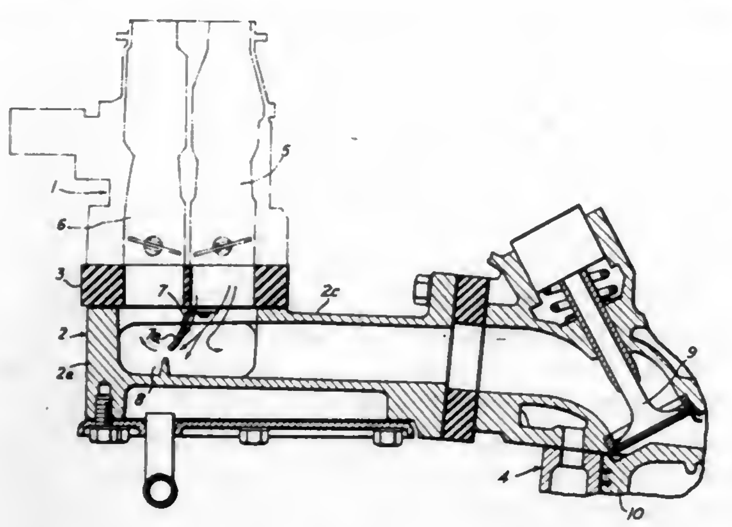
INDUCTION FLOW GUIDE DEVICE FOR INTERNAL COMBUSTION ENGINE INTAKE MANIFOLD

Hiromitsu Matsumoto, and Toshio Kurahashi, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 6, 1978, Ser. No. 883,825

Int. Cl.^{2} F02B *75/18*

U.S. Cl. 123—52 MB **2 Claims**



1. In an engine induction system wherein a plurality of engine cylinders are supplied with air/fuel mixture by a compound carburetor having a separate primary and secondary intake passage through an intake manifold which has a plenum chamber that receives mixture from said two intake passages and distributes said mixture to the cylinders through respective branch pipes, said primary passage being closer to the cylinders than the secondary passage, and said plenum chamber having a floor opposite where the primary and secondary passages enter said plenum chamber, a first pair of said branch pipes departing from said plenum chamber closer to said primary intake passage than to said secondary intake passage an on the same side of said intake passage, a second pair of said branch pipes departing from said pleunum chamber relatively closer to said secondary intake passage than to said primary intake passage, on opposite sides of said intake passage from one another, the improvement comprising: a rectifying plate depending from the top of said plenum chamber between the primary and secondary passage, sloping downwardly and away from said first pair of branch pipes, with a clearance between its lower edge and said floor, and confronting said first pair of branch pipes, whereby to provide a coanda effect effect to reduce flow through said first pair of branch pipes and to encourage flow through said second pair of branch pipes.

4,191,141

TWO-STROKE ENGINE WITH AUXILIARY FLUID MEANS

Walter Franke, Hittfelder Kirchweg 22, 2105 Seevetal 3, Fed. Rep. of Germany

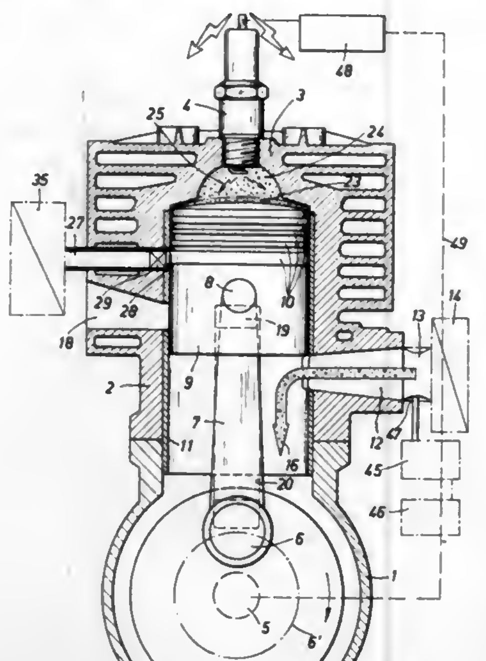
Filed Mar. 16, 1978, Ser. No. 887,254

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1977, 2711641

Int. Cl.^{2} F02B *75/02, 41/02, 33/04*

U.S. Cl. 123—65 A **10 Claims**

1. A two-stroke internal combustion engine comprising: cylinder means including inner wall means defining interior portions of said cylinder means; piston means operably reciprocal within said cylinder means between an upper and a lower dead center position; inlet port means for introducing a supercharged fuel-air mixture into said cylinder means; ignition means for igniting said fuel-air mixture within said cylinder means; exhaust port means in flow communication with the interior of said cylinder means at a location immediately above said piston means with said piston means in said bottom dead center position for exhausting combustion gases from within said cylinder means; and auxiliary port means including auxiliary fluid source means for introducing an auxiliary fluid into said cylinder means; said auxiliary port means extending through said inner wall means in flow communication with said cylinder means interior portions at a location directly above and generally angularly aligned with said exhaust port means, said inlet port means being located to extend through said inner wall means in flow communication with said cylinder means interior portion at a location angularly displaced by about 90° from said exhaust port means and said auxiliary port means.



4,191,142

SELF-CONTAINED HYDRAULIC LASH ADJUSTER

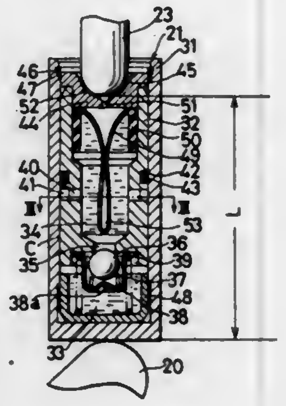
Hisashi Kodama, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 23, 1978, Ser. No. 880,519

Claims priority, application Japan, Mar. 2, 1977, 52/22926

Int. Cl.^{2} F01L *1/24*

U.S. Cl. 123—90.58 **3 Claims**



1. A self-contained hydraulic lash adjuster comprising a cylinder member having an end wall closing the lower end thereof, a hollow plunger member having an upper open end and a lower end wall slidable axially in said cylinder member, said plunger and cylinder members defining a pressure chamber between each end wall thereof, said hollow plunger member having a reservoir chamber therein, a push rod seat member engaging said upper end of said plunger member for closing said reservoir chamber and for transmitting the thrust of said plunger member to a push rod, said push rod seat member being provided with a central hole, means for allowing a relatively slow rate of fluid flow from said pressure chamber to said reservoir chamber, a check valve for allowing a relatively rapid rate of fluid flow only from said reservoir chamber to said pressure chamber through a passage provided in the end wall of said plunger member, an elastomeric bag member having a generally tubular shape with a closed bottom end and an open upper end, said open upper end being fixed to the inner wall of said plunger member and said closed bottom end being freely disposed in said reservoir chamber, the interior of said bag member being normally disposed in communication with atmospheric pressure through said central hole in said push rod seat member and the outer surface of said bag member being in fluid tight contact with said reservoir chamber.

4,191,143

EGR/IGNITION TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

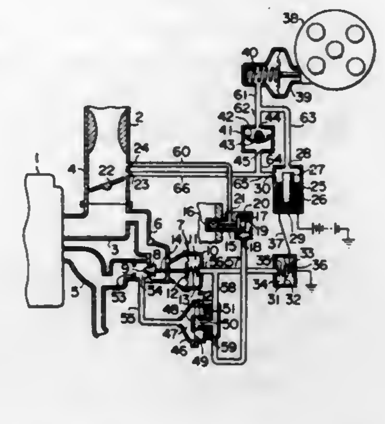
Kiyoshi Yuuki, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 8, 1978, Ser. No. 940,648

Claims priority, application Japan, Mar. 8, 1978, 53-26147

Int. Cl.^{2} F02P *5/04;* **F02M** *25/06*

U.S. Cl. 123—117 A **8 Claims**



1. In an internal combustion engine having an intake system which has an intake passage, a throttle valve incorporated in said intake passage, and a vacuum port which opens to said intake passage at a position which is upstream of said throttle valve when it is fully closed and which is downstream of said throttle valve when it is opened beyond a predetermined opening, an EGR system having an EGR passage and an EGR valve which has a first diaphragm means and opens said EGR passage when said first diaphragm means is supplied with a vacuum greater than a predetermined level, and a vacuum advancer which has a second diaphragm means and advances ignition timing in accordance with the vacuum supplied to said second diaphragm means, an EGR/ignition timing control system comprising a vacuum switch which is opened or closed in accordance with the vacuum supplied to said first diaphragm means, a solenoid valve which has a solenoid and is opened or closed in accordance with energization or deenergization of said solenoid, an electric circuit which selectively energizes said solenoid in accordance with the operation of said vacuum switch, a check valve, first and second passage means which individually connect said first and second diaphragm means to said vacuum port, said second passage means incorporating therein a parallel connection of said solenoid valve and said check valve, said solenoid valve being adapted to be closed when the vacuum supplied to said first diaphragm means is above a predetermined level and to be opened when the vacuum supplied to said first diaphragm means is below a predetermined level, and said check valve being so directed as to allow fluid to flow only from said second diaphragm means toward said vacuum port.

4,191,144

METHOD FOR CONTROLLING IGNITION TIMING IN AN INTERNAL COMBUSTION ENGINE

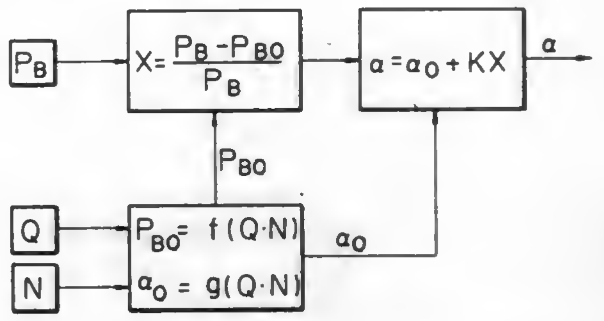
Hidetaka Nobira, Mishima; Kiyoshi Kobashi, Susono, and Jiro Nakano, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 4, 1978, Ser. No. 893,391

Claims priority, application Japan, Sep. 5, 1977, 52-105900

Int. Cl.^{2} F02P *5/04;* **F02B** *5/02*

U.S. Cl. 123—117 R **6 Claims**



1. A method for controlling ignition timing in an internal combustion engine having an exhaust gas recirculation device, an intake manifold, and an ignition system, said method comprising the steps of

measuring the amount Q of air taken into said engine, the rotational speed N of said engine and the value P_B of absolute pressure in said intake manifold of said engine when exhaust gas is being recirculated;

calculating the value P_{BO} of absolute pressure in said intake manifold when exhaust gas is not being recirculated, said calculation being performed by using said measured amount Q of air taken into said engine and by using said measured rotational speed N of said engine;

calculating an optimum spark-advance angle α_O in said engine when exhaust gas is not being recirculated, said calculation being performed by using said measured amount Q of air taken into said engine and by using said measured rotational speed N of the said engine;

calculating an exhaust gas recirculation ratio X using said measured value P_B for absolute pressure in said intake manifold and said calculated value P_{BO} for absolute pressure in said intake manifold;

calculating an optimum spark-advance angle α in said engine when exhaust gas is being recirculated, said calculation being performed by using said calculated optimum spark-advance angle α_O in said engine and by using said calculated exhaust gas recirculation ratio X; then

controlling ignition timing of said ignition system in response to said calculated optimum spark-advance angle α.

4,191,145

VACUUM SENSOR

Albert L. Fowler, Kirkaldy, Scotland, assignor to Hughes Microelectronics Limited, Glenrothes, Scotland

Filed May 19, 1978, Ser. No. 907,440

Claims priority, application United Kingdom, Oct. 18, 1977, 43380/77

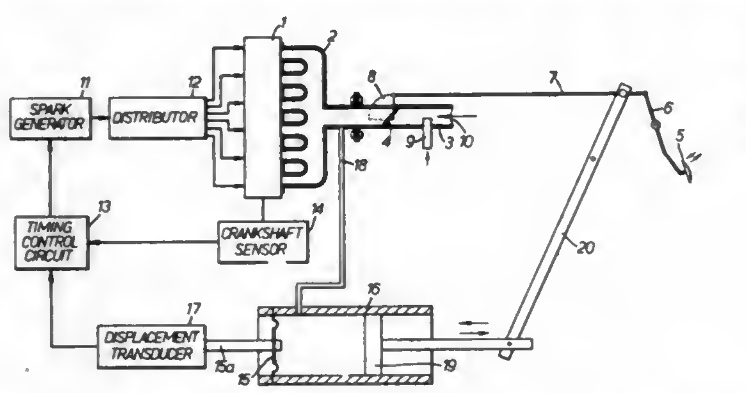
Int. Cl.^{2} F02P *5/04*

U.S. Cl. 123—117 A **8 Claims**

1. A vacuum sensor for use with an internal combustion engine having an inlet manifold for receiving gas to be consumed by said engine, and a throttle adapted to be selectively positioned so as to control the volumetric flow rate of said gas into said inlet manifold, said vacuum sensor comprising:

a vacuum transducer for sensing the level of partial vacuum applied thereto; and

means for applying the level of partial vacuum present in said inlet manifold to said vacuum transducer after the operation of said engine reaches dynamic equilibrium and for modifying, during a change in throttle position, the level of partial vacuum applied to said transducer so that before the partial vacuum level present in said inlet manifold changes to a new value associated with the equilibrium condition of operation for the new throttle position, said modified partial vacuum level approximates said new value.



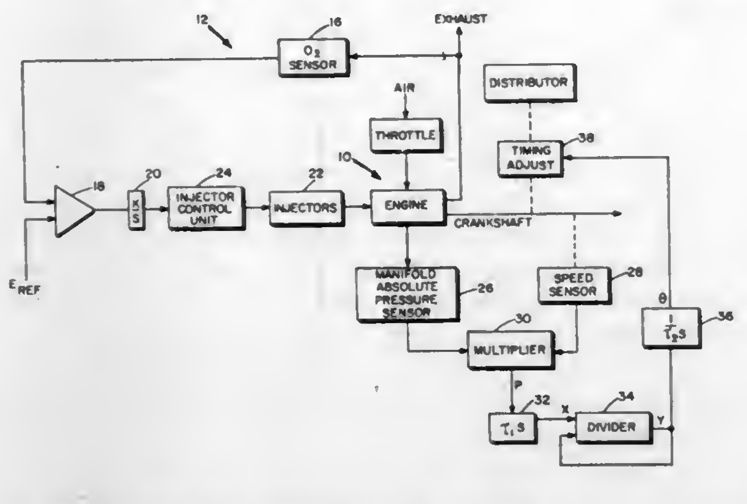
4,191,146
MEANS FOR OPTIMIZING FUEL ECONOMY IN AN INTERNAL COMBUSTION ENGINE

Lael B. Taplin, Bloomfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 28, 1978, Ser. No. 882,002

Int. Cl.^{2} F02P *5/04*

U.S. Cl. 123—117 R **6 Claims**



1. In an internal combustion engine of the spark ignition type, a system for optimizing spark timing comprising:
   - means for generating a speed signal proportional to the speed of the engine;
   - means for generating a pressure signal proportional to the engine manifold absolute pressure;
   - means for multiplying together said speed and said pressure signals for generating a product signal; and
   - adaptive controller means responsive to said product signal from said multiplying means for setting the ignition spark timing of the engine to maximize the amplitude of said product electrical signal.

4,191,147
EGR/IGNITION TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kiyoshi Yuuki, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

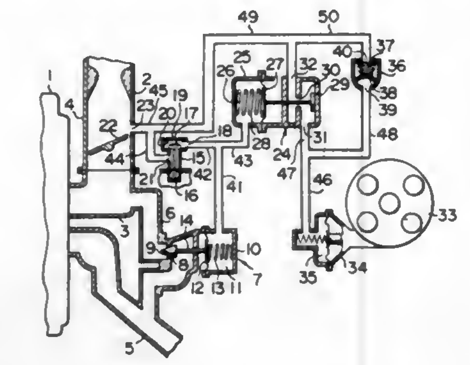
Filed Sep. 8, 1978, Ser. No. 940,649

Claims priority, application Japan, Mar. 8, 1978, 53-26148

Int. Cl.^{2} F02P *5/04;* F02M *25/06*

U.S. Cl. 123—117 A **3 Claims**

1. In an internal combustion engine having an intake system which has an intake passage, a throttle valve incorporated in said intake passage, and a vacuum port which opens to said intake passage at a position which is upstream of said throttle valve when it is fully closed and which is downstream of said throttle valve when it is opened beyond a predetermined opening, an EGR system having an EGR passage and an EGR valve which has a first diaphragm means and opens said EGR passage when said first diaphragm means is supplied with a vacuum greater than a predetermined level, and a vacuum advancer which has a second diaphragm means and advances ignition timing in accordance with the vacuum supplied to said second diaphragm means, an EGR/ignition timing control system comprising a vacuum valve which has a third diaphragm means, a valve element operated by said diaphragm means and a valve port which is closed by said valve element when said third diaphragm means is supplied with a vacuum greater than a predetermined level, a check valve, first, second and third passage means which individually connect said first, second and third diaphragm means to said vacuum port, said second passage means incorporating therein a parallel connection of said valve port of said vacuum valve and said check valve, and said check valve being so directed as to allow fluid to flow only from said second diaphragm means toward said vacuum port.



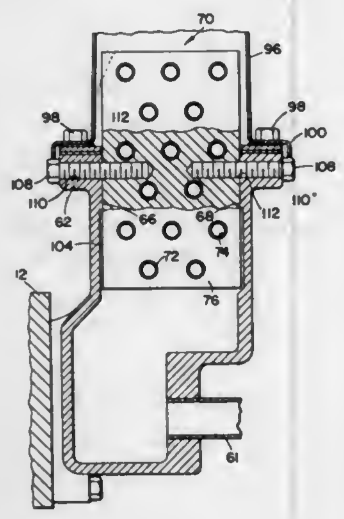
4,191,148
AFTERCOOLER ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

Harshad H. Patel, and Tejandra N. Bose, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 30, 1977, Ser. No. 811,912

Int. Cl.^{2} F28F *1/32;* F02B *33/44*

U.S. Cl. 123—119 CD **9 Claims**



1. An aftercooler assembly for an internal combustion engine, said assembly comprising,
   - housing means defining an elongated chamber having at least one inlet and outlet for air, said housing means having a pair of elongated opposed interconnected side and end walls forming an elongated trough having a substantially continuous planar surface; defined by the extremities of said side and end walls;
   - an elongated aftercooler core positioned in said chamber, said core comprising a plurality of coolant conduits extending generally parallel to the longitudinal axis of said housing means and having a pair of core support plates at opposite ends of said aftercooler core and at least one core support plate intermediate said end core support plates, all of said support plates extending generally transverse to and structurally connected to said coolant conduits; and
   - means for securing said intermediate core support plate to both of said side walls adjacent said planar surface, thereby forming a structural support for said aftercooler core and reinforcing the side walls of said housing.

4,191,149
CARBURETORS FOR INTERNAL COMBUSTION ENGINES

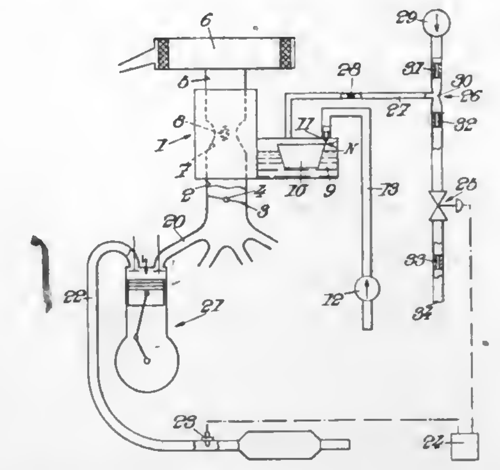
Rathindra Dutta, Kaarst; Josef Rosgen, Grevenbroich, and Gerd Rosemann, Munchen-Gladbach, all of Fed. Rep. of Germany, assignors to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly sur Seine, France

Filed Dec. 16, 1977, Ser. No. 861,358

Claims priority, application France, Jan. 14, 1977, 77 01078

Int. Cl.^{2} F02M *7/00, 7/06*

U.S. Cl. 123—119 EC **7 Claims**



1. A carburetor for an internal combustion engine, comprising a float chamber and a device for controlling the gas pressure in the float chamber, said device having: an air source at a pressure below atmospheric pressure; airflow passage means connecting said source and atmosphere; throttle means on said air-flow passage means for impressing a head loss to the airflow; an oxygen sensitive probe adapted to be immersed in the exhaust gas of the engine and to provide an electrical signal representative of the oxygen content of said exhaust gases; control means for actuating said throttle means responsive to said electrical signal; and means connected to the float chamber, located in the airflow passage means and so constructed that it conveys to the float chamber a pressure whose value is outside the range between the pressure of the source and atmospheric pressure for a predetermined range of values of said head loss, said last-named means comprising a pitot tube, one end of which opens directly into the float chamber and the other end of which extends within and opens directly into the airflow passage means intermediate the ends thereof.

4,191,150
ENGINE WITH SELECTIVE VENTING OF UNBURNED MIXTURE FROM THE PISTON CREVICE VOLUME

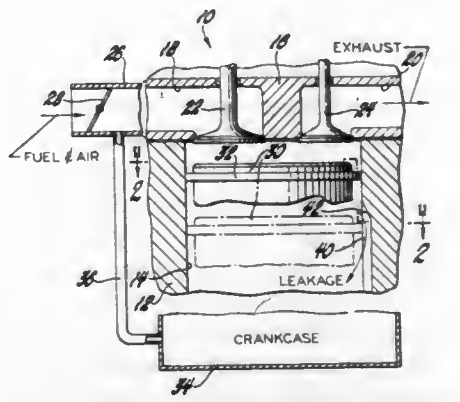
Robert M. Siewert, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1978, Ser. No. 890,598

Int. Cl.^{2} F02M *25/06*

U.S. Cl. 123—119 B **4 Claims**

1. An internal combustion engine having a cylinder with closed and open ends, a piston reciprocably disposed in the cylinder with one end opposing the cylinder closed end to define a combustion space therebetween with an annular crevice volume around said piston one end formed by clearance between the piston and cylinder, the piston being reciprocable between extreme top and bottom dead center positions, respectively, nearest to and farthest from the cylinder closed end, seal means on the piston spaced from said one end and engaging the cylinder to seal the combustion space and crevice volume from the cylinder open end and thus limit blowby leakage from the combustion space to the cylinder open end, intake means for admitting air to the combustion space for compression during a first piston stroke toward top dead center and the subsequent combustion of fuel therein, exhaust means for permitting discharge of combustion products from the combustion space following expansion on a second piston stroke toward bottom dead center, and means for collecting and recirculating to the intake means blowby gases escaping from the combustion space to the open end of the cylinder, and the improvement comprising bypass means operative to open a limited passage for gas flow from the crevice volume to the cylinder open end during each piston expansion stroke, substantially after the beginning thereof but in advance of the opening of said exhaust means on each said expansion stroke, whereby unburned fuel-air mixture is removed from the crevice volume before the exhaust step and recirculated to the intake means for readmission and burning in the cylinder, thus reducing the exhaust of unburned products from the engine.



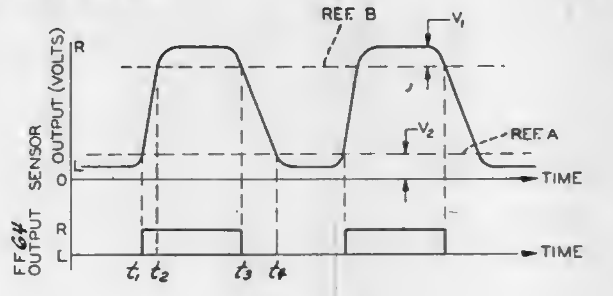
4,191,151
OXYGEN SENSOR SIGNAL PROCESSING CIRCUIT FOR A CLOSED LOOP AIR/FUEL MIXTURE CONTROLLER

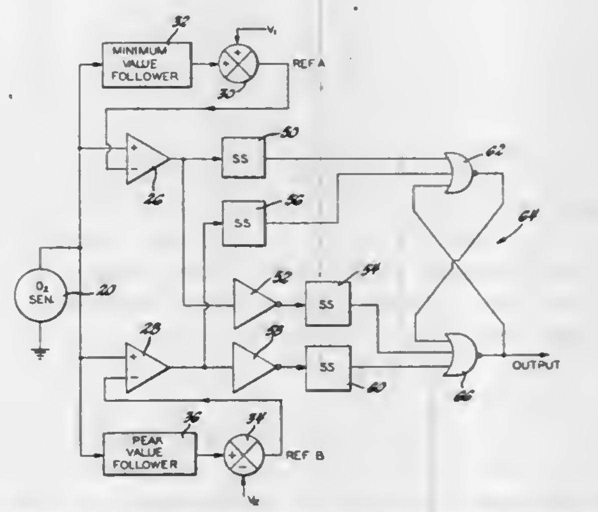
Joseph L. Wanamaker, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1978, Ser. No. 888,247

Int. Cl.^{2} F02B *3/00*

U.S. Cl. 123—119 EC **3 Claims**





1. A fuel control system for an internal combustion engine

having combustion space into which an air/fuel mixture is supplied to undergo combustion and having means defining an exhaust passage from the combustion space into which spent combustion gases are discharged and are directed to the atmosphere, comprising, in combination:

a sensor responsive to the oxidizing/reducing conditions in the exhaust passage effective to produce a sensor signal varying between high and low values when the oxidizing/reducing conditions vary through a predetermined oxidizing/reducing condition, the sensor being characterized in that its response to changing oxidizing/reducing conditions in a first direction through the predetermined condition varies from its response to changing oxidizing/reducing conditions in an opposite direction through the predetermined condition;

a sensor signal processor responsive to the sensor signal effective to provide an output signal indicating the sense of deviation of the oxidizing/reducing conditions from the predetermined condition and being substantially independent of said variances in said sensor response characteristics, the sensor signal processor including means responsive to the sensor signal effective to provide the output signal at a first level representing the deviation of the oxidizing/reducing conditions in one sense from the predetermined condition beginning at the time when the value of the sensor voltage signal becomes greater than a first reference value that is less than the high value of the sensor signal and at a second level representing the deviation of the oxidizing/reducing conditions in an opposite sense from the predetermined condition beginning at the time when the value of the sensor signal becomes less than a second reference value that is greater than the low value of the sensor signal; and

means responsive to the output signal effective to adjust the air/fuel mixture in a sense tending to restore the predetermined oxidizing/reducing conditions.

4,191,152

MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

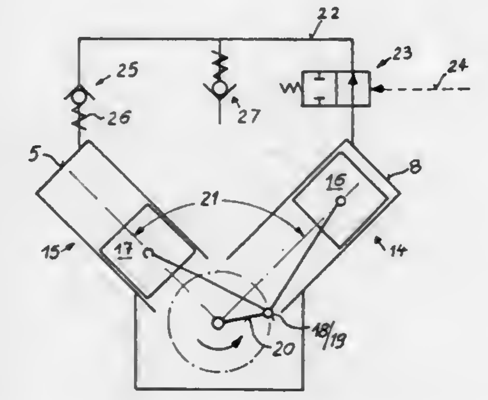
Herbert Deutschmann, Friedrichshafen, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Oct. 7, 1977, Ser. No. 840,179

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1976, 2648411

Int. Cl.^{2} F02B *11/02*

U.S. Cl. 123—119 C **15 Claims**



1. A diesel internal combustion engine having a relatively low compression ratio and operating with exhaust gas turbocharging, the diesel internal combustion engine comprising several cylinder units each of which are operable as an engine during a medium to full load operation of the internal combustion engine, each cylinder unit including piston means and cylinder means, a number of the cylinder units operate as an engine and a number of the cylinder units operate as a compressor during a compression stroke of the piston means for the purpose of starting the internal combustion engine, characterized in that each compressor cylinder unit is coordinated to a respective engine cylinder unit, means are provided for connecting the piston means of the respective compressor cylinder units and the respective piston means of the engine cylinder unit to a crankshaft of the internal combustion engine so that the piston means of the respective compressor cylinder units lead the piston means of the coordinated engine cylinder unit whereby, at a beginning of a compression stroke of the respective engine cylinder unit, the coordinated compressor cylinder unit supercharges the engine cylinder unit, connecting means for communicating the cylinder means of the coordinated compressor and engine cylinder units with each other, and in that the connecting means includes a first valve means adapted to be controlled in correspondence with an operating condition of the internal combustion engine, and a second valve means adapted to be opened in the presence of a required supercharging pressure.

4,191,153

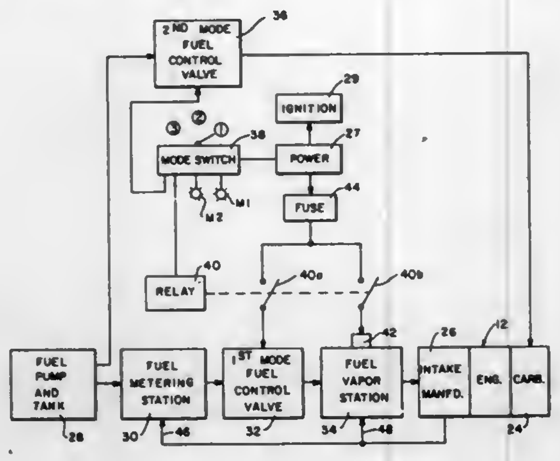
ASSEMBLY AND METHOD OF VAPORIZING LIQUID GASOLINE FUEL AND SYSTEM

Robert C. Strem; R. C. Strem, both of Newcastle, and John H. Eberle, Colfax, all of Calif., assignors to Omnewtronics, Inc., Carson City, Nev.

Continuation-in-part of Ser. No. 843,799, Oct. 20, 1977. This application Dec. 1, 1977, Ser. No. 856,494

Int. Cl.^{2} F02M *17/22*

U.S. Cl. 123—133 **1 Claim**



1. In a system for feeding gasoline fuel in a vapor state into a gasoline burning internal combustion engine, an assembly for converting liquid gasoline to said vapor state, comprising:

(a) a housing defining an internal chamber and including:
  (i) Air inlet means,
  (ii) liquid gasoline inlet means, and
  (iii) fuel outlet means;
(b) a first plurality of gasoline supporting plates fixedly located within said chamber in a spaced-apart, longitudinally aligned array starting with a first one of said first plates, the porosity of said plates to the passage of air therethrough successively increasing starting with said first one;
(c) a second plurality of gasoline supporting plates fixedly located within said chamber in a spaced-apart, longitudinally aligned second array located adjacent to and longitudinally aligned with said first plates, each of said second plates having a predetermined porosity to the passage of air therethrough;
(d) means associated with each of said first plates for applying predetermined amounts of liquid gasoline onto its associated first plate for vaporization thereon, the amount of liquid gasoline being applied to said first plates successively decreasing starting with said first one of said first plates, said gasoline applying means associated with each of said first plates including
  (i) a longitudinally extending channeled member opening upwards and having a plurality of longitudinally spaced apertures along its bottom edge, said channeled member being supported within said chamber above said associated gasoline supporting plate, and
  (ii) means for directing liquid gasoline into said channeled member at least at two longitudinally spaced points through said liquid gasoline inlet means, said gasoline passing through said apertures and onto its associated plate,
(e) means for directing a stream of air into said chamber through said air inlet means; and
(f) means for directing said stream of air successively through said first plates during said vaporization, whereby said vaporized gasoline is entrained by and carried with said stream, thereafter successively through said second plates, whereby any liquid gasoline entrained in said stream is captured by said second members for vaporization thereon, and thereafter out of said chamber through said fuel outlet means, said air stream directing means including an air directing baffle plate associated with and located directly in front of each of said gasoline support plate, said baffle plates together directing said air stream alternately towards one edge section of a given one of said plates and towards an opposite edge section of a next, adjacent plate as said stream passes through successive plates.

4,191,154

EVAPORATED FUEL VAPOR CONTROL DEVICE FOR USE IN AN INTERNAL COMBUSTION ENGINE

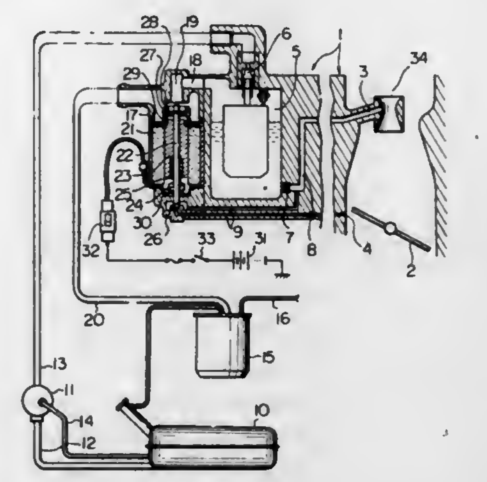
Norio Shibata, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 3, 1978, Ser. No. 874,757

Claims priority, application Japan, Aug. 29, 1977, 52-114467[U]

Int. Cl.^{2} F02M *7/20*

U.S. Cl. 123—136 **6 Claims**



1. An emission control device of an internal combustion engine having an intake passage with a throttle valve therein, said device comprising:

a carburetor having a float chamber and a slow fuel passage fluidly communicating said intake passage with the lower interior of said float chamber, which is filled with liquid fuel, said float chamber having therein an upper air space;

a canister containing an active charcoal therein;

an evaporated fuel vapor passage fluidly communicating said canister with the upper air space of said float chamber;

a single valve device in said slow fuel passage and in said evaporated fuel vapor passage, said valve device normally closing said slow fuel passage and substantially simultaneously opening said evaporated fuel vapor passage; and

means for actuating said valve device to open said slow fuel passage and substantially simultaneously close said evaporated fuel vapor passage when the engine is operating.

4,191,155

INTERNAL COMBUSTION ENGINE IGNITION NOISE PREVENTING DEVICE

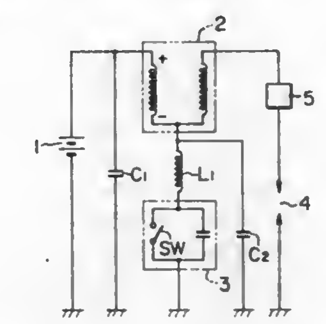
Kanemitsu Nishio; Mitsutaka Yoshida; Takashi Suzuki, and Junji Sunohara, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Nov. 17, 1977, Ser. No. 852,259

Claims priority, application Japan, Nov. 25, 1976, 51-141439; Dec. 2, 1976, 51-145406; Dec. 2, 1976, 51-145407; Dec. 2, 1976, 51-161974[U]

Int. Cl.^{2} F02P *1/00*

U.S. Cl. 123—148 P **6 Claims**



1. In an internal combustion engine ignition device, said ignition device being of the type having a low voltage side circuit including a D.C. power source, the primary of an ignition coil and an interrupter means connected in series with said primary and said D.C. power source, and a high voltage side circuit including the secondary of said ignition coil, a spark plug and a radio noise preventing means for suppressing a capacity discharge current in said high voltage side circuit, the improvement comprising:

radio noise preventing means in said low voltage side circuit for suppressing a capacity discharge current flowing through said low voltage side circuit, said radio noise preventing means in said low voltage side circuit comprising an inductor connected in series between said primary and said interruptor and a capacitor connected in parallel to the series connection of the inductor and interruptor.

4,191,156

TWO-STROKE, WATER-COOLED INTERNAL COMBUSTION ENGINE HAVING THE CYLINDER LINERS REMOVABLE FROM THE CYLINDER BLOCK

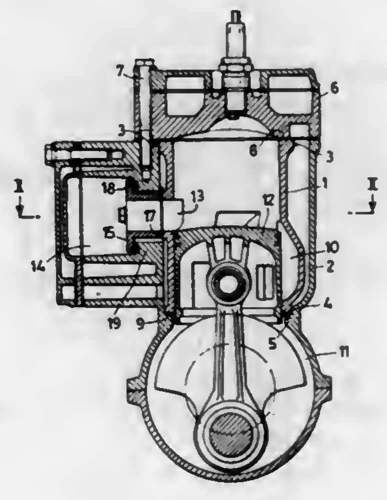
Carlo Doveri, Pontedera, Italy, assignor to Piaggio & C. S.p.A., Genoa, Italy

Filed Dec. 20, 1977, Ser. No. 862,761

Claims priority, application Italy, Dec. 30, 1976, 31023 A/76

Int. Cl.^{2} F01N *7/10*

U.S. Cl. 123—193 C **17 Claims**



1. In a two-stroke internal combustion engine of the compression crankcase type: an engine block having at least one cavity which defines a seating with a substantially annular bottom wall and with a discrete number of spaced apart lateral

resting surfaces formed in correspondence with the top surface of the engine block; an engine head releasably attached to the top surface of the engine block, the annular bottom wall receiving in sealtight manner the lower edge of an inserted cylinder liner, the exterior surface of said liner forming with the engine block a cooling jacket and the top edge of the liner being laterally received on said resting surfaces and confined at its top by a surface which is substantially coplanar with the top surface of the engine block so as to receive in a sealtight manner the engine head, the liner having transfer ducts formed therethrough in portions of the liner which project laterally outward of the remainder of the liner, said resting surfaces of the engine block receiving the top edge of the liner in correspondence with sectors thereof which are spaced from the areas from which the transfer ducts project, so that the liner can be slipped out of the engine block, the liner having at least one exhaust port formed therethrough and the block having an exhaust duct disposed at the location of the exhaust port, means for providing a tight seal between said exhaust port and said exhaust duct, said means including a fitting in the form of a sleeve and means for clamping the sleeve to the liner and to corresponding resting surfaces on the block.

4,191,157

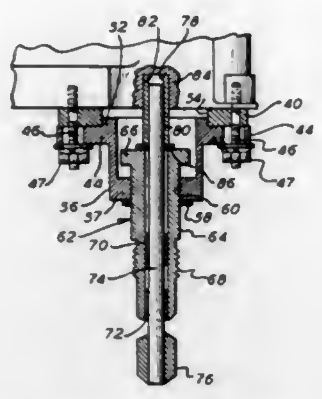
MAGNETO DRIVE ADAPTER

David L. Shaw, 103 Washington St., Morristown, N.J. 07960

Filed Sep. 7, 1978, Ser. No. 940,291

Int. Cl.^{2} F02B *77/14;* F02P *1/04;* H02K *7/10*

U.S. Cl. 123—198 R **2 Claims**



1. In combination, a motorcycle engine including a cam casing having a drive take-off port and a drive gear, a magneto drive shaft mounted in said port and connected with said drive gear, a housing for rotatably supporting said drive shaft, first and second plates respectively secured to said cam casing and to a magneto, for supporting said magneto on the cam casing, and means for adjustably securing said first and second plates together for angular adjustment relative to each other for changing the timing of said magneto.

4,191,158

GAS FIRED GUN AND PLASTIC VALVE THEREFOR

Roger J. Curran, Stratford, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed May 17, 1977, Ser. No. 797,883

Int. Cl.^{2} F41B *11/06*

U.S. Cl. 124—76 **28 Claims**

1. Apparatus for propelling a projectile from a gun comprising:

a gun frame,

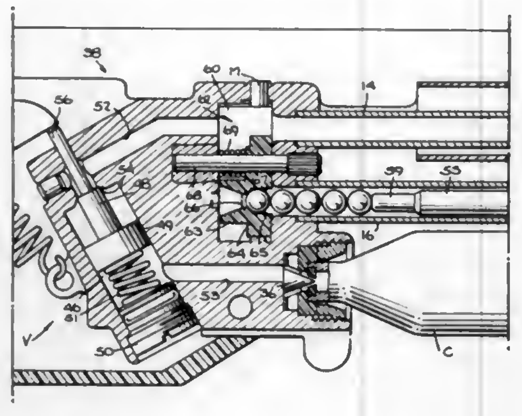
a barrel carried by said gun frame,

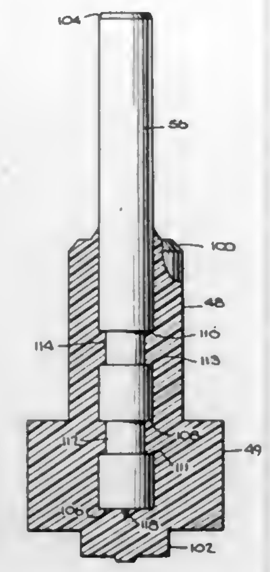
means carried by said frame defining a chamber for containing a gas under pressure,

a normally closed valve carried by said frame for storing gas in said chamber under pressure,

means carried by said frame for opening said valve and releasing gas from said chamber to propel the projectile along said barrel,

said valve including a valve seat, an elongated valve stem and an elongated pin carried by said stem, said pin having an end portion projecting from one end of said stem, said stem being formed of a plastic material wholly encapsulating the remaining portion of said pin, said stem having a sealing surface adjacent said one stem end engageable with said valve seat, said pin being generally cylindrical throughout its length and having a different diameter portion in said remaining pin portion defining a shoulder axially spaced from the projecting end portion of said pin, said shoulder lying wholly within said stem and facing in a direction opposite to the direction said pin end portion projects from said stem, the end of said pin opposite its projecting end portion terminating within said stem short of the opposite end of said stem whereby said opposite pin end and said shoulder form impact surfaces within said stem butting the axially opposed portions of said stem encapsulating the remaining portion of said pin, and the end of said pin within said stem having a reduced diameter deflector portion projecting axially from said opposite pin end to facilitate flow of plastic material about the pin during injection molding of said stem with said pin.





4,191,159

SYSTEM FOR SLICING SILICON WAFERS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Earl R. Collins, La Canada, Calif.

Filed Oct. 16, 1978, Ser. No. 951,828

Int. Cl.^{2} B28D *1/08*

U.S. Cl. 125—21 **9 Claims**

1. In a system including a cutting station for slicing a plurality of silicon wafers simultaneously from a plurality of boules during a single cutting operation, the improvement comprising:

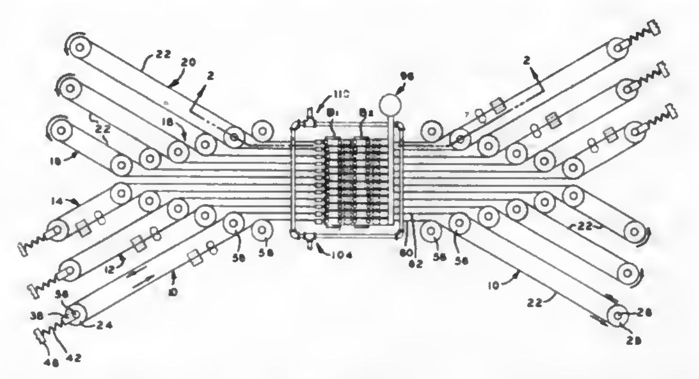
A. a ganged band saw including a plurality of endless band saw blades supported for simultaneous operation and arranged in side-by-side coplanar relation;

B. means for imparting simultaneous unidirectional linear travel to each of said blades;

C. means adjacently related to a cutting station for simultaneously feeding to said ganged band saw a plurality of boules of silicon arranged in spaced coplanar relation;

D. means for reducing blade wobble including a plurality of guide means disposed in juxtaposition with the cutting station for receiving said blades in supported relation, each of said guide means being characterized by a pair of coaxially spaced disks supported in engaged relation with opposite side surfaces of one blade of said plurality; and

E. means for angularly advancing said pair of disks in a direction opposing said unidirectional travel at a linear speed less than the rate of unidirectional travel of the blade.



4,191,160

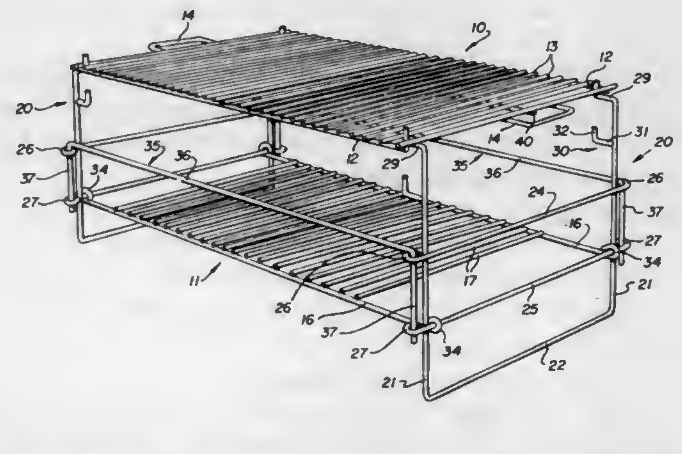
COLLAPSIBLE BARBECUE

William G. Elliott, Smiths Falls, Canada, assignor to Roger's Plating Limited, Ontario, Canada

Filed Dec. 19, 1977, Ser. No. 862,040

Int. Cl.^{2} F24B *3/00*

U.S. Cl. 126—9 R **8 Claims**



1. A collapsible cooking rack arrangement, comprising:

a first wire rack for supporting food to be cooked;

a second wire rack for supporting a heat source;

a pair of end supports for holding said first and second racks in mutually vertically spaced relationship;

said end supports each including means for releasably supportingly engaging said first rack, whereby said rack is readily removable from said end supports;

means for pivotally connecting said end supports to opposite respective ends of said second rack at points intermediate the tops and bottoms of said end supports, whereby said end supports are pivotable relative to said second rack between collapsed positions, in which said end supports are compactly folded with said second rack, and erected positions, in which said second rack is raised above the bottoms of said end supports to provide ground clearance and said engaging means are engageable with said rack; and

means for locking said end supports in the erected positions.

4,191,161

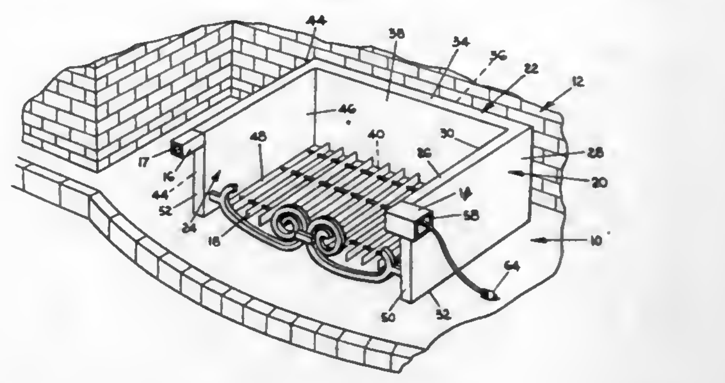
FIREPLACE HEATER

William E. Kling, 6647 Tanglewood Dr., SE., Grand Rapids, Mich. 49506

Filed Nov. 21, 1977, Ser. No. 853,267

Int. Cl.^{2} F24B *7/00*

U.S. Cl. 126—121 **5 Claims**



1. A fireplace heater for placement in a solid fuel burning fireplace, the fireplace heater comprising:

a conduit comprising a heat conducting material forming a container shaped with rear and first and second side sections to substantially define a central area for placement of a fire;, a bottom portion extending along the rear and side sections of the container and containing a substantial depth of water along the substantially entire length of the conduit, and an upper portion above the bottom portion, an inlet opening extending through the upper portion of the conduit for receiving ambient air and located at a front end of said first side section, and an outlet opening extending through the upper portion of the conduit for discharging air therefrom and located at a front end of said second side section;

at least one wall of the bottom portion of the conduit having a heat exchange wall for transferring heat from the fire directly to water in said bottom portion; and

means for circulating air through the inlet, upper portion, and outlet; the circulating air passing over the water in the bottom portion to pick up heated water vapor as the air passes through the upper portion, whereby heated moist air is passed into a room adjacent the fire-place.

4,191,162

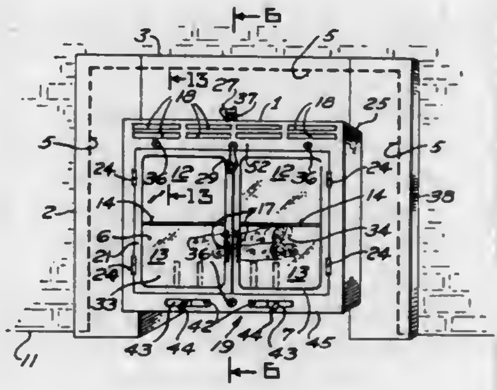
ENERGY SAVING AIR-FLOW HEATER

Donald S. Simms, Brattleboro Rd., Box 355, Rte. 1, Leyden, Mass. 01301

Filed Nov. 23, 1977, Ser. No. 854,414

Int. Cl.^{2} F24B *5/02*

U.S. Cl. 126—123 **2 Claims**

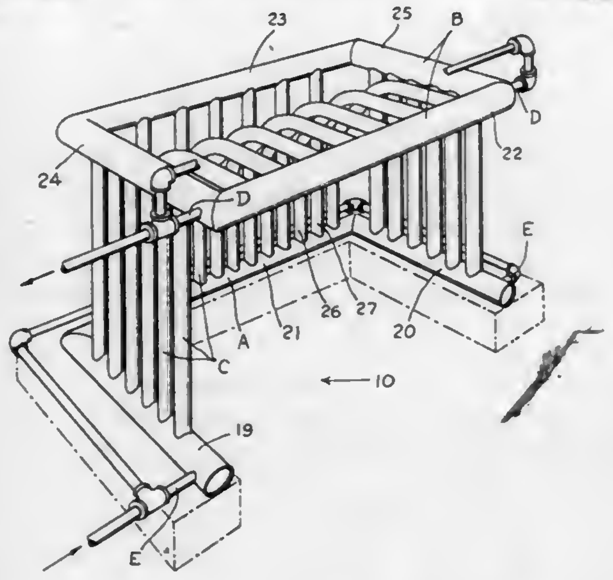


1. A unit for generating hot air to circulate in a room comprising of: a heat chamber, two borosilicate glass doors adapted to contract and expand from the heat, located in the front of the unit, hinge means adapted to contract and expand from the heat generated in the heat chamber mounting said doors on the front of the heat chamber, an outer enclosed

sleeve duct means located near the top and rear thereof whereby the velocity of the flow of air is caused to increase, openings below the heat chamber at the base of the unit and below the doors for permitting air to enter said outer enclosed sleeve duct, an opening in the top of said unit above the heat chamber for permitting heated air to flow from said outer sleeve duct means, a reduced cross-section in said sleeve duct means that causes the heated air to flow at a high velocity, means in the front of the unit for controlling the flow of air to the heat chamber, means in the front of the unit for controlling the flow of gases and smoke from the heat chamber, sheet metal screws, panel connecting means on the top of the unit above the duct means and on the sides of the unit outside the duct means, said panel connecting means comprising of a plurality of openings in the outer surfaces of said unit adapted to receive the said sheet metal screws, each of said openings at the top and the sides thereof and being aligned equally distant from the front of the unit so that the openings in the top are aligned with the openings in the sides, flat panels, said flat panels having flanges at right angles to said panels, said flanges having openings, said flanges adapted to rest on said openings in the unit at the top and sides thereof and adapted to align with the openings at the top and the sides of the unit aforesaid in predetermined positions, whereby sheet metal screws may secure said panels in the same plane whereby the area behind the said panels is hidden from view and whereby if the fireplace is small or large, the panels can be positioned in abutment with the face of the fireplace.

4,191,163
FIREPLACE WATER HEATER

Henry G. Ballard, Rt. 9, Box 151, Easley, S.C. 29640
Filed Feb. 6, 1978, Ser. No. 875,387
Int. Cl.^{2} F24B *9/04*
U.S. Cl. 126—132 **2 Claims**



1. A water heater for a fireplace having a fire chamber defined by a hearth, rear and side walls, and a top wall containing a flue comprising:

a lower U-shaped header consisting of heater pipes extending adjacent respective rear and side walls within said fire chamber defining an open area for building a fire so that the hearth is entirely open about a central portion thereof to accommodate a fire supported therein entirely apart from the heater;

an upper heater extending adjacent a marginal portion of said top wall about the flue;

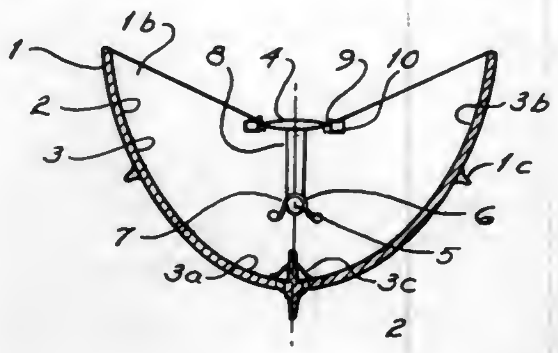
a plurality of upright boiler pipes connecting said lower and upper headers spaced along said rear and side walls;

a first number of said boiler pipes along said rear wall extending substantially vertically upwardly from said lower header connecting with a rear portion of said upper header and a second number of said boiler pipes alternating with said first number extending diagonally across said fire chamber connecting with a front portion of said upper head simultaneously communicating water flow from said lower header with said front and rear portions of said upper header enhancing efficient transfer of heat; and

connections for supplying water to flow through said water heater.

4,191,164
DUAL CONVERSION STEAM AND ELECTRIC SOLAR POWER SYSTEM

Donald A. Kelly, 58-06 69th Pl., Maspeth, New York, N.Y. 11378
Filed Oct. 20, 1976, Ser. No. 734,028
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—439 **10 Claims**



1. A dual conversion stream and electric solar power system with linear solar concentration comprised of three geometric blended shapes,

a base parabolic reflector section symmetrical about a vertical centerline,

and blended with two equal and opposite side radial reflective, sections blended into the outer edges of said base parabolic reflector sections,

two equal and opposite concave reflective elongate strips disposed adjacent to the bottom centerline of said linear solar concentrator panels,

said linear solar concentration panels contructed of builtup fiberglass and epoxy resin to form a rigid structural member,

highly reflective mirror surfaces bonded to the inner contoured surface of said linear solar concentration panels,

multiple longitudinal ribs are external reinforcement for said linear solar concentration panels,

multiple rigid cross partitions uniformly spaced within each of said linear solar concentration panels,

multiple flash stream boiler pipes centrally and axially disposed at the focal zone within each of said linear solar concentration panels,

vertical slots symmetrically disposed within the top of each of said multiple rigid cross partitions and in right-angle relationship to said multiple flash stream boiler pipes,

multiple wire forms loops retaining said flash boiler pipes onto each of said multiple rigid cross partitions,

fastening means for said multiple wire form loops onto said multiple rigid cross partitions,

multiple linear convex lenses disposed between said multiple rigid cross partitions,

metal tracks supporting said multiple linear convex lenses disposed between and supported by said multiple rigid cross partitions,

said multiple linear convex lenses dispoed centrally above said flash stream boiler pipes,

connection of one end of said multiple flash stream boiler pipes to a cold water header pipe, connection of the opposite end of said multiple flash stream boiler pipes to a steam header pipe,

connection of said cold water header to a pressurized cold water supply source,

connection of said stream header pipe to a steam engine-coupled to a 110 volt alternator,

multiple solar photovoltaic cells arrayed in a square-form pattern around and in tangent contact with the top and bottom and side of said flash stream boiler pipes,

said multiple solar photovoltaic cells disposed adjacent to the cold water entrance end of said flash stream boiler pipes,

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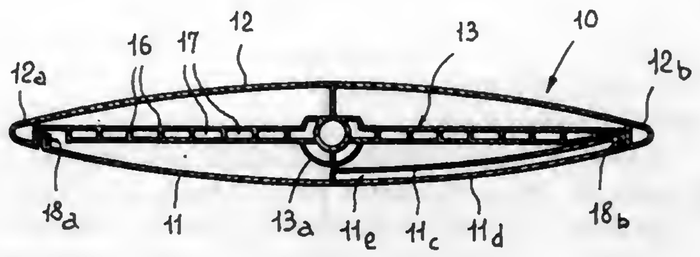
4,191,165
BREAKSUN SHIELD OPERATING AS A COLLECTOR

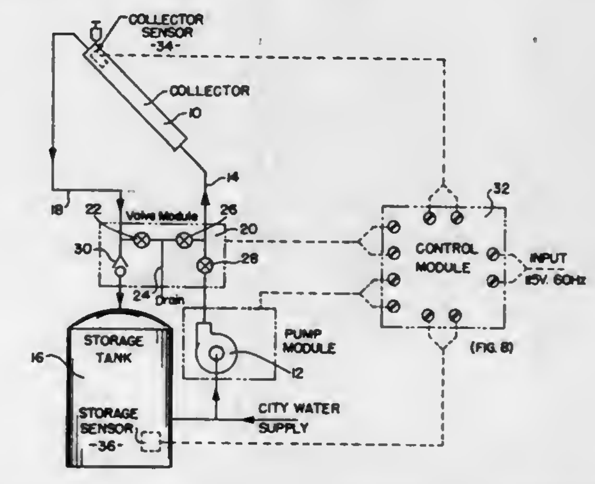
Ernesto Faudarole, Turin, Italy, assignor to Stars Stampaggio Resine Speciali S.p.A., Turin, Italy
Filed Dec. 1, 1977, Ser. No. 856,224
Claims priority, application Italy, Dec. 3, 1976, 69892 A/76
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—445 **14 Claims**



1. In a sun shield for building external facades and of the type comprising a plurality of orientable pallets, an improved pallet having the double function of a sun shield and a collector of solar energy, is made of polymeric material and includes an external shell having a lenticular cross-section and formed by extrusion, at least one transparent wall, an inner collector which is divided internally into separate cells extending longitudinally of the pallet and at least the surfaces of which are adapted to act substantially as a black body and two collecting heads for the delivery and recycling of an intermediate fluid to be heated by solar energy incident on the pallet, said collecting heads being sealingly connected to the upper and lower ends of said external shell.

4,191,166
SOLAR HEAT SYSTEM

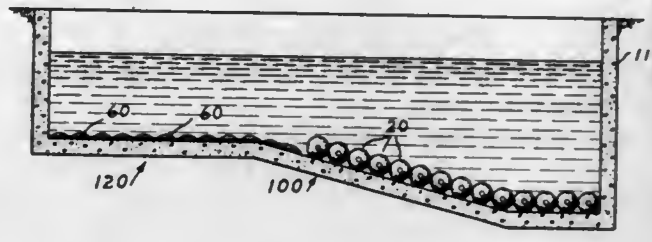
Myrl J. Saarem; Donald E. Lovelace; Dale C. Firebaugh, and Dale F. Soukup, all of Carson City, Nev., assignors to Richdel, Inc., Carson City, Nev.
Filed Dec. 27, 1977, Ser. No. 864,719
Int. Cl.^{2} F24J *3/02;* **F16K** *31/44*
U.S. Cl. 126—430 **7 Claims**



1. In a solar water heater system which includes a collector, a storage tank, a circulating pump, and pipeline means intercoupling the collector, storage and circulating pump to enable the pump to circulate a fluid through the collector to be heated therein, and returned to the storage tank, said pipeline means including a supply line extending from the pump to the collector and a return line extending from the collector to the storage tank; the combination of: a drain line, an electrically energized valve module coupling the pipeline means to the drain line, and a control module connected to the valve module for selectively establishing the valve module in an energized operating condition in which a circulating path for the fluid is established from the pump through the collector to the storage tank, and for selectively establishing the valve module in a de-energized operating condition in which the fluid in the collector is discharged through the drain line; said valve module including electrically activated means for selectively establishing the valve module in its energized operating condition in response to an electric signal from the control module, and spring means for establishing the valve module in its de-energized operating condition in the absence of such electrical signal, and said valve module further including a first valve interposed in the supply line, said first valve being set to an open operating position by said electrically activated means when said valve module is in its energized operating condition, and said first valve being set to a closed operating position by said spring means when said valve module is in its de-energized operating condition, and said valve module including a pair of valves respectively coupling the supply line and the return line to the drain line, said pair of valves being set to a closed position by said electrically activated means when said valve module is in its energized operating condition, and said pair of valves being set to an open position by said spring means when said valve module is in its deenergized operating condition.

4,191,167
SOLAR ENERGY FLUID HEATER

Vladimir Ignatjev, 39 Ledgewood Dr., Norwalk, Conn. 06850
Continuation-in-part of Ser. No. 786,082, Apr. 11, 1977, abandoned. This application Jun. 16, 1977, Ser. No. 807,004
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—417 **5 Claims**



1. Apparatus for absorbing solar energy and heating fluid therewith comprising

a container of fluid through which the sun's rays can pass, said container having a bottom wall,

in said container, a plurality of thin-walled, dark-colored, hollow members, each having a plurality of apertures in its wall through which fluid can flow into and out of the interior thereof, said members being positioned to receive the sun's rays and to become heated thereby and to thereby heat the fluid in said container by contact and by radiation,

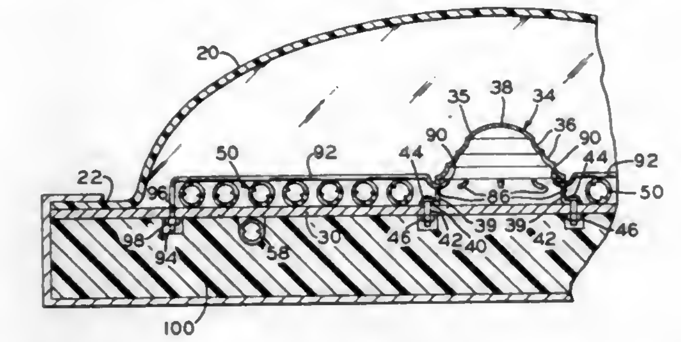
said hollow members each being secured to a plate which is seated on said bottom wall and provides a thermal insulating action between said bottom wall of said container and said hollow member.

4,191,168
SOLAR ENERGY CONVERTING APPARATUS

Peyton S. Allen, R.R. 1, Grabill, Ind. 46741, and Norman G. Bell, 628 Stratton Rd., Fort Wayne, Ind. 46825
Filed Nov. 2, 1977, Ser. No. 847,724
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—441 **15 Claims**

1. Solar energy conversion apparatus comprising a flat plate of thermally conductive material, a planar heat-absorbing device in the form of a flat spirally wound coil of tubing superposed on said plate, said coil having an open space centrally thereof which receives a radiation-reflective member, a cover element transmissive of solar radiation disposed in spaced relation over said device and peripherally mounted on said

plate thereby defining a dead-air space therewith, a flat base of material of low thermal conductivity, said plate being superposed on said flat base, means for securing said plate, said base, said cover element and said heat-absorbing device together, said cover elements including a material that is also reflective of some of the solar radiation whereby radiation reflected from objects within said dead-air space onto said cover element is further reflected internally thereby contributing heat energy to the air within said space, to said cover element, to said heat absorbent element and to said plate, said coil having opposite ends to which fluid-conducting connections may be made, said tubing interiorly having at least one inwardly projecting helically extending vane which imparts rotation to fluid circulated through said tubing.



4,191,169

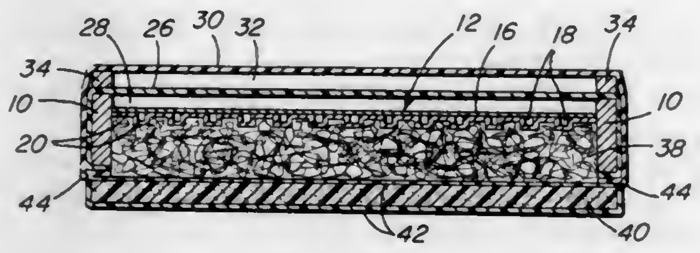
SOLAR ENERGY PANEL

Mark Hyman, Waltham, Mass., assignor to Solar Heat Corporation, Arlington, Mass.

Filed Feb. 6, 1978, Ser. No. 875,161

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—444 **13 Claims**



1. A solar energy panel comprising:
a frame;
an absorber plate mounted to the frame, the absorber plate including means defining flow passages for a fluid medium and for communicating said fluid medium to and from the fluid passages;
a first glazing attached to and extending across the frame, above and in spaced relation to the absorber plate, said first glazing comprising a film of plastic material which is substantially transparent to solar energy;
a second glazing attached to the frame and extending over the first glazing in spaced relation to the first glazing, said second glazing being formed from a film of plastic material which is substantially transparent to solar energy, said second glazing extending downwardly along the outside surfaces of the frame in surrounding relation to the frame; and
a bottom film of plastic material covering the bottom of said panel and being integral and continuous with the second glazing to encase the entire panel within protective plastic material.

4,191,170

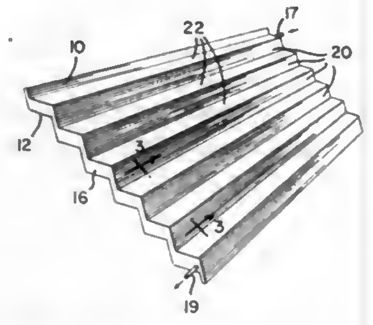
SOLAR PANEL

David R. Carrell, P.O. Box 895, Yakima, Wash. 98907

Filed Oct. 21, 1977, Ser. No. 844,421

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—449 **15 Claims**



1. A solar panel, comprising:
means forming multiple sets of planar absorptive faces positionable parallel to the longitudinal axis of solar travel, each set being composed of a plurality of spaced apart parallel faces positionable in perpendicular relation to the direction of incident solar radiation at a predetermined discrete solar position;
means operatively associated with said faces forming a series of closed-ended parallel flow channels underlying said faces in thermally conductive relation therewith;
means operatively connecting adjacent channels intermediate the ends thereof to transmit a heat exchange fluid between adjacent channels;
fluid inlet means operatively connected with one channel; and
fluid outlet means operatively connected with another channel.

4,191,171

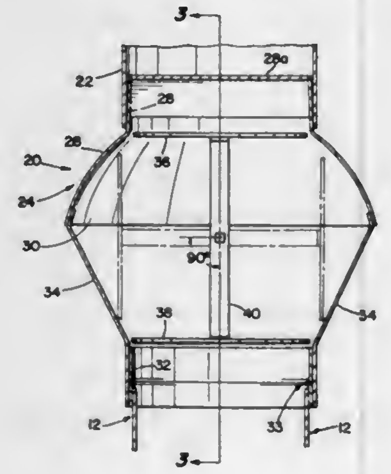
DRAFT HOOD AND DAMPER ASSEMBLY FOR FUEL FIRED HEATING APPARATUS

John J. Primeau, 19800 Seminole, Euclid, Ohio 44117

Filed Mar. 29, 1978, Ser. No. 891,320

Int. Cl.^{2} F23L *3/00;* **F16K** *1/00*

U.S. Cl. 126—292 **11 Claims**



7. A draft hood and damper assembly for use on a fuel fired heating apparatus said assembly including a flared draft hood forming member having an outlet end of a first diameter and an inlet end of a second diameter larger than said first diameter, a tube member having an outlet end of a diameter substantially less than said second diameter and generally axially aligned with said hood member and spaced from said inlet end to define a generally annular flow space about said tube to the inlet of said hood forming member; a first damper member having a configuration and size to conform to the outlet of said draft hood forming member; a second damper member having a configuration and size to conform to the outlet of said tube member; rotatable shaft means extending in a direction transverse to the outlet of said draft hood member; mounting means connecting said first and second damper members to said shaft means in spaced apart relationship on opposite sides thereof; and actuating means for selectively rotating said shaft means from a first position to respectively prevent flow through the outlet of said hood forming member and the outlet from said tube member to a second position wherein said damper members are spaced laterally of the outlet from said hood forming member and the outlet from said tube member.

4,191,172

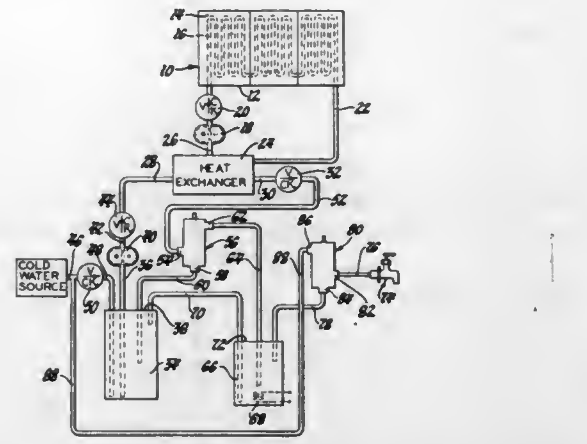
THERMOSTATIC MIXER VALVE

Robert L. Walch, Jr., Newfane; Van P. Carey, N. Tonawanda, and Michael J. Thomas, Lockport, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 19, 1978, Ser. No. 907,879

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—421 **2 Claims**



1. A solar energized hot water system comprising: storage means for potable water including a reserve tank and an immediate-use tank, a source of unheated potable water; a solar heat collector; a solar heat exchanger having one pass connected with said collector and another pass connected with said unheated water source; means including an alternate heater responsive to the water temperature in said immediate-use tank and energizable to prevent water temperature therein from falling below a predetermined temperature level; means operably connecting said solar heat exchanger with said storage means including a temperature responsive valving device to alternately direct heated water from said heat exchanger to said immediate-use tank when above said predetermined temperature and to said reserve tank when below said predetermined temperature; said valving device forming a hollow housing defining a flow path therethrough with three openings, the first receiving heated water from said solar heater, the second for passing heated water to said reserve tank and the third for passing heated water to said immediate-use tank; a thermally responsive power element and valve portion to block flow between said first and said third ports and permit flow between said first and second ports when the water temperature is below the predetermined temperature and to permit flow between said first and third ports and block flow between said first and second ports when the water temperature is above the predetermined temperature, whereby omission of direct flow of cooler water to the immediate-use tank minimizes the energization of the alternate heater.

4,191,173

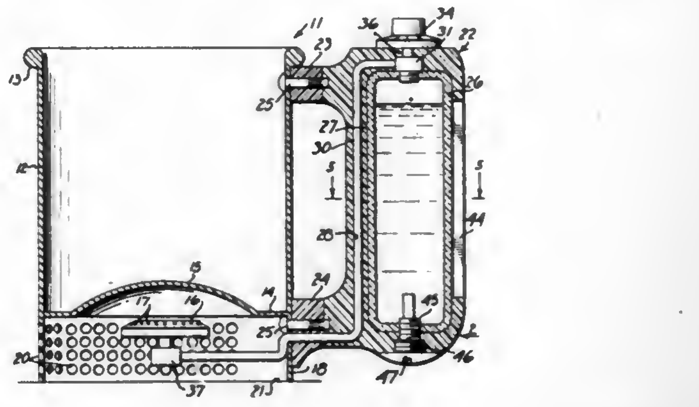
SELF-HEATING CUP

John R. Dedeian, 1616 156th NE., #241, Bellvue, Wash. 98007, and Charles Dedeian, 501, Soap Lake, Wash. 98851

Filed Jun. 12, 1978, Ser. No. 914,892

Int. Cl.^{2} F24H *1/00*

U.S. Cl. 126—350 R **4 Claims**



1. A self-heating drinking cup comprising
an at least substantially cylindrical vessel for containing a beverage or the like,
a lip protecting cover of heat insulating material surrounding the inner and outer surfaces of the upper portion of said vessel,
said vessel having a bottom wall,
a hollow elongate handle of heat insulating material extending parallel to the length of said vessel,
spacing means of heat insulating material maintaining said handle in spaced apart relation to said vessel whereby said handle may be gripped to solely transport and pour or drink from said vessel,
means forming a skirt below said bottom wall for supporting said vessel on an underlying surface,
a burner,
means supporting said burner within said skirt for applying heat against said bottom wall,
an elongate container for fluid fuel within said hollow handle and extending along the length of said handle, and
a fluid conduit extending from the upper end of said container,
downwardly through said handle and through said spacing means to said burner.

4,191,174

INCUBATOR OPENINGS

Paul F. Martin, 86 Townsend Rd., Miramar, Wellington, New Zealand

Filed Dec. 13, 1977, Ser. No. 860,085

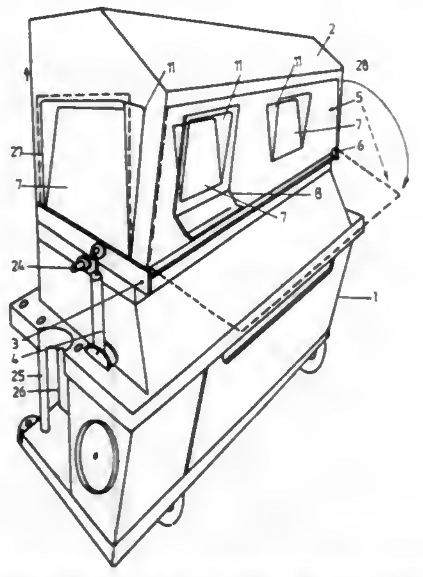
Claims priority, application New Zealand, Dec. 20, 1976, 182924

Int. Cl.^{2} A61G *11/00*

U.S. Cl. 128—1 B **6 Claims**

1. An incubator including a cover means and means cooperating with said cover means for defining an enclosure within said cover means having sides and a top, means defining at least one access opening in a side of said cover means for allowing at least a person's arm to be extended through said side into said enclosure, said access opening having top, bottom, and side portions, rigid means movably disposed to the outside of said cover means to allow for opening and substantial closing of said access opening, means for providing said enclosure with an environment having a gas pressure above that externally of said enclosure, said means defining said at least one access opening including self-supporting canopy-like flange means projecting inwardly and downwardly of said enclosure at the top portion of said access opening and extending at least along upper parts of said side portions of said access opening, said flange means extending further into said enclosure at upper regions of said flange means than at lower regions of said

flange means whereby, opening said access opening will not allow any substantial rolling over by air from outside the access opening into said enclosure to hence affect the incubator environment.



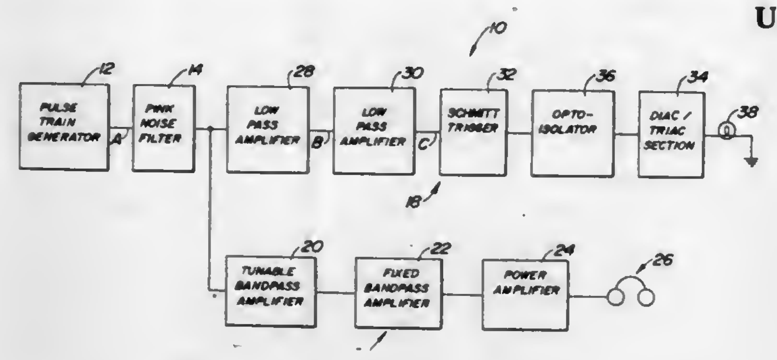
4,191,175
METHOD AND APPARATUS FOR REPETITIVELY PRODUCING A NOISE-LIKE AUDIBLE SIGNAL

William L. Nagle, c/o Seidel Gonda & Goldhammer, P.C. 600 Three Penn Center, Philadelphia, Pa. 19102

Filed Jan. 16, 1978, Ser. No. 870,050

Int. Cl.² A61B *19/00*

U.S. Cl. 128—1 C **10 Claims**



1. Apparatus for repetitively producing a noise-like audible signal, comprising:

an audible signal source,

means for repetitively generating at a first adjustable repetition frequency bursts of digital pulses, said pulses within each burst having a second higher adjustable repetition frequency,

pink noise filter means connected to said pulse burst generating means for substantially attentuating all frequencies of said repetitive bursts of digital pulses above a first cutoff frequency and for accentuating a preselected range of lower frequencies.

tunable band pass filter means connected to said pink noise filter means for repetitively generating noise-like pulses of varying amplitudes, said tunable band pass filter means having a center frequency which is adjustable over a preselected range of frequencies which correspond to the frequencies optimally detectable by the average human ear, said noise-like signal having a frequency component accentuated at approximately said center frequency, and

means connected to said tunable band pass filter means for driving said audible signal source.

4,191,176
INTRALENTICULAR CATARACT SURGERY

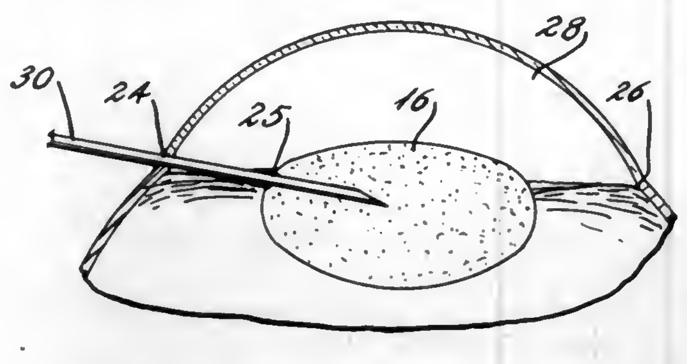
Joseph Spina, Bryn Mawr, Pa., and Michael K. Weibel, Redding, Conn., assignors to Novo Laboratories, Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 771,551, Feb. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 660,873, Feb. 24, 1976, Pat. No. 4,078,564. This application Aug. 23, 1977, Ser. No. 827,100

The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.

Int. Cl.² A61M *5/00*

U.S. Cl. 128—1 R **7 Claims**



1. A method for enzymatically treating cataracts in vivo which comprises injecting a concentrated solution of a trypsin directly into the lens of an eye, then allowing enzymatic digestion of the lens to take place and thereafter removing the enzyme digested lens material.

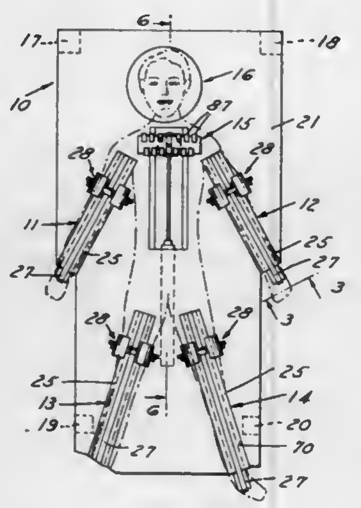
4,191,177
MASSAGE APPARATUS

Tony Abbott, 26726 Student St., Detroit, Mich. 48239

Filed Aug. 2, 1978, Ser. No. 930,186

Int. Cl.² A61H *7/00*

U.S. Cl. 128—51 **11 Claims**



1. In a massage apparatus, the combination comprising:

(a) a support member having a support surface for supporting the body of a person on which the massage apparatus is to operate;

(b) a pair of arm massage units mounted on the support member for massaging the arms of a person laying on the support surface;

(c) a pair of leg massage units mounted on the support member for massaging the legs of a person laying on the support surface;

(d) a back massage unit mounted on the support member for massaging the back of a person laying on the support surface;

(e) each of said massage units including a plurality of massage rollers;

(f) means for moving said massage units;

(g) each of said massage units including a pair of movable massage roller carrier members;

(h) a plurality of massage rollers operatively mounted on each carrier member; and,

(i) means for moving said pair of massage roller carrier members on each of said massage units toward each other for normally biasing the massage rollers on the carrier members against the part of a person's body on which the respective massage unit is operating.

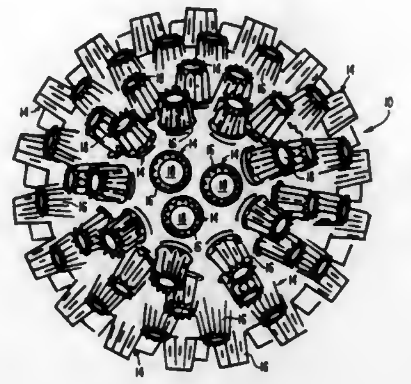
4,191,178
MASSAGE DEVICE

Michael J. Wisnieski, 2863 Mission Blvd., San Diego, Calif. 92109

Filed Mar. 31, 1978, Ser. No. 892,304

Int. Cl.² A61H *15/00*

U.S. Cl. 128—57 **4 Claims**



1. A massage device comprising:

a central core section;

a plurality of frustro-conic protuberances extending therefrom, said protuberances having an outer corrugated surface and a concave tip.

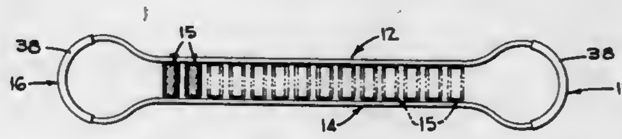
4,191,179
BODY MASSAGING APPARATUS

Alvin J. Mattila, 2 Beaver St., San Francisco, Calif. 94114

Filed Jan. 18, 1979, Ser. No. 4,404

Int. Cl.² A61H *11/00*

U.S. Cl. 128—58 **5 Claims**



1. Body massaging apparatus comprising first and second elongate flexible tension members, first and second handle means connected to opposite ends of said elongate members for affording a hand grip thereto and supporting said elongate members in substantial parallel spaced apart relation, a plurality of parallelly spaced apart massaging units extending between said elongate members and supported thereby, each said massager unit including a shaft having first and second ends secured to respective said elongate members and spanning the space therebetween, a substantially rigid cylindric member defining a central opening sized for rotative movement on said shaft and having an exterior surface concentric therewith, a flexible sheet adhesively secured to said cylindric surface, and a plurality of resilient fingers integral with and projecting radially from said flexible sheet, said fingers having width and thickness dimensions and a length dimension greater than said width and thickness dimensions so that in response to manipulation of the apparatus by grasping said handles said members can be rolled over parts of the body to cause said points to roll upon and stimulate the skin.

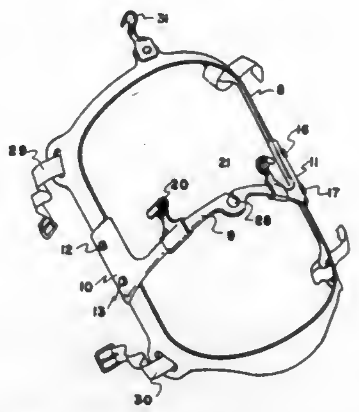
4,191,180
ENDOTRACHEAL SUPPORT AND STABILIZATION DEVICE

Donna J. Colley, and Michael L. Easterwood, both of 630 E. 24th St., San Angelo, Tex. 76903

Filed Mar. 24, 1978, Ser. No. 889,812

Int. Cl.² A61M *25/02, 16/00*

U.S. Cl. 128—207.17 **5 Claims**



1. An endotracheal support and stabilization device for a person having a head with a face in front of the head and a back, the face having a forehead, a nose with nostrils and a chin, said endotracheal support and stabilization device comprising

a generally oval frame framing the face of a user, said frame having spaced opposite upper and lower parts and spaced opposite side parts substantially parallel to each other and a cross-member mounted transversely on the side parts of said frame and extending across the face of the user substantially perpendicular to said side parts at substantially the level of the nose, said cross-member being slidably mounted on said side parts of said frame for adjustment to different positions from said upper and lower parts of said frame according to different nose positions on different faces;

clamp means on said cross-member for securing external hoses to said cross-member in a manner whereby tubing from said hoses is maintained inserted into the nostrils of the user free from pressure on the nose; and

fastening means affixed to said frame and extendable around the back of the user's head for releasably supporting the frame in position framing the user's face with said cross-member extending across the user's nose, the upper part in the area of the forehead of the user and the lower part in the area of the chin of the user.

4,191,181
APPARATUS FOR INFUSION OF LIQUIDS

Manfred Franetzki, Uttenreuth; Karl Prestele, Erlangen, and Helmut Fünke, Möhrendorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 26, 1977, Ser. No. 845,711

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1976, 2652026

Int. Cl.² A61J *7/00;* A61M *5/00*

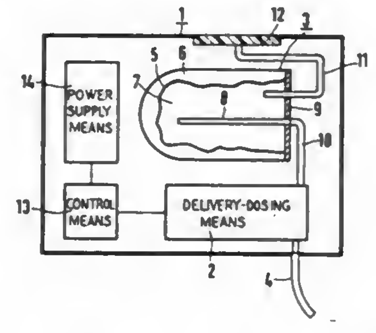
U.S. Cl. 128—213 R **20 Claims**

1. A device for infusion of liquids into human or animal bodies comprising:

a reservoir means for infusion liquids isolated from a body being treated with such infusion liquid;

a delivery-dosing means operationally coupled to said reservoir means and to an outflow catheter adapted to be connected to a body being treated with the infusion liquid; and

a reduced-pressure generating means operationally engaged with said reservoir means which maintains a defined reference pressure value at the interconnection between said reservoir means and said delivery-dosing means which is



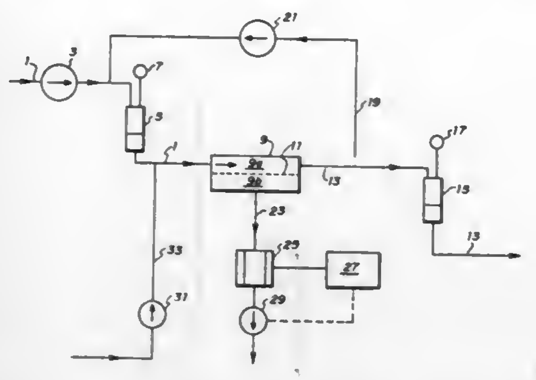
lower than the pressure prevailing at an outflow opening of said outflow catheter.

4,191,182

METHOD AND APPARATUS FOR CONTINUOUS PLASMAPHERSIS

Robert P. Popovich; Glen D. Antwiler, and Jack W. Moncrief, all of Austin, Tex., assignors to Hemotherapy Inc., Austin, Tex.

Filed Sep. 23, 1977, Ser. No. 836,214
Int. Cl.^{2} A61M *1/03*
U.S. Cl. 128—214 R **24 Claims**



19. A continuous plasmapheresis process comprising:
(a) continuously withdrawing whole blood from the blood vessel of a donor and pumping said whole blood into the filtering chamber of an ultrafiltration cell;
(b) continuously filtering said whole blood into a cellular component fraction and a plasma fraction by passing it in a flow over and parallel to an ultrafilter membrane having a pore size of from about 0.1 to 1.0 microns in diameter, and at a flow rate sufficient to provide a shear stress at the membrane interface of from about 10 dynes/cm^2 to about 1000 dynes/cm^2 at transmembrane pressures of from about 50 mm of mercury to about 700 mm of mercury;
(c) continuously admixing said cellular component fraction with an amount of replacement fluid substantially equal to said separated plasma fraction; and
(d) continuously returning said cellular component fraction and replacement fluid mixture to a blood vessel of said donor.

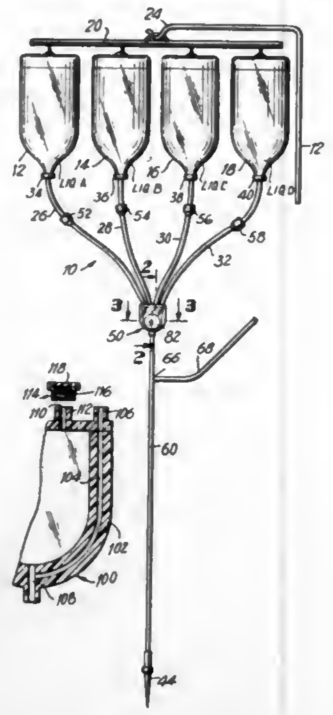
4,191,183

MIXING CHAMBER FOR USE IN PLURAL MEDICAL LIQUID INTRAVENOUS ADMINISTRATION SET

Barry Mendelson, 1 Topaz Ct., New City, N.Y. 10977

Filed Oct. 31, 1977, Ser. No. 847,263
Int. Cl.^{2} A61M *5/00*
U.S. Cl. 128—214 R **7 Claims**

1. A mixing chamber for use in an intravenous administration set wherein plural medical liquids are delivered to a patient comprising a pair of opposed, substantially parallely extending front and rear walls, said walls being closely spaced to each other relative to their transverse dimensions, said walls each having top and side peripheral edges;
a top wall extending between and interconnecting the top peripheral edges of said front and rear walls, said top wall having a plurality of entry ports formed therethrough, each port communicating with the space defined between said front and rear walls; and
a side wall extending between and interconnecting the side peripheral edges of said front and rear walls, said side wall having an exit port formed therethrough, said exit port communicating with the space defined between said front and rear walls, whereby said front, rear, top and side walls define a relatively shallow interior chamber, said mixing chamber further including a bypass bore having upper and lower ends formed in said sidewall, the upper end of said bypass bore communicating with an entry port and the lower end of said bypass bore communicating with said exit port.

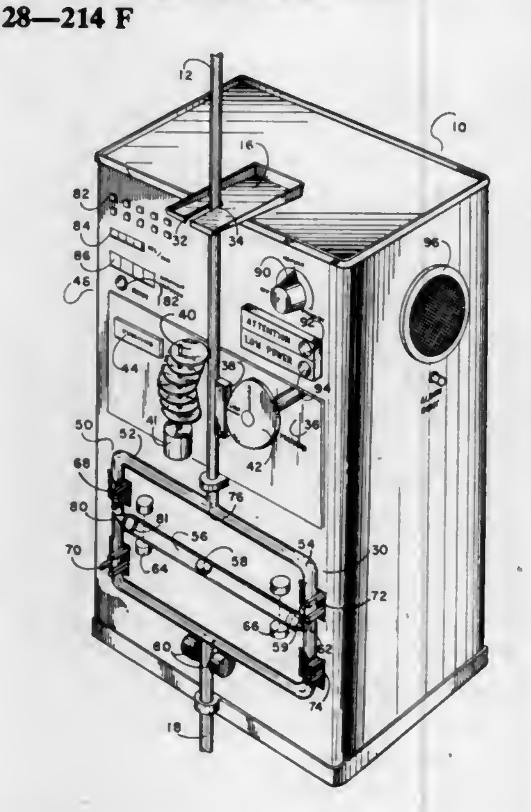


4,191,184

INTRAVENOUS INFUSION REGULATION SYSTEM WITH RECIPROCAL METERING MEANS

Jeffrey A. Carlisle, 30 Harris St., Acton, Mass. 01720

Continuation-in-part of Ser. No. 757,452, Jan. 6, 1977, abandoned. This application May 31, 1978, Ser. No. 911,280
Int. Cl.^{2} A61M *5/00*
U.S. Cl. 128—214 F **4 Claims**



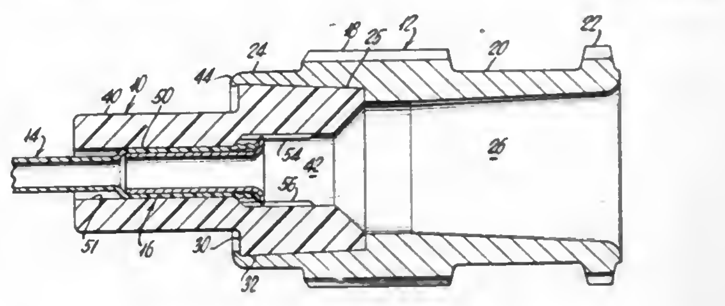
1. An intravenous infusion system capable of regulating flow from an infusate fluid supply means through a disposable tubing supply network into animate bodies, most notably medical patients, comprising:
- a reciprocal metering means allowing discrete, known quantities of said fluid to move at specific intervals through said disposable tubing supply network;
- circuit means for regulating the frequency and number of said discrete fluid quantities passed into the patient;
- means for selectively externally increasing the available driving pressure of said infusate;
- means for monitoring fluid velocity during moments of infusion through said tubing means;
- means for computing and displaying clinical status conditions based on said fluid velocity;
- wherein said reciprocal metering means comprise:
- a fluid volume control apparatus capable of receiving an inlet tube from an infusion supply means and an outlet tube connected to a cannula for infusion of fluids into animate bodies comprising:
  - a ported, divaricated delivery tube which receives and diverges into portions from said inlet tube and converges and receives said outlet tube;
  - a transverse volume control tube, ported at its ends, intermediately disposed between said diverging portions of said divaricated delivery tube, said diverging portions being ported therewith with said control tube having internal dimensions such that each infusion cycle will deliver less than 1.0 ml of infusate;
  - means associated with said diverging portions of said delivery tube for restricting and regulating fluid flow through said delivery tube being positioned such that said volume control tube port connections are interposed therebetween;
  - means for alternately operating said infusion flow regulation and restriction means in a diagonally paired tandem fashion;
  - a control member movably positioned in a substantially fluid tight relation within said control tube, and optical detection means positioned about each end of said control tube at the connection of said delivery tube portions for detection of said control member;
  - and wherein said means for monitoring fluid velocity during moments of infusion comprise:
- electrical output means from said optical detectors which are measured by the controlling circuitry in relation to the initiation of each infusion cycle to determine the time taken for said control member to leave the presence of one said detector means and travel through said volume control tube into the presence of said detection means at the other end of said control tube;
- and wherein said means for externally increasing the available driving pressure of said infusate fluid comprises:
  - a motor-driven eccentric means and an associated occluding means, such as a roller or peristaltic pump, for squeezing said inlet tube in a well-known time-space relationship, causing fluid to be propagated in a single direction through said tubing network;
  - an electromechanical switch to selectively activate and deactivate said motor-driven eccentric means and said associated occluding means;
  - and wherein said circuit means for regulating the frequency and number of said discrete fluid quantities delivered to the patient consists of a programmed microprocessor and associated interface and input/output circuit means;
  - and wherein said means for computing clinical status conditions provides distinct indications for infusion rate, volume infused, and abnormally slow flow through said volume tube.

4,191,185

CATHETER ASSEMBLY

Francis P. Lemieux, Morristown, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Sep. 6, 1977, Ser. No. 830,933
Int. Cl.^{2} A61M *5/00, 25/00*
U.S. Cl. 128—214.4 **5 Claims**



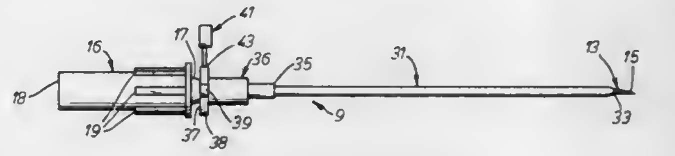
1. A catheter assembly comprising: a hub having an axial opening therethrough; catheter securement means including a color-coded plastic insert having a proximal section secured within the distal end of said axial opening and a distal section extending outwardly therefrom, said insert having a passageway extending therethrough in alignment with said axial opening; and a flexible hollow plastic catheter having a proximal portion secured within said passageway of said insert only, there being no direct contact between said catheter and said hub, said catheter having a distal portion extending beyond the distal end of said insert, said proximal portion of said catheter being secured within said passageway in fluid communication with said axial opening by an internal sleeve, having expanded only said proximal portion outwardly into locking contact with the internal surface of said distal section of said insert.

4,191,186

REMOVABLE DIGIT ENGAGEABLE MEANS FOR SEPARATING A CATHETER AND STYLET

Robert J. Keeler, Wheeling, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

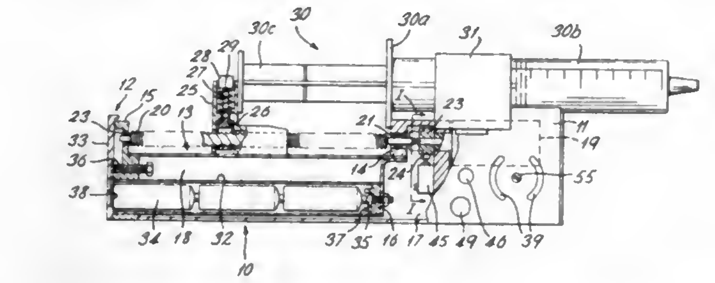
Filed Dec. 12, 1977, Ser. No. 859,344
Int. Cl.^{2} A61M *05/00*
U.S. Cl. 128—214.4 **10 Claims**



1. In a catheter placement unit including:
- a stylet having a sharpened first end and a second end embedded in a tubular stylet hub having a receiving end of reduced diameter,
- a flexible catheter slidably disposed over said stylet, a first end of said catheter terminating short of said sharpened first end of said stylet and tapering away therefrom and a second end of said catheter attached to a first end of a tubular catheter hub having a second end loosely and removably disposed over said receiving end of said stylet hub, said catheter hub having digit engageable means associated therewith for facilitating removal of said catheter hub from said stylet hub; the improvement which comprises:
- said digit engageable means being removably associated with said catheter hub and removable quickly and easily therefrom by a single handed operation.

4,191,187
MEDICAL APPARATUS

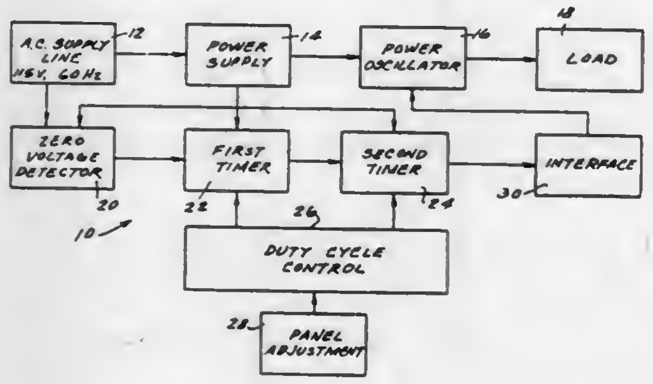
Basil M. Wright, Rickmansworth, England, assignor to National Research Development Corporation, London, England
Filed Mar. 8, 1978, Ser. No. 884,545
Claims priority, application United Kingdom, Mar. 9, 1977, 09947/77
Int. Cl.^{2} A61M *5/20*
U.S. Cl. 128—218 A **10 Claims**



1. Syringe driving apparatus comprising an elongate support formed for securement therealong of the barrel of a syringe, an electric motor, a transmission assembly drivably coupled with said motor and engageable with the plunger of said syringe to move said plunger into said barrel, drive control means for repeatedly applying uniform electrical signals at an adjustable frequency to energise said motor by each such signal to produce a predetermined incremental movement of said plunger by said transmission system, and safety control means for inhibiting said drive control means in response to energisation of said motor thereby for a predetermined continuous period of time greater than the duration of each of said drive control signals during normal operation of the apparatus.

4,191,188
VARIABLE CREST FACTOR HIGH FREQUENCY GENERATOR APPARATUS

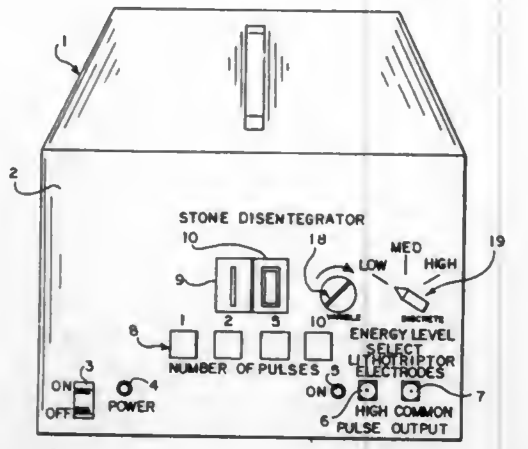
Kenneth W. Belt, Berwyn, and Stuart G. McCarrell, Chicago, both of Ill., assignors to Macan Engineering & Manufacturing Company, Inc., Chicago, Ill.
Division of Ser. No. 684,082, May 7, 1976, Pat. No. 4,100,505. This application Sep. 9, 1978, Ser. No. 876,325
Int. Cl.^{2} A61B *17/36;* **A61N** *3/02*
U.S. Cl. 128—303.13 **15 Claims**



1. A method of treating live tissues by applying a high frequency electrosurgical signal thereto, comprising the steps of:
receiving an input sinusoidal voltage;
generating repetitive pulses which are symmetrical in time with respect to and centered about peaks of the input sinusoidal voltage;
applying the input sinusoidal voltage and the repetitive pulses to a high frequency generator to turn the generator on and off and generate bursts of high frequency signals which are centered about the peaks of the input sinusoidal voltage; and
applying the signal bursts to an electrosurgical instrument.

4,191,189
STONE DISINTEGRATOR

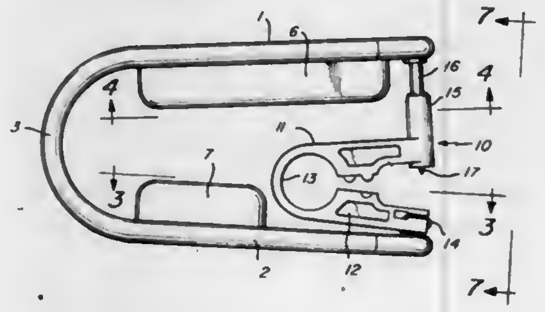
Yale Barkan, 835 Amigos Way, No. 17, Newport Beach, Calif. 92660
Filed Oct. 19, 1977, Ser. No. 843,402
Int. Cl.^{2} A61B *17/00*
U.S. Cl. 128—328 **7 Claims**



1. An instrument for disintegrating calculi in the urinary tract by hydraulic impacts formed by electrical discharges in the liquid medium surrounding the calculi including in combination a lithotrite for providing said electrical discharges, first and second spaced lithotriptor electrodes of said lithotrite, capacitor means, a high voltage relay for selectively connecting and disconnecting said lithotriptor electrodes across said capacitor means; and when said relay has disconnected said lithotriptor electrodes, said electrodes are electrically isolated from the capacitor means; means for charging said capacitor means, including rectifying and filtering means, and control means for said relay, said contol means including a pulse generator of selectable pulse repetition rate, and input circuit means to said pulse generator including unipolar initiation signal transmission means, and isolation and threshold filtering means.

4,191,190
EARLOBE PIERCING INSTRUMENT HOLDER

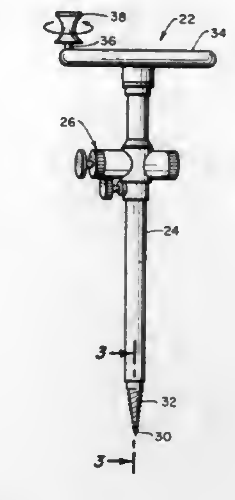
John A. Hastings, 31 Main St., Bass River, Mass. 02664
Filed May 12, 1977, Ser. No. 797,808
Int. Cl.^{2} A61B *17/00*
U.S. Cl. 128—330 **3 Claims**



1. In combination, an earlobe piercing instrument and a holder for said instrument, said earlobe piercing instrument including a plunger adapted to engage the head of an earlobe piercing pin and means for supporting a locknut adapted to receive the pointed end of said pin after it has been projected through an earlobe, said holder comprising means for engaging said plunger and means for engaging said locknut supporting means for relative movement toward one another, said means for engaging said plunger and said means for engaging said locknut supporting means being positioned at the outermost ends of said plunger and said locknut supporting means, respectively, and means commonly supporting said plunger engaging means and said lockout supporting means, wherein said piercing instrument has a pair of jaws and means resiliently holding said jaws apart, said means resiliently holding said jaws apart also in part providing means for securing said instrument to said means commonly supporting said plunger engaging means and said locknut supporting means.

4,191,191
LAPROSCOPIC TROCAR

Robert M. Auburn, 2683 Surfrider Ave., Ventura, Calif. 93003
Filed Feb. 13, 1978, Ser. No. 877,270
Int. Cl.^{2} A61B *17/34*
U.S. Cl. 128—347 **3 Claims**

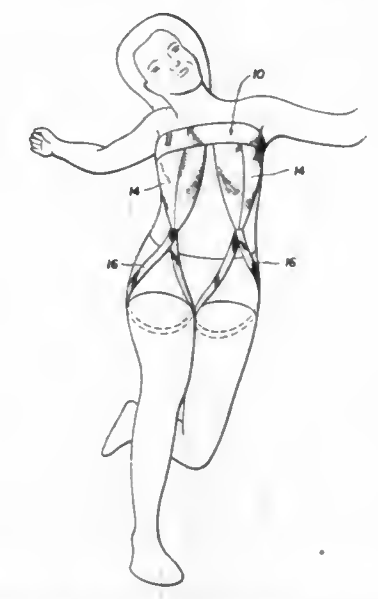


1. A laproscopic trocar comprising:
an elongated cannula having an internal chamber, said cannula having a first opening providing access into said internal chamber and a second opening providing exit from said internal chamber;
an elongated instrument capable of being conducted through said first opening and into said internal chamber and through said second opening, the outer end of said instrument extending exteriorly of said second opening being sharp pointed, said outer end including a helical ridge, said helical ridge taking the form of a plurality of helical ridges forming a screw thread assembly, whereby said instrument to be inserted within said cannula with said sharp pointed outer end to make initial penetration through a patient's abdominal wall and subsequent rotation of said instrument causes gradual entry of said instrument into the patient's abdomen due to the threading of said helical ridge through the patient's abdominal wall, said screw thread assembly comprises a series of sharp pointed helical ridges and a series of smoothly contoured helical ridges, said sharp pointed helical ridges being located adjacent said sharp pointed outer end.

4,191,192
ATHLETIC BRASSIERE

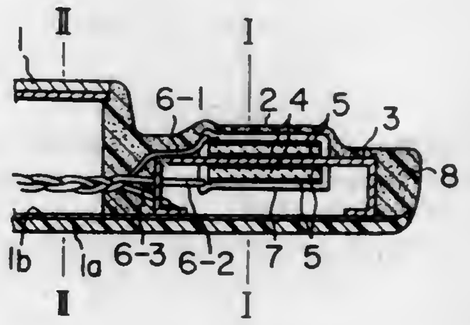
Robert F. McDavid, Box 921, Terre Haute, Ind. 47808
Filed Mar. 30, 1979, Ser. No. 25,346
Int. Cl.^{2} A41C *3/08*
U.S. Cl. 128—457 **6 Claims**

1. An athletic brassiere comprising an elastic chest band adapted to snugly encircle the chest of a wearer near the armpits and above the breasts, a pair of breast cups secured to the frontal portion of said chest band, and a pair of elastic straps attached to said cups and adapted to encicle the legs of a wearer of the brassiere and exerting a downward pull on the cups which is resisted by the holding action of said chest band.



4,191,193
CATHETER HEAD-TYPE TRANSDUCER

Iwao Seo, Ibaragi, Japan, assignor to Mitsubishi Petrochemical Co. Ltd., Chiyoda, Japan
Filed Feb. 22, 1977, Ser. No. 770,782
Claims priority, application Japan, Feb. 29, 1976, 51/021431
Int. Cl.^{2} A61B *5/02*
U.S. Cl. 128—675 **8 Claims**



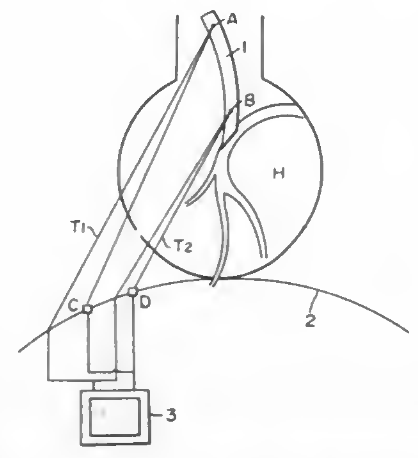
1. A catheter comprising a tube having a length and a tip, and a transducer on said tip which is comprised of a pair of organic high polymer filmlike piezoelectric elements being mounted on each opposite face of a rectangular shim having feet at each end fixed to and raising the piezoelectric elements from a relatively undeformable inner wall of the catheter tube so that said piezoelectric elements are centrally distorted in response to fluid pressure exerted on said tip, said shim being fixed to the inner wall of the catheter tube at the catheter tip, said piezoelectric elements being adhered to said shim with opposing sides of the same pole to said shim, and conductor means comprising a cable connected respectively with both piezoelectric elements and said shim extending through said tube to conduct the electrical signal generated by the transducer to means for receiving it.

4,191,194
BLOOD VESSEL TESTER

Toshio Watanabe, 1-28, Shirasagi 1-chome, Nakano-ku, Tokyo, and Yoshinori Tanimoto, 6, Kawada-cho, Shinju-ku, Tokyo, both of Japan
Filed Feb. 8, 1978, Ser. No. 876,138
Claims priority, application Japan, Feb. 14, 1977, 52-14718
Int. Cl.^{2} A61B *5/02*
U.S. Cl. 128—692 **4 Claims**

1. A method for determining whether or not a transplanted

blood vessel inside a mammal is obstructed or contracted, in which a pair of temperature-sensitive elements are attached to the surface of said transplanted blood vessel at separate positions thereon which positions are longitudinally spaced-apart from each other in the direction of the blood flow of said transplanted blood vessel, said temperature-sensitive elements being capable of providing separate thermoelectromotive force outputs indicative of the temperature of the surface of said transplanted blood vessel at the respective positions, which comprises the steps of: transfusing a quantity of a cooling liquid into the blood that flows through said transplanted blood vessel at a location in the blood flow path upstream from said temperature-sensitive elements so that said temperature-sensitive elements thereby provide thermoelectromotive force outputs in response to the flow of the cooling liquid past said positions, each of said outputs varying with time and said two outputs being spaced-apart in time from each other; and measuring the time difference between corresponding points of said thermoelectromotive force outputs which time difference indicates whether or not said transplanted blood vessel is obstructed or contracted between said positions.



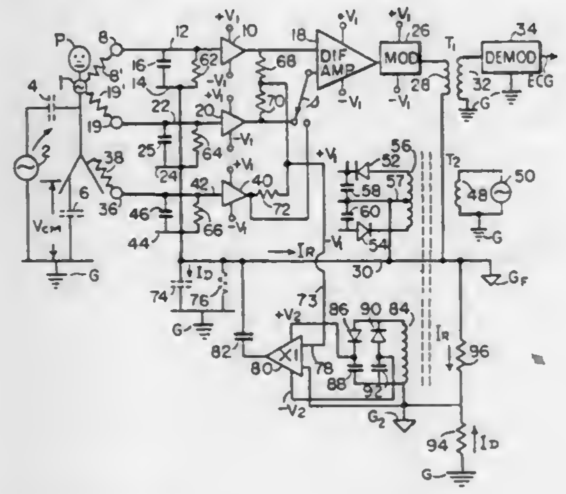
4,191,195
COUPLING CIRCUIT WITH DRIVEN GUARD

Arthur Miller, Brookline, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 7, 1978, Ser. No. 940,404

Int. Cl.² A61B *5/04*

U.S. Cl. 128—696 **2 Claims**



1. In combination,
- a coupling circuit referred to a point of floating ground potential for transferring the difference between electrical signals supplied by electrodes on a patient's body to circuits referenced to true ground,
- a unity gain buffer amplifier having an input and an output, means coupling potentials on said coupling circuit to said input of said unity gain amplifier,
- means for alternating current coupling said output of said unity gain amplifier to a point of floating ground potential,
- a power supply for providing direct current operating potentials to said unity gain amplifier that are referenced to a given point,
- a first impedance connected between said given point and true ground, said impedance having sufficient value to protect a patient from electrical shock, and
- a second impedance connected between said given point and the point of floating ground reference of the coupling circuit.

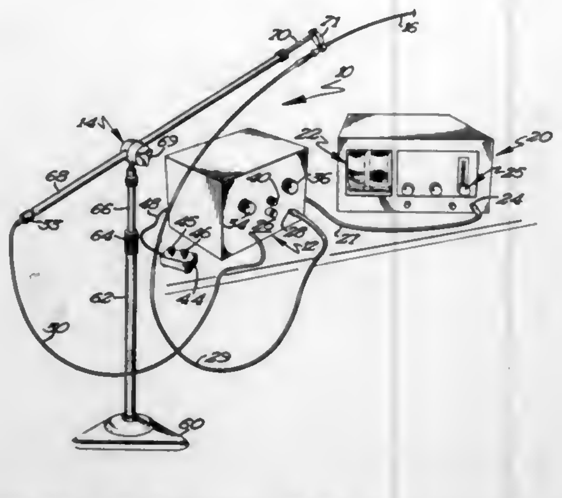
4,191,196
PROFILOMETRY METHOD AND APPARATUS

William E. Bradley; Gerald W. Timm; William M. Klatt, all of Minneapolis, and Wayne H. Graves, Minnetonka, all of Minn., assignors to American Medical Systems, Inc., Minneapolis, Minn.

Filed Jun. 15, 1976, Ser. No. 696,318

Int. Cl.² A61B *5/10*

U.S. Cl. 128—733 **5 Claims**



1. A diagnostic profilometry method comprising the steps of:
- generating a urethral pressure profile, said generating step including the steps of:
  - catheterizing a patient with a urethral catheter having a plurality of electrodes mounted thereon;
  - inputting fluid through said catheter into the urethra;
  - withdrawing said catheter from the urethra; and
  - measuring and recording intra-urethral fluid pressure as said catheter is withdrawn; and
- generating a urethral electromyographic profile simultaneously with the generation of said urethral pressure profile as said catheter is withdrawn by monitoring urethral electrical activity with said plurality of electrodes mounted on said urethral catheter and recording said urethral electrical activity.

4,191,197
TOUCH FREE TYMPANIC THERMOMETER

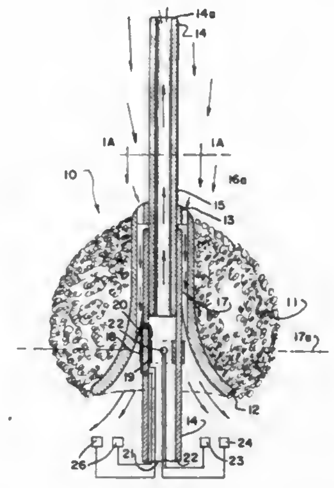
Theodor H. Benzinger, 6607 Broxburn Dr., Bethesda, Md. 20014

Filed Mar. 14, 1978, Ser. No. 886,705

Int. Cl.² G01K *7/00*

U.S. Cl. 128—736 **20 Claims**

4. A touch-free tympanic thermometer comprising a tube passing heated air of a temperature close to tympanic temperature onto a tympanic membrane and from a thermoelectric probing tube, and means measuring the temperature of the air returning outside the tubing yet while inside the ear canal.



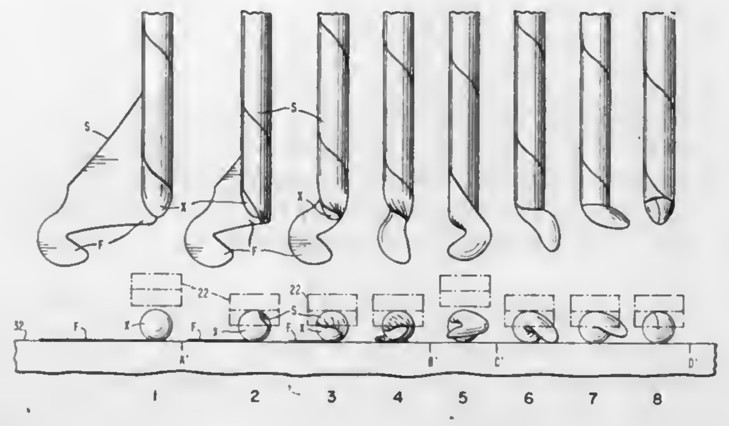
4,191,198
CIGAR HEAD WRAPPING MECHANISM

Michael E. Chopko, and Hans C. Dreher, both of Dallas, Pa., assignors to Culbro Corporation, New York, N.Y.

Filed Jun. 2, 1977, Ser. No. 802,668

Int. Cl.² A24C *1/30, 1/32*

U.S. Cl. 131—76 **15 Claims**



1. An apparatus adapted to wrap a wrapper strip around a cigar bunch with a shaped head by rolling said bunch over said strip while said strip is on a supporting surface, in combination with a mechanism for pressing the tail portion of said strip onto said head during said rolling of said bunch which comprises a conveyor having a portion movable along said supporting surface, and a header block carried by said conveyor into contact with said head while said tail portion is being wrapped around said head, said block having a shaped face to make conforming contact with said head.

4,191,199
APPARATUS AND PROCESS FOR RECLAIMING TOBACCO

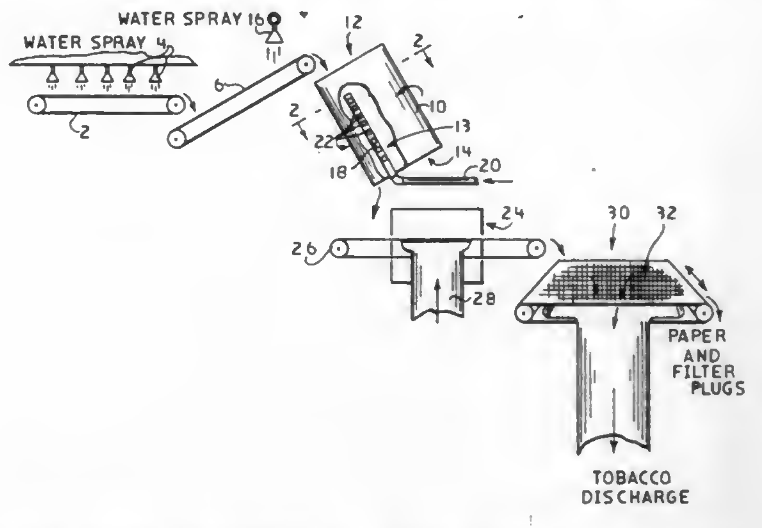
James W. Sullivan, Glendale, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Apr. 3, 1978, Ser. No. 892,450

Int. Cl.² A24C *5/36*

U.S. Cl. 131—96 **18 Claims**

10. Apparatus for reclaiming tobacco from cigarettes which comprises;
- a rotatable cylinder having a first open end and a second open end and a bore communicating between the ends;
- means of delivering steam within said bore;
- means for rotating said cylinder about its lengthwise axis;
- means for delivering cigarettes into the first open end;
- means for saturating the paper wrappers of said cigarettes with hot water adjacent said first open end;
- said cylinder being positioned at an angle inclined to the horizontal so that cigarettes delivered at the first open end will be carried by gravity out of the second open end;



- dryer means positioned to receive cigarettes discharged from the second open end of the cylinder; and
- classifying means associated with the dryer means for separating the dried tobacco from the remaining components of the cigarettes.

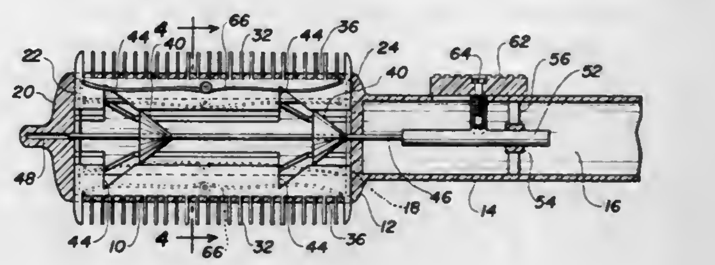
4,191,200
HAIR DRESSING COMB

Frank J. Renda, 752 Colonial Ave., York, Pa. 17403

Filed Mar. 9, 1978, Ser. No. 884,920

Int. Cl.² A45D *24/10*

U.S. Cl. 132—123 **8 Claims**



1. A hair dressing comb comprising in combination, a substantially cylindrical housing, a handle extending axially from one end thereof, a plurality of elongated combs mounted within said housing and extending longitudinally therein, means within said housing supporting said combs radially relative to the axis of said housing in circumferentially spaced positions relative to each other, said housing having openings therein through which at least the teeth of said combs can project radially outward from a retracted position substantially within said housing to extended operative positions therebeyond, cam means within said housing engageable simultaneously with said combs and movable in one direction to project at least the teeth of said combs simultaneously from said housing through said openings therein to the extended operative positions thereof, and spring means respectively mounted upon said combs and tensioned to normally hold said combs retracted within said housing and said cam means frictionally and slidably engaging said combs for axial movement in one direction to move said combs to extended operative position beyond said housing and thereby tension said springs to an even greater extent and said cams being slidably movable in an opposite direction to instantly release said tension of said springs to cause them to retract said combs to inoperative position within said housing.

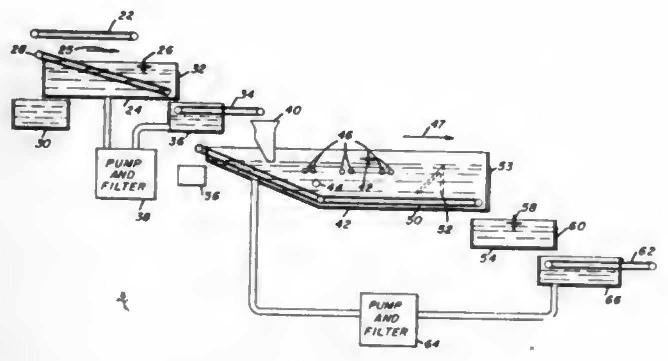
4,191,201
APPARATUS FOR SELECTIVELY RECLAIMING PARTS FROM FILM CARTRIDGES

Clive D. Barnsbee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 844,950, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 701,925, Jul. 2, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,508

Int. Cl.^{2} B08B *3/04*

U.S. Cl. 134—104 **1 Claim**



1. Apparatus for use in separating materials having different specific gravities wherein at least some of said materials are of a geometry that causes them to tend to float in a fluid having a lower specific gravity, and wherein at least some of said materials are affixed together by an adhesive, said apparatus comprising:
 - a first separation tank for containing a fluid of predetermined specific gravity, said first tank having disposed therein a rotary paddle wheel for providing mild agitation to said fluid;
 - a first sump tank including a first screen conveyor, said first sump tank disposed so that fluid and floating materials overflowing from said first separation tank fall onto said screen conveyor, said fluid passing through said first screen conveyor and collecting in said first sump tank, and said materials being collected on said first screen conveyor;
 - a second separation tank disposed to receive materials from said first screen conveyor and for containing a detergent fluid of predetermined specific gravity capable of dissolving said adhesive, said second tank including a ramp member disposed within said second tank so as to be submerged beneath said detergent fluid, and said second tank further including means for causing said detergent fluid to boil in a localized region within said tank to produce a turbulent region of fluid in said tank separated by said ramp member from a relatively calm region of fluid,
 - whereby said turbulence facilitates sinking of those materials having a higher specific gravity than said detergent fluid but which are of a geometry that causes them to tend to float, said detergent fluid dissolves said adhesive permitting affixed materials to be separated, and said calm region of fluid further facilitates separation of said materials on the basis of specific gravity;
 - a third separation tank disposed to catch the overflow of detergent fluid and floating materials from said second separation tank, said third tank having a rotary paddle wheel disposed therein to provide mild fluid agitation; and
 - a second sump tank including a screen conveyor, said second sump tank disposed so that detergent fluid and floating materials overflowing from said third separation tank fall onto said screen conveyor, said detergent fluid passing through said screen conveyor and collecting in said second sump tank, and said remaining materials being collected on said second screen conveyor.

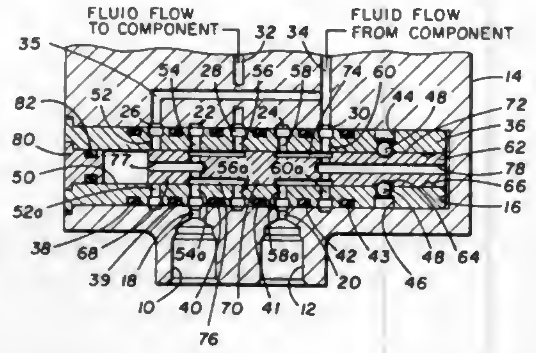
4,191,202
POLARITY CONTROL VALVE

Robert G. Brent, Arlington, Tex., assignor to Textron, Inc., Ft. Worth, Tex.

Continuation of Ser. No. 735,268, Oct. 26, 1976, abandoned. This application Jun. 14, 1978, Ser. No. 915,505

Int. Cl.^{2} H01M *6/30*

U.S. Cl. 137—112 **4 Claims**



1. In a hydraulic actuator system including fluid pressure controlled elements, the improvement of a polarity control valve for establishing a hydraulic flow path from a pressure line connected to either of two input passages to the same one of two flow channels, comprising:
 - a housing having a chamber therein;
 - first and second input passages opening into the chamber of said housing;
 - first and second flow channels between the chamber and a fluid pressure controlled element; and
 - a valve spool slidably mounted for positive movement between first and second positions in said chamber and having radially extending lands to form separate annular chambers, said valve spool including:
   - a first annular chamber for connecting the first flow channel to the first input passage when the pressure line is connected to the first input passage and for connecting the second flow channel to the first input passage when the pressure line is connected to the second input passage;
   - a second annular chamber for connecting the first flow channel to the second input passage when the pressure line is connected to the second input passage and for connecting the second flow channel to the second input passage when the pressure line is connected to the first input passage;
 - said first and second annular chambers being out of fluid communication with each other in all positions of the valve spool;
 - flow passages in said spool to direct fluid pressure from the first and second input passages to opposite ends of said spool to positively move said valve spool between said positions and thereby establish the above described connections through said first and second annular chambers; and
 - means disposed within said housing for releasably holding said valve spool in said positions, said means being responsive to a preestablished pressure differential between the input passages.

4,191,203
FLUID CIRCUIT OR LOGIC ELEMENT

Pier L. Panigati, Lugano, Switzerland, assignor to Etablissement d'Occident, Vaduz, Liechtenstein

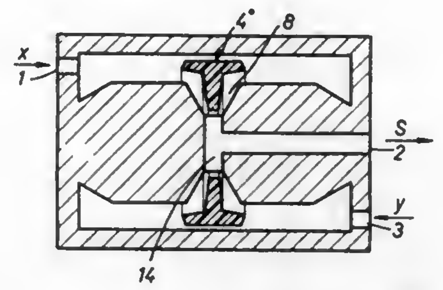
Filed Jun. 22, 1978, Ser. No. 917,883

Claims priority, application Switzerland, Jun. 27, 1977, 7860/77

Int. Cl.^{2} G05D *11/00*

U.S. Cl. 137—112 **2 Claims**

1. A logic element for representing the OR function, the element being of the type having two inlets for feeding in a fluid, an outlet, and a sealing device which is displaceable under the action of the fluid in order to selectively bring about a connection between one or the other inlet and the outlet, wherein the improvement comprises:
 - a generally cylindrical housing having two spaced-apart inlets; a segment surrounded by and extending longitudinally in said housing and forming, with said housing, an annular chamber having a central axis,
 - said segment including means defining an annular slot in a surface thereof, the slot having walls sloping together toward said central axis of the annular chamber, the slot and segment providing a connection between input portions of the annular chamber to either side of the slot;
 - an outlet disposed in the housing and including a passageway extending through said segment to a base portion of the slot; and
 - a sealing device with an annular configuration disposed at least partly in the slot, the sealing device having sides which diverge from the sides of the slot and having a predetermined clearance relative to the slot, the slot being at least equal in its longitudinal dimension to the longitudinal dimension of the sealing device, so that the resulting clearance permits an initial displacement of the sealing device along the central longitudinal axis of the annular chamber with subsequent rotation about its own torsional axis until it engages with the whole surface of its corresponding side of the slot and thus sealingly interrupts the connection between one of said two inlets and the outlet.



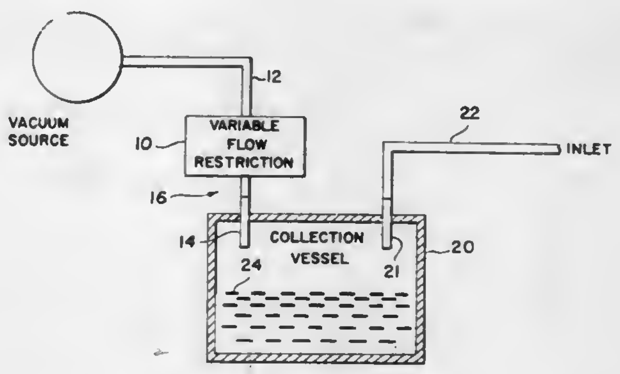
4,191,204
PRESSURE RESPONSIVE FLUID COLLECTION SYSTEM

John R. Nehring, Bergen, N.J., assignor to International Paper Company, New York, N.Y.

Filed Apr. 14, 1975, Ser. No. 567,552

Int. Cl.^{2} A61M *1/00*

U.S. Cl. 137—205 **13 Claims**



1. A system for collecting body fluids comprising:
 - (a) a vacuum source;
 - (b) a closed fluid collection vessel having an inlet port and an outlet port, said ports being in flow communication above the level of fluid within said vessel;
 - (c) an inlet conduit having its discharge end in flow communication with said inlet port and its intake end disposed to be immersed in said body fluid;
 - (d) a vacuum conduit connecting said vacuum source and said outlet port; and
 - (e) pressure responsive means associated with said vacuum conduit for reducing air flow to said vacuum source in response to a significant increase in pressure within said collection vessel caused by said inlet conduit ingesting significant amounts of air.

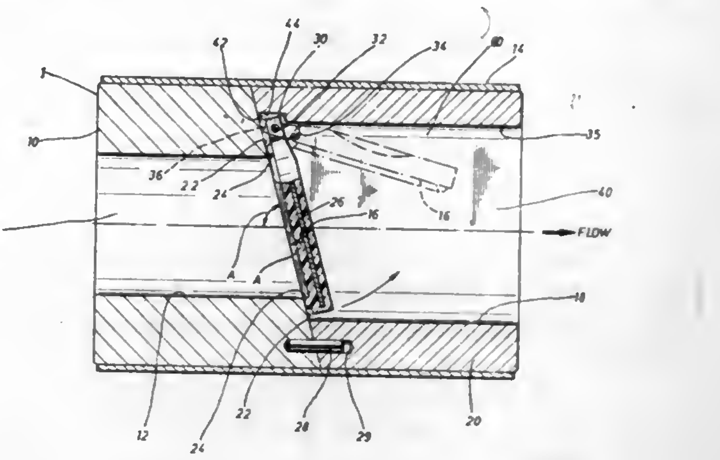
4,191,205
THERMOPLASTIC CHECK VALVE

Franklin A. Nash, 4817 Welford, Bellaire, Tex. 77401

Filed Mar. 21, 1978, Ser. No. 888,627

Int. Cl.^{2} F16K *15/03*

U.S. Cl. 137—375 **13 Claims**



9. A check valve comprising:
 - a cylindrical sleeve;
 - a first and second cylindrical thermoplastic element contained in said sleeve, said elements having throughholes whose centerline axes are in alignment, said second element throughhole diameter greater than said first element throughhole diameter;
 - a central passageway formed by said throughholes;
 - a first annular sealing surface formed on said first element around said central passageway in a plane inclined to the center-line axis of said passageway;
 - a disk-shaped rotatable flapper mounted to said second element, said flapper rotatable from a first position in which said flapper is out of said central passageway to a second position in which said flapper is contacting said first sealing surface; and
 - a second sealing surface connected to said flapper for sealing against said first sealing surface when said flapper is in contact with said first sealing surface.

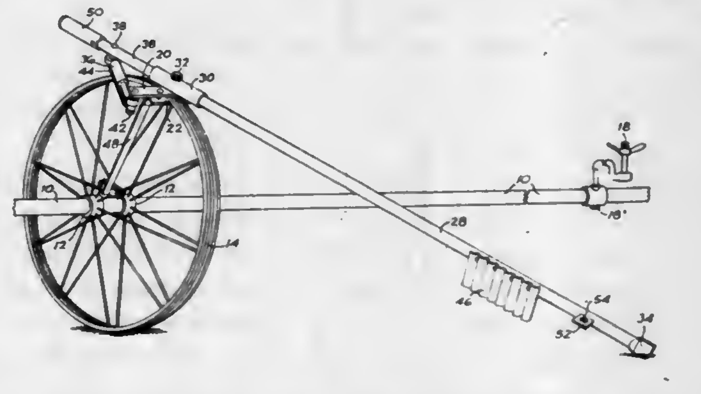
4,191,206
AUTOMATIC WIND BRACE FOR SIDE ROLL IRRIGATION SYSTEM

Larry W. Baker, Rte. 1, Box 52 C, Burley, Id. 83318

Filed Oct. 2, 1978, Ser. No. 947,486

Int. Cl.^{2} B05B *3/18*

U.S. Cl. 137—344 **12 Claims**



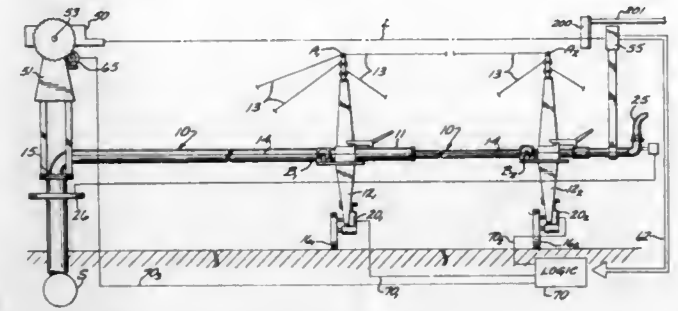
1. A wind brace for a side roll irrigation system wherein lengths of interconnected irrigation pipes are supported through the hubs of a plurality of spaced-apart wheels, the wind brace comprising:

(a) a base member,
(b) attaching means for mounting the base member on a side roll irrigation system radially outward of the irrigation pipe thereof,
(c) an elongated brace member having inner and outer ends,
(d) pivot means on the base member mounting the brace member adjacent the inner end thereof for pivotal movement of the brace member between a retracted, inoperative position substantially parallel to the irrigation pipe and an extended, operative position projecting angularly downward to the ground, and
(e) damper means interconnecting to the base member and the brace member for delaying pivotal movement of the brace member from its retracted position to its extended position.

4,191,207
IRRIGATION PIPE CONTROL SYSTEM

Edgar F. Jacobi, Huntington Beach, Calif., and Mark R. Madden, Plainsfield, Wis., assignors to Colkhi, Inc., San Diego, Calif.

Filed Mar. 23, 1978, Ser. No. 889,233
Int. Cl.^{2} B05B *3/00*
U.S. Cl. 137—344 3 Claims

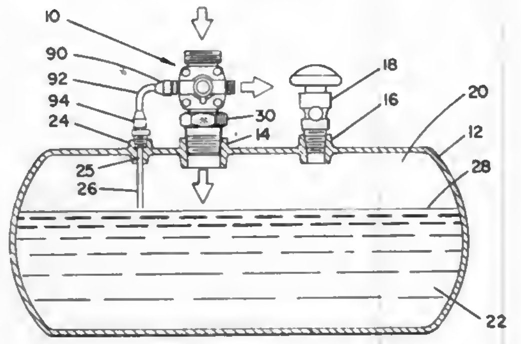


1. A control system for correcting deflections of a movable irrigation pipe including powered dollies for support, said irrigation pipe including a pivoted end and a free end comprising:
a source of electrical excitation;
a laser operatively connected to said source for producing a laser beam;
mounting means deployed on said pivoted end of said pipe and connected to support said laser thereon, said mounting means including a pivotal gear means aligned to provide pivotal motion of said laser in a vertical plane including the central axis of said pipe and a servo motor connected to pivot said gear means in response to vertical control signals;
sensing means deployed on said free end of said pipe and aligned for exposure to said laser beam, said sensing means including a first horizontal photoresponsive strip along the upper edge thereof, a second photoresponsive strip aligned subjacent said first strip and a third photoresponsive strip along the lower edge of said sensing means, said second strip including a first, second and third laterally spaced sensing zones;
advancing means included in said dollies for changing the rate of advance thereof in response to an advance control signal produced by impingment of said laser beam on a respective one of said laterally spaced sensing zones; and
control means connected to produce said vertical control signal to said servo motor according to the impingment of said laser beam on said first and third strip and to produce a control signal indicative of the impingment of said laser beam on said first and third zones to maintain said laser beam on said second strip regardless of the relative vertical movement of said free end of said irrigation pipe.

4,191,208
AUTOMATIC FILL-STOP VALVE

Gerald D. Mylander, 1232 W. Collins, Orange, Calif. 92667

Filed Sep. 14, 1977, Ser. No. 833,020
Int. Cl.^{2} F16K *21/18*
U.S. Cl. 137—393 6 Claims

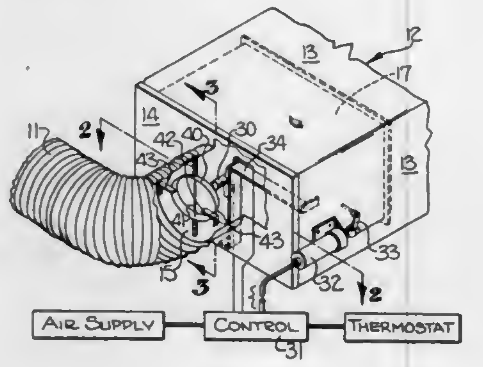


1. An automatic fill-stop valve for use in filling tanks for containing liquid which boils under ambient conditions, said fill-stop valve comprising:
a valve body having a liquid passage therethrough, a bore in said body, a valve spool movably mounted in said bore for moving from a closed position wherein said liquid fill passage is closed to an open position wherein liquid filling can take place, said valve spool having a large piston thereon, said valve body having a drive chamber therein, said large piston being open to said drive chamber so that pressure in said drive chamber moves said spool toward the valve closed position a ram disc bore, in said drive chamber, said ram disc bore being of larger diameter than said large piston, a ram disc in said ram disc bore, said ram disc being movable in said ram disc bore in a direction to urge said valve spool in a valve closing direction, said valve spool lying against said ram disc when said valve spool is in its valve open position;
a level-sensing system comprising a level-sensing tube and a first orifice in series with said tube, the side of said ram disc away from said valve spool being open to said level-sensing system so that increases in pressure in said level-sensing system urge said ram disc and said valve spool toward the valve closed position, said level-sensing system further including a second orifice and a manually operable valve, said drive chamber being connected to said level-sensing system between said first and second orifices.

4,191,209
AIR FLOW SENSING DEVICE FOR AIR CONDITIONING SYSTEMS

Frank J. Mattson; John T. Lawler; Jack L. Stegall, all of Charlotte, N.C., and Kenneth R. Dawkins, Rock Hill, S.C., assignors to Aeronca, Inc., Pineville, N.C.

Filed Oct. 5, 1978, Ser. No. 948,919
Int. Cl.^{2} G01F *1/05*
U.S. Cl. 137—486 18 Claims

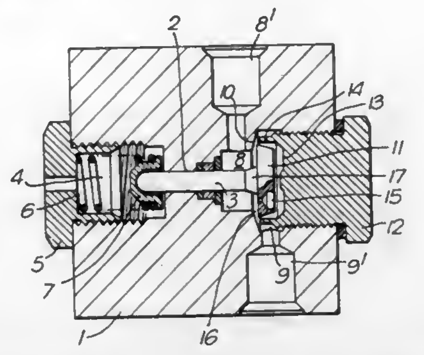


12. In an air flow system having an air flow sensor mounted in the air flow path and wherein an inaccurate reading of the air flow may be obtained by the sensor because of an uneven air velocity distribution at the sensor, as may occur when there is a curved air flow path adjacent to and preceding the sensor, the combination therewith of means for obtaining a more accurate sensor reading when an uneven air velocity distribution occurs at the sensor, and means comprising air redirecting means positioned in the air flow closely adjacent and preceding said sensor and being mounted for movement in response to impingement thereon of an air flow having an uneven velocity distribution to redirect the air flow and provide a more representative air velocity condition at the sensor.

4,191,210
APPARATUS FOR BRAKING SYSTEMS INCORPORATING A PRESSURE-CONTROL DEVICE FOR ANTISKID CONTROL

Juan Belart, Walldorf, and Dieter Kircher, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to ITT Industries, Incorporated, New York, N.Y.

Filed Dec. 8, 1977, Ser. No. 858,510
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1977, 2702399
Int. Cl.^{2} F16K *31/12*
U.S. Cl. 137—505.13 4 Claims

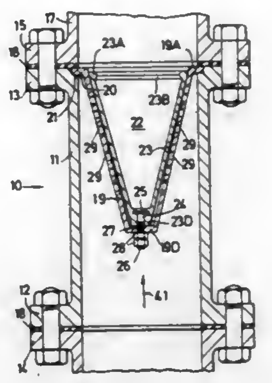


1. Apparatus for braking systems incorporating an antiskid pressure control device comprising:
a housing having a longitudinal axis;
a stepped bore disposed coaxial of said axis including
  a first portion having a first given diameter,
  a second portion integral with said first portion having a second given diameter greater than said first given diameter, said second portion providing an outlet chamber, and
a third portion integral with said second portion having a third given diameter greater than said second given diameter, said third portion providing an inlet chamber;
a valve seat formed in said bore at the junction of said second and third portions;
a valve member movable in response to braking pressure including
  a piston coaxial of said axis slidably sealed in said first portion and extending through said second portion, and
  a valve disk coaxial of said axis coupled to said piston adjacent said second portion, said disk being disposed in said third portion in an opening and closing relation with said valve seat and having a tapered periphery the maximum diameter of which is disposed adjacent said valve seat;
a throttle disposed in said housing to provide a permanent communication between said inlet chamber and said outlet chamber; and
a valve passageway extending from a first transverse surface of said disk adjacent said valve seat to a second transverse surface of said disk remote from said valve seat including
a gap between said tapered periphery of said disk and the inner surface of a hollow cylindrical cap disposed coaxial of said axis and extending over and embracing said tapered periphery of said disk when said disk is in its open position, the outer surface of said cap being spaced from the inner surface of said third portion, said cap extending from an end wall of said third portion remote from said valve seat, the cross-section of said gap increasing due to said tapered periphery of said disk when said disk moves from its open position to its closed position to provide a rapid closing movement for said valve member by pressure fluid flowing through said gap from said first transverse surface to said second transverse surface, said passageway being closed by said disk being seated on said valve seat upon attainment of a predetermined value of braking pressure acting on said disk in opposition to a spring acting on an end of said piston remote from said disk.

4,191,211
VALVE MEMBER FOR A NON-RETURN VALVE

Robert M. Walker, Barrow-on-Soar, England, assignor to The British Steam Specialties Limited, England

Filed Sep. 15, 1978, Ser. No. 942,491
Int. Cl.^{2} F16K *15/14*
U.S. Cl. 137—512.15 11 Claims



1. A non-return valve, comprising:
a housing having inlet and outlet ends and attachment means for attaching the inlet and outlet ends of the housing, respectively, to inlet and discharge pipes;
a perforate, hollow, conoidally-shaped valve seat defining a cavity of circular cross-section mounted within the housing and having a base, a rim and mounting means at said rim for securing said valve seat in position in said housing; and
a valve member comprising a hollow conoidally-shaped diaphragm of elastomerically deformable material having a base, a rim, an inwardly directed bead around the rim and connecting means connecting the base of the diaphragm to the base of the valve seat so that the entire outer periphery of the rim of the diaphragm is in sealing engagement with the inner periphery of the rim of the valve seat, whereas at least part of the remainder of the outer surface of the diaphragm is spaced inwardly of the cavity defined by the valve seat;
the diaphragm having, throughout part of its axial length, a cross-section which, before insertion of the valve member into the valve seat, has a non-annular shape which is bounded by non-circular inner and outer peripheries.

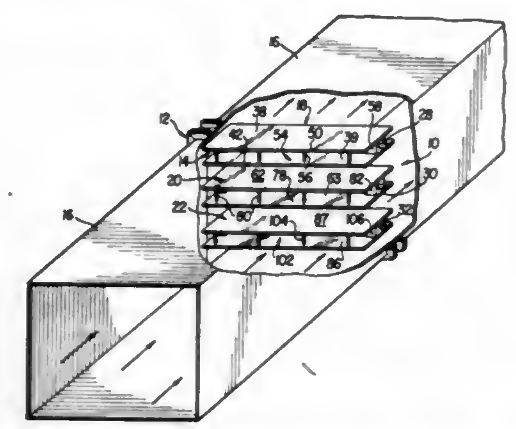
4,191,212
MULTIPLE BLADE DAMPER ASSEMBLY

Donald K. Hagar, Allentown, Pa., assignor to Damper Design, Inc., Allentown, Pa.

Filed May 18, 1977, Ser. No. 798,166
Int. Cl.^{2} F16K *1/22*; F24F *13/16*
U.S. Cl. 137—601 19 Claims

1. A damper assembly for controlling the flow of gases in a conduit, the assembly comprising, in combination, a plurality of generally rectangular blades, each including a pair of spaced, generally rectangular plates, each pair of plates defining a substantially unrestricted open flow passageway extending entirely through each blade, each blade having a pivot axis extending longitudinally thereof, the pivot axes of said plurality of blades supporting said blades and allowing said blades to swing about their respective axes into a closed condition wherein a first series of said plates are aligned in one common

plane and wherein a second series of plates are aligned in a second common plane, said first and second series of plates forming an enclosed sealing space, said plurality of blades also being swingable into an open position wherein said plates of each blade are all substantially parallel to the plates of the other blades in side-by-side relationship and aligned with the direction of gas flow, whereby gas may flow between said blades and also between said plates of said blades through said open passageways defined thereby.



4,191,213
CHANGE OVER DEVICE FOR CONTINUOUSLY CASTING VARIOUS EMULSIONS FOR PHOTOGRAPHIC PURPOSES

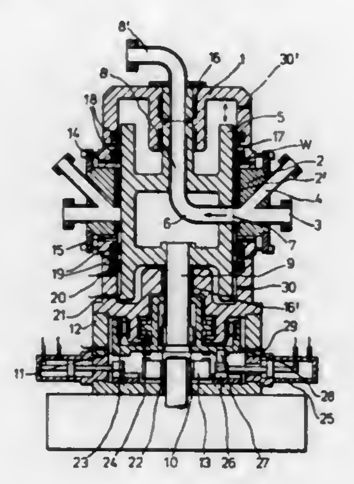
Ludvik Dölling, Holzkirchen; Wilhelm Haag, Hohenbrunn-Riemerling, and Herbert Heindze, Hohenschaeftlarn, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,402

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648574

Int. Cl.^{2} F16K *11/02*

U.S. Cl. 137—625.17 **12 Claims**



1. A change-over device for continuously coating a plurality of emulsions onto a film support at a coating station for the production of photographic materials, comprising a cylinder for containing pressure and which has a plurality of radial apertures, a sealing plate closing each of the apertures, each of the sealing plates having mounted thereon a feed and return pipe manifold, clamping means securing the sealing plates to the cylinder at the apertures in pressure-tight relationship, a change-over piston in the cylinder which is capable of both rotational and axial movements, the piston having an inlet conduit having a radial portion with inlet means for communicating with a selected one of the manifolds and an axial portion with an outlet means for connection to the coating station, a piston rod connected to the piston and to a rotary drive member, a clutch for transmitting rotational force between the rotary drive member and the piston rod for rotating the piston, the clutch including a rotary indexing unit rotatably mounted in the cylinder and surrounding the piston rod whereby the inlet means is aligned and connected to a selected one of the feed and return pipe manifolds, axially sliding rotary drive means connecting the clutch to the piston rod, fluid pressure means connected to the cylinder on two ends of the piston whereby the inlet means in the piston is moved axially out of and into axial alignment with the manifolds for alternatively blocking flow and causing flow between the selected one of the manifolds and the inlet conduit in the piston whereby a selected one of the emulsions is supplied to the coating station.

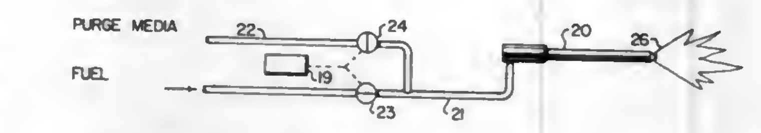
4,191,214
SEQUENTIAL OPERATING MECHANISM FOR VALVES

Thomas H. Holley, Richardson, and Robert J. George, Dallas, both of Tex., assignors to Forney Engineering Company, Carrollton, Tex.

Filed Jul. 7, 1978, Ser. No. 922,695

Int. Cl.^{2} F16K *31/163*

U.S. Cl. 137—630.2 **11 Claims**



1. Apparatus for sequentially operating a pair of adjacent valves comprising:

a first cam plate fixed to the stem of a first valve;

a second cam plate fixed to the stem of a second valve;

actuator means having a pair of cam pins thereon, one of said cam pins being engagable with said first cam plate and the other of said cam pins being engagable with said second cam plate;

guide means for said actuator means establishing a path of movement therefor, said path of movement being rectilinear and extending past both of said cam plates; and

means for moving said actuator means back and forth along said path of movement;

said cam plates each being provided with camming surfaces thereon configured with respect to the path of movement of said actuator block, the position of said cam pins thereon, and the positions of said valve stems so that upon movement of said actuator means along said path of movement in one direction, one of said valves is completely actuated before actuation of the other of said valves begins, and both valves are fully actuated during the course of said movement.

4,191,215
DIGITAL FLUID FLOW RATE CONTROLLER

Winfried K. Gonner, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,467

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725410

Int. Cl.^{2} F16K *11/24*

U.S. Cl. 137—870 **8 Claims**

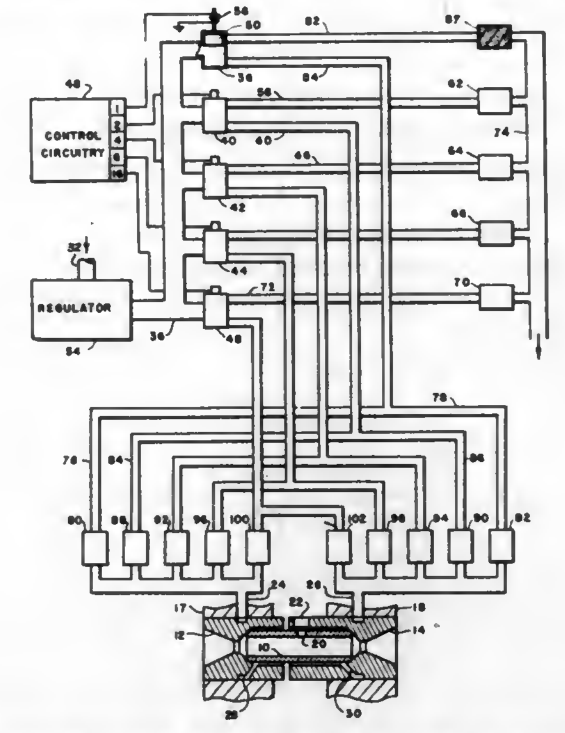
1. A flow rate control system for metering a predetermined fluid flow from an inlet manifold to a desired terminus, said system including:

at least one directional control valve coupled to the manifold, said valve being switchable between first and second positions for directing the fluid from said manifold between first and second outlet conduits;

a first fluid flow restrictor in said first outlet conduit, said first restrictor being calibrated to pass a predetermined flow of said fluid at a predetermined pressure to the desired terminus;

a second fluid flow restrictor in said second outlet conduit, said second restrictor having a fluid resistance substantially equal with that of said first restrictor, said second restrictor coupled to a vent conduit for removing the fluid passing through said second conduit from the system; and

electrical means for rapidly switching said control valve between said first and second positions whereby a continual and constant flow of said fluid will pass through said valve and whereby said switching will not alter the pressure within said manifold.



4,191,216
FABRICATED ORIFICE FITTING MECHANISM FOR PIPELINES

Walter L. Connolly, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed Jul. 10, 1978, Ser. No. 923,023

Int. Cl.^{2} F16D *1/00*

U.S. Cl. 138—44 **16 Claims**

1. An orifice fitting body structure of fabricated construction comprising:

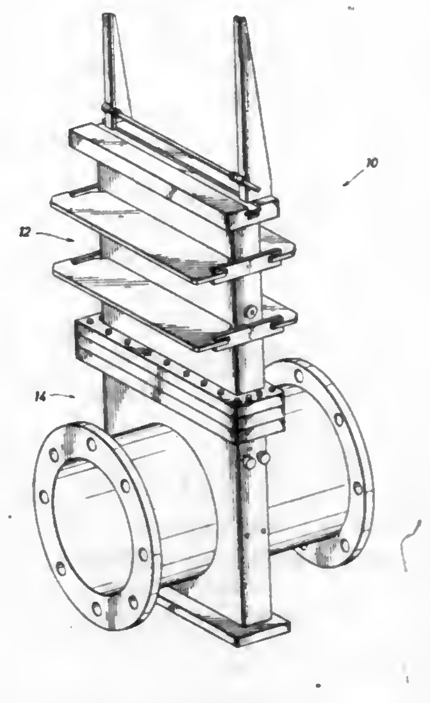
a pair of end plates being positioned in generally parallel relation, said end plates defining circular flow passage openings;

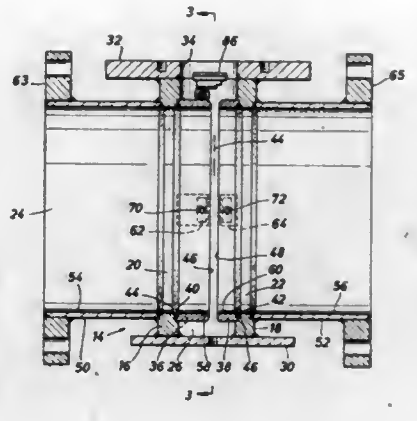
a pair of side plates being connected to said end plates by internal and external welds and cooperating with said end plates to define a generally rectangular body tube having registering flow passage openings;

a bottom plate being secured to first extremities of said end plates and side plates by internal and external welds;

a connection flange plate being secured to second extremities of said end plates and side plates and defining a body access openings, at least some of said internal welds being formed by extending welding means through said body access opening, said end, side, bottom and connection flange plates cooperating to define a pressure containing body structure;

a pair of hub rings being located within said pressure containing body in registry with said flow passage openings of said side plates and with end faces thereof positioned in closely spaced opposed relation, said hub rings being welded to said end plates about said flow passage openings; and





conduit means being connected to said end plates about said flow passage openings.

4,191,217
REINFORCING RUBBER HOSE

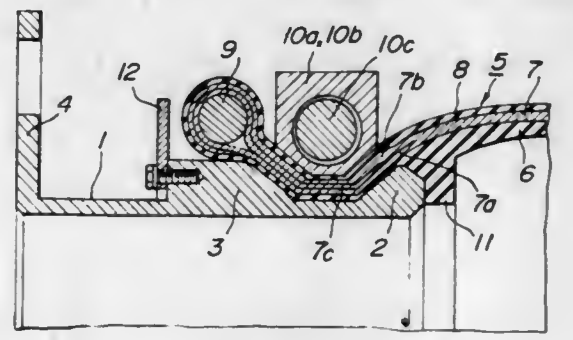
Mamoru Kadono; Tetsuji Saigusa; Yoshiyuki Nakajima, and Tomohiro Koga, all of Yokohama, Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan

Filed Dec. 6, 1978, Ser. No. 966,991

Claims priority, application Japan, Dec. 6, 1977, 52-146356

Int. Cl.^{2} F16L *11/12*

U.S. Cl. 138—109 **3 Claims**



1. In an end structure for a reinforced rubber coupling hose comprising a pair of cylindrical mouth pieces each having an annular intermediate rib and an annular end rib, a hose body extending across these cylindrical mouth pieces and composed of inner and outer rubber layers, and a clamping ring arranged at each end of the hose body and wound around by the free end of the reinforcing layer, the clamping ring urging the reinforcing layer against the annular intermediate rib of the cylindrical mouth piece so as to make the hose body integral with the

cylindrical mouth piece, the improvement wherein at least one free end of said reinforcing layer is composed of inner and outer reinforcing layers, said inner reinforcing layer being wound around said clamping ring from its inside toward the outside thereof to form a turn-back portion of said outer reinforcing layer being superimposed about and covering said turn-back portion of said inner reinforcing layer.

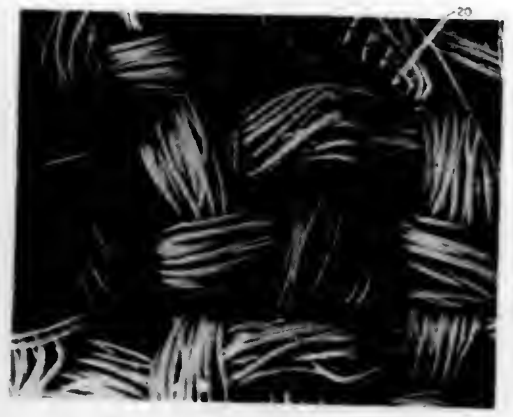
4,191,218
FABRICS FOR HEART VALVE AND VASCULAR PROSTHESES AND METHODS OF FABRICATING SAME

Richard E. Clark, St. Louis, Mo.; John Skelton, Sharon, and Robert B. Davis, Framingham, both of Mass., assignors to Albany International Corp., Albany, N.Y. and Washington University, St. Louis, Mo.

Division of Ser. No. 790,442, Apr. 25, 1977, which is a continuation-in-part of Ser. No. 771,359, Feb. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 575,438, May 7, 1975, abandoned. This application Apr. 28, 1978, Ser. No. 901,085

Int. Cl.² D03D *7/00, 3/02;* **A61F** *1/22;* **D04C** *1/00*

U.S. Cl. 139—383 R **12 Claims**



1. A fabric for a cardiovascular prosthesis comprising woven multifilament polymeric yarns extending in first and second directions forming an angle therebetween, the yarns in each of said directions having crimps similarly oriented with respect to the plane of the fabric and being bloomed in their interstices to form a substantial number of open interstitial spaces in the range of 20 to 40 microns evenly distributed throughout the fabric, the stretch characteristic of the fabric having a region of easy elongation up to at least ten percent in at least one of said directions.

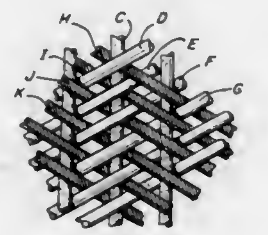
4,191,219
TRIAXIAL FABRIC PATTERN

Dianne Kaye, Acton, Mass., assignor to Tripoint, Inc., Acton, Mass.

Filed Mar. 20, 1978, Ser. No. 888,377

Int. Cl.² D03D *13/00*

U.S. Cl. 139—383 R **5 Claims**



1. A triaxial fabric comprising a first set of warp yarn courses and second and third sets of weft yarn courses, the yarn courses of each set being woven at an acute angle to and intersecting the yarn courses of each other set, wherein each intersection of a warp yarn course with a weft yarn course includes yarn courses of both said second and said third weft sets, but only alternate intersections along the length of each weft yarn course include a warp yarn course.

4,191,220
WOVEN FASTENER STRINGER

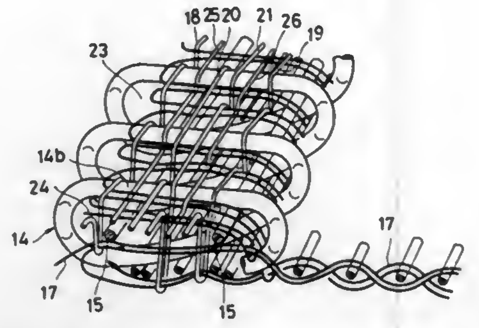
Hiroshi Yoshida, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 22, 1978, Ser. No. 972,429

Claims priority, application Japan, Dec. 29, 1977, 52-5389

Int. Cl.² D03D *1/00*

U.S. Cl. 139—384 B **4 Claims**



1. A woven fastener stringer comprising a woven tape formed with foundation warp and weft threads and consisting of a web section defining a major dimension of said tape and a woven filament section defining a longitudinal edge portion of said tape; a row of successively interconnected elongated loops woven into said filament section, each of said loops having a coupling head at one end thereof, an upper leg and a lower leg extending from said head in a common direction, and a heel portion at the opposite end remote from said head connected to a next adjacent one of said successive loops; a plurality of reinforcing cords extending longitudinally through said row of elongated loops; and a combination of a first group of binding warp threads extending over said upper legs and alternately overlying and underlying said foundation weft thread in the spaces between each adjacent pair of said loops, a second group of binding warp threads extending over said upper legs in parallel relation to said first group of binding warp threads and alternately overlying and underlying said foundation weft thread in the spaces between every other adjacent pair of said loops, said first and second groups of binding warp threads being engaged with said foundation weft thread at positions underlying said reinforcing cords.

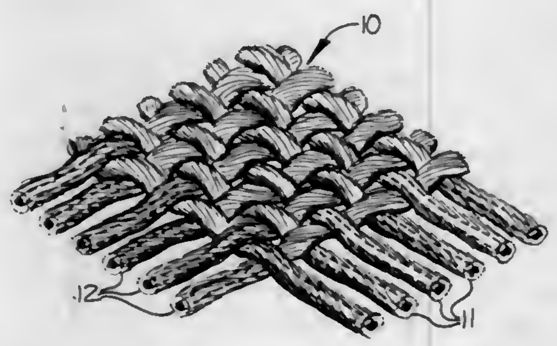
4,191,221
SHEETING FABRIC FORMED OF CORESPUN YARNS

Hugh J. Boyer, Eden, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed Aug. 30, 1978, Ser. No. 938,031

Int. Cl.² D03D *15/00;* **D02G** *3/36*

U.S. Cl. 139—426 R **6 Claims**



1. A percale sheeting fabric of polyester and cellulosic fiber construction which more effectively utilizes the beneficial properties of the cellulosic fiber as compared to conventional polyester and cotton blend sheeting fabric constructions so as

to provide a greatly increased moisture absorbency rate for enhanced comfort, and with enhanced cover, bulk, and opacity, said fabric being formed of warp and filling yarns of corespun construction having a yarn count of about 34/1 to 37/1 cotton count and being interwoven to form a woven fabric construction of at least about 180 threads per square inch and wherein the picks per inch are approximately 10 to 20 percent less than the warp ends per inch, each of the corespun warp and filling yarns having a core portion formed of multifilament polyester of 2 to 4 denier per filament and of a total denier of about 45 to 50, and having a sheath portion formed of cellulosic fibers of a staple length of at least 1 1/16 inch, the cellulosic fibers being helically wrapped about the multifilament polyester core portion to substantially surround and encase the same, and said cellulosic fibers comprising at least 65 percent by weight of the corespun yarn.

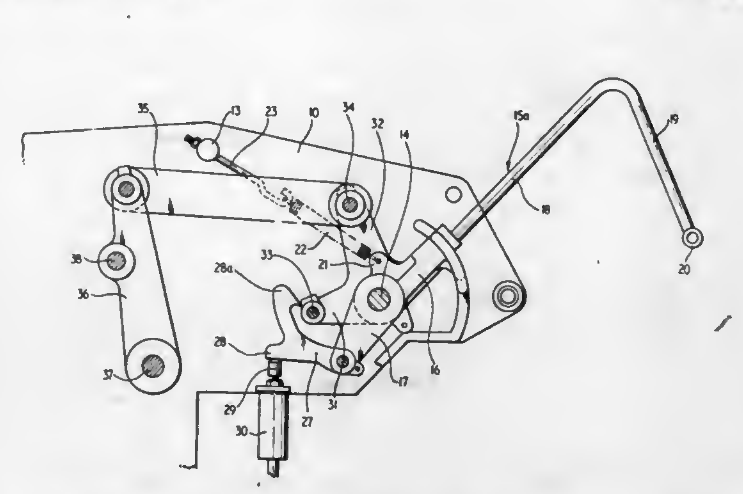
4,191,222
WEFT PRESENTER MECHANISMS

Brian Marshall, Keighley, England, assignor to Macart Textiles (Machinery) Limited, Bradford, United Kingdom

Filed Feb. 28, 1978, Ser. No. 881,938

Int. Cl.² D03D *47/38*

U.S. Cl. 139—453 **9 Claims**



1. A weft presenting mechanism for use on a loom, the mechanism comprising:

- (a) a plurality of fingers each having an eyelet to receive a weft thread and being pivotally mounted about a common axis for movement between an inoperative position and an operative position;
- (b) drive means pivotally mounted for movement about said common axis, said drive means comprising a pair of bellcrank levers, one mounted at each side of the plurality of fingers, so that the fingers are sandwiched therebetween, a first bar extending between one arm of each lever and a second bar extending between the other arm of each lever;
- (c) means connected to said second bar to impart rotary reciprocating motion to said bellcrank levers causing said first bar to repeatedly rock about said common axis, moving first in a driving direction and then back in a return direction;
- (d) a plurality of catches, one attached to each of the said fingers, each catch comprising a hook; and
- (e) control means selectively operable to move any desired hook into the path of the said first bar so that as the said first bar moves past the hook in its driving direction it catches on the hook and moves the hook and attached fingers with it, the rocking movement of the said first bar thus being imparted to the associated finger thereby causing the finger to move from its inoperative position to its operative position as the first bar moves in its driving direction and then back again to its inoperative position as the first bar moves in its return direction.

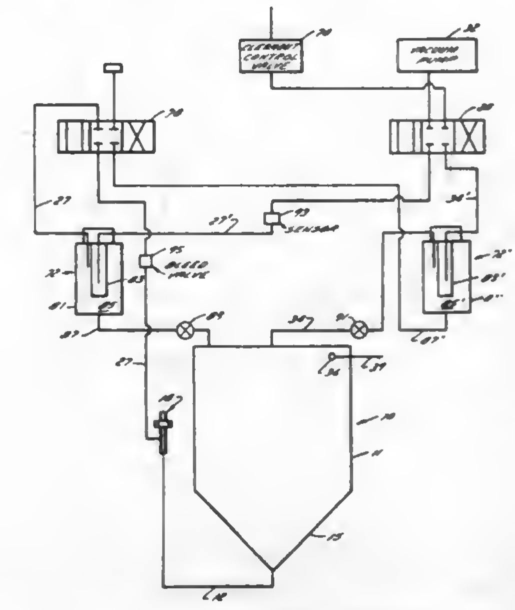
4,191,223
POWDER TRANSFER SYSTEM

Leonard Bourgeois, 341 St. Marc St., Chateauguay, Quebec, Canada (J6J 2K2)

Filed Apr. 18, 1978, Ser. No. 897,485

Int. Cl.² B65B *1/04*

U.S. Cl. 141—18 **13 Claims**



12. A power transfer apparatus comprising a reservoir, an outlet conduit having one end thereof in fluid communication with a lower portion of said reservoir, a vacuum source, a filling assembly including a filling nozzle connected to the other end of said outlet conduit, conduit means extending between said vacuum source and said filling assembly and operative to cause a powder to flow through said outlet conduit when a vacuum is applied, refill means for refilling said reservoir from an external container, said refill means including an inlet situated in an upper portion of said reservoir, and filter means in said conduit means between said vacuum source and said filling assembly, said filter means including a discharge conduit extending from the filter to said reservoir such that any powder retained by said filter means may be selectively recycled back to said reservoir.

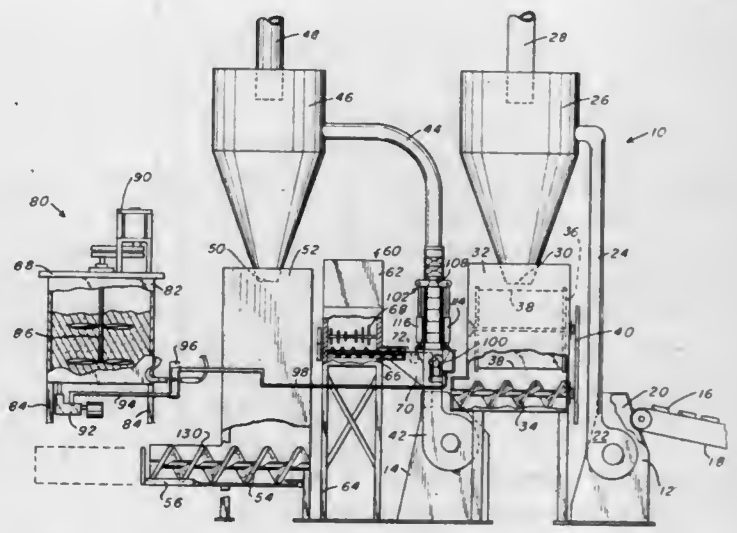
4,191,224
APPARATUS FOR MAKING CELLULOSE INSULATION

Kenneth L. Bontrager, Jefferson County, Colo.; Marion R. Bontrager, Phoenix, Ariz.; Robert J. Taylor, and David C. Card, both of Denver, Colo., assignors to Diamond Insulation Industries, Inc., Denver, Colo.

Filed Aug. 5, 1977, Ser. No. 822,232

Int. Cl.² B05C *5/00, 11/10*

U.S. Cl. 141—100 **7 Claims**

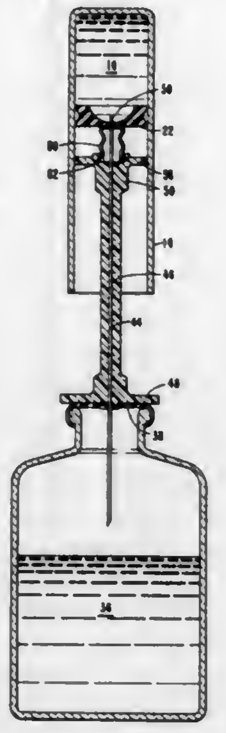


1. An apparatus for making cellulose fire retardant insulation which comprises:

(a) first grinding means for grinding waste paper and other cellulose material into a coarse granular state;
(b) a second grinding means for grinding the coarse ground material into a fine granular state;
(c) first conduit means for transporting the coarsely ground material from said first grinding means to said second grinding means;
(d) means for introducing a continuous quantity of dry, fire retardant chemicals to said second grinding means so that said meterial and chemicals will be thoroughly ground and mixed;
(e) a second substantially vertical conduit means for transporting said fine granular material and dry chemicals to a storage means for storing the material prior to use, said second conduit means having a spray nozzle substantially centrally positioned in a portion thereof to spray a liquid fire retardant chemical in a pattern which is substantially perpendicular to the flow of said granular material to evenly dampen and wet the granular materials with the chemicals to produce a desirable fire retardant cellulose insulation material.

4,191,225
PHARMACEUTICAL COCKTAIL PACKAGE

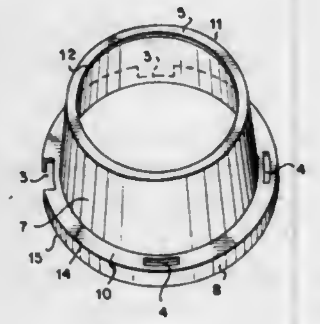
Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited, South El Monte, Calif.
Continuation of Ser. No. 734,254, Oct. 20, 1976, abandoned. This application Jan. 3, 1978, Ser. No. 866,380
Int. Cl.^{2} B65B *3/04;* A61M *5/00*
U.S. Cl. 141—329 **1 Claim**



1. An alimentation kit comprising:
(a) a plurality of cylindrical rigid vials, each having a closed end and cylindrical walls, and containing a liquid concentrate of an alimentary component, a slidable resilient piston stopper positioned approximately on the liquid surface within the vial and sealing same; and
(b) a transfer device for the sequential addition of the liquid contents of each of said vials to a glass bottle containing intravenous solution and provided with an imperforate closure, said transfer device having a cannula, said cannula having a central portion which is provided with an elongated longitudinally extending rigid cannula support having a length approximately equal to the length of said vials, in proximity to one end of said rigid cannula support a first laterally extending flange, one end portion of said cannula extending beyond said first laterally extending flange and being adapted to pierce the imperforate closure of said bottle containing intravenous solution, said first laterally extending flange being adapted to act as a stop to limit the extent of advancement of said cannula and to abut said imperforate closure of said bottle containing intravenous solution, in proximity to the other end portion of said rigid cannula support a second laterally extending flange which is circular in shape and slightly smaller in diameter than the interior of said cylindrical walls of said rigid vials, the other end portion of said cannula extending beyond said second laterally extending flange and terminating in a sharpened outer end, a thin resilient tube over said sharpened outer end, said resilient tube being closed in proximity to the sharpened outer end and along the length of said other end portion of said cannula and having an open end provided with an external integral ring which is received in a complementary annular female groove in the walls of an axial cylindrical recess in said other end of said rigid support to form a seal therewith, said second laterally extending flange being slidably engageable with the interior of said cylindrical walls and said resilient tube being longitudinally compressible over and pierced by said sharpened outer end when one of said vials is fitted over said second laterally extending flange and the piston stopper of said one of said vials is forced over said sharpened outer end, said resilient tube being constructed and arranged to act in its compressed state as a stop for said piston stopper while said vial is advanced over said other end portion of said cannula and said other end of said rigid support, whereby said piston stopper can be slidably moved to the closed end of said vial and all of the contents of the vial can be transferred to the bottle of intravenous solution through said cannula, said resilient tube being self-recoverable over said sharpened end when said piston stopper is withdrawn to maintain a seal over said cannula between the sequential additions of the liquid contents of each of said vials.

4,191,226
BASKET FILLER

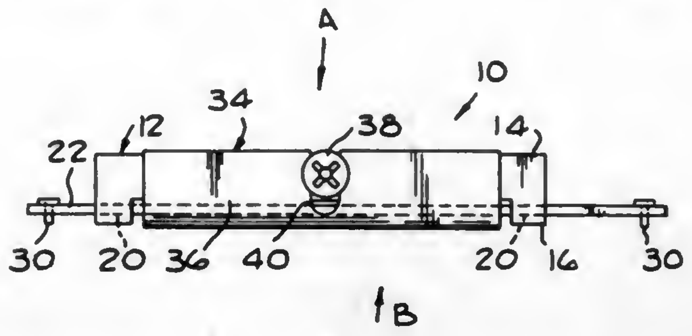
Garrett J. Kyte, Ewell, Md. 21824
Filed Feb. 15, 1978, Ser. No. 872,229
Int. Cl.^{2} B65B *1/04*
U.S. Cl. 141—391 **2 Claims**



1. A basket filler for use in filling with marine life a basket having a pair of handles extending therefrom comprising:
a body which is frusto-conical in shape having open ends, one of which is larger than the other;
the larger end having an outwardly extending flange portion transverse to the central axis of the filler with a circumferential skirt extending axially from the outer circumference of the flange portion; and
means provided on said extending flange portion so the filler can be used upon said basket, whereby a lid for the basket can be associated with one handle of said basket while marine life is being put into the basket through the filler, and permitting quick removal of the filler and immediate closing of the basket lid to prevent escape of said marine life.

4,191,227
ATTACHMENT FOR A POWER TOOL

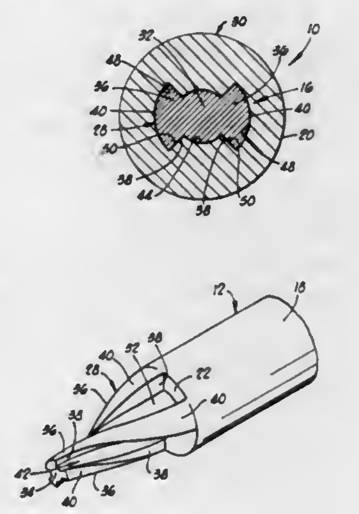
Daniel J. J. Venter, Pretoria, South Africa, assignor to Knipping (Proprietary) Limited, Johannesburg, South Africa
Filed Apr. 28, 1978, Ser. No. 900,877
Claims priority, application South Africa, May 4, 1977, 77/2680
Int. Cl.^{2} B25B *23/10*
U.S. Cl. 145—46 **14 Claims**



1. An attachment for an electric power tool, the attachment comprising a member having a formation for receiving a nose of a power tool, means for securing the attachment to the power tool, a movable element having an opening therein, the opening comprising a contiguous slot and an aperture, means for guiding said element between a position in which the aperture thereof is aligned with said formation of said member and a position in which said slot is aligned with said formation of said member, and a spacer for engaging a surface against which the attachment is placed, the position of said spacer with respect to said formation being adjustable.

4,191,228
TOOL ASSEMBLY

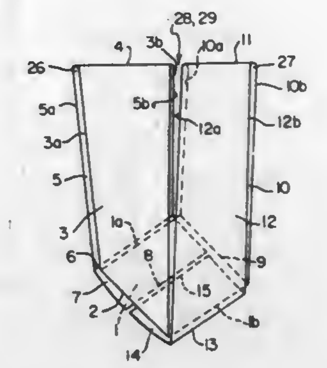
John W. Fenton, 1258 Aalapapa Dr., Kailua, Hi. 96734
Filed Jun. 7, 1978, Ser. No. 913,578
Int. Cl.^{2} B25B *15/00*
U.S. Cl. 145—50 A **5 Claims**



1. In a tool assembly having a drive member and a driven member engagable with the drive member so that torque can be applied thereto, the improvement comprising:
a male portion formed on one end of the drive or driven member, the male portion including a frusto-conic shaped hub which tapers away from the end of the member on which the male portion is formed to a flat which is perpendicular to the axis of the hub, and at least one spiralled lobe connected to and extending radially from the hub and spirally about the axis of the hub, the spiralled lobe comprising an outer arcuate face and a pair of angularly opposed side faces each coplanar with the axis of the hub, the spiralled lobe as a whole tapering in the same direction as the hub and converging therewith to a flat which is coplanar with the flat of the hub and
a female portion formed on one end of the other of the drive and driven member, the female portion formed as a frustoconic shaped recess which tapers inwardly from the end of the other of the members and ends in a flat bottom and at least one spiralled slot extending radially from the recess and ending in a flat bottom coplanar with the bottom of the recess, the recess and the spiralled slot being sized and positioned to threadably engage the hub and the spiralled lobe, respectively, of the drive member to operatively engage the drive member and the driven member so that when torque is applied to the drive member in one direction torque is transferred to the driven member and when torque is applied to the drive member in an opposite direction the driven member remains stationary and the drive member is disengaged from the driven member.

4,191,229
FLEXIBLE CONTAINER FOR TRANSPORTATION AND STORAGE OF BULK MATERIALS

Johannes Skaadel, Skien, and Bjarne Omdal, Porsgrunn, both of Norway, assignors to Norsk Hydro A.S., Oslo, Norway
Continuation-in-part of Ser. No. 810,473, Jun. 27, 1977, Pat. No. 4,136,723. This application Nov. 13, 1978, Ser. No. 959,778
Claims priority, application Norway, Jun. 28, 1976, 762230
Int. Cl.^{2} B65D *29/00*
U.S. Cl. 150—1 **8 Claims**



1. A flexible container for transportation and storage of bulk material, said container comprising:
a single elongated piece of material having a major longitudinal dimension;
said piece of material being folded along plural fold lines extending transverse to said major longitudinal dimension, thereby forming plural wall sections and plural bottom sections, such that said plural bottom sections are overlapped to form a plural ply bottom of said container, and such that said wall sections are aligned with edges thereof juxtaposed;
at least portions of said juxtaposed edges of said wall sections being joined to form corner edges of said container;
certain of said fold lines forming an upper portion of said container;
opposite longitudinally free end edges of said piece of material being joined; and
edges of said bottom sections which extend transverse to said fold lines being free and substantially unattached.

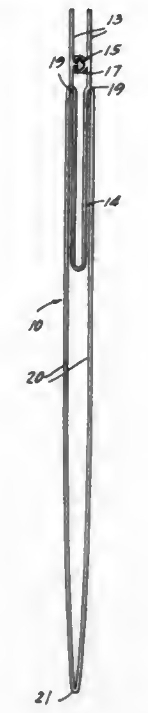
4,191,230
INTEGRAL EXTRUDED CONSTRUCTION FOR BAGS

Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.
Continuation-in-part of Ser. No. 754,745, Dec. 27, 1976, abandoned, and Ser. No. 878,610, Feb. 16, 1978. This application Apr. 27, 1978, Ser. No. 900,567
Int. Cl.^{2} B65D *33/24*
U.S. Cl. 150—3 **12 Claims**

1. A plastic extruded bag construction, all of the following named parts of which are in a unitary one-piece plastic extrusion including:
a thin-wall plastic closure web area;

pull flange portions of substantial length having their lower proximal ends joined respectively to opposite ends of said closure web area, with said pull flange portions arranged to extend upwardly at respectively opposite sides of a bag mouth at the top of the bag;

separable interlocking complementary fastener profiles adjacent to said proximal ends of said pull flange portions and arranged to be interlockingly separably coupled together and separated by manipulation of said pull flange portions;



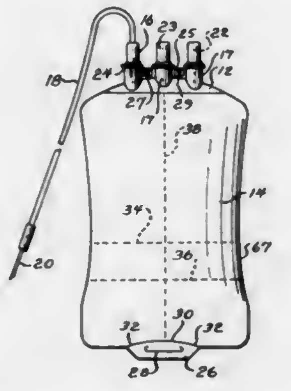
said closure web area being collapsed and extending inwardly into the bag clear of the coupled fastener profiles; and a bag body having bag wall panels with the upper ends thereof joined with the rest of the extrusion adjacent to the profiles whereby the closure web area provides a closure across the bag mouth inwardly from the fastener profiles and which closure must be ruptured to gain access into the bag body.

4,191,231
FLEXIBLE COLLAPSIBLE CONTAINERS, AND METHOD OF MOLDING

David A. Winchell, Twin Lakes; Jerry D. Martin, Kenosha, both of Wis., and Frank L. Roe, Hanover Park, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 22, 1977, Ser. No. 817,940
Int. Cl.^{2} B65D *35/08*

U.S. Cl. 150—8 **5 Claims**



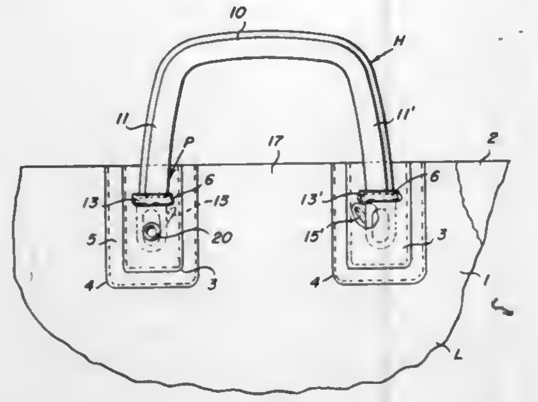
1. A blow-molded, flexible, collapsible container, free of laterally positioned longitudinal seal lines, which defines a sealed, collapsible portion of generally oval transverse cross-section and, defined at one end of said sealed portion, a shoulder portion having a wall thickness substantially thicker than the wall thickness of the sealed, collapsible portion, a plurality of spaced, upstanding sleeves being defined through said shoulder portion at said one end, the oval cross-sections of said sealed, collapsible portion defining major axes which are at least 50 percent greater than the minor axes of said oval cross-sections to facilitate flat collapse, and at the end of said container opposite to said shoulder portion end an integrally-attached, flat tail seal and hanger portion, said tail seal and hanger portion defining a continuous inner end integral with the remainder of said container material and having central and lateral portions, said continuous inner end being longitudinally recessed toward said container at its central portion relative to the lateral portions thereof to permit tucking of the hanger portion into the bag.

4,191,232
DUPLEX HANDLES OF MOLDED PLASTIC MATERIAL

Bela G. Szabo, Carnegie, Pa., assignor to Bruce Plastics, Inc., Pittsburgh, Pa.

Filed Jan. 19, 1979, Ser. No. 4,927
Int. Cl.^{2} B65D *33/06*

U.S. Cl. 150—12 **1 Claim**



1. A limp receptacle comprising a pair of flexible sides, each having a pair of spaced pockets adjacent the upper edge thereof for receiving a U-shaped flexible handle of molded plastic material, said handle comprising a hand-hold at its midportion and a pair of legs extending from the opposite ends thereof and terminating in free extremities for connection to each side at said pockets, an integral flexible barb molded to each leg adjacent to each extremity and extending transversely therefrom for entrapment within each pocket to restrain withdrawal therefrom preparatory to the permanent connection therebetween, an enlargement at the lower end of each leg above said extremity and barb, adapted to limit the entry of said legs into the respective spaced pockets, and a rivet fastening each handle extremity to the side of the receptacle at said pockets.

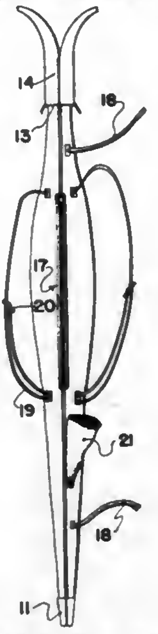
4,191,233
SKI COVERS

Gordon McKay, 2326 Albert Ave., Saskatoon, Saskatchewan, Canada

Filed Nov. 9, 1978, Ser. No. 959,234
Int. Cl.^{2} B65D *81/00;* **A63C** *11/00*

U.S. Cl. 150—52 R **16 Claims**

1. A pair of individual flexible and detachable cover assemblies, one each for each ski of a pair of skis, a web portion extending from each of said cover assemblies intermediate the ends thereof and fastening means for detachably securing said web portions together and hence said ski cover assemblies together.

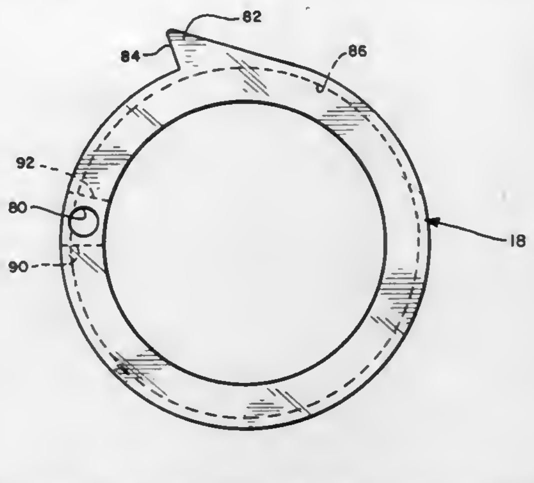


4,191,234
COVER FOR ROTATABLE SAMPLE TRAY

Laurence A. Rubin, Columbia, and William S. Baker, Annapolis, both of Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 21, 1978, Ser. No. 935,544
Int. Cl.^{2} B67C *3/26*

U.S. Cl. 150—52 R **14 Claims**



1. An evaporation reducing cover for a rotatable sample tray which has sample receiving receptacles therein and which is positioned on a supporting means, said cover being adapted to be loosely positioned over the sample tray without securement to the tray or the supporting means and with the underside thereof resting on and covering the open tops of the receptacles, having means for holding the cover in a stationary position when the sample tray is rotated including means for frictionally engaging the rotatable sample tray when it is rotated so that concentric alignment of said cover and the sample tray is maintained during rotation of the sample tray and having passage means therethrough for allowing liquid sample to be inserted into or withdrawn from a receptacle when such receptacle is in registry with said passage means.

4,191,235
HOLDING DEVICES

Maurice Davis, Croydon, England, assignor to Davis Industrial (Filters) Limited, Croydon, England

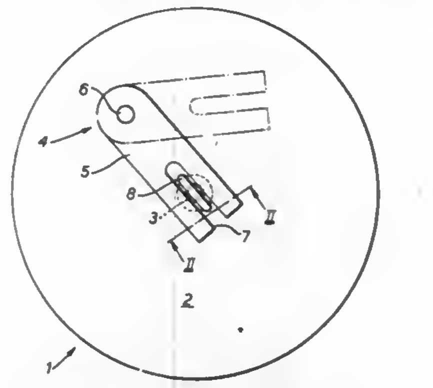
Filed Oct. 26, 1977, Ser. No. 845,782

Claims priority, application United Kingdom, Jan. 28, 1977, 3676/77

Int. Cl.^{2} F16B *39/02*

U.S. Cl. 151—55 **2 Claims**

1. A holding device for holding against rotation a rotatable fastener of the type having head means engageable by manually operable means for exerting a positive non-frictional rotary force on the fastener to move it in fastening and unfastening directions, said device comprising a resilient body, means on said body for mechanically and directly engaging the head means of a fastener in a manner which prevents rotation of the fastener relative to said body, releasable mounting means on said body for pivotally mounting said body adjacent said fastener, said mounting means comprising a projection for making snap engagement with or snap disengagement from an appropriately sized opening, and, when engaged in said opening, retaining said body in its mounted position regardless of the pivotal movement thereof, said body comprising a resilient strip resiliently moveable axially relative to a fastener until said head engaging means of said body is clear of said head means, and said body is then pivotal, while still mounted, to a position in which the fastener is free to rotate.

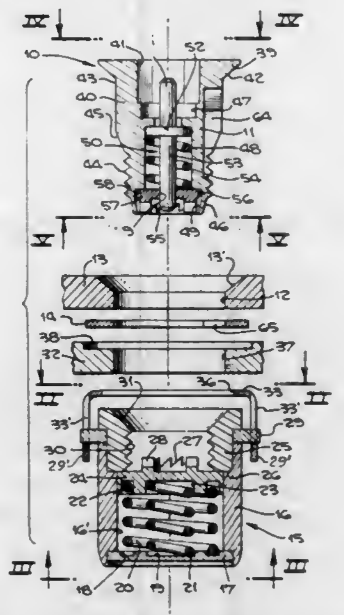


4,191,236
CAPTIVE PANEL FASTENER ASSEMBLY

John A. Duran, Glendora, Calif., assignor to Avibank Mfg., Inc., Burbank, Calif.

Filed Aug. 9, 1977, Ser. No. 823,397
Int. Cl.^{2} F16B *43/00*

U.S. Cl. 151—69 **4 Claims**



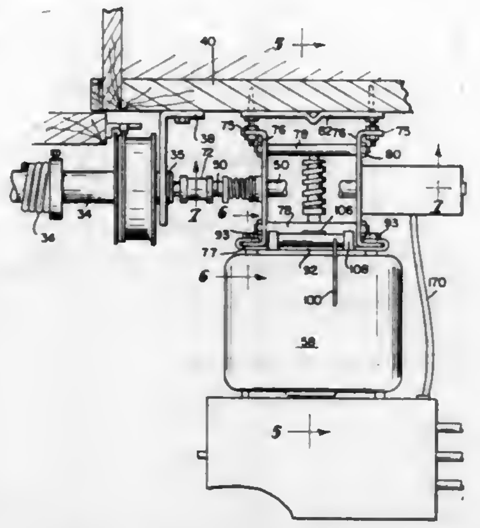
1. A panel fastener assembly including; a stud nut having an enlarged head with a recess of irregular configuration adapted to receive a like configured tool therein, a threaded portion, a generally cylindrical portion interconnecting said enlarged head and said threaded portion, a cavity extending through said nut communicating with both said recess and the exterior of said nut, said cavity at the exterior of said nut forming a chamber having an inner wall, a spring-biased elongated pin mounted in said cavity and movable therein, said pin having a first portion extending into said recess and a second portion extending through an aperture in a locking element fixedly mounted in the chamber of said nut and inseparable therefrom; said locking element having a plurality of teeth extending away

from said pin with means on said teeth for permitting rotation of said teeth in only one direction; and

a sleeve having a generally cylindrical main body portion and a central chamber, a threaded portion communicating with said central chamber having threads thereon adapted to mate with the threaded portion of said nut, a spring-biased locking element movably mounted in said cavity and inseparable therefrom, said-mentioned locking element having a plurality of teeth configured similarly as the teeth on said first-mentioned locking element also adapted to rotate in only one direction surrounding a cavity for receiving the tip of the second portion of said pin therein when said pin is moved against its spring bias, both of said locking elements being non-rotatively mounted, the teeth on said first-mentioned locking element being entirely contained within said nut with said first-mentioned locking element having an outer periphery abutting against the inner wall of said chamber of said nut and trapped therein.

4,191,237
GARAGE DOOR OPERATOR

Clayton B. Voege, 1418 Alimingo Dr., Indianapolis, Ind. 46260
Filed Oct. 28, 1977, Ser. No. 846,414
Int. Cl.^{2} E05F *15/16*
U.S. Cl. 160—188 **29 Claims**



1. A door operator unit adapted to be sold as such and to be mounted as a unit for actuating an overhead garage door which is counterbalanced by means including a drum shaft having a drum thereon for a lift cable attached to the door, comprising

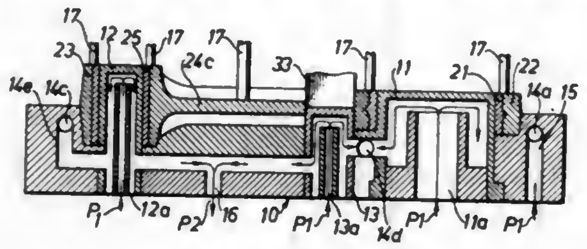
a unitary assembly including a frame having a main shaft journalled therein, a worm gear mounted on said shaft and drivingly connected thereto, a motor mounted on said frame, and a worm mounted on the shaft of such motor in driving relation with the worm gear on the main shaft, and

means for mounting the unitary assembly with its main haft in coaxial driving relation with the drum shaft of the door counterbalance means, said mounting means including means for coupling the end of the main shaft of the operator unit is coaxial driving relation with the end of the drum shaft, and means for transmitting torque reactin from said frame to a fixed support.

4,191,238
CONNECTING ROD OR THE LIKE AND METHOD AND MOULD FOR PRODUCING CONNECTING RODS OR THE LIKE

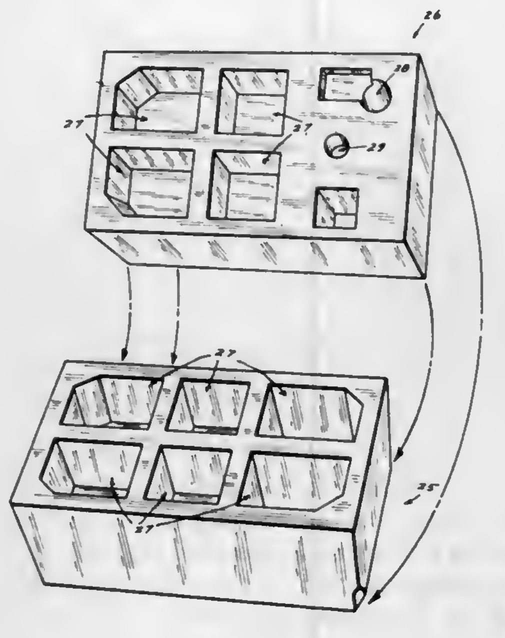
Heinz Pichl, Upsala, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden
Filed Apr. 15, 1977, Ser. No. 787,870
Claims priority, application Sweden, Apr. 28, 1976, 7604870
Int. Cl.^{2} B22D *19/00;* G05G *1/00*
U.S. Cl. 164—100 **6 Claims**

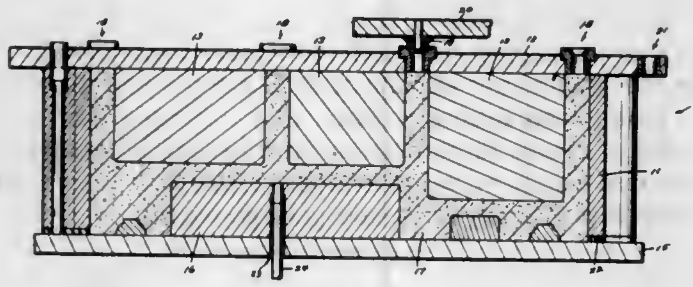
1. The method of producing a piston rod or the like which comprises a non-ferrous body portion and a hard ferrous material continuous bearing race element embedded in said body portion and integral therewith, which method comprises placing said race element in a mould with a hollow cooling core fittingly disposed in said race element and with a mould cavity outwardly surrounding said race element, pouring hot molten non-ferrous metal into said cavity while cooling said core by flushing the interior thereof with cooling liquid, permitting said non-ferrous metal to cool and solidify while continuing said flushing, and removing from said core and cavity said element and the resultant solidified non-ferrous metal ring formed therearound by said cavity.



4,191,239
BLOW PLATE STRUCTURE AND MOLD FORMED THEREBY

Ronald A. Cina, and Albert D. Kluge, both of Lansing, Mich., assignors to Roberts Corporation, Lansing, Mich.
Continuation-in-part of Ser. No. 763,813, Jan. 31, 1977, Pat. No. 4,074,744. This application Feb. 3, 1978, Ser. No. 874,869
Int. Cl.^{2} B22C *15/24, 9/02*
U.S. Cl. 164—200 **3 Claims**





1. In a mold apparatus for forming block sand molds in connection with an automatic mold machine comprising:

a pattern plate adapted for supporting selected patterns on the upper surface thereof;

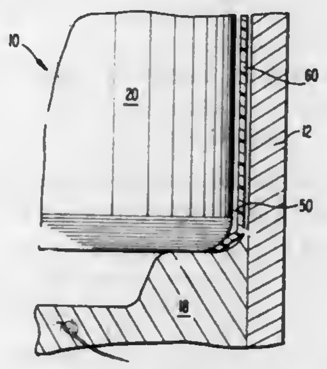
a four sided molding flask member mounted on the upper surface of said pattern plate, said molding flask having vertically extending side walls which intersect at right angles to form a four sided flask member; and

a blow plate selectively positioned across the top of said flask so as to define a block sand mold forming cavity in cooperation with said pattern plate and said molding flask member, said blow plate provided with one or more spaced-apart sand minimizer pocket forming finger extensions having vertical planar side walls which extend downwardly from the blow plate into said molding flask member, said spaced-apart sand minimizer pocket forming finger extensions being spaced from the side walls of said molding flask and cooperating with said flask to define honeycomb grid support wall forming cavities therebetween which cavities extend to the said blow plate and said flask member, said honeycomb grid wall forming cavities being in open communication with said block sand mold forming cavity, said blow plate provided with one or more blow hole openings therethrough through which sand is blown to fill said sand mold forming cavity and said honeycomb grid support wall forming cavities.

3. A block sand mold member of a block sand mold, said block sand mold member being shaped to define pairs of spaced apart opposed parallel planar side walls, an upper planar surface having a selected mold cavity formed therein and a lower planar surface having spaced apart sand minimizer pocket cavities formed therein; said upper and lower planar surfaces being spaced apart and parallel to each other with said pairs of spaced apart opposed parallel planar side walls being interposed therebetween and normal thereto thus defining said block sand mold member; said lower planar surface having said spaced apart sand minimizer pocket cavities formed therein so as to minimize the amount of sand required to form the block sand mold member; the spaced-apart sand minimizer pocket cavities being defined by support walls having planar side surfaces and a planar top surface which planar top surface forms a portion of said upper planar surface; said support walls being integral with said block sand mold member extending at least a portion of the distance between said pairs of spaced apart opposed parallel planar side walls and a predetermined distance from said lower planar surface into the block mold member; said support walls cooperating with said block sand mold member to define a honeycomb grid wall arrangement thereby defining said spaced apart sand minimizer cavities.

4,191,240
HEAT CONDUCTING FILLER MATERIAL FOR MOTOR-CONTAINING DEVICES

Clinton Rule, Thurston Rd., Gloucester, Mass. 01930, and Peter A. Rubel, 518 Annursnac Hill Rd., Concord, Mass. 01742
Filed Apr. 4, 1977, Ser. No. 784,081
Int. Cl.^{2} F28F *13/00*
U.S. Cl. 165—1 **14 Claims**



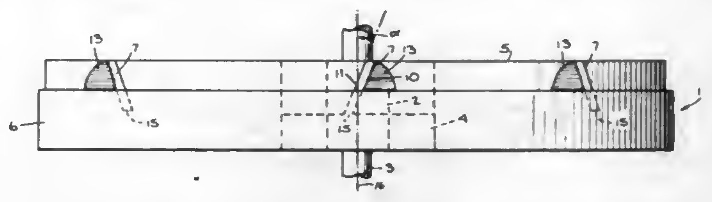
1. A method of improving heat transfer conditions in apparatus of the type including a housing having an external surface and an internal surface defining a motor compartment and a motor mounted in said motor compartment, said motor and motor compartment having relative dimensions and shapes such that a gap exists between said motor and the internal surface of said housing, said method comprising the steps of:

A. inserting in said gap between said motor and the internal surface of said housing at least one sheet of prestretchable thermoplastic material that exhibits a memory characteristic, said sheet being in a prestretched, reduced thickness state upon insertion in said gap so that only a portion of said gap is occupied thereby; and

B. expanding said sheet after its insertion in said gap toward its original unstressed state so that said sheet conforms substantially to the dimensions and shape of said gap and improves the transfer of heat generated by operation of said motor to said housing.

4,191,241
ENERGY EXCHANGE WHEEL AND METHOD OF FABRICATION

Timothy E. Brennan, Atlantic Highlands, N.J., assignor to Wing Industries, Inc., Cranford, N.J.
Filed Dec. 20, 1978, Ser. No. 971,191
Int. Cl.^{2} F28D *19/00*
U.S. Cl. 165—10 **18 Claims**



1. An energy exchange wheel having a central axis and comprising:

an inner hub concentric with said axis;

an outer rim concentric with said axis and having its inner periphery spaced from the outer periphery of said hub;

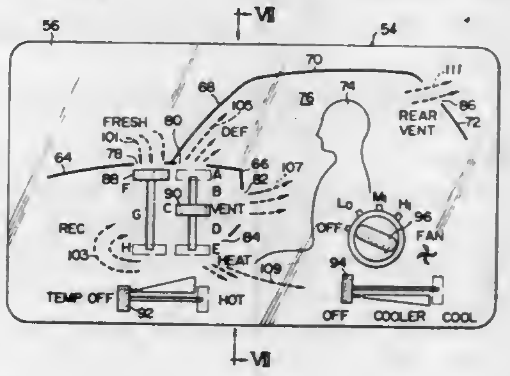
an axially perforate matrix of energy absorbing material filling the space between said rim and said hub, said matrix having a plurality of slots therein extending radially from said hub to said rim;

a plurality of bar-like spokes equal in number to the number of said slots disposed in said slots and extending at least from said hub to said rim, said spokes being secured to said rim at their radially outer ends and each spoke having a face in contact with a wall of the slot in which it is disposed, said face and said wall having a pitch angle with respect to said axis which will prevent movement of said matrix in a direction axially and away from said spokes; and

means maintaining the radially inner ends of said spokes in fixed relation to said hub.

4,191,242
AIR CONDITIONER OPERATING APPARATUS

Naotake Kumagai, Aichi, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan
Filed Mar. 7, 1978, Ser. No. 884,164
Claims priority, application Japan, Mar. 28, 1977, 52/38149[U]; Jan. 24, 1978, 53/7108
Int. Cl.^{2} B60H *1/00;* B60Q *11/00;* G08B *5/36*
U.S. Cl. 165—11 **32 Claims**

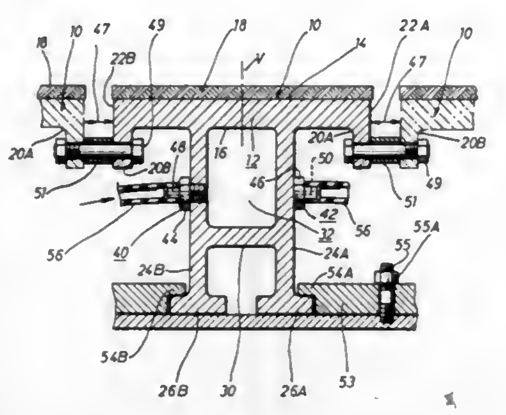


1. Air conditioner operating apparatus comprising an automotive air conditioner comprising component elements composed of a plurality of air intake ducts and a plurality of air

outlet ducts, an operating panel having a sketch corresponding to a cabin in which the air conditioner proper is provided, a plurality of means for indicating the flow of air into and out of the air conditioner proper provided in a plurality of positions on the sketch, control means movable between the plurality of indicating means, operating means actuated by the control means through connecting means to control the component elements, and said connecting means.

4,191,243
CHANNEL BEAM HAVING HEAT TRANSFER FLUID VOLUME DEFINED THEREIN

Byron A. Donzis, 24 Lana La., Houston, Tex. 77027
Filed Oct. 14, 1977, Ser. No. 842,089
Int. Cl.^{2} F28D *21/00*
U.S. Cl. 165—45 **15 Claims**



12. A substantially planar athletic playing surface comprising:

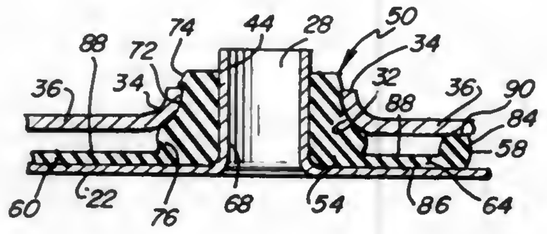
- a first and a second channel beam disposed in next-adjacency one with the other, each channel beam comprising:
  - a base portion having an upper and a lower surface thereon, the upper surface being substantially planar and having an athletic composition material disposed thereon;
  - first and second legs depending from the lower surface of the base portion;
  - a cross piece disposed between the legs and cooperating with the legs and the lower surface of the base portion to define a region adapted to carry a heat transfer fluid therein; and,
  - end caps securable to each axial end of each beam to enclose each region therein and define an interior volume within each channel beam;
- means disposed below the lower surface of the base portion of each channel beam for inletting and outletting a heat transfer fluid from the interior volumes thereof; and,
- means connecting the outlet of the first beam to the inlet of the second beam to define a continuous conduction path for the heat transfer fluid beneath the planar surface area.

4,191,244
MODULAR HEAT EXCHANGER WITH RESILIENT MOUNTING AND SEALING ELEMENT

Frank E. Keske, Chilicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 9, 1978, Ser. No. 878,124
Int. Cl.^{2} F28F *9/26*
U.S. Cl. 165—69 **6 Claims**

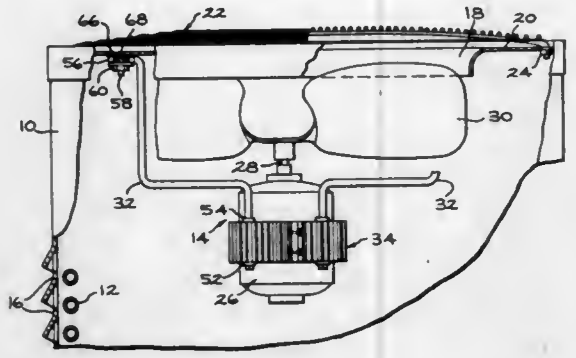
1. In a cooling system having a header tank, an outlet tank, and at least one cooling core extending between the header tank and the outlet tank, the improvement comprising:

- a means for mounting the core to a selected one of said tanks and providing a seal between the core and the selected tank, said means including an elastomeric element between the core and the selected tank integrally including a strip portion having a bore therethrough and being of a construction sufficient for receiving a selected portion of the cooling core therein, and a raised lip portion around the edge of the strip portion and the edge of the bore, said raised lip portion being deformed when compressed between the core and the selected tank to seal the connection between the selected portion of the core and the selected tank and to provide a damped resilient mount therebetween.



4,191,245
HEAT DISSIPATING MOTOR MOUNTING ARRANGEMENT

Michael E. Wendt, Tyler, Tex., and Danny D. Beaver, Ft. Smith, Ark., assignors to General Electric Company, Louisville, Ky.
Division of Ser. No. 695,940, Jun. 14, 1976, Pat. No. 4,103,192. This application Feb. 24, 1978, Ser. No. 881,106
Int. Cl.^{2} F20F *7/00*
U.S. Cl. 165—69 **1 Claim**



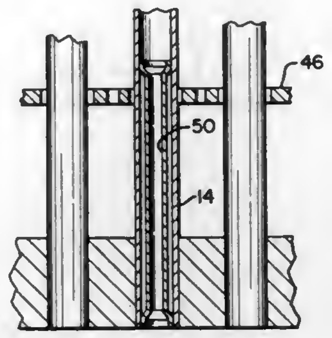
1. A refrigeration condenser unit comprising:

- a housing having inlet openings arranged in at least one side of said housing and an outlet arranged in a top wall in said housing and a condenser in said housing arranged in air flow relationship with said openings and said outlet, a fan motor arranged for passing air through said openings between said housing and the ambient surroundings;
- a split ring motor support member on said motor having an inner portion dimensioned to embrace the outer wall surface of said motor;
- holding means formed integral with said support member being arranged on the end portions of said ring adjacent said split;
- clamping means engaging said holding means for urging said end portions toward each other so that the inner contact portion of said support member is maintained in engagement with the outer surface of said motor with sufficient pressure to prevent relative movement therebetween, and to provide a low resistance thermal conductive path between the motor and the motor support member;
- a plurality of parallel circumferentially spaced heat dissipating means being formed integral with said motor support member projecting radially outwardly and extending substantially the full axial dimension of said support member;
- support arms including a first end having a non-circular cross section secured to the motor support member at spaced intervals around the circumference thereof and having their other end attached to the wall portion adjacent housing opening so as to center the rotational axis of said motor relative to said opening;
- arm support elements formed integral with said motor support member and arranged substantially parallel to said heat dissipating means;

- a non-circular passageway extending through said support elements for receiving said first end of said support arm in mating relationship to secure said arm to said motor support member;
- a resilient member arranged between said first end of the support arm and said support element passageway for absorbing vibration between said motor support member and said support arms.

4,191,246
DEVICE TO REDUCE LOCAL HEAT FLUX THROUGH A HEAT EXCHANGER TUBE

Don S. Cassell, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Mar. 5, 1979, Ser. No. 17,649
Int. Cl.^{2} F28F *13/08, 9/00*
U.S. Cl. 165—134 R **5 Claims**

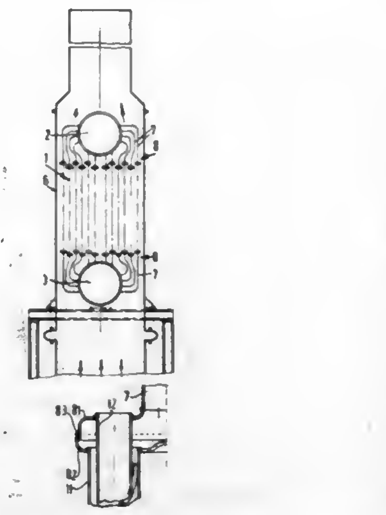


1. In a shell- and tube- heat exchanger for the generation of vapor by the indirect transfer of heat from a heating fluid to a vaporizable liquid, a pressure vessel, means to introduce vaporizable fluid into the bottom portion of the vessel, an outlet near the top through which vapor is discharged, a bundle of tubes positioned within the vessel, means for circulating heating fluid through the tubes, tube support means positioned within the pressure vessel for preventing tube vibration, the tube support means including horizontally positioned means closely surrounding, but slightly spaced from, each tube in the bundle of tubes at a given elevation, each tube containing an insulating sleeve secured within it, each insulating sleeve being smaller than the inner diameter of the tube it is positioned in, so as to form an annular space therebetween, each insulating sleeve being substantially closed at its upstream end regarding flow of heating fluid, so that the annular space is full of stagnant water forming an insulating barrier during operation, each insulating sleeve being at the same elevation as the tube support means.

4,191,247
HEAT EXCHANGERS

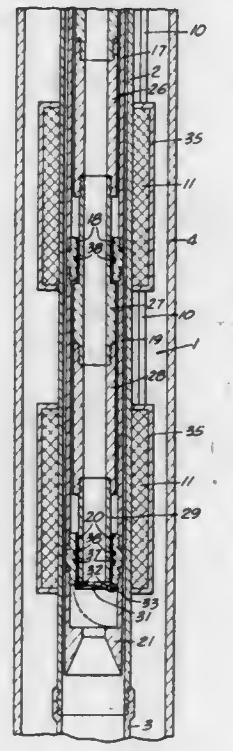
Jacobus C. Versteeg, Teteringen, Netherlands, assignor to B.V. Machinefabriek Breda v/h Backer & Rueb, Breda, Netherlands
Filed May 27, 1977, Ser. No. 801,067
Int. Cl.^{2} F28F *9/02*
U.S. Cl. 165—158 **3 Claims**

1. A heat exchanger comprising a distribution header, a collection header, a plurality of groups of tubes for conducting a first medium from said distribution header to said collection header, each tube being provided with an inner tubular member for forming an annular space between the tubular member and the tube, distribution means connected to said distribution header and to each group of tubes for dividing the first medium into a plurality of streams, collection means connected to each group of tubes and to said collection header for combining streams of the first medium in said collection header, each distribution means and each collection means including a pipe connected to said distribution header and to said collection header, respectively, and a secondary header connecting a pipe to the tubes in a group of tubes, and an envelope surrounding said plurality of groups of tubes, said distribution and said collection means for guiding a second medium around said elements, characterized in that each secondary header comprises a pair of oppositely facing cup-shaped thin-walled flexible members, the edges of which are joined in a gas tight manner to form a header having spaced apart substantially parallel first and second walls, and in that a pipe is connected to said first wall, the tubes forming a group of tubes are connected to said second wall, and the tubular members provided in the tubes forming a group of tubes extend through said secondary header and are connected to said first wall, whereby the first medium flows from the distribution header through the pipes, secondary headers and the annular spaces between the tubes and their associated tubular members, and the second medium flows through the tubular members and around the outside surfaces of the tubes, secondary headers, and pipes of said distribution and collection means.



4,191,248
TANDEM SOLENOID-CONTROLLED SAFETY CUT-OFF VALVE FOR A FLUID WELL

Donald L. Huebsch, 3716 Prestwick Dr., Los Angeles, Calif. 90027, and Louis B. Paulos, 9616 Yolanda Ave., Northridge, Calif. 91324
Filed Jan. 3, 1978, Ser. No. 866,335
Int. Cl.^{2} E21B *43/12;* **F16K** *31/08;* **H01F** *7/16*
U.S. Cl. 166—65 M **63 Claims**



41. A solenoid controlled device comprising: a plurality of coils separate magnetic armature means for each of said coils

and each biased to a different distance from its associated pole piece when said coils are de-energized, means operatively connected to and actuatable by said armature means as said armature means move in succession in out-of-phase relation into contact with their respective pole pieces when said coils are energized, and non-magnetic armature restraining means within said housing positioned to engage a portion of said armature means when in the retracted position thereof to hold said actuatable means open thereby permitting said solenoid coils to be energized with less power than initially required to move said armature means to the retracted position thereof.

59. A solenoid-controlled valve assembly comprising: a tubular housing, a solenoid coil carried coaxially of said housing armature means reciprocally supported coaxially of said coil and spring biased to an extended position but movable to a retracted position when said coil is energized, means providing a valve seat, a valve movably supported and operably associated with said armature means for movement between the open and closed positions thereof by movement of said armature means between the extended and retracted positions of said armature means, and non-magnetic armature restraining means positioned to engage said armature means when in the retracted position thereof thereby enabling said solenoid coil to hold said armature means in said retracted position with less power consumption than initially required to move said armature means to the retracted position thereof.

4,191,249

REDUCING THE RELATIVE WATER/PETROLEUM MOVEMENT IN A PETROLEUM PRODUCING RESERVOIR

Amir M. Sarem, Yorba Linda, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Nov. 16, 1978, Ser. No. 961,091

Int. Cl.^{2} E21B ***33/138***

U.S. Cl. 166—244 C **11 Claims**

1. A method fo reducing the relative water/petroleum movement in a petroleum-containing water drive reservoir penetrated by one or more wells comprising:

(a) injecting into the reservoir a slug of an oil containing both an oil-soluble thickening agent and a solid particulate water-soluble thickening agent, and

(b) producing the well.

4,191,250

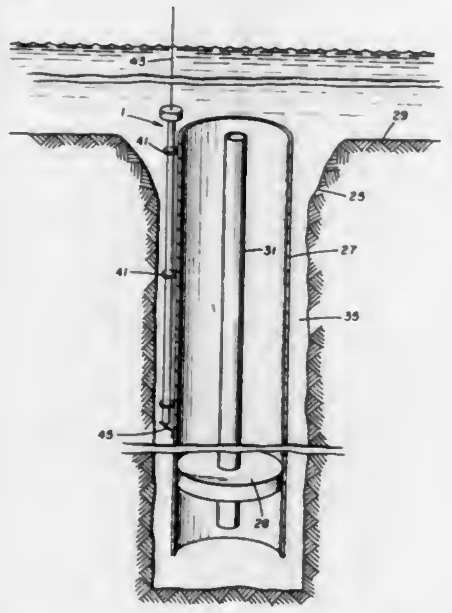
TECHNIQUE FOR CEMENTING CASING IN AN OFFSHORE WELL TO SEAFLOOR

Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,927

Int. Cl.^{2} E21B ***43/00, 49/00***

U.S. Cl. 166—253 **10 Claims**



1. In the drilling of a wellbore beneath a seafloor the method of cementing a casing string to the wellbore wall from the casing shoe to the seafloor, comprising:

(a) injecting a cement slurry down the casing string and into the annulus formed about the casing string;

(b) concomitantly sensing the hydrostatic pressure in the annulus at a preselected point spaced below the seafloor;

(c) transmitting a pressure signal related to the hydrostatic pressure of the cement slurry at the preselected point in the annulus through a column of incompressible liquid contained within a closed rigid conduit to a pressure transducer which generates a corresponding electrical signal;

(d) transmitting said electrical signal to a means for indicating when the cement slurry in the annulus rises to the seafloor;

(e) terminating the injection of cement slurry down said casing string when said cement slurry reaches the seafloor; and

(f) maintaining said cement slurry in said annulus to allow said slurry to set and bond said casing string to said wellbore wall.

5. Apparatus for indicating the level of a cement slurry in an offshore wellbore annulus, comprising:

(a) a rigid closed conduit filled with an incompressible liquid;

(b) a means for sensing hydrostatic pressure and transmitting a pressure signal relating thereto, connecting with said rigid closed conduit near one end thereof;

(c) a housing connecting with said rigid closed conduit at the other end thereof;

(d) a means for generating an electrical signal in response to a pressure signal mounted in said housing and having pressure communication with the interior of said rigid closed conduit; and

(e) an electrical conductor connecting with said means for transmitting an electrical signal in response to a pressure signal, said conductor passing through said housing for connecting with an indicating means.

4,191,251

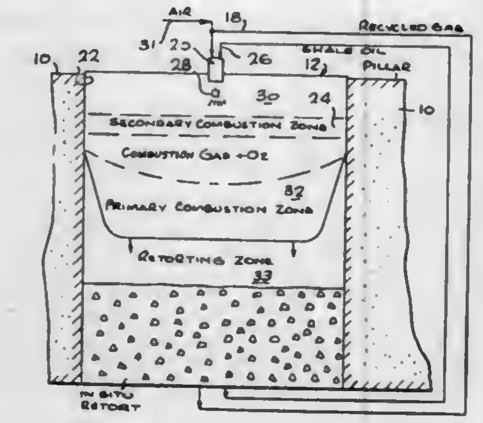
PROCESS FOR RECOVERING CARBONACEOUS VALUES FROM IN SITU OIL SHALE RETORTING

Chang Y. Cha, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation of Ser. No. 844,035, Oct. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 728,911, Oct. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 648,358, Jan. 12, 1976, abandoned, which is a continuation of Ser. No. 465,097, Apr. 29, 1974, abandoned. This application Aug. 1, 1978, Ser. No. 930,022

Int. Cl.^{2} E21B ***43/24***

U.S. Cl. 166—260 **77 Claims**



39. A method for forming a secondary combustion zone in an in situ oil shale retort containing a fragmented permeable mass of particles containing oil shale and having a primary combustion zone advancing therethrough, which comprises the step of:

introducing a retort inlet mixture comprising a liquid fuel and oxygen supplying gas into a selected location in the fragmented mass on the trailing side of the primary combustion zone, such that a secondary combustion zone is formed at said selected location.

4,191,252

METHOD FOR THE RECOVERY OF OIL

Peter S. Buckley, Dyce, Scotland, and Dennis M. Grist, Chertsey, England, assignors to The British Petroleum Company Limited, Sunbury-on-Thames, England

Filed May 19, 1978, Ser. No. 907,622

Claims priority, application United Kingdom, May 23, 1977, 21569/77

Int. Cl.^{2} E21B ***43/24***

U.S. Cl. 166—272 **3 Claims**

1. A process for the treatment of a viscous oil reservoir to increase the water permeability of the reservoir prior to steam injection which process comprises injecting a solvent for the oil down a well in the reservoir wherein the solvent is steam distillable, has an aromatic content of at least 25% and contains a primary alkylamine surfactant which is steam distillable so that the solvent and surfactant are caused to penetrate the reservoir by the steam and be present in the zone where the steam condenses the surfactant also being adsorbable on the reservoir rock so as to be adsorbed before reaching the production well.

4,191,253

SURFACTANT WATERFLOOD OIL RECOVERY METHOD

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 11, 1978, Ser. No. 967,945

Int. Cl.^{2} E21B ***43/22***

U.S. Cl. 166—275 **16 Claims**

1. A method for recovering petroleum from a subterranean, petroleum-containing formation of known or determinable temperature and formation water salinity, said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with at least a portion of the petroleum formation, comprising

(a) injecting into the formation via the injection well an aqueous, surfactant-containing fluid, said surfactant comprising a sulfated ethoxylated alkyl or alkylarylthiol having the following formula:

$$R{-}S{-}(OR')_nSO_3^-M^+$$

wherein R is an alkyl having from 6 to 26 carbon atoms, or an alkylaryl having from 5 to 24 carbon atoms in the alkyl chain, S is sulfur, O is oxygen, R′ is ethylene or a mixture of ethylene and propylene with relatively more ethylene than propylene, n is a number from 1 to 12, and M is a monovalent cation, or a sulfonated ethoxylated alkyl or alkylarylthiol having the following formula:

$$R{-}S(OR')_nR''SO_3^-M^+,$$

wherein R″ is ethylene, propylene, hydroxy propylene or butylene, and R, S, O, R′, n and M have the same meaning as above, or a mixture thereof, said surfactant fluid displacing petroleum through the formation to the remotely located production well; and

(b) recovering petroleum displaced by said surfactant fluid from the formation via the production well.

4,191,254

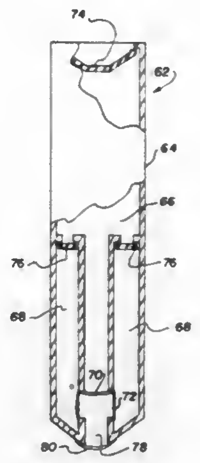
APPARATUS AND METHOD FOR PLUGGING VOIDS IN A GROUND STRATUM

Kenneth E. Baughman, 5035 Grape, Houston, Tex. 77096, and Earl N. Doyle, 1737 Campbell Rd., Houston, Tex. 77055

Filed Jan. 16, 1978, Ser. No. 869,707

Int. Cl.^{2} E21B ***33/13***

U.S. Cl. 166—286 **20 Claims**



12. A container for storing precursors of a polymeric foam in a liquid state and for mixing and releasing the precursors to form a solid material outside the container comprising, in combination;

means within said container for separating and storing the precursors, and

means responding to the pressure about said container for causing mixing of the precursors and subsequent releasing of the mixed precursors from the container, said means for causing mixing of the precursors including at least one plunger adapted to respond to the pressure about the container to mix, whereby by placing the container adjacent an area to be filled with foam and applying a pressure to the outside of the container, a solid foam can be directed into said area to be filled.

19. A method of dispensing a solid foam as it is forming from a container, comprising the steps of:

separately storing at least two liquid precursors in said container which are capable of forming the desired foam when combined in said container;

placing the container adjacent to the area to receive the solid foam material;

flowing a fluid under pressure about said container,

utilizing the pressure of said fluid to force the two precursors to mix together and simultaneously be driven out of the container into the area to receive the solid foam material; and

permitting the foam material to set in said area.

4,191,255

METHOD AND APPARATUS FOR CUTTING AND PULLING TUBULAR AND ASSOCIATED WELL EQUIPMENT SUBMERGED IN A WATER COVERED AREA

Allen K. Rives, Lafayette, La., assignor to Lor, Inc., Houston, Tex.

Filed Apr. 13, 1978, Ser. No. 895,739

Int. Cl.^{2} E21B ***23/00, 29/00, 31/02***

U.S. Cl. 166—297 **13 Claims**

1. A method of cutting and pulling tubular and associated well equipment submerged in a water covered area comprising the steps of:

a. lowering a well string including a cutting tool, a swivel and releasable spear in the water covered area to seat the swivel on the well equipment to thereby position the spear above the well equipment and the cutting tool within the well equipment to be cut and pulled;

b. actuating the cutting tool to sever the well equipment;

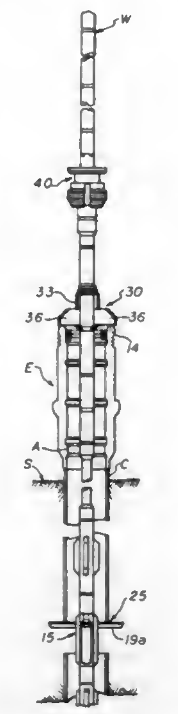
c. actuating the swivel to unseat it from the well equipment and lowering the well string to position the swivel and releasable spear within the severed well equipment; and

d. actuating the releasable spear to engage the severed well equipment for retrieval by first rotating and then pulling the well string out of the water covered area.

10. A swivel for use in a well string for conducting subsea operations on well equipment including:

a. an elongated hollow mandrel for connection in the well string;

b. an outer member rotatably supported on said mandrel;



c. circumferentially spaced support means extending outwardly of said outer member for seating on said well equipment while conducting the operations; and

d. release means associated with said support means operable upon lowering the well string a predetermined amount while said support means is engaged with the well equipment to enable said support means to retract when the well string is thereafter raised whereby the well string may then be lowered to move the swivel into the well equipment.

4,191,256

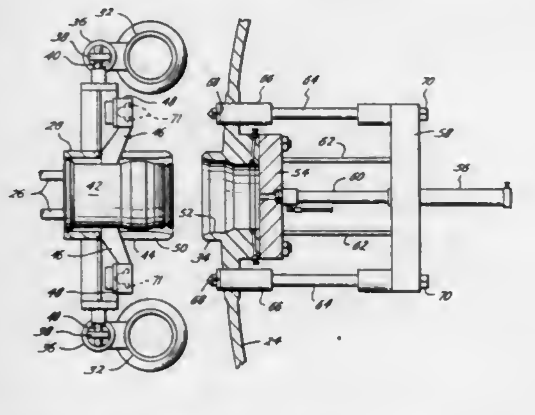
SUBSEA FLOWLINE CONNECTOR

David G. Croy; Andrew J. Rafferty, and Richard D. Jolly, all of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 21, 1978, Ser. No. 898,968

Int. Cl.² E21B *7/12*

U.S. Cl. 166—343 **9 Claims**



1. A flowline connector for providing a connection from a production wellhead within a subsea dry production chamber to a flowline on the exterior of the chamber comprising

an actuator assembly positioned within a subsea production chamber and having at least one actuator and at least one actuator arm extending from said actuator through the wall of said chamber,

a carriage supported on the flowline,

at least one receptacle mounted on said carriage having a means for retaining the end of said actuator arm therein,

a piston secured to said receptacle and movably mounted on said carriage,

a flowline passage carried by said piston,

said chamber having a port for receiving said piston and said flowline passage,

said actuator having sufficient travel to move said arm into engagement with said receptacle and to pull said piston into a sealed position within said port.

4,191,257

SPRINKLER-SEALING DEVICE

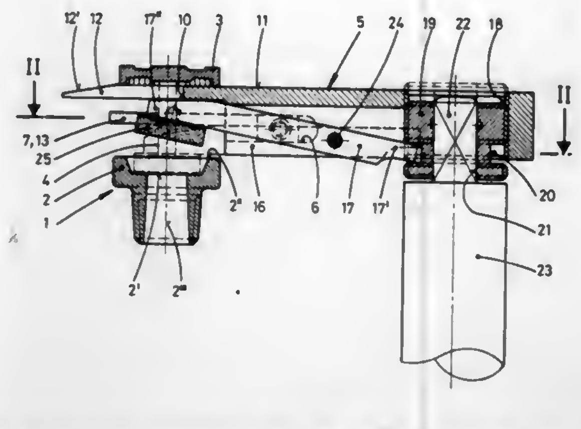
Johann G. Mohler, Laugneristrasse, CH-6353 Weggis, Switzerland

Filed Oct. 30, 1978, Ser. No. 955,825

Claims priority, application Switzerland, Dec. 23, 1977, 16013/77

Int. Cl.² A62C *37/20*

U.S. Cl. 169—90 **3 Claims**



1. In a sprinkler system with a large number of sprinkler nozzles, a sprinkler-sealing device which can be coupled to a manually used operating rod system to activate a sealing element intended to individually seal a single sprinkler nozzle and interrupt the flow of water, comprising a recessed housing and guiding means to take up and position a control member and the sealing element, stop and centralizing means located on the front side of said housing for approximative alignment of the housing with the sprinkler nozzle to be sealed, spring-loaded fixing means movably connected with the housing for releasable connection of the housing to said sprinkler, a locking lever pivotably located in the housing in the plane of the sprinkler axis, one end of said locking lever carrying the sealing element intended to seal the nozzle opening of the sprinkler, and the control member comprising a spindle nut with a central take-up opening for the operating rod system located pivotably in a threaded hole of the housing and having a circular surrounding slot to operably engage the other operating end of the locking lever.

4,191,258

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

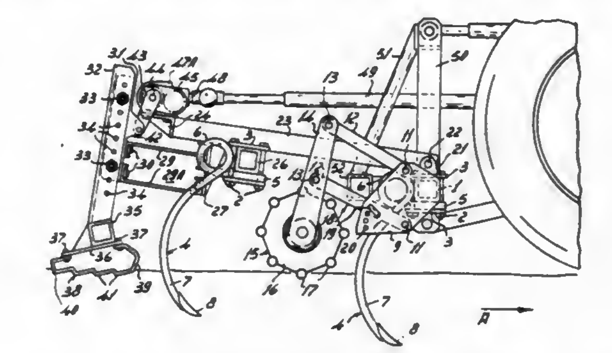
Filed Jun. 15, 1977, Ser. No. 806,670

Claims priority, application Netherlands, Jun. 17, 1976, 7606554

Int. Cl.² A01B *27/00*

U.S. Cl. 172—40 **28 Claims**

25. A soil cultivating implement comprising a frame with coupling means connectable to a prime mover, said frame having beam means extending transverse to the direction of travel and a plurality of cultivating tines mounted along the length of a beam of said beam means in a row, a supporting roller being connected to the frame with pivotable arms, setting means interconnecting said arms to the frame in any chosen one of a plurality of positions to vary the level of said roller relative to said frame, an elongated soil working member with supports being resiliently interconnected to said beam and positioned at the rear of said roller and said beam, said beam being pivoted to the remainder of the frame by pivot means and eccentric means connecting the soil working member to driving means, said eccentric being driven to reciprocate the soil working member together with beam and tines in substantially up and down movements about a common axis during operation.



4,191,259

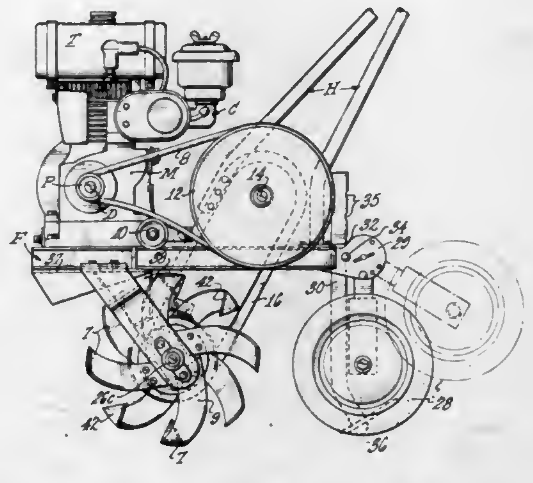
ROTARY CULTIVATOR AND MULCHER

Charles F. Boren, 16230 Orchard Ave., Gardena, Calif. 90247

Filed Jun. 19, 1978, Ser. No. 916,864

Int. Cl.² A01B *33/04*

U.S. Cl. 172—43 **9 Claims**



1. A rotary cultivator comprising in combination:

a support frame carrying at least one generally annular pair of axially-separated rotary members disposed for rotation on a transverse axis, each member of the pair comprising a plurality of radially extending cutting means having outer terminal blades, individually providing a transverse ground-penetrable edge,

roller means carried by the support frame spaced from said rotary members and adapted to go along a selected path of travel of the cultivator, with the terminal blades selectively disposed in ground clearance or ground penetration position,

the axial space which is intermediate said pair of rotary members and which extends outward from said axis to the terminal blades, having a pair of cutter blades disposed therein generally parallel to said axis and radially spaced apart, one fixed to said frame and the other being rotatable with said axis and rotary members, whereby upon movement of the cultivator against standing vegetation the latter may be severed and at least some cut into short pieces and churned into the ground by joint action of the terminal blades and the pair of cutter blades.

4,191,260

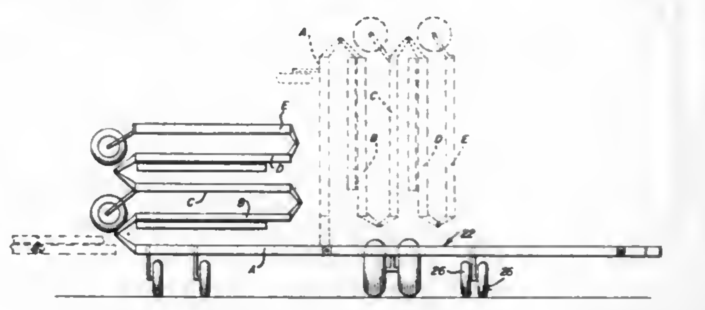
FOLDING WIDE PASS DRAFT IMPLEMENT

Duane O. Klindworth, P.O. Box 133, Hogeland, Mont. 59529

Filed Mar. 15, 1978, Ser. No. 886,944

Int. Cl.² A01B *73/00*

U.S. Cl. 172—311 **15 Claims**



1. A multi-section draft implement including a center towing section including front and rear ends and at least three side-by-side outer wing sections each defining a frame section of appreciable plan area and including front and rear ends, disposed to each side of said towing section, first means pivotally connecting the adjacent sides of the first wing sections adjacent said towing section to the corresponding sides of the towing section for upward and inward swinging of said first wing sections to upstanding positions over the adjacent side marginal portion of said center section with said adjacent sides lowermost, second means pivotally connecting the adjacent sides of the second wing sections from said center section to the adjacent sides of the first wing sections for relative swinging upwardly and inwardly into inverted, superposed and substantially parallel positions thereover, and third means pivotally connecting the adjacent sides of the third wing sections from said center section to the adjacent sides of the second wing sections for relative swinging into juxtaposed substantially parallel positions with said second sections and the undersides of each pair of second and third sections opposing each other.

4,191,261

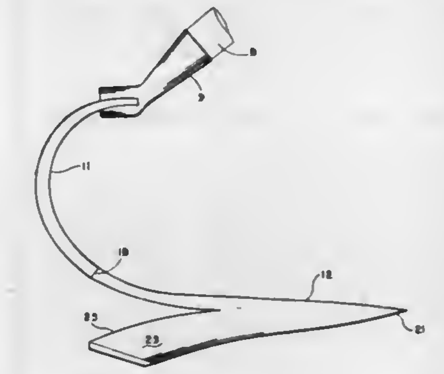
HAND OPERATED TOOL WITH CENTRAL OPENING IN UPPER PORTION

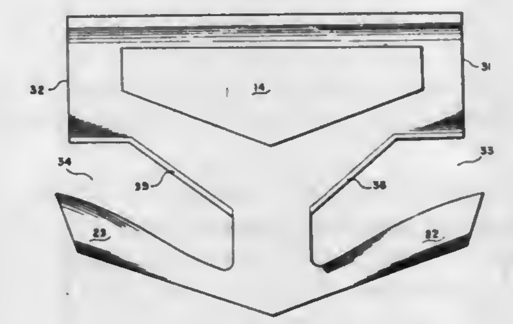
Phillip Tarantino, 6767 Northland Rd., Manteca, Calif. 95336

Filed Mar. 27, 1978, Ser. No. 890,044

Int. Cl.² A01B *1/10*

U.S. Cl. 172—371 **1 Claim**





1. In a hand operated tool for pulling through soil in a direction of travel toward the operator comprising: an arcuate upper portion having a forward edge and a rearward edge, said upper portion forming on the underside thereof a single, horizontal, generally-cylindrical cavity with an axis substantially transverse to said direction of travel;

a downwardly curving centrally disposed member distending from said forward edge, said centrally disposed member terminating in a triangular cutting point; two rearwardly extending cutting blades diverging from said cutting point, each said blade having a leading edge and a trailing edge, said leading edges of said cutting blades being at a lower height than said trailing edges; and

handle means centrally affixed to the rearward edge of said upper portion,

said centrally disposed member being of such length that the trailing edge of said cutting blades is a predetermined distance from the forward edge of said upper portion, and being of such curvature that the triangular cutting point points generally rearwardly at a predetermined acute angle to said handle,

said arcuate upper portion being provided between said forward edge and said rearward edge with a generally central opening over a substantial area thereof, said opening having a top edge, two side edges and a bottom edge, said bottom edge sloping downwardly from the side edges to form a centrally located, v-shaped point in substantial alignment with said triangular cutting point.

4,191,262

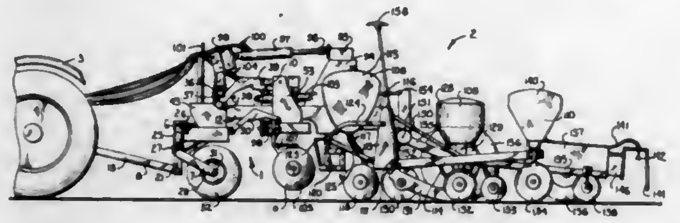
AGRICULTURE LIGHT TILLAGE IMPLEMENT AND TOOL MOUNTING MECHANISM THEREFOR

Merton E. Sylvester, Rte. 3, Sabetha, Kans. 66534

Filed Sep. 1, 1978, Ser. No. 938,951

Int. Cl.^{2} A01B *23/04, 25/00*

U.S. Cl. 172—459 **10 Claims**



9. An agriculture implement for light soil tillage immediately preceeding a trailing, agriculture earth working device, said implement comprising:

(a) a frame shaped for connection to a forward side of the earth working device, and including mobile ground engaging support means for translating said implement over the ground;

(b) a control arm having one end thereof pivotally connected with said frame;

(c) a motor connected with and selectively rotating said control arm with respect to said frame;

(d) a tool support carriage suspended from and operably connected with the other end of said control arm and adapted for mounting a plurality of earth working tools thereto;

(e) a linkage arm having first and second ends thereof pivotally connected with said frame and said tool support carriage respectively; said linkage arm second end being spaced apart from said control arm other end to securely retain tool orientation when said implement is in a tilling position;

(f) a longitudinally resilient member having first and second ends thereof respectively connected with said tool support carriage and said control arm other end, whereby rotation of said control arm in a normally downwardly direction resiliently urges said tools into the ground when said implement is in the tilling position;

(g) stop means limiting maximum separation between said tool support carriage and said control arm, and positively interconnecting the same when said implement is in a transport position, whereby rotation of the control arm in a normally upwardly direction lifts said tools out of engagement with the ground for transport; and

(h) a connector arm pivotally connecting said tool support carriage to said control arm, said connector arm having one end thereof pivotally connected to said control arm at a point spaced inwardly of said control arm other end, an opposite end thereof pivotally connected to said tool support carriage, whereby movement of said tool support carriage relative to said control arm in a horizontal direction is substantially limited, and said tool support carriage may be urged to move in a vertical direction relative to said control arm but is biased to a specific relative position therefrom by said resilient member.

4,191,263

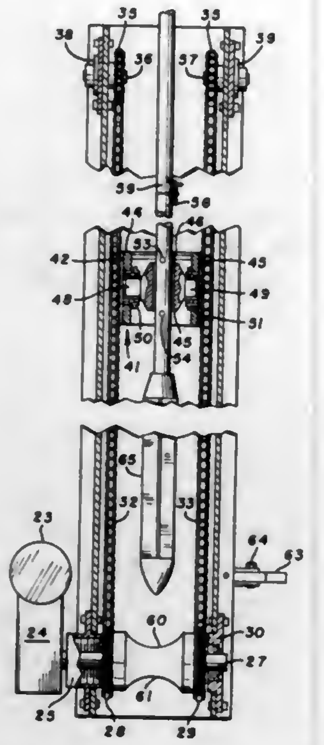
PEAT SAMPLING PROBE

Thomas J. Malterer, Hibbing, Minn., assignor to State of Minnesota as represented by the Commissioner of Natural Resources, St. Paul, Minn.

Filed Jul. 26, 1978, Ser. No. 928,233

Int. Cl.^{2} E21C *11/02*

U.S. Cl. 173—28 **4 Claims**



1. Sample gathering apparatus for drivably moving a core sampling assembly into and out of subterranean zones for gathering a core sample therewithin, and being arranged for mounting upon a vehicle, said sample gathering apparatus comprising:

(a) frame means, drive means mounted upon said frame means for moving said core sampling assembly into and out of subterranean zones, and coupling means for releasably securing said drive means to said core sampling assembly;

(b) said frame means being elongated and including:
  (1) a first pivotal joint for adjustably mounting said sampling apparatus upon a vehicle; and
  (2) means for mounting said drive means upon said frame and for delivering power to said coupling means;

(c) said drive means including:
  (1) motor means for delivering power to said coupling means;
  (2) an elongated endless belt mounted for movement along a first drive plane and being driven by said motor means and having said coupling means secured thereto and arranged for motion therewith, said coupling means including a core sample assembly retainer;
  (3) said core sample assembly retainer including a receiving hub pivotally secured to said endless belt and arranged for pivotal motion about a swing axis generally transverse to said drive plane, with said hub having means for releasably securing said core sampling assembly thereto;

(d) said frame means further having upper and lower segments with the lower segment being formed with an open front surface so as to permit said core sampling assembly to swing pivotally outwardly of said frame means about said swing axis for pivotal lifting of said core sampling assembly from the ground surface and about said swing axis; and

(e) said receiving hub and said core sampling assembly being coaxially disposed, and wherein the coupling between said hub and core sampling assembly is a pin means, with a pair of bores being formed within said core sampling means, and with each bore being disposed generally along the axis of said core sampling means, with one of said bores being disposed above said swing axis and with the other being disposed below said swing axis.

4,191,264

IMPACT WRENCH

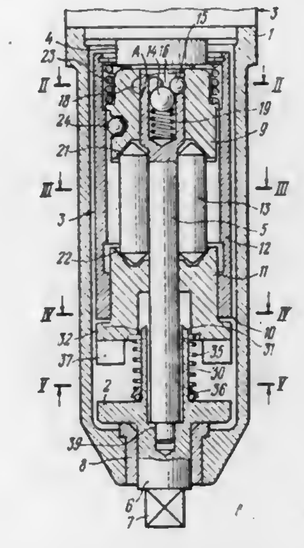
Georgy A. Antipov, ulitsa Krasny Mayak, 3, kv. 146; Mikhail L. Gelfand, Yaroslavskoe shosse, 129, kv. 44, both of Moscow; Nikolai S. Lavnikov, ulitsa Kustanaiskaya, 117, kv. 10, Rostov-na-Donu; Leonid N. Teres, ulitsa 2 Koltsevaya, 61/21, Rostov-na-Donu; Ivan I. Urazhdin, ulitsa Engelsa, 52/56, kv. 18, Rostov-na-Donu; Yakov I. Tsipenjuk, ulitsa Kirova, 5, kv. 30, Solntsevo Moskovskoi oblasti, and Petr S. Yakubovsky, Podshipnikovy pereulok, 12, kv. 36, Rostov-na-Donu, all of U.S.S.R.

Filed Jan. 6, 1978, Ser. No. 867,580

Claims priority, application U.S.S.R., Apr. 26, 1977, 2470156

Int. Cl.^{2} B25D *15/00*

U.S. Cl. 173—93.6 **2 Claims**



1. An impact wrench comprising a housing; an impact clutch accommodated in said housing and comprising an anvil and a hammer which includes a driving member and a driven member interconnected for combined rotation and for axial movement of the driven member relative to the driving member of the hammer for engagement with the anvil; rotary drive means for the hammer accommodated in said housing and comprising a yieldable coupling including a drive shaft having a blind bore; said driving member surrounding said drive shaft and being arranged coaxially therewith; said drive shaft having radial bores; balls arranged substantially within the blind bore and partially protruding therefrom through said radial bores; said driving member having a friction surface facing said radial bores of said drive shaft, said friction surface being constituted as a continuous inner annular groove arranged in a plane substantially at right angles to the longitudinal axis of the drive shaft and eccentrically with respect to said driving member; and a spring-loaded pressure member in said blind bore exerting axial pressure on said balls, whereby said balls engage the bottom and walls of said annular groove.

4,191,265

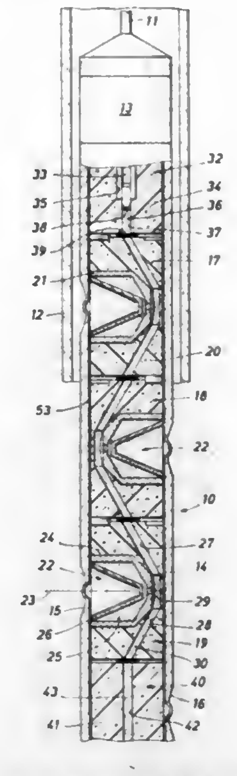
WELL BORE PERFORATING APPARATUS

Michel J. Bosse-Platiere, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 14, 1978, Ser. No. 915,498

Int. Cl.^{2} E21B *43/117*

U.S. Cl. 175—4.56 **27 Claims**



1. Perforating apparatus adapted for operation in a well bore and comprising:

a tubular carrier having an end opening providing access to the interior bore of said carrier;

a plurality of bodies adapted to be successively introduced through said end opening and tandemly assembled within said interior bore with their opposite ends respectively abutting one another;

charge-detonating means including an elongated passage entirely through each body, each passage of one body communicating with the passage of the abutting body for collectively defining a generally-longitudinal intercommunicating passage through said tandemly assembled bodies, and a detonating explosive cooperatively arranged within each of said body passages and closed entirely in each body by closure means on each end of the body, said detonation-inducing forces being communicated solely via said collectively defined intercommunicating passage for producing detonation-inducing forces therein at predetermined locations within selected ones of said tandemly-assembled bodies;

means defining a laterally-directed charge-receiving opening on each of said selected bodies; and

perforating means within each of said charge-receiving openings including a shaped explosive charge including a detonation-initiating base portion cooperatively arranged within detonating proximity of said predetermined locations in said body passages.

4,191,266

PROCESS AND INSTALLATION FOR DRILLING HOLES IN THE EARTH'S CRUST UNDER FREEZING CONDITIONS

Wouter H. van Eek, Wassenaar, and Arnold W. J. Grupping, Aerdenhout, both of Netherlands, assignors to Wouter H. van Eek, Wassenaar, Netherlands

Filed Feb. 28, 1978, Ser. No. 882,621

Claims priority, application Netherlands, Mar. 4, 1977, 7702354

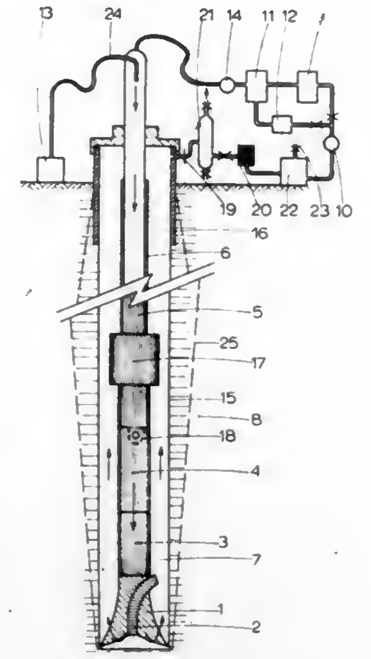
Int. Cl.^{2} E21B *7/00*

U.S. Cl. 175—17 **21 Claims**

1. In a process for drilling holes in the earth's crust through

strata containing unconsolidated earth formations utilizing a hollow drilling string extending the length of said hole and terminating at its lower end with a drill bit, wherein a mud containing drilling fluid is cooled to a temperature below the freezing point of water contained in said earth formations and introduced into the upper portion of said drilling string and circulated through said hole in contact with said earth formations, the improvement essentially comprising the combination of:

drilling said hole utilizing a drill bit
adapted for drilling through hard rock
formations;
forming a cold drilling liquid containing
solid particles of a frozen aqueous medium;



introducing said frozen particle containing
cold drilling liquid into the upper portion
of said drilling string; and
circulating said cold drilling liquid to
the bottom of said hole through said
drilling string and into contact with said
unconsolidated earth formations thereby
causing at least a portion of said solid
particles of frozen aqueous medium to melt;

said circulating cold drilling liquid having sufficient frigories to solidify said unconsolidated earth formations at the bottom of said hole by freezing said water contained in said formations at a rate and depth sufficently in advance of said drill bit whereby balling is substantially avoided.

4,191,267
RAISE-BORING

Michael B. Snaddon, 47 Duncan Rd., Glenferness, Agricultural Holdings, Transvaal, South Africa

Filed Jan. 19, 1978, Ser. No. 870,809

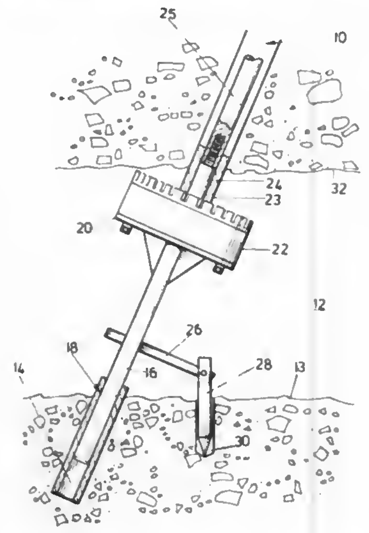
Claims priority, application South Africa, Jan. 19, 1977, 77/0289

Int. Cl.² E21D *3/00*

U.S. Cl. 175—53 **6 Claims**

1. A method of collaring a drill hole from a tunnel in the art of raise-boring which includes the steps of:

drilling a pilot hole with a pilot drill in one wall of the tunnel,
advancing the pilot drill across the tunnel to drill an opposed hole aligned with the pilot hole, in the opposite wall of the tunnel,
mounting a borer head on an arbour,



locating the arbour across the tunnel in both holes,
rotating the borer head to collar the drill hole, and
detaching the borer head from the arbour.

4,191,268
DIGITAL WEIGHING MACHINE

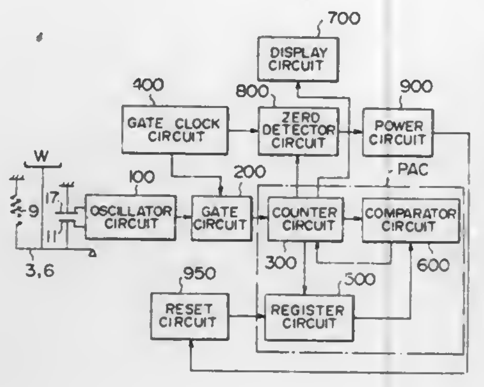
Tsutomu Miyoshi; Shuichi Yanagita, and Yushi Komachi, all of Tokyo, Japan, assignors to Tanita Corporation, Tokyo, Japan

Filed Feb. 15, 1978, Ser. No. 877,840

Claims priority, application Japan, Feb. 22, 1977, 52/21061; Apr. 12, 1977, 52/42203

Int. Cl.² G01G *3/02*

U.S. Cl. 177—210 C **7 Claims**



1. A digital weighing machine comprising a base, a metering spring fixed at one end thereof to said base, a load supporting link mounted between said base and the other end of said metering spring and movable to displace the metering spring according to the weight of a body to be measured when applied to the load supporting link, a fixed electrode plate consisting of an electrically conductive flat plate secured to said base, a movable electrode plate consisting of an electrically conductive flat plate disposed opposite to said fixed electrode plate to provide an electrostatic capacitance therebetween and interlocked with said load supporting link so as to move away from or towards said fixed electrode plate with said movement of said load supporting link, an oscillator circuit including said electrostatic capacitance as a frequency determining parameter for generating an electric output having a frequency which varies with the change in said capacitance according to the weight of said body, a counter circuit for directly counting the frequency of the electric output from said oscillator circuit to provide a count representative of the weight of said body, a digital display for displaying the count from said counter, and an electric power circuit for said oscillator circuit, counter circuit and display, wherein said movable electrode plate is

supported in a movable point contact relation with said load supporting link by a link pin and a spring is provided between said movable electrode plate and said load supporting link for keeping the point contact pressure constant at any time.

4,191,269
VEHICLE BODY FRAME ARRANGEMENT

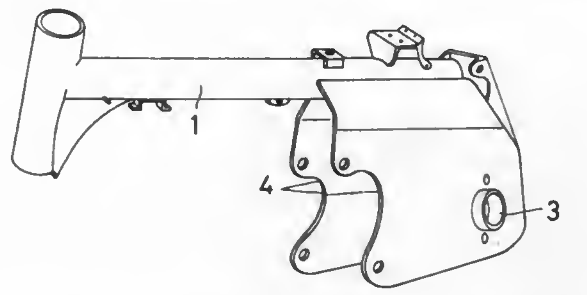
Tomoyuki Nagashima, Tokorozawa; Masayuki Tanaka, Wako, and Shigeo Shinomiya, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,945

Claims priority, application Japan, Jul. 15, 1977, 52-93469[U]

Int. Cl.² B62D *21/04;* **B62K** *19/10*

U.S. Cl. 180—217 **5 Claims**



1. A vehicle body frame arrangement comprising a main longitudinal pipe member, a pair of left and right side plates secured to said main pipe and depending therefrom in spaced relation, a lateral pipe member secured to said side plates, a wheel shaft rotatably supported in said lateral pipe member and projecting beyond the ends thereof, a first cover member secured to one of said side plates to form a first compartment therewith, a chain sprocket and chain mounted on said wheel shaft and accommodated in said first compartment, a second cover member secured to the other of said plates to form a second compartment therewith, and brake means mounted in said second compartment for applying braking force to said wheel shaft, said brake means comprising a brake drum on the wheel shaft and brake shoes supported by the other of said plates.

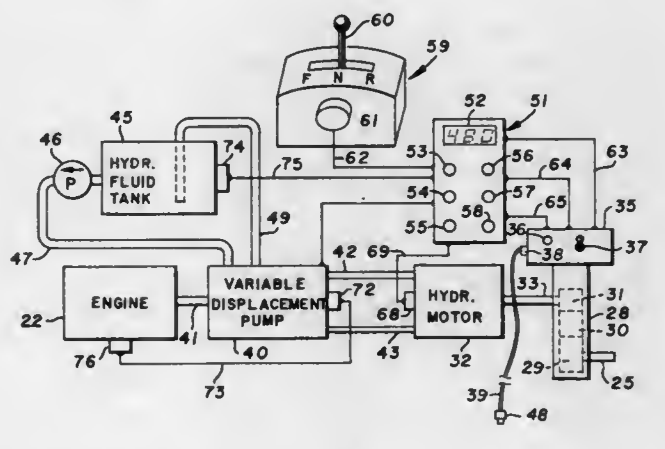
4,191,270
CONTROL FOR TRACTOR POWER TAKEOFF SHAFT

Donald A. Monteith, Fargo, N. Dak., assignor to Steiger Tractor, Inc., Fargo, N. Dak.

Filed Sep. 1, 1977, Ser. No. 829,642

Int. Cl.² B60K *17/28*

U.S. Cl. 180—53 D **16 Claims**



1. In combination:

a tractor having means for propelling the same along the ground, an engine for driving said propelling means, an operator's compartment, and means including an operator's control in said operator's compartment for varying the speed of the engine;
a motor operatively connected to said engine and driven thereby;
a power takeoff shaft driven by said motor;
a manually adjustable control for said motor and movable from a neutral position through an intermediate range of positions to an end position;
motor control means responsive to the position of said manually adjustable control, said motor control means including first means for interrupting operation of said motor when said manually adjustable control is in said neutral position, second means for causing said motor to drive said power takeoff shaft at a speed dependent upon the speed of the engine when said manually adjustable control is in said intermediate range of positions, the ratio of the speed of said shaft to the speed of the engine being dependent upon the position of said manually adjustable control in said intermediate range of positions, and third means for causing said motor to operate said shaft at a predetermined speed regardless of the speed of the engine as long as the engine speed is adequate to maintain said speed, when said manually adjustable control is in said end position;
further means effective upon actuation thereof to interrupt operation of said motor regardless of the position of said manually adjustable control; and
means for preventing resumption of the operation of said motor following such an interruption until said manually adjustable control has been returned to said neutral position.

4,191,271
GEARSHIFT LINKAGES FOR TILT-CAR VEHICLES

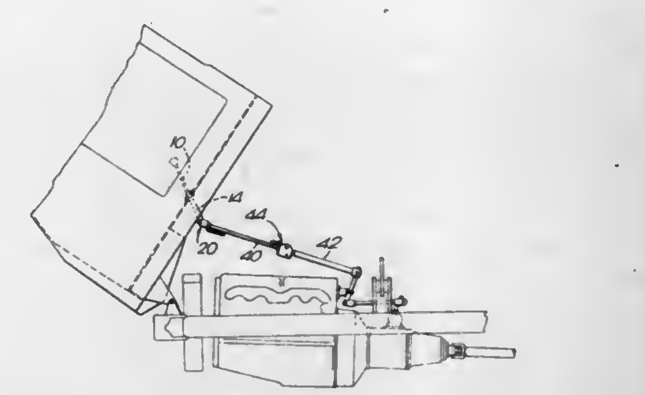
Stephen N. W. Fox, Luton; Edward H. Snook, Newport Pagnall, both of England, and Norman F. Stimson, deceased, late of Luton, England (by Verity S. Stimson, personal representative), assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1978, Ser. No. 948,571

Claims priority, application United Kingdom, Oct. 6, 1977, 41623/77

Int. Cl.² B60K *20/04;* **G05G** *9/12*

U.S. Cl. 180—77 TC **5 Claims**



1. A gearshift linkage for transmitting movement of a gear lever mounted in the cab of a tilt-cab vehicle to a ratio-change transmission carried by a chassis portion of the vehicle, comprising a gear lever which is pivotally mounted intermediate its ends in a spherical bearing and includes a lower lever portion, a U-section yoke comprising a pair of spaced side members interconnected by a transverse member, means pivotally connecting the yoke by way of the side members thereof to the lower portion of the gear lever, a locating projection extending from the transverse member in the opposite direction to the side members, an elongate inner tube member connected at one end thereof to the transverse member and extending therefrom in the opposite direction to the side members, an elongate outer tube member telescopically accommodating the inner tube member and providing a connection to linkage for actuating the ratio-change transmission, a channel-section housing member secured by way of side walls thereof to an end region of the outer tube member, facing surfaces of the side walls of the channel-section housing member arranged for co-operation

with the locating projection, a latching pawl pivotally mounted on the housing member between the side walls thereof, means spring-biasing the latching pawl towards a portion for providing latching engagement with the transverse member, and a detent member projecting from the lower end region of the lower lever portion of the gear lever and arranged, during tilting movement of the cab of the vehicle from its normal operational position, in which the pawl is in its position of latching engagement with the transverse member, to engage a cam surface of the pawl to cause the pawl to pivot to an unlatched position permitting telescopic extension of the inner and outer tube members, subsequent return movement of the cab of the vehicle to its normal operational position causing telescopic shortening of the inner and outer tube members until the locating projection co-operates with the facing surfaces of the side walls of the housing member and the pawl again assumes its position of latching engagement with the transverse member.

4,191,272

DUST SEAL

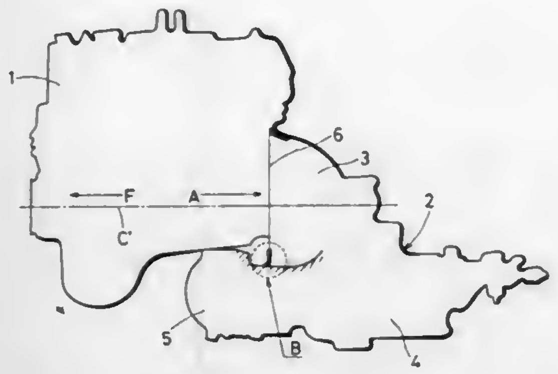
Akio Kuramoto, Okazaki, and Takeo Kawai, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 7, 1978, Ser. No. 958,365

Claims priority, application Japan, May 24, 1978, 53-71031[U]

Int. Cl.^{2} B62D *25/16;* **F02B** *77/00*

U.S. Cl. 180—84 **5 Claims**



1. In a front engine-front drive vehicle having a trans-axle case comprising a clutch housing portion accommodating a clutch and a differential housing portion accommodating a differential and connected to an engine body on the vehicle, said clutch housing portion being mounted to the engine body at the rear end thereof through a rear end plate having a bottom edge and said differential housing portion being arranged below said engine body with a space therebetween, a laminar dust seal of an elastic material attached to said bottom edge of said rear end plate, said seal having a means to seal an upper surface of said differential housing portion at the lower portion thereof and a means to cover a front portion of side walls of said clutch housing portion on either side thereof.

4,191,273

SEAL AND SOUND ATTENUATOR FOR CONTROL CONSOLE

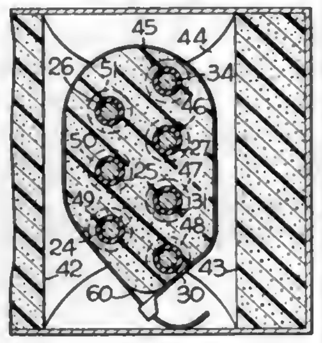
Hugh K. Williams, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jun. 5, 1978, Ser. No. 912,846

Int. Cl.^{2} G10K *11/00*

U.S. Cl. 180—89.13 **10 Claims**

1. A sound attenuating device on a vehicle comprising, a vehicle chassis, a platform mounted on said chassis defining an operator station, a control console mounted on said platform defining an interior compartment, at least one lever mounted in the compartment of said control console for operating a control function of the vehicle, a partition delineating the compartment of said control console forming an exterior wall, deformable sound attenuating material mounted on said partition covering the exterior wall and defining a plurality of holes, a force transmitting member connected to said lever and extending through one of said holes in said sound attenuating material and said partition, a casing enclosing said force transmitting member mounted in one of said holes and stationary relative to said sound attenuating material, a deforming member pressing the sound attenuating material against the casing enclosing the force transmitting member and closing the holes to provide sealing and sound attenuation of said compartment from the external side of said partition.



4,191,274

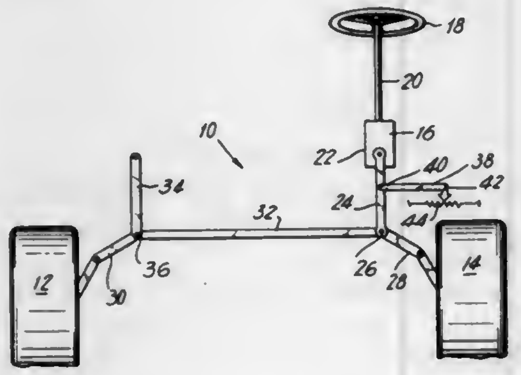
ADJUSTING AUTOMOBILE SUSPENSION SYSTEM

Jerome Goldberg, Cold Spring, and Christopher D. Bloch, Hillsdale, both of N.Y., assignors to Spring Hill Laboratories, Inc., Cold Spring, N.Y.

Filed Aug. 22, 1977, Ser. No. 826,709

Int. Cl.^{2} B62D *7/20*

U.S. Cl. 180—282 **10 Claims**



1. An adjusting vehicle suspension system for a vehicle having a chassis and an individual suspension system at each wheel of the vehicle comprising

sensing means at each wheel of the vehicle to sense the height of the vehicle chassis with respect to each said wheel;

sensing means on said vehicle to sense changes in steering wheel direction of said vehicle;

sensing means on said vehicle to sense centrifugal force acting on said vehicle;

control means carried by said vehicle to receive the sensed changes in vehicle height with respect to each said wheel, changes in steering wheel direction of said vehicle and centrifugal force acting on said vehicle;

said control means including means for controlling camber adjustment means at each said wheel to effect changes in wheel camber to maintain optimum road contact between each said wheel and the road according to a predetermined camber for each wheel based on a correlation of the centrifugal force acting on the vehicle displacement of the vehicle sensed at each wheel.

4,191,275

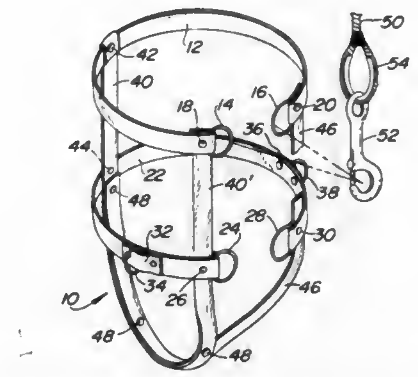
SAFETY HARNESS KIT

Martin J. Mansfield, Jr., Philadelphia, Pa., assignor to Cla-Mar International Corp., Philadelphia, Pa.

Filed Oct. 6, 1978, Ser. No. 949,334

Int. Cl.^{2} A62B *1/16*

U.S. Cl. 182—3 **9 Claims**



1. A safety harness for suspending a person from above by a rope comprising:

(a) an upper body strap having first and second ends, said strap being adapted to encircle a person's body below the arms, a discrete ring member attached to each end portion of said strap,

(b) a lower body strap beneath said upper body strap, said lower body strap having first and second ends and being adapted to encircle an adult's waist or a child's body under the arms, a discrete ring member attached to each end portion of said lower body strap,

(c) a rear strap connected to a middle portion of each of said body straps,

(d) a first front strap portion connected to each of said body straps adjacent their first ends, a second front strap portion connected to each of said body straps adjacent their second ends, and part of said front strap portions remote from said upper body strap being secured together in overlapping relation for supporting a person by being disposed between the person's legs, and the harness being open between said front strap portions.

4,191,276

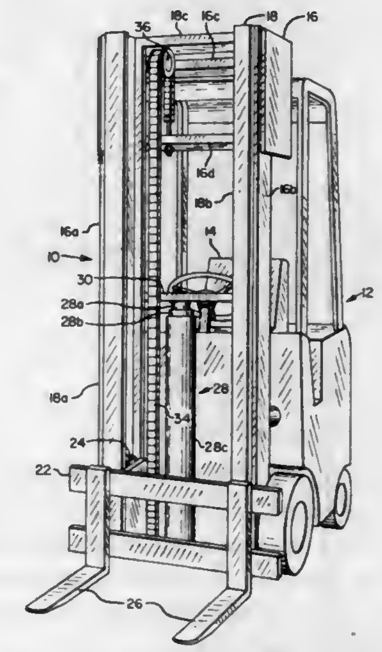
HIGH-VISIBILITY TWO-STAGE MAST ASSEMBLY FOR LIFT TRUCKS

Stanley E. Farmer, Troutdale, and Harlan D. Olson, Sandy, both of Oreg., assignors to Cascade Corporation, Portland, Oreg.

Filed Mar. 6, 1978, Ser. No. 884,005

Int. Cl.^{2} B66F *9/06*

U.S. Cl. 187—9 E **7 Claims**



1. A high-visibility load-lifting structure for an industrial lift truck or the like comprising an elongate, extensible-contractable telescopic mast having an extensible end, said mast including a first elongate mast section for mounting vertically on said truck and a second elongate mast section longitudinally and movably mounted upon said first mast section for vertical extension therefrom, each of said mast sections having a top and comprising a pair of transversely-spaced apart elongate upright members, a load carriage movably mounted upon said second mast section and extending forwardly therefrom for vertical reciprocation with respect thereto along a predetermined vertical path of travel, and a fluid-actuated, extensible-contractable fluid ram assembly comprising multiple relatively reciprocable elongate ram portions for selectively moving said load carriage and said second mast section with respect to said first mast section, said ram portions being telescopically longitudinally mounted on said first mast section in a position transversely between the upright members thereof, a first one of said ram portions having an extensible end which is more extensible in a longitudinal direction than any other of said ram portions, the extensible end of said first ram portion being located nearer to the longitudinal midpoint of said mast than to the extensible end thereof when said mast and ram assembly are fully contracted, a rigid transverse member connected to the extensible end of said first ram portion extending transversely therefrom and fixedly attached to each of the upright members of said second mast section at locations rearwardly of said predetermined vertical path of travel of said load carriage so as to avoid interference with the vertical reciprocation thereof, a pair of transversely-spaced sheaves rotatably mounted adjacent the top of said second mast section above said transverse member and extending rearwardly of said transverse member, and a pair of elongated flexible tension elements trained over said respective sheaves, each tension element being connected at one end to said first mast section and at the other end to said load carriage, said first ram portion engaging said second mast section during extension of said ram assembly from its fully-contracted position in such a manner as to begin extending said second mast section at the same speed as that of said ram assembly while the extensible end of said first ram portion remains nearer to the longitudinal midpoint of the fully-contracted mast than to the extensible end thereof.

4,191,277

APPARATUS FOR TRANSMITTING CONTROL SIGNALS TO ELEVATORS OR THE LIKE

Fritz Meyer, Küssnacht; Josef Heine, and Ladislav Vig, both of Ebikon, all of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Jul. 19, 1978, Ser. No. 926,221

Claims priority, application Switzerland, Jul. 29, 1977, 9405/77

Int. Cl.^{2} B66B *1/16*

U.S. Cl. 187—29 R **4 Claims**

1. An apparatus for transmitting control signals to a transportation system, such as an elevator having an elevator cabin travelling in an elevator cabin chute, comprising:

means for transmitting in coded form floor call and cabin call signals as well as cabin position signals;

storage means including call storages for storing the coded floor call signals and cabin call signals and a cabin position storage for storing cabin position signals;

a comparator for comparing the floor call signals and cabin call signals with the cabin position signals and for producing a respective control signal determinative of the direction of travel of the elevator cabin and the stop of such elevator cabin;

means for coding the floor call signals and cabin call signals;

said coding means comprising a respective cabin diode matrix and floor diode matrix each having outputs and inputs;

said call storages having inputs and outputs;

said transmitting means including common call lines for connecting the outputs of the diode matrixes with the inuts of the call storages;

a coding device for coding the cabin position signals;

said coding device comprising switches attached to the elevator cabin and actuation elements arranged in the elevator cabin chute;

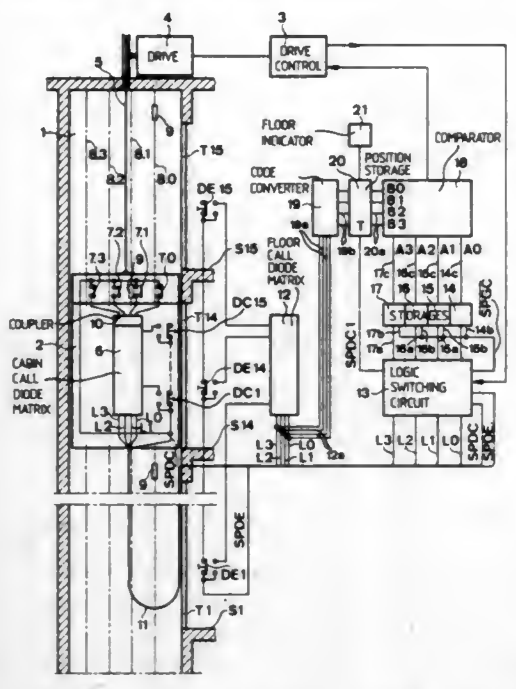
the cabin position code comprising a Gray code;

one said actuation element being provided for each floor change;

each actuation element being associated with a changing binary place of the respective code word correlated to each floor;

coupling means having diodes;

each diode of the coupling means being connected in series with a respective one of the switches;



each said switch being connected by means of the therewith series connected diode of the coupling means with the outputs of the cabin diode matrix and by means of the call lines with inputs of the cabin position storage;

logic switching circuit means which, during travel of the elevator cabin and for a time span after stoppage of the elevator cabin, switch the diodes of the cabin and floor diode matrixes into the reverse direction and the diodes of the coupling means into the forward direction and disconnect the call lines from the call storages;

said logic switching circuit means during the remainder of the time of stoppage of the elevator cabin switching the diode matrixes into the forward direction and the diodes of the coupling means into the reverse direction and connecting the call lines with the call storages.

4,191,278

SLIDABLE SUPPORT STRUCTURE FOR A DISC BRAKE CALIPER

Yasuo Karasudani, Yokohama, Japan, assignor to Tokico Ltd., Kanagawa, Japan

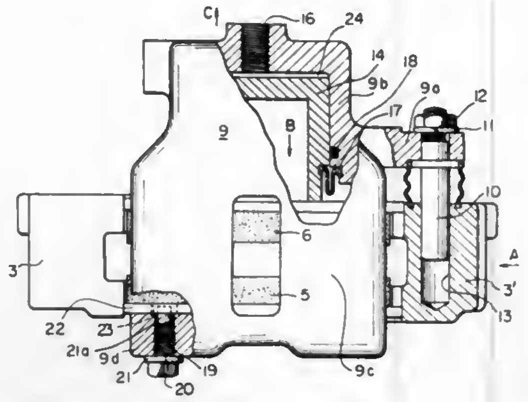
Filed Jun. 8, 1976, Ser. No. 694,037

Claims priority, application Japan, Jun. 18, 1975, 50/74172

Int. Cl.^{2} F16D *65/02*

U.S. Cl. 188—73.3 2 Claims

1. A disc brake comprising a disc having an axis and first and second opposite faces; a torque taking member fixed relative to said disc and provided with slide surfaces; first and second friction elements provided with slide surfaces and disposed adjacent to said first and second opposite faces respectively, said slide surfaces of said first and second friction elements cooperating with said slide surfaces of said torque taking member such that said first and second friction elements are slidably carried and at least said first friction element is restraind against movement radially of said axis of said disc by said torque taking member; a caliper member arranged to straddle said disc and to move said first and second friction elements against said first and second opposite faces respectively for braking, said caliper member having front and rear limbs disposed adjacent said first and second friction elements respectively, a crown portion joining said limbs, and first and second sides; a slidable assembly mounting said caliper member on said torque taking member, said assembly comprising only a single pin extending directly between said caliper and torque taking members, releasable connection means securing said single pin to one of said torque and caliper members on said first side of said caliper member, and an opening in the other of said torque and caliper members slidable receiving said pin, said pin being spaced from said friction elements, and inter-engaging projection and recess means on said first friction element and said caliper member on said second side of said caliper member and comprising a recess in a portion of said first friction element defined by an elongated slot whose longitudinal dimension is greater than its transverse dimension, said longitudinal dimension extending generally towards the axis of the pin, and a projection carried by said caliper member and engaged within said slot so as to hold said caliper member against pivotal movement about the axis of said pin, said projection having play along said slot.



4,191,279

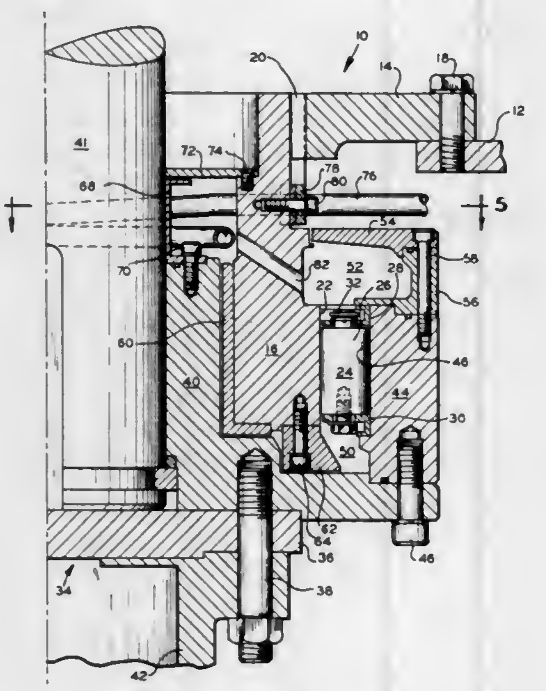
SELF LUBRICATING ONE WAY COUPLING

Robert J. Brown, Ann Arbor, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 30, 1977, Ser. No. 865,975

Int. Cl.^{2} F16D *63/00*

U.S. Cl. 188—82.84 7 Claims



1. A self lubricating coupling comprising:

a generally cylindrical uni-directional driving means;

a first member fixed against rotation and including a generally cylindrical portion defined on the exterior thereof drivingly engagable with the radially inner portion of said uni-directional driving means;

a second member adapted for connection to a rotating machine and including a generally cylindrical portion defined on an interior wall portion thereof drivingly engagable with the radially outer portion of said uni-directional driving means;

an annular fluid lubricant sump defined by an interior wall portion of said second member; and

fluid circulating means carried by said first member and disposed in said sump, said fluid circulating means including a plurality of generally radially extending spirally formed fluid passageways in facing spaced relation to an interior wall portion of said second member, whereby upon relative motion of said second member with respect to said first member fluid is circulated.

4,191,280

MECHANICAL LINK MEMBERS

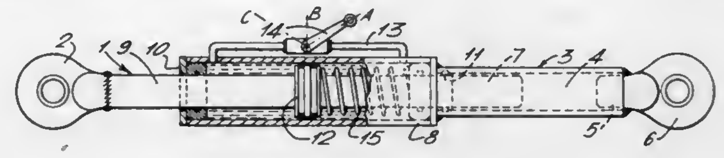
Cyril Copperwheat, Ampthill, England, assignor to Uni-Drive (Tractors) Limited, Bedfordshire, England

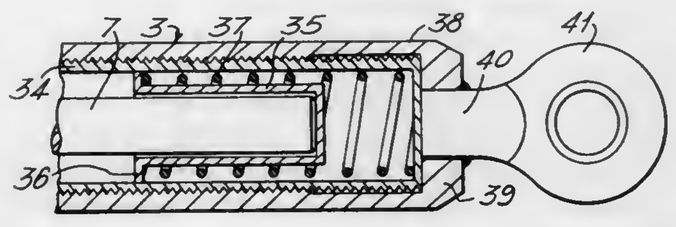
Filed Aug. 17, 1977, Ser. No. 825,356

Claims priority, application United Kingdom, Aug. 23, 1976, 35067/76; Jan. 5, 1977, 00239/77

Int. Cl.^{2} F16F *9/44*

U.S. Cl. 188—300 4 Claims





1. A variable length mechanical link member for force transmission, comprising:

two link member elements having first ends for connection to respective machine elements and second ends cooperating together to form a double acting piston and cylinder unit,

fluid flow conduit means interconnecting the cylinder spaces of said piston and cylinder unit,

fluid flow control means in said conduit for interrupting fluid flow between the cylinder spaces,

one of said link member elements being formed as a piston rod and having a piston mounted between the first connected end of said element and the free end of said piston rod, said piston dividing the cylinder into separate cylinder spaces,

the other link member element comprising a first tubular portion forming said cylinder and a second tubular portion forming a closed-end bore in which is received the free end of said piston rod,

a flanged cup-shaped element in said closed-end bore to accommodate said free piston rod end, and

spring means acting between the flange and the closed-end of the bore urging said cup-shaped element against said free piston rod end.

4,191,281

DAMPING-FORCE CONTROL MECHANISM IN A HYDRAULIC SHOCK ABSORBER

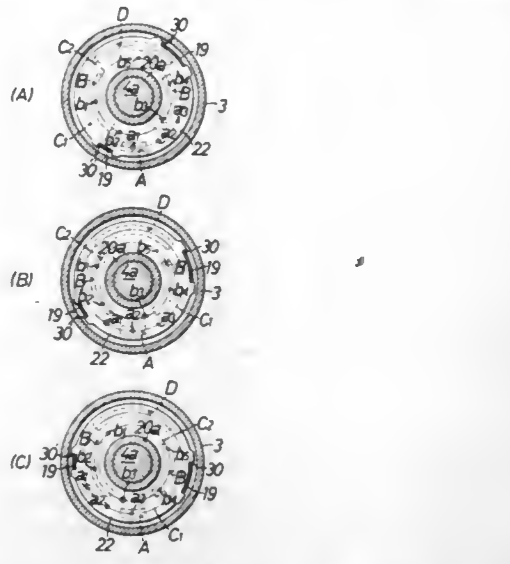
Masao Nishikawa, Tokyo, and Hitoshi Yamamoto, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 920,997

Claims priority, application Japan, Feb. 18, 1978, 53-17850

Int. Cl.^{2} F16F *9/44*

U.S. Cl. 188—319 6 Claims



1. A damping force control apparatus for use with a hydraulic shock absorber comprising a piston disposed within a cylinder casing defining a pair of hydraulic chambers, passage means formed in said piston to enable passage of fluid between said chambers, an orifice plate mounted on said piston for stepwise rotation relative thereto, a plurality of orifices formed through said orifice plate and each having a cross sectional area different from each other and smaller than said passage means for controlling flow of fluid passing therethrough by stepwise rotation of said orifice plate relative to said piston, said orifices being disposed in angularly spaced relationship in such a circular pattern that at least two of said orifices, which communicated with said passage means upon the last stepwise rotation of said orifice plate, remain in the communication state upon a further stepwise rotation of said orifice plate and at least one of said orifices, which was out of communication with said passage means upon the last stepwise rotation of said orifice plate, is placed into communication with said passage means upon said further stepwise rotation of said orifice plate with a corresponding number of said orifices, which were in communication with said passage means upon the last stepwise rotation of said orifice plate, being placed out of communication with said passage means upon said further stepwise rotation of said orifice plate.

4,191,282

DEVICE FOR TIGHTENING A SCREW JOINT

Knut C. Schoeps, Tyreso, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Mar. 15, 1978, Ser. No. 886,774

Claims priority, application Sweden, Mar. 22, 1977, 7703257

Int. Cl.^{2} F16P *5/00;* **F16D** *43/20*

U.S. Cl. 192—0.034 8 Claims

1. In a device for tightening screw joints, comprising a pressure fluid motor, an overload, friction type slip clutch including a driving half (**11**) and a driven half (**13**), an output shaft (**14**) for connection to a screw joint member, a pressure fluid shut off valve (**38**), and a release mechanism for initiating closing of the shut off valve at overload clutch slipping,

the improvement comprising:

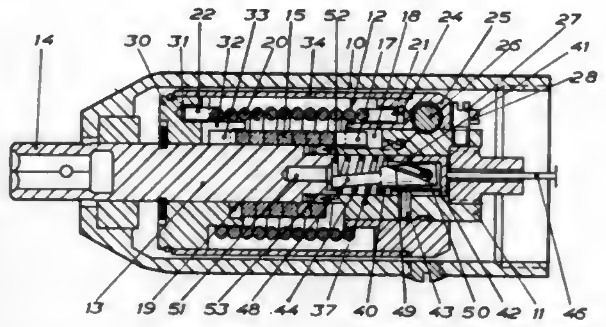
a male member (**48**) which is associated with one of said clutch halves for co-rotation therewith,

a female member comprising a bore (**51**) and which is associated with the other of said clutch halves for co-rotation therewith, and which is adapted to engagingly receive said male member (**48**),

one of said male and female members (**48,51**) being movable relative to the other between a laterally offset position and an axially aligned position, and being also axially movable relative to the other between an engaged position and a separated position,

first biasing means (**49**) for biasing said one of said male and female members (**48,51**) toward said laterally offset position,

second biasing means (**47**) for biasing said one of said male and female members axially toward said engaged position, and



guide means comprising two circular recesses (**52,53**) arranged such that the cross-section of at least said bore (**51**) is disposed within the cross-sectional confines and is tangent to at least one of said circular recesses (**52,53**), said circular recesses being located at the male member (**48**) facing end of said bore (**51**) and associated with said male and female members (**48,51**) for urging, against the action of said first biasing means (**49**), said male and female members (**48,51**) relative to each other from said laterally offset position to said axially aligned position upon relative rotation between said clutch halves (**11,13**), thereby providing for relative axial movement of said members (**48,51**) from said separated position to said engaged position by action of said second biasing means (**47**).

4,191,283

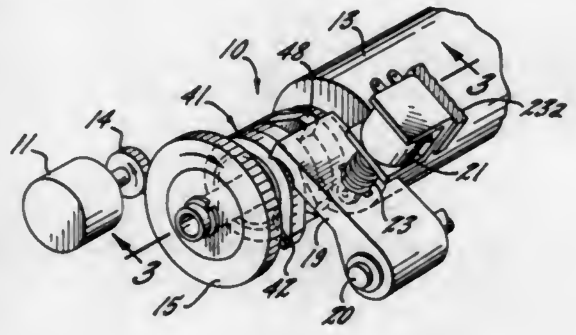
HELICAL SPRING COUPLING WITH PROGRAMMABLE CONTROL COLLAR

Harry F. Keeny, III, Turnersville, N.J., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Aug. 24, 1978, Ser. No. 936,491

Int. Cl.^{2} F16D *11/06*

U.S. Cl. 192—26 **7 Claims**



1. A selectively engageable and disengageable coupling having at least one rotatable member, a helical spring telescoped with said member, an intermittently rotatable control collar operable to expand and contract said spring relative to said member to change the state of engagement of said coupling, and an interposer selectively movable between inactive and active positions permitting and preventing rotation of said collar, said collar comprising a sleeve coaxial with said rotatable member and connected to said spring, a plurality of stops spaced axially along said sleeve and operable to engage said interposer to prevent rotation of said collar when said interposer is in said active position, and means mounting said stops for selective angular adjustment relative to one another on said sleeve and enabling the angular spacing between said stops to be selectively changed.

4,191,284

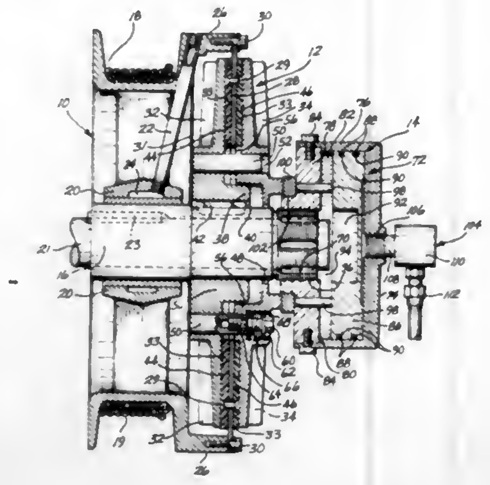
CLUTCH WITH FLUID ACTUATOR

Gerald D. King, Bradfield Canal, Ketchikan, Ak. 99901

Continuation-in-part of Ser. No. 677,379, Apr. 15, 1976, abandoned. This application Feb. 3, 1978, Ser. No. 874,784

Int. Cl.^{2} F16D *25/00*

U.S. Cl. 192—85 AA **2 Claims**



1. A fluid operated actuator for operating a rotatable device of the type wherein said device is engaged for rotation with a shaft by axially displacing an annular region of said device which concentrically surrounds said shaft and wherein the end portion of said shaft includes threads, said actuator comprising:

housing means configured for engagement with said shaft of said device to be operated, said housing means including an outer housing of cylindrical configuration having a substantially closed end and an open end of substantially circular geometry, the central opening of said outer housing defining a cylindrical bore, said housing means further including an endplate of substantially circular geometry, said endplate being dimensioned and arranged for mounting within said open end of said outer housing, said endplate including an internally threaded opening dimensioned and arranged for engagement with said threaded end region of said shaft of said rotatable device, said endplate including a plurality of circumferentially spaced apart openings symmetrically arranged about said internally threaded opening, said endplate further including an annular shoulder surrounding said internally threaded opening and projecting outwardly toward said rotatable device;

a piston slidably received within said cylindrical bore of said housing means, said piston including a recess of circular geometry for receiving any portion of said threaded end region of said shaft that extends into said bore when said piston is forced along said cylindrical bore to operate said rotatable device;

a plurality of thrust pins, each of said thrust pins slidably received within an individual opening of said plurality of circumferentially spaced apart openings of said endplate of said housing means;

a thrust ring, said thrust ring being substantially flat and being of annular geometry, said thrust ring being mounted to said plurality of thrust pins in concentric spaced apart relationship with said shaft of said rotatable device, the inner diameter of said thrust ring being commensurate in diameter with the outer diameter of said annular shoulder of said endplate to maintain said thrust ring in alignment with said shaft during axial displacement of said thrust ring;

a rotary fluid coupling mounted in the central portion of said closed end of said outer housing, said rotary fluid coupling for supplying fluid pressure to said cylindrical bore to force said piston along said cylindrical bore, said piston urging said thrust pins outwardly through said circumferentially spaced apart openings of said housing means to axially displace said thrust ring along said shaft, said axial displacement of said thrust ring operating said rotatable device.

4,191,285

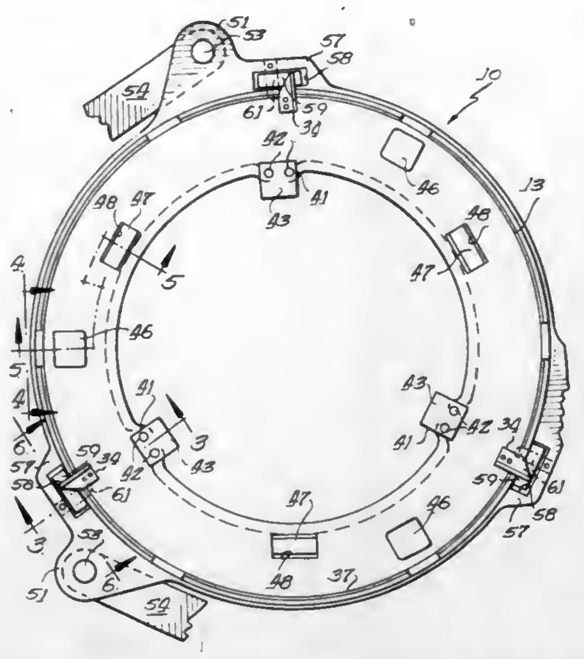
WEAR COMPENSATOR FOR BELLEVILLE SPRING CLUTCH

W. Vincent Thelander, Sr., Cave Creek, Ariz., and Terry K. Lindquist, Troy, Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 6, 1977, Ser. No. 830,926

Int. Cl.^{2} F16D *11/00, 13/75*

U.S. Cl. 192—111 A **23 Claims**



1. An automatic wear compensator for a diaphragm spring-actuated friction clutch assembly including a flywheel, a friction clutch disc, a pressure plate assembly and a clutch cover secured to said flywheel, said pressure plate assembly comprising a pressure plate operatively connected to said clutch cover, a pressure ring operatively connected to said pressure plate to rotate therewith, camming means interposed between said pressure plate and pressure ring to alter the distance therebetween, fulcrum means for the diaphragm spring on said pressure ring, and means for engaging said flywheel to sense the wear of said friction clutch disc and actuate said camming means.

4,191,286

APPARATUS FOR TRANSPORTING CYLINDRICAL STEEL ARTICLES

Katsutoshi Sato; Susumu Ito, both of Hitachi; Tadashi Kanaya, Katsuta; Hiroaki Onishi, Ibaraki; Tsuneo Ichiishi, and Akira Osaka, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

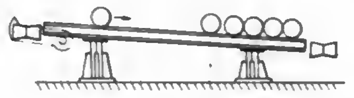
Filed Sep. 26, 1978, Ser. No. 946,019

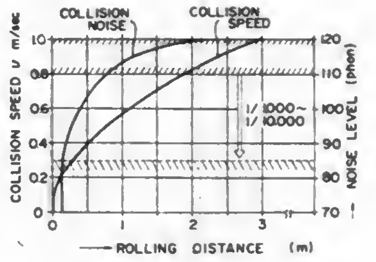
Claims priority, application Japan, Sep. 28, 1977, 52-115564

Int. Cl.^{2} B65G *11/20*

U.S. Cl. 193—40 **8 Claims**

1. An apparatus for transporting cylindrical steel articles comprising at least one skid rail unit which comprises: an inner pole section including at least one skid rail extending longitudinally, a pair of outer pole sections each including at least one skid rail which extends longitudinally and is spaced from and substantially parallel to the skid rail of said inner pole section, the top sufaces of the skid rail of said inner pole and the skid rails of said outer pole sections defining an inclined supporting plane on which the articles to be transported roll down; at least one inner pole iron core magnetically coupled with said inner pole section; an electromagnetic coil wound around each of the inner pole iron cores; at least one outer pole iron core magnetically coupled with each of said outer pole sections; and a yoke section magnetically coupling all the inner pole iron





cores of said inner pole section and all the outer pole iron cores of said outer pole sections.

4,191,287

AUTOMATIC TRANSPORT MECHANISM AND A CARRIER MEMBER FOR USE THEREWITH

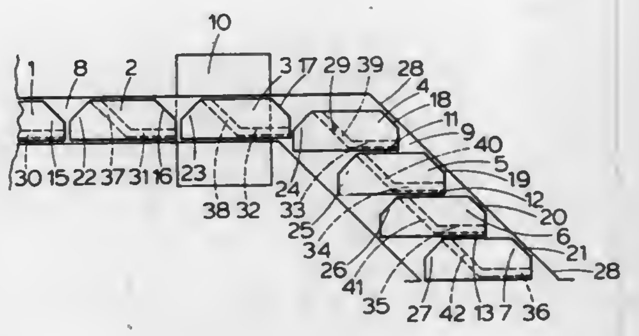
Neil R. Brook, Cambridge, and Peter J. Maling, Little Eversden, both of England, assignors to PYE (Electronic Products) Limited, Cambridge, England

Filed Oct. 13, 1978, Ser. No. 951,229

Claims priority, application United Kingdom, Oct. 18, 1977, 43302/77

Int. Cl.^{2} B65G *35/06*

U.S. Cl. 198—472 **11 Claims**



1. An automatic transport mechanism for transporting a series of carrier members through a processing zone comprising a first passageway along the floor of which substantially rectangular carrier members pass in end to end contact via the processing zone, to a second, outlet, passageway continuous with the first passageway, said second, outlet, passageway being orientated in the same plane at an angle of less than 90° to the first passageway in the direction of passage of the carrier members and having an inner and an outer wall spaced apart with a width which is wider than the first passageway by an amount which is sufficient to allow each carrier member to proceed in side to side contact with adjacent members, means for redirecting each carrier member in turn on passing from the first passageway to the second, outlet, passageway comprising at least one oblique wall surface which forms a tapered section substantially at the leading end of each carrier member for slidably engaging, when in operation, an oblique wall surface formed by at least an initial part of the outer wall of the second, outlet, passageway and characterised in that the floor of the first passageway has at least one pivot which can freely project into an open-ended inlet groove along the base of the carrier member and can be allowed to pass along the groove parallel with the longitudinal axis of the carrier member, after which passage, the or each pivot enters, into slidable engagement with a corresponding number of open-ended outlet grooves continuous with the inlet groove but each orientated at the

same angle to the inlet groove as the second, outlet, passageway is orientated to the first passageway, the or each pivot being spaced so that it contacts the second, outlet passageway at the same time as the oblique wall surface of the carrier member contacts the initial part of the oblique wall of the second outlet, passageway.

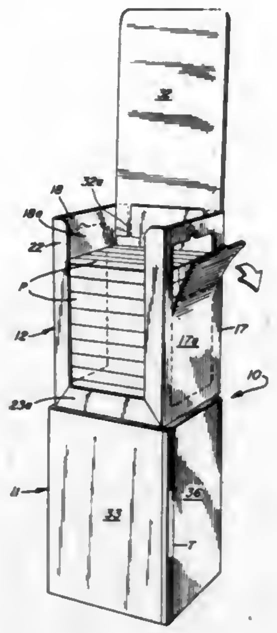
4,191,288
SHIPPER DISPLAY UNIT

Michael W. Hostad, Romeoville, Ill., assignor to Packaging Corporation of America, Evanston, Ill.

Filed Aug. 11, 1976, Ser. No. 713,514

Int. Cl.^{2} B65D *5/52*

U.S. Cl. 206—45.22 **7 Claims**



5. A blank for use in forming the inner member of a shipper display unit, said blank comprising a base panel which is adapted to subtend and engage a plurality of products disposed in a predetermined arrangement, a pair of wall panels disposed on opposite sides of said base panel and foldably connected thereto, a first pair of flange members disposed on one side of said wall panels and foldably connected to first corresponding edges of said wall panels, a second pair of flange members disposed on the opposite side of said wall panels and foldably connected to second corresponding edges of said wall panels, the folding axes of said flange members being angularly disposed relative to the axes of folding of said wall panels relative to said base panel, the combined widths of each pair of flange members measured perpendicular to the folding axes thereof with the wall panels being substantially less than the distance between the folding axes connecting said wall panels to said base panel, and locking flaps disposed on opposite sides of said base panel and foldably connected thereto, each flap being disposed intermediate the wall panels for interlockingly engaging protruding peripheral portions of a pair of said flange members when said blank is set up to form the inner member, at least one pair of flange members being provided with means for supporting an insert piece, when said blank is set up to form said inner member.

4,191,289
HOURGLASS CARTON

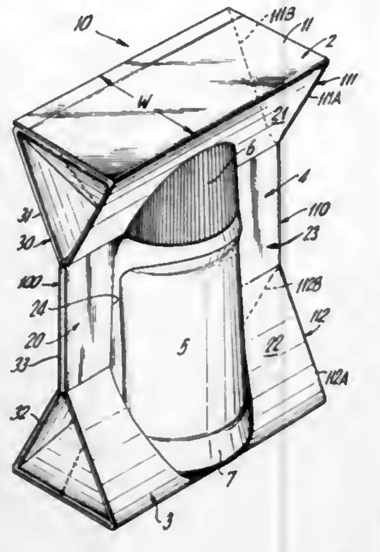
John J. Austin, Hinsdale, Ill., assignor to Champion International Corporation, Stamford, Conn.

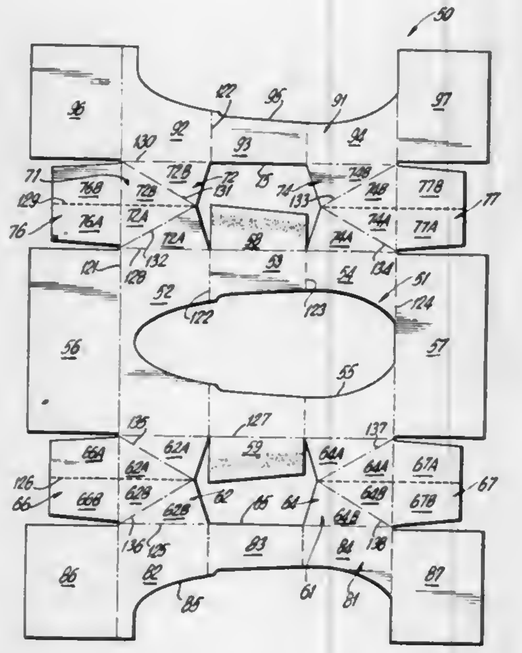
Filed Jan. 2, 1979, Ser. No. 256

Int. Cl.^{2} B65D *5/42, 75/00*

U.S. Cl. 206—45.14 **5 Claims**

1. A paperboard blank for forming a display carton of generally hourglass configuration, comprising: a first side panel generally rectangular in configuration said first side panel including a plurality of hingedly connected sections extending the length of said first side panel, said first side panel further including a central aperture, said central aperture conforming substantially to the configuration of the article to be contained within the carton; a pair of closure flaps each being hingedly connected to one end of said first side panel: a first end panel generally rectangular in configuration hingedly connected to one side of said first side panel, said first end panel having a pair of spaced apart pleat sections; a pair of closure flaps hingedly connected to each end of said first end panel; a second end panel hingedly connected to the other side of said first side panel, said second end panel having a pair of spaced apart pleat sections, there being a fold aperture disposed between said pleat sections; a pair of closure flaps, each of which being connected to an end of said second side panel; a pair of glue straps, each of which being hingedly connected to one side of said first side panel, each of said glue straps being disposed in one of the fold apertures of said first and second end panels; a first partial second side panel hingedly connected to said first end panel, said first partial second side panel including three hingedly connected sections extending along the length of said first partial second side panel, said first partial second side panel including a generally U-shaped cut which approximates one half of the configuration of the article to be contained in the carton; a pair of closure flaps each of which being hingedly connected to one end of said first partial second side panel; a second partial second side panel hingedly connected to said second end panel, said second partial second side panel including a plurality of panel sections hingedly connected along the length of said second partial second side panel, said second partial second side panel including a generally U-shaped aperture approximating one half the configuration of the article to be contained within the carton; and a pair of closure flaps, each of which are being hingedly connected to one end of second partial second side panel.





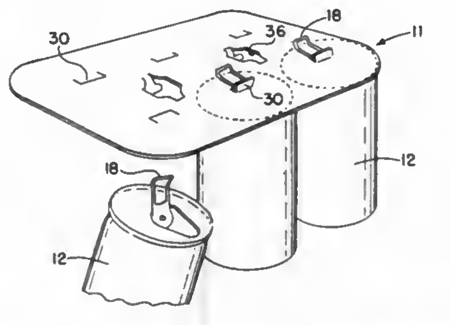
4,191,290
TWO-WAY CONTAINER PACKAGE

Bruce C. Suffern, Streamwood, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 18, 1979, Ser. No. 31,232

Int. Cl.^{2} B65D *75/00*

U.S. Cl. 206—150 **6 Claims**



6. In a package for containers having hinged retained tear tab openers, a package making device including a flat sheet member adapted to overlie the lids of a plurality of such containers and having an outer margin substantially corresponding in configuration and dimension to the outer perimetrical margin of an array created by a predetermined plurality of closely adjacent containers, a plurality of slot means equal in number to the number of such containers formed in the flat sheet member, each of said slot means being configured to receive and retain a respective hinged retained tear tab opener on such empty containers, thereby creating a package of a closely spaced array of containers when in the empty condition.

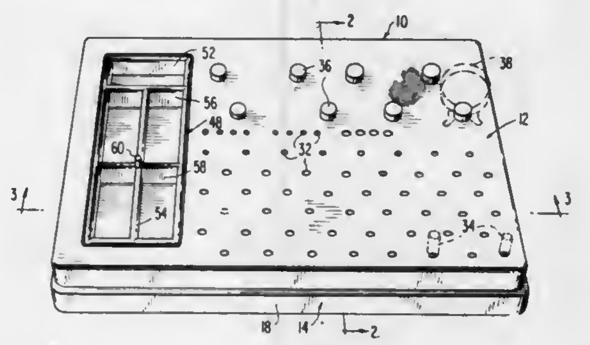
4,191,291
DENTAL ORGANIZER AND CONTAINER

Ronald W. Brown, 8060 Montgomery Rd., Cincinnati, Ohio 45236

Filed Jan. 25, 1979, Ser. No. 6,931

Int. Cl.^{2} B65D *1/36, 85/00*

U.S. Cl. 206—369 **1 Claim**



1. An improved multi-part plastic dental tool and equipment holder for joint and separate treatment of metallic dental burs, files, etc., having rod-like ends, and rubber dam clamps, and cotton pellets, paper points, and the like, the holder comprising:

a hollow tool-holding block having a top, side walls and end walls, the top having an upper surface;

the top having a plurality of small diameter holes formed therein at spaced positions and receiving the rod-like ends of the burs, files, etc., the holes being arranged in rows;

a series of integrally molded vertically projecting, cylindrical posts extending upwardly from the top of the block, and spaced from said holes, the posts supporting the vertically oriented rubber dam clamps in frictional grip therewith;

the block having a recess formed therein adjacent one end wall thereof and spaced from the holes and the posts, the recess being defined by end walls and side walls and having a bottom wall;

a removeable, open top partitioned tray of said thermoplastic material having a series of walls with upper edges corresponding in depth to the walls of the recess and having a bottom which seats on the bottom wall of the recess;

the tray having its wall upper edges coplaner with the upper surface of the top of the block;

the tray including a longitudinally extending vertical partition and at least one intersecting transverse partition, and an integral lift pin projecting upwardly at the intersection of said partition such that the pin is readily grasped for removal of the tray from the recess;

the tray being vertically removeable with its contents whereby, upon removal of the tray, the block with the metallic dental burs, files, etc., and the rubber dam clamps is submerged in a cleaning solution for cleaning thereof; and

said tray being reinserted whereby said holder and said tray are placed in a dry-heat oven or the like for high temperature sterilization of the contents.

4,191,292
CONTAINER FOR INTERCHANGEABLE TAPE CASSETTE

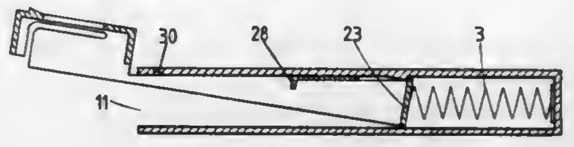
Eduard H. Schweizer, Heubachstrasse 41, 8810 Horgen, Switzerland

Continuation-in-part of Ser. No. 839,890, Oct. 6, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 918,264

Claims priority, application Switzerland, Mar. 21, 1977, 3476/77

Int. Cl.^{2} B65D *85/672*

U.S. Cl. 206—387 **21 Claims**



1. A container for a tape cassette comprising:

a rectangular casing having flat top wall, bottom, two parallel narrow side walls, rear wall and a front opening;

a cassette-moving push-in slide in the form of a four-sided open-bottom frame, fitting and movable inwardly and outwardly within said casing through said opening between closed and open positions, the two side parts of said frame extending along said narrow side walls of said casing and which frame at least partially surrounds the periphery of a tape cassette lying on said casing bottom;

spring means engaged between said casing and said frame which, after a holding device is unlocked, will propel said frame together with a tape cassette, which will slide therewith along said casing bottom, a certain distance through said front opening into said open position;

guide means for controlling the movement of said frame which are designed in such a way that, in said open position, at least that part of said frame which protrudes from said casing assumes an oblique position relative to said bottom of said casing so that a tape cassette which lies on said bottom of said casing and protrudes therefrom, is at least partially exposed.

4,191,293
BLISTER PACKAGE

Morris M. Newman, 79 Clifton Ave., Marblehead, Mass. 01945

Filed Aug. 9, 1978, Ser. No. 932,201

Int. Cl.^{2} B65D *75/36*

U.S. Cl. 206—467 **15 Claims**

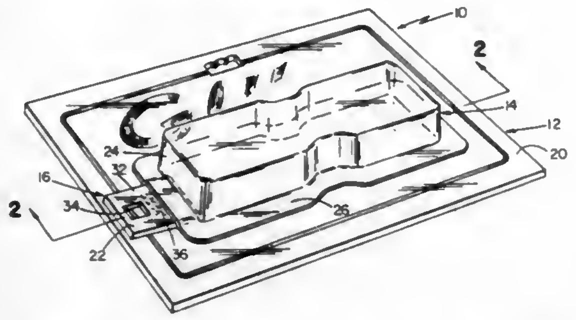
1. A container comprising:

a backing,

a molded blister having a receptacle and an integral circumferential flange surrounding said receptacle,

said receptacle facing a surface of said backing and said blister being demountably attached to said surface by said flange, said receptacle projecting outwardly from

said surface of said backing to form a pocket between said blister and said backing adapted to receive a product, and
- a separate spacer providing a grip,
- said spacer being of lesser extent than the receptacle and having a first end portion and a second end portion,
  - said first end portion extending under a small portion of a wall of said receptacle and being attached to the adjacent part of said flange,
  - said second end portion extending away from said wall,
- said spacer being added without the necessity for changing said backing or said molded blister which are normally joined without said spacer.



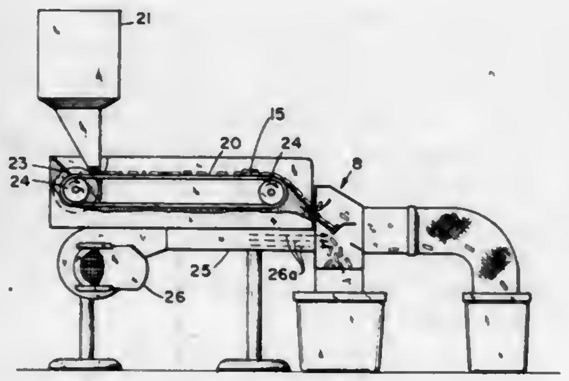
14. A container comprising a backing, a molded blister having a receptacle and an integral circumferential flange surrounding said receptacle,
- said receptacle facing a surface of said backing and said blister being demountably attached to said surface by said flange, said receptacle projecting outwardly from said surface of said backing to form a pocket between said blister and said backing adapted to receive a product, and
- a tab providing a grip,
  - said tab having an anchoring portion extending beyond the inner side of said flange inside of said pocket, said anchoring portion having a shoulder abutting the inside of said flange.

4,191,294

EMPTY CAPSULE EJECTOR

James W. McGrath, Jr., Valley Cottage, and Paul E. Seifried, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1977, Ser. No. 860,808
Int. Cl.^{2} B07B *4/02*
U.S. Cl. 209—135 12 Claims



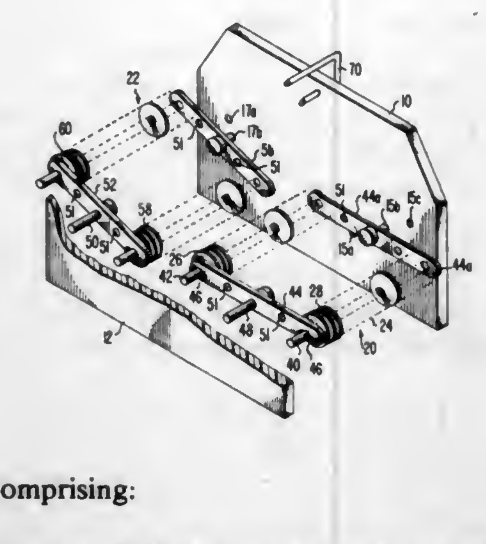
1. An apparatus for separating slack-filled capsules from properly filled capsules having the same surface area comprising:
- an endless conveyor belt;
- means for continuously moving said belt on which is contained at least a single column of said capsules;
- an inclined plane at the terminal end of said belt;
- a sorting box adjacent the terminal end of said plane consisting of a series of three fins, the first fin higher than the second fin and the second fin higher than the third fin wherein the angle and separation between the first and second fin is such that the speed of motion of said capsules is reduced without jamming and the angle and separation between the second and third fin is such that only the narrowest part of said capsules fit through;
- a tunnel whose terminal end is adjacent to said box;
- means for creating laminar air flow through said tunnel;
- a first tube aligned in about a horizontal position with said tunnel for receiving said slack-filled capsules;
- a second tube aligned in about a vertical position with said box such that said properly filled capsules enter by gravity;
- said laminar flow being created through said tunnel such that said capsules passing through said second and third fins are oriented to present their largest cross-sectional area to said flow and said slack-filled capsules enter said first tube.

4,191,295

PROCESSING RACK

Frederick J. Tams, III, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 14, 1978, Ser. No. 933,871
Int. Cl.^{2} A47F *7/00*
U.S. Cl. 211—41 10 Claims



1. A rack comprising:
- a frame;
- first and second pairs of members for receiving and supporting an article which may have any one of many different shapes and sizes, each said member having a long axis;
- first support means mounting the two members of said first pair with their long axes in fixed, parallel spaced relationship;
- second support means mounting the two members of said second pair with their long axes in fixed, parallel spaced relationship; and
- means rotatably mounting said first and said second support means to said frame so that said first pair of members is rotatable in either direction about a first axis which is parallel to and spaced from the axes of said first pair of members, and said second pair of members is rotatable in either direction about a second axis which is parallel to and spaced from said first axis and the axes of said members of said second pair, whereby when an article is placed into said rack in a position such that it bears against at least one member of each pair, it tends to cause the members of each pair to rotate about the first and second axes until they assume orientations abutting the article in which the article is stably supported.

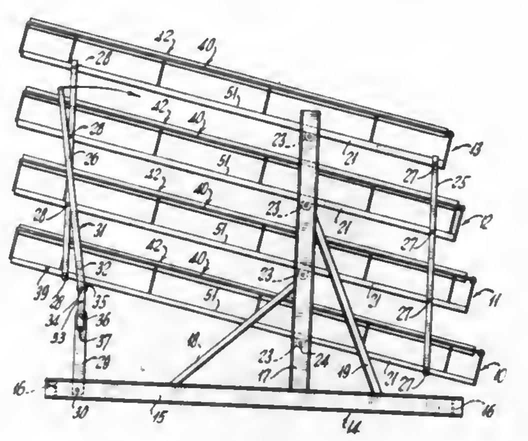
4,191,296

ARTICLE DISPENSING RACK

J. Robert Morgan, Palmer Hill Rd., Old Greenwich, Conn. 06870

Filed Nov. 3, 1976, Ser. No. 738,284
Int. Cl.^{2} A47F *3/024*
U.S. Cl. 211—49 D 7 Claims

1. A rack for dispensing articles comprising a base, a plurality of inclined shelves each pivotally supported by said base at points between the ends thereof, each shelf having at least one partition to define at least two channels, said partition including fixed support means defining a line extending between the ends of said shelf and partitioning means carried on each side of said support means, said support means being independently adjustable to fix the width of each of said channels, means at the lower or article withdrawal end of each of said shelves for retaining articles thereon which are fed toward said end by gravity and means for changing the inclination of said shelves.

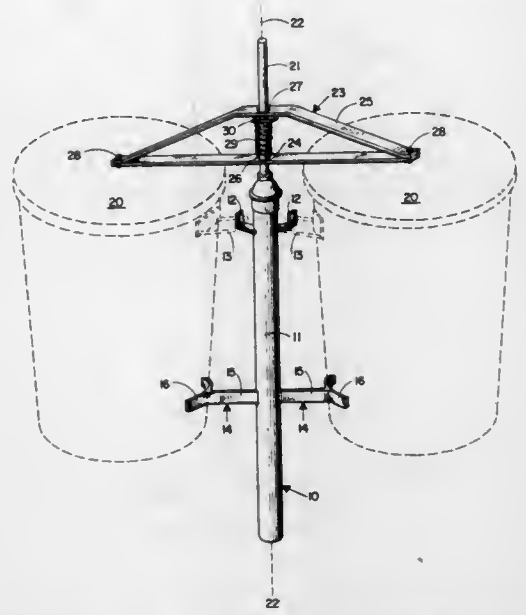


4,191,297

SUPPORT AND COVER RESTRAINING DEVICE FOR REFUSE CONTAINERS

Olin A. Hardman, 5947 S. 600 W., Murray, Utah 84107

Filed Sep. 25, 1978, Ser. No. 945,235
Int. Cl.^{2} A47G *29/00*
U.S. Cl. 211—83 9 Claims



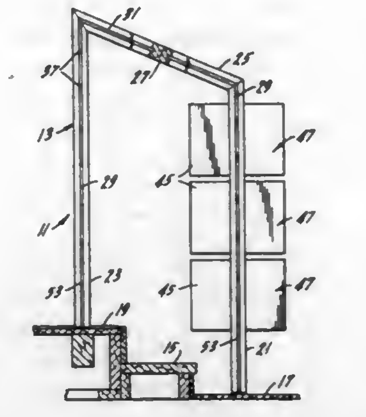
1. A support and cover restraining device for holding refuse containers, comprising:
- a. a post adapted for upright orientation and having mounting means fixed near a top section thereof for attachment of a plurality of refuse containers;
- b. stabilizing means projecting from said post for retaining said refuse containers in substantial upright orientation;
- c. a guide rod projecting from the top section of said post along a longitudinal axis thereof;
- d. a first support arm having a central opening and means at opposing ends of said arm for attachment of covers for said refuse containers;
- e. a second support arm having a central opening therein and having bowed structure in relation to said first arm, said second arm being attached at ends thereof to said first arm in orientation such that said central openings are aligned, said arms being positioned on said rod through the aligned openings and having a separation distance there-between to maintain said arms in a pivotal, radial orientation with respect to said post axis; and
- f. spring tension means coupled to and biasing said arms to a low position along said post axis corresponding to a closed position for said covers with respect to said containers, said tension means being responsive to a lifting force applied to said arms along said axis to permit upward movement of said arms to a higher position to allow rotation of said arms with attached container covers, thereby exposing openings of said containers.

4,191,298

RAILING DISPLAY RACK

Charles E. Broudy, Narberth, Pa., assignor to Hart Schaffner & Marx, Chicago, Ill.

Filed Aug. 10, 1977, Ser. No. 823,390
Int. Cl.^{2} A47F *3/14*
U.S. Cl. 211—126 4 Claims



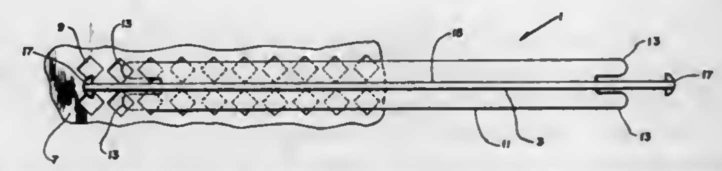
1. An elongated display rack for wearing apparel having a front display face and a rear display face, said rack including;
- a pair of end support members, each end support member including a pair of spaced uprights, one located at the front face and the other located at the rear face of the rack, and a transversely extending rail connecting the tops of the uprights,
- the top of one upright of each pair of end support members extending above the top of the other upright,
- a longitudinal beam extending between said end support members and connected to the transversely extending rails of the end support members intermediate the ends thereof,
- said uprights being of equal length with the bottoms of the uprights located at one face of the rack being positioned at a higher level than the bottoms of the uprights located at the other face of the rack, and
- wearing apparel support means attached to the uprights and extending generally parallel to the front and rear faces of the display rack.

4,191,299

PARTITION WITH RESILIENT TONGUES FOR ENGAGING PERFORATED SHELVING

David M. Moore, Pittsburgh, Pa., assignor to Armstrong Store Fixture Corporation, Pittsburgh, Pa.

Filed Mar. 13, 1978, Ser. No. 885,667
Int. Cl.^{2} A47F *5/00*
U.S. Cl. 211—184 1 Claim



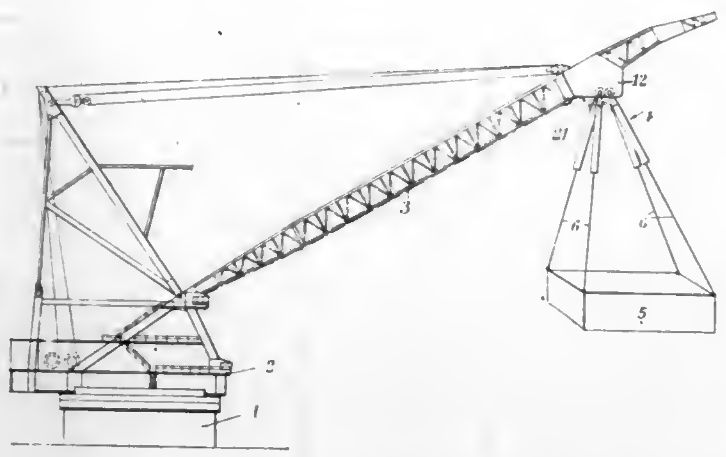
1. A shelf partition for use with perforated shelving comprising an elongated planar body member, a flange extending along one elongated edge of said elongated planar body member in both directions normal to the plane thereof, and a pair of fasteners at opposite ends of said flange for securing said parti-

tion to the perforated shelving, each of said fasteners comprising a pair of resilient tongues extending from and integral with one end of said flange in a direction parallel to said elongated edge with one on each side of said elongated planar body member, said resilient tongues being insertable in separate perforations in said shelving where they bear against the underside of said shelving and firmly support said partition in an upright position on said shelving on said elongated edge.

4,191,300
HOISTING DEVICE FOR HIGH-POWER CRANE

René Beghi, 13 Rue General Pershing, 78000 Versailles; Gabriel Desmars, 3 Rue de Cousson, 44000 Nantes; Yvan Monié, Chemin Rural 167, Pince Vins,92500 Rueil, and Raymond Pessayre, 105 Avenue de La Bourdonnais, 75007 Paris, all of France

Continuation of Ser. No. 658,076, Feb. 13, 1976, abandoned.
This application Feb. 13, 1978, Ser. No. 877,386
Claims priority, application France, Feb. 18, 1975, 75/04982
Int. Cl.^{2} B66C *1/14*
U.S. Cl. 212—41 **6 Claims**



1. A crane for hoisting and positioning a load in space, comprising a carrier base structure, a frame secured on said base structure, a control cab on said frame, a jib pivoted on said frame, a fish-plate assembly rigidly mounted at the outer end of said jib, at least three pull ropes for supporting the load, each rope having associated therewith a pair of parallel uprights suspended from said fish-plate assembly and two sets of rope traction members supported by each pair of uprights, each set of rope traction members comprising a pair of hydraulic traction cylinder and piston actuators and a jaw-type traction wedging block rigid with said pair of actuators with said rope passing therethrough, another cylinder and piston actuator for controlling the jaws of the traction block and being supported thereby, and means for controlling each one of said pair of hydraulic traction cylinder and piston actuators and each traction block control cylinder and piston actuator for pulling the rope step by step in each set of traction members.

4,191,301
ROTATION LIMITER

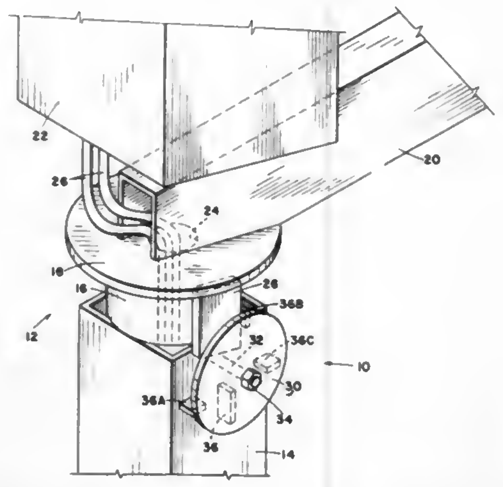
Charles E. Hickman, Tulsa, and William C. Denwalt, Jr., Broken Arrow, both of Okla., assignors to Auto Crane Company, Tulsa, Okla.

Filed Jun. 19, 1978, Ser. No. 916,571
Int. Cl.^{2} B66C *23/84*
U.S. Cl. 212—69 **3 Claims**

3. In a crane having a boom base with a boom extending therefrom, and a stationary pedestal, the boom base being rotatably secured on the pedestal, a device to limit the rotation of the boom base while permitting rotation clockwise and conterclockwise through a preselected number of turns, comprising:

(a) an actuating lug rigidly secured to the boom base;

(b) a disc rotatably secured to the pedestal and adjacent the boom base, the disc having a plurality of bosses secured to the disc adjacent the periphery thereof, the bosses being spaced apart from each other in angular relationship, the bosses being engaged by the actuating lug to cause angular displacement of the disc upon each rotation of the boom base; and

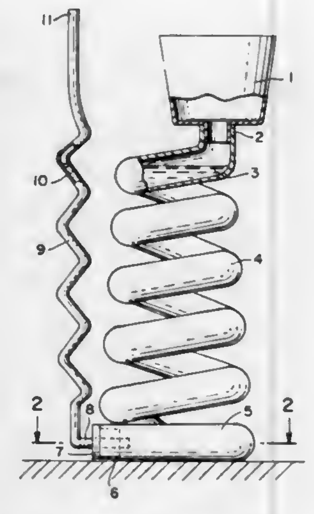


(c) a stop lug secured to the pedestal in the path of the disc bosses to engage therewith and arrest angular displacement of the disc and thereby the rotation of the boom.

4,191,302
CHILD'S DRINKING CONTAINER

Christopher S. Fiducia, 181 Avenue A, Holbrook, N.Y. 11741

Continuation-in-part of Ser. No. 850,417, Nov. 10, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,164
Int. Cl.^{2} A47G *19/22*
U.S. Cl. 220—1 R **2 Claims**



1. A container for storage and drinking, which comprises:

a. a helix-shaped transparent container which directs liquid in a downward swirling movement during filling, said container comprising of a hollow tube structure, said hollow tube structure containing the liquid to be consumed;

b. a base at the bottom most end of the container said base formed from the bottom most coil of the container said bottom coil formed flat for approximately seventy-five percent of its circumference;

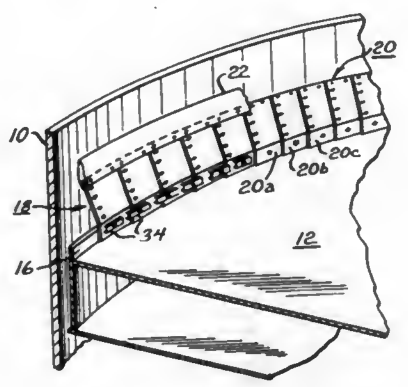
c. a spiral shaped transparent straw, the top of said straw extending beyond the top of the container so as to keep the fluid in the container from coming out of the top of the straw due to gravity, the straw formed to permit liquid from the container to be received by the straw in an upward swirling movement during the filling of the container and during drinking giving a fascinating visual effect; and

d. a stopper to connect the straw to the container and to communicate the liquid from the container to the straw.

4,191,303
LIQUID STORAGE TANK SEALING SYSTEM

Mark D. Kinghorn, Sr., P.O. Box 1333, Rte. 30, Schererville, Ind. 46375, and Mark D. Kinghorn, Jr., 11903 W. 90th, St. John, Ind. 46373

Filed Mar. 9, 1979, Ser. No. 19,080
Int. Cl.^{2} B65D *87/207, 87/20*
U.S. Cl. 220—222 **20 Claims**



1. A sealing system for sealing the space between a liquid storage tank shell and the tank roof freely floating on the liquid stored within the tank shell, the sealing system comprising

a plurality of overlapped vapor-impermeable shield sections extending radially outwardly from the perimeter of a floating roof of a liquid storage tank for engaging a radially inwardly directed inner wall of the liquid storage tank to form a substantially liquid and vapor tight seal therewith,

said plurality of overlapped vapor-impermeable shield sections having an inner end carried by the roof of the liquid storage tank and forming a substantially liquid and vapor tight seal therewith,

a flexible sealing member carried on an outer end of said plurality of overlapped vapor-impermeable shield sections for engaging the radially inwardly directed inner wall of the liquid storage tank and forming a substantially liquid and vapor tight seal therewith,

each of said plurality of overlapped vapor-impermeable shield sections being formed with a plurality of slots adjacent to each of the overlapping edges,

gasket means carried between the overlapping portions of said plurality of overlapped vapor-impermeable shield sections, and

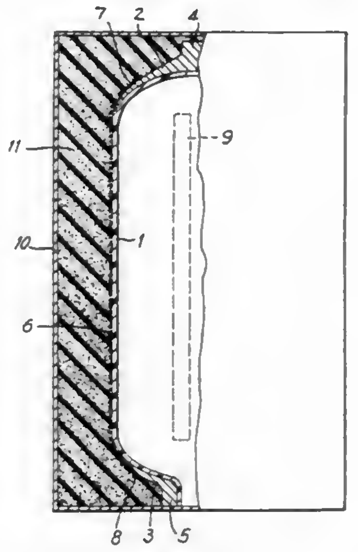
fastener means passing through said plurality of slots formed in each of said plurality of overlapped vapor-impermeable shield sections, and said gasket means carried therebetween, for structurally interlocking said plurality of overlapped vapor-impermeable shield sections while allowing transverse movement therebetween in response to variation in the rim space during relative movement between the floating roof and the inner wall of the liquid storage tank and forming a substantially liquid and vapor tight seal between said overlapping edges.

4,191,304
PRESSURE TANK FOR HOT-WATER HEATERS

Heinz Schiedat, Hoxter, Fed. Rep. of Germany, assignor to Stiebel Eltron GmbH & Co. KG, Holzmindenl, Fed. Rep. of Germany

Continuation of Ser. No. 766,495, Feb. 7, 1977, Pat. No. 4,099,641. This application Feb. 22, 1978, Ser. No. 880,695
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605103; Dec. 2, 1976, 2654585
Int. Cl.^{2} B65D *25/18*
U.S. Cl. 220—414 **1 Claim**

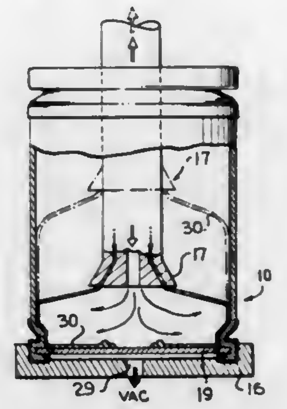
1. A pressure tank, particularly for hot water heaters, comprising: a synthetic liner; a continuous glass fiber wrapping free of synthetic resin for reinforcing said liner and in direct contact with said liner; an outer container shell spaced from said wrapping: and a synthetic foamed, heat-insulating layer between said wrapping and said shell and around said wrapping holding said wrapping to said liner, said wrapping being held against said liner and itself solely by said heat insulating means.



4,191,305
CONTAINER HAVING BLOWN PLASTIC LINER AND METHOD AND APPARATUS FOR FORMING SAME

Glenn L. Davis, Chicago, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Division of Ser. No. 794,993, May 9, 1977, Pat. No. 4,127,430.
This application Jun. 22, 1978, Ser. No. 918,301
Int. Cl.^{2} B65D *25/14*
U.S. Cl. 220—462 **1 Claim**



1. A lined container, said lined container comprising a container including an end wall and a body, and a tubular lining, said lining being bonded to said end wall about a preselected exposed area of said end wall and extending across said end wall in stretched relation to said body, and said liner is in an expanded state above said end wall and confirming to said body, said lining having a terminal annular end portion forming that part of said lining bonded to said container end wall about said preselected exposed area of said end wall.

4,191,306
STAMP DISPENSER

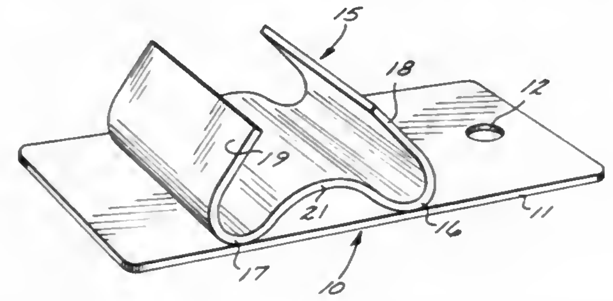
Walter P. Rabner, 13861 Fresh Meadow, Apartment 1-H, Seal Beach, Calif. 90740

Filed Jan. 19, 1979, Ser. No. 4,749
Int. Cl.^{2} B65H *1/00*
U.S. Cl. 221—33 **3 Claims**

1. A dispensing device for storing postage stamps folded in an accordian arrangement, comprising:

a first rectangular strip provided with an opening proximate one end thereof; and

a second rectangular strip attached to said first strip and bent to form two end segments inclined towards each other to form a gap therebetween and convolved to include a central arc directed towards said gap, said arc and end segments defining a transverse cavity conformed to receive said stamps.



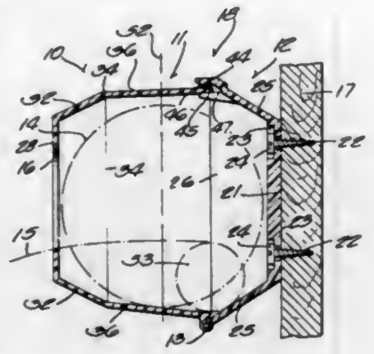
4,191,307
DISPENSER FOR PLASTIC BAGS

Robert A. LeCaire, Jr., Appleton, and Barry B. Glashagel, Larsen, both of Wis., assignors to Presto Products Incorporated, Appleton, Wis.

Filed Mar. 24, 1980, Ser. No. 889,709

Int. Cl.^{2} B65D *85/672*

U.S. Cl. 221—45 **8 Claims**



1. A sheet material dispenser adapted to be mounted on an upright wall and having a mounting base section and a cover section, a hinge interconnecting said sections so that the cover section may be swung away from the base section to load sheet material thereinto, latch means for latching the two sections together when the cover section is swung closed, said cover section being supported by the base section in cantilevered relation to said upright wall to impose the weight of the loaded dispenser and pressures developed by dispensing sheet material from the dispenser on the base section, said sections comprising plastic material which is yieldable under stress, said base section having a flat base panel adapted to be fastened to the upright wall and side and end panels extending at obtuse angles from the base panel and intersecting one another to form angled corners and to constitute the base section as a truncated pyramid enclosing a hollow space and having inherently strong beam configurations to withstand the pressures exerted thereon without sufficient change of shape to release the latch means when the dispenser is mounted, loaded and is use, said side panels having edges spaced from the base panel, said hinge being disposed on the edge of one side panel and the latch means being disposed on the edge of the other side panel whereby to space the hinge and latch means from said upright wall, said latch means comprising two snap latches proximate the corners formed by the intersecting side and end panels of the base section.

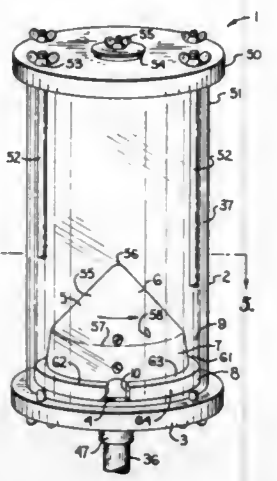
4,191,308
TABLET DISPENSER FOR FUMIGATING AGRICULTURAL COMMODITIES

James R. Allen, Salina, and Alvin T. Hammes, Shawnee Mission, both of Kans., assignors to Research Products Company, Salina, Kans.

Filed Sep. 15, 1978, Ser. No. 942,647

Int. Cl.^{2} B65H *3/60*

U.S. Cl. 221—202 **12 Claims**



1. A tablet dispenser for fumigating agricultural commodities, comprising:

(a) a container shaped for retaining a plurality of pesticide tablets therein; said container having a sidewall, and a base with an aperture therein proportioned to permit the tablets to pass therethrough;

(b) a dispensing rotor mounted in said container base for rotation therein, and including:

  (1) a first portion having an outer surface thereof spaced apart from said container sidewall and forming an annularly shaped channel therebetween; said channel being shaped to receive therein a single file ring of the tablets, oriented on a circumferential edge thereof;

  (2) a second portion depending from and extending outwardly of said first portion, forming a base surface of said channel on which the tablets are supported, and including a dispensing aperture shaped to permit the tablets to pass therethrough; said rotor dispensing aperture being positioned radially coextensive with said container base aperture for selective alignment therewith;

(c) means urging the tablets in the container into said channel;

(d) means rotating said rotor with respect to said container, whereby a tablet is dispensed from said tablet dispenser for each alignment of said base and rotor apertures;

(e) a retaining pin connected with said container, extending into said channel and adapted to abut tablets disposed in the channel and retain the same in a generally stationary state with respect to said dispensing rotor, whereby the tablets in the channel quickly fill the rotor dispensing aperture for dependable dispensing of the tablets.

4,191,309
PRODUCT PORTIONING IN THE CONTINUOUS PUMPING OF PLASTIC MATERIALS

Lewis F. Alley, Kansas City, Mo., and James E. White, Overland Park, Kans., assignors to Marlen Research Corporation, Overland Park, Kans.

Filed Nov. 23, 1977, Ser. No. 854,355

Int. Cl.^{2} B67D *5/22;* **G01F** *11/16*

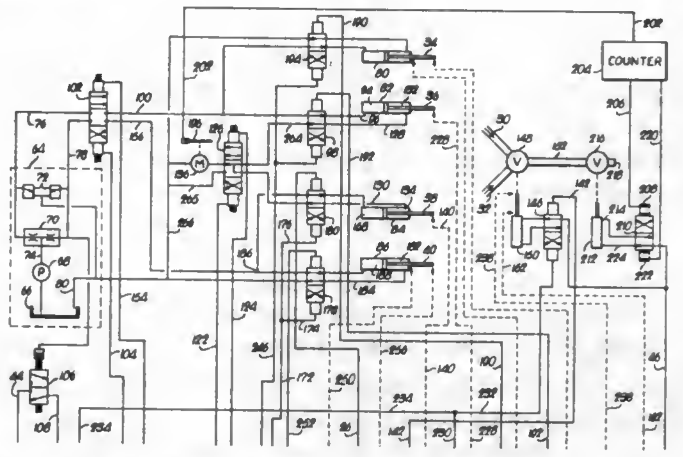
U.S. Cl. 222—1 **6 Claims**

1. In a method of portioning viscous products dispensed as a result of movement of a pumping member by fluid on one side thereof, the improvement which comprises the steps of:

displacing fluid with said member from the opposite side thereof simultaneously with said movement and at a predetermined relationship to the volume of product being dispensed;

sensing when a certain selected volume of fluid, corresponding to the desired portion of product to be obtained, has been displaced from said opposite side of the member; and

in response to said sensing step, temporarily interrupting further dispensing of the product.



4,191,310
DEVICE FOR INFLATING LIFESAVING EQUIPMENT

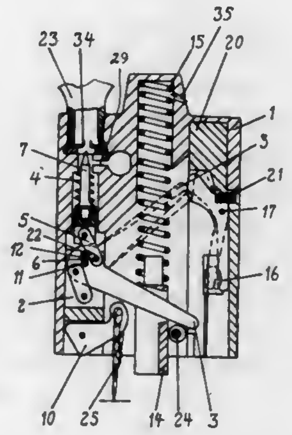
Jost Bernhardt, Hamburg; Georg Hase; Peter Hase, both of Wedel, and Klaus Hagen, Hamburg, all of Fed. Rep. of Germany, assignors to Bernhardt Apparatebau GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Apr. 5, 1978, Ser. No. 893,260

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1977, 771077[U]

Int. Cl.^{2} B67B *7/24;* **F17C** *00/00*

U.S. Cl. 222—5 **9 Claims**



1. A device for inflating the floating body of lifesaving equipment, which includes: a housing comprising passage means for connection to a body to be inflated, said housing also being provided with connecting means for connecting to said housing a pressure container adapted to store and furnish a gas under pressure, and provided with a diaphram normally closing off said pressure container, a striker reciprocably mounted in said housing and operable to pierce said diaphragm of a pressure container connected to said housing for establishing communication between said passage means and the interior of the pressure container connected to said housing, a manually operable lever operatively connected to said striker and operable to actuate said striker for causing the latter to pierce said diaphragm of a container connected to said housing, pivotable lever means pivotally journalled in said housing and having one end designed as free end and having its other end operatively connected to said striker, said free end being pivotable from an ineffective position in which said pivotable lever does not cause said striker to pierce a diaphragm of a pressure container connected to said housing toward an effective position to cause said striker to pierce said last mentioned diaphragm, a two-arm control lever pivotally arranged within said housing and having a first arm normally engaging said free end so as to hold the same in its ineffective position, said control lever also having a second arm, an abutment member comprising a water soluble section normally abutting said second arm of said control lever so as to prevent said first arm from releasing said free end of said pivotable lever means from its ineffective position, said water soluble section of said abutment member when disintegrated by contact with water becoming ineffective to thereby permit said first arm of said control lever to release said free end of said pivotable lever means and spring means continuously urging the free end of said pivotable lever means in the direction toward the effective position of the latter and being operable in response to said water soluble section becoming ineffective to move said free end toward its effective position to thereby cause said striker to pierce the diaphragm of a pressure container connected to said housing.

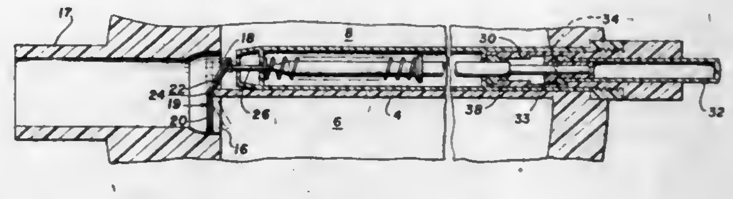
4,191,311
TWO COMPARTMENT CONTAINER HAVING PUSH BUTTON ACTUATOR ROD

Giuseppe Auguadro, Via G. della Porta, 17, Como, Italy

Continuation-in-part of Ser. No. 757,289, Jan. 6, 1977, abandoned. This application May 11, 1978, Ser. No. 904,954

Int. Cl.^{2} A47G *19/24*

U.S. Cl. 222—142.6 **6 Claims**



1. A dispensing container comprising,

a first compartment having a first outlet opening in an upper portion thereof to permit material in said first compartment to flow through said first outlet opening upon inversion of the container,

a second compartment having a second outlet opening in an upper portion thereof, to permit material in said second compartment to flow through said second outlet opening upon inversion of the container, said second outlet opening being adjacent to said first outlet opening,

a movable closure member,

pivot means supporting said closure member for pivotal movement between a first position and a second position,

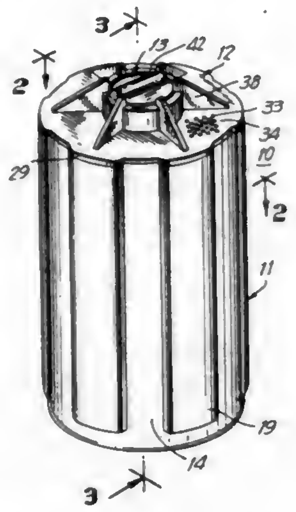
said closure member including a first closure portion in said first outlet opening, said first closure portion occupying a closed position where it obstructs said first outlet opening when the closure member is in its first position and occupying an open position where said first outlet opening is open when the closure member is in its second position,

said closure member also including a second closure portion in said second outlet opening, said second closure portion occupying a closed position where it obstructs said second outlet opening when the closure member is in its second position and occupying an open position where said second outlet opening is open when the closure member is in its first position,

actuator means for moving said closure member from its first position to its second position, said actuator means including a rod connected to said closure member at a point spaced from said pivot axis, said rod being axially movable from a retracted position which it occupies when said closure member is in said first position to an extended position which it occupies when said closure member is in said second position, said actuator means also including a manually operated pushbutton and means for holding said rod at its extended position and then at its retracted position in response to successive manual depressions of said pushbutton.

4,191,312
MULTICOMPARTMENT CONDIMENT AND SPICE DISPENSER

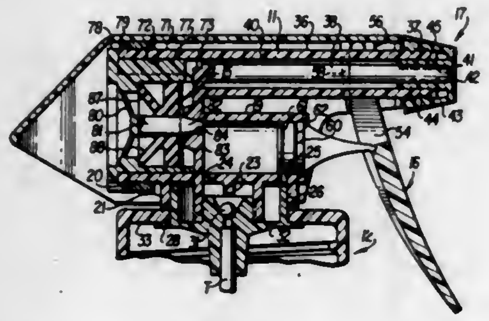
Sami Shemtov, 1228 E. 73rd St., Brooklyn, N.Y. 11228
Filed May 15, 1978, Ser. No. 905,736
Int. Cl.^{2} A47G *19/12*
U.S. Cl. 222—142.9 **9 Claims**



1. A device selectively dispensing a plurality of particulate materials comprising an integrally formed body member including outer and inner coaxial cylindrical walls and an annular bottom wall extending between the bottom edges of said cylindrical walls and a circular top wall located atop said inner cylindrical wall and regularly circumferentially spaced radial partitions extending between said cylindrical walls and delineating with said cylindrical walls a plurality of circumferentially spaced vertical compartments provided with top openings, a vertical pin coaxially upwardly projecting from said top wall, a cover member rotatably mounted in said body member and having a central opening coaxially registering with said pin and including a perforate section of an area not exceeding the transverse cross sectional area of one of said compartments at the top thereof, said cover member being rotatable to transfer said perforate section into selective registration with respective compartment top openings and first locking means releasably locking said cover member to said body member for rotation relative thereto.

4,191,313
TRIGGER OPERATED DISPENSER WITH MEANS FOR OBTAINING CONTINUOUS OR INTERMITTENT DISCHARGE

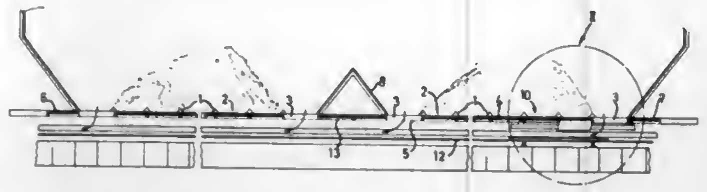
William S. Blake, Miami Lakes, and Roy Hammett, Miami, both of Fla., assignors to James D. Pauls and J. Claybrook Lewis and Associates, Limited, Miami, Fla.
Filed Jul. 24, 1978, Ser. No. 927,566
Int. Cl.^{2} B05B *11/02*
U.S. Cl. 222—335 **17 Claims**



1. A dispenser, comprising: a body having a plurality of expansible chambers therein, including a pump chamber and an accumulating chamber; a manually operated actuator accessible exteriorly of the dispenser and having means connected with the pump chamber to alternately enlarge and reduce the volume of the pump chamber when the actuator is operated; said accumulating chamber having a resiliently yieldable means whereby the accumulating chamber volume is enlarged when material is moved thereinto by the pump chamber, to thereby accumulate under pressure a quantity of the material; and adjustable means connected with the accumulating chamber to adjust the rate of discharge of material from the accumulating chamber, the quantity of accumulated material and the selected rate of discharge enabling either an intermittent or a continuous discharge to be obtained during multiple operations of the actuator.

4,191,314
DEVICE FOR OPENING AND CLOSING CARGO POCKET BOTTOM OUTLETS FOR BULK CARGO

Åke E. T. Wahlström, Enköping, Sweden, assignor to AB Nordstroms Linbanor, Enköping, Sweden
Filed Sep. 28, 1977, Ser. No. 837,414
Claims priority, application Sweden, Oct. 4, 1976, 7610984
Int. Cl.^{2} B63B *27/04*
U.S. Cl. 222—506 **11 Claims**

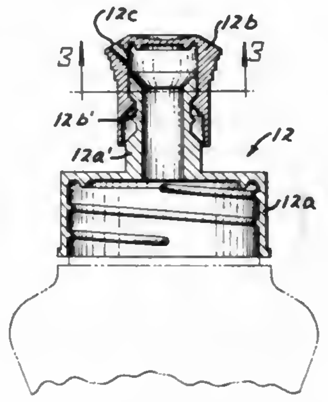


7. Apparatus for opening and closing bottom outlets of a plurality of cargo pockets which are arranged in rows and beneath which conveyors are arranged, said apparatus comprising a guide arrangement extending longitudinally along the bottom of a row of pockets and carrying covers for the bottom outlets of the pockets, means mounting said covers for horizontal movement in the longitudinal direction of the guide arrangement between opened and closed positions, and at least one carriage movable in either direction parallel to said guide arrangement into a position adjacent a selected cover, said carriage being provided with driving means which are movable from an inoperative position to a position in which they are engaged with the selected cover in order to, during subsequent movement of the carriage in either direction, move the selected cover to an open or closed position, after which the driving means can be moved to the inoperable position in order to allow the movement of the carriage to another cover, a raisable and lowerable outlet spout or loading box horizontally movably journalled on the carriage in a manner such that said spout or box, when the driving means is moved into engagement with a cover, is raisable to an abutment position beneath the cover, said apparatus further including locking means engaging with stationary stops so that the spout or box is fixed below the outlet of the pocket during subsequent movement of the carriage and displacement of the cover.

4,191,315
CLOSURE

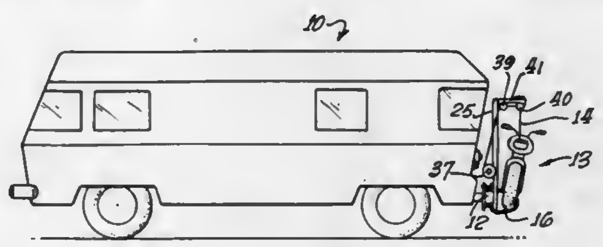
Ludwig F. Funke, 7200 Newburgh Rd., Evansville, Ind. 47715
Continuation of Ser. No. 774,132, Mar. 3, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,108
Int. Cl.^{2} B67D *3/00*
U.S. Cl. 222—553 **3 Claims**

1. A closure for a product container comprising a body member receiving a cap on a dispensing passageway, where said cap slides linearly on said body member to and from a pouring position and a non-pouring position and is freely rotatable thereon at said pouring position to automatically achieve pouring in any direction without the necessity of alignment, said cap having an upper surface blending into an outwardly flaring rim lower than said upper surface and including a downwardly depending side wall, and an outlet in said cap positioned in said outwardly flaring rim thereof proximate the juncture with said downwardly depending side wall selectively communicating with the contents of said product container and serving a dripless function when said product container is returned to a normal non-pouring position.



4,191,316
MOTORCYCLE CARRIER

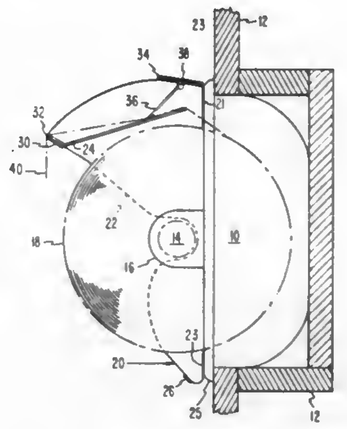
Paul A. Baumgartner, 8906 Mills Ave., Whittier, Calif. 90605
Filed Jan. 8, 1979, Ser. No. 1,885
Int. Cl.^{2} B60R *9/00*
U.S. Cl. 224—42.03 B **5 Claims**



1. A motorcycle carrier for use on the bumper of a vehicle, said carrier comprising:
- a frame member including means for attachment to the bumper of a vehicle;
- first and second upright members affixed to said frame member, and extending upwardly a height in excess of the height of the motorcycle to be carried, and separated horizontally a distance less than the length of the motorcycle to be carried, each of said upright members having a generally horizontal arm affixed to the upper end thereof;
- bearing means comprising a first bearing means affixed to said first upright member and a second bearing means affixed to said second upright member at a point near said frame member;
- shaft means held by each of said bearing means to permit the rotation of said shaft;
- first and second cable means affixed to said shaft and passing upwardly from said shaft means to pulley means held on said arms affixed to said first and second upright members;
- hook means attached to the extremity of both of said cable means for attachment to two points on the upper extremity of the motorcycle to be carried so that said motorcycle is hung from said cables;
- handle means affixed to said shaft to facilitate the rotation thereof;
- ratchet means affixed to said shaft to prevent the unwinding of said cable after the cable has been wrapped about the shaft and a load is exerted on said cable; and
- means to affix the lower portion of said motorcycle to said bumper.

4,191,317
TOILET PAPER UNROLLING FIXTURE

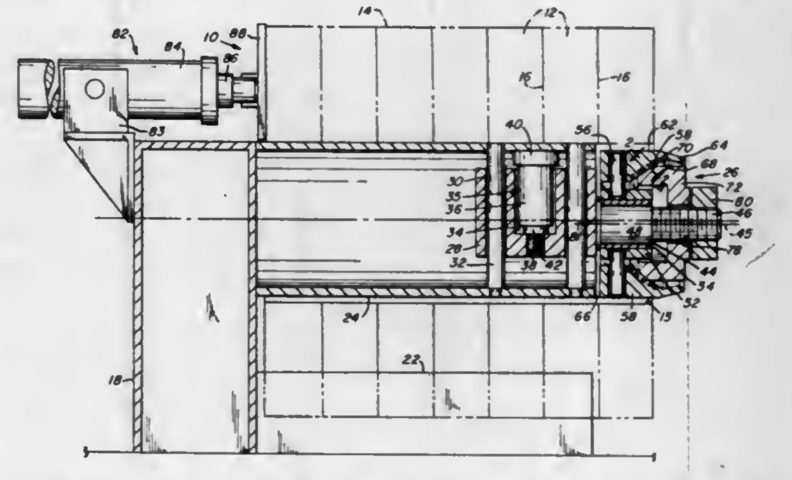
Lane J. Harkins, P.O. Box 149, Berthoud, Colo. 80513
Filed May 12, 1978, Ser. No. 905,190
Int. Cl.^{2} B65H *35/10;* **A47K** *10/22;* **B26F** *3/02*
U.S. Cl. 225—77 **1 Claim**



1. In a conventional built-in recessed toilet paper holder of the type that includes a housing having a pair of spaced apart side brackets between which a spindle is suspended for rotatably supporting a roll of toilet paper for the convenience of the user, the improvement comprising:
- a frame having a pair of like vertically positioned side members, each of said pair of side members including a generally semicircular notch area for holding the frame in place behind the spindle, the side members being spaced apart a distance greater than the width of the roll of toilet paper, but less than the distance between the side brackets of the toilet paper holder;
- a generally flat paper guide spaced above the roll of toilet paper and fixedly positioned between the side members and over which the free end of the roll of toilet paper extends as paper is reeled off the roll;
- a tensioning flap, a first edge of which is spaced above said paper guide and hingedly attached between the side members, said tensioning flap having a second edge that engages the free end of the roll of toilet paper that extends over the paper guide; and
- a tear bar positioned between the side members proximate to a forward edge of the paper guide for enabling the user to tear a desired length of paper from the free end of the roll of toilet paper.

4,191,318
BREAKAWAY UNCOILER

John W. Rogers, 22175 Douglas Rd., Shaker Heights, Ohio 44122
Filed Dec. 22, 1978, Ser. No. 972,552
Int. Cl.^{2} B26F *3/00*
U.S. Cl. 225—103 **12 Claims**



1. Apparatus for detaching and dispensing sheet metal strip material from a construct having an axial opening therethrough and including a plurality of axially spaced coils of strip

material interconnected by frangible connections, said apparatus comprising:

- (a) a frame;
- (b) a construct support attached at one end to said frame, said support being adapted to telescopically receive said construct through the axial opening therein;
- (c) means at the free end of said support for engaging a selected coil for detachment from said consturct, said means being vertically movable with respect to said support to fracture the interconnections between a selected coil and the construct and being rotatably mounted with respect to said support to permit rotation of the engaged coil following fracture of said interconnections.

4,191,319

GALVANIZED TUBE WELDED SEAM REPAIR METALLIZING PROCESS

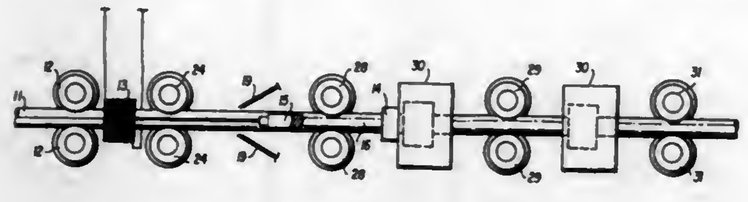
J. Charles Headrick, Oceola, Ark.; Robert C. Peel, Ranburne, Ala., and R. Emory Starnes, Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 667,066, Mar. 15, 1976, Pat. No. 4,082,212. This application Mar. 30, 1978, Ser. No. 891,892

The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.

Int. Cl.^{2} B23K *31/06*

U.S. Cl. 228—147 **5 Claims**



1. An improved method of manufacturing zinc coated steel tubing from zinc coated steel strip of the type in which the zinc has been applied directly to the steel strip before continuously passing said zinc coated steel strip along a path and sequentially performing thereon the following steps:

- a. forming said strip into tubular form and bringing the edges thereof into abutting relation,
- b. welding the edges together and thereby volatilizing zinc from the weld area,
- c. restoring the zinc coating to the weld area by spray atomization metallizing that area in two sequential stages,

wherein the improvement comprises:

- d. the first stage comprising sensing the temperature of said tubular form, moving an atomization metallizing means along the path of the strip in response to said temperature, spraying atomized molten aluminum alloy containing from more than about 0.45 to about 0.95 weight percent iron, no more than 0.10 weight percent silicon, and the remainder aluminum with associated trace elements,
- e. the second stage comprising spraying atomized molten zinc thereon,
- f. the combined coatings applied in steps (d) and (e) providing a coating of substantially the same thickness as the original zinc coating on the steel strip.

4. Apparatus for manufacturing zinc coated steel tubing from zinc coated steel strip in which the zinc has been applied directly to the steel strip, comprising means for moving said strip along a path of travel, means for forming said strip into tubular shape with the lateral edges thereof in abutting relation, means for welding said edges together, the welding causing at least a portion of the zinc coating to be lost by volatilization, means for replacing the lost zinc by atomization metallizing the weld zone as the strip moves along said path of travel, said replacing means including first spray means for atomization metallizing the weld zone with an aluminum alloy coating, and second spray means for atomization metallizing the aluminum alloy coated weld zone with a zinc alloy coating, and wherein said first spray means and second spray means includes means for sensing the temperature of said strip.

4,191,320

DEGRADABLE ARTICLE

Lynn J. Taylor, Toledo, and John W. Tobias, Perrysburg, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 472,947, May 24, 1974, Pat. No. 4,056,665, which is a continuation-in-part of Ser. No. 301,199, Oct. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 206,144, Dec. 8, 1971, Pat. No. 3,797,690. This application Sep. 27, 1977, Ser. No. 836,944

The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.

Int. Cl.^{2} C08J *3/20*

U.S. Cl. 229—3.5 R **16 Claims**

1. As an article of manufacture, a photodegradable polymeric container package comprised of at least one thermoplastic organic polymer and at least two aromatic carbonyl photosensitizers present in amounts sufficient to accelerate the photodegradation of the resulting polymeric composition, at least one aromatic carbonyl photosensitizer having an ultraviolet absorption maximum in the range of 280 to 330 millimicrons and at least one other aromatic carbonyl photosensitizer having an ultraviolet absorption maximum in the range of 330 to 400 millimicrons.

4,191,321

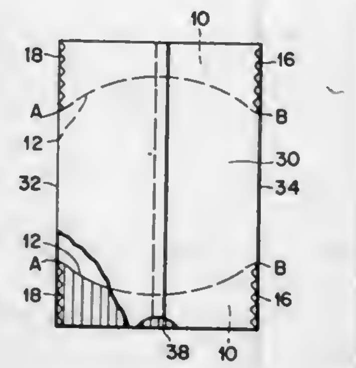
CONTAINER HAVING PAPER-BOARD END CAP AND OVAL SLEEVE

Rolf A. Samsing, 349 Elm St., Braintree, Mass. 02184

Filed Dec. 29, 1978, Ser. No. 974,352

Int. Cl.^{2} B65D *5/02*

U.S. Cl. 229—5.5 **6 Claims**



1. An improved container having an oval cross-sectional shape, comprising: a tubular central section; an end cap inserted into an end of said tubular central section; said end cap being formed from a rectangular sheet material having an oval shaped crease symmetrical about an axis of the rectangle, folded along the crease such that portions of the rectangular sheet material outside said oval shaped crease frictionally engage said tubular central section; thereby forming a container having an oval cross-sectional shape.

4,191,322

PLEATED CLOSURE CONSTRUCTION

Alfred W. Kinney, Kenneth City, Fla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 630,577, Nov. 10, 1975, Pat. No. 4,084,488. This application Jan. 30, 1978, Ser. No. 873,648

Int. Cl.^{2} B65D *3/12*

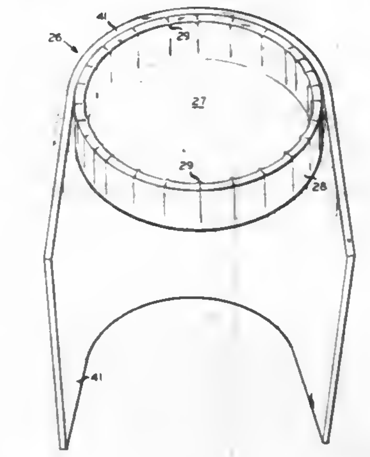
U.S. Cl. 229—5.8 **4 Claims**

1. A paperboard closure formed from a single discoidal blank, said closure comprising:

a discoidal central surface, and

an annular flange depending from the perimeter of said central surface, said flange having a plurality of spaced pleats protruding inwardly from the inside surface thereof

and extending generally perpendicular to the perimeter of said flange, each of said pleats extending from the outer perimeter of said flange and terminating at a point spaced from said discoidal central surface, the outside surface of said flange being substantially smooth and continuous, with substantially the only irregularities in the otherwise smooth outside surface of the flange being hairlines each of which coincides with the location of a respective one of said pleats on the inner surface of said flange, when said flange is in the position which it will assume when mating with a corresponding sidewall surface.



4,191,323

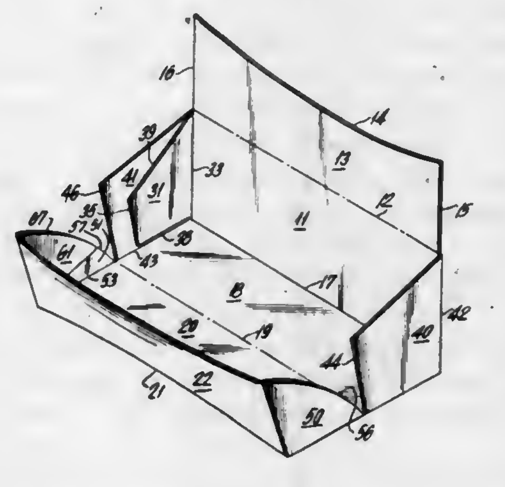
CARTON BLANK AND ERECTED INTEGRAL CARTON AND COVER

George P. Webinger, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,271

Int. Cl.^{2} B65D *3/02*

U.S. Cl. 229—8 **21 Claims**



1. A carton blank comprising as integral portions of a paperboard blank:

- (a) a base rectangular panel (**11**) having opposite fold line edges with dimensions in length of L_1 (**12,17**) and width of W_1 (**32,33**);
- (b) a first pair of side flap panels (**30,31**) each first side flap panel being joined at a fold line (**32,33**) to an opposite width side of said base panel (**11**);
- (c) a rectangular panel (**18**) joined to the base panel (**11**) along a fold line (**17**) and having opposite fold line edges with length L_2 (**17,19**) equal to length L_1 and with width W_2 (**42,43**);
- (d) a second air of flap panels (**40,41**) each second flap panel being joined at a fold line (**42,43**) to an opposite width side of said rectangular panel (**18**);
- (e) a concave edge four-sided panel (**13**) having its inner edge (**12**) joined at a fold line to said base panel (**11**) along its length and having an opposite free edge (**14**) in the form of a concave curve;
- (f) a convex top four-sided panel (**20**) having its inner edge (**19**) joined at a fold line to the said rectangular panel (**20**) along its length and having an opposite non-free edge (**21**) which is a convex curve;
- (g) a third pair of side flap panels (**50,51**) with each of said third pair of side flap panels being joined at a fold line (**52,53**) to an opposite side of said convex top panel (**20**);
- (h) a concave four-sided front panel (**22**) having a concave curved edge (**21**) which is the said convex curved edge of said convex top panel; and
- (i) a fourth pair of side flap panels (**60,61**) with each side flap panel being joined at a fold line (**62,63**) to an opposite width side of said concave front panel (**22**).

4,191,324

COLLAPSIBLE BOX

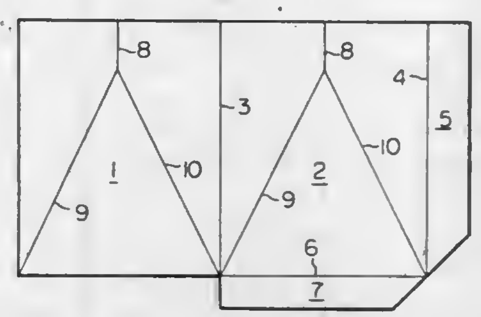
Yoshiko Kitagawa, 23-1, Yoyogi 2-chome, Shibuya-ku, Tokyo, Japan

Filed Aug. 25, 1978, Ser. No. 936,805

Claims priority, application Japan, Aug. 27, 1977, 52-115217[U]; Sep. 8, 1977, 52-120763[U]

Int. Cl.^{2} B65D *5/36*

U.S. Cl. 229—22 **19 Claims**



1. A collapsible box which alternately takes a substantially flat state for storage or an erected state for receiving contents, and which is easily erected from the flat state, comprising:

a substantially rectangular front side wall and a substantially rectangular back side wall which are foldably connected to each other along the bottom and both sides thereof to form a collapsed, substantially flat structure;

first fold lines which are lengthwise scored from the center of the top edge of each of the two side walls and extending toward the bottom edges of each of the two side walls, said first fold lines terminating short of said bottom edges of the side walls and said first fold lines having a sufficient length such that a large area in which the front and back side walls contact each other is formed when the box is erected, said first fold lines being unfolded when the box is in its substantially flat state; and

a pair of second fold lines which are slopwise scored on each side wall, said second fold lines of each side wall extending from the terminating point of said first fold line of the respective side wall to respective bottom corners of said side walls, said second fold lines being unfolded when the box is in its substantially flat state;

whereby when opposing side edges of said side walls are pushed inwardly toward each other, said front and back said walls are folded on said first and second fold lines to form an erected box, a large area of said side walls contacting each other to close the top of the erected box and said first fold lines forming side edges of the erected box at the top portion of the erected box.

4,191,325

CENTRIFUGE WITH SLUDGE OUTLETS AT ROTOR PERIPHERY

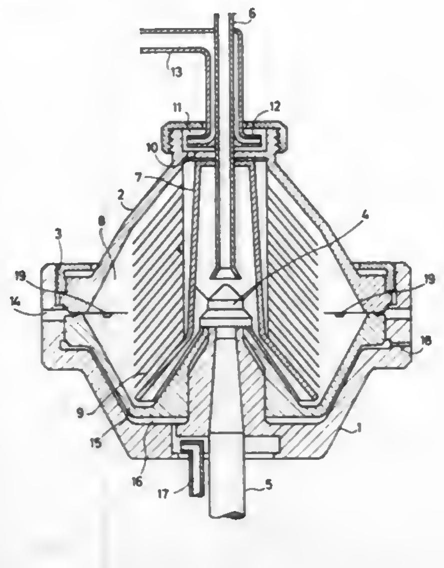
Klaus Stroucken, Ronninge; Torbjorn Winberg, Stockholm, and Kaj Lindfors, Tumba, all of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Filed Aug. 9, 1978, Ser. No. 932,380

Claims priority, application Sweden, Aug. 12, 1977, 7709131; Mar. 14, 1978, 7802889

Int. Cl.^{2} B04B *1/12*

U.S. Cl. 233—20 A **17 Claims**



1. In a centrifugal separator, a rotor mounted for rotation about an axis and having a central inlet for a sludge-containing liquid and a central outlet for separated liquid, the rotor including two parts of which at least a first part is axially displaceable into and from abutment against a second part during operation of the centrifugal separator, the rotor also having a plurality of peripheral outlet openings for separated sludge, said sludge outlet openings being formed by and between said two parts of the rotor.

4,191,326

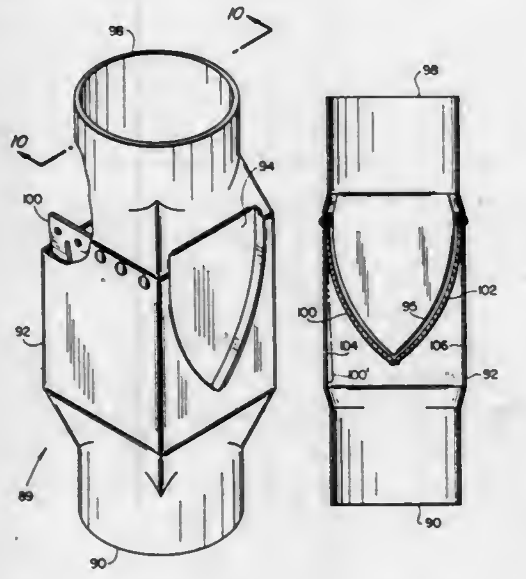
DRAFT CONTROL ARRANGEMENT FOR COMBUSTION APPARATUS

Werner Diermayer, 1275 Panorama Dr., Lafayette, Calif. 94549, and Luitpold Kutzner, Marschnerstrasse 78, D-8000 Munich, Fed. Rep. of Germany

Division of Ser. No. 884,209, Mar. 7, 1978, Pat. No. 4,159,078. This application Dec. 20, 1978, Ser. No. 971,518

Int. Cl.^{2} G05D *23/08*

U.S. Cl. 236—1 G **5 Claims**



1. A damper for controlling the flow of vent gases from a gas-fired heating apparatus, including the combination of a housing enclosing a portion of the flow path of vent gases from the heating apparatus, temperature responsive means mounted within the housing for movement across the path between open and closed positions responsive to the temperature of vent gases, said temperature responsive means when in its open position being oriented in streamlined relationship along the path to present a minimum of resistance to the flow of gases, the temperature responsive means including at least one bimetal blade, and the housing includes means having a closure surface which overlaps and forms a closure with the side margins of the blade when the blade is in its closed position to essentially close the flow path, said housing further including a pair of opposite walls each having recesses having inner sides which form said closure surface means with the inner sides shaped to conform with the side margins of the blade when the blade is in its closed position.

4,191,327

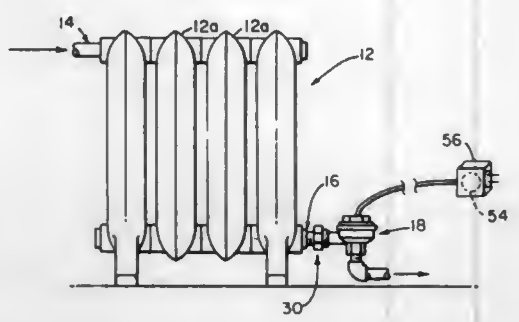
AUTOMATIC THERMOSTATIC CONTROL FOR A STEAM TRAP RADIATOR

Arthur H. Anderson, 790 Boylston St., Boston, Mass. 02199, and Thomas E. Murray, 34 South St., Quincy, Mass. 02169

Filed Nov. 10, 1977, Ser. No. 850,152

Int. Cl.^{2} F24F *11/00*

U.S. Cl. 236—42 **7 Claims**



1. A control system for a steam radiator having an inlet and an outlet and having a steam trap with a thermostatic valve member in fluid communication with the outlet, said trap having means for holding a quantity of residual water within the trap, comprising, in combination,

auxiliary means mounted on said trap for heating said trap and said residual water to close said thermostatic valve member and block a fluid flow from the radiator through said trap, said residual water heated by said auxiliary means generating a fluid pressure within said trap, and

second valve means in the fluid flow path between the radiator and said trap, said second valve means being operable to pass a fluid flow from the radiator to said trap and to block a reverse fluid flow when said fluid pressure in said trap generated by said auxiliary heating means exceeds the fluid pressure at the return outlet of the radiator.

4,191,328

INTEGRAL THERMOSTAT-DIGITAL CLOCK UNIT

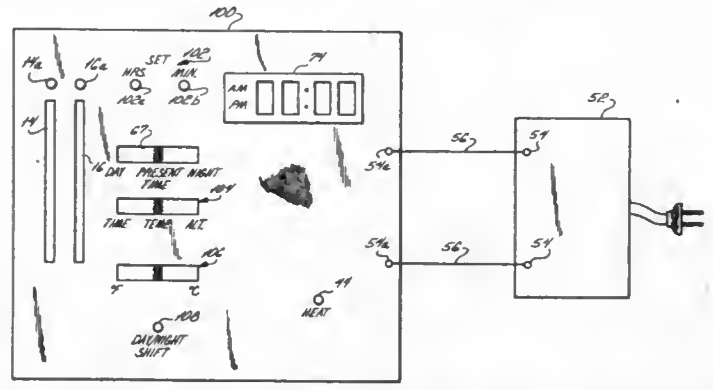
Roger H. Isaacs, Staten Island; David Sandelman, and Daniel E. Shprecher, both of Brooklyn, all of N.Y., assignors to Rapidcircuit Corp., Brooklyn, N.Y.

Filed Sep. 1, 1977, Ser. No. 829,904

Int. Cl.^{2} F23N *5/20;* G05D *23/00*

U.S. Cl. 236—46 R **12 Claims**

1. A room unit thermostat connected by only two wires with a remotely controlled circuit for controlling the supply of warm or cold air to alter the ambient temperature in said room, said room unit comprising display means to display the time of day and the ambient temperature, clock means to generate said time of day connected to said display means, and power means connected to said two wires for supplying timing signals and power to said clock means and power to said thermostat, said thermostat supplying a control signal on said two wires for controlling said remotely controlled circuit, further comprising daytime temperature control means and nighttime temperature control means, logic means connected to said clock means and comprising means to enable said daytime control or said nighttime control, said logic means being settable to nighttime and daytime settings and comprising means responsive to the time of day being equal to said settings so enabling said respective daytime and nighttime control means.



4,191,329

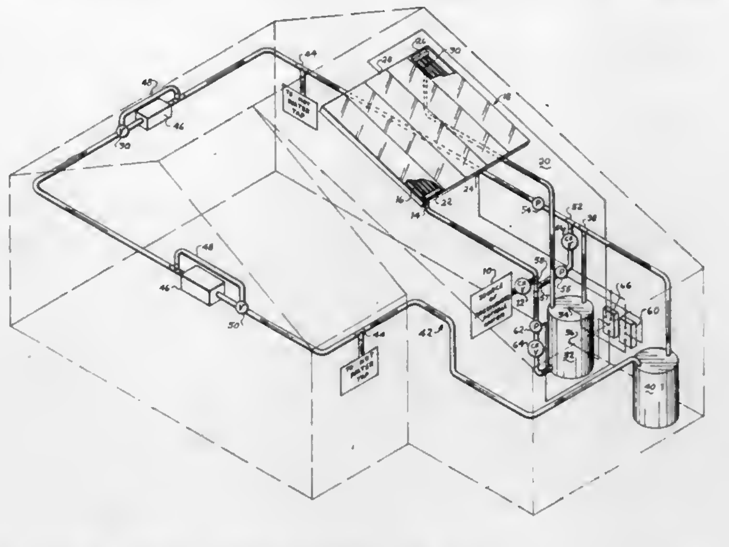
SINGLE-PIPE HOT WATER SOLAR SYSTEM

William E. Geaslin, Lubbock, Tex., assignor to Solartech Systems Corporation, Lubbock, Tex.

Filed Apr. 17, 1978, Ser. No. 897,291

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—427 **9 Claims**



1. In a solar water heating system having

a. solar panels which transfer radiant heat from the sun to solar water tubes therein,

b. the solar tubes having

(i) inlets, and

(ii) outlets,

c. a solar water storage tank,

d. a supplemental water heater using a non-solar heat source,

e. at least one space heater which transfers heat from water therein to interior spaces,

f. at least one hot water tap tee which supplies hot water to washers, baths and lavatories, and

g. a source of pressurized portable water, the improved connections and controls comprising in combination:

h. the source of water connected to the inlet of the solar tubes,

j. the outlet of the solar tubes connected to the solar tank,

k. the solar tank connected to

m. a tank tee,

n. the tank tee connected to the supplemental heater,

o. the supplemental heater connected through all the space heaters and tap tees in series to

p. a loop tee,

q. the loop tee connected to the inlet of the solar tubes,

r. the loop tee directly connected by a short pipe to the tank tee, and

ss. a transfer pump located within the connection between the loop tee and the inlet of the solar tubes.

4,191,330

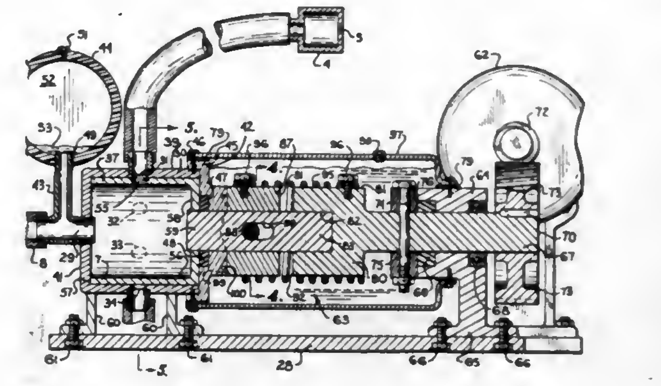
DRIP IRRIGATION SYSTEM FOR AGRICULTURE

Larry E. Sample, 5139 Ridge Ave. #266, Las Vegas, Nev. 89103

Filed May 19, 1978, Ser. No. 907,686

Int. Cl.^{2} B05B *15/02*

U.S. Cl. 239—66 **12 Claims**



1. A drip irrigation system for agriculture, comprising:

(a) a plurality of water distribution lines adapted for extending across an area for growing crops; said lines being arranged in at least first and second separate groups thereof, wherein the lines in each of the groups are interconnected;

(b) a water source of pressurized, substantially unfiltered water selectively communicating with said water distribution lines;

(c) a plurality of water emitters connected with and spaced along each of said lines for discharging the water in said lines into the soil of the crop growing area; said emitters each having an orifice sized to generally allow foreign materials in said substantially unfiltered water to pass therethrough;

(d) a water distributor including:

  (1) an outlet portion with first and second outlet ports connected with said first and second water line groups, respectively, and which has a hollow housing portion wherein said first and second ports are disposed, said housing portion having a cylindrical bore;

  (2) a sequencing valve having a cylindrical rotor with a hollow interior and which is coaxially mounted within said bore of the housing for turning of the rotor therein, said rotor having a dispensing port in the wall thereof selectively and cyclically alignable with one of said first and second ports in said housing portion for directing water therethrough while simultaneously closing the other of said first and second ports, said cylindrical rotor being adapted to index between said first and second ports and sequentially and individually communicate said first and second water distribution line groups with said water source, whereby surges of pressurized, substantially unfiltered water rush cyclically through said lines to alleviate clogging of the orifices by foreign material in the water; and

  (3) an inlet portion connected with said water source, and wherein said inlet portion leads into the hollow interior of said cylindrical rotor.

4,191,331

STREAM REVERSING DIRECTOR

Jon A. Bivens, Upland, and Wilson V. Cochran, Riverside, both of Calif., assignors to The Toro Company, Riverside, Calif.

Filed Mar. 23, 1978, Ser. No. 889,257

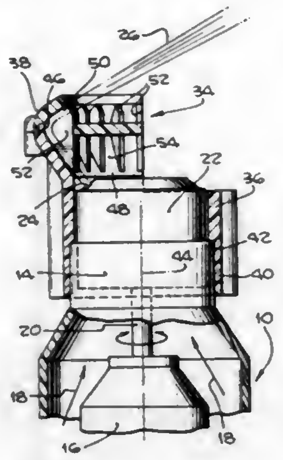
Int. Cl.^{2} B05B *3/08*

U.S. Cl. 239—231 **5 Claims**

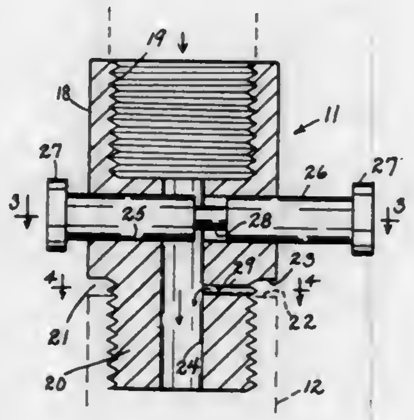
1. In an irrigation sprinkler having a body with a rotating portion including a nozzle having an opening emitting a stream of irrigation water of cross-sectional diameter d and adapted for irrigating an area by rotating the rotating portion about an axis of rotation, the improvement for redirecting the stream of

water intended for a part of the area to another of the area comprising:

- a redirector adapted for mounting to the sprinkler body and having a partial-cylindrical portion disposed concentric to the axis of rotation adjacent the rotating portion of the sprinkler for a portion of the path of rotation of the nozzle opening and including in said partial-cylindrical portion a plurality of close adjacent guide channels each substantially of width d and having an inlet end and an outlet end, said channels lying in respective ones of a family of planes passing through the axis of rotation of the rotating portion, said inlet ends being positioned closed adjacent the path of travel of the nozzle opening to sequentially receive the stream of water from the nozzle as the rotating portion rotates, said guide channels being shaped from said inlet ends to said outlet ends to confine and smoothly redirect the stream of water from the nozzle intended for a portion of the part of the area not to be watered toward a portion of the part of the area where said redirected water is desired while maintaining the redirected water stream substantially identical in size and break-up characteristics to the unredirected water stream.

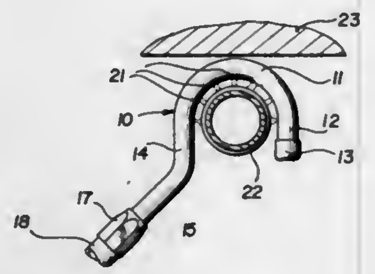


4,191,332
SHOWER HEAD FLOW CONTROL DEVICE
David J. De Langis, and Philip A. De Langis, both of 4060 W. 226th St., Torrance, Calif. 90505
Filed Jan. 10, 1978, Ser. No. 868,424
Int. Cl.² B05B *7/06*
U.S. Cl. 239—428.5 **4 Claims**



1. A shower system comprising respective hot and cold water supply conduits including manually adjustable control valves, a common water supply pipe connected to said supply conduits, whereby water may be supplied to said supply pipe at a mixture temperature in accordance with the relative settings of said control valves, a shower head, a conduit fitting connected between said common supply pipe and said shower head, said fitting having a straight longitudinal bore extending between its opposite ends, an elongated valve element slidably engaged transversely in said fitting and intersecting said bore, at least one end of said valve element projecting laterally from said fitting, said valve element being formed with an annular peripheral groove having an axial length slightly less than the diameter of said longitudinal bore, registrable at times with said longitudinal bore and being movable to selected flow-restricting positions to adjustably control the velocity of liquid flow through the fitting to the shower head and being movable at other times to a flow-blocking position relative to said bore, wherein said fitting has a reduced externally threaded lower end portion defining a peripheral shoulder, said externally threaded lower end portion being tightly threadedly engaged with the shower head and having a length providing an annular clearance space between the shower head and said peripheral shoulder, and wherein the wall of said reduced lower end portion adjacent to said shoulder is formed with a small air-aspirating passage communicating with said clearance space, whereby said clearance space and air-aspirating passage define a venturi passage to allow air to be aspirated into the water stream passing into the shower head, causing the air to mix with the water, the air-aspirating passage being located relatively close to the shower head, whereby the back pressure developed in the shower head can be readily overcome by suitably adjusting the restrictive position of the groove to provide the required velocity of the water stream.

4,191,333
FLAME TIP FOR SOLDERING TORCH
Ralph Rene, 455 Paulison Ave., Passaic, N.J. 07055
Filed Aug. 14, 1978, Ser. No. 933,516
Int. Cl.² F23D *13/36*
U.S. Cl. 239—543 **1 Claim**



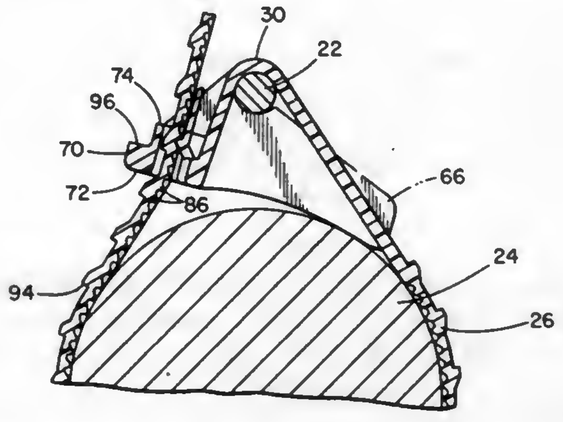
1. A flame tip for a soldering torch to facilitate soldering around a pipe in close quarters, comprising a single substantially rigid tube section which is externally threaded at one end for coupling to a flexible hose extending from a burner device, whereby the tube section can be easily and safely manipulated by hand to a variety of positions without being restrained in its movements, a closure cap for the end of the tube section remote from said threads and hose, the tube section including a comparatively short straight portion extending forwardly of said threads, an elbow at the forward end of the straight portion, a substantially semi-circular body portion extending forwardly from the elbow and having a center lying substantially on the axis of said straight portion, and another comparatively short straight portion leading from the semi-circular body portion and carrying said closure cap, said semi-circular body portion being provided in its interior side with a plurality of circumferentially equidistantly spaced radial flame jet apertures whose axes converge to the center of the semi-circular body portion.

4,191,334
CABLE TIE
John J. Bulanda, and John E. Lopata, both of New Lenox, Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed Apr. 25, 1978, Ser. No. 899,774
Int. Cl.² F16L *33/00*
U.S. Cl. 24—16 PB **6 Claims**

1. A one-piece cable tie for attaching one or more elongate objects such as electrical conductors to a support wire, said tie comprising,

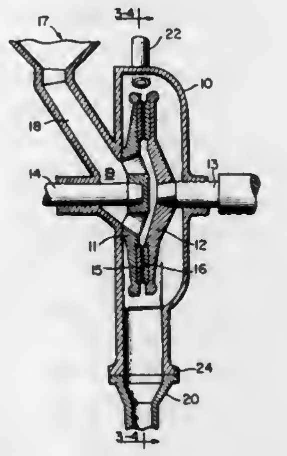
- an elongate flexible strap;

- a locking head joined to one end of said strap and including a strap entry face, a strap exit face and a strap-receiving aperture extending therebetween for receiving the other end of said strap, said strap including spaced transverse abutments and said locking head having a locking pawl engageable with said abutments for maintaining a threaded strap in said locking head; and



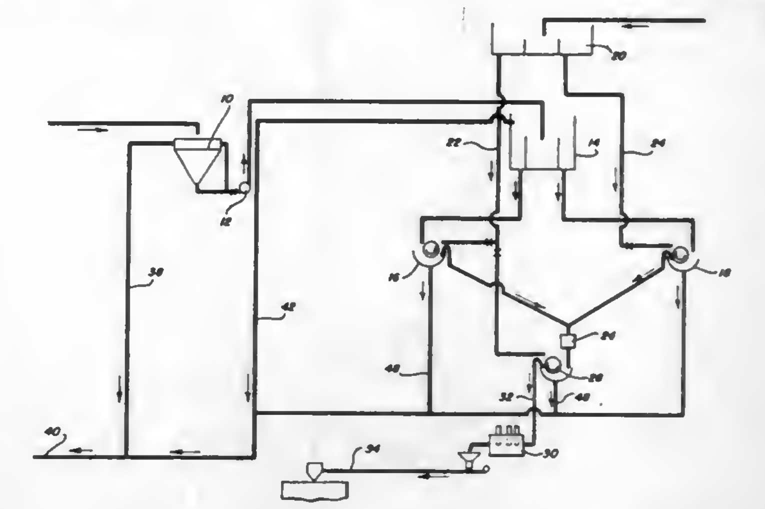
- at least one relatively rigid leg extending from said locking head between said strap and said strap entry face with said strap disposed between said leg and said strap exit face, said leg being offset relative to said strap so that said strap can be deflected toward, threaded into and drawn tight in said locking head without interference from said leg whereby said strap formed into a single loop and passed through said locking head holds said objects and said wire spaced from one another by said leg.

4,191,335
DRY REFINING PROCESS AND APPARATUS
Giancarlo A. Cavagna, Silver Spring, Md., assignor to Westvaco Corporation, New York, N.Y.
Filed Jan. 8, 1979, Ser. No. 1,428
Int. Cl.² B09C *7/02*
U.S. Cl. 241—17 **5 Claims**



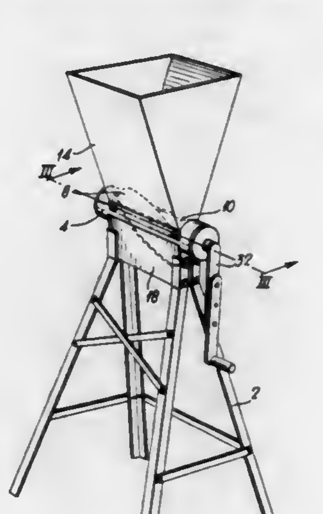
1. Method for dry refining cellulosic fibrous material to produce convoluted, fiberized cellulose fibers which are twisted and bent in a substantially lasting manner without producing knots or fiber bundles comprising, introducing the fibrous material in a substantially dry state into a refiner housing having opposed disk refining surfaces, flowing said material between the relatively opposed refining surfaces located within said refiner housing, causing one or more of said refining surfaces to rotate relative to other refining surfaces so as to operate on said material and liberate the individual fibers thereof as the material flows between said surfaces and removing the liberated fibers from the refiner housing, the improvement wherein, during the refining action, one or more sources of air is introduced into the refiner housing at the periphery thereof in the region between the ends of the milling disks and the refiner housing walls to prevent the liberated pulp fibers from becoming trapped between the ends of the refining surfaces and the refiner housing walls while maintaining the refiner in a relatively cool condition.

4,191,336
PROCESS FOR RECOVERING MAGNETITE FROM FLY ASH
Jim W. Brown, 211 Country Club La., Carterville, Ill. 62918
Filed Dec. 11, 1978, Ser. No. 967,969
Int. Cl.² B02C *23/14*
U.S. Cl. 241—21 **11 Claims**



1. A process for recovering magnetite from fly ash comprising the steps of; making a slurry of fly ash and a liquid, delivering of the slurry to a magnetic separator, separating magnetite from the remainder of the fly ash with the magnetic separator, crushing the magnetite, separating the crushed magnetite from other materials with a second magnetic separator having a weaker magnetic field then the first mentioned magnetic separator, and drying the crushed magnetite.

4,191,337
APPARATUS FOR BREAKING UP VEGETABLE MATTER
Clifford A. Wilson, Nassau, The Bahamas, assignor to Rotocrop International, Ltd., Nassau, The Bahamas
Filed Dec. 6, 1977, Ser. No. 857,978
Claims priority, application United Kingdom, Oct. 31, 1977, 45276/77
Int. Cl.² B02C *18/18*
U.S. Cl. 241—224 **6 Claims**

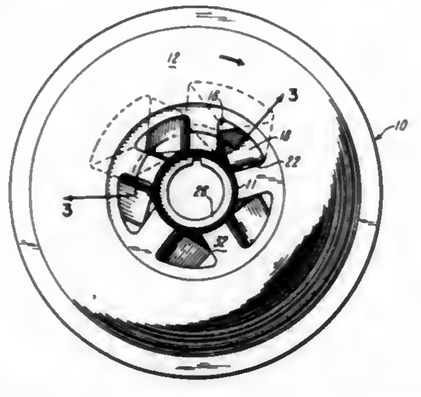


1. Apparatus for breaking up organic matter comprising a frame supporting a rotatable shaft having an elliptical blade mounted thereon such that the periphery of the blade generates a cylindrical surface upon rotation of the shaft; and a housing defining a delivery passage for said vegetable matter and including a drum in which the shaft rotates, said delivery passage terminating in an opening formed in the drum with two spaced edges, at least one of which lies on said cylindrical

surface for shearing engagement with the periphery of the blade as the shaft rotates, and the drum defining a discharge aperture substantially opposite said opening, the arrangement being such that vegetable matter fed to the delivery passage is broken up as it passes through said opening, and discharged radially across the cylindrical surface through said aperture.

4,191,338
INFEED DISC FOR DISC-TYPE REFINERS

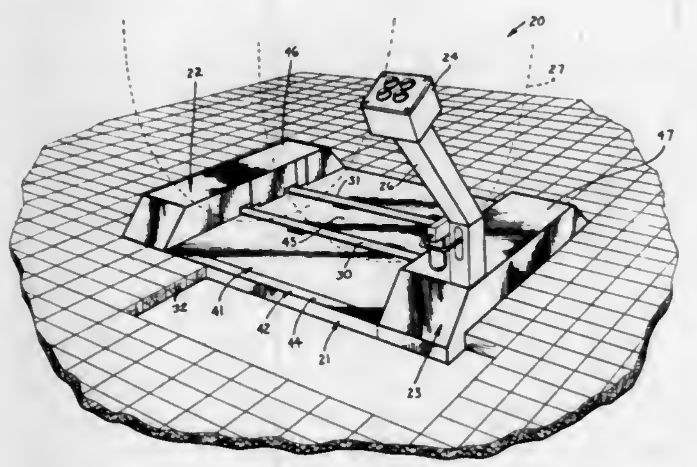
William E. Lyons, Springfield, and John J. Egan, Dayton, both of Ohio, assignors to The Bauer Bros. Co., Springfield, Ohio
Continuation-in-part of Ser. No. 803,067, Jun. 3, 1977, abandoned. This application Apr. 19, 1978, Ser. No. 897,583
Int. Cl.^{2} B02C *17/12*
U.S. Cl. 241—245 **19 Claims**



1. An infeed disc for a disc refiner comprising a plate unit having a first aperture for mount thereof to and rotation by a drive shaft, said plate unit having an infeed face and an operating face and at least one additional aperture forming an infeed passage one end of which opens from said infeed face and the other of which opens from said operating face, said passage being skewed and essentially curved as it extends from said one end thereof to the other and said other end of said passage being circularly offset from said one end thereof in a path about said first aperture.

4,191,339
APPARATUS FOR SUPPORTING A REEL OF CABLE FOR ROTATION

Helmut E. Durr, Dunwoody, and George E. Mock, Duluth, both of Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Feb. 28, 1979, Ser. No. 15,982
Int. Cl.^{2} B65H *75/02*
U.S. Cl. 242—54 R **10 Claims**



1. An apparatus for supporting a cylindrically shaped article for rotation, said apparatus comprising:

a pair of parallel rolls which are spaced apart a distance which is less than the diameter of an end section of a cylindrically shaped article to be supported thereon;

means for supporting at least one of said rolls in a rest position between a first surface and a second surface;

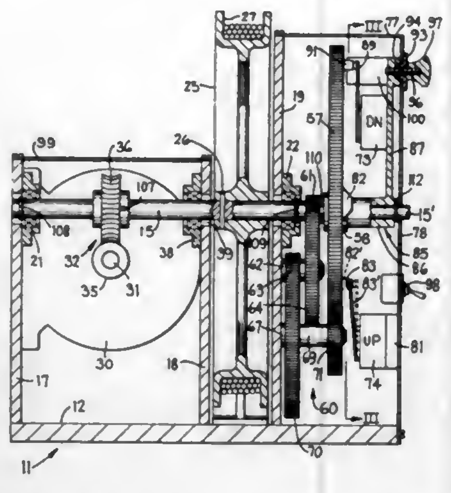
means for supporting the cylindrically shaped article in engagement with said second surface between said rolls;

means for causing said at least one roll to be moved from said rest position into engagement with said cylindrical article and then to be further moved into a work position to cause said article to be supported by said rolls above said second surface, said means including means moveable along said first surface for engaging said at least one roll at successively increasing distances above the first surface; and

means effective when said at least one roll has been moved into said work position for supporting said at least one roll for rotation to facilitate rotation of said article.

4,191,340
ELECTRIC OPERATED AUTOMATIC DOWNRIGGER

Emil Kubanek, R.R. #2, Box 380 A, Hamilton, Mich. 49419
Filed Nov. 30, 1978, Ser. No. 965,260
Int. Cl.^{2} B65H *63/08*
U.S. Cl. 242—54 R **10 Claims**



1. Apparatus for use as a downrigger in trolling, comprising:

a frame;

reel means rotatable with respect to said frame for winding and unwinding a quantity of line;

electric motor means energizable for rotating said reel;

limit switch means having a limit switch and an actuating cam means which are relatively movable such that the actuating cam means is engageable with said limit switch for tripping same to shut off said motor means;

first and second supports carrying said limit switch and actuating cam means, respectively, said first support being normally fixed with respect to said frame, said second support being connected for movement in proportional relation to said reel and relative to said first support;

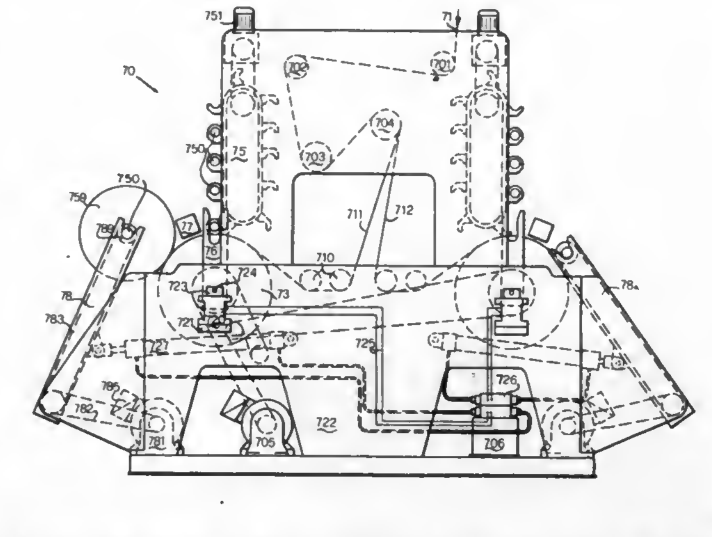
means actuable for adjusting the position of said limit switch with respect to said frame and thereby changing the position of said second support along its path of travel at which said limit switch and actuating cam means come into said tripping relation to shut off said motor;

whereby to automatically stop unwinding of line from said reel means when a preset length has been unwound.

4,191,341
WINDING APPARATUS AND METHOD

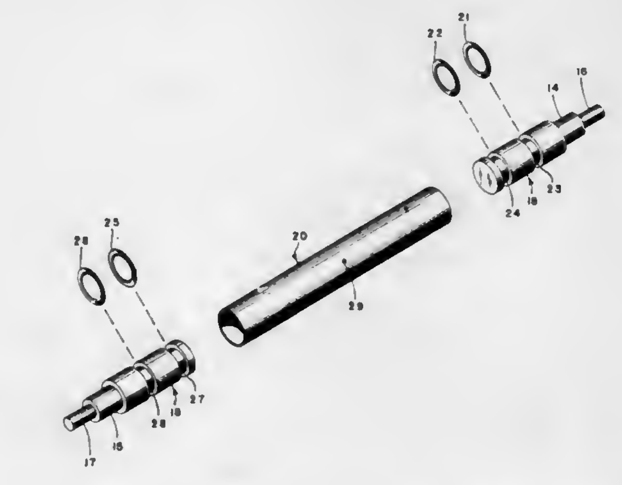
Gottlieb Looser, Rigistrasse 28, Zurich, Switzerland
Filed Apr. 3, 1979, Ser. No. 26,134
Int. Cl.^{2} B65H *19/20*
U.S. Cl. 242—56 A **12 Claims**

1. In an apparatus for continuously winding a web of material onto a series of core mandrels; said apparatus comprising: a rotatable winding drum for contacting engagement with said web and for guiding said web onto a core mandrel; a core mandrel supply; a first core mandrel support for contacting an empty core mandrel from supply with said winding drum to commence winding of said web onto said empty core mandrel and to produce a partially web-wound core mandrel; a second core mandrel support for receiving a partially web-wound core mandrel from said first core mandrel support and for maintaining said web-wound core mandrel near said winding drum until a predetermined coil of said web is formed on said web-wound core mandrel; a drive means associated with said rotatable winding drum for rotating same; a means for cutting said web after formation of said predetermined coil and for commencing said winding of said web onto another empty core mandrel; a first transfer means for transferring said partially web-wound core mandrel from said first mandrel support to said second mandrel support; and a second transfer means for discharging said web-wound core mandrel with said predetermined coil of said web thereon from said second core mandrel support; the improvement consisting of a force-sensing device in operative connection with said winding drum for sensing a force exerted against said winding drum by said web-wound core mandrel on said second core mandrel support when in contacting relation; a core mandrel drive means for rotating said web-wound core mandrel when on said second core mandrel support; a compensator means for counter-acting said force exerted against said winding drum by said web-wound core mandrel; and a means connected to said force-sensing device for actuating said compensator means so as to at least partially counter-act said force exerted against said winding drum.



4,191,342
ADJUSTABLE ROLL MANDREL

Ronald W. Reinhold, 4426 Buttercup La., East, Traverse City, Mich. 49684
Filed Jul. 10, 1978, Ser. No. 923,333
Int. Cl.^{2} B65H *75/02*
U.S. Cl. 242—68 **3 Claims**



1. A roll mandrel having a tubular central portion for supporting a roll of strip material, and two members having journal portions of reduced diameter at opposite ends respectively one of said members being axially moveable with respect to the other thereof within said tubular central portion, wherein the improvement comprises:

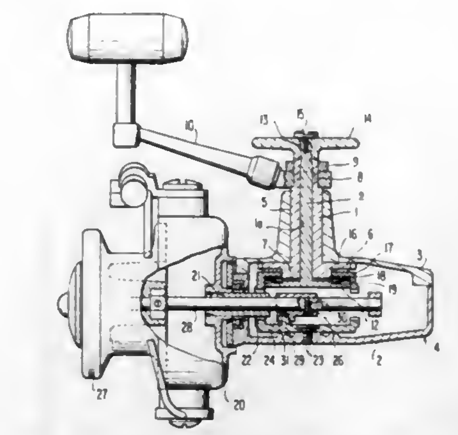
a tube constituting said tubular central portion, and having a hole in the wall thereof in an axially central position;

said members being a pair of plunger members each having one of said journal portions integral therewith, and slideably received in said tube, each of said plunger members having a plurality of different journal diameter sections; and

resistance means interposed between said plunger members and said tube to maintain the adjusted axial position of said plunger members within said tube.

4,191,343
SPINNING REEL WITH IMPROVED DRAG AND SPOOL OSCILLATION MECHANISMS

Yasomatsu Morishita, Kure, Japan, assignor to Ryobi, Ltd., Fuchu, Japan
Filed Sep. 26, 1978, Ser. No. 945,993
Claims priority, application Japan, Jul. 20, 1976, 51-97125[U]
Int. Cl.^{2} A01K *89/01*
U.S. Cl. 242—84.21 R **7 Claims**



1. A spinning reel including a spool, a spool shaft connected thereto, a rotor, a reel housing, a handle and a spool reciprocating means, comprising:

(a) a hollow shaft rotatably supported by said reel housing, said hollow shaft having one end formed with an anti-reversing gear and a support disc extending inwardly from and coaxially with said gear, and the other end fixed to said handle,

(b) a drag control shaft slidably supported in said hollow shaft, said drag control shaft having an inner end formed with a disc member positioned in parallel with said anti-reversing gear, and an outer end formed with a thread,

(c) a rotor drive wheel disposed between said anti-reversing gear and said disc member and fitted on said support disc, said rotor drive wheel beng meshed with a pinion to rotate said rotor, and said spool shaft being slidably fitted in said pinion,

(d) a resilient means disposed between said disc member and said rotor drive wheel for spring-biasing said disc member to urge the rotor drive wheel toward said anti-reversing gear,

(e) a drag control knob threadingly engaged with said thread portion of said drag control shaft, said knob being contacted with said hollow shaft to move said disc member for controlling the biasing force of said resilient means to thereby control slippage of said rotor drive wheel relative to said anti-reversing gear,

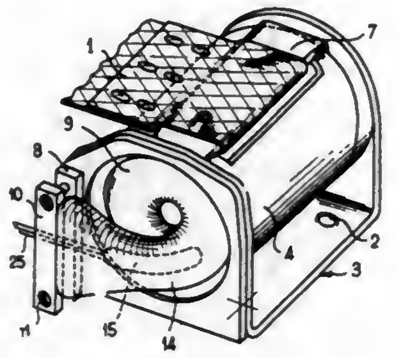
(f) a spool oscillation gear rotatably secured to said reel housing at a position symmetrical with said rotor drive wheel and on the opposite side of the spool shaft therefrom, said spool oscillation gear being meshed with said pinion and rotatable in a reverse direction from that of said rotor drive wheel,

(g) a pin member extending upwardly from said oscillation gear, and

(h) an oscillating piece fixedly secured to said spool shaft, said oscillating piece being formed with a groove at a lower surface thereof adapted to slidingly receive said pin member.

4,191,344
DEVICE FOR CAUSING ROTATION, HAVING A PRESSURIZED TUBULAR DRIVE MEANS

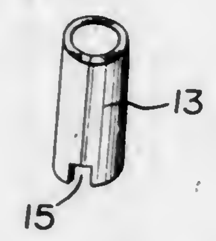
Jean-Francois Tillac, Bordeaux Cauderan, France, assignor to Societe Nationale des Poudres et Explosifs, Paris, France
Filed Apr. 6, 1978, Ser. No. 893,945
Claims priority, application France, Apr. 20, 1977, 77 11940
Int. Cl.² A62B *35/00;* B65H *75/48*
U.S. Cl. 242—107 22 Claims



1. A device for protecting people in a vehicle which comprises a frame fixed on the fixed chassis of the vehicle, a movable element capable of rotating relative to said frame, a displaceable element such as a safety belt connected to said movable element, a drive means for causing the rotation of the movable element with respect to the frame, the drive means comprising at least one flexible tube which in normal operation is rolled up, said flexible tube being connected at at least two portions thereof to said frame, and to said movable element, said tube being responsive to an increase in pressure to occupy greater volume and to acquire an expanded position, thereby tending to unroll and to thus rotate the movable element, pressurizing means responsive to signaling means setting free pressurized fluid, said pressurized fluid causing an increased pressure on said flexible tube, said flexible tube being joined to said pressurizing means.

4,191,345
TAPE CASSETTE

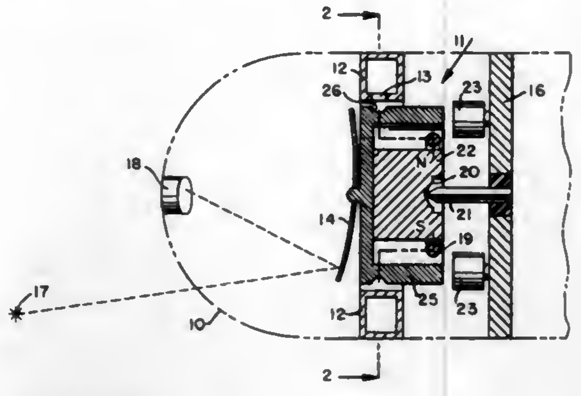
Takateru Sato, and Shigemasa Shoji, both of Tokyo, Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan
Filed Aug. 8, 1978, Ser. No. 932,017
Claims priority, application Japan, Nov. 24, 1977, 52-157732[U]
Int. Cl.² G03B *1/04*
U.S. Cl. 242—197 3 Claims



3. In a tape cassette comprising first and second half-cases, a reel disposed therein, a tape fed from said reel and a cylindrical tape guide for guiding tape fed from said reel, an improvement therein which comprises;
- said tape guide includes a surface layer formed by a hard chromium plating or nickel plating, wherein said cylindrical tape guide further includes a slit formed in the axial direction thereof;
- a post extending from said first half-case; and
- a projection extending from said post wherein said cylindrical tape guide includes a groove in at least one end thereof which is fitted to said projection.

4,191,346
TARGET SEEKING GYRO

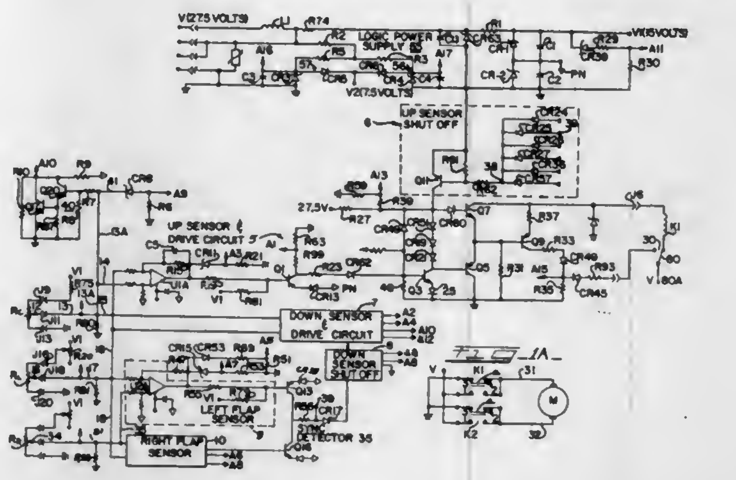
William B. McLean, deceased, late of San Diego, Calif. (by LaVerne J. McLean, Mark A. McLean, and California Bank, trustees), assignor to Walter G. Finch, Baltimore, Md.
Continuation of Ser. No. 337,899, Feb. 19, 1953, abandoned, and a continuation of Ser. No. 583,337, May 7, 1956, Pat. No. 4,093,154. This application Jun. 17, 1976, Ser. No. 697,189
Int. Cl.² F42B *13/28;* F41G *7/10;* G01C *19/53, 19/28*
U.S. Cl. 244—3.16 64 Claims



1. In combination,
- a spin stabilized body;
- means for generating a signal having a frequency proportional to the spin frequency of said body; and
- means responsive to said signal for precessing the body.

4,191,347
FLAP CONTROL CIRCUITRY

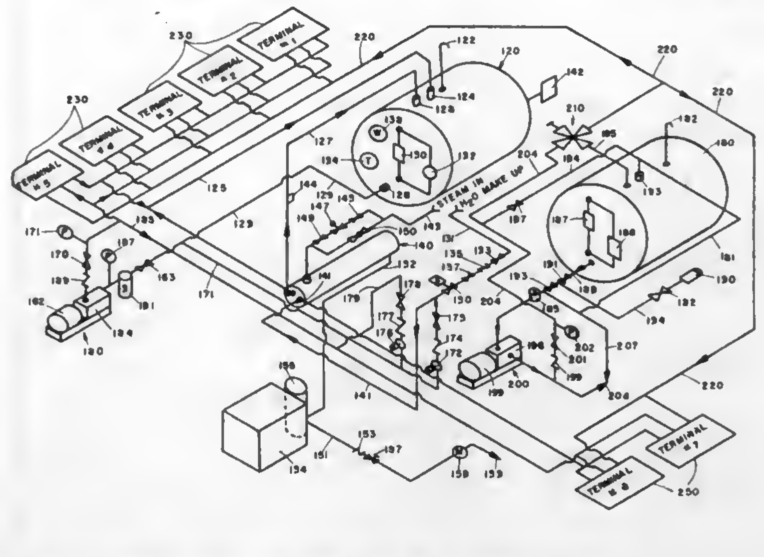
Albert Fueyo, Mount Prospect, Ill., assignor to Calco Manufacturing Company, Addison, Ill.
Filed Oct. 5, 1977, Ser. No. 839,424
Int. Cl.² B64C *13/00*
U.S. Cl. 244—76 A 4 Claims



1. An aircraft flap sensing and comparing circuit for comparing the movement and position of the flaps on an aircraft which flaps are driven by a motor selectively connected to a power source and are controlled by a control unit, comprising in combination:
- first means for obtaining a first analog voltage responsive to the position and movement of a first flap;
- second means for obtaining a second analog voltage responsive to the position and movement of a second flap;
- sensing means for sensing and comparing said first and second voltages and providing an output when said voltages are unequal above a given tolerance;
- first and second relay contacts connecting said power source to said motor;
- said first relay contacts being responsive to movement of said control unit in a first direction to connect the power source to drive said motor in a first direction of rotation;
- said second relay contacts connecting said power source to said motor to drive said motor in a second and relatively reverse direction; and,
- said first and second relay contacts connected in a relatively bucking relation such that when both said first and second relay contacts are energized, equal power is provided to opposite sides of the motor, and the motor will be caused to stop.

4,191,348
DEICING SYSTEM

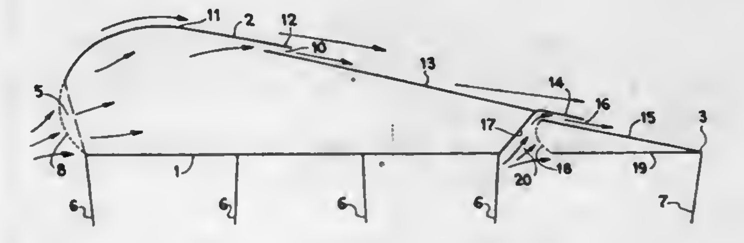
Sidney J. Holwerda, Hudsonville, Mich., assignor to Holwerda-Huizenga Co., Grand Rapids, Mich.
Filed Nov. 10, 1977, Ser. No. 850,229
Int. Cl.² B64D *15/10*
U.S. Cl. 244—134 C 32 Claims



23. A method for deicing aircraft comprising:
- providing a stationary centrally located source of heated water;
- providing a stationary centrally located source of deicing fluid;
- providing a plurality of stationary distribution terminals and locating same remote from said sources, each terminal including means for coupling an applicating hose thereto;
- coupling each of said centrally located sources to said terminals through conduit means for delivery of deicing fluid to said coupling means; and
- providing a mixing valve means coupled to said conduits for selectively mixing water and deicing fluid delivered to coupling means; and
- coupling an applicating hose to any of said terminals and applying deicing fluid mixed with heated water to an airplane located at said terminal.

4,191,349
PARACHUTE HAVING AN IMPROVED MULTI-CELL CANOPY

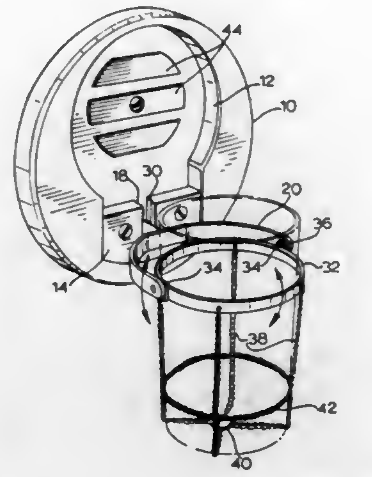
Marcel H. Pravaz, Clichy, France, assignor to Cabinet Lavoix, Paris, France
Filed Jul. 19, 1978, Ser. No. 926,523
Claims priority, application France, Mar. 24, 1978, 78 08664
Int. Cl.² B64D *17/14*
U.S. Cl. 244—145 6 Claims



1. A parachute having a multi-cell canopy of the gliding wing type having a leading edge and trailing edge, comprising an upper wall and a lower wall, a part of the upper wall and a part of the lower wall defining therebetween an opening adjacent the leading edge for entry of air which inflates the canopy, a part of the upper wall and a part of the lower wall also defining therebetween a plain flap adjoining the trailing edge, an air outlet passage in the shape of a slot in the upper wall, the slot being located in a region of said part of the upper wall defining the flap a little in front of the trailing edge relative to the direction of gliding, an opening in the lower wall and communicating with said outlet passage, a closing wall extending from the lower wall to the upper wall for closing a part of the canopy located in front of said opening in the lower wall relative to the direction of gliding, the part of the canopy forming said flap being open in a front part and communicating with said opening of the lower wall.

4,191,350
STORABLE HOLDER FOR A CONTAINER

William Ormond, 233 Hillcrest Ave., Hamilton, Canada (L8P 2X3)
Filed May 1, 1978, Ser. No. 901,641
Int. Cl.² A47F *5/00;* A47K *1/08*
U.S. Cl. 248—293 6 Claims



1. A storable holder for a container, such as a glass, cup, mug, bottle or can comprising:
- a base member adapted for mounting on a surface;
- a yoke member pivoted to the base member for movement about a yoke axis between a stored position in which it is alongside the base member and a operative position in which it extends from the base member;
- a ring member pivoted to the yoke member about a ring axis and movable therewith between corresponding stored and operative positions, the ring member being urged by gravity in the operative position to a stable horizontal attitude;
- the ring member comprising a rigid ring and at least one depending flexible loop-like member including ferromagnetic material connected at its ends to the rigid ring and embracing the bottom of a container in the ring member to retain the container in the holder; and
- a magnet on the base member against which the loop-like member can be retained by magnetic attraction of the ferromagnetic material when the yoke and ring members are in their stored positions.

4,191,351
MOUNTING FLUID FLOW APPARATUS

Thomas E. Goyne, Denver, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.
Filed Oct. 20, 1977, Ser. No. 844,144
Int. Cl.² F16M *13/00*
U.S. Cl. 248—311.1 R 15 Claims

1. A mount for a fluid flow transfer device for facilitating

rotation of said device from an upright position to an inverted degassing position, said mount comprising:

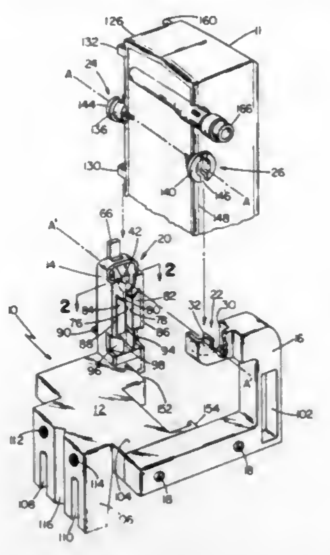
a base;

two arms rigidly connected to said base for extending adjacent to opposite sides of said device,

a first bearing surface on each said arm for cooperating with a second bearing surface on each of said opposite sides of said device to permit rotation of said device with respect to said mount about an axis of rotation passing through the rotational centers of said bearing surfaces;

one of said bearing surfaces being open at its upper surface to receive said other bearing surface when said device is translated radially with respect to said axis of rotation and said device and mount are angularly oriented about said axis in an installation position,

retention means at said axis of rotation for preventing relative radial translation of said first and second bearing surfaces when said device and mount are angularly oriented in other positions than said installation position, and



a selectively disengageable first latch on one of said arms, said latch including an axially moveable first latching surface spaced radially from said rotation axis for cooperating with either of a pair of fixed second latching surfaces on said device equally spaced radially from said rotation axis the same distance as said first latching surface is spaced from said axis,

one of said latching surfaces having a ramp portion inclined with respect to the other said latching surface to move said first latching surface axially away from said device momentarily to allow said latching surfaces to engage,

whereby said device can be inserted in said mount by translating said device relative to said mount while in said installation orientation such that said first and second bearing surfaces engage, and

whereby said device, once inserted, can be rotated between operating and degassing positions while retained by first and second bearing surfaces and said retention means, and can be locked into place at each position by engagement of said first and second latching surfaces.

4,191,352
ROTATABLY INSTALLED SUSPENSION CLIP

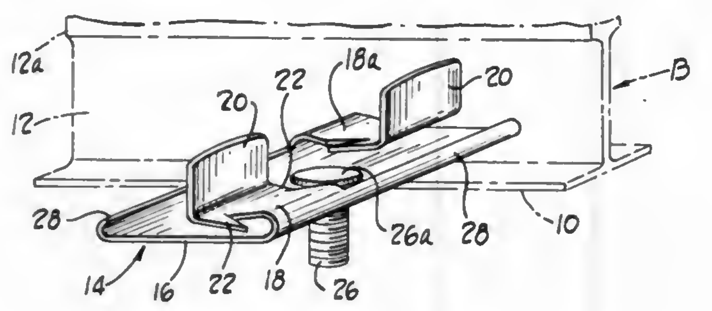
Jerome T. Schuplin, Parma Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio

Filed Aug. 21, 1978, Ser. No. 935,356

Int. Cl.^{2} A44B *21/00;* **E04C** *17/18*

U.S. Cl. 248—317 **20 Claims**

1. A suspension clip adapted for rotatable installation on an associated support beam having a base flange such as for instance an inverted T-beam, said clip comprising a generally flat body portion formed from sheet-like generally resilient material, and having a lengthwise axis, and including reversely bent arm portions on opposite edges of said body portion, said arm portions extending generally parallel to said body portion on the same side thereof and extending toward but not through a lengthwise plane perpendicular to the plane of said body portion passing through and generally containing said axis of said body portion, and each of said arm portions including a tab portion extending generally perpendicular to said plane of said body portion, said body portion and coacting arm portions



being adapted to embrace the base flange of the associated support beam when the clip is placed against the underside of the support beam in angular relation thereto and rotated to cause said body portion and coacting arm portions to resiliently grasp the base flange of the support beam.

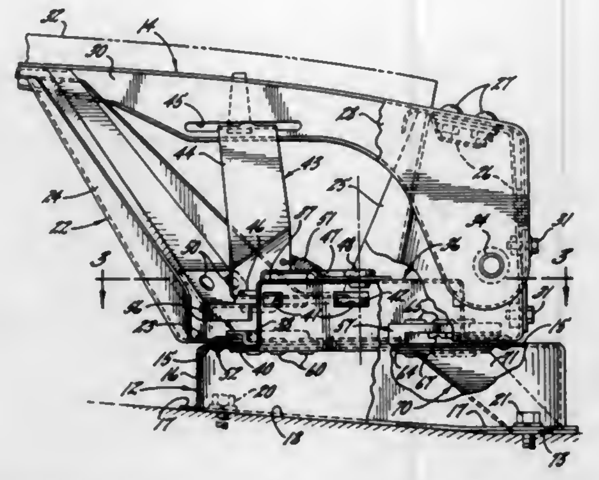
4,191,353
PEDESTAL FOR SUPPORTING A SWIVEL SEAT IN A VEHICLE

Robert F. Leonhardt, Roscoe, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Jul. 31, 1978, Ser. No. 929,348

Int. Cl.^{2} F16M *13/00*

U.S. Cl. 248—425 **13 Claims**



1. A pedestal adapted to be anchored to the floor of a vehicle and adapted to support a vehicle seat for turning about an upright axis, said pedestal comprising a stationary base having a lower side adapted to be positioned on the vehicle floor, a platform for supporting the seat and located on the upper side of said base, a bearing between the upper side of said base and the lower side of said platform and mounting said platform to turn on said base and about an upright axis, a clamp secured to the upper side of said base and holding said platform downwardly against said bearing, a tie strap having an upper end connected to said clamp, and means for anchoring the lower end of said strap rigidly to the vehicle floor.

4,191,354
READING RACK FOR LYING POSITION

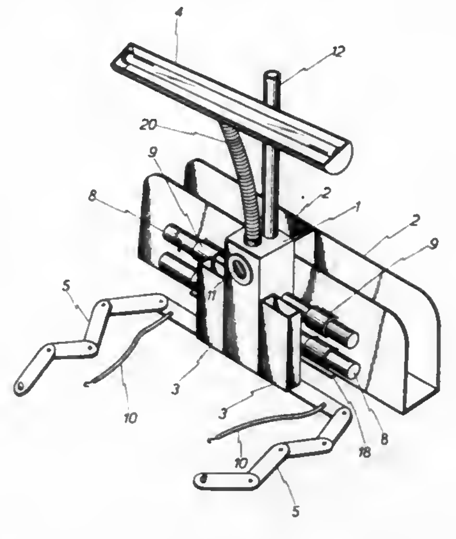
Su Chia-Liu, 29-1 Yuan Ben, 8th Lin, Yuan Ben Li, Young mei, Tao-Yoan Hsien, Taiwan

Filed Sep. 19, 1978, Ser. No. 943,799

Int. Cl.^{2} A47B *23/00*

U.S. Cl. 248—445 **6 Claims**

1. A stand for reading material comprising a base member, a flexible arm extending upwardly from said base member, and a support assembly extending from a free end of said arm, said assembly including a bearing block mounted to the free end of said arm, a support rod axially adjustably mounted in said bearing block, a first pair of foldable articulated arms extending laterally from said bearing block on opposite sides of the



rod axis respectively clamping means on said bearing block and at a free end of said rod remote from said bearing block and a second pair of foldable articulated arms extending laterally from said free end of said rod on opposite sides of the rod axis respectively.

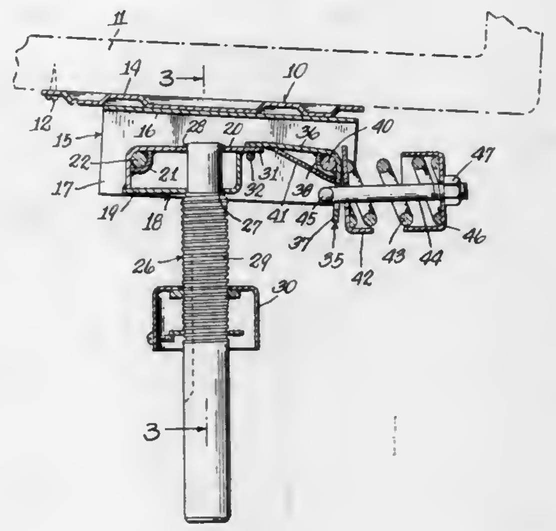
4,191,355
ROCKER FIXTURES

James K. Faull, Rte. 1, Box 156, Enon Valley, Pa. 16120

Filed Jun. 15, 1978, Ser. No. 915,821

Int. Cl.^{2} F16M *13/00*

U.S. Cl. 248—594 **11 Claims**



1. A rocker fixture for a chair and adapted to be interposed between a floor-engaging base of said chair and a person-supporting seat of said chair, said fixture comprising:

a support adapted to be secured to the undersurface of said seat,

an upright post adapted to have its lower end supported from said base,

a head bracket secured to the upper end of said post, said bracket having a first pivotal connection with said support whereby when the latter is connected to said seat and said post is supported on said base, said support and said seat may be tilted about said first pivotal connection,

a lever member having a second pivotal connection with said support, said lever member having a portion in abutting relation with a portion of said head bracket and slidable with respect thereto when said support is tilted about said first pivotal connection, and

means for resiliently holding said lever member portion in abutting relation with said bracket portion in any position of said support.

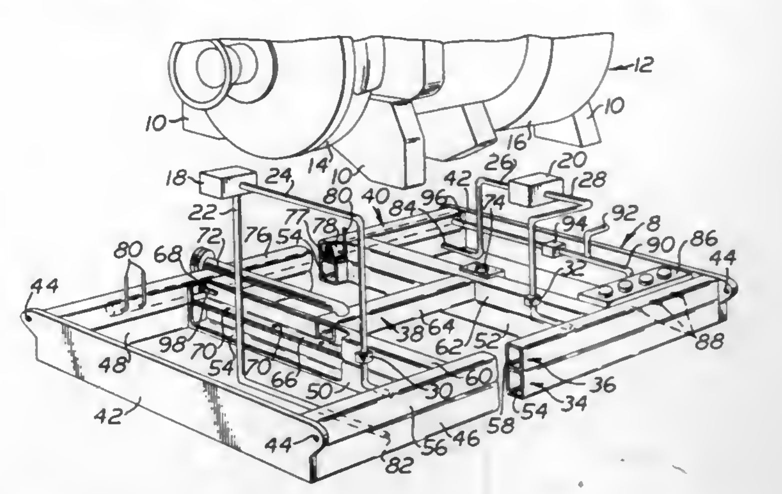
4,191,356
ENGINE MOUNTING BASE

Raymond V. Ashmun, Peoria; Steven R. Baker, Magnolia, and Jerry A. Damerell, Washburn, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 8, 1978, Ser. No. 913,931

Int. Cl.^{2} F16F *15/00*

U.S. Cl. 248—678 **18 Claims**



5. An engine mounting base (**8**) comprising:

first hollow frame means (**34**) for containing a preselected quantity of a fluid at generally atmospheric pressure, said first hollow frame means (**34**) including first and second substantially parallel elongate tubes (**46,48**) having closed ends and a third tube (**50**) connected to said pair of tubes (**46,48**) and defining a common fluid chamber (**54**) therewith; and

second hollow frame means (**36**) for containing another preselected quantity of said fluid at a preselected pressure level above atmospheric pressure, said first and second hollow frame means (**34,36**) being connected.

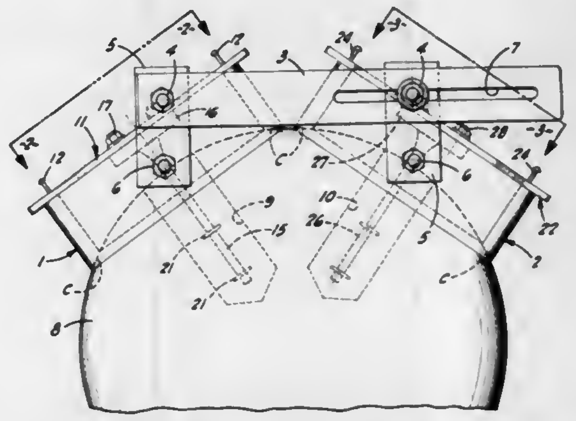
4,191,357
DUPLICATOR FOR BOWLING BALL FINGER AND THUMB HOLES

James G. Nesbitt, 431 Duncan Ave., Stockton, Calif. 95207

Filed Jul. 7, 1978, Ser. No. 922,667

Int. Cl.^{2} E04G *17/00*

U.S. Cl. 249—205 **9 Claims**



1. An apparatus for supporting a core rod to be used in duplicating at least one of the finger and thumb holes of one bowling ball in another bowling ball; comprising a member adapted to rest on and be supported by said one bowling ball adjacent such one hole, an element mounted on the member and overlying said hole, and securing means adapted to support the rod on the element and position said rod to depend into such hole in clearance relation to the sides thereof so that a casting of the hole may then be formed on said or rod.

4,191,358
SHUTOFF DEVICE

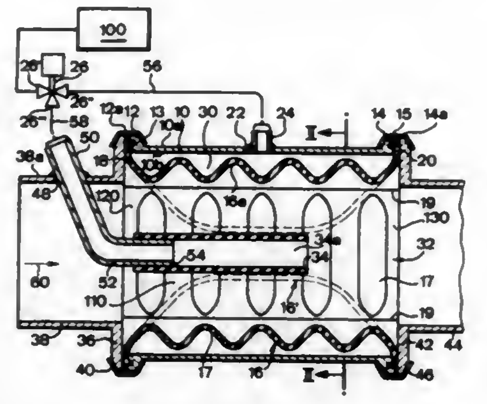
Johann W. Ferri, Uster, Switzerland, assignor to Luwa AG, Zurich, Switzerland

Filed Apr. 10, 1978, Ser. No. 895,042

Claims priority, application Switzerland, Apr. 15, 1977, 4692/77

Int. Cl.² F16K *7/07*

U.S. Cl. 251—5 **8 Claims**



1. A shutoff device comprising:
a substantially tubular-shaped housing;
said housing having opposed ends;
one end of said housing forming an inlet opening and the other end of said housing an outlet opening;
said housing having an inner housing wall;
an elastic hose body having opposed ends;
means for securing the ends of said elastic hose body at the housing;
said elastic hose body defining a closable throughflow passage which flow communicates said inlet opening with said outlet opening;
said elastic hose body in conjunction with said inner wall of said housing forming a substantially ring-shaped pressure compartment;
a conduit connection arranged at said housing and opening into said ring-shaped pressure compartment;
said hose body having a number of folds extending essentially in parallelism to one another; and
said folds extending transversely with respect to said hose body and being arranged in rows extending in the lengthwise direction thereof.

4,191,359
CONTROL APPARATUS FOR CONTROLLING POSITIONING OF A CONTROL MEMBER

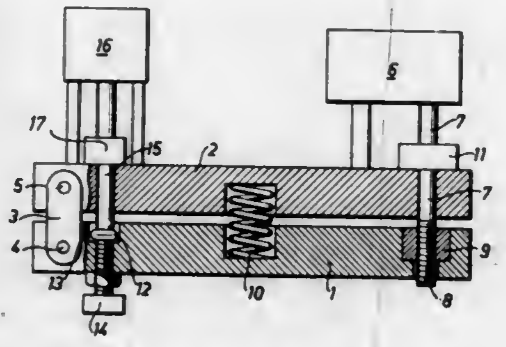
Roland J. E. Andersson, Bjarred; Lars-Ake L. Larsson, Loddenkopinge, and Lars J. C. Traven, Lund, all of Sweden, assignors to Gambro AB, Sweden

Filed Dec. 5, 1977, Ser. No. 857,285

Claims priority, application Sweden, Dec. 3, 1976, 7613576

Int. Cl.² F16K *7/06*

U.S. Cl. 251—9 **20 Claims**



1. Apparatus for adjusting the position of a control member relative to a hollow flexible tube, comprising:
first and second members pivotally connected together to pivot about a pivot point;
a control member mounted on said first member and disposed at a first distance from said pivot point;
tube support means for supporting a hollow flexible tube on said second member relative to said control member so that said tube is adapted to be transversely compressed by said control member to vary the size of the opening of said tube and so that adjustment of the position of said control member relative to said tube provides a desired control of said tube by varying the distance between said control member and said tube support means;
fine control means for finely adjusting the position of said control member relative to said second member, said fine control means acting at an action point on one of said first and second members to pivot said first and second members relative to each other about said pivot point, said action point being a second distance from said pivot point which is greater than said first distance such that a selected amount of movement of said action point results in adjustment of the position of said control member relative to said second member, the amount of change in position of said control member being less than said selected amount of movement; and
coarse control means operatively associated with said control member for adjusting the position of said control member relative to said second member between a first position in which said fine control means is operative to finely adjust the position of said control member relative to said tube to thereby effect a change in control of said tube, and a second position in which said fine control means is inoperative to effect a change in control of said tube.

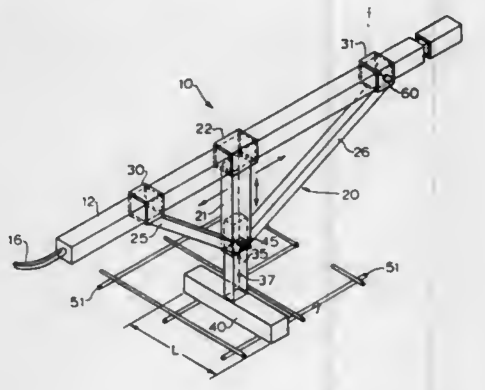
4,191,360
CONCRETE REINFORCEMENT MESH LIFTING TOOL

Donald R. Morrison, 2109 Camp Green St., Charlotte, N.C. 28208

Filed Jun. 1, 1979, Ser. No. 44,493

Int. Cl.² B25B *1/04*

U.S. Cl. 254—129 **1 Claim**



1. A tool for levering concrete mesh wire, and the like, comprising:
(a) an elongated straight lever member formed of hollow metal tubing and having an outer lever end and an inner lift end, said lift end having rigidly secured thereto an outwardly extending concave metal point member adapted to engage strands of wire mesh and the like; and
(b) a lever support structure slidably and adjustably mounting said lever member intermediate the said lever and lift ends thereof, said support structure comprising:
(i) a central hollow tubular metal leg member extending outwardly below and in perpendicular relation to the longitudinal axis of said lever member and having at the upper end of said leg member a collar integrally secured thereto and slidably fitted on said lever member;
(ii) a pair of hollow tubular metal strut members having lower ends rigidly fixed to opposed lower surfaces of said central leg member and extending outwardly and upwardly therefrom to respective collars secured thereto and slidably fitted on said lever member on opposite sides of said central leg member collar;
(iii) an auxiliary telescoping hollow tubular leg member slidably fitted within said central leg member and providing means for extending the length thereof, said auxiliary leg member having a hollow tubular metal ground support crossbar secured to the lower end thereof in an inverted T configuration and being of a length selected to span the mesh of reinforcement wire with which said tool is used;
(iv) locking means for locking said auxiliary leg member in a selected position on said central leg member to position the pivot point of said lever at a selected distance above the level of ground support; and
(v) means on said pivotal support structure for locking such structure to said lever member to locate the position of said pivot point along the length of said lever.

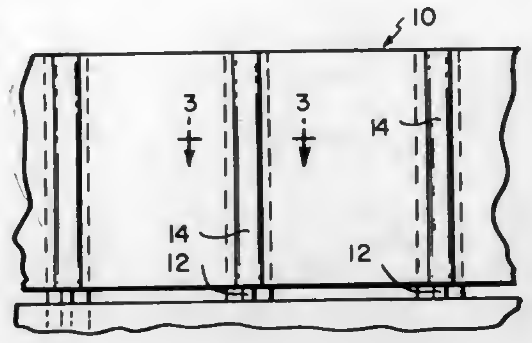
4,191,361
LOCKBAR FOR FENCE POST MOUNTING

Hans P. Jensen, Copenhagen, Denmark, assignor to Julius Koch USA Inc., New Bedford, Mass.

Filed Aug. 30, 1978, Ser. No. 938,109

Int. Cl.² E04H *17/00*

U.S. Cl. 256—12.5 **17 Claims**



1. Lockbars for fastening flexible concatenated structures to spaced, parallel, elongate fixtures comprising elongate sleeves having interior cross-section configurations which are complementary to portions of the elongate fixtures such as to enable telescopically sliding the sleeves axially onto said fixtures, each sleeve containing an opening at one side and being of such interior dimension as to bindingly accommodate the bight of the concatenated structure entering the opening at one side, extending around the fixture within the confines of the sleeve and leaving the opening at the other side and being tapered at one end in a plane intersecting the side containing the opening.

4,191,362
WELDING TORCH HOLDER

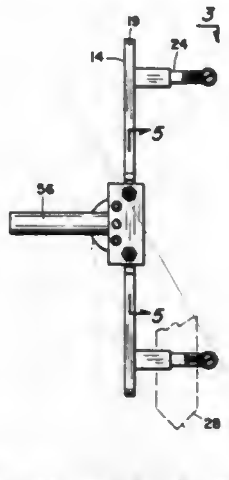
John R. Haynes, Tulsa, Okla., assignor to Head, Johnson & Chafin, Inc., Tulsa, Okla.

Filed Oct. 16, 1978, Ser. No. 951,603

Int. Cl.² B23K *7/00*

U.S. Cl. 266—48 **4 Claims**

1. A welding torch holder comprising:
a longitudinal flat member having a first longitudinal edge and a second longitudinal edge, a longitudinal toothed rack attached to the first edge, and clamping means to hold a welding torch securely;
a block member having a first body member and a second body member, the two body members releasably attached together and having an internal passageway for slidably receiving the longitudinal member therethrough, a securing arm extending outwardly from said first body member to attach the block member to a gantry;
means cooperating with said block member and said rack member to provide reciprocation between said longitudinal member and said block member;
a friction means situated in said passageway and interposed between said second body member and said second edge;



means carried by said second body member and operable externally thereof to urge said friction means against said second edge.

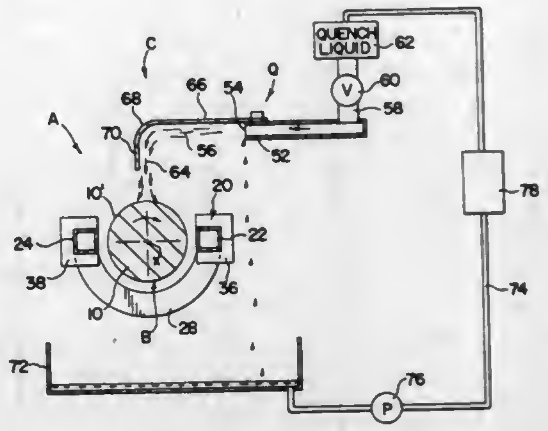
4,191,363
QUENCHING DEVICE FOR INDUCTIVELY HEATED WORKPIECES

Robert J. Shank, Garfield Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Aug. 23, 1978, Ser. No. 935,949

Int. Cl.² C21D *1/66*

U.S. Cl. 266—129 **12 Claims**



1. A device for directing quench fluid from a supply thereof onto the top of an inductively heated circumferential surface portion of a workpiece rotating about a central axis and axially stationary, said device comprising: supply means including an outlet end offset completely to one side of and out of overlying relation to, and substantially coextensive with, said heated surface portion of said axially stationary rotating workpiece for directing from said outlet end an unconstrained jet of quench fluid under pressure from a position spaced horizontally from said surface portion out of overlying relation thereto, deflector means intercepting and guiding said quench fluid jet downwardly onto the top of and throughout substantially the entire length of the said heated surface portion from above to quench the same, and means for selectively actuating said supply means.

4,191,364
SUPPORT FOR METALLURGICAL VESSELS

Harry T. Montgomery, New Castle, and Rashed N. Nagati, Mars, both of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Apr. 20, 1978, Ser. No. 898,293

Int. Cl.² C21C *5/50*

U.S. Cl. 266—246 **13 Claims**

1. A metallurgical vessel including:
a trunnion support at least partially surrounding said vessel,
a plurality of bracket means affixed to said vessel in a spaced

relation and engaging said trunnion support, each bracket means having an edge portion extending generally in a first direction away from said vessel,

retainer means associated with each bracket means for limiting the movement thereof relative to said trunnion support,

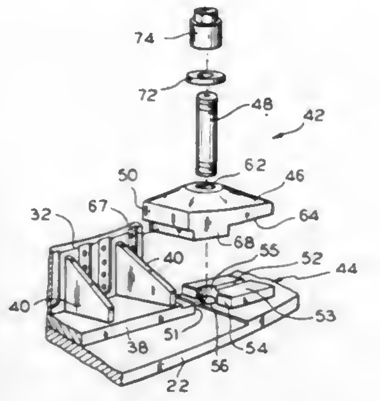
each said retainer means including a first means, a second means and clamping means,

said first means being affixed to said trunnion support adjacent to the edge portion of its associated bracket means

one of said first and second means having an elongate groove formed therein and the other having a complimentary guide portion,

said second means being removably mounted on said first means, and with said guide portion disposed in said groove, said first and second means being arranged with said groove oriented in a second direction generally normal to said first direction whereby said second means is slideably mounted on said first means for movement in said second and an opposite direction toward and away from the adjacent edge portion of said bracket means, said second means also having a surface formed thereon and generally complimentary to said edge portion, at least a part of said surface being disposed vertically above said edge portion when said second means is in an operative position relative to said bracket means,

said clamping means engaging said trunnion support and being adapted to engage said second means for releaseably clamping said second means to said first means to retain said second means in its operative position.



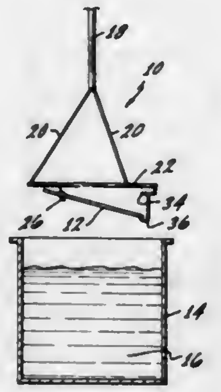
4,191,365
HORIZONTAL/INCLINED SUBSTRATE HOLDER FOR LIQUID PHASE EPITAXY

Charles F. O'Neill, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 2, 1979, Ser. No. 16,884

Int. Cl.^{2} B25B *11/00*

U.S. Cl. 269—46 **7 Claims**



1. A substrate holder adapted for practicing liquid phase epitaxy, comprising:

a dipping rod,

substrate holding means connected to one end of said rod including means holding said substrate at a tilt the angle of which is defined thereby relative to a horizontal plane when said substrate is free of liquid epitaxy melt and permitting said substrate to assume a horizontal position while yet contained in said substrate holder when said substrate is within an epitaxy melt.

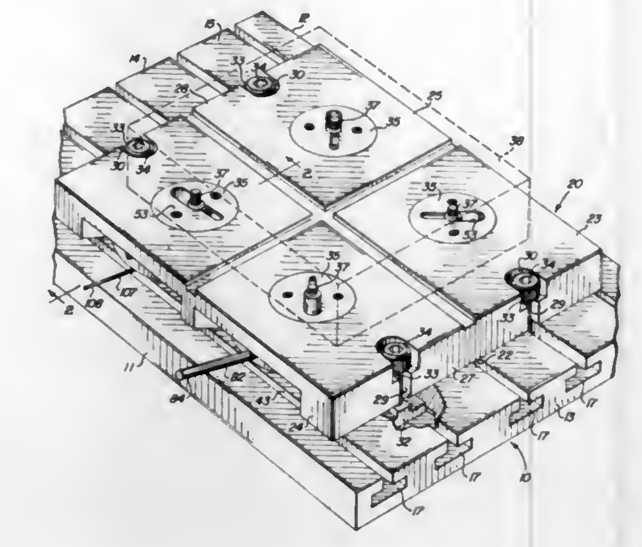
4,191,366
UNIVERSAL PLANETARY CLAMPING DEVICE

Yehuda Rabin, South Caulfield, Australia, assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Jan. 30, 1978, Ser. No. 873,458

Int. Cl.^{2} B23D *7/08;* **B23Q** *1/08*

U.S. Cl. 269—47 **17 Claims**



1. For use in combination with a machine tool having a work support surface, an improved fixture for attachment to said support surface and for holding a work piece during machining operations by said machine tool, said improved fixture comprising:

(a) a substantially rigid plate including,
  i. a base surface for resting upon the support surface of said machine tool,
  ii. a bearing surface for receiving said work piece thereagainst and spaced from said base surface, and
  iii. an edge surface extending between said base surface and said bearing surface;

(b) a bore extending through said plate between said base surface and said bearing surface;

(c) an insert having a first end positioned proximate said bearing surface and a second end, said insert disposed within said bore for movement along the longitudinal axis thereof;

(d) an aperture extending through said insert between the first and second ends thereof; a pin having first and second ends and receivable within the aperture in said insert;

(e) attachment means carried by said insert and having work piece engaging means carried proximate the first end of said pin and extending from the first end of said insert;

(f) connection means for detachably securing said pin to said insert; and

(g) actuator means carried by said plate for retracting said insert relative said bearing surface and urging said work piece into contact with said bearing surface.

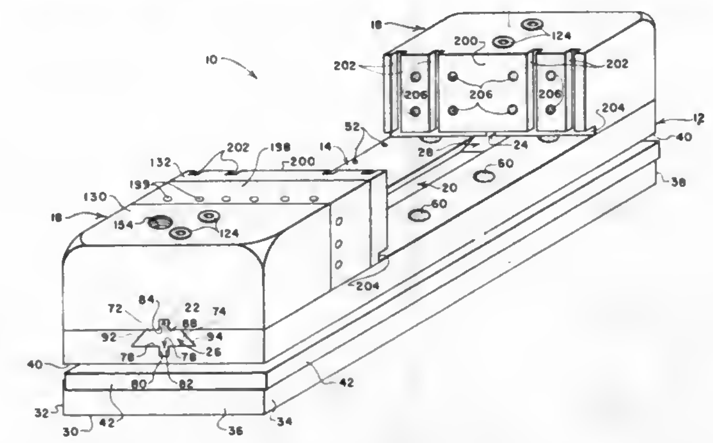
4,191,367
FLUID-OPERATED VISE WITH JAW MOUNTING SYSTEM

Arthur S. Speiser, 4400 Clarkwood Pkwy., Warrensville Hts., Ohio 44128, and Samuel G. Sheterom, Jr., 25 Wintergreen Hill, Painesville, Ohio 44077

Continuation-in-part of Ser. No. 851,839, Nov. 16, 1977, Pat. No. 4,101,119. This application Jun. 13, 1978, Ser. No. 914,157

Int. Cl.^{2} B25B *1/02*

U.S. Cl. 269—203 **13 Claims**



1. A fluid-operated vise, comprising:

(a) an elongate base structure having a top surface and an undercut groove including inclined surface portions, the undercut groove extending substantially the full length of and opening through the top surface;

(b) first and second jaw structures supported on the top surface and being movably positionable therealong for gripping a workpiece therebetween;

(c) first and second downwardly facing elongate grooves provided, respectively, in bottom portions of the first and second jaw structures the first and second downwardly facing grooves being of substantially identical cross section and communicating along their lengths with the undercut groove as the first and second jaw means are positioned along the length of the top surface;

(d) first and second elongate key members each having lower cross sectional portions configured to correspond to the undercut cross section of the undercut groove and being positioned therein, and each having upper cross sectional portions configured to correspond to the cross section of the downwardly facing grooves and being positioned therein, whereby the key members maintain alignment of the first and second jaw structures and the base structure as the jaw structures are positioned along the length of the top surface;

(e) first and second clamping means for clamping the first and second key members into engagement with the inclined surface portions to releasably retain the first and second jaw structures in place at selected positions along the length of the top surface;

(f) one of the jaw structures defining a first jaw mounting surface facing toward the other of the jaw structures;

(g) the other of the jaw structures including:
  (i) a first component operably engaged by the first clamping means and adapted to be secured by the first clamping means at a first selected position along the length of the top surface;
  (ii) a second component movably connected to the first component for relative movement in directions toward and away from said one jaw structure;
  (iii) fluid-operated actuator means interposed between the first and second components for moving the second component relative to the first component in a direction toward said one jaw structure; and,
  (iv) biasing means interposed between the first and second components for biasing the second component toward the first component in a direction away from said first jaw structure;

(h) the second component defining a second jaw mounting surface facing toward the first jaw mounting surface;

(i) first and second jaw means carried, respectively, by the first and second jaw structures and being configured to clampingly engage workpiece means therebetween when the second component is moved toward said first jaw structure under the influence of the fluid-operated actuator;

(j) the first jaw means abuttingly engaging the first jaw mounting surface, and the second jaw means abuttingly engaging the second jaw mounting surface; and,

(k) interfitting formation means being provided on the first jaw means and the first jaw mounting surface, and on the second jaw means and the second jaw mounting surface, for releasably mounting the jaw means on their respective jaw mounting surfaces and for accurately positioning the jaw means relative to their respective jaw mounting surfaces.

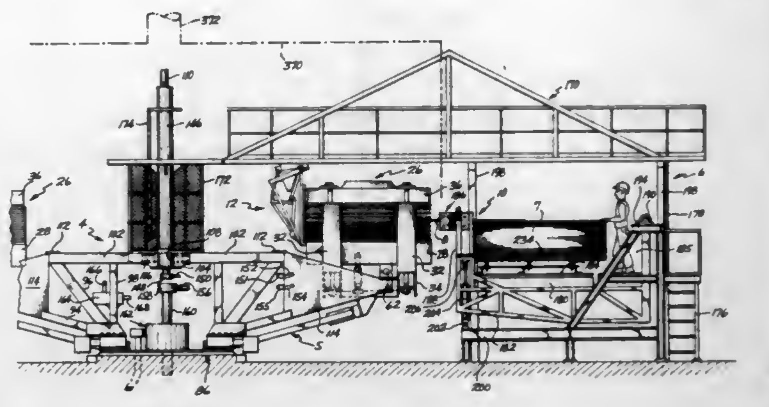
4,191,368
APPARATUS FOR FEEDING THIN SHEETS

Byron B. Brookhyser, Milton, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 20, 1978, Ser. No. 888,458

Int. Cl.^{2} B65H *1/08*

U.S. Cl. 271—10 **6 Claims**



1. In a work station of the type having a plurality of vertically spaced substantially horizontal openings for the insertion therein of substantially flat thin sheet workpieces and an associated loading apparatus for sequentially feeding sheets into the openings, comprising:

a frame spaced adjacent the infeed side of the work station;

means for pivotally mounting the frame about a laterally extending axis positioned toward the rear of the frame and at a vertical location approximately midway between the uppermost and lowermost openings;

means on the floor of the frame for supporting a quantity of stacked sheets and for adjusting the vertical height of the top sheet;

a feeder mechanism located along the front side of the frame and elevated from the floor,

said feeder mechanism having a plurality of feed rolls forming at least one nip into which the top sheet of the stack will be fed; and

means for indexing the frame upwardly and downwardly so the nip of the feed rolls sequentially comes into alignment with each opening of the work station.

4,191,369
MEANS FOR GUIDING SHEET-LIKE PRINTING PAPER

Genji Matsuda, and Fumio Hosobuchi, both of Tokyo, Japan, assignors to Oriental Photo Industrial Co., Ltd., Tokyo, Japan

Filed May 26, 1978, Ser. No. 909,923

Claims priority, application Japan, Jun. 1, 1977, 52-64426

Int. Cl.^{2} B65H *29/58*

U.S. Cl. 271—299 **7 Claims**

1. Apparatus for conveying and guiding exposed strip-form photographic printing paper into an automatic photographic

developing machine, said strip-form photographic printing paper having a downwardly facing exposed surface, comprising:

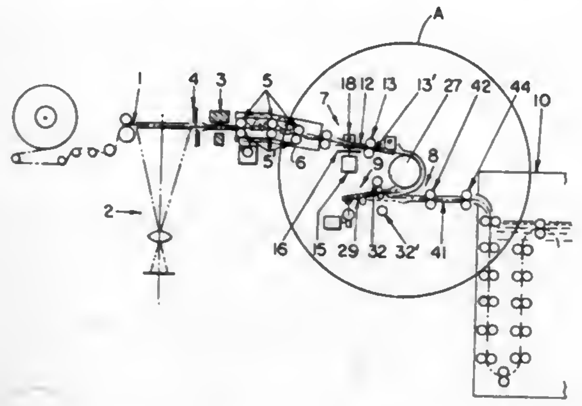
means for cutting the exposed strip-form photographic printing paper into sheets;

sorting means and first conveying means for conveying said sheets in single file along a first path to said sorting means, said sorting means comprising reciprocable means for receiving sheets from said first conveying means, means mounting said reciprocable means for reciprocable movement back and forth in a direction extending at a right angle to said first path, said reciprocable means being movable between at least two transfer positions which are laterally offset from said first path and from each other whereby successive sheets are individually transported to the respective transfer positions;

separate substantially horizontal and substantially parallel passageways extending from said transfer positions and second conveying means for separately conveying said sheets along said passageways;

means for inverting said sheets so that the exposed surfaces thereof face upwardly; and

third conveying means for sequentially changing the feed direction of said individual sheets that are conveyed from said passageways by said second conveying means and then conveying said sheets into said automatic developing machine.



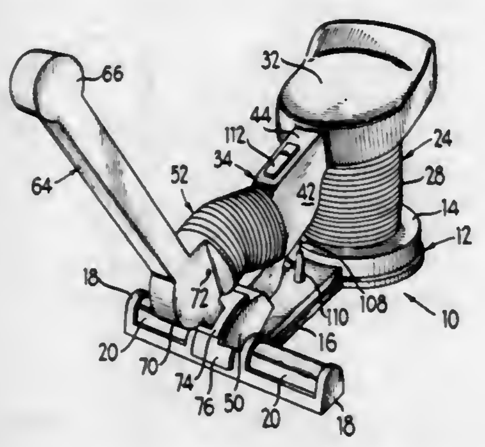
4,191,370
PNEUMATIC EXERCISING DEVICE

Burton C. Meyer, Downers Grove; Ralph J. Kulesza, and Alex Imatt, both of Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 25, 1977, Ser. No. 855,027

Int. Cl.^{2} A63B *21/00*

U.S. Cl. 272—120 **12 Claims**



1. A self-energizing exercising device utilizing the weight of the user as a resistive force, comprising:

a base structure;

a seat means for supporting the user mounted for movement between different generally vertical levels above said base structure;

a flexible bellows type fluid chamber supporting said seat means on said base structure expandable and contractable to raise and lower the level of said seat means;

bellows pump means for supplying pressurized fluid to expand said fluid chamber and actuable by a user while seated on said seat means;

means for releasing pressurized fluid from said fluid chamber to lower the seat means from a selected upper position; and

handle means operable in generally a rowing fashion by a user positioned on the seat means for operating the pump means including a hand graspable portion mounted for movement toward and away from the seat means so as to require substantial movement of the user's arms and torso.

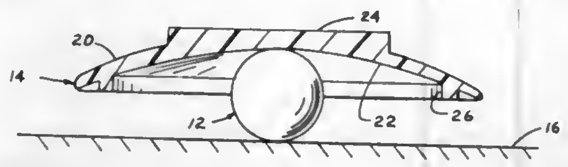
4,191,371
BALANCING APPARATUS

Leon Armer, Jr., 22 Utica St., Brockport, N.Y. 14420

Filed Jan. 16, 1978, Ser. No. 869,651

Int. Cl.^{2} A63B *23/04*

U.S. Cl. 272—111 **5 Claims**



1. Balancing apparatus for providing recreational amusement and beneficial exercise to the user, said apparatus comprising:

a spherical fulcrum of a first diameter, said spherical fulcrum being rotatable about its orthogonal axes to freely move over a horizontal surface;

a platform supported by said spherical fulcrum and movable relative to said spherical fulcrum in a plurality of directions in the plane of the platform, said platform having a first surface and an oppositely facing second surface engaging said spherical fulcrum;

a foot support centrally located on said first surface; and

stop means for engaging said spherical fulcrum to limit movement of said platform for all directions of movement of said platform relative to said spherical fulcrum, said stop means being positioned on said second surface at a location outside the projection of said foot support from said first surface on said second surface.

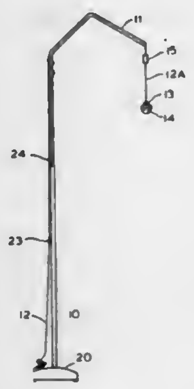
4,191,372
TENNIS TRAINER DEVICE

Dennis H. Keller, 3437 Witt Rd., Auburn, Calif. 95604

Filed Mar. 24, 1978, Ser. No. 889,739

Int. Cl.^{2} A63B *69/38*

U.S. Cl. 273—29 A **8 Claims**



8. A sport training device to improve a player's ability to hit a ball comprising:

a substantially vertical standard;

a cross arm, one end attached to an elevated portion of said standard;

a cord, one end of said cord connected to the other end of said cross arm;

fastening means attached to the other end of said cord and releasably attaching a ball to said cord, a said ball being released upon impact; of said ball by a striking implement; and

an elongated stiffening member attached to a length of said cord at a distance above said fastening means for decreasing the tendency of said cord to wrap around said cross arm after said ball is hit;

wherein said elongated stiffening member comprises a member having a weight of at least three/quarters of the total weight of the cord, the fastening means and said elongated stiffening member.

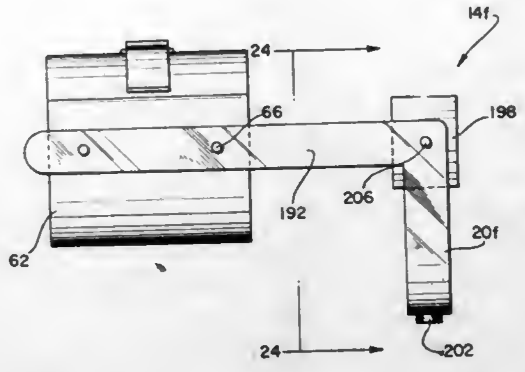
4,191,373
TENNIS ELBOW BRACE

William E. Lancellotti, 371 Broadway, Providence, R.I. 02903

Filed Dec. 6, 1976, Ser. No. 748,111

Int. Cl.^{2} A63B *69/38*

U.S. Cl. 273—29 A **14 Claims**



12. A device adapted for wear by a tennis player for minimizing and/or perventing tennis elbow comprising, a pair of elements adapted for respective generally compressive contact with the area of said player's arm adjacent the medial and lateral condyles thereof, bracket means terminating in laterally spaced free ends and positioned generally beneath the wearer's elbow with said free ends thereof proximal said condyles when said device is properly worn by a person, said elements respectively mounted on said bracket means proximal said free ends in spaced opposition to each other, said bracket means permitting the adjustment of each of said elements so as to enable said elements to apply pressure to specific areas of said player's arm so as to relieve at least some of the tension applied to said condyles normally caused by the movements of said player's arm during tennis play, said device including forearm brace means extending forwardly from opposite sides of said bracket to anchor means adapted for connection to the forearm of the wearer, said anchor means including at least an upper forearm strap adapted for positioning proximal the wearer's elbow, said forearm brace means including separate first and second relatively stiff brace members connected respectively to the lateral and medial sides of said bracket and to generally opposite sides of said forearm strap.

4,191,374
PROJECTILE RETURN APPARATUS WITH BALL TARGET AREA

Ralph J. Kulesza, Chicago; John R. Wildman, North Riverside; Joseph M. Burck, Glenview; Burton C. Meyer, Downers Grove, and Walter J. Wozniak, Addison, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,410

Int. Cl.^{2} A63B *63/00*

U.S. Cl. 273—30 **8 Claims**

1. A game apparatus for receiving and launching aerial projectiles such as a ball without substantially reducing the velocity of the projectile, comprising:

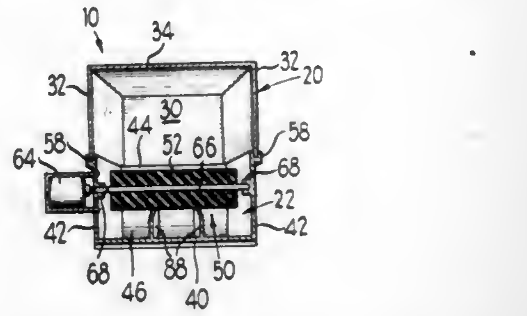
a self-contained portable housing having a generally open vertical ball receiving area;

a smaller, ball target area mounted at the rear of said housing behind said ball receiving area and having a width several times the diameter of a ball for receiving a ball propelled through the ball receiving area;

a ball propelling means including a rotating cylinder mounted adjacent the target area and a concentric arcuate housing portion spaced from the surface of said cylinder at a distance less than the diameter of said ball;

a ball ejection opening below the ball receiving area; and

guide means between said propelling means and said ejection opening for affecting the direction of a ball propelled by said propelling means, said guide means comprising a plurality of diverging dividers between the ball propelling means and ball ejection opening to define a plurality of exit paths of travel and movable means for varying the altitude of the propelled ball.



4,191,375
GAME BALL AND METHOD OF MAKING SAME

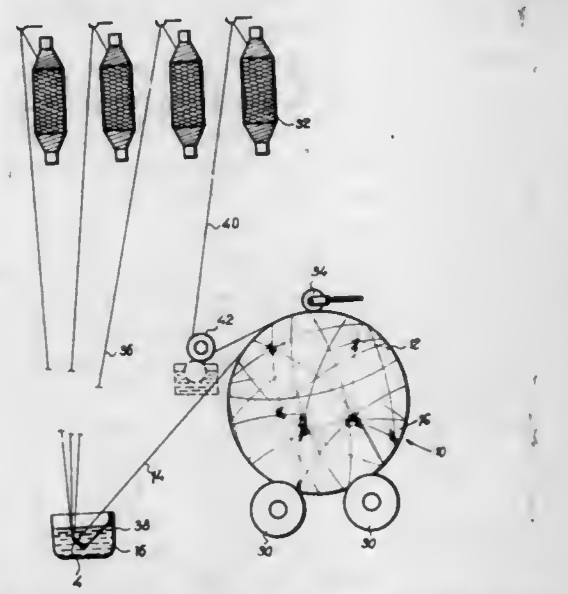
Vladimir Uruba, and Zdenek Figalla, both of Gottwaldov, Czechoslovakia, assignors to GALA, narodni podnik, Prostejov-Kraslice, Czechoslovakia

Filed Apr. 11, 1978, Ser. No. 895,370

Claims priority, application Czechoslovakia, Apr. 13, 1977, 2407/77

Int. Cl.^{2} A63B *41/10, 45/00*

U.S. Cl. 273—65 EB **7 Claims**



1. A method of making a game ball having an inner rubber bladder comprising the steps of simultaneously winding about said bladder a plurality of yarns in at least one layer, at least one of said yarns being formed of a substantially continuous strand of synthetic material and at least one of said yarns being formed of a substantially continuous strand of natural material, applying to said at least one strand of synthetic material along a major portion thereof an adhesive, prior to its winding on said bladder.

4,191,376

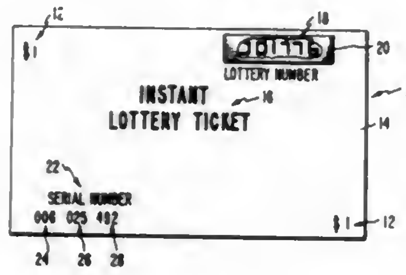
HIGHLY SECURE PLAYING CARDS FOR INSTANT LOTTERY AND GAMES

Max Goldman, and Carl Alexoff, both of Cherry Hill, N.J., assignors to Systems Operations, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 580,604, May 27, 1975, abandoned. This application Jan. 28, 1977, Ser. No. 763,639

Int. Cl.^{2} A63B *71/06*

U.S. Cl. 273—139 **6 Claims**



1. An instant lottery ticket construction for a game comprising:

a plurality of lots of tickets, each of said tickets being imprinted with a serial number, and imprinted with a lottery number seemingly randomly associated with the serial number, said lottery number being not discernible after the ticket is fabricated and when given to the player being transformable by the player to be intelligible for comparison with known winning lottery numbers set forth in the game in association with the tickets when dispensed to the player, the tickets for each of said lots being physically connected and disconnected when dispensed to the player;

said serial numbers being imprinted by means of a computer-controlled printer on successive ones of said lottery tickets with said serial numbers being sequential within each of said lots and providing an inventory control of the tickets in each of said lots;

said lottery numbers being imprinted by means of said printer on said lottery tickets with each of said lottery numbers being correlated seemingly randomly to the serial number of the same ticket by a certain computer algorithm of logical operations so that improperly altered or counterfeit lottery numbers can be detected by testing for correlation with the associated serial number; said physically connected tickets in said lots having a certain quantity of winning ones of said lottery numbers in a particular game, the winning lottery numbers being seemingly randomly distributed through said physically connected tickets of said lots without physical manipulation of said tickets and correlated with said serial numbers by a certain computer algorithm associated with said lottery number algorithm; whereby a highly reliable lottery is economically established in the ticket fabrication by the ability to validate winning lottery tickets, by the distribution and dispensing of tickets being accounted for by serial numbers, and by the assurance to players and ticket dispensers of a certain number of winning lottery tickets in seemingly random relation to non-winning tickets.

4,191,377

INDEXING MEANS FOR ROTATING DRUMS OF AMUSEMENT APPARATUS

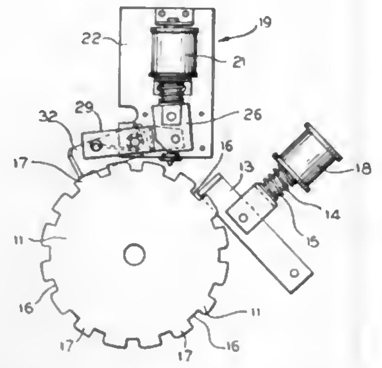
Walter M. Burnside, Waukegan, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Apr. 3, 1978, Ser. No. 892,671

Int. Cl.^{2} A63F *5/04*

U.S. Cl. 273—143 R **3 Claims**

1. In an amusement apparatus including a plurality of rotatable drums, each having a plurality of symbols and each symbol being related to an index position on an index wheel connected to the drum, said index wheel having uniformly spaced peripheral teeth and spaces between said teeth, certain combinations of said symbols entitling a player to a reward, a clutch in driving engagement with one drum, a motor for driving said one drum through said clutch, a first solenoid operated pawl having its distal end normally biased into engagement in a space on said index wheel of said one drum to lock said index wheel against rotation, and first switch means for energizing upon actuation said first solenoid operated pawl, the improvement which comprises a second solenoid operated pawl having its distal end normally biased out of engagement with the periphery of said index wheel of said one drum but in registration with a point disposed substantially medially of one of said teeth when the distal end of said first solenoid operated pawl is in engagement in one of said spaces, and second switch means connected to said second solenoid operated pawl so as to energize said second solenoid operated pawl only upon actuation of both said first and second switch means, whereby if both switch means are actuated the index wheel is driven by the motor a distance substantially equal to one-half the width of an index tooth before being locked by said second solenoid operated pawl and on subsequent deactuation of said first switch means the index wheel is driven by said motor an additional distance substantially equal to one-half of the width of an index tooth before being locked by said first solenoid operated pawl so that the total advance is one index position.



4,191,378

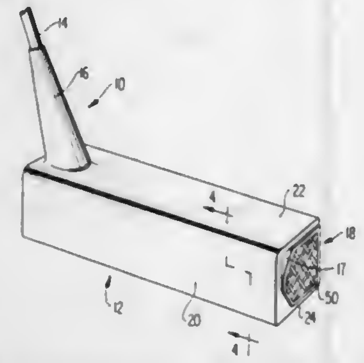
GOLF PUTTER WITH DETACHABLE MAGNETIC TAPE PLAYER CARTRIDGE

Wilfred F. Morin, 1560 Palisade Dr.; Joseph A. Martini, 655 Plumas, Suite 171, both of Reno, Nev. 89509; Peter Marich, and Harvey A. Gross, both of P.O. Box 2186, Reno, Nev. 89505

Filed May 2, 1978, Ser. No. 902,140

Int. Cl.^{2} A63B *53/00, 53/04*

U.S. Cl. 273—162 R **8 Claims**



1. In a golf putter comprising an elongated golf head and a shaft mounted to the head and projecting upwardly therefrom, the improvement wherein said elongated golf head is C-shaped in vertical cross-section, including at least top and bottom walls joined by a sidewall and having an opposite sidewall open to define a side opening cavity, and said putter further comprises a unitary magnetic tape player cartridge, said cartridge comprising a rectangular casing which is generally configured and dimensioned to the cavity of said C-shaped elongated golf head and being insertably mounted within said cavity through said opening.

4,191,379

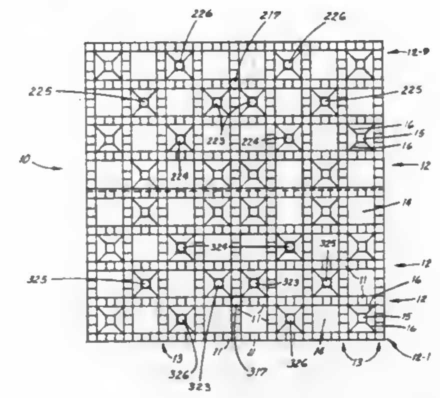
BOARD GAME

Louis DaVia, 16235 ½, Paramount, Calif. 90723

Filed Jun. 16, 1977, Ser. No. 807,224

Int. Cl.^{2} A63F *3/00*

U.S. Cl. 273—258 **7 Claims**



1. A game comprising a playing board having a flat surface with a multiplicity of discrete playing piece positions thereon arranged in a plurality of rows and a plurality of columns of distinctive colored playing piece positions which intersect to form a plurality of adjacent closed geometric figures, said figures enclosing portions of said board colored other than with said distinctive color, and certain of said playing piece positions at the intersections of said rows and columns have diagonal indicia leading therefrom, there being at least one playing piece position on each of said diagonal indicia, said distinctive colored playing piece positions thereby defining a grid of alternative rectilinear paths and diagonal paths of playing piece movement, at least some of said rectilinear paths having a different number of playing piece positions than said diagonal paths whereby strategy may be employed in alternatively selecting a path amongst said rectilinear and diagonal paths, a plurality of playing pieces for each of a plural number of players, and indicia means associated with each of said playing pieces specifying an exact value number of units of movement which a piece may cause by progression along said paths and by transfer to an adjacent confronting piece in a direction determined by the alignment of said movement causing piece and said confronting piece whereby ones of said playing pieces are adapted for movement by each player in rotation in said paths according to the value number associated with a selected piece which is moved until confronted with another playing piece blocking the path of movement of said selected piece so that the excess of the balance of said value number associated with said selected playing piece over the number of units theretofore moved by said selected playing piece in the current turn in reaching said confronting playing piece is imparted to said confronting playing piece to move the confronting playing piece in a direction of alignment of said selected piece and said confronting piece in lieu of said selected piece, a number of positions equal to the aforesaid balance.

4,191,380

VIDEO DISC PLAYER HAVING UNITARY RECORD HANDLING PLATFORM CONSTRUCTION

James A. Allen, Monrovia, and Leslie A. Torrington, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,537

Claims priority, application United Kingdom, Feb. 13, 1978, 5736/78

Int. Cl.^{2} G11B *3/36*

U.S. Cl. 274—9 B **4 Claims**

1. A player for use with a disc record removably subject to occupancy of a protective caddy; said player comprising:

(A) a housing having an input slot into which a caddy is inserted;

(B) means for guiding caddy insertion into said housing along a path;

(C) a turntable for centering and rotatably supporting a record;

(D) means for removing a record from a caddy during caddy withdrawal subsequent to arrival of a record-carrying caddy at a fully inserted position in said housing, whereby a record is retained in said housing upon conclusion of such caddy withdrawal;

(E) a platform mounted in said housing subject to motion between an elevated position and a depressed position (1) for supporting a retained record while occupying said elevated position, and (2) for effecting transfer of said retained record to said turntable during its motion toward said depressed position;

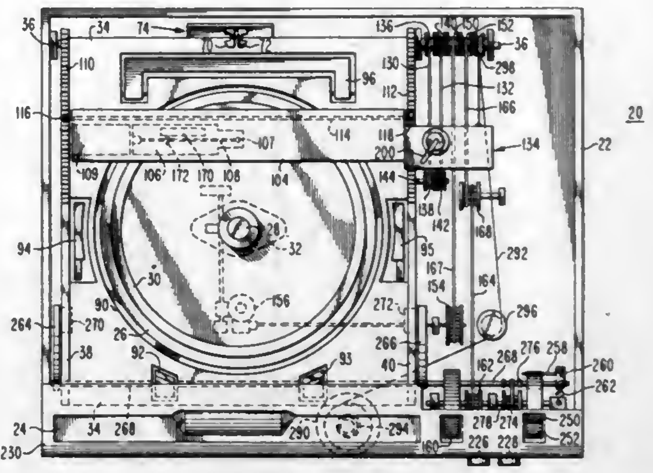
(F) a signal pickup for recovering prerecorded information from a turntable-supported record during playback;

(G) a carriage for supporting said signal pickup;

(H) means for guiding said carriage in said housing along a second path lying parallel to said path of caddy insertion;

(I) means coupled to said carriage for selectively translating said carriage during playback along said guiding means away from a starting position in correlation with the rotation of said turntable; and

(J) means for fixedly mounting said caddy guiding means and said carriage guiding means on said movable platform.



4,191,381

APPARATUS FOR FACILITATING CARRIAGE RETURN IN VIDEO DISC PLAYER

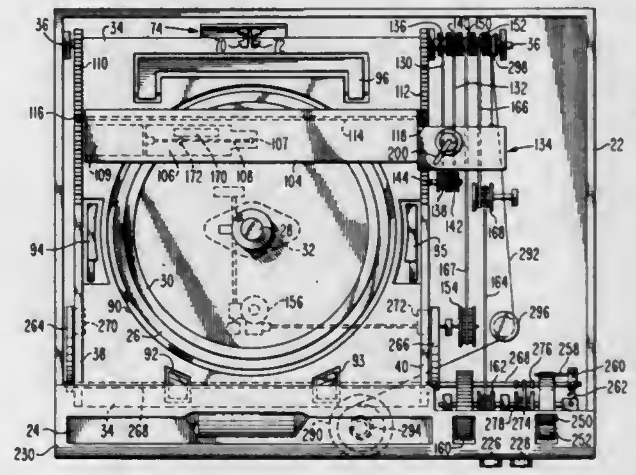
Frederick R. Stave, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,535

Claims priority, application United Kingdom, Feb. 13, 1978, 5733/78

Int. Cl.^{2} G11B *3/36, 17/04*

U.S. Cl. 274—9 B **3 Claims**



1. A player for use with a record caddy; said player comprising:

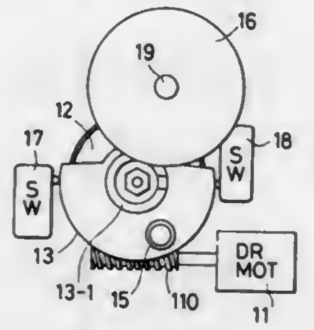
(A) a housing having an input slot into which a caddy is inserted along a path;

(B) a record extracting mechanism for removing an enclosed

record from said caddy during withdrawal thereof subsequent to an occupied caddy arrival at a fully inserted position in said housing, thereby retaining the record in said housing for playback; wherein an empty caddy is inserted into said housing subsequent to playback to retrieve a retained record from said player;
(C) a turntable mounted in said housing for centering and supporting a retained record;
(D) means mounted in said housing for rotating said turntable;
(E) a signal pickup for recovering prerecorded information from a turntable-supported record during playback;
(F) a carriage for supporting said signal pickup;
(G) means for guiding said carriage in said housing along a second path lying substantially parallel to said path of caddy insertion; the location of said carriage path relative to said caddy path being such that an empty caddy engages said carriage, when said carriage is at a position other than at a starting position, during a caddy insertion into said housing to reset said carriage at said starting position;
(H) means for mechanically translating said carriage during playback along said guiding means away from said starting position and in a direction opposite to the direction of said caddy insertion; and
(I) means coupled to said carriage for storing energy during mechanical translation of said carriage in said opposite direction along said guiding means; said coupling between said energy storing means and said carriage being such that the stored energy applies a force to said carriage in a sense urging its travel along said guiding means in said direction of caddy insertion, whereby said applied force aids resetting of said carriage by an empty caddy to said starting position when said carriage is at a position other than at said starting position during a caddy insertion.

4,191,382
TURNTABLE ROTATION CONTROL DEVICE

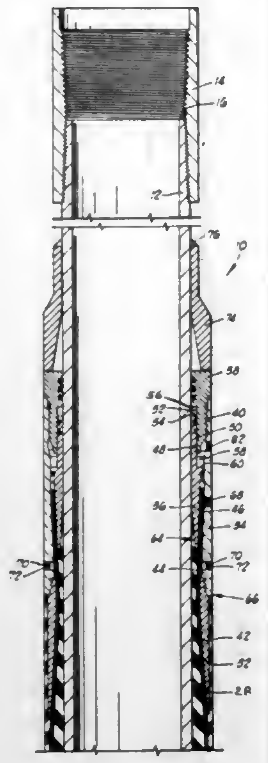
Shizuo Inaba, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 19, 1978, Ser. No. 943,835
Claims priority, application Japan, Sep. 20, 1977, 52-112937
Int. Cl.^{2} G11B *17/06*
U.S. Cl. 274—15 R **10 Claims**



1. In a record player having a turntable, a turntable drive motor for rotating said turntable, a tone arm and a rest for the tone arm, the improvement comprising:
a reversible electric motor,
first means for horizontally swinging a tone arm towards the inner circumference of a record mounted on said turntable by rotation of said motor in a first direction;
second means for horizontally swinging said tone arm toward the outer circumference of a record mounted on said turntable by rotation of said motor in a second direction;
means for generating signals to effectuate rotation of said motor in said first and second directions,
means for detecting when said tone arm has been swung horizontally from an initial position on said rest and generating an output signal thereof,
circuit means for producing a logical sum of an output signal of said signal generating means to drive said motor in said first direction and an output signal of said detecting means; and
a drive circuit driven in response to the logical sum output of said circuit means to control rotation of the turntable.

4,191,383
INFLATABLE PACKER AND METHOD OF CONSTRUCTING SAME

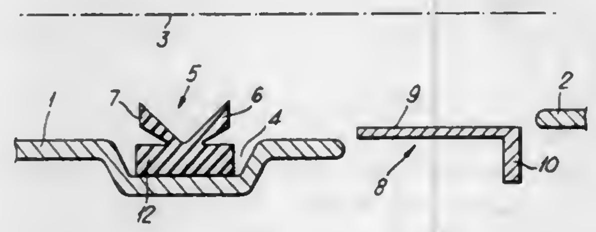
Eugene E. Baker, and Ernest E. Carter, Jr., both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Feb. 2, 1979, Ser. No. 8,773
Int. Cl.^{2} F16J *15/40, 15/46*
U.S. Cl. 277—1 **18 Claims**



1. An inflatable packer element, comprising:
an inflatable bladder means including a reinforcing element;
an annular anchor means having an axially tapered surface;
an annular wedge means having an axially tapered surface, said bladder means, anchor means and wedge means being so arranged that an end of said reinforcing element is located between said tapered surfaces of said anchor means and said wedge means; and
means for applying hydraulic pressure to said wedge means to urge said tapered surface of said wedge means toward said tapered surface of said anchor means so that said end of said reinforcing element is clamped between said tapered surfaces.

4,191,384
METHOD AND DEVICE FOR SEALING A PIPE JOINT

Lennart Svedberg, Bredaryd, Sweden, assignor to Forsheda Gummifabrik AB, Forsheda, Sweden
Filed Apr. 3, 1978, Ser. No. 893,038
Int. Cl.^{2} F16J *15/06;* **B23Q** *3/00*
U.S. Cl. 277—1 **4 Claims**

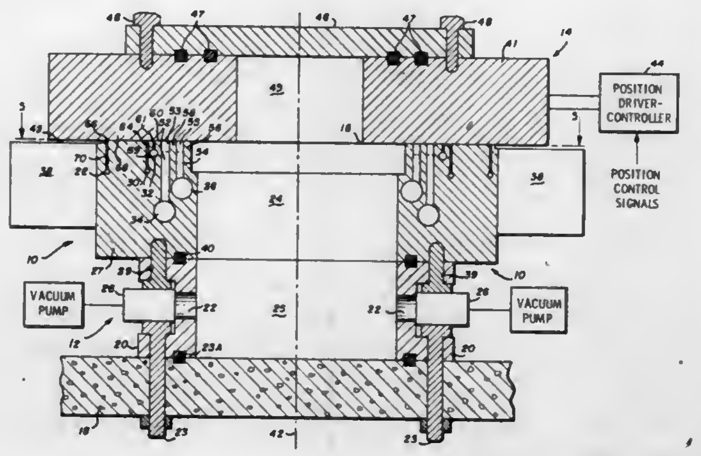


1. The method of placing in correct position the annular sealing lip of an elastomeric sealing ring when assembling a

pipe joint by inserting one end of an inner pipe into one end of an outer pipe, said completed pipe joint comprising said elastomeric sealing ring seated in a circumferential inner channel in said outer pipe, said annular sealing lip protruding obliquely inwardly and against the direction of insertion of said inner pipe for making a seal between said inner and outer pipes when said assembly of said pipe joint has been completed, comprising:
placing said ring in said channel prior to insertion of said inner pipe;
inserting into the central opening of said annular sealing lip a radially-expandable generally-cylindrical mounting guide which, upon insertion thereof, is of smaller diameter than said central opening;
thereafter expanding said mounting guide radially to stretch said lip to an inner diameter at least as great as the outer diameter of said one end of said inner pipe;
while said lip is so stretched, inserting said one end of said pipe through the interior of said mounting guide to a position within said opening in said stretched lip; and
thereafter withdrawing said mounting guide and permitting its said lip to contract and bear against the outside surface of said end portion of said inner pipe.

4,191,385
VACUUM-SEALED GAS-BEARING ASSEMBLY

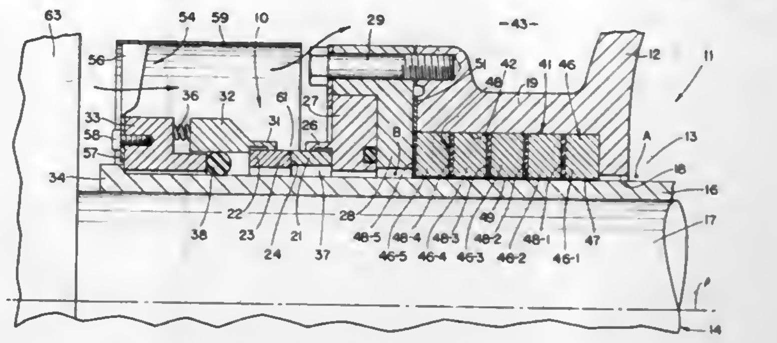
Wayne L. Fox, deceased, late of Castro Valley, Calif., and by Rosemary M. Fox, executrix, 5640 Cold Water Dr., Castro Valley, Calif. 94546
Filed May 15, 1979, Ser. No. 39,307
Int. Cl.^{2} B01J *17/00;* **B16J** *15/40*
U.S. Cl. 277—3 **10 Claims**



1. An integral vacuum sealed gas-bearing housing assembly comprising, in combination:
a first sub-assembly housing means establishing a first internal chamber, said first sub-assembly having a first planar surface about the periphery of said first chamber and a plurality of vacuum plenums delineated by adjacent lands and extending to said planar surface;
a plurality of individual plenum ducts connected to said plenums;
manifold means for interconnecting said plenum ducts to vacuum pump means;
at least one gas-bearing means within said first sub-assembly about said first planar surface and extending about the perimeter of the chamber and spaced laterally from said plenums;
at least one gas duct within the side wall of said first housing and interconnected to the gas-bearing means;
manifold means for interconnecting the gas duct to a gas pump means to pump gas therein at a pressure above atmospheric pressure;
a second sub-assembly housing means forming a second internal chamber communicating with said first internal chamber, said second sub-assembly housing means having a second planar surface, said second planar surface being in face-to-face orientation with said first planar surface and overlapping said individual plenums and said gas-bearing groove; and
driver means for moving said second sub-assembly housing means relative to said first sub-assembly housing means whereby gas pumped within said gas duct establishes a gas bearing about the interface of said first and second planar surfaces to establish a spacing intermediate the first and second sub-assemblies and said vacuum pump means removes gas from said interface intermediate the gas-bearing means and said internal chambers.

4,191,386
SELF-COOLED MECHANICAL SEAL

Lowell E. Hershey, Portage, Mich., assignor to Durametallic Corporation, Kalamazoo, Mich.
Filed Jan. 16, 1978, Ser. No. 870,006
Int. Cl.^{2} F16J *15/34*
U.S. Cl. 277—22 **8 Claims**

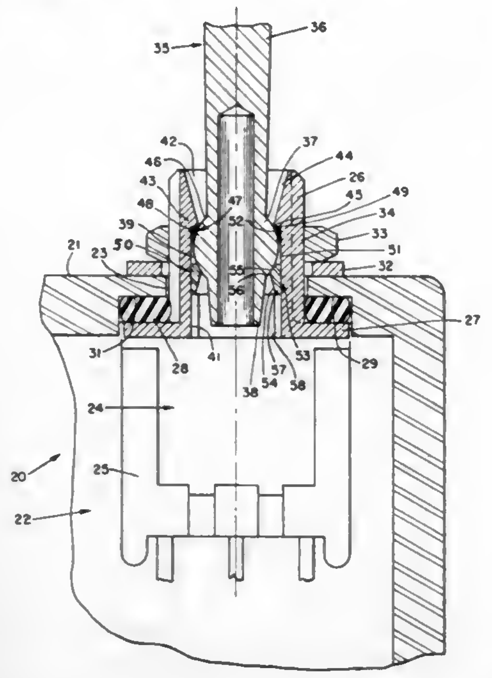


1. In a seal construction for creating a sealed relationship between a wall of a fluid handling device for use with a high-temperature fluid and a rotatable shaft projecting outwardly of the wall through an opening formed therein, the fluid handling device defining therein a fluid chamber in communication with the opening, said wall having an axially elongated sleevelike stuffing box fixedly related thereto in concentric and surrounding relationship to said shaft so that the interior of said stuffing box communicates with said opening, and a mechanical seal assembly positioned adjacent the free end of the stuffing box and disposed in surrounding relationship to the shaft for creating a sealed relationship therebetween to prevent escape of fluid from said device, said mechanical seal assembly including first and second seal ring means disposed in axially opposed relationship, first mounting means for nonrotatably connecting said first seal ring means with respect to said stuffing box, second mounting means for nonrotatably connecting said second seal ring means with respect to said shaft, said first and second seal ring means respectively having first and second annular axially directed seal faces formed thereon and disposed in relatively rotatable sliding sealing engagement with one another, the improvement comprising heat dissipating packing means disposed within the stuffing box axially between said opening and said mechanical seal assembly for (1) extracting substantial quantities of heat from the fluid and the shaft and transferring same radially outwardly into the stuffing box and thence into the surrounding environment and (2) restricting the flow of fluid therepast from said device to said mechanical seal assembly, said heat dissipating packing means being formed as an axially elongated sleevelike packing structure stationarily mounted within the interior of said stuffing box in close surrounding relationship to said shaft so as to define a narrow annular clearance space in surrounding relationship to said shaft, said sleevelike packing structure having a relatively high heat transfer coefficient in the radial direction to facilitate the transfer of heat radially outwardly into the stuffing box while having a low heat transfer coefficient in the axial direction to prevent heat transfer axially therealong toward the mechanical seal assembly, said packing structure including a plurality of axially aligned packing rings positioned within said stuffing box in surrounding relationship to said shaft and a plurality of thermal insulator rings disposed in axial alignment with said packing rings, said packing rings being constructed of a mate-

rial having a high heat transfer coefficient, and said insulator rings being axially spaced apart and positioned axially between adjacent packing rings for preventing heat transfer axially between adjacent packing rings.

4,191,387
WATERTIGHT SEAL FOR TOGGLE SWITCHES

Francis D. Kirchoff, Waban, Mass., assignor to Alco Electronic Products, Inc., North Andover, Mass.
Filed Dec. 21, 1978, Ser. No. 971,801
Int. Cl.^{2} H01H *3/06;* **F16J** *15/18*
U.S. Cl. 277—30 **10 Claims**



1. A watertight seal for a toggle switch of the type having an elongated, toggle switch handle with an integral, generally spherical, portion of predetermined diameter, intermediate of the length thereof said seal comprising:

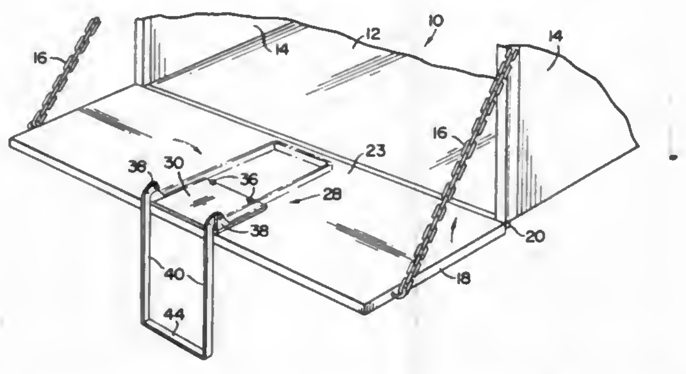
- an elongated hollow housing having an open upper end, an open lower end, an annular, inward-projecting shoulder, intermediate of said ends, of less diameter than said spherical portion and a cylindrical recess of greater diameter than said spherical portion extending from said open, lower end to said shoulder;
- said spherical portion having an outer circumferential face in sliding contact with said annular shoulder;
- a first annular seal, of flexible resilient material, seated within said cylindrical recess and juxtaposed to said shoulder said seal being in sliding contact with the outer circumferential face of said spherical portion and
- a second annular seal, of flexible resilient material, mounted within said cylindrical recess, and in sliding contact with the inner circumferential face of said spherical portion;
- said first and second annular seals permitting actuation of said toggle handle while preventing passage of moisture around said handle.

4,191,388
TAIL GATE STEP

Lester T. Barksdale, P.O. Box 729, Tavares, Fla. 32778
Filed Jun. 1, 1978, Ser. No. 911,336
Int. Cl.^{2} B60R *3/02*
U.S. Cl. 280—166 **10 Claims**

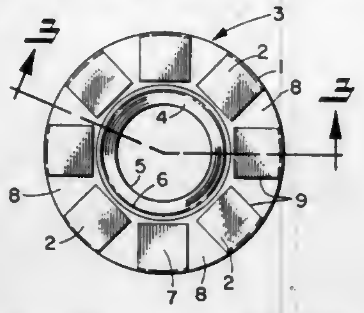
1. In combination:

- a vehicle having a foldable panel pivoted by a hinge to a portion of the vehicle, said panel having holes therein;
- a plate mounted against said panel, said panel including a pair of sheets with a void therebetween, said holes extending through one of said sheets;
- means extending through said holes for removably coupling said plate with said panel;
- a step; and
- means for pivotably coupling said step with said support member such that said step may be pivoted to a stepping position below said panel when said panel is in the horizontal position, said coupling means including a pair of rods, each rod having a first leg and a second leg substantially normal to said first leg, said first leg coupled substantially normal to said plate and extending through one of said holes, and wherein said second leg extends substantially parallel with said sheet and through said void.



4,191,389
SEALING WASHER

Jerry G. Jelinek, La Habra, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Oct. 26, 1977, Ser. No. 845,640
Int. Cl.^{2} F16K *41/00;* **F16J** *9/06*
U.S. Cl. 277—166 **8 Claims**



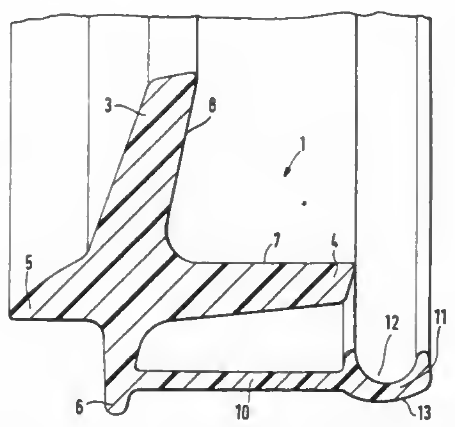
1. A sealing washer comprising an elastomeric sealing ring; and a rigid annular retainer around said sealing ring having radial channels on one side thereof defined between folded-over integral tabs of said retainer, said tabs having inner ends substantially tangent to the inside diameter of said retainer; said sealing ring having integral radially extending portions extending into said channels.

4,191,390
GASKET RING WITH LOCKING RINGS

Franz-Josef Wolf, Bad Soden-Salmunster, and Dieter Roth, Schluchtern-Kressenbach, both of Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Bad Soden-Salmunster, Fed. Rep. of Germany
Filed Sep. 18, 1978, Ser. No. 943,230
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743238; Dec. 9, 1977, 2754982
Int. Cl.^{2} F16J *15/10*
U.S. Cl. 277—219 **8 Claims**

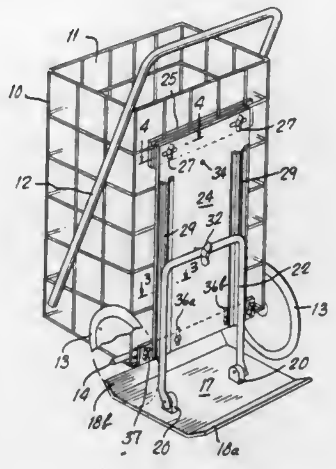
1. A sealing ring assembly including:

- a sealing ring of elastic material adapted for insertion in a pipe element, said sealing ring having a contoured annular retaining ring with a concave opening facing radially inwardly with respect to said sealing ring, said retaining ring being adapted to engage an annular groove in a pipe to secure said sealing ring against axial displacement; and
- a clamping ring for engagement with said retaining ring, said clamping ring being a split ring the major portion of which is U-shaped in cross section, said clamping ring having overlapping ends, one of said overlapping ends being reduced in size to fit within and engage the other of said overlapping ends to form a substantially uninterrupted circular path, said clamping ring being radially expandable, and said clamping ring including locking means to prevent radial contraction of said clamping ring.



4,191,391
SHOPPING CART WITH AUXILIARY SLED ATTACHMENT

Peter J. Dorlini, 415 Gramatan Ave., Mt. Vernon, N.Y. 10552
Filed Sep. 1, 1978, Ser. No. 938,914
Int. Cl.^{2} B62B *13/18*
U.S. Cl. 280—9 **8 Claims**



1. A shopping cart of basket-type construction having an open top for the reception of groceries and the like, a handle for pushing or pulling the same, and a pair of wheels at its bottom rear end for rolling ground engagement with a sidewalk, street and the like, characterized in that:

(a) said shopping cart has an auxiliary sled attachment including a sled which is movable into and out of one of two selective positions, wherein in one of said positions the sled of such attachment is in ground engaging position, and in the other of said positions is in an inoperative, non-ground engaging position;

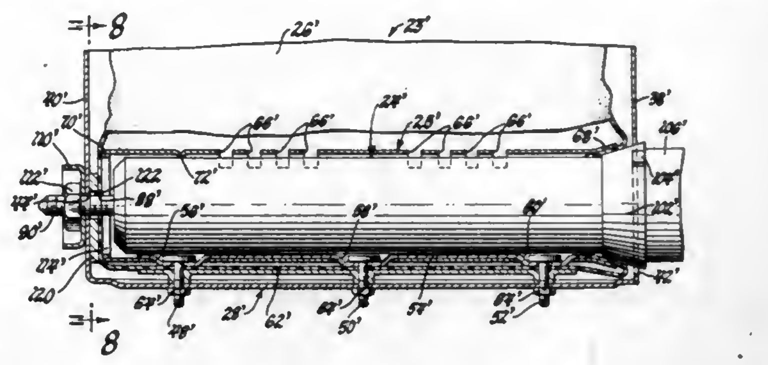
(b) said auxiliary sled attachment has
- a support plate secured to the back of the cart,
- a slidably mounted inverted U-shape frame,
- vertically slidable means on said U-shape frame cooperating with complemental means on said support plate, and
- a pivotal connection between the free ends of the U-shape frame and said sled member, whereby said inverted U-shape frame may be moved upwardly and downwardly to bring said sled into and out of operative, ground engagement;

and

(c) means for retaining said sled in either of said selective positions.

4,191,392
OCCUPANT RESTRAINT CUSHION SYSTEM

Ronald R. Barnett, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 24, 1978, Ser. No. 936,353
Int. Cl.^{2} B62D *21/08*
U.S. Cl. 280—740 **2 Claims**



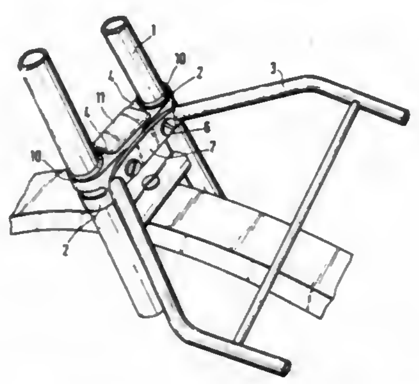
1. An occupant restraint system comprising, in combination, an elongated housing adapted to be fixedly mounted on a motor vehicle, said housing including a base wall connected to a pair of laterally spaced side walls, one of said side walls having an enlarged opening formed therein and the other side wall having an aperture formed therein, a restraint cushion having a pair of laterally spaced side walls, a diffuser located within said restraint cushion and being positioned in the housing between the end walls, means fixed with said diffuser and passing through the restraint cushion for rigidly connecting the diffuser to said base wall so as to locate said diffuser concentrically and in spaced relationship with respect to said enlarged opening in said one of said side walls of said housing, a gas generator having a body portion positioned in said diffuser and having a stud formed with one end thereof that extends through one of said side walls of said restraint cushion and through said aperture in said other side wall of said housing, an enlarged head formed with the other end of said body portion and extending out of the other of said side walls of the restraint cushion, a nut on the stud, said diffuser having a longitudinal length greater than the longitudinal length of said body portion with one end of said diffuser abutting a fixed portion of said one of said side walls of said housing and the other end abutting said enlarged head, the stud end of said body portion being spaced from said one of said side walls so as to form a chamber between said stud end of said body portion and the restraint cushion along said one of said side walls so that upon tightening of said nut on the stud the opposite ends of said diffuser cooperate with said one of said side walls of said housing and with said enlarged head respectively to provide a seal at each end of the diffuser, and a portion of said one end of said diffuser being spaced from said fixed portion of said one of said side walls of said housing so as to provide a vent for said chamber that prevents a pressure build-up therein.

4,191,393
BICYCLE LUGGAGE CARRIER ATTACHMENT ARRANGEMENT

Heinz Niemann, Herford, Fed. Rep. of Germany, assignor to ESGE-Marby GmbH & Co., Bielefeld, Fed. Rep. of Germany
Filed Dec. 7, 1978, Ser. No. 967,220
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 7828291[U]
Int. Cl.^{2} B62J *7/04, 11/00*
U.S. Cl. 280—289 A **10 Claims**

1. Attachment arrangement to attach a luggage carrier to the fork elements (1) of the rear fork of a bicycle frame, in which the carrier (3) has a cross bar (7) formed with screw holes therethrough, said arrangement comprising

two separate U-shaped clamps (2), each formed with elongated openings (5) in the legs (4) of the U for placement of the U-shaped clamps, individually, around the fork elements (1); and threaded bolts (6) passing through said openings and through the screw holes of the cross bar (7) of the carrier, the elongated openings permitting adjustment of the U-shaped clamps with respect to the fork elements of different sizes and of respectively different mutual spacing.



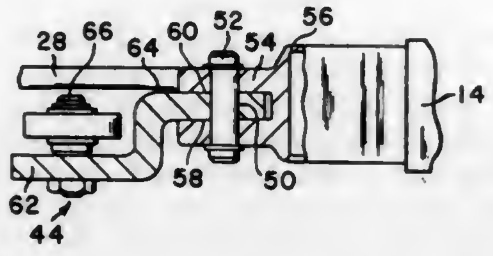
4,191,394
TRAILER HITCH

John T. Kasselmann, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 3, 1978, Ser. No. 922,007

Int. Cl.^{2} B62D *13/04;* B60T *7/20*

U.S. Cl. 280—432 **3 Claims**



1. In a tow vehicle-trailer combination having a steering system on the trailer that responds to a steering input signal created in the tow vehicle, a brake system on the trailer that responds to a braking input signal developed in a surge brake actuator, and a hitch for joining the tow vehicle to the trailer, the improvement in which the hitch includes, a connecting member pivotally attached to said tow vehicle, to said surge brake, and to said steering system, said connecting member comprising:

a bracket fixed to said tow vehicle having a first and second spaced apart pivotal point of attachment;

a clevis attached to an input member of said surge brake actuator;

a plate member having a hole therethrough, said hole being aligned with said clevis;

a pin extending through said hole for connecting said plate with said clevis, said clevis supporting said plate member in said trailer, said plate having third and fourth spaced apart pivotal points of attachment located on opposite sides of said hole;

a first bar attached to said bracket and said plate for connecting said first pivotal point of attachment with said third pivotal point of attachment; and

a second bar attached to said bracket and said plate for connecting said second pivotal point of attachment with said fourth pivotal point of attachment, said first and second bars transmitting both the braking input signal and the steering input signal from the tow vehicle to the plate member, said plate member pivoting with respect to said surge brake actuator for transmitting said steering input signal from the tow vehicle to the trailer and moving longitudinally with respect to the tow vehicle for transmitting said braking input into said surge brake actuator to effect a brake application, said first, second, third and fourth spaced apart pivotal points of attachment stabilizing the transmission of said braking input signal to said surge brake actuator to reduce the possibility of introducing a steering input into said steering system during a brake application.

4,191,395
SKI BOOT ELEMENT

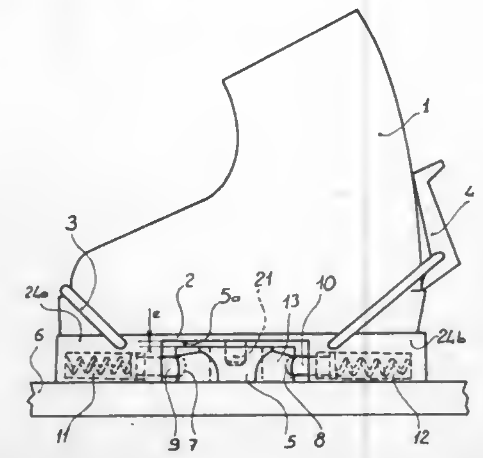
Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France

Filed Sep. 2, 1977, Ser. No. 830,244

Claims priority, application France, Sep. 3, 1976, 76 26686

Int. Cl.^{2} A63C *9/08*

U.S. Cl. 280—613 **15 Claims**



1. A ski-boot element attached at least temporarily to a boot during skiing and designed to be held to a ski, comprising

(a) a depression arranged substantially in the central area of said element and extending transversely under the skier's foot the open out on both sides of the said element;

(b) front and rear parts of said element located at opposed ends of said depression, at least one of said parts having means for locking said element on said ski, said locking means being directed towards the interior of said depression and being designed to cooperate with a corresponding locking part fixed to the said ski; and

(c) a projecting pivot extending from the bottom of said depression towards the lower surface of said element and substantially perpendicularly thereto, said pivot being located between said at least one locking means and the opposed one of said parts and cooperating, when said ski is being fitted, with a cavity in the locking part fixed to said ski, said cavity receiving said pivot in a rotatable relationship.

4,191,396
CROSS COUNTRY SKI BINDING

Peter Biermann, Warmbronn, and Otto Ewald, Griesheim, both of Fed. Rep. of Germany, assignors to Vereinigte Baubeschlagfabriken Gretsch and Company GmbH, Fed. Rep. of Germany

Filed Nov. 7, 1977, Ser. No. 849,447

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1976, 2650678

Int. Cl.^{2} A63C *9/00*

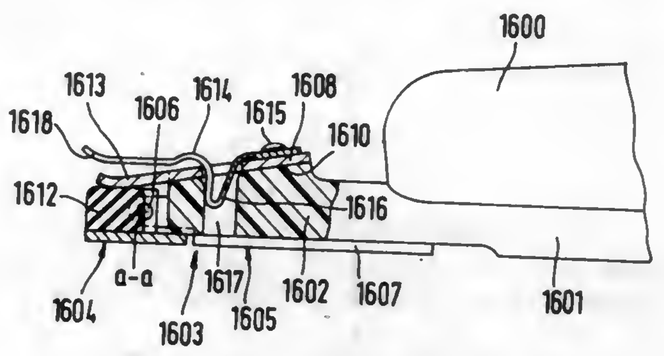
U.S. Cl. 280—615 **29 Claims**

1. Cross country ski binding comprising:

forward ski boot support element means fixedly attachable to a ski, said support element means including means supportingly engageable with a forward sole extension of a ski boot while permitting lifting of the rear part of said ski boot from the ski,

and resiliently biased latching means for engaging said support element means with said forward sole extension to latch said sole extension to said ski,

wherein said support element means includes a front support element part which is fixedly attachable to said ski, a rear support element part engageable with a free end of said forward sole extension, in a manner which leaves a longitudinal portion of the sole extension between said free end and a show portion of the ski boot unrestrained against lift-off from said rear support element part, and a connecting part connecting said front and rear support element parts for angular movement relative to one another, whereby ease of lifting the rear part of said ski boot is enhanced by said angular movement.



4,191,397
BABY CARRIAGE

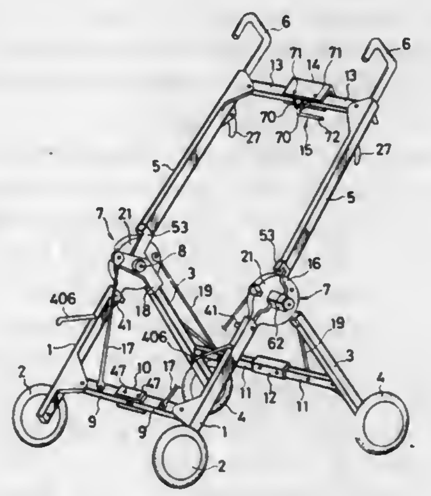
Kenzo Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed May 4, 1978, Ser. No. 903,016

Claims priority, application Japan, Jun. 15, 1977, 52/71460; Dec. 22, 1977, 52/155189; Jan. 7, 1978, 53/596[U]; Jan. 27, 1978, 53/8443

Int. Cl.^{2} B62B *11/00*

U.S. Cl. 280—647 **12 Claims**



1. A collapsible baby stroller, comprising frame means, hammock means operatively held in said frame means for resting a baby in said hammock means, said frame means comprising first and second leg means and push means, said frame means further comprising pivotal mounting means having a pivot axis, said pivotal mounting means being disposed on opposite sides of said hammock means, said pivotal mounting means operatively pivotally interconnecting said first and second leg means and said push means, at least one of said pivotal mounting means including fixed stop plate means having a circumferential surface with its center at said pivot axis, said circumferential surface of said stop plate means having at least two notches at different positions thereon; said stroller further comprising a wedge-like member operatively supported by said push means and movable toward and away from said stop plate means; whereby the selective engagement of said movable wedge-like member with either of said at least two notches enables said push means to be alternately fixed in two positions so that said push means are tilted forwardly of said hammock means in one of said two positions and rearwardly of said hammock means in the other of said two positions.

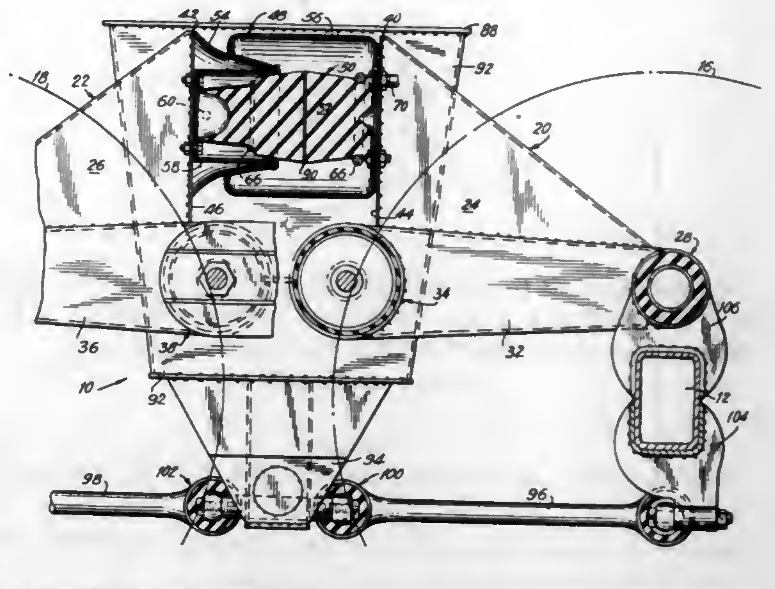
4,191,398
VEHICLE SUSPENSION SYSTEM

Elwood H. Willetts, 102 S. Penataquit Ave., Bay Shore, N.Y. 11706

Continuation-in-part of Ser. No. 706,730, Jul. 19, 1976, Pat. No. 4,030,738, and Ser. No. 807,002, Jun. 16, 1977, Pat. No. 4,132,433. This application Oct. 28, 1977, Ser. No. 846,374

Int. Cl.^{2} B60G *5/00*

U.S. Cl. 280—683 **1 Claim**



1. A multiple axle vehicle suspension structure, comprising, in combination: transversely extending axles spaced from one another longitudinally with respect to the longitudinal axis of said vehicle suspension structure, frame members spaced transversely with respect to one another and extending between said axles, opposing rocker beam assemblies separately trunnioned in said structure at an elevation beneath the elevation of said frame members, said opposing rocker beam assemblies being pivotally supported at longitudinally extending ends thereof by and above the respective elevations of said axles, multiple spring means characterized by the absence of helical springs and being reactive with respect to said axles for operationally equalizing the load as between said axles, said multiple spring means comprising an air spring assembly disposed intermediate and cooperative with upwardly extending faces of said opposing rocker beam assemblies, and at least one elastomer which is operatively resistant to compressive forces produced during use, said compressive resistant elastomer comprising an elastomeric member of high hysteresis characteristics and being operatively self-damping while in parallel relationship with respect to said air spring assembly, operationally providing a combined spring rate with said air spring assembly which increases progressively with load, said compressive resistant elastomer being enclosed within the confines of and during use functioning within the longitudinal space limitations as that of said air spring assembly.

4,191,399
VEHICLE OCCUPANT RESTRAINT SYSTEM

Louis P. Garvey, Birmingham, and Chester F. Rhamstine, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

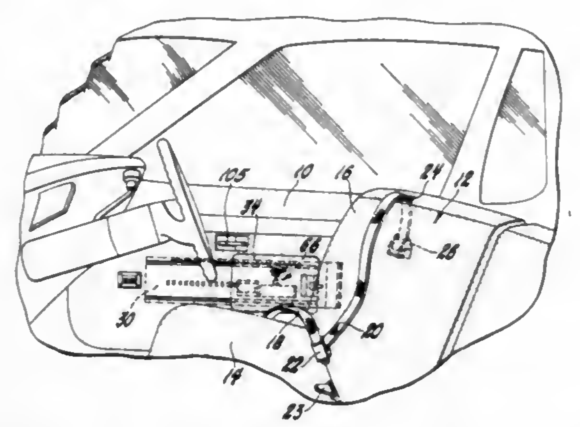
Filed May 18, 1978, Ser. No. 907,116

Int. Cl.^{2} B60R *21/10*

U.S. Cl. 280—806 **5 Claims**

1. In a vehicle having a body with a side door pivotally movable between open and closed positions to facilitate entry and exit of a vehicle occupant, a seat for a vehicle occupant operatively mounted within said body adjacent to said door, said seat having a bench and a back disposed laterally of said door, a restraint belt for an occupant sitting in said seat, first anchor means operatively connected to one end of said belt and secured to said seat back, second anchor means operatively connected to said vehicle body disposed laterally from said door, said second anchor means including selectively engage-

able buckle means for connection with the other end of said belt, and interlock means for securing said seat back directly to said side door to lock said door under predetermined forward load on said seat back and prevent forward movement of said seat back relative to said door and thereby holding said first anchor means stationary relative to said vehicle body.



4,191,400

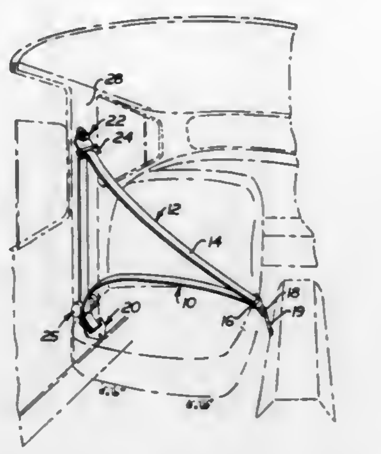
SWIVELING ANCHOR FOR OCCUPANT RESTRAINT SYSTEM

Edward J. Smith, Mantachie, Miss., assignor to REPA Feinstanzwerk GmbH, Fed. Rep. of Germany

Filed Mar. 25, 1977, Ser. No. 781,194

Int. Cl.^{2} B60R *21/10*

U.S. Cl. 280—808 **1 Claim**



1. In a vehicle restraint system of the type in which a belt member extends upwardly from a first vehicle anchorage point to an upper vehicle anchorage point and then diagonally downwardly across the chest of a vehicle occupant to a lower anchorage point and where said first anchorage point comprises a belt retractor connected with said belt and having means urging said belt toward a retracted position, anchorage means at said upper anchorage point for engaging the belt member generally behind outwardly and above the occupant's outside shoulder for guiding the belt member over the occupant's shoulder and then diagonally downwardly toward said first anchorage point and for transmitting forces to the frame of the vehicle generally behind, outwardly of, and above the occupant's outside shoulder, said anchorage means comprising a ring member having an opening through which the belt member extends, an anchor member connected in force transmitting relationship with said ring member, said anchor member comprising a sheet metal member having a portion folded back upon itself to define first and second metal sheet portions with contiguous inner surface portions, said sheet metal member forming a loop surrounding a portion of said ring and being non-rotatably connected therewith, means for supporting said anchor member in force transmitting relationship with the frame of the vehicle comprising a bushing member fixedly connected with the frame of the vehicle, said bushing member having an outer surface portion forming a portion of a sphere, said inner surface portions of said first and second metal sheet portions of said anchor member extending generally outwardly and forming bearing surface means in the shape of a portion of a sphere disposed in surrounding relation with said outer surface portion of said bushing member for allowing said anchor member to move universally with respect to said bushing member to allow the diagonal portion of the shoulder belt to remain flat against the occupant's chest as the occupant's upper torso moves.

4,191,401

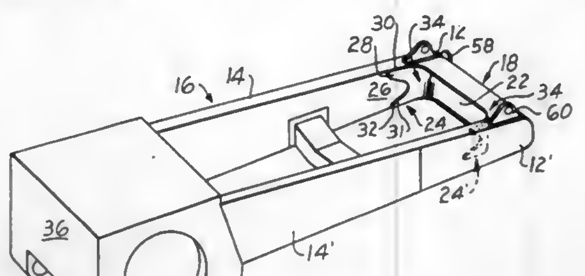
MAIN FRAME NOSE CONSTRUCTION

Ronald L. Krolak, Morton, Ill., and Delbert G. Nelson, West Bountiful, Utah, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 18, 1977, Ser. No. 816,632

Int. Cl.^{2} B62D *27/00*

U.S. Cl. 280—796 **11 Claims**



1. A nose construction for spanningly connecting the front ends of a pair of generally parallel linearly extending vehicle frame members, comprising:

- a tube extending from the front end of one to the front end of the other of said pair of frame members;
- a pair of gusset means unitarily formed of said tube, one adjacent each end thereof, each extending along an in-facing side of the exterior of the respective one of said frame members toward a rear end thereof;
- means for affixing said tube to said frame members; and
- means for affixing said gusset means to said frame members;
- wherein each of said pair of gusset means further comprises an upper gusset unitarily formed of said tube and extending along a top portion of the respective frame member, and a lower gusset unitarily formed of said tube and extending along a bottom portion of a respective frame member, and a central gusset unitarily formed with said tube, said upper gusset, said lower gusset, and said central gusset extending along the respective in-facing side of a respective intermediate portion of a respective frame member; and
- wherein each of said central gussets comprises an upper branch abutting a respective upper gusset, a lower branch abutting a respective lower gusset, and a central region terminating short of the rearward termination of both of said upper and lower branches.

4,191,402

FORM FOR CONTROL AND/OR RECORDING PURPOSES

Irving R. Michlin, Katonah, N.Y., assignor to Transkrit Corporation, Elmsford, N.Y.

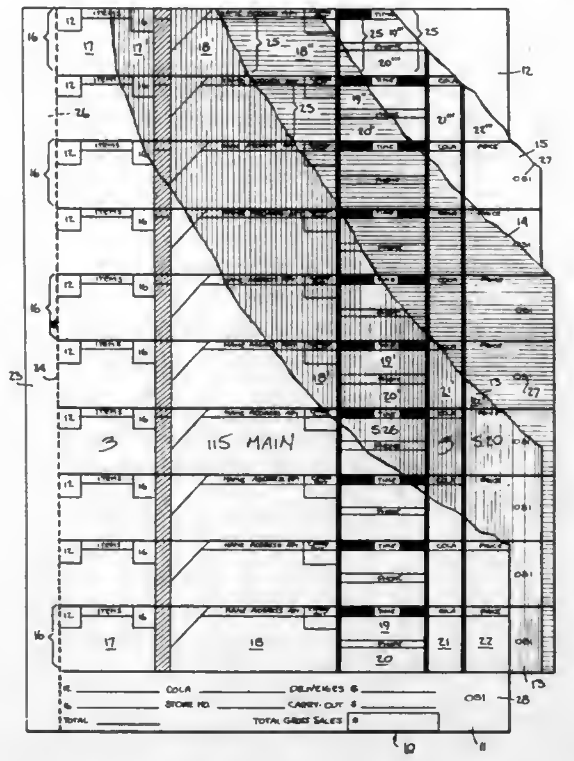
Continuation of Ser. No. 706,198, Jul. 19, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 928,779

Int. Cl.^{2} B42F *3/00*

U.S. Cl. 282—23 R **12 Claims**

1. A form comprising

- a face sheet having an ordered array of sets of designated spaces thereon for recording of information thereon;
- a second sheet underlying said face sheet, said second sheet defining a plurality of separated strip portions, a first common tab portion secured to each of said strip portions, and a line of weakening between said tab portion and said strip portions for individual removal of a respective strip portion from said tab portion, each said strip portion having a surface positioned under a respective set of designated spaces of said face sheet to simultaneously receive and record the information of a respective set of designated spaces thereon; and
- a third sheet underlying said second sheet, said third sheet defining a plurality of separated strip portions, a second common tab portion secured to each of said strip portions of said third sheet and a line of weakening between said second tab portion and said strip portions of said third sheet for individual removal of a respective strip portion from said second tab portion, each said strip portion of said third sheet having a surface positioned under a respective strip portion of said second sheet to simultaneously receive and record the information of said respective strip portion of said second sheet thereon.



4,191,403

DONOR MATERIAL FOR CARBONLESS COPYING

Guido Dessauer, Düsseldorf-Gerresheim; Kurt Riecke, Kempen, and Ferdinand Land, Viersen, all of Fed. Rep. of Germany, assignors to Feldmuhle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 941,801

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743800

Int. Cl.^{2} B41M *5/22*

U.S. Cl. 282—27.5 **5 Claims**

1. In a donor material for carbonless copying including a carrier sheet, a multiplicity of frangible microcapsules secured to one major face of said sheet, each microcapsule containing a dye precursor in a liquid medium, and discrete spacer particles interposed between said microcapsules and projecting beyond said microcapsules away from said face for protecting the microcapsules against premature fracture, the improvement which resides in said spacer particles consisting essentially of a vegetal protein insoluble in water and amounting to 10 to 50% of the weight of said microcapsules, the average size of said particles being between two and three times the average size of said microcapsules.

4,191,404

PROCESS FOR PRODUCING A PRESSURE-SENSITIVE CARBONLESS COPY SHEET USING MICROCAPSULES FORMED IN SITU IN A RADIATION CURABLE BINDER

Yu-Sun Lee, Parma, Ohio, and Dale R. Shackle, Scottsboro, Ala., assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 773,901, Mar. 3, 1977, abandoned. This application Apr. 7, 1978, Ser. No. 894,404

Int. Cl.^{2} B41L *1/36*

U.S. Cl. 282—27.5 **2 Claims**

1. A pressure-sensitive carbonless paper comprising a substrate having a plurality of surfaces, at least one of said surfaces being coated with a set, tack-free resinous film, said set resinous film being compatible with the desired surface writing characteristics of said carbonless paper, said set resinous film further comprising a free radical initiated polymerization product of at least one ethylenically unsaturated organic compound, said organic compound having at least one terminal ethylenic group per molecule, said polymerization product having dispersed therein pressure-rupturable microcapsules containing a hydrophilic liquid, said hydrophilic liquid containing at least one chromogenic material, said chromogenic material being soluble in said hydrophilic liquid, said microcapsules being impermeable to said set resinous film and said hydrophilic liquid.

4,191,405

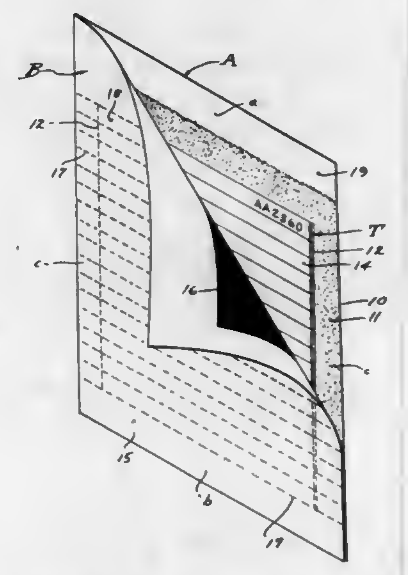
MARKER MANIFOLD

Dick E. Johnstun, 27472 Via Olmo, Mission Viejo, Calif. 92691

Filed Mar. 12, 1979, Ser. No. 19,907

Int. Cl.^{2} B32B *1/08, 3/16;* **B41L** *1/16;* **B41M** *5/10*

U.S. Cl. 282—28 A **24 Claims**

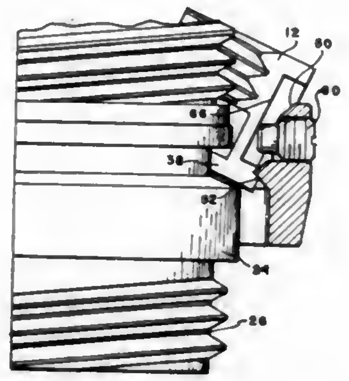


1. A manifold embracing a heat shrink marker tube for imprinting, and including;

- a flexible backing lamina of elongate sheet form and having at least one marginal portion,
- a flexible marker tube of partially cured cross-linked polymer tubing hardened into a constrained flattened configuration and secured over the backing lamina by means of a releasible pressure sensitive adhesive,
- and a flexible carbon faced front lamina coextensively overlying the flattened marker tube and with at least one marginal portion overlying said at least one marginal portion of the backing lamina, and with the carbon facing the said marker tube,
- the said at least one marginal portions of the laminae being releasably secured one to the other by pressure adhesive.

4,191,406
QUICK ACTING COUPLING

Edward M. Eaton, 3727 Valle Vista, Chino, Calif. 91710
Filed Sep. 5, 1978, Ser. No. 939,333
Int. Cl.^{2} F16L *37/12*
U.S. Cl. 285—35 **6 Claims**



1. A coupling for interconnecting a pair of tubular members:

(a) a body having a through opening and bearing attachment means at one end thereof permitting its removeable, fixed attachment to one of said pair of tubular members, and an annular groove at the opposite end thereof;

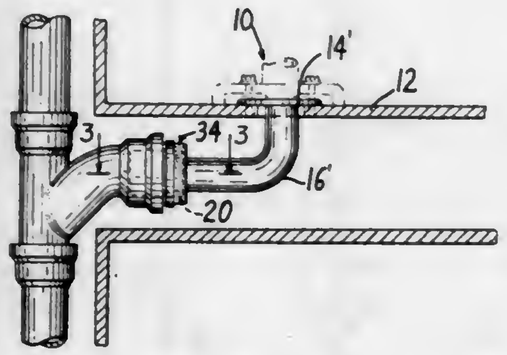
(b) an assembly of a plurality of closely spaced, segmented arcuate jaws having outer segmented circular surfaces, each having:

an inboard radial flange seated in said annular groove of said body to permit pivotal movement of said jaws between radially expanded and compressed positions, and a radial groove on the trailing portion of its outer surface with segmented conical leading and trailing shoulders; and

(c) a cam ring surrounding the assembly of said jaws and axially-slidable thereon between forward and rearward positions with a cylindrical inside wall and an interior cam guide intermediate its width and having a triangular cross-section with leading and trailing surfaces having the same incline as the respective leading and trailing shoulders of said jaws whereby said cylindrical inside wall and the leading surface of said cam guide seat against the outer circular surface and leading shoulder, respectively, of each jaw when said ring is in its forward position and said trailing surface of said cam guide seats against the trailing shoulder of each jaw when said ring is in its rearward position.

4,191,407
PIPE COUPLING FOR PLUMBING APPARATUS

John Bretone, Jr., 91 Woodview Rd., West Hempstead, N.Y. 11552
Filed Oct. 31, 1977, Ser. No. 846,971
Int. Cl.^{2} F16L *55/00*
U.S. Cl. 285—56 **8 Claims**



1. Apparatus for connecting a discharge pipe between a toilet to be supported on a floor and a section of a sewage system, the apparatus comprising:

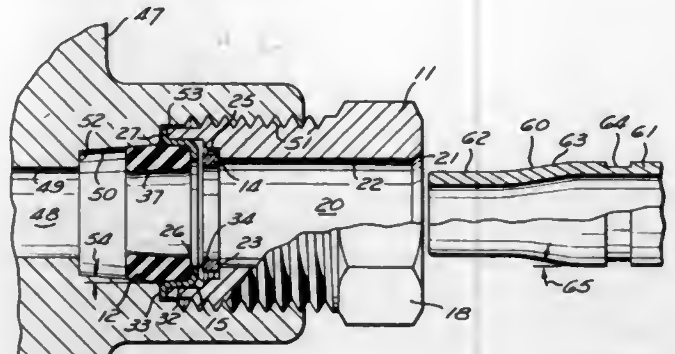
a ferrule, having one end sealed to the section of the sewage system;

a rigid coupling having a rigid hollow element and a compressible hollow element arranged coaxially about the rigid hollow element and attached thereto so as to form at one end of the coupling a socket for receiving the other end of the ferrule, one end of the discharge pipe being permanently and fixedly attached to the inner surface of the rigid hollow element; and

clamp means for compressing the compressible hollow element into sealing engagement with the ferrule, wherein the rigid hollow element engages and supports the ferrule and the discharge pipe and cooperates with the compressible hollow element and the clamp means so as to substantially prevent the ferrule from moving radially relative to the coupling, whereby the coupling rigidly couples the ferrule to the discharge pipe.

4,191,408
AUTOMOTIVE QUICK CONNECT TUBE COUPLING

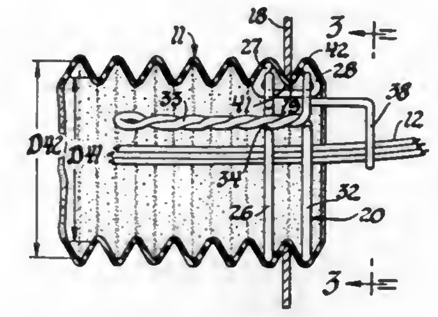
Richard C. Acker, Chagrin Falls, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio
Filed May 27, 1977, Ser. No. 801,150
Int. Cl.^{2} F16L *17/02*
U.S. Cl. 285—113 **4 Claims**



1. A coupling assembly comprising a body, a tube, a nut, a retainer, a spring clip, and an annular elastomeric ringlike seal; said body having an axially extending fluid flow passage, said passage including a nominal diameter portion and a threaded end portion and a counterbore portion between said nominal diameter portion and said threaded end portion; and tube having a cylindrical outer wall, said outer wall having a nominal diameter portion and a reduced diameter end portion and a conical ramp portion between said nominal diameter portion and said reduced diameter end portion, and an annular groove in said outer wall axially spaced from said reduced diameter end portion; said nut being threadably received in said threaded end portion of said body passage, said nut having a tube receiving passage extending axially from end to end therethrough, said tube receiving passage including a nominal diameter portion and an end surface and a counterbore between said nominal diameter portion and said end surface; said spring clip being a C-shaped snap ring disposed in said nut counterbore; said retainer including a cylindrical portion and a radial portion extending from said cylindrical portion, said radial portion being disposed adjacent to said snap ring for retaining said snap ring in said nut counterbore; said tube extending axially through said nut passage and into said body passage, said reduced diameter tube portion being disposed in said nominal diameter portion of said body passage, said conical ramp portion of said tube being disposed in said counterbore portion of said body passage, said snap ring being received in said annular groove of said tube, and said seal being disposed in said counterbore of said body passage on said outer surface of said tube, an end portion of said tube extending completely through the inner diameter of said ringlike seal, said counterbore of said body passage being conical.

4,191,409
CORRUGATED CONDUIT RETAINER

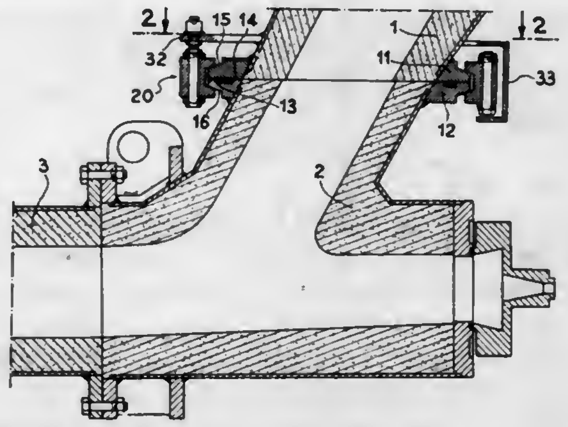
David B. Ballantyne, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sep. 28, 1978, Ser. No. 946,506
Int. Cl.^{2} F16L *5/00*
U.S. Cl. 285—189 **1 Claim**



1. A wall with a hole, a corrugated conduit insertable in the hole and having outwardly extending corrugations whose diameter is larger than that of the hole, a single retainer for retaining the corrugated conduit in the hole in the wall, said retainer being receivable within one end of the conduit and comprising a wire having a pair of expandable loops for engaging the interior of two outwardly extending corrugations of the conduit on the opposite interior sides of an intermediate inwardly extending corrugation to resiliently retain the two outwardly extending corrugations outward of the hole on opposite sides of the wall while holding the intermediate inwardly extending corrugation outward against the surface of the hole, said wire further having a pair of arms originating at the loop nearest the one end of the conduit operatively engageable with the other loop and the interior of the conduit so as to be responsive to compression of the conduit by an externally applied force to contract both said loops with said conduit to permit both insertion and removal of the conduit with the retainer in place in the conduit.

4,191,410
DEVICE FOR ASSEMBLING IN PARTICULAR TWO SECTIONS OF A BLAST DOWNPIPE OF A BLAST FURNACE

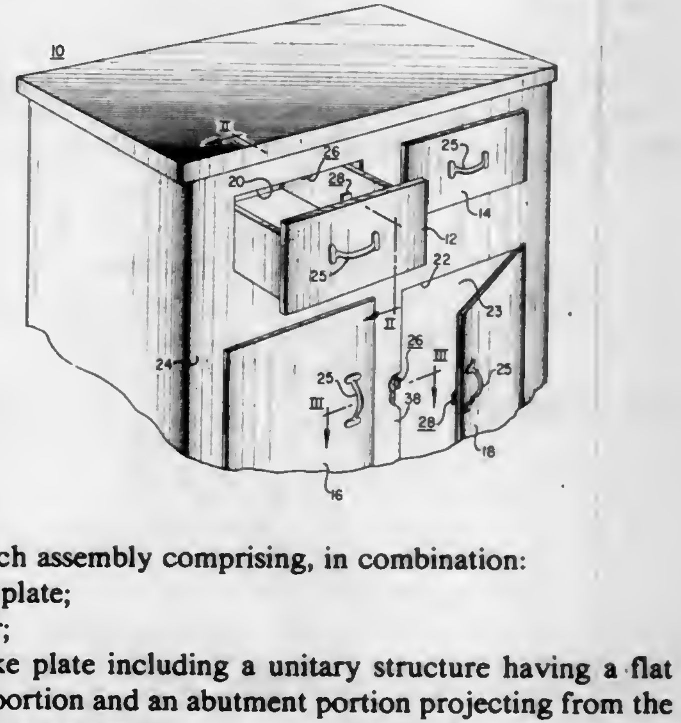
Henry Voituriez, Dunkerque, and René Aymard, Grande Synthe, both of France, assignors to Union Siderurgique du Nord et de l'est de la France, Paris, France
Filed Sep. 29, 1978, Ser. No. 946,735
Claims priority, application France, Sep. 30, 1977, 77 29505
Int. Cl.^{2} F16L *17/06*
U.S. Cl. 285—367 **10 Claims**



1. In a device for assembling two pipe elements and in particular an upper element and a lower element of a blast downpipe supplying blast to a blast furnace, the device comprising two flanges respectively carried by said two elements, said flanges defining facing sealing surfaces and frustoconical surfaces, jaws arranged around the entire circumference of the flanges in spaced apart relation to each other and defining frustoconical surfaces which are complementary to and cooperative with the frustoconical surfaces of the flanges, links, means pivotally connecting the links to the jaws so that the links and jaws pivot about substantially vertical axes and constitute an articulated collar, clamping and unclamping means combined with the collar for selectively clamping and unclamping the collar, and support means supporting the collar relative to the upper pipe element; the improvement wherein said support means comprise a first support part fixed to the upper pipe element and a second support part having a first end portion and a second end portion which is opposed to the first end portion and is mounted on the first support part to pivot about an axis substantially parallel to said pivot axes, and means supportingly mounting the collar at a plurality of points on the combined first support part and second support part so that the collar is held substantially in a plane perpendicular to said axes while it is movable substantially in said plane for clamping purposes, said mounting points being located in a region of the collar corresponding to substantially three-quarters of the circumferential extent of the collar, and one of said mounting points being located in said first end portion of the second support part, and the second part representing substantially one quarter of the circumferential extent of the collar.

4,191,411
CHILD SAFE LATCH

Milas M. Rodgers, 3139 Medina, Irving, Tex. 75061
Filed Jul. 19, 1978, Ser. No. 926,003
Int. Cl.^{2} E05C *19/06*
U.S. Cl. 292—87 **5 Claims**



1. A latch assembly comprising, in combination:

a strike plate;

a striker;

the strike plate including a unitary structure having a flat base portion and an abutment portion projecting from the base portion; and,

the striker including a unitary structure having a flat base portion and an elongated resilient leaf spring having an end portion freely projecting from the base portion, the freely projecting end portion having opposite side surfaces disposed for separately engaging the abutment portion as the striker is moved into and out of latching engagement with the strike plate, respectively, the resilient leaf spring being characterized by a yieldable reversing force which permits the tip of the freely projecting end portion when forced into engagement with the abutment to deflect and rotate into a latched position thereon in response to a closing force which is less than a predetermined threshold level, and which permits the free end portion of the leaf to deflect and pass its tip over the abutment in response to an opening force which is equal to or greater than the predetermined threshold level.

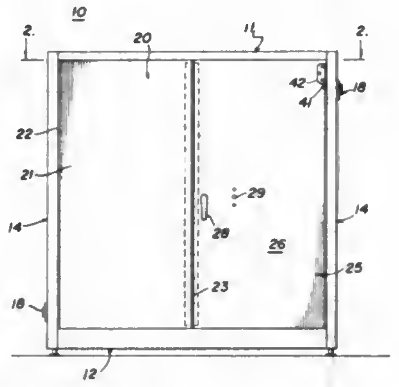
4,191,412
DOOR CLOSURE APPARATUS

William R. LeKander, Geneva, Ill., assignor to Lyon Metal Products, Incorporated, Aurora, Ill.

Filed Jun. 16, 1978, Ser. No. 916,248

Int. Cl.^{2} E05C *1/06*

U.S. Cl. 292—182 **17 Claims**



1. Door closure apparatus for a combustible material storage cabinet having a door biased toward a closed position, said apparatus comprising a bracket mounted on the associated cabinet, a latch member carried by said bracket for movement between a latching condition for holding the associated door in an open position and a release condition permitting movement of the door between its open and closed positions, first bias means coupled to said bracket and said latch member and urging said latch member to its release condition with a first predetermined force, and second bias means including a fusible link and coupled to said bracket and said latch member for urging said latch member to its latching condition with a second predetermined force greater than said first force thereby normally to hold said latch member in its latching condition, said second bias means being responsive to melting of said fusible means for removing said second force from said latch member and permitting movement of said latch member to its release condition by said first bias means thereby to permit biased movement of the door to its closed position.

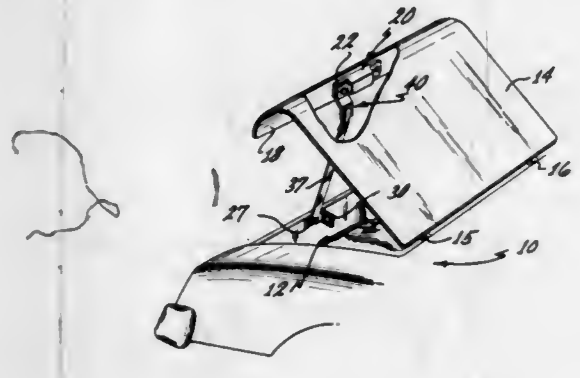
4,191,413
TRUNK RETAINER ASSEMBLY

Harold R. Barner, 9361 Alto Dr., La Mesa, Calif. 92041

Filed Dec. 6, 1978, Ser. No. 966,766

Int. Cl.^{2} E05C *17/00*

U.S. Cl. 292—262 **4 Claims**



1. In combination with an automobile having a trunk compartment with a trunk lid hinged adjacent its forward end forming the top surface of the trunk compartment, a trunk retainer assembly comprising:

an elongated strap,

a buckle having a strap attaching portion, an intermediate portion, and a mounting portion,

means for detachably securing one end of said elongated strap to said buckle, comprising a pair of longitudinally spaced slots on said strap attaching portion of the buckle, one of said slots being a top slot and the other a bottom slot, said slots extending laterally with the longitudinal axis of said strap attaching portion whereby said strap can be threaded through said top slot and then its direction reversed 180 degrees so that it can be threaded downwardly through said bottom slot.

means for detachably securing one end of said elongated strap to the interior of said trunk compartment, and

means for detachably securing said buckle to the interior of said trunk lid.

the longitudinal axis of said mounting portion of said buckle and the longitudinal axis of said strap attaching portion of said buckle are laterally offset and interconnected between them by the diagonally oriented intermediate portion of said buckle thereby allowing the trunk lid to be closed while buckle is secured to the inside surface of the trunk lid.

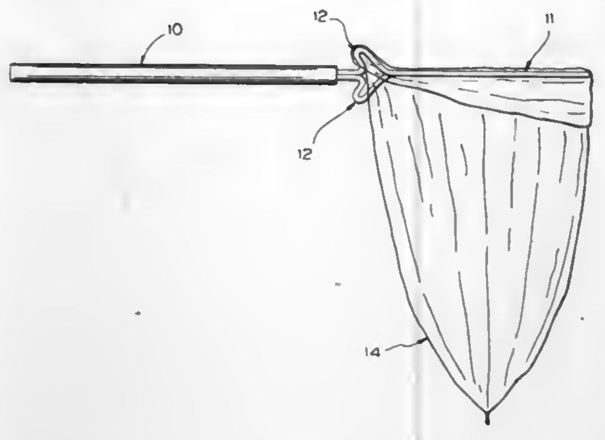
4,191,414
SANITARY DEVICE

James Dameron, 2150 N. Racine, Chicago, Ill. 60614

Filed Jan. 5, 1977, Ser. No. 756,895

Int. Cl.^{2} A47F *13/06*

U.S. Cl. 294—1 BA **6 Claims**



1. A sanitary device for holding a commonly available plastic bag free of attachment means, comprising:

a wire frame disposed on one end of an elongated handle, said frame forming a planar loop at the end of said handle; bight means extending outwardly from the plane of said wire frame substantially near where the wire frame joins said handle; a disposable plastic bag removably mounted on said wire frame by folding the periphery of the open end of said bag around said frame and over said outwardly extending bight means, whereby said bight means causes said plastic bag to stretch tautly over said bight means and said wire frame securing said plastic bag to the wire frame.

4,191,415
STORAGE AND TRANSPORTATION APPARATUS

Heinz Frei, Ziegelrain 29, CH-5001 Aarau, Switzerland

Filed Aug. 15, 1978, Ser. No. 933,884

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738332

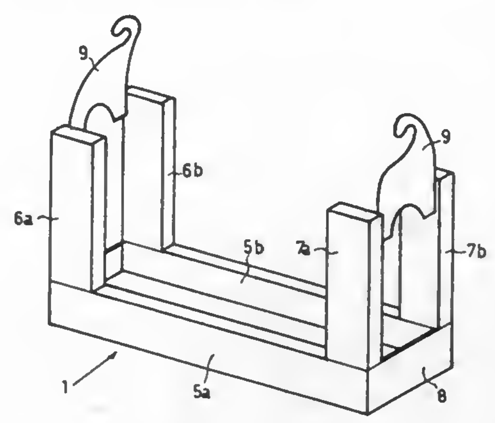
Int. Cl.^{2} B66C *1/16*

U.S. Cl. 294—67 R **2 Claims**

1. A loading, unloading and storage assembly for elongated pipes and rods which are cradled in at least two stock racks separated from each other to support said pipes and rods comprising:

a plurality of stock racks, each having a rectangular base formed of long parallel girders on the long sides and plates on the short sides and a pair of upstanding end members of equal height at each short side of said rectangular base, which end members define a cradle along the long side for supporting said pipes and rods;

a pair of flat suspension plates on each stock rack, each plate being in the form of a generally rectangular base portion which is welded to the upper inner portions of the upstanding end members and lies in a vertical plane of said upstanding end members and an inwardly tilted curvilinear hook portion bent along a line near the top of said upstanding end members to define an inwardly tilted angle of about 165 degrees measured along the inner surface of said suspension plate from said line, said hook portions opening in the same direction and said inwardly tilted angle of about 165 degrees permitting stacking of a plurality of said stock racks touching each other at their bases in end to end relationship while permitting lifting and transport from the hook portions and



a traverse support including a longitudinal body with at least two pairs of short arms adjacent the ends thereof which are perpendicular to said body, each of said short arms being connected to said longitudinal body by a reinforcement and guiding plate comprising a bevelled guide edge near the free end of the arms, and the free end of the arms being equipped with securing plates having oblique guide extensions extending substantially parallel to said guide edge on the adjacent reinforcement and guiding plate.

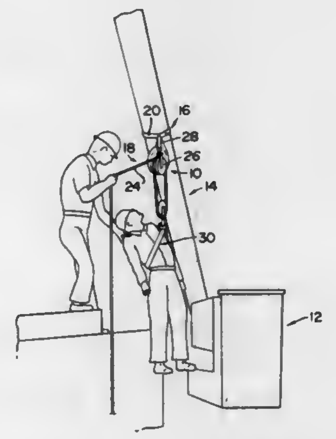
4,191,416
LIFT ASSEMBLY

Edward Nist, 246 Redwood Rd., Venice, Fla. 33595

Filed Dec. 8, 1978, Ser. No. 967,603

Int. Cl.^{2} B66C *1/12*

U.S. Cl. 294—74 **10 Claims**



1. A lift assembly of the type primarily designed for removal of an injured person from a boom supported aerial basket, said lift assembly comprising: assembly support means connected to the boom and positioned to supportingly mount said lift assembly in communicating relation to the aerial basket, a pulley and cable assembly attached to the boom, said cable movably disposed to have its length travel along said pulley into and out of direct communication with the aerial basket, sling means connected to said cable and configured for securing engagement with a person in the aerial basket, whereby and incapacitated person can be readily removed from the basket by attachment of said sling means and force being applied to said cable.

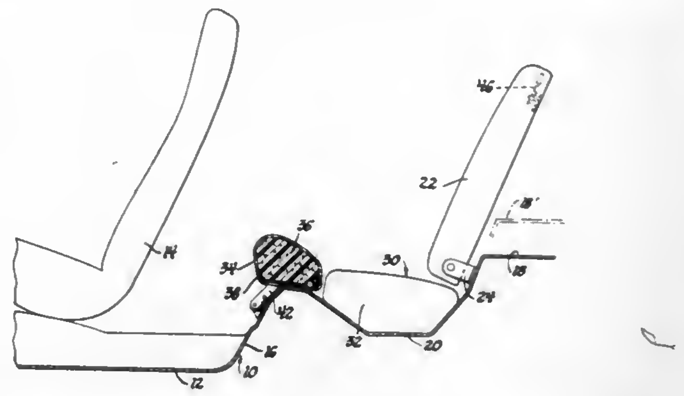
4,191,417
VEHICLE SEAT

Rudolph A. Ferrara, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 28, 1978, Ser. No. 919,803

Int. Cl.^{2} A47C *1/02*

U.S. Cl. 296—65 R **3 Claims**



1. In an automotive vehicle body, said body including a seat structure of the type including a seat cushion rising from seat rear to seat front and conventionally providing full pelvic and at least partial thigh support, the improvement comprising, said seat cushion having separate main and bolster portions, said main portion being mounted stationary on the vehicle body and providing the full pelvic support, said bolster portion providing said at least partial thigh support, and means mounting said bolster portion on the vehicle body for movement relative to said main portion between a normal condition lying adjacent and higher than said main portion so as to provide therewith said conventional full pelvic and at least partial thigh support rising from seat rear to seat front, and a stowed condition displaced to a position remote from said main portion.

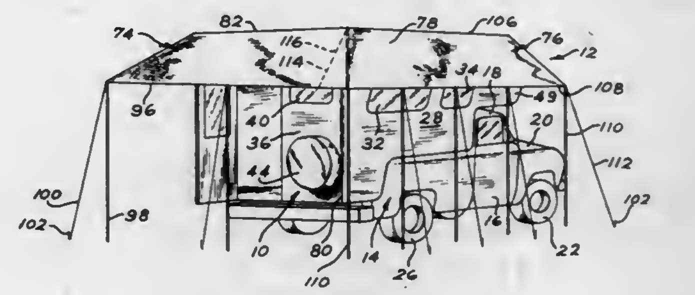
4,191,418
MODULAR DESIGN OF MULTI-SIDED AWNING FOR RECREATIONAL VEHICLES

Larry Ladegast, Jr., 4437 Rockwood Dr., Louisville, Ky. 40220

Filed Aug. 23, 1978, Ser. No. 935,921

Int. Cl.^{2} E04F *10/10*

U.S. Cl. 296—163 **18 Claims**



1. A multi-sided awning for use with a recreational vehicle comprising:

a. a first awning panel having first fastener means arranged along a first edge of the panel, said fastener means being adapted to engage with a first edge of a wall of the vehicle, and first supporting means arranged on a second opposite edge of the panel, said supporting means being adapted to engage upright support means;

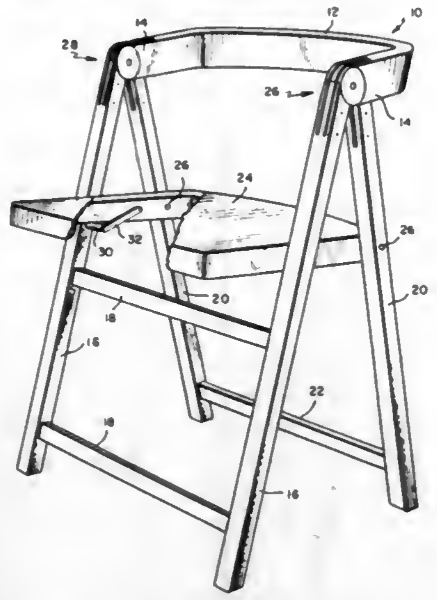
b. a second awning panel having second fastener means arranged along only a portion of a first edge of the panel, said fastener means being adapted to engage with a second edge of a wall of the vehicle adjacent to said first edge, the remaining portion of said first edge of the second panel being generally coextensive with a third edge of the first awning panel, and second supporting means arranged on a second opposite edge of the second panel, said supporting means being adapted to engage upright support means; and

c. quick-connect fastener means joining the said coextensive portion of said first edge of the second panel with the third edge of the first awning panel.

4,191,419
HINGE MECHANISM FOR FOLDING CHAIRS

Michael F. Kirkpatrick, Lincoln Center, Lincoln Rd., Lincoln, Mass. 01773

Filed Oct. 26, 1978, Ser. No. 955,103
Int. Cl.² A47C *4/10*
U.S. Cl. 297—48 **7 Claims**



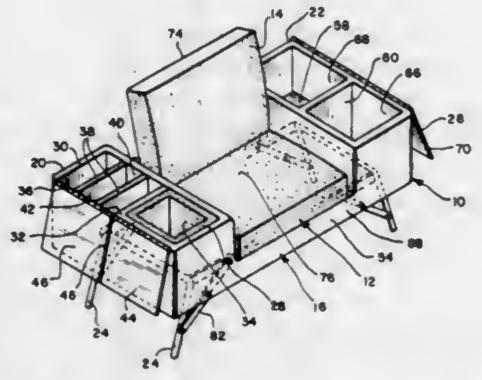
1. In a folding chair having a back-rest with terminal ends, interconnected pairs of first and second legs, and a seat pivotally connected to the second legs, said chair being adjustable between a folded position with the first and second legs, the seat and the back-rest substantially parallel, and an open position in which the first and second legs and the back-rest are angularly disposed relative to each other with the seat linked to and resting on supports carried by the first legs to hold the first and second legs in an open position, the improvement comprising:

hinge mechanisms pivotally connecting each terminal end of said back-rest with a first leg and a second leg, said hinge mechanisms including releasable gravity-independent locking means responsive only to the angular displacement of the back-rest and legs with respect to each other for fixing the back-rest relative to the legs when the chair is in the open position.

4,191,420
PORTABLE CHAIR AND STORAGE UNIT

Kendall G. Fassett, Rte. 1, Box 317, and Jeffery G. Norris, Box 317, both of, New Lisbon, Wis. 53950

Filed Aug. 11, 1978, Ser. No. 932,780
Int. Cl.² A47C *7/62, 4/00*
U.S. Cl. 297—194 **9 Claims**



1. A portable chair and storage unit, comprising, in combination:

a chair foundation, including a base segment flanked by a first and a second side compartment, wherein at least one of said side compartments has a top lid hingedly secured along the outer edge of said side compartment so as to open away from said chair seat;

a chair seat, including a bottom and a back cushion, said bottom cushion being supported on and secured to said base segment, and said back cushion being movable between a generally upright functional position, to a compacted position generally overlying said bottom cushion, said first and second side compartments being of a sufficient height to form a substantially planar surface with the back face of said back cushion when in said compacted position;

means for locking said back cushion in said compacted position to provide a readily portable unit when compacted;

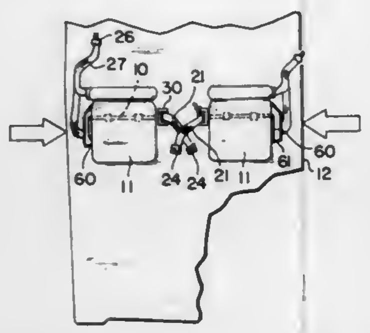
further including at least one partition dividing at least one of said side compartments having a top lid into more than one storage areas; and

wherein said first side compartment includes a fishing reel storage area having means for side-end opening, said fishing reel storage area having a means for side-end opening, said fishing reel storage area being in communication with a hollow portion of said base segment, below said bottom cushion, that is in communication with said second side compartment, said fishing reel storage area, base hollow portion, and second side compartment together forming a fishing rod storage area, whereby a portable chair and storage unit that allows access to side storage compartments including a storage area for fishing rods, both when the back cushion is in the upright and in the compacted position, is provided.

4,191,421
SIDE COLLISION SAFETY SEAT BELT STRUCTURE

George S. Lechter, 99 Pond Ave., Apt. 205, Brookline, Mass. 02146

Filed Apr. 5, 1978, Ser. No. 893,293
Int. Cl.² A62B *35/00*
U.S. Cl. 297—483 **4 Claims**



1. A seat belt mounting structure for use in a vehicle which disengages a fastened seat belt under a condition of a sidewise impact to the vehicle so as to prevent entrapment of an occupant of a seat in the vehicle who is fastened to the seat by the seat belt, comprising

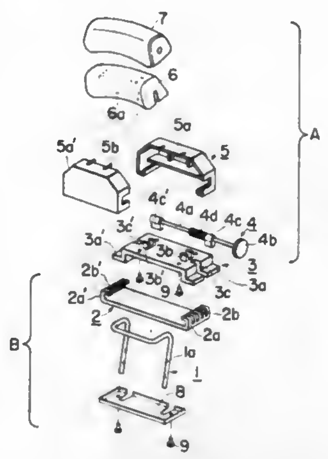
a seat belt fitted with first detachable means to fasten about an occupant of a seat in a vehicle, said seat belt fitted with second detachable means to fasten to the frame of the vehicle adjacent an inner side of the seat,

said second detachable means responsive to lateral movement of a member thereof in the direction away from the outer side of said seat and towards the inner side of said seat such that a given amount of said movement caused by a sidewise impact upon said vehicle serves to disengage the seat belt from said second detachable means while normally keeping said second detachable means engaged with said seat belt in the absence of a sidewise impact upon said vehicle.

4,191,422
ADJUSTABLE HEADREST

Hideho Inasawa, and Yoshinori Akiyama, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Aug. 2, 1978, Ser. No. 930,247
Claims priority, application Japan, Nov. 30, 1977, 52/160513
Int. Cl.² A47C *1/10*
U.S. Cl. 297—391 **5 Claims**



1. An adjustable headrest for a vehicular seat arrangement comprising:

a stationary guide rail supported on the vehicular seat, said guide rail having a plurality of first notches;

a slide rail slidably movable along said guide rail forwardly and backwardly of the seat, said slide rail having at least one second notch, a part of said second notch of the slide rail being adapted to align with one of said plurality of first notches of the guide rail;

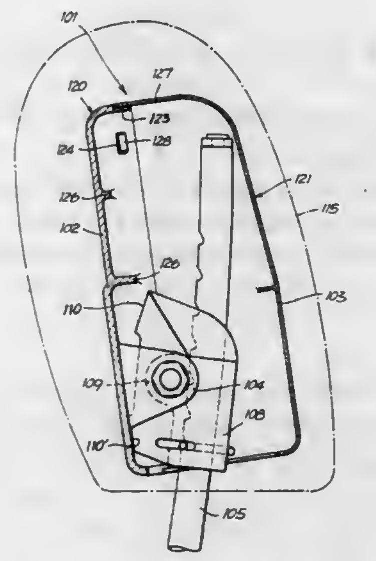
a manually operable shaft axially reciprocally supported on said slide rail over the aligned notches, said shaft having biasing means for resiliently holding said shaft in its inoperative position and at least one latch element arranged to engage in the aligned notches of said slide rail and of said guide rail when said shaft is in said inoperative position; and

a rigid cover enclosing said guide rail, said slide rail and said shaft assembled together and fastened to said slide rail for the back and forth movement therewith.

4,191,423
HEADREST FOR VEHICLES

Walther Göldner, Ebersbach, Fed. Rep. of Germany, assignor to Recaro GmbH & Co., Kirchheim, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,959
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 7739993[U]
Int. Cl.² A47C *7/38*
U.S. Cl. 297—408 **8 Claims**



1. In a headrest for vehicles, especially motor vehicles, including an upholstery support having front and back walls, holder means for pivotably mounting in a frictional manner the upholstery support, and stop means for limiting the pivotal range of movement of the upholstery support, the improvement wherein said stop means comprises:

at least one connecting body mounted to the holder means and pivotably mounted to the upholstery support,

said connecting body defining the axis of rotation of the upholstery support,

said connecting body having at least two stop surfaces arranged on opposite sides of the axis of rotation of the upholstery support so as to abut the front wall of the upholstery support and to limit the clockwise and counterclockwise pivotal range of movement of the upholstery support;

said upholstery support being formed of two support portions joined along a plane through the axis of rotation of the upholstery support;

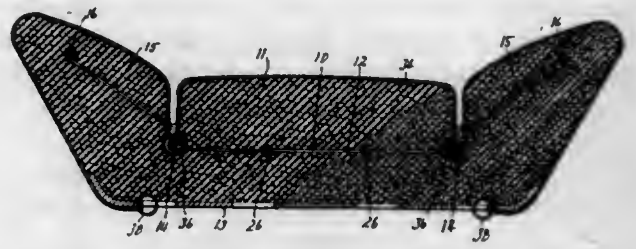
one of the two support portions including the front wall of the upholstery support and the other of the two support portions including the back wall of the upholstery support; and

said front wall being thicker than said back wall, so as to enable raised side edges of the back wall to fit over stepped side edges of the front wall and to enable the back wall to be more flexible to thereby better dampen the shock of an impact.

4,191,424
SUPPORT GRID FOR UPHOLSTERED SEATING

Donald D. Mundell, Carthage, Mo., assignor to Flex-o-lators, Inc., Carthage, Mo.

Filed Jul. 17, 1978, Ser. No. 925,108
Int. Cl.² A47C *7/02*
U.S. Cl. 297—459 **6 Claims**



1. A support grid for an upholstered seat bottom or seat back structure having a transversely central main seating area and side wing portion seating areas at the sides of said main seating area and inclined outwardly and upwardly from said main seating area, said grid comprising a wire fabric including:

a. a series of closely spaced, generally parallel spring cross wires extending transversely of said seating structure, the central portions of said cross wires defining said main seating area, and the end portions of said cross wires being angled upwardly and outwardly to define said wing seating areas, each of said cross wires being twice rebent on itself at each side of said main seating area to form an S-bend disposed in a plane generally normal to said seating areas and each including an inwardly opening lower loop and an outwardly opening upper loop, and

b. a pair of resilient side strands extending transversely to said cross wires respectively at each side of said main seating area and each confined in said inwardly opening lower loops of the S-bends of said cross wires at its associated side of said main seating area, the cross wires continuing outwardly from said upper loops to define said wing seating areas, whereby top-loading of said wing seating areas flexes said cross wires, tending to restrict said upper loops, expand said lower loops, and loosen the engagement of said side strands in said lower loops, said grid being covered by a layer of padding material.

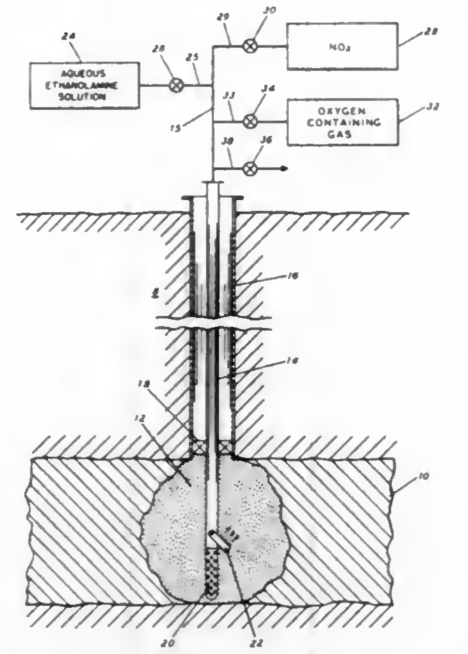
4,191,425
ETHANOLAMINE IN A METHOD OF RECOVERING COAL IN AQUEOUS SLURRY FORM

Bruce W. Davis, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 831,035, Sep. 6, 1977, Pat. No. 4,132,448. This application Dec. 20, 1978, Ser. No. 971,575

Int. Cl.^{2} B02C *19/00;* **E21C** *41/02*

U.S. Cl. 299—5 **2 Claims**



1. A method for recovering lignitic, sub-bituminous or bituminous coal in slurry form from a coal-containing formation comprising establishing a flow path from the earth's surface to a lignitic, sub-bituminous or bituminous coal-containing formation, flowing through said flow path a gaseous mixture containing up to 99 volume percent oxygen and at least about one volume percent NO_2, up to an amount of NO_2 that will remain in vapor phase in said gaseous mixture, and contacting said coal-containing formation with said gaseous mixture to cause a reaction with the coal in said formation adjacent said flow path, flowing an aqueous alkaline solution containing from at least 0.25% weight percent ethanolamine to about 5 weight percent ethanolamine through said flow path to contact the coal contained in said formation with said aqueous alkaline solution to break up and slurry the coal, and lifting the coal in slurry form from said formation to the earth's surface.

4,191,426
SEALING GUARD FOR A SURFACE TREATING MACHINE

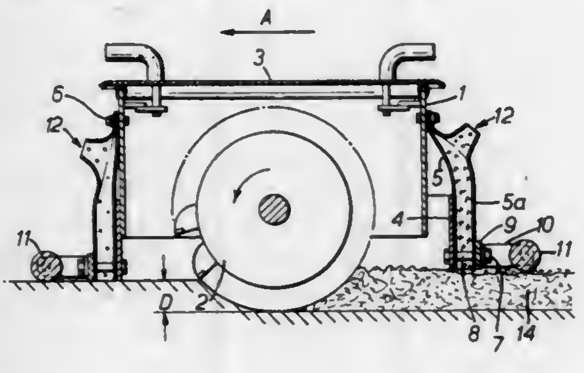
Peter Ely, Ossett, England, assignor to Dresser Europe S.A., Brussels, Belgium

Filed May 3, 1978, Ser. No. 902,504

Claims priority, application United Kingdom, May 3, 1977, 18557/77

Int. Cl.^{2} E01C *23/08*

U.S. Cl. 299—39 **7 Claims**



1. A guard for a machine in which in operation a rotary element of the machine and a surface requiring an operation to be performed thereon by the rotary element are relatively displaced, comprising a first guard portion encircling the rotary element and secured to the machine so as to leave a gap between the guard portion and the surface, and a second guard portion encircling the rotary element and mounted on the first guard portion by mounting means permitting relative movement between the first and second guard portions and in a manner to close substantially the gap between the first guard portion and the surface, in which the mounting means defines a jacket having an inlet opening and also an outlet opening to direct a fluid based substance introduced into the inlet opening onto the surface adjacent the said element.

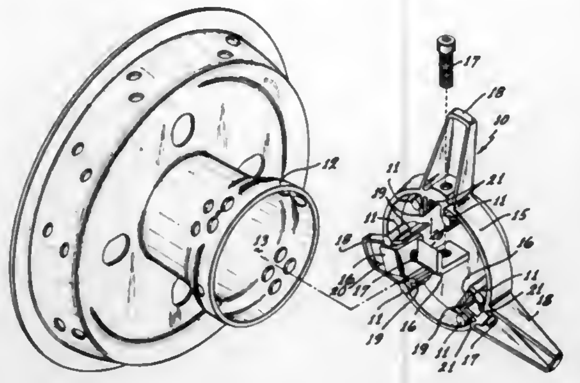
4,191,427
SIMULATED KNOCK OFF SPINNER NUT

Robert A. Bradley, Santa Ana, Calif., assignor to Tru-Spoke, Inc., Anaheim, Calif.

Filed Jun. 26, 1978, Ser. No. 919,325

Int. Cl.^{2} B60B *7/06*

U.S. Cl. 301—108 S **10 Claims**



1. For use with a vehicle wheel of the type having a circular hub opening including a generally axially smooth interior sidewall surface portion, a simulated knock off wheel spinner nut comprising:

- a. a simulated spinner nut having a first portion of a generally cylindrical cross section and having mounting means for axially aligning the spinner nut relative to the hub opening and being sized to be slidably inserted into the circular hub opening of the vehicle wheel for partially receiving the nut within the hub opening; and
- b. means for securing said spinner nut to the vehicle wheel comprising a plurality of tabs spaced about the inner circumference of said first portion each having a screw threadably inserted therein with said screw passing through said first portion of said spinner nut and having its head outside thereof for drawing each of said tabs radially outwardly into frictional locking engagement with the interior sidewall surface of the circular hub opening of the wheel.

4,191,428
AIR BRAKE SYSTEM WITH PRESSURE HOLDING VALVE

Harold Durling, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

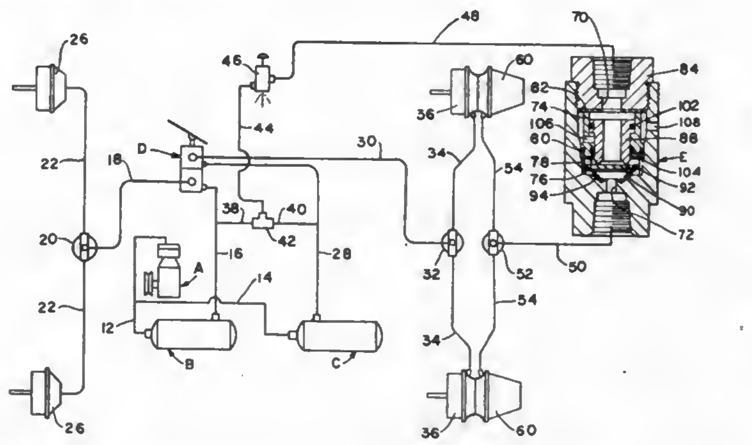
Continuation-in-part of Ser. No. 769,548, Feb. 17, 1977, Pat. No. 4,119,351. This application Jul. 28, 1978, Ser. No. 928,737

The portion of the term of this patent subsequent to Aug. 10, 1995, has been disclaimed.

Int. Cl.^{2} B60T *15/20*

U.S. Cl. 303—6 M **7 Claims**

6. A pressure holding valve having inlet and delivery ports, a single check valve between said ports for normally providing flow directly therepast in one direction from said inlet port to said delivery port for all pressures at said inlet port slightly above atmospheric pressure and above the pressure at said delivery port, said check valve normally blocking reverse flow in an opposite direction from said delivery port to said inlet port at relatively low pressure drops from said delivery port to said inlet port when said inlet port is at operational pressures substantially above atmospheric pressure and the pressure at said delivery port exceeds the pressure at said inlet port, movable pressure responsive means operable solely by pressure differentials in the absence of springs for movement in response to a relatively high pressure drop from said delivery port to said inlet port upon lowering of the pressure at said inlet port below said operational pressures for providing flow directly past said check valve in said opposite direction, and said pressure responsive means being operative as aforesaid to provide reverse flow in said opposite direction for reducing the pressure at said delivery port to atmospheric pressure when the pressure at said inlet port is atmospheric.



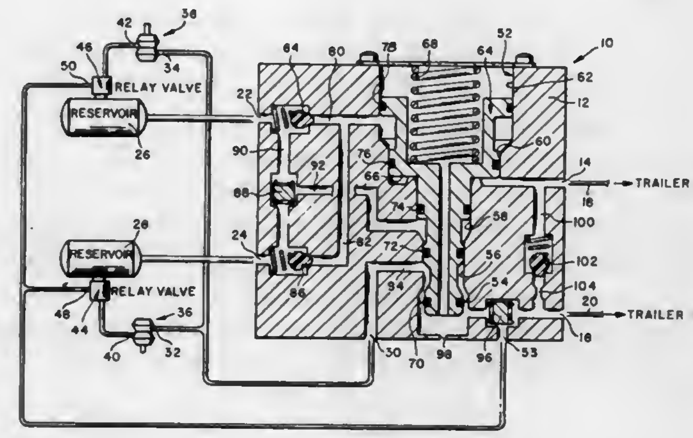
4,191,429
FLUID PRESSURE BRAKING SYSTEM HAVING EMERGENCY VALVE

Richard J. Reitz, Amherst, and Edward J. Kruke, Lorain, both of Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 759,228, Jan. 13, 1977, abandoned. This application Jan. 12, 1978, Ser. No. 868,943

Int. Cl.^{2} B60T *15/56*

U.S. Cl. 303—58 **13 Claims**



1. In a vehicle fluid pressure braking system, a fluid pressure source, a reservoir, an emergency brake held in a released condition by hold-off pressure, a supply line for communicating hold-off pressure to said emergency brake and for charging said reservoir, a service brake, a service line, service brake application effecting means responsive to the fluid pressure level in said service line for communicating said service brake to the fluid pressure level in said reservoir, and emergency means located in the supply line upstream of the reservoir between the fluid pressure source and the reservoir, responsive to a decrease in the pressure level in said supply line for communicating said hold-off pressure to said service brake application effecting means to cause the latter to effect a service brake application by communicating said service brake to said reservoir, said emergency means including a piston movable from a first position communicating said supply line with said reservoir and said emergency brake and preventing communication between said reservoir and said service brake application effecting means to a second position preventing communication between said reservoir and said supply line, said emergency means in said second position also preventing communication between said reservoir and said emergency brake, said emergency means in said second position initiating communication between said emergency brake and said service brake application effecting means.

4,191,430
ANTI-LOCK DEVICE FOR RAILWAY VEHICLES

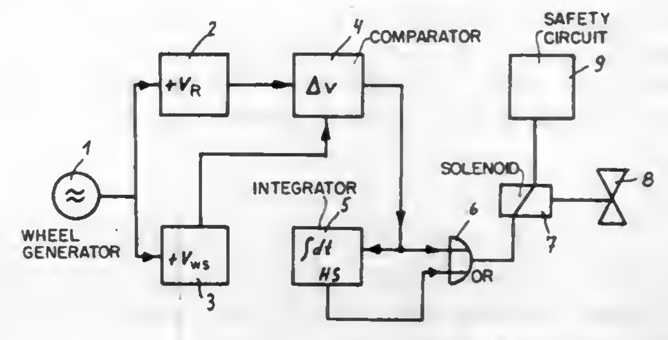
Klaus Schirmer, Geiselbullach, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 842,337, Oct. 14, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,125

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1977, 2701456

Int. Cl.^{2} B60T *8/10*

U.S. Cl. 303—109 **4 Claims**



1. In an anti-lock device particularly for railway vehicles, the combination of means for generating a signal indicative of the wheel speed, means for generating a reference signal substantially indicative of the speed of the vehicle, comparator means connected to both said wheel speed and vehicle speed signal generating means for generating a signal corresponding to the difference between said wheel and vehicle speeds when said difference exceeds a first predetermined value and for ceasing said difference signal when said difference decreases below a second predetermined value, said first predetermined value being greater than said second predetermined value, integrator means connected to the output of said comparator means for integrating said difference signal linearly upwardly until the difference signal ceases at said second predetermined value and for integrating linearly downwardly from said second predetermined value, said integrator means having means therein for generating an auxiliary signal indicative of the adhesive factor between the vehicle wheel and the surface upon which the wheel is rolling when the integrated signal is above a third predetermined value, said third predetermined value being derived from said difference signal and being a function of an assumed speed of the vehicle, said third predetermined value being linearly dependent upon said reference signal, and means connected to the output of said comparator means for generating an anti-locking signal in response to said generated difference signal to release the vehicle brakes, said anti-locking signal being continuously generated until the point at which both said difference signal and said auxiliary signal have ceased at which point the brakes are applied.

4,191,431
TRACK-TYPE VEHICLE UNDERCARRIAGE AND LINK ASSEMBLY

Robert D. Roley, Peoria, and Roy L. Maguire, Edelstein, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 17, 1977, Ser. No. 842,816

Int. Cl.^{2} B62D *55/10, 55/14, 55/20, 55/30*

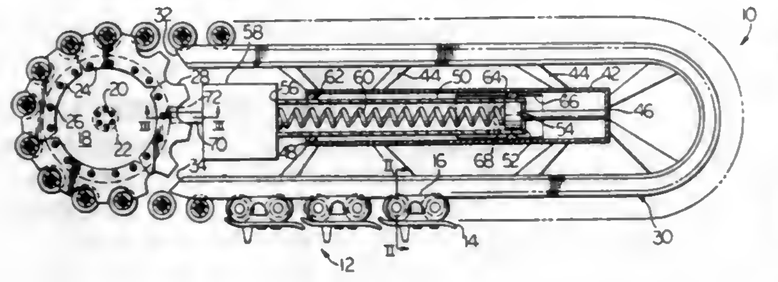
U.S. Cl. 305—18 **7 Claims**

1. A vehicle undercarriage comprising:

a guide bar, said guide bar being substantially "U" shaped and having parallel support members;

a tubular member connected to the guide bar;

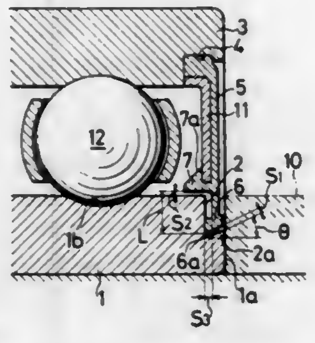
a recoil receiving member movably mounted in the tubular member;
a recoil piston having a first end connected to the tubular member and having a second end movably mounted in the recoil receiving member;



means for biasing the recoil piston and its associated tubular member and guide bar relative to the recoil receiving member;
an endless track of linked together track shoes; and
means for guiding the track along the guide bar, said means being a plurality of raised flanges on the track extending between the parallel support members of the guide bar.

4,191,432
SEAL ASSEMBLY FOR BEARING

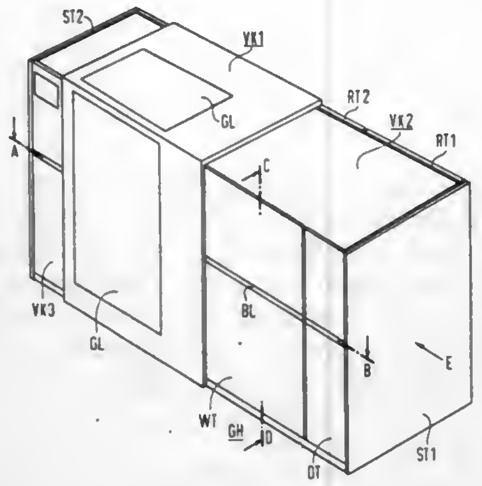
Toshio Miki, Yaoshi; Yoshiki Fujita, Ikomagun, and Yoshihisa Kawakami, Kashiwarashi, all of Japan, assignors to Koyo Seiko Company Limited, Osaka, Japan
Continuation of Ser. No. 836,653, Sep. 26, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 951,268
Int. Cl.² F16C ***33/76***
U.S. Cl. 308—187 2 Claims



1. A seal assembly for an anti-friction bearing comprising: an inner ring formed with a shoulder including a peripheral stepped portion having a great depth radially inwardly of the periphery of the inner ring, a side face and a peripheral bottom face tapered axially inwardly of the inner ring and having an increasing diameter toward the axially outer end of the inner ring and an annular seal member having its outer periphery secured to the inner periphery of one end of an outer ring and reinforced with a metal core, said metal core having an inside diameter greater than the outside diameter of the inner ring, the annular seal member having on its inner periphery a first elongated flexible seal lip extending radially inwardly thereof linearly along the side face of the stepped portion of the inner ring with a small clearance formed between the first elongated flexible seal lip and the side face and a second seal lip projecting axially inwardly of the bearing along the outer periphery of the inner ring with a small clearance formed between the second seal lip and the outer periphery of the inner ring whereby the flow of the lubricant enclosed in the bearing is guided axially inwardly of the bearing, the first seal lip having an annular projection axially projecting from the inner side of its inner peripheral portion lightly in contact with the side face of the inner ring stepped portion and another annular projection axially projecting from the outer side of its inner peripheral portion, the first seal lip further having a tapered inner peripheral face positioned to provide small clearance between the tapered inner peripheral face and the peripheral bottom face of the stepped portion, the first seal lip tapered inner peripheral face having an axial length not greater than the axial length of the tapered bottom face of the stepped portion.

4,191,433
HOUSING FOR A DEVICE, IN PARTICULAR FOR A PRINTER

Egon Rampp, Munich, and Alexander Vogel, Puchheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jul. 26, 1978, Ser. No. 928,071
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737933
Int. Cl.² A47B ***63/00***
U.S. Cl. 312—183 15 Claims

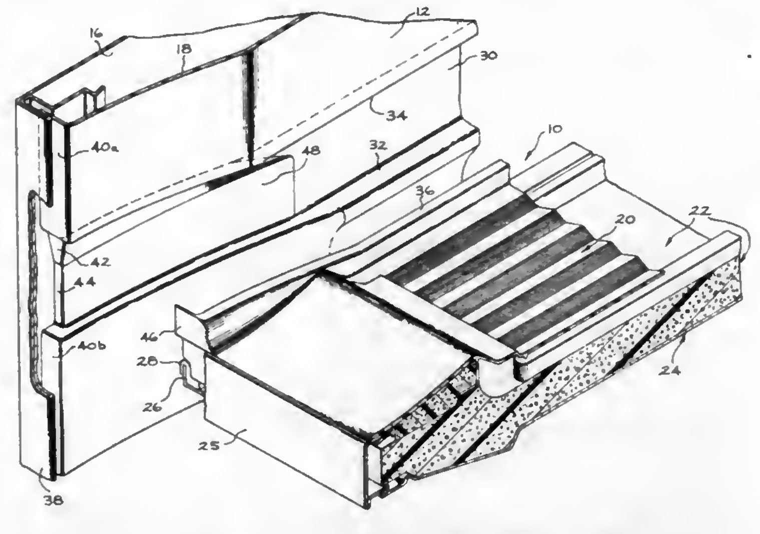


1. A housing for a non-mechanical printer device wherein individual areas of the internal mechanism of the printer are to be freely accessible for purposes of servicing and operation comprising a housing including at least first and second cover portions, said first cover covering a portion of a top of said device and a portion of a first longitudinal side of said device, said second cover providing a cover for a second portion of said device and a second portion of said first longitudinal side of said device, the first cover being longitudinally movable from a covering position to a position exposing a portion of said device with the first cover in the position exposing the portion of the said device lying over the second cover, the first and second covers being jointly movable to a third position exposing a greater amount of the interior of the device, movement to the third position being longitudinal movement to a position substantially beyond the majority of the device whereby movement of the two covers to the third position gives free access from at least the top and a first longitudinal side to a significant portion of the interior of the device.

4,191,434
REFRIGERATOR COMPARTMENT PARTITIONING MEANS

John M. Powell, Charlestown, Ind., and K. Bailey Keeling, Jr., Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Jul. 28, 1978, Ser. No. 928,934
Int. Cl.² F25D ***11/00***
U.S. Cl. 312—214 6 Claims

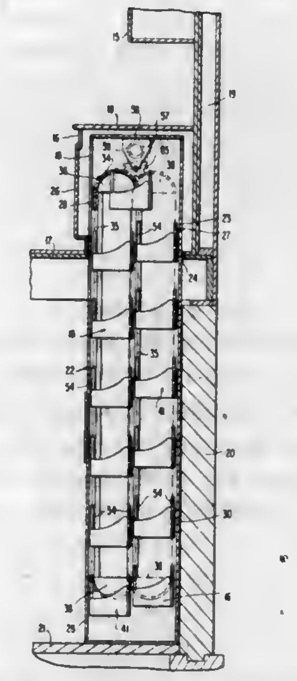
1. Compartment partitioning means for a refrigerator cabinet of the type containing an outer shell and a plastic inner liner comprising
a metal plate defining a surface of a fresh food compartment and having a raised edge extending along the sides and back thereof,
an elongated strip of compressible, resilient material folded longitudinally across and along said edge to form a thermally insulating seal between said plate and the adjacent walls of said liner,
a mass of insulating material forming a thermal compartment divider disposed against said plate, said strip also forming a thermally insulating seal between said plate and divider,
a plastic tray defining a surface of a freezer compartment and having raised flat rims extending along the sides thereof, said tray being disposed against said divider, said plate, divider and tray forming a partition, and



a pair of channels formed on the sides of said liner and being partially defined by a pair of ledges which overlap said flat rims such that said liner and tray may be spaced relative to one another without producing an unsightly gap therebetween.

4,191,435
CABINET STORAGE CONVEYOR

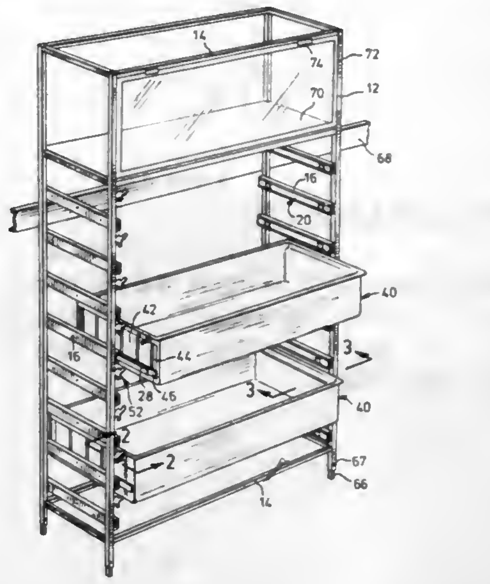
John C. Lehman, Marietta, Pa., assignor to John C. Lehman, Inc., Marietta, Pa.
Filed Mar. 3, 1978, Ser. No. 883,294
Int. Cl.² A47B ***49/00***
U.S. Cl. 312—266 9 Claims



1. In an article storage and transport system for cabinets and the like, a modular preassembled article storage and transport conveyor apparatus including a unitary boxlike housing mounted at least partially within a space encompassed by said cabinets through an opening means formed in said cabinets, said cabinets and said housing having coinciding passage means allowing easy access to the interior of said system, a pair of endless conveyor chains in offset relationship and disposed in laterally spaced parallel planes, each chain having multiple articulated links, plural equidistantly spaced article storage and transport trays suspended at diagonally opposite corners in level relationship from said chains, said trays adapted to pass in succession adjacent to said coinciding passage means of the cabinets and housing, fixed guide track means for said chains on said housing and defining continuous uninterrupted guidance paths for the endless chains along their entire movement paths, and power drive means for said chains on said housing including a pair of sprocket gears in operative engagement with the exteriors of said chains at a fixed point on each chain.

4,191,436
CABINET FOR USE IN MOBILE VEHICLE

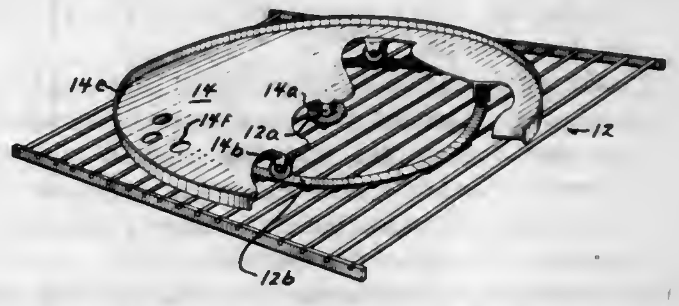
Richard S. Cherry, Don Mills, Canada, assignor to The Streakers International Incorporated, Toronto, Canada
Filed Jul. 25, 1978, Ser. No. 927,876
Int. Cl.² A47B ***43/00, 88/00***
U.S. Cl. 312—293 5 Claims



1. A cabinet, for use in a mobile van or truck, comprising:
a rectangular frame having vertical legs interconnected by horizontal struts;
at least one extensible drawer suspension means mounted on the frame, said means including a pair of opposed extensible channel-shaped runners each having a plurality of hook means projecting laterally therefrom;
at least one tray having a pair of opposed sides with bar means fixed horizontally parallel to each side and spaced therefrom, the bar means being engagable with the hook means of the opposed runners whereby the tray is removably carried by the suspension means; and
releaseable means to hold the tray in closed position in the frame with the suspension means retracted.

4,191,437
REFRIGERATOR STORAGE SYSTEM

Ludwig F. Funke, 7200 Newburgh Rd., Evansville, Ind. 47715
Continuation-in-part of Ser. No. 743,913, Nov. 22, 1976. This application May 30, 1978, Ser. No. 910,733
Int. Cl.² A47B ***57/00***
U.S. Cl. 312—305 8 Claims



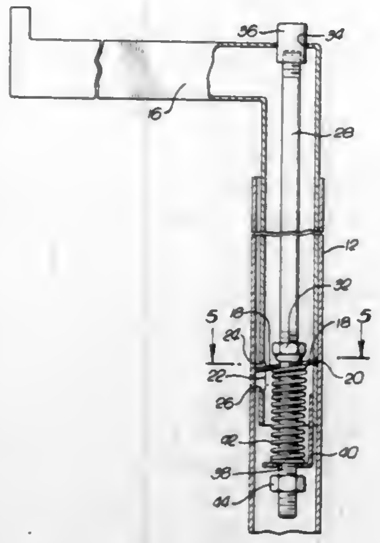
1. A rearrangeable storage system for a refrigerator having a plurality of storage shelves comprising at least one removable and rotatable shelf adapted to travel a 360° path within the confines of a supporting storage shelf, load supporting means arranged on the undersurface of said rotatable shelf outwardly of the rotational axis thereof, tracks disposed on said storage shelves for rolling engagement by said mounting means to

achieve various storage arrangements with the relocation of said rotatable shelf, and means maintaining said rotatable shelf at a preselected position on said storage shelves, where unobstructed space is provided between said rotatable shelf and the next adjacent upper storage shelf, where portions of said storage shelves remain usable when said rotatable shelf is at said preselected position on said storage shelves, and where the full areas of said storage shelves remain usable after any relocation of said rotatable shelf.

4,191,438

RELEASABLE COUPLING FOR DISPLAY UNIT EXTENSION BAR

Robert H. Day, 2045 Morgan, #B, Burbank, Calif. 91504
Filed Jun. 19, 1978, Ser. No. 916,605
Int. Cl.^{2} A47B *57/00;* **F16M** *11/00*
U.S. Cl. 312—306 **6 Claims**

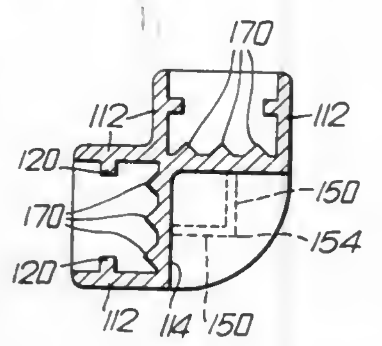


4. In a display unit or the like:
(a) a construction of square tubular parts, one of the parts being a vertical standard open at its upper end;
(b) an extension bar of square tubular construction and slidably fitted into said standard;
(c) said extension bar having at its lower end, a narrow slot extending transversely across one side of the extension bar and a wide slot on the opposite side, the top edge of which wide slot lies beneath the level of the narrow slot;
(d) a toggle bar in the form of a plate having one end fitted in the narrow slot and its other end projecting through the wide slot so that the toggle bar is mounted by the extension bar for pivotal movement about an axis transverse to the extension bar;
(e) said toggle bar being dimensioned to engage inside one wall of the standard at a place located beneath the pivot axis and beneath the said top edge of said wide slot whereby a load on said extension bar causes the toggle bar to force the extension bar into wedging relationship with the opposite wall of the standard;
(f) an operating rod extending downwardly from the top of said extension bar and through the toggle bar, said operating rod having an abutment above the toggle bar for moving the toggle bar away from said one inside wall to release the extension bar;
(g) a coil spring surrounding the operating rod and located beneath the toggle bar for biasing the toggle bar to move upwardly about said pivot axis.

4,191,439

DRAWER CONSTRUCTION

Arik Cohen, Jerusalem, Israel, assignor to Rim Jerusalem Furniture Limited, Jerusalem, Israel
Filed May 31, 1978, Ser. No. 911,196
Claims priority, application United Kingdom, Jun. 1, 1977, 23307/77; Nov. 25, 1977, 49267/77
Int. Cl.^{2} A47B *88/02, 47/04*
U.S. Cl. 312—330 R **14 Claims**

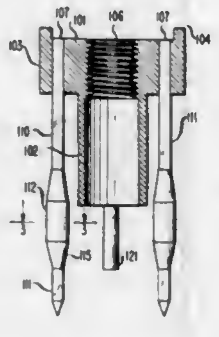


1. A drawer construction comprising a front member, a back member, two side members, a bottom and a plurality of brackets respectively interengaging adjacent members, wherein each of said brackets includes a pair of traversely spaced side walls, a base wall connecting said side walls and defining with said pair of side walls a channel open at one end and closed at the other end by an end wall and wherein said channels are each provided with a pair of interfacing longitudinal guide ribs extending along the interiors of the side walls of the channel and disposed intermediate the base wall and the free edge of their respective side wall, said channels further being provided with longitudinally extending locking rib sections, said guide ribs and locking ribs permitting insertion of an end of one of said members in said channel by relative linear movement parallel with the longitudinal extent of the channel but inhibiting relative linear movement parallel with the longitudinal extent of the channel but in the opposite direction for withdrawal of said member from said channel, all of said members having parallel major faces on opposite sides thereof and a plurality of said members having grooves in their opposite major faces disposed adjacent and parallel with their end faces and complementary with the guide ribs of the channel in which said end faces are received.

4,191,440

ELECTRICAL CONNECTOR FOR COUPLING POWER LEADS TO CIRCUIT BOARDS

Eugene C. Schramm, Denville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sep. 19, 1978, Ser. No. 943,733
Int. Cl.^{2} H01R *9/18;* **H05K** *1/12*
U.S. Cl. 339—17 C **11 Claims**



1. An electrical connector comprising:

a generally flat, unitary member of electrically conductive material having at least one aperture therein for terminating at least one electrical conductor;

means, affixed to said flat member in parallel rows, for electrically and mechanically coupling said member to a circuit board, each of said coupling means including

a compliant portion at an intermediate point along its length for effecting frictional engagement between said coupling means and said circuit board, and

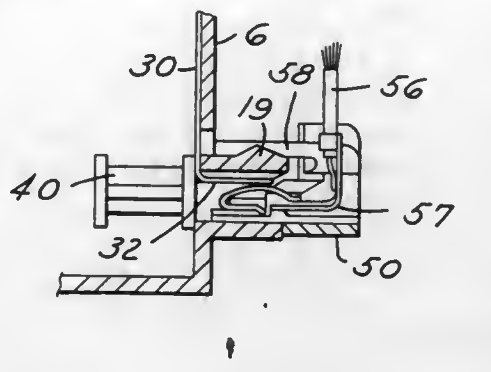
a flexible terminal portion intermediate said compliant portion and said flat member, said flexible terminal portion having a length to a smallest cross-sectional width ratio greater than three and further having one end integral with said compliant portion and an opposite end affixed to said flat member, said flexible terminal portion providing a flexible connection between said compliant portion and said flat member; and

means, affixed to said flat member at an intermediate point between said parallel rows of said coupling means, for counteracting shear stresses between said flat member and said circuit board upon the termination of said electrical conductor to said connector.

4,191,441

CIRCUIT BOARD ASSEMBLY

William C. Ryder, Hadleigh, and John C. Hobbs, Loughton, both of England, assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 14, 1979, Ser. No. 12,083
Claims priority, application United Kingdom, Feb. 24, 1978, 07574/78
Int. Cl.^{2} H05K *1/12*
U.S. Cl. 339—17 F **16 Claims**



1. A circuit board assembly comprising a circuit board having a front surface, a contact supporting surface extending rearwardly away from said front surface, a flexible circuit sheet mounted on said front surface and having a contact portion which overlies said contact supporting surface and which is accessible from behind said circuit board and a holder removably mounted on said circuit board and retaining said contact portion of said sheet in contact with said contact supporting surface while allowing access to said contact portion from behind of said circuit board; and

said contact support surface having formed therein a respective groove extending rearwardly away from the front surface of said circuit board and said holder including at least one finger extending forwardly from said holder which is slidably engaged in said respective groove, and parts of said at least one finger adjacent said respective groove holding the contact portion of said circuit sheet in engagement with said contact support surface.

4,191,442

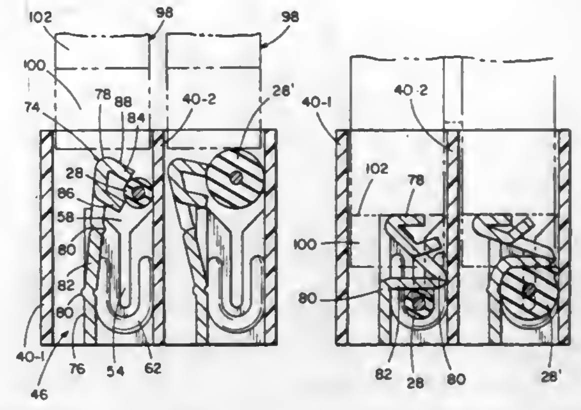
ELECTRICAL CONNECTOR AND METHOD OF FABRICATING A WIRE HARNESS USING THE CONNECTOR

Jack E. Caveney, Hinsdale, and Roy A. Moody, Flossmoor, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed May 25, 1978, Ser. No. 909,732
Int. Cl.^{2} H01R *13/38*
U.S. Cl. 339—99 R **24 Claims**

1. An electrical connector for mechanically joining a plurality of wires to a plurality of other electrical components and for providing low resistance electrical paths between predetermined ones of said plurality of wires and preselected ones of said plurality of other electrical components, said connector comprising:

an insulative housing having a front wall, a back wall and a plurality of spaced barrier walls extending between the aforementioned walls to define an array of cavities extending through said housing; and

a plurality of metallic terminal elements each having a wire terminating portion and a portion for contacting another electrical component with one terminal element preloaded into each of said cavities, said wire terminating portion having an open-ended elongate wire-receiving slot of a width less than the diameter of the conductor in the wire to be terminated in the wire terminating portion so that in response to the insertion of the wire laterally of its axis into the slot the insulation of the wire is removed, said wire terminating portion further having an entrance adjoining said slot of greater width than said slot to guide the wire into the slot, at least one of said housing and plurality of terminal elements comprising holding means for firmly mechanically holding each of said wires in alignment with the entrance to the slot corresponding to that wire prior to insertion of the wire into the slot, said holding means being adapted to hold said wires bent from their as-manufactured axial direction and comprising first means for engaging said wires on the side of said terminal elements remote from said back wall, further comprising second means for engaging said wires on the side of said terminal elements remote from said front wall, and further comprising third means for engaging said wire between said first and second wire engaging means, whereby after positioning of the wires in the holding means and prior to insertion of the wires into the slots, the connector can be physically moved without dissociation of the wires from their corresponding slots.



4,191,443

ELECTRICAL CONNECTOR MEANS

Richard C. Doyle, Greenlawn, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.
Filed Jul. 28, 1977, Ser. No. 820,038
Int. Cl.^{2} H01R *13/58*
U.S. Cl. 339—103 R **24 Claims**

1. Connector means adapted to be coupled to the electrical conductors in an insulated electrical cable, comprising:

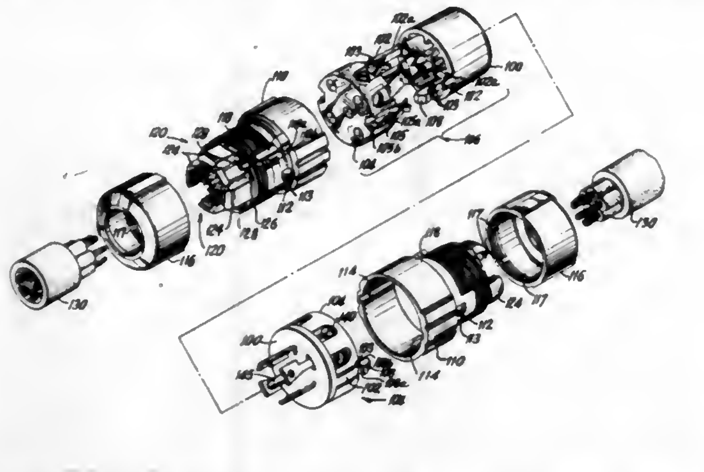
a terminal housing adapted to support electrical contact means and to electrically isolate terminal portions of said electrical contact means yet enable access thereto for coupling the conductors to said terminal portions of said electrical contact means;

a connector front member adapted to be releasably lockably attached on one side to one side of said terminal housing member, said connector front member being adapted to permit access to contact portions of said electrical contact means on its other side, said terminal housing and said connector front member forming a connector body when coupled together;

at least two generally flexible and resilient leg members formed on said connector front member, extending in a direction longitudinally back from its said other side, each said leg member formed with first engaging means adapted to releasably lockably couple said connector front member and said terminal housing together to form said connector body, and each said leg member also being formed with second engaging means;

a generally cylindrical connector housing member, said connector housing member adapted to receive said connector body and the cable when coupled to said terminal housing, said connector housing adapted to be releasably lockably attached to said connector body by said second engaging means; and

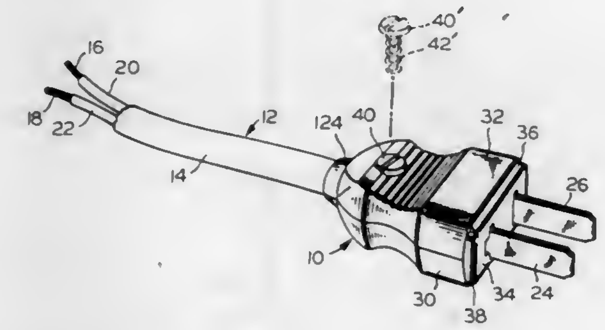
means associated with said connector housing for tighteningly grasping the cable when the conductors are coupled to said terminal portions to retain the cable fixed relative to said connector housing; such that said terminal housing, said connector front member and said connector housing can be retained in assembled configuration by said first and second engaging means without threaded fasteners.



4,191,444
DEAD FRONT PLUG WITH STRAIN RELIEF

Donald F. Smith, Warwick, R.I., and Michael J. Ostrelich, Easton, Conn., assignors to General Electric Company, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,174
Int. Cl.² H01R ***13/58***
U.S. Cl. 339—107 **6 Claims**

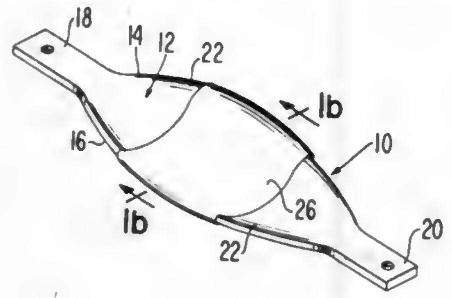


1. A strain relief for a plug, said strain relief comprising:
an insulating housing in three aligned connected sections, the two end sections folding up in valise formation,
an annular channel in each end section,
said annular channel being disposed about a fastener opening extending through the center portion of said annular channel,
a fastener to force said sections together
and radially extending ribs in said annual channel, the ribs of one channel being offset from those of the opposite channel
whereby a wire restrained in the said channel is given a sinusoidal configuration around an arc of said channel.

4,191,445
LOUVERED ELECTRICAL CONNECTOR

Robert S. Deal, Los Altos Hills, Calif., assignor to Multilam Corporation, Los Altos, Calif.

Filed Jan. 16, 1976, Ser. No. 649,893
Int. Cl.² H01R ***13/12***
U.S. Cl. 339—252 R **2 Claims**

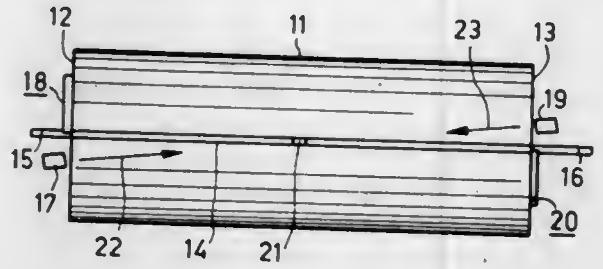


1. An electrical connector comprising: an elongated device having a pair of opposed ends and a louver extending between said ends, the louver having a pair of spaced side margins; and a layer of electrically conducting material on said louver independently thereof for forming an electrical current-carrying path between said side margins, said layer having a number of flexible fingers adjacent to each side margin, respectively, of said louver.

4,191,446
DIRECTIONAL COUPLING-DEVICE FOR MULTI-MODE OPTICAL FIBRES

Hervé Arditty, Marly-le Roi, and Jean-Jacques Hunzinger, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y. 10017

Filed Dec. 15, 1975, Ser. No. 640,706
Claims priority, application France, Dec. 16, 1974, 74 41330
Int. Cl.² G02B ***5/14***
U.S. Cl. 350—96.15 **13 Claims**

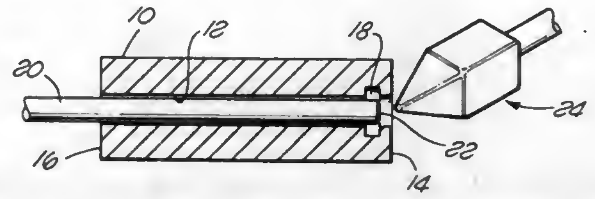


1. A directional coupling device for multimode optical fibers, which comprises a coupler body of a material which is transparent in a given wavelength range of optical radiation and which is a carrier for the transmitted information, two axially aligned optical single multi-mode fibers having ends coupled to said body, at least one of which transfers information from one or more information sources which are disposed along an information routing circuit including said optical fibers, at least one of said fibers transferring the information conveyed by the other fiber, to which latter information specific information is added which is introduced in the directional coupling device, the coupled optical fibers being aligned in the body of the directional coupler with said ends of the two optical fibers being fixed opposite each other at an adjustable distance which corresponds to the desired degree of coupling between the two optical fibers, means for introducing light rays into the body of the directional coupler along an axis such that a portion of the light rays is intercept by and enters into at least one of the optical fibers, said latter means for introducing light rays including a radiation source arranged on at least one of the ends of the coupler body, and photo-sensitive means for picking up at least a fraction of the dispersion luminous flux extracted from the luminous flux which passes through at least one of the two fibers and through said coupler body, said photo-sensitive means comprising at least one photosensitive detector arranged on at least one of the ends of the body of the coupling device.

4,191,447
FIBER OPTIC TERMINATION AND METHOD OF MAKING SAME

Leslie M. Borsuk, Los Alamitos, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 27, 1978, Ser. No. 900,424
Int. Cl.² G02B ***5/14***
U.S. Cl. 350—96.20 **10 Claims**

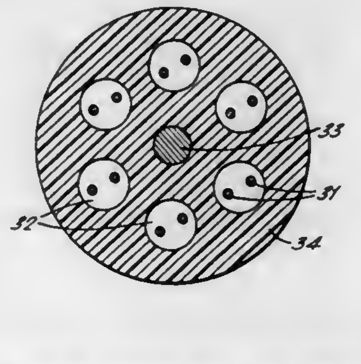


1. A fiber optic termination comprising:
a ferrule having a front mating end and a rear;
a bore extending axially through said ferrule from said rear to said front end;
a recess in the wall of said bore spaced behind said front end; and
an optical fiber inserted into said bore from said rear, said fiber embodying an integral, enlarged forward lens portion extending into said recess to thereby restrict forward and rearward axial movement of said fiber in said bore.

4,191,448
OPTICAL GUIDES

Noel S. Dean; Kenneth L. Lawton, and Vincent A. Yates, all of Wigan, England, assignors to BICC Limited, London, England

Filed Dec. 30, 1975, Ser. No. 645,333
Claims priority, application United Kingdom, Jan. 6, 1975, 423/75
Int. Cl.² G02B ***5/16***
U.S. Cl. 350—96.23 **16 Claims**

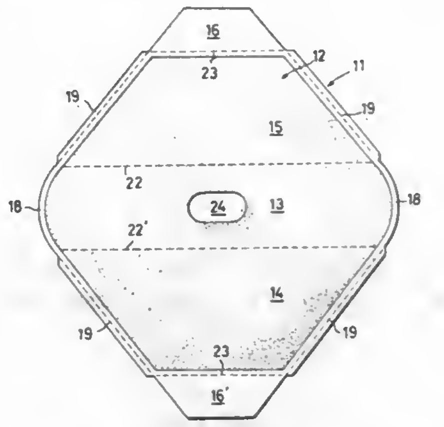


1. An optical cable comprising at least one optical fibre housed loosely in and throughout the length of a bore extending lengthwise in an extruded elongate body of insulating material so that at any transverse cross-section of the cable throughout the whole of its length limited relative movement between the optical fibre and the extruded elongate body can take place when the cable is flexed; at least one separate elongate reinforcing member embedded in said extruded elongate body throughout the whole of the length of the body and arranged side by side with said bore; and, lining the boundary wall of the bore, a metallic tape having on at least its outer surface a coating of plastics material.

4,191,449
GUARD-RAIL REFLECTOR

Masuzo Hirata, Hirakata, Japan, assignor to Toyo Seikan Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1977, Ser. No. 773,002
Int. Cl.² G02B ***5/12***
U.S. Cl. 350—97 **19 Claims**

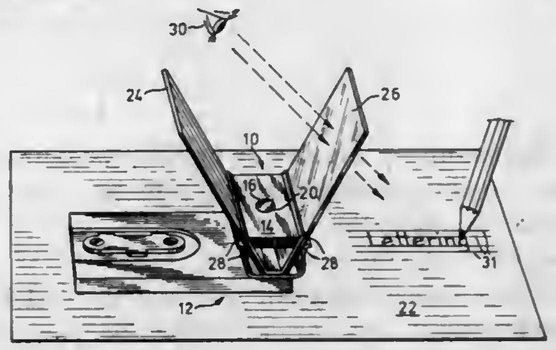


11. The guard-rail reflector of claim **10** wherein said washer has a central fastener receiving space generally aligned with the space between said mounting plane parts, and a pair of reversely turned legs combining with adjacent portions of said washer to define sockets for receiving opposed edges of said mounting plane parts.

4,191,450
DOUBLE CLIP LETTERING GUIDE ADJUSTMENT WEDGE

Daniel H. Hoggan, 952 Foothill Dr., Providence, Utah 84332

Filed Jun. 14, 1978, Ser. No. 915,522
Int. Cl.² G03B ***21/56***
U.S. Cl. 350—121 **9 Claims**



1. An adjustment wedge for adjusting the angle between the clips of a double clip lettering guide, comprising in combination an adjustment wedge member and means attached to the wedge member for adjusting the position of the wedge member with respect to lettering guide, such that said wedge member and the double clip adjustably position and hold the lettering guide.

4,191,451
PROJECTION SCREEN AND METHOD OF MAKING SAME

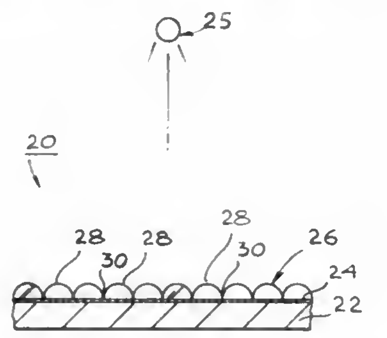
Marvin P. Hodges, Woodland Hills, Calif., assignor to Marv Hodges, Inc., St. Petersburg, Fla.

Filed Apr. 21, 1978, Ser. No. 898,837
Int. Cl.² G03B ***21/60***
U.S. Cl. 350—126 **42 Claims**

1. An improved projection screen, said screen comprising, in combination:

a. a substrate,

b. a layer comprising a plurality of discrete shaped light-affecting elements deposited on said substrate,

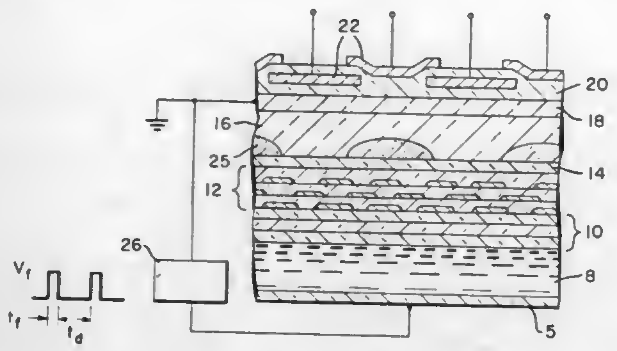


c. wherein said elements are shaped by a patterned tool and subsequently deposited in a liquid state on said substrate.

4,191,452
AC SILICON PN JUNCTION PHOTODIODE LIGHT-VALVE SUBSTRATE

Jan Grinberg; Paul O. Braatz, both of Los Angeles; Michael Waldner, Woodland Hills, and Alexander D. Jacobson, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 28, 1977, Ser. No. 865,281
Int. Cl.² G02P *1/13*
U.S. Cl. 350—342 14 Claims



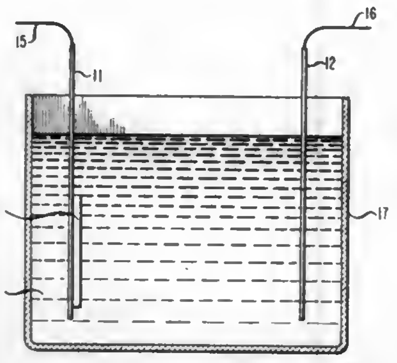
1. An alternating current driven liquid crystal light valve for responding to applied information signals, said light valve including in combination:

(a) a liquid crystal layer;
(b) interface means adjacent said liquid crystal layer for reflecting light and for inhibiting the passage of light therethrough;
(c) a light valve substrate structure including a dielectric layer adjacent said interface means, a semiconductor body of predetermined thickness and a first type of conductivity adjacent said dielectric layer, and including in preselected portions of said semiconductor body regions of a second conductivity type forming with the first conductivity type portion of said semiconductor body a set of PN junction diodes adjacent said dielectric layer; and
(d) means for applying an AC biasing voltage across said light valve substrate, said interface means and said liquid crystal layer to cause the reverse biasing of said PN junctions during a portion of the AC cycle establishing depletion regions that extend throughout the thickness of said first conductivity type portion and at least portions of said second type conductivity regions estabilishing an electric field in said semiconductor body and charged centers in said second conductivity regions whereby information signal-representing charge carriers in said semiconductor body which move through said depletion regions under the influence of said electric field are attracted towards said charged centers for an improved resolution of the signals applied across said liquid crystal layer.

4,191,453
IRIDIUM OXIDE BASED ELECTROCHROMIC DEVICES

Gerardo Beni, Westfield; Shimshon Gottesfeld, New Providence; James D. E. McIntyre, Gillette, and Joseph L. Shay, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 27, 1978, Ser. No. 919,485
Int. Cl.² G02F *1/17*
U.S. Cl. 350—357 7 Claims

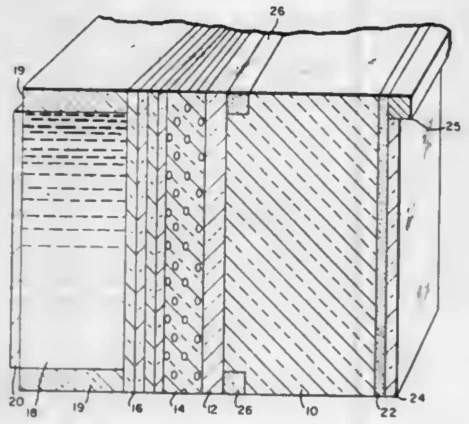


1. An electrochromic device comprising a first electrode and a second electrode contacted with an electrolyte CHARACTERIZED IN THAT said first electrode contains anodic iridium oxide, said electrolyte has a pH in the range 2 to 12 and said electrolyte has an ionic conductivity greater than 0.01 $ohm^{-1} cm^{-1}$, whereby when an electrical potential is applied between said first electrode and said second electrode a reflectivity change is produced.

4,191,454
CONTINUOUS SILICON MOS AC LIGHT VALVE SUBSTRATE

Paul O. Braatz; Jan Grinberg, both of Los Angeles; Alexander D. Jacobson, Topanga, and Michael Waldner, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 808,224, Jun. 20, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,840
Int. Cl.² G02F *1/13*
U.S. Cl. 350—342 5 Claims



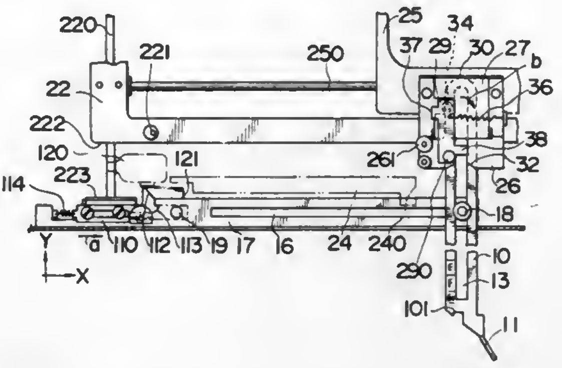
1. An alternating current liquid crystal light valve, comprising:

(a) a silicon substrate;
(b) a silicon dioxide layer formed on a surface of said substrate;
(c) light blocking means adjacent said silicon dioxide layer;
(d) light reflecting means adjacent said light blocking means;
(e) a liquid crystal layer adjacent said light reflecting means; and
(f) alternating current biasing means whereby during a part of the alternating current cycle, the voltage across the silicon substrate-silicon dioxide structure depletes said silicon substrate of its mobile charge carriers and permits charges to move from one side of the substrate to the opposite side adjacent said silicon dioxide under the influence of the electric field set up by said biasing means.

4,191,455
MANUAL RETRIEVING MECHANISM FOR MICROFICHE READER APPARATUS OR THE LIKE

Yutaka Watanabe; Seiichi Yamagishi, both of Tokyo, and Shiro Toriumi, Machida, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 19, 1978, Ser. No. 943,902
Claims priority, application Japan, Sep. 30, 1977, 52/118015; Jun. 12, 1978, 53/80957[U]
Int. Cl.² G03B *23/08*
U.S. Cl. 353—27 A 10 Claims



1. In a microfiche reader apparatus or the like including an automatic retrieving mechanism comprising a first carriage moveable in a first direction and supporting thereon a microfiche and a second carriage moveable in second direction which is orthogonal to said first direction and moveably supporting said first carriage thereon;

a manual retrieving mechanism including a stationary guiding means affixed to said apparatus and having an elongated slot and a manual retrieving lever means having an elongated slot, a pivotal shaft means engaging and being moveable along said elongated slots and said lever means being so positioned to have its elongated slot perpendicular to the elongated slot of said guiding means; and

means coupling said manual retrieving lever means with said first carriage so as to enable movements of said first and second carriages by the manual operation of said lever means.

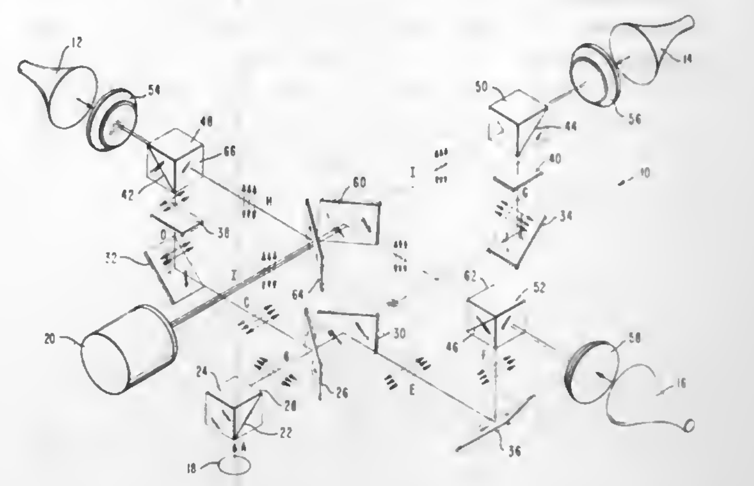
4,191,456
OPTICAL BLOCK FOR HIGH BRIGHTNESS FULL COLOR VIDEO PROJECTION SYSTEM

Byung S. Hong, Mission Viejo; Joseph H. Colles, Oceanside; David D. Scofield, San Diego; Stephen J. Purdy, and Stephen J. Reinsch, both of Vista, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 8, 1979, Ser. No. 18,691
Int. Cl.² H01J *29/89;* G03B *21/00;* G02F *1/01*
U.S. Cl. 353—31 6 Claims

1. An improved optical block for use in a high brightness full color video projector of the type wherein a beam of collimated white light from a high intensity source is modulated with the primary color components of at least three video sources by means of a first, second and third reflection type polarization state modulation means, each of said means for spatially modulating a primary color component video image in real time, said optical block comprising:

(a) a first polarizing means positioned to receive said collimated projection light for prepolarizing said light along a first plane and a second plane, said first and second planes being mutually orthogonal and for directing said light polarized along said first plane and said light polarized along said second plane along mutually orthogonal paths;
(b) means for projecting said full color image;
(c) input filter means located on a first level for separating collimated unmodulated polarized white light leaving said first polarizing means into three beams of collimated polarized light of different primary colors;
(d) relay mirror means for redirecting said three beams of collimated polarized light of different primary colors in a direction perpendicular to said first level;
(e) first, second and third wavelength-tuned polarizer/analyzers located on a second level and positioned to receive said three beams of collimated polarized light of different primary colors;
(f) said first, second and third wavelength tuned polarizer/analyzers being arrayed to direct said three beams of collimated polarized light of different primary colors to the surface of said first, second and third reflection type polarization state modulation means so that the state of polarization of the light in said beams is modulated by the primary color component video images and each reflected to one of said wavelength-tuned polarizer/analyzers to be polarization analyzed;

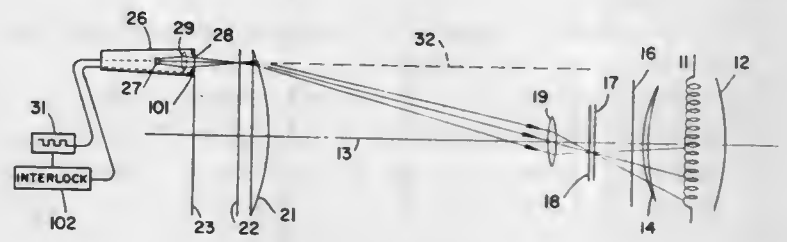


(g) output filter means located on a second level positioned to receive the image modulated portion of said polarization-analyzed beams so as to recombine said three beams into said full color image for projection by said means for projecting said full color image, the optical path length from said means along any of said three primary color beams to the reflection and modulation means for modulating said beam being equal to said path length along any other of said beams and said reflection and modulation means being positioned so that said projection lens means simultaneously images and superimposes the three primary color component images 55 formed separately at each of said reflection and modulation means in said respective collimated light beams to form said full color image without the interposition of any lens in the optical path between said means for projecting said full color image and said reflection and modulation means.

4,191,457
BI-DIRECTIONAL OPTICAL APPARATUS FOR ALTERING AN OPTICALLY PROJECTED MEMBER

Arthur R. Zingher, 511 Church Ave., Woodmere, N.Y. 11598

Filed Aug. 21, 1978, Ser. No. 935,709
Int. Cl.² G03B *21/00*
U.S. Cl. 353—44 20 Claims



1. In a device for illuminating a subject and projecting an image of said subject through an optical focusing systems to an

apparent image, an apparatus for performing useful work on said subject, comprising light source means directed at said apparent image for emitting a beam of writing light, means for directing said writing light from the image plane back through said optical focusing means to focus on said subject, and recording means closely adjacent to said subject for undergoing perceptible change in response to said writing light.

4,191,458

PHOTOGRAPHIC INFORMATION SETTING DISPLAY CIRCUIT

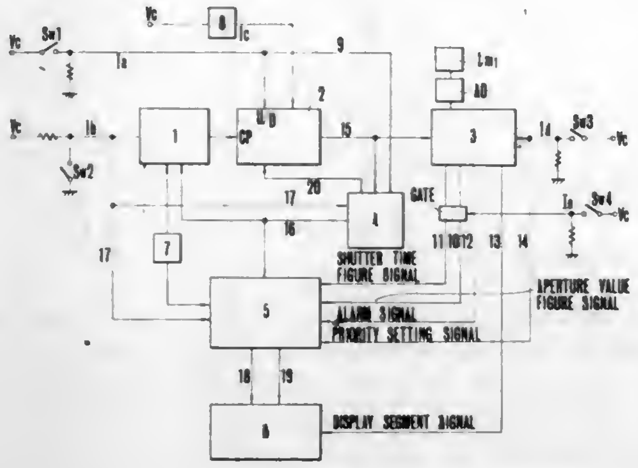
Masaharu Kawamura, Hino; Nobuaki Sakurada, Yokahama; Nobuhiko Shinoda, Tokyo; Fumio Ito, Yokohoma; Hiroyashu Murakami, Tokyo, and Tadashi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 720,597, Sep. 7, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 897,123

Claims priority, application Japan, Sep. 11, 1975, 50-110727

Int. Cl.^{2} G03B *17/20*

U.S. Cl. 354—23 D **33 Claims**



1. A photographic information display circuit for displaying photographic information comprising:

(a) pulse forming means for producing pulses,

(b) counter means for counting the pulses from the pulse forming means,

(c) manually operable exposure controlling operation means coupling the pulse forming means to the counter means for forming count control signal and for making the counter means count the pulses from the pulse forming means until an exposure value is set in the counter in response to the count control signals,

(d) a light measuring circuit for producing a digital value corresponding to the intensity of the light from the object,

(e) an operation circuit connected to the counter means and the light measuring circuit so as to produce a digital calculated exposure value on the basis of the object brightness and the exposure value set at the counter means,

(f) first display means connected to the counter means so as to display the exposure value in the counter means,

(g) second display means connected to the operating circuit so as to display the calculated exposure value produced by the operating circuit, and

(h) a display control circuit coupled to the operation means for transmitting display control signal to the first display means in response to the count control signal so as to display the set exposure value by means of the first display means and for transmitting the display control signal to the second display means so as to display the set value and the calculated exposure value when the count control signal disappears.

4,191,459

DIGITAL CAMERA SHUTTER CONTROL CIRCUIT HAVING MEMORY READ-OUT/SHUTTER OPENING SYNCHRONIZATION

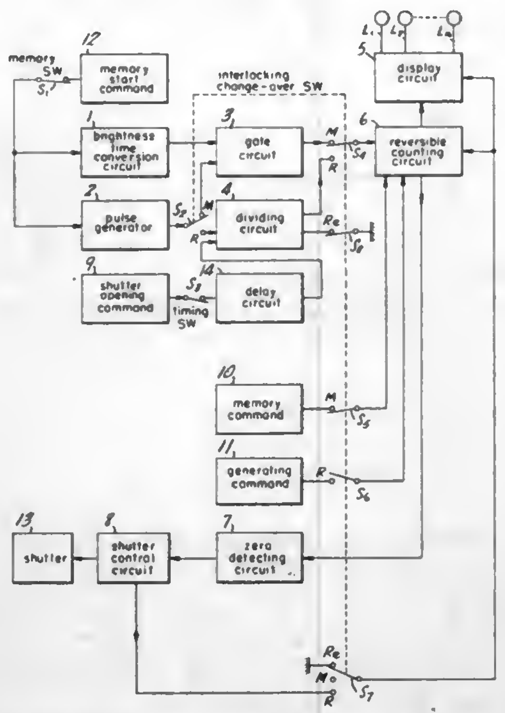
Takeo Saito; Youichi Seki, both of Chiba, and Kiyoshi Kitai, Tokyo, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Continuation of Ser. No. 499,982, Aug. 23, 1974, abandoned. This application Jun. 30, 1976, Ser. No. 701,020

Claims priority, application Japan, Aug. 24, 1973, 48-95006

Int. Cl.^{2} G03B *7/08*

U.S. Cl. 354—23 D **6 Claims**



1. In a camera shutter control circuit of the type having means for developing a plurality of pulses the number of which is representative of an exposure time; a counting circuit for counting and storing the number of pulses representative of an exposure time; and read-out means for reading-out the number of stored pulses stored in said counting circuit to control an exposure time; the improvement which comprises:

said read-out means comprising means responsive to a reset signal for rendering said reading-out means inoperative; and

reset means for normally developing a reset signal to render said reading-out means inoperative and operable for terminating the reset signal after a variable selectible time delay to render said read-out means operative, said reset means including means operable for selecting said time delay, and said reset means renderable operative upon initiation of shutter opening to terminate the reset signal after the selected time delay and initiate reading-out of the stored pulses to control an exposure time, whereby selection of the reset means time delay to equal the shutter opening time is effective to synchronize shutter opening with the initiation of reading-out of the stored pulses and thereby eliminate exposure time error due to premature or late initiation of reading-out of the stored pulses.

4,191,460

CAMERA WITH AUTOMATIC FOCUS ADJUSTMENT DEVICE

Makoto Fujiki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 962,884

Claims priority, application Japan, Dec. 14, 1977, 52-150340

Int. Cl.^{2} G03B *3/10*

U.S. Cl. 354—25 **33 Claims**

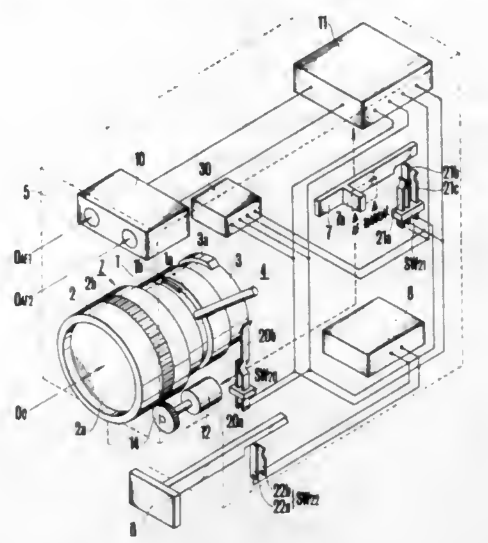
1. A camera comprising:

(a) a zoom lens mechanical mounting capable of selectively photographing in an ordinary zoom range and a macro-zoom range;

(b) photographing range changeover means for changing over said zoom range of said zoom lens mechanical mounting;

(c) automatic focus adjustment means for automatically controlling focus adjustment of said zoom lens in accordance with a distance from said camera to an object to be photographed, said means having:

a distance measuring optical system having an optical axis offset from that of said zoom lens; and



a focus adjusting device for detecting the camera-to-object distance by an incident light beam from said distance measuring optical system and for performing focus adjustment of said zoom lens;

(d) drive means for driving said camera; and

(e) control means responsive to changeover operation by said changeover means to said macro-zoom range for causing said drive means to be inoperative.

4,191,461

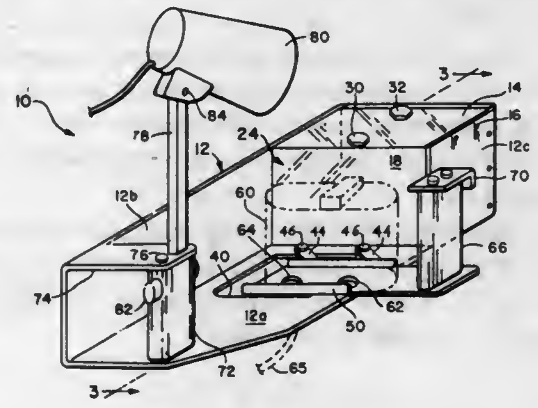
CAMERA JIG FOR UNDERWATER STEREOSCOPIC PHOTOGRAPHY

John Mittleman; Charles O. Warrell, both of Panama City, and Ronald S. Peterson, Panama City Beach, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 16, 1979, Ser. No. 39,990

Int. Cl.^{2} G03B *17/08*

U.S. Cl. 354—64 **10 Claims**



1. Apparatus for use in taking close-up underwater stereoscopic photographs, said apparatus comprising in combination:

a rigid frame including a base portion and having front and rear ends;

a fluid tight box disposed at said front end of said frame and comprising spaced front and rear transparent plates extending transversely of the front to rear central axis of said base portion;

a transparent liquid filling said box;

a camera support member extending transversely of said base portion rearwardly of said rear transparent plate;

an underwater camera, mounted on said support member, and looking through said rear transparent plate, said transparent liquid, and said front transparent plate;

connecting means, between said camera support and said base portion, for guiding lateral movement of said camera support member and said camera between first and second predetermined positions from which said camera has first and second fields of view laterally displaced from one another by said predetermined distance; and

handle means for use in manually supporting said apparatus and for effecting said lateral movement of said camera support member and said camera between successive photographic exposures by said camera.

4,191,462

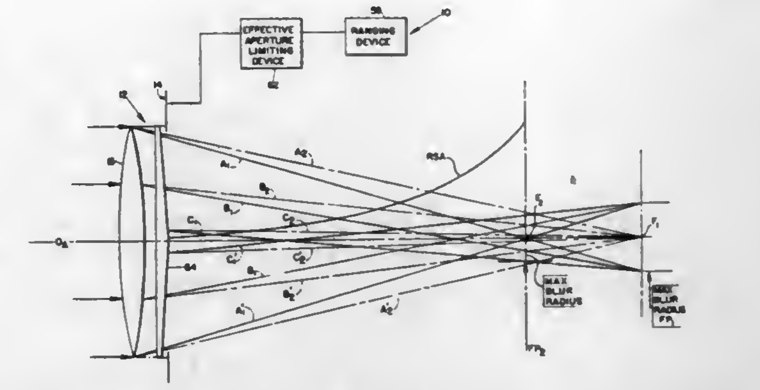
FIXED FOCUS EXPOSURE CONTROL APPARATUS WITH REVERSE SPHERICAL ABERRATION CORRECTIVE CHARACTERISTIC

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1978, Ser. No. 899,270

Int. Cl.^{2} G03B *3/04, 15/03*

U.S. Cl. 354—139 **14 Claims**



1. In a camera including means for defining a focal plane and an effective aperture control arrangement operatively disposed with respect to said focal plane, the improvement comprising a lens arrangement operatively disposed with respect to said effective aperture control arrangement and fixedly positioned with respect to said focal plane during different exposure operations in which image-forming light rays from subjects, located at different specific locations within a given range of distances from said camera, are at different times respectively focused at said focal plane, said lens arrangement being configured to include a reverse spherical abberation corrective characteristic effective to substantially reduce the average size of the effective circles of confusion associated with each of the images of the different said subjects as formed at said focal plane by said lens arrangement in combination with said effective aperture control arrangement wherein said effective aperture control arrangement includes a shutter arrangement of the type capable of selectively providing different maximum effective aperture sizes during different exposure operations and means for varying the maximum effective aperture size for different exposure operations as a function of camera-to-subject distances so that the sizes of said maximum effective apertures increase as the camera-to-subject distances increases.

4,191,463

COUNTER DEVICE FOR MULTIPLE EXPOSURE IN A CAMERA

Fumio Urano, Omiya; Keisuke Haraguchi, Ranzan, and Akihiro Arai, Urawa, all of Japan, assignors to Asahi Kogaku Kogyo Kaisha, Tokyo, Japan

Filed Jun. 16, 1978, Ser. No. 916,386

Claims priority, application Japan, Jun. 20, 1977, 52-80759[U]

Int. Cl.^{2} G03B *17/36*

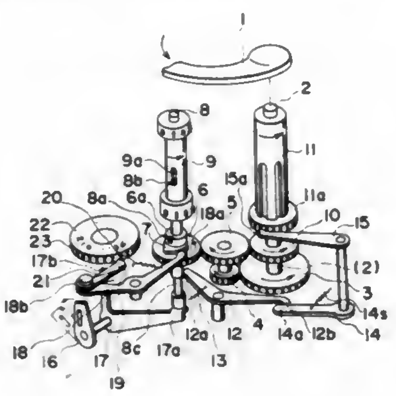
U.S. Cl. 354—217 **5 Claims**

1. A camera of the type having a multiple exposure function,

film winding means on which the camera film is wound and operating means for transmitting motion through a winding operation transmitting means to said film winding means to thereby cause said film to be wound, wherein the improvement comprises:

a counter device for displaying the number of exposures taken per frame of film;

a counter advance means engageable with said counter device and said winding operation transmitting means for advancing said counter device in response to movement of said operating means; and



switch means movable by the camera operator between a first position for disabling said counter advance means and a second position for enabling said counter advance means while simultaneously preventing movement of said film winding means by said operating means so that when said switch means is in said second position the counter device may be advanced by said operating means through said winding operation transmitting means to count the number of exposures without winding said film.

4,191,464

BLADE TYPE FOCAL PLANE SHUTTERS

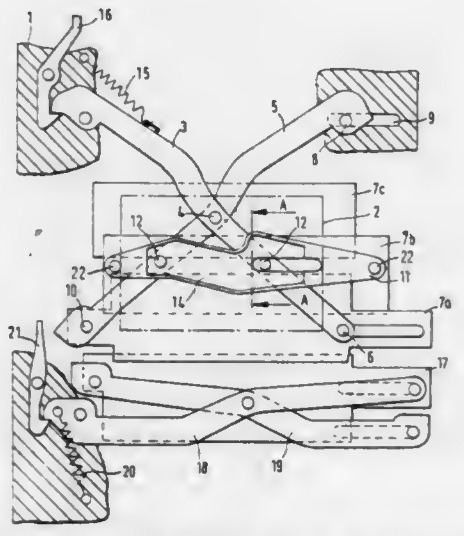
Heinz Schulze, Dresden, German Democratic Rep., assignor to Veb Pentacon Dresden Kamera und Kinowerke, Dresden, German Democratic Rep.

Filed Sep. 8, 1977, Ser. No. 831,651

Claims priority, application German Democratic Rep., Sep. 13, 1976, 194762

Int. Cl.^{2} G03B *9/40*

U.S. Cl. 354—246 **6 Claims**



1. A blade-type focal plane shutter for a camera of the type having an exposure determining system therein, said shutter comprising:

(a) a plurality of opening blades for movement in front of a film gate,

(b) a drive lever for the opening blades, and

(c) means for diffusedly reflecting light positioned parallel to the focal plane and operatively connected to said drive lever, which reflecting means before the commencement of the exposure operation lies in front of the opening blades in the film gate and is movable out of the film gate during the opening movement of the opening blades in a path parallel to the focal plane, said reflecting means together with the opening blades forming a reflection factor which corresponds to the mean reflection factor of different film types.

4,191,465

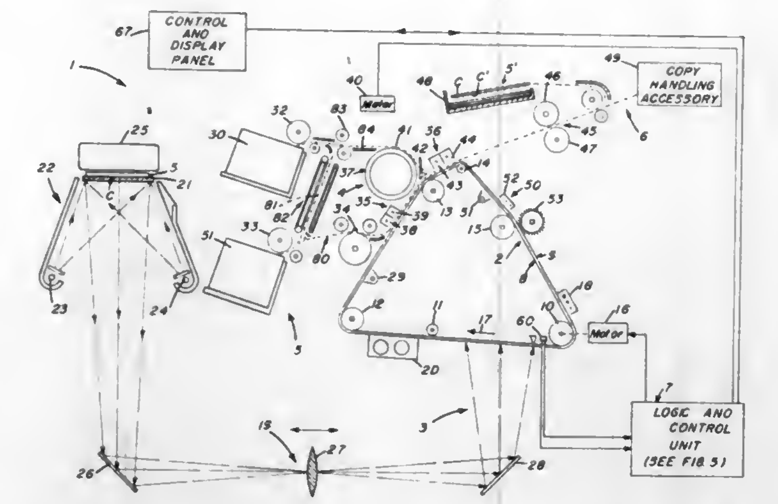
APPARATUS FOR PRODUCING SIMPLEX OF DUPLEX COPIES

Elmer E. Boase, Rochester; Alphonse B. DiFrancesco, Penfield, and Stuart F. Ring, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,286

Int. Cl.^{2} G03G *15/00*

U.S. Cl. 355—3 SH **16 Claims**



1. In apparatus for producing simplex or duplex copies and including a movable image transfer member upon which unfixed, transferable images may be formed and image transfer means for transferring the transferable images from the transfer member to copy sheets, the improvement comprising:

vacuum member means located adjacent to and operable in synchronism with said transfer member for moving:

when duplex copies are being made, in a first direction to separate by vacuum attraction from the transfer member a copy sheet to one side of which a first transferable image has been transferred by said transfer means from said member, and then in a second direction following separation of the copy sheet from the transfer member to invert the copy sheet relative to the transfer member while said first image is unfixed and to bring the other side of the copy sheet into transfer relationship with a second transferable image on the transfer member at said transfer means; and

when simplex copies are being made, in said second direction to bring one side of a copy sheet into transfer relationship with a first transferable image on said transferable member at said transfer means.

4,191,466

ILLUMINATING SYSTEM FOR COLOR ENLARGEMENT OR COPYING EQUIPMENT

Mario Gandini, Brixen, Italy, assignor to Durst A.G. Fabrik Fototechnischer Apparate, Bozen, Italy

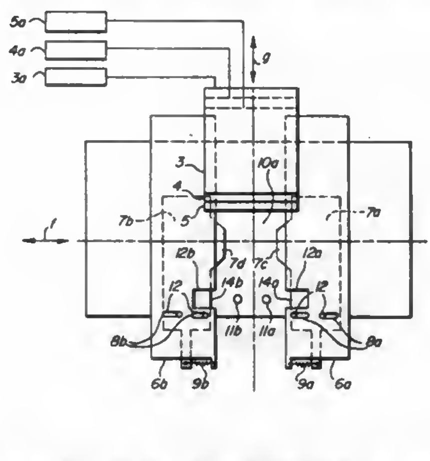
Filed Nov. 9, 1978, Ser. No. 959,253

Int. Cl.^{2} G03B *27/76*

U.S. Cl. 355—35 **12 Claims**

1. In an illuminating system for color enlargement or copying having a filter of maximum density continuously insertable in a predetermined direction into a copy light beam passing through an aperture, the improvement comprising: a shutter

positioned for insertion into said light beam in a direction normal to the direction of insertion of said filter, said shutter



having a shape that varies as the shutter is inserted into the light beam to thereby vary the shape of said aperture.

4,191,467

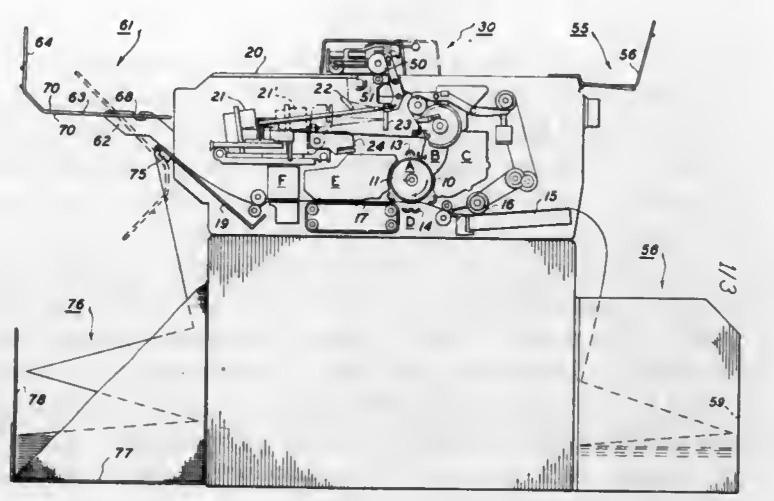
DUAL MODE CATCH TRAY

Richard A. Schieck, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 4, 1979, Ser. No. 27,183

Int. Cl.^{2} G03B *27/62*

U.S. Cl. 355—75 **11 Claims**



1. A dual purpose document and copy sheet receptacle for receiving copies produced from a reproducing apparatus when said receptacle is used in a first mode of operation and for receiving copied originals when said receptacle is used in a second mode of operation,

said receptacle comprising a first support surface for receiving copies produced when said receptacle is used in said first mode of operation and a second support surface for receiving copied originals when said receptacle is used in said second mode of operation,

said receptacle being pivotally mounted to provide first and second support surfaces when used in said first and second modes of operation respectively.

4,191,468

RANGE FINDING FIBERSCOPE

John F. Scully, Spencer, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jun. 21, 1978, Ser. No. 917,612

Int. Cl.^{2} G01C *3/12*

U.S. Cl. 356—17 **10 Claims**

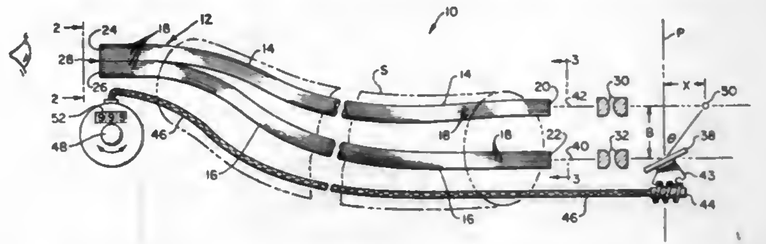
1. A range finding instrument comprising:

a pair of image-conducting bundles of optical fibers each having a distal image-receiving face and a proximal image-emitting face, said proximal faces being juxtapositioned and said distal faces being fixedly spaced a predetermined distance apart in a first plane with axes thereof extending substantially parallel to one another;

light deflecting means in aligned spaced relationship with a first of said distal faces, said deflecting means intersecting the axis of said first face, the point of said intersection being in a second plane parallel to said first plane, said second plane establishing a reference from which range finding measurements may be made;

a first objective lens means axially aligned between said deflecting means and said first distal face for focusing an image of a remote object upon said first face;

second objective lens means axially aligned with the second of said distal faces for focusing an image of said same



remote object upon said second face, centering of said image on said second face being accomplished by movement of said instrument;

means for independently angularly adjusting said light deflecting means relative to said first distal face to center said image of said remote object upon said first distal face; and

means for determining extent of angulation of said light deflecting means for determination of range of said object from said second plane.

4,191,469

INTERFERENCE OPTICAL SENSING DEVICE FOR A CENTRIFUGE

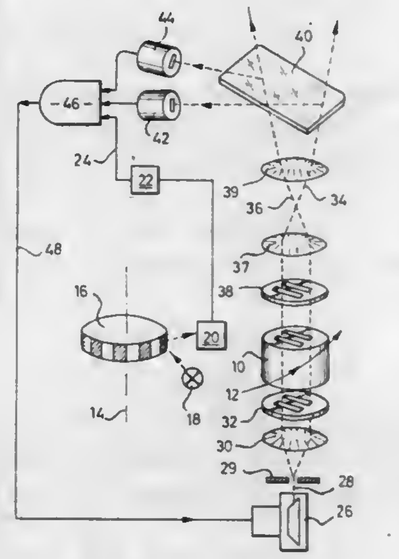
Josef Flossdorf; Henning Schillig, and Klaus-Peter Schindler, all of Brunswick, Fed. Rep. of Germany, assignors to Gesellschaft fur biotechnologische Forschung m.b.H., Brunswick, Fed. Rep. of Germany

Filed Dec. 28, 1977, Ser. No. 865,197

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1977, 2702275

Int. Cl.^{2} G03B *27/32;* G01B *9/02*

U.S. Cl. 356—23 **6 Claims**



1. An interference optical measuring device comprising a light source, a light beam splitter, two component optical beam paths, means for sensing radiation in said optical beam paths, a centrifuge having a multiple hole rotor, said rotor having holes for receiving sample cells or a counter balance, said rotor being arranged in said optical paths so that on rotation of the rotor said cells and counter balance successively pass through the component optical beam paths and in at least one sampling position two samples in a selected cell simultaneously lie in the two component optical beam paths, means for producing a position signal indicating that said selected cell is located in

said sampling position, and control means for activating said measuring device when said samples are in said sampling position, characterized in that said light source includes means for emitting a control light between said activation of said measuring device, in that there are provided control light detecting means, positioned in said component optical paths at positions in said paths on the other side of said rotor with respect to said control light source, said detecting means for providing respective first and second output signals when said first and second component beam paths are optically coupled through a hole in said rotor, and in that the position signal and the first and second output signals are passed to a coincidence circuit, which activates said measuring device when all three signals arrive simultaneously.

4,191,470

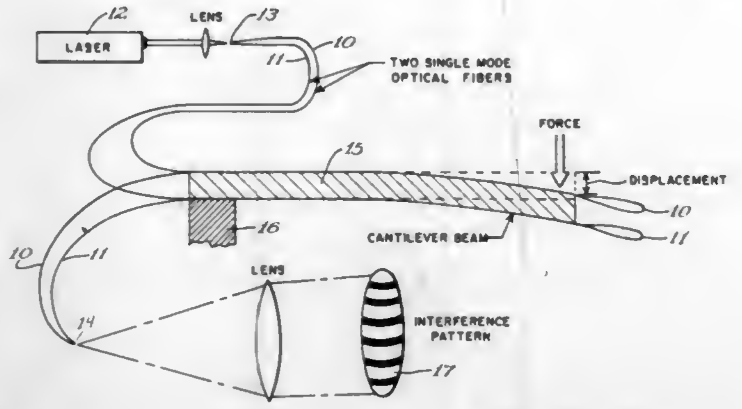
LASER-FIBER OPTIC INTERFEROMETRIC STRAIN GAUGE

Charles D. Butter, Cologne, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 18, 1978, Ser. No. 943,588

Int. Cl.^{2} G01B *11/16*

U.S. Cl. 356—35.5 **4 Claims**



4. Optical strain gauge apparatus comprising:

first and second single mode optical fibers adapted to be fastened, respectively, to different positions on strainable beam means, the different positions having different strains one from the other;

laser means positioned with respect to one end of said fibers to transmit coherent laser light through the length of said fibers; and

means positioning the other end of said first and second fibers in close proximity so that the coherent laser light emanating therefrom produces an optical interference pattern,

whereby when optical fibers are subjected to strain said optical interference pattern changes to give a measure of strain.

4,191,471

AIRCRAFT ARMAMENT ALIGNMENT

Henry C. Courten, Commack, and Joseph P. Mattal, Smithtown, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 24, 1972, Ser. No. 256,421

Int. Cl.^{2} G01B *11/26;* G01C *1/06*

U.S. Cl. 356—154 **6 Claims**

1. Apparatus for aligning the boresight axis of a weapon carried by an aircraft with respect to a reference axis on said aircraft including

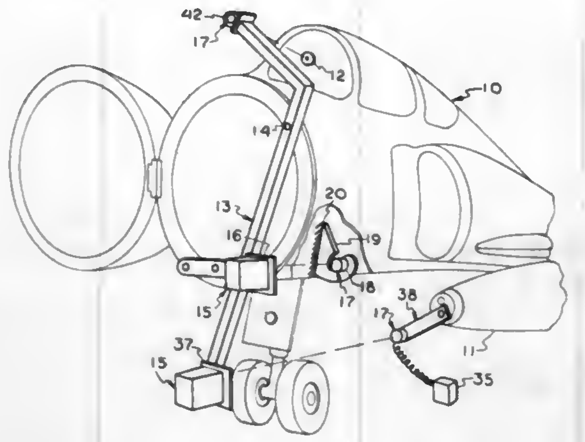
a collimator comprising a housing, an objective lens, a translucent screen, a reticle on said screen, and optical elements between said lens and said screen mounted in said housing, the angular relationship between the optical axis of said objective lens and a collimated light beam received by said lens being indicated by the position of a light spot in said reticle,

means for generating a collimated light beam,

a jig temporarily and adjustably attachable to said aircraft, said jig having first and second supporting means for alternatively supporting said collimator at first and second spaced-apart locations thereon,

first retaining means for retaining said collimated light-generating means on said aircraft so that said collimated light beam is parallel to said reference axis and directed toward the first location on said jig,

second retaining means for retaining said collimated light generating means on said weapon so that said collimated light beam is parallel to said boresight axis, and directed toward the second location on said jig,



whereby, with the light generating means in the first retaining means, the collimator at the first location on said jig, and the jig adjusted so that the light spot on the reticle indicates that the optical axis of said lens is aligned with respect to said reference axis, said jig will be in known relationship with respect to said reference axis and

with the light-generating means subsequently moved to the second retaining means and the collimator moved to the second location on said jig and the weapon adjusted so that the light spot on the reticle indicates that the boresight axis is aligned in a known relationship with respect to said optical axis of said lens, the weapon boresight axis is aligned at a known relationship with respect to said aircraft reference axis.

4,191,472

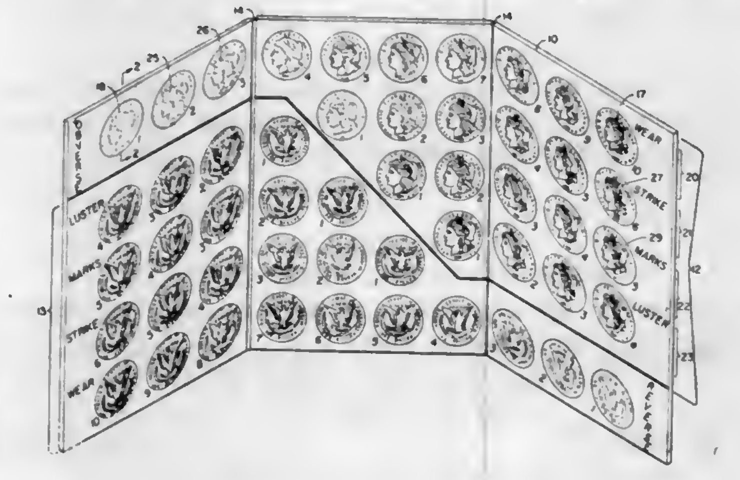
APPARATUS FOR THE ELEVATION OF COINS

Derek Mason, 351 Linda Way, Mill Valley, Calif. 94942

Filed Oct. 17, 1977, Ser. No. 842,777

Int. Cl.^{2} G02B *27/00;* G09B *25/00*

U.S. Cl. 356—243 **28 Claims**



1. A method for determining the relative numismatic quality of a test coin of a given mint mark and date comprising the steps of: forming a plurality of facsimile coin sets, each set comprising a plurality of facsimile coins, the facsimile coins in each set exhibiting only one given coin defect to varying quantitative extents while being substantially defect-free in all other respects; arranging the facsimile coins in each set in relatively close proximity to each other; assigning to each facsimile coin in each set a value representative to the extent to which such coin exhibits the defect represented by the corresponding set; comparing the test coin with the facsimile coins in each set; determining the facsimile coin in each set which exhibits the corresponding defect to an extent which closest resembles such defect on the test coin; and summing the values assigned to the facsimile coins determined to closest resemble the test coin to thereby establish an overall value for the test coin; whereby the established overall value represents the relative numismatic quality of the test coin as determined by the extent to which said defects are present on the test coin.

4,191,473

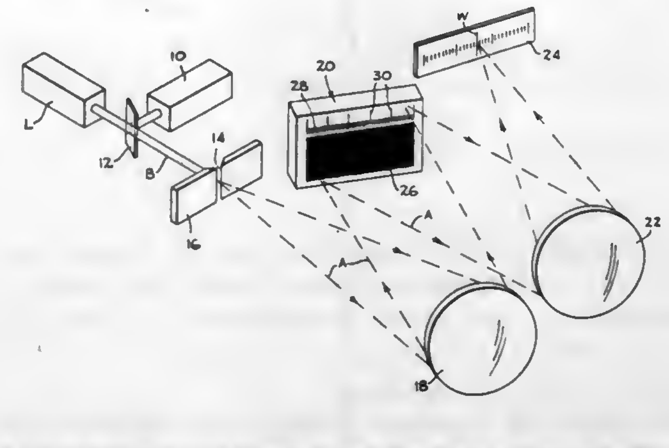
METHOD OF AND APPARATUS FOR MEASURING THE ABSOLUTE WAVELENGTH OF A SOURCE OF UNKNOWN FREQUENCY RADIATION

Theodor W. Hansch, 15100 Oak Creek Dr., Apt. 405, Palo Alto, Calif. 94304

Filed Jan. 9, 1978, Ser. No. 837,017

Int. Cl.^{2} G01J *3/02;* G02B *5/18*

U.S. Cl. 356—300 **13 Claims**



1. Apparatus for measuring the absolute wavelength of a source of unknown frequency radiation which comprises

a diffraction grating having a predetermined grating pattern with periodic variations in at least some of its grating lines and arranged to receive radiation from the radiation source,

a reference source of radiation of known wavelength (frequency) arranged to direct its radiation against said diffraction grating, and

means for imaging the diffracted radiation from both sources, the imaged radiation from said reference source providing a calibration scale.

4,191,474

SPECTROGRAPH FOR AN EXTENDED SPECTRAL FIELD IN WHICH PARTIAL PLANAR DIFFRACTION SPECTRA ARE SUCCESSIVELY FORMED IN THE SAME PLANE

Genevieve Passereau, Bourg la Reine, France, assignor to Instruments S.A., Paris, France

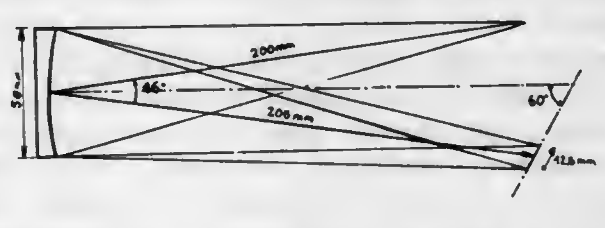
Filed Jun. 30, 1978, Ser. No. 920,995

Claims priority, application France, Jul. 8, 1977, 77 21098

The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed.

Int. Cl.^{2} G01J *3/18*

U.S. Cl. 356—305 **1 Claim**



1. A spectrograph for an extended spectral field, including an inlet slot for defining a source of light to be analyzed, and a dispersive system consisting solely of a concave holographic grating, said grating having registration points with coordinates in relation with the coordinates of the light source to be analyzed to produce, for each of respective different bands of wavelengths which in total cover the entire range of wavelengths of the spectral field to be analyzed, tangential focal lines for different wavelengths which are disposed in the same plane, said grating being rotatable around an axis passing through the center of the grating and perpendicular to a plane passing through the center of the inlet slot whereby respective partial planar diffraction spectra are successively formed in the same plane when rotating the grating around said axis.

4,191,475

PROCESS AND APPARATUS FOR ANALYZING A SAMPLE BY EMISSION SPECTROGRAPHY

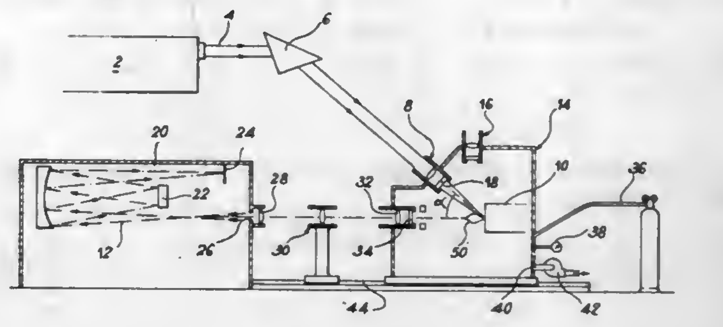
Michel Sourrouille, Bagnols, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 7, 1977, Ser. No. 785,554

Claims priority, application France, Apr. 15, 1976, 76 11132

Int. Cl.^{2} G01J *3/30*

U.S. Cl. 356—318 **11 Claims**



1. A process for the analysis of a sample by emission spectrography according to which a laser beam is directed onto a sample with an intensity which is sufficient to volatilize and excite the constituent bodies of the sample at the impact point of the laser beam and the plasma created by the volatilized and excited bodies is observed by means of a spectrograph, wherein the laser beam is directed onto the surface of the sample in accordance with an angle of impact of α greater than 10° and the optical observation axis of the spectrograph is oriented perpendicular to the surface of the sample, said optical axis passing through the impact point of the laser beam on the sample, the vicinity of the sample during volatilization being subjected to a continuous electrical field substantially perpendicular to the surface of the sample.

4,191,476

OPTICAL INSPECTION

Harry C. Pollard, Leicester, England, assignor to National Research Development Corporation, London, England

Filed Mar. 13, 1978, Ser. No. 886,130

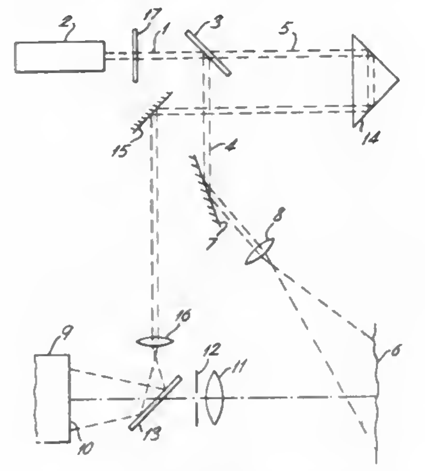
Claims priority, application United Kingdom, Mar. 15, 1977, 10884/77

Int. Cl.^{2} G01B *9/02*

U.S. Cl. 356—349 **14 Claims**

1. A method of optical inspection of a surface, the method comprising:

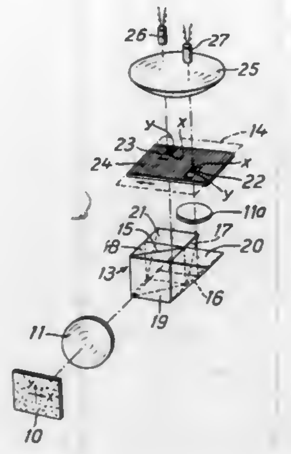
forming two patterns of illumination independently on a photosensitive screen respectively by means of light of two different wavelengths, said patterns being formed in the same manner and each of them resulting from the irradiation of said screen with light derived from a coherent source and consisting of first and second interfering beams, said first beam for each of said patterns being constituted by light scattered from said surface and imaged on to said screen; and



deriving from said screen a video signal representing the spatial variations in the sum of the intensities in said two patterns of illumination.

4,191,477
PROCESS AND APPARATUS FOR THE SEPARATE EVALUATION OF IMAGE CONTENTS IN TWO COORDINATE DIRECTIONS OF MOTION

Dieter Schick, Solms, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany
Filed Aug. 23, 1977, Ser. No. 827,075
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1976, 2637844
Int. Cl.² H04N *7/18*
U.S. Cl. 356—373 **12 Claims**

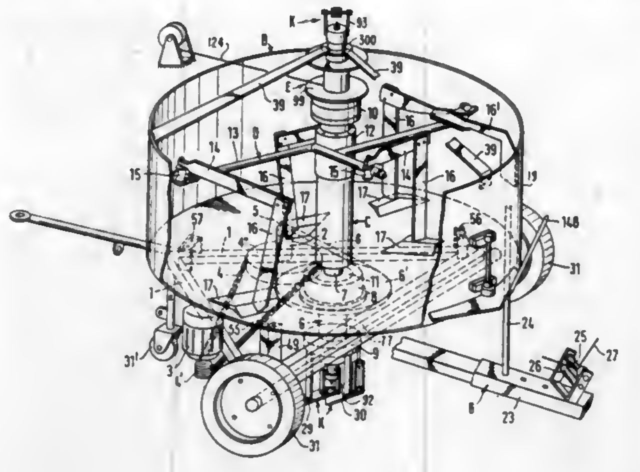


5. An apparatus for separately measuring the image contents of an object in two coordinate directions of motion, said apparatus comprising:

an optical element for receiving the image to be measured;
a beam splitting means for orthogonally splitting the image received;
a mirror means for reflecting the split images received from the beam splitting surface; and
a correction grid arranged to receive said images reflected by said mirror means, said grid being constructed such that it is periodic in at least one orthogonal direction;
said beam splitting means and said mirror means formed by a prism combination, said prism combination comprising first, second, third and fourth quadratic prisms;
said prisms being arranged such that the base of said first prism is in contact with the base of said second prism to form said mirror means, one cathetus of said third prism being arranged against one cathetus of said first prism and one cathetus of said fourth prism being arranged against one cathetus of said second prism such that a second cathetus of said third prism and a second cathetus of said fourth prism are each located in substantially the same plane and such that said third and fourth prisms are arranged along adjacent sides of said first and second prisms.

4,191,478
MIXING APPARATUS FOR CONCRETE OR OTHER BULK MATERIAL

Viktor Zupančič; Franc Zupančič, and Tomaz Zupančič, all of Cesta v gorice 10/D, 61000 Ljubljana, Yugoslavia
Filed Feb. 7, 1978, Ser. No. 875,881
Claims priority, application Yugoslavia, Feb. 7, 1977, 314/77
Int. Cl.² B28C *7/02, 7/14*
U.S. Cl. 366—39 **19 Claims**



1. An apparatus for mixing bulk material, comprising:

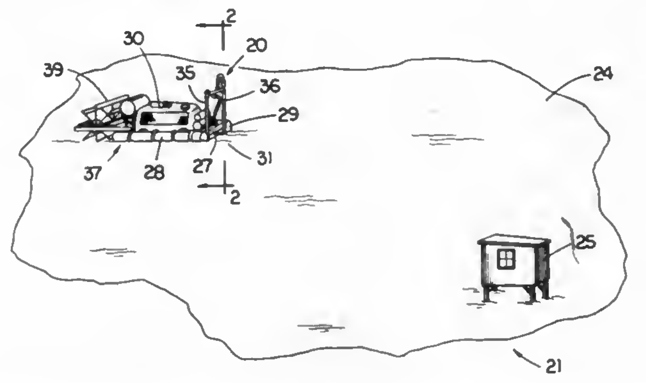
a framework including a generally triangular base;
an upwardly open mixing drum supported on said base and centered on a substantially vertical axis;
agitator means in said drum;
mechanism for relatively rotating said agitator means and said drum, said mechanism including main shaft means centered on said axis and provided with ancillary force-transmitting means forming part of a power train selectively actuatable for the operation of associated material-handling equipment; and
drive means for rotating said main shaft means to impart relative rotation to said drum and said agitator means, said drive means including a motor secured to said framework on one side of said base, an auxiliary shaft journaled on another side of said base, a first step-down transmission linking said motor with said auxiliary shaft, and a second step-down transmission linking said auxiliary shaft with said main shaft means.

4,191,479
SLUDGE AGITATING APPARATUS

William D. Shuck, Indianapolis; Frederick D. Lind, Whiteland, and John W. Cole, Indianapolis, all of Ind., assignors to Tousley-Bixler Construction Co. Inc., Indianapolis, Ind.
Filed Jul. 3, 1978, Ser. No. 921,257
Int. Cl.² B01F *15/00*
U.S. Cl. 366—101 **28 Claims**

1. A sludge agitating apparatus for conditioning sludge so that it can be pumped from a lagoon, and comprising:

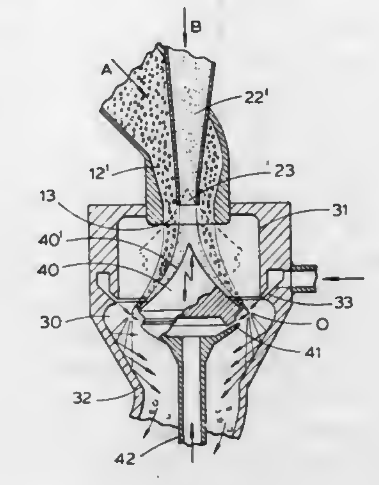
a support platform having means for floating on a body of water;
an agitator mechanism comprising fluid dispensing means;
means for attaching said agitator mechanism to said support platform, said attaching means arranged for movement of said agitator mechanism between a raised position wherein the fluid dispensing means is adjacent said support platform, and a submerged position substantially below said support platform;
a fluid supply source coupled to said agitator mechanism; and



said fluid dispensing means including a plurality of fluid outlets for release of fluid received by said agitator mechanism from said fluid supply source.

4,191,480
CONTINUOUS FLOW STATIC MIXER FOR MIXING POWDER AND/OR SUSPENSION MATERIALS WITH LIQUID MATERIALS

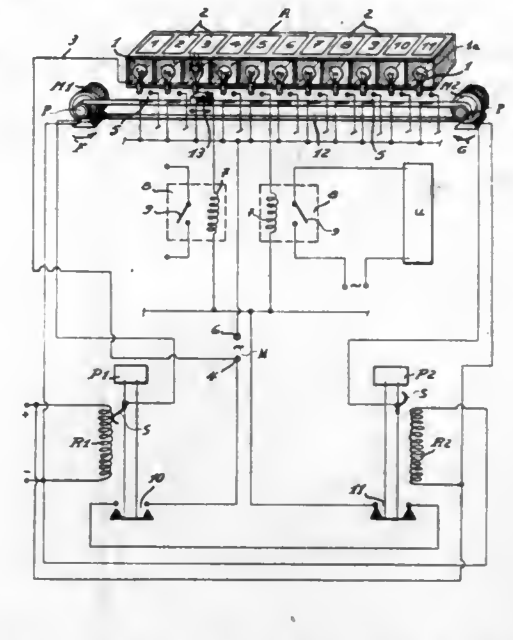
Hans Hiorth, Lierbyen, Norway, assignor to Dyno Industrier A.S, Oslo, Norway
Filed Apr. 4, 1978, Ser. No. 893,308
Claims priority, application Norway, Apr. 4, 1977, 771200
Int. Cl.² B01F *15/00*
U.S. Cl. 366—336 **6 Claims**



1. A static mixer for mixing in a continuous flow powder and/or suspension materials with liquid materials, and especially for intermixing the material components of an explosive, said mixer comprising a toroidal mixing chamber, an inlet for each powder and/or suspension component centrally and coaxially disposed in the chamber, at least one spreader body having a substantially conical spreading surface centrally disposed and in a spaced and downstream relationship to the powder/suspension inlet(s), an annular inlet in the chamber for each liquid component, each said powder/suspension inlet being in the form of a pipe nozzle communicating with a pressure vessel containing fluidized powder components and/or suspension components, each said liquid inlet being in the form of an annular conical slit-nozzle communicating with a liquid-containing pressure vessel, each said conical spreading surface and each said conical slit-nozzle being so axially and angularly disposed relative to each other such that in operation of the mixer the high speed conical powder/suspension sprays leaving each said conical spreading surface hit the high speed conical liquid sprays from each said conical slit-nozzle in a common unsupported or floating circular mixing zone in said mixing chamber.

4,191,481
ANALOGICAL CONTROL DEVICE FOR A TYPEWRITING MACHINE TO BE USED BY HANDICAPPED PERSONS

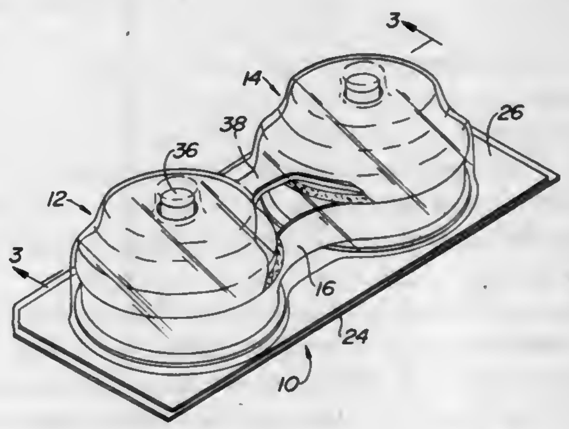
Jean-Claude Gabus, Hauterive, Switzerland, assignor to Carba S.A., Berne, Switzerland
Filed Feb. 14, 1978, Ser. No. 877,770
Claims priority, application Switzerland, Nov. 23, 1977, 14332/77
Int. Cl.² B41J *5/30*
U.S. Cl. 400—87 **7 Claims**



1. Analogical control device, particularly of a typewriting machine, for use by handicapped persons comprising a linear display having as many positions as there are characters and functions to be printed or controlled, each character and function being associated with a utilization circuit; a continuously variable speed scanning device of said display to select a desired character or function; and means whereby stopping the scanning on a given position causes the energization of the corresponding utilization circuit.

4,191,482
PRINTING RIBBON PACKAGE HAVING INK ABSORBING MEANS

Carl W. Ploeger, 1404 Dewey Ave., North Bellmore, N.Y. 11710
Filed Nov. 17, 1977, Ser. No. 852,253
Int. Cl.² B41J *33/14*
U.S. Cl. 400—207 **10 Claims**



1. A printing ribbon package comprising:

(a) at least one spool having a hub, a printing ribbon wound around said hub, said spool containing an ink reservoir, a flexible pad supported by said spool in a position for transmitting ink to an edge of said ribbon, a wick extending from said pad to said reservoir by way of a constriction in the spool,
(b) a housing, said spool being disposed within said housing,
(c) means in said housing in contact with said exposed por-

tion of said pad for absorbing ink discharged from said pad while said spool is in said housing.

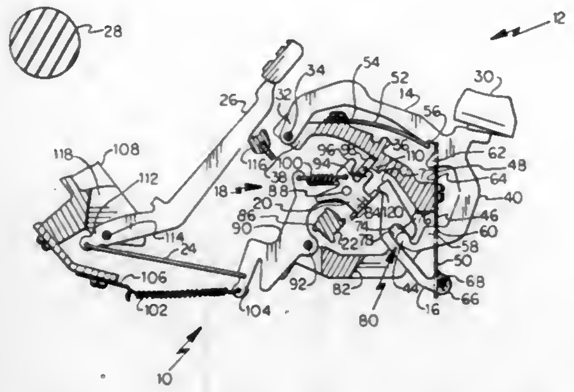
4,191,483
TYPEWRITER KEY ACTION

Hans W. Mueller, Cortland, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Apr. 17, 1978, Ser. No. 896,952

Int. Cl.^{2} B41J *23/06, 25/02*

U.S. Cl. 400—369 **1 Claim**



1. A key action for a typewriter including a typebar pivotally mounted for movement from a rest position to a print position, an actuating means connected to the typebar to effect the printing movement of the typebar, a power roll rotatably mounted in the typewriter for engagement with a pivotal pawl of the actuating means to power the typebar printing movement, the improvement comprising:
- a support member fixed in the typewriter;
- a keylever pivotally mounted on said support member for movement from a rest position to a first depressed position and beyond to a repeat depressed position;
- an elongated interposer mounted on a shaft fixed in the typewriter, said interposer movable from an initial position to a first and second pivoted position;
- means connecting said keylever to said interposer for direct control of the movement of said interposer in response to movement of said keylever, said connecting means including an abutment on said keylever closely received within a recess on said interposer;
- a flat leaf spring having one end attached to said support member and horizontally extending therefrom to engage said keylever for restoring said keylever to said rest position from said first and repeat depressed positions, and for restoring said interposer from each one of said pivoted positions to said initial position through said connecting means; and
- a nose portion on said interposer having three operable positions for controlling the typebar, said nose engages a top surface of the pawl to pivot the pawl into engagement with the power roll for causing a single typebar printing movement in response to keylever movement to said first depressed position, said nose abuts the pawl below said top surface to avoid pivoting the pawl to prevent further actuation of the typebar when the typebar remains in said first depressed position, and said nose engages the pawl below its pivot to repeatedly pivot the pawl into engagement with the power roll for causing repeat typebar printing movement in response to keylever movement to said repeat depressed position and when the keylever remains in said repeat depressed position.

4,191,484
DOCUMENT FILES

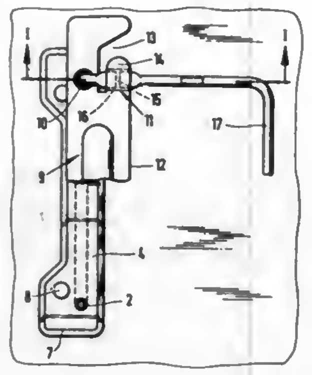
Herbert Zippel, Altdorf, Fed. Rep. of Germany, assignor to Herbert Zippel GmbH & Co., KG, Nuremberg, Fed. Rep. of Germany

Filed Feb. 9, 1976, Ser. No. 656,325

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1975, 2506637

Int. Cl.^{2} B42F *13/06, 13/08*

U.S. Cl. 402—15 **1 Claim**



1. A quick release clamping mechanism for a document file, comprising:
- a flexible and resilient hollow tube of plastic having a central portion and two end portions,
- means for anchoring said central portion of the tube to the file, and
- an elongate clamping plate defining two holes for receiving end portions of the tube and spaced longitudinally of the plate by a distance corresponding to that between holes punched in documents to be held by the file and a central portion located between the two holes,
- the clamping plate also having two clamping tongues extending longitudinally of the plate away from opposite longitudinal ends of the central portion of the plate, each tongue being aligned transversely of the plate with a corresponding one of said holes in the plate and defining, on the face thereof arranged to face the documents when held by the file, a cam surface on each tongue defining a tube trapping recess for trapping a corresponding end portion of the tube and adapted to improve the wedging effect on a corresponding end portion of the tube when wedged between the clamping tongue and the documents, said cam surface on each tongue comprising a rib of triangular cross section with the apex pointing toward the documents and extending longitudinally of the clamping plate, and two ridges located at opposite ends of said rib and extending transversely of said rib, each ridge being of greater height, in a direction extending perpendicularly of the plate, than its corresponding rib.

4,191,485
APPARATUS FOR SECURING A WHEEL TO A ROTATABLE SHAFT OF A TURBO-MACHINE

Norman A. Samurin, Greensburg, and William A. Straslicka, Norvelt, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

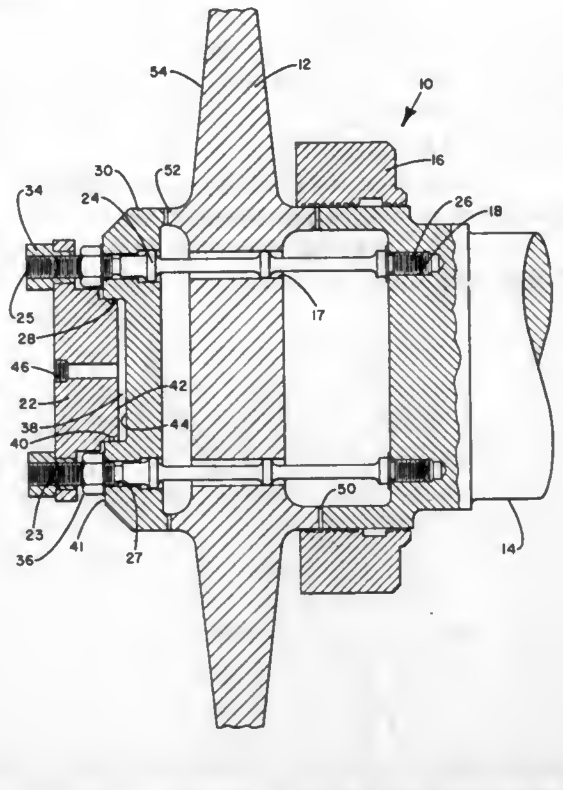
Filed Oct. 30, 1978, Ser. No. 956,170

Int. Cl.^{2} B63H *1/20*

U.S. Cl. 403—15 **2 Claims**

1. Apparatus for securing a wheel to a rotatable shaft of a turbomachine comprising:
- an end cap forming one end of said wheel and including an axially extending flange defining a chamber;
- coupling means connecting the other end of said wheel to one end of said shaft for rotating the wheel with the shaft;
- a plurality of connecting means extending axially through aligned apertures formed in said wheel and said end cap, with one end of said connecting means being positively secured to said one end of said shaft;

- a movable piston slidably mounted within said chamber and connected to the unsecured ends of said connecting means; and



- force generating means for moving said piston within said chamber relative to said end cap for stretching said connecting means and for simultaneously compressing said wheel between said shaft and said end cap.

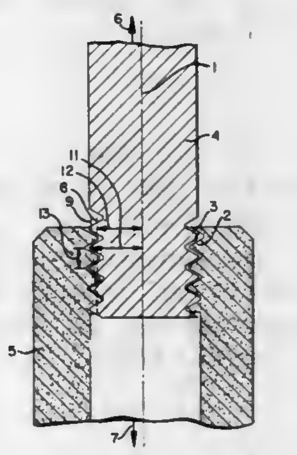
4,191,486
THREADED CONNECTIONS

John F. Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 6, 1978, Ser. No. 940,006

Int. Cl.^{2} F16B *21/20*

U.S. Cl. 403—28 **8 Claims**



1. In a threaded connection to be loaded in an axial direction, said connection comprising two pieces (i) having coincidental axes and (ii) having different coefficients of thermal linear expansion wherein one piece is a threaded male piece and the other piece is a threaded female piece.
- the improvement comprising providing, at ambient temperature, a taper such that the change in radial clearance per unit of length between the opposing threads of each piece is equal to the expression $A\Delta T \tan\theta$ wherein:

A = the difference in the coefficients of thermal linear expansion of the materials of which each piece is comprised in the axial direction;

ΔT = the operating temperature of the connection minus ambient temperature; and

θ = the acute angle formed by the loaded face of the thread of either piece with the axes

said radial clearance increasing in the direction of the loading of the piece having the higher coefficient of thermal linear expansion.

4,191,487
TRANSMISSION SHAFT INDEXING COUPLING

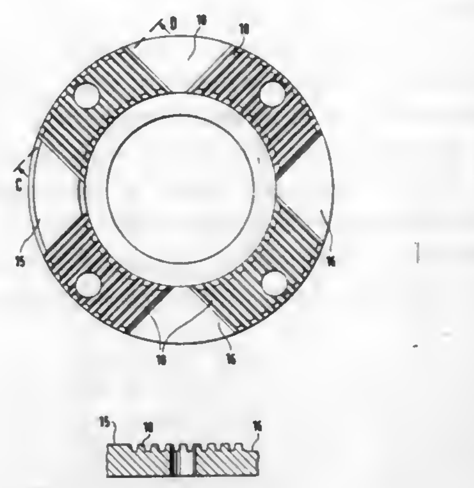
Josef Schultenkämper, Essen, Fed. Rep. of Germany, assignor to Gelenkwellenbau GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 1, 1978, Ser. No. 882,373

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715639

Int. Cl.^{2} F16D *1/00;* **F16L** *23/00*

U.S. Cl. 403—337 **2 Claims**



1. For use in a transmission shaft assembly comprising an axially extending drive shaft, an axially extending output shaft spaced from and in alignment with said drive shaft, an axially extending intermediate connecting shaft located between and in axial alignment with said drive shaft and output shaft, said intermediate shaft having a first end adjacent to and spaced from said drive shaft and a second end adjacent to and spaced from said output shaft, a first universal joint connected to the first end of said intermediate shaft and a second universal joint connected to the second end of said intermediate shaft, and means for detachably and rigidly connecting said first universal joint to said drive shaft and said second universal joint to said output shaft, wherein the improvement comprises that said means for detachably and rigidly connecting comprises a pair of couplings, one for connecting said drive shaft and said first universal joint and the other for connecting said output shaft and said second universal joint, each coupling of said pair of couplings comprises a first flange secured to one of said drive shaft or said output shaft and a second flange secured to one of said first universal joint or said second universal joint, said first and second flanges each having a face extending substantially perpendicularly of the axial direction of said intermediate shaft, each said face on said first and second flanges disposed in facing and mating relation to each other, each said face having two groups of teeth projecting therefrom with the teeth extending from the roots to the crests thereof in the axial direction of said intermediate shafts, each said group of teeth comprising a pair of segments of teeth with each segment located on a diametrically opposite side of said face from the other segment in said pair, said segment of teeth having an radially inner edge spaced outwardly from the axis of said face on which said segment is formed and a radially outer edge, each said segment of teeth on one said face being in meshed engagement with one said segment of teeth on the other face, said segments of teeth on each said face being spaced angularly apart about the axis of said intermediate shaft, said teeth in each said segment disposed in parallel relation and extending chordally across said face relative to the axis of said intermediate shaft, each of said teeth having the crests and roots thereof extending perpendicularly to the axis of said intermediate shaft and having a pair of opposite flanks sloping outwardly from the crest to the roots of said tooth, said teeth in adjacent said segments on each said face being disposed in substantially

perpendicular relation, adjacent said segments of teeth on said face being spaced apart from a sector-like shaped planar surface, one of said faces having three raised said planar surfaces located in the plane of the crests of said teeth located thereon and one recessed said planar surface located in the plane of the roots of said teeth located thereon and the other said face having three recessed said planar surfaces located in the plane of the roots of said teeth thereon and one raised said planar surface located in the plane of the crests of said teeth located thereon so that said raised and recessed planar surfaces intermesh and align said segments of teeth and afford alignment of the transmission shaft assembly and also assure after disassembly and reassembly that the same angular relationship between the parts of the transverse shaft assembly are maintained, and with said first and second flanges in meshed engagement with one another the sloping flanks of said teeth in said segments of teeth thereon are in contact engagement and said juxtaposed planar surfaces between said groups of teeth and said juxtaposed tooth crests and roots on said segments of teeth are disposed in closely spaced relation forming a clearance space therebetween whereby torque can be transmitted through each of said couplings from said drive shaft to said output shaft.

4,191,488

SECUREMENT ARRANGEMENT FOR BICYCLE BEARING ASSEMBLY

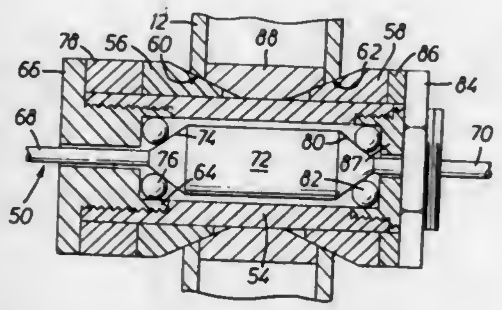
Harry Bickerton, Welwyn, England, assignor to Harry Bickerton Limited, Welwyn, England

Filed May 27, 1977, Ser. No. 801,364

Claims priority, application United Kingdom, May 23, 1977, 21703/77

Int. Cl.^{2} F16B *2/14;* B62M *3/00*

U.S. Cl. 403—370 **4 Claims**



1. A hollow tubular frame member of a bicycle, said frame member having opposed aligned apertures therethrough of a diameter substantially less than the thickness of the frame member, an elongated bearing sleeve that extends transversely through said frame member apertures and projects from opposing sides thereof, a pair of wedging elements disposed around said sleeve and extending inwardly of said frame member into respective ones of said apertures, means forming an abutment on said sleeve in abutment with one of said wedging elements, a screw thread on said sleeve, and a cooperatively threaded member received by said screw thread for applying pressure to the other of said wedging elements, whereby tightening of said cooperatively threaded member on said screw thread urges said wedging elements into said respective apertures to secure said bearing sleeve in said tubular frame member, the frame member and sleeve being perpendicular to each other at the point of juncture between them.

4,191,489

METHOD FOR IMPROVING LOAD TRANSFERS BETWEEN CONCRETE SLABS IN ZONES AT WHICH JOINTS ARE PROVIDED, AND MEANS FOR PERFORMING SAME

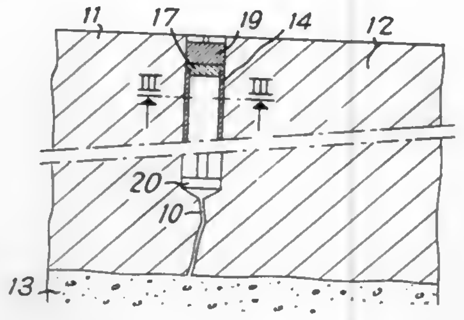
Michel Ray, Paris, and Jean L. Nissoux, La Chevroliere, both of France, assignors to Etat Francais Represente par le Ministere de l'Environment et du Cadre de Vie Laboratorie Central des Ponts et Chaussees, Paris, France

Filed Nov. 1, 1978, Ser. No. 956,665

Claims priority, application France, Nov. 7, 1977, 77 33423

Int. Cl.^{2} E01C *11/18*

U.S. Cl. 404—51 **15 Claims**



1. Load transfer means for a joint between two adjacent slabs in a concrete pavement having an upper surface, said means comprising at least one elongated, substantially cylindrical connection piece having an axis and adapted to be easily deformed over its entire length by transverse deformation in at least one direction of deformation substantially perpendicular to its axis, said piece being disposed so that its axis extends substantially vertically and in the plane of the joint between said two slabs, the said direction of deformation being arranged substantially perpendicular to the plane of the joint, said piece being in contact with both of said slabs with the contacting portions being on opposite sides of the axis of the connection piece and being adhered to the respective slabs so as to prevent any relative movement between said contacting portions and the respective slabs, whereby vertical solicitation is transmitted from one slab to the other through said connection piece without impairing free horizontal expansion or contraction of said slabs.

4,191,490

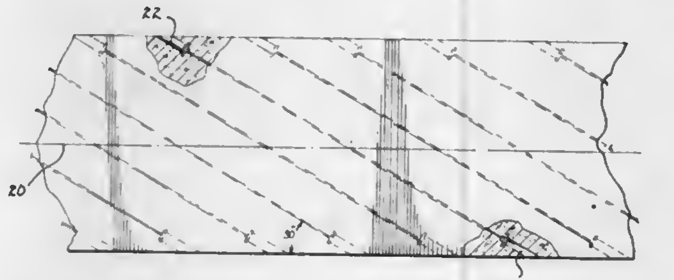
PRESTRESSED CONCRETE ROADWAY

George D. Barnett, Palm Desert, Calif., assignor to Barnett, Haynes & Barnett, International, Palm Desert, Calif.

Continuation-in-part of Ser. No. 814,993, Jul. 12, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,814

Int. Cl.^{2} E01C *5/08*

U.S. Cl. 404—70 **8 Claims**



1. A section of prestressed concrete roadway comprising:

a. a poured-in-place concrete slab section having predetermined thickness, width, and length and having a longitudinal axis, said poured-in-place concrete slab section having first and second opposed edges;

b. a plurality of post-tensioned diagonal strands distributed at predetermined intervals in said concrete slab section, each of said post-tensioned diagonal strands being substantially parallel to all of the others of said post-tensioned diagonal strands, each of said post-tensioned diagonal strands being oriented at a predetermined angle with respect to said longitudinal axis, each of said post-tensioned diagonal strands having first and second ends, respectively, said first end of each of said post-tensioned diagonal strands being anchored into said poured-in-place concrete slab section along said first edge, said second end of each of said post-tensioned diagonal strands being anchored into said poured-in-place concrete slab section along said second edge, said poured-in-place concrete slab section containing no post-tensioned diagonal strands which are not parallel to each of said plurality of post-tensioned diagonal strands;

c. first anchoring means attached to each of said first ends for anchoring said first ends into said first edge of said poured-in-place concrete slab section; and

d. second anchoring means attached to each of said second ends for anchoring said second ends into said second edge of said poured-in-place concrete slab section, said first and second anchoring means maintaining predetermined effective tensile forces in each of said diagonal strands, said predetermined effective tensile forces acting to produce a longitudinal compressive force in said poured-in-place concrete slab section, said predetermined effective tensile forces also acting to produce a shear force in said poured-in-place concrete slab section, said predetermined angle being selected such that said longitudinal compressive force exceeds a predetermined magnitude and said shear stress is sufficiently low to avoid significiant weakening of said poured-in-place slab section;

whereby, all of said first ends of said post-tensioned diagonal strands are oriented in the same direction along said first edge surface to permit rapid post-tensioning of said post-tensioned diagonal strands without interference from others of said post-tensioned diagonal strands and without requiring reorienting of equipment utilized to perform said post-tensioning of said diagonal strands.

4,191,491

CREATING AND MAINTAINING A POOL OF FRESH WATER ON A TABULAR ICEBERG

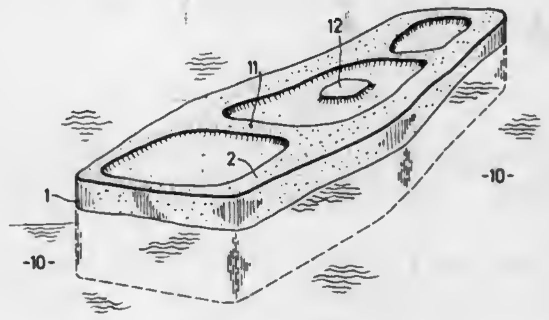
Georges L. Mougin, Paris, France, assignor to ITI Limited, Paris, France

Filed Mar. 8, 1978, Ser. No. 884,406

Claims priority, application France, Mar. 15, 1977, 77 07596

Int. Cl.^{2} E02B *1/00*

U.S. Cl. 405—52 **10 Claims**



5. A method of creating and maintaining a pool of water on an iceberg, comprising the steps of:

(a) providing an iceberg having a substantially horizontal upper surface; and

(b) applying an insulating film along a closed path on said horizontal upper surface to permit solar radiation to form said pool by the melting of said iceberg within said closed path, with said film extending down the inside wall of said pool, the further melting of said iceberg being limited after said pool is formed because the heat of vaporization of the water of said pool is greater than the heat of fusion of ice in said iceberg.

4,191,492

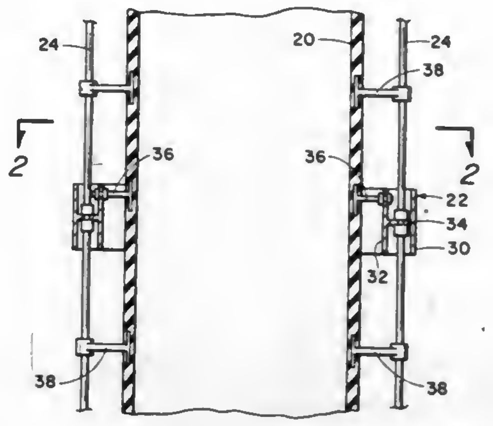
METHOD OF INSTALLING A LINER IN A LARGE DIAMETER BOREHOLE

James H. Cobbs, 5144 S. New Haven, Tulsa, Okla. 74135

Division of Ser. No. 838,745, Oct. 3, 1977. This application Sep. 29, 1978, Ser. No. 947,011

Int. Cl.^{2} E21D *11/04, 5/00, 9/00*

U.S. Cl. 405—133 **3 Claims**



1. With a liner of low flexural rigidity adapted to be grouted into a borehole in the earth, said liner comprising a cylinder having a plurality of spaced outwardly extending keys attached at their first ends to said cylinder and extending outwardly, with their outer ends having suitable means to lock to the grout,

the method of installation into a mud filled borehole comprising the steps of:

(a) installing at least one support ring around said cylinder at a selected position, concentric with said cylinder and attached to said cylinder by a plurality of circumferentially spaced keys;

(b) inserting said liner, axially, into said borehole, with its bottom end at a selected distance above the bottom of said borehole;

(c) inserting a plurality of grout pipes circumferentially spaced into the annulus between said cylinder and the wall of said borehole to a point near the bottom of said borehole;

(d) pumping in grout through said pipes into said annulus, while

(e) raising said pipes, as the level of the grout in said annulus rises, always keeping the bottom ends of said pipes below the surface of said grout.

4,191,493

METHOD FOR THE PRODUCTION OF A CAVITY LIMITED BY A FLEXIBLE MATERIAL

Knut Hansson, Malmö, and Lars Larson, Falsterbo, both of Sweden, assignors to Aktiebolaget Platmanufaktur, Malmo, Sweden

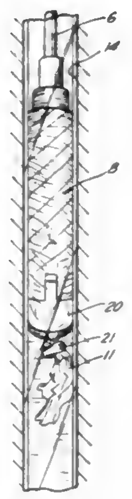
Filed Jul. 14, 1977, Ser. No. 815,840

Int. Cl.^{2} E21D *11/00*

U.S. Cl. 405—150 **8 Claims**

1. A method for lining a vertical bore hole in the ground with a tubular length of material and for removing any liquid present in the bore hole, said method comprising providing a magazine having a substantial length of tubular material radially wound on itself in a number of overlapping layers, pulling one end of tubular material from the magazine, closing said end to form a tubular cavity within the portion of the tubular material pulled from the magazine, inserting the magazine into the bore hole to the bottom thereof, supplying a pressure medium to said tubular cavity to unwind said material from the magazine while propelling the magazine upwardly through said bore hole, said material which is being unwound being

pressurized by said pressure medium to fit tightly against the wall of the bore hole such that as the magazine advances upwardly any liquid present in the bore hole is expelled from the open top of the bore hold.



4,191,494
APPARATUS OF EFFECTING BUOYANCY ON SUBMERGED ARTICLES

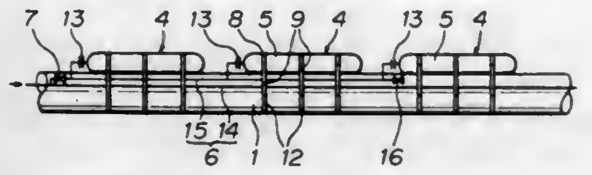
Koji Nakamura, Chigasaki; Masaru Ogata, Yokohama, and Takuzo Nakatsuka, Hyogo, all of Japan, assignors to Shibata Kogyo Co., Ltd, Akashi and Nippon Kokan Kabushiki Kaisha, Tokyo, both of, Japan

Filed Apr. 21, 1978, Ser. No. 898,768

Claims priority, application Japan, Apr. 28, 1977, 52-49462

Int. Cl.² F16L *1/00, 3/00*

U.S. Cl. 405—171 **8 Claims**



1. An apparatus for imparting buoyancy to articles in water, comprising a plurality of submergible floats of bag shape and of soft air-tight material, attaching means disposed on the outer portion of said floats for attaching said floats to said article, pipe means for supplying pressurized air into said floats, and differential pressure regulating valve means disposed between said pipe means and said floats, whereby said valve means controls the amount of air supplied to said floats in accordance with the difference in pressure between the inside of said flaots and the outside thereof with added air being supplied when said difference is lower than a predetermined value and with air being exhausted from said floats when said difference is higher than said predetermined value, wherein said differential pressure regulating valve means comprise inlet port connectable to said pipe means and an outlet port connectable to said float, spring room disposed between said input and output ports and having a valve disc and a valve seat room, a room formed above said valve seat room via a partition in which a diaphragm is furnished to divide into a diaphragm room and a spring room which has windows communicating with the outside, and wherein said partition is formed with a hole to provide communication between said diaphragm room and said valve seat room, said valve disc being formed with a valve stem protruding into said diaphragm room through said partition, said diaphgram having a hole to provide communication between said diaphragm room and said pring room which is equipped with a spring, whereby said diaphragm is pushed toward said diaphragm room so that said communicating hole is closed by means of said valve stem, wherein said spring balances said diaphragm when the pressure of said diaphragm room reaches a predetermined value exceeding the pressure of said spring room.

4,191,495
SEA PLATFORMS TO SUPPORT INDUSTRIAL INSTALLATIONS

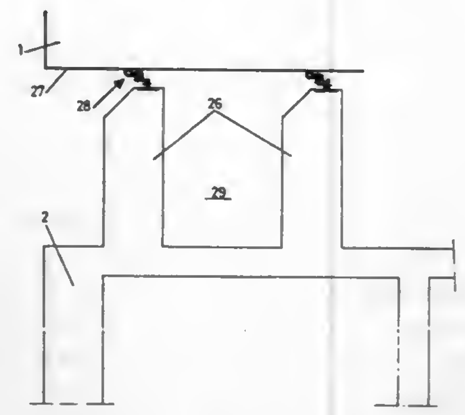
Jose U. Rivacoba, and Alberto T. Galdos, both of Bilbao, Spain, assignors to Sener, Ingenieria y Sistemas S.A., Madrid, Spain

Filed Nov. 3, 1978, Ser. No. 957,342

Claims priority, application Spain, Nov. 3, 1977, 463.817

Int. Cl.² E02B *17/02*

U.S. Cl. 405—195 **11 Claims**



1. A marine platform to support industrial installations which comprises:
- a barge;
- a lower keel on which said barge rests and which keel is positioned on the ocean floor;
- intermediate friction means, situated between contact surfaces of the barge and keel;
- elastic means, interconnected to the barge and keel, for opposing displacements between said barge and keel;
- wherein said displacements are controlled because the friction resulting from the intermediate friction means impedes movements between said barge and keel caused by external forces acting on the barge, such as waves, currents, and winds, and caused by effects of acceleration on the keel induced by earthquake of small magnitude;
- said intermediate friction means having means for permitting displacements between said barge and keel in the case of an earthquake of great magnitude;
- said elastic means having means for decreasing the elasticity constant in discrete degrees when the displacements surpass a predetermined value so that, as the intensity of the earthquake increases, the oscillation period of the barge on the keel increases too but amplification of said oscillation period is avoided.

4,191,496
GAS-BAG SUPPORTED STRUCTURAL FOUNDATION

Robert F. Becker, 777 NW. Carkeek Park Rd., Seattle, Wash. 98177

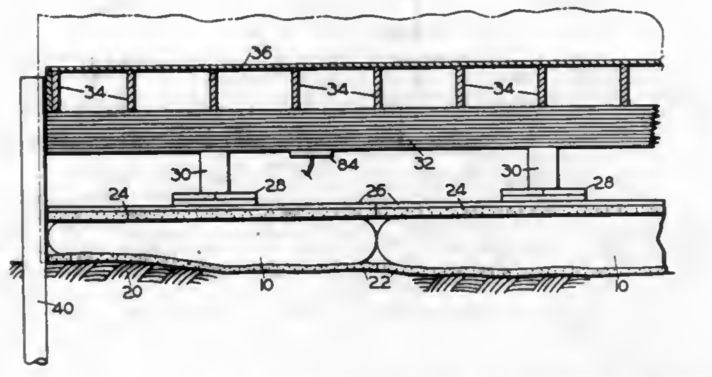
Continuation-in-part of Ser. No. 756,844, Jan. 5, 1977, abandoned. This application Dec. 9, 1977, Ser. No. 859,172

Int. Cl.² E02D *27/32, 35/00*

U.S. Cl. 405—229 **8 Claims**

1. In combination with a building constructed on terrain subject to shifting due to thawing and freezing, a foundation for supporting the building comprising
- (a) a plurality of inflatable bag members each including at least one gas opening, said bag members being adapted for positioning on the terrain;
- (b) support means mounted on the upper surface of said bag members; and
- (c) self-leveling means for maintaining said support means in a substantially horizontal position, said self-leveling means including
  - (1) compressed gas supply means;

  - (2) supply and exhaust conduit means connecting each of said bags with said gas supply means and with exhaust, respectively;
  - (3) first valve means (76) connected in said supply conduit means and second valve means (82) connected in said exhaust conduit means, said valve means controlling the degree of inflation of said bags, respectively; and



  - (4) level-responsive means responsive to shifting of said support means resulting from thawing or freezing of the terrain, said level-responsive means being mounted on said support means for selectively operating said valve means to maintain said support means in a level condition.

4,191,497
MINE ROOF SUPPORTS

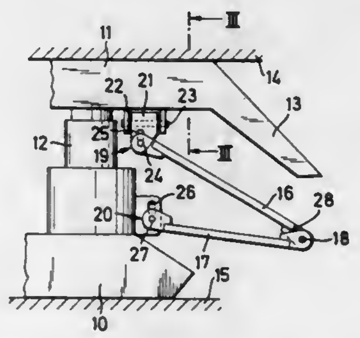
Helmut Poklekowski, Lunen; Klaus Seeberger, Werne, and Gunther Harmsma, Bergkamen-Oberberge, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jul. 3, 1978, Ser. No. 921,231

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1977, 2730295

Int. Cl.² E21D *15/44*

U.S. Cl. 405—296 **13 Claims**



1. A mine roof support unit comprising a floor sill, a roof cap supported on the floor sill by hydraulic prop means, and a goaf shield fitted between the roof cap and the floor still, the goaf shield being constituted by two shield plates hinged together, the upper shield plate being connected to the roof cap by a first link, and the lower shield plate being connected to the floor sill by a second link, the first link incorporating lost motion whereby the roof cap can be lowered sufficiently to permit the advance of the unit without the hinge connection between the two shield parts moving towards the goaf side of the working, wherein the first link comprises a first link member connected to the roof cap, and a second link member connected to the upper shield plate, the second link member being slidable relative to the first link member, and wherein the roof cap is provided with an integral, downwardly depending, inclined deflector plate, the first link member being fastened to the underneath surface of said deflector plate, the second link member being slidable relative to the first link member in a direction parallel to the underneath surface of said deflector plate.

4,191,498
HYDRAULIC ROOF SUPPORT CONTROL SYSTEM

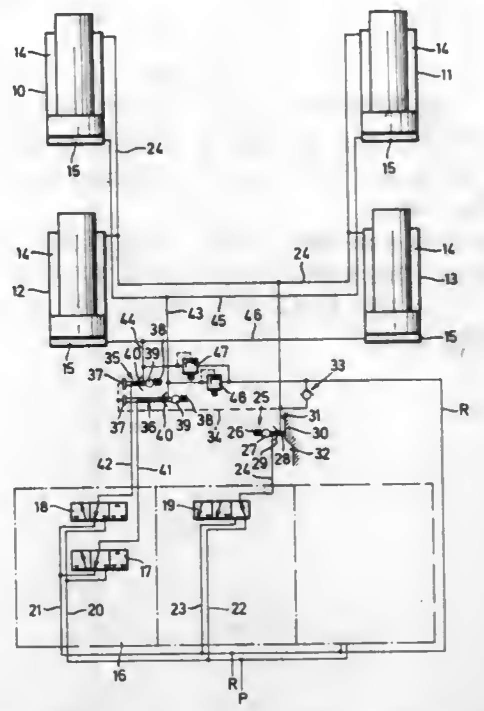
Walter Weirich, Dortmund, and Harry Rosenberg, Lüdinghausen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 909,087

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733270

Int. Cl.² E21D *15/44*

U.S. Cl. 405—302 **19 Claims**



1. In a hydraulic control system for a roof support unit of an underground mining installation, the roof support unit including a roof cap supported by hydraulic prop means capable of controlled movement over a fixed range between extended and retracted positions, and the control system including a valve for controlling the supply of pressurised hydraulic fluid from a source to the prop means, the improvement comprising: an actuator for closing said valve to terminate the supply of pressurised hydraulic fluid to the prop means as soon as the prop means has been retracted by a predetermined amount less than said fixed range.

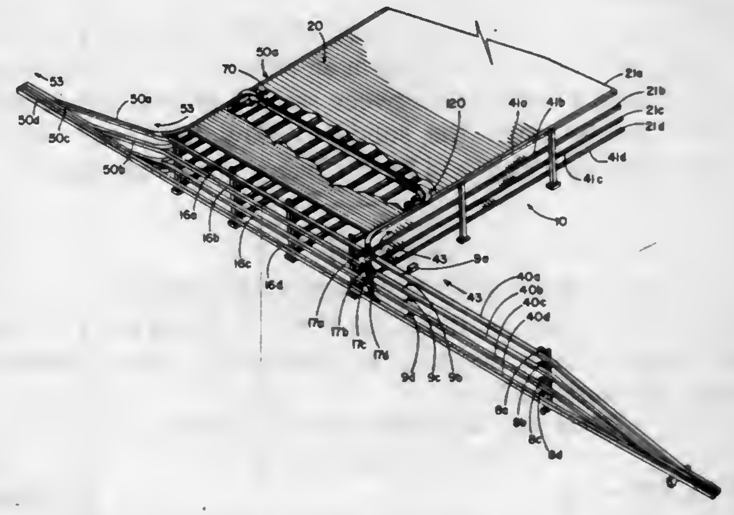
4,191,499
LIVE STORAGE SYSTEM

Rudolph E. Futer, Alameda, Calif., assignor to Futerized Systems, Inc., Hayward, Calif.

Filed Jul. 25, 1978, Ser. No. 926,621

Int. Cl.² B65G *51/02*

U.S. Cl. 406—34 **10 Claims**



1. In a live storage system for packages wherein a plurality of storage rows is arranged to support said packages and each

storage row has a slot along its base, the improvement comprising:

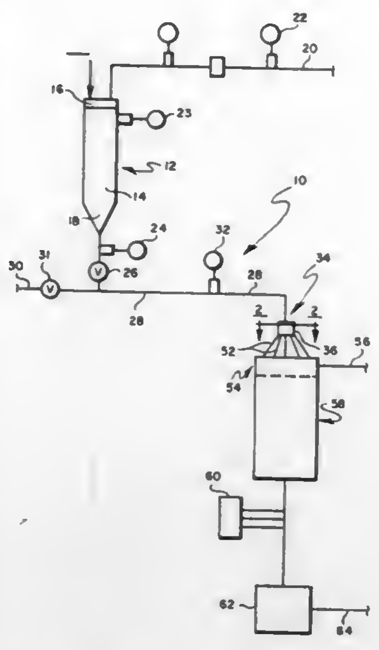
a traveler mounted beneath said storage rows and movable to positions beneath each of said rows, said traveler having an air plenum and a plurality of air jets along the upper surface of said plenum, and

air supply means for pressurizing the plenum of said traveler, whereby the pressurized air flows through said air jets of said traveler and through said slot of one of said storage rows to create an air film along which said packages are conveyed.

4,191,500
DENSE-PHASE FEEDER METHOD

Carl L. Oberg, and George A. Hood, both of Canoga Park, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 819,307, Jul. 27, 1977, abandoned. This application May 8, 1978, Ser. No. 903,434
Int. Cl.^{2} B01J *1/00;* B65G *53/04, 53/40*
U.S. Cl. 406—146 **7 Claims**



1. The method of transporting particulate solids in dense-phase flow comprising the steps of:

filling a feeder vessel with particulate solids;

sealing said feeder vessel;

delivering carrier gas into said sealed feeder vessel through a pressure inlet line in an amount to provide an initial pressure in excess of that in a downstream feeder line;

opening a valve connecting a lower portion of the feeder vessel to said downstream feeder line so as to discharge said solids at their bulk density by the pressure differential and resultant expansion of the gas in the interstices of said particulate solids; and

delivering additional carrier gas only through said pressure inlet line to said vessel and in an amount both to maintain a pressure differential between said vessel and said feeder line and to cause the solids to flow from said vessel through said valve and feeder line at their bulk density.

4,191,501
PLASTIC LENS CUTTER AND EDGER

Robert W. Sinklier, Ventura, and Virgil A. Venditto, Jr., Oxnard, both of Calif., assignors to National Optronics, Incorporated, Charlottesville, Va.

Filed Jul. 21, 1978, Ser. No. 926,747
Int. Cl.^{2} B23C *1/18*
U.S. Cl. 409—104 **6 Claims**

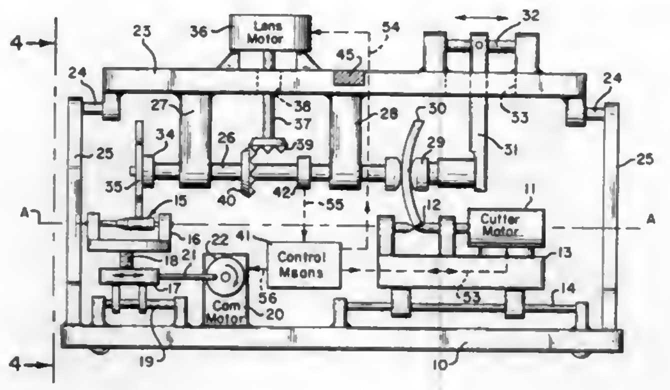
1. A machine for cutting and edging a plastic lens including, in combination:

(a) a table carrying a lens cutter and lens pattern engaging cam in coaxial alignment;

(b) a head carrying a plastic lens to be cut and a lens pattern in coaxial alignment;

(c) means coupling said head to said table for movement towards and away from the axis of said lens cutter and lens pattern engaging cam so that said lens cutter engages the periphery of said lens to be cut;

(d) a head lowering cam means on said table for receiving said head when said cutter engages the periphery of said lens and gradually lowering said head a given distance to effect a slight radial cut into said periphery, said pattern defining the finished contour of said lens and engaging said cam after said slight radial cut is made into said periphery; and

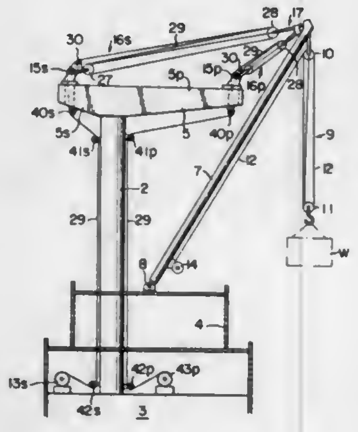


(e) means for effecting a rotation of said lens and pattern simultaneously, resulting in a cutting of said lens out of the lens material by said lens cutter as opposed to grinding away the periphery of said lens.

4,191,502
CARGO-HANDLING MACHINE WITH 300-DEGREE OPERATIONAL AZIMUTH RANGE FOR SHIPBOARD USE

Tadaomi Komatsu, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 22, 1978, Ser. No. 935,865
Int. Cl.^{2} B63B *27/04*
U.S. Cl. 414—140 **8 Claims**

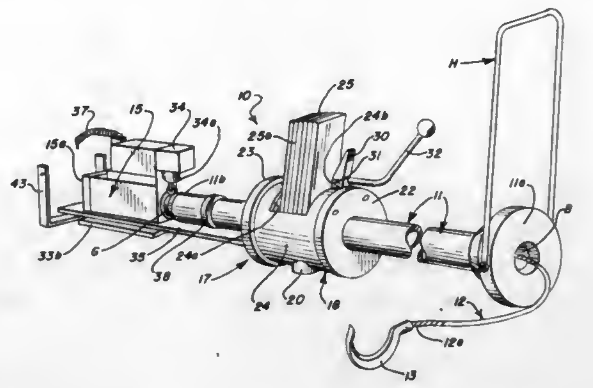


1. A cargo-handling machine for shipboard use comprising: a derrick post fixedly and uprightly mounted on a structural part of a ship between two loading areas forward and aft of the post; an outrigger fixed to the top of the derrick post and having two arms extending laterally outward from the post; a derrick boom pivotally supported at its inner end by a gooseneck connection positioned substantially below the middle point of the outrigger equidistant from the two outer ends thereof and permitting topping movement of the boom and azimuthal turning thereof continuously through at least 150 degrees of angle clockwise and counterclockwise from a dead-abeam position relative to the outrigger; a cargo-hoisting tackle suspended at its upper end from the top end of the boom; a hoisting winch for operating the cargo-hoisting tackle; two boom-topping tackles connected at their inner ends to respective swivel pulleys pivotally secured respectively to the two outer ends of the outrigger; topping winches for respectively operating the topping tackles; and a multiple-swivel universal coupling connected between the top end of the boom and the outer ends of the two topping tackles and functioning to permit the two topping tackles to undergo inversion of their positions relative to the boom without mutual contacting or entwinement when the boom turns azimuthally through said dead-abeam position from one loading area to the other.

4,191,503
DEVICE FOR RELEASABLY SECURING ONE UNIT AGAINST A SECOND UNIT

Robert O. Neff, Milwaukee; Arthur K. White, Mequon, and Norbert Hahn, Cudahy, all of Wis., assignors to Rite-Hite Corporation, Brown Deer, Wis.

Filed Feb. 1, 1978, Ser. No. 874,119
Int. Cl.^{2} B65G *67/02;* B60D *7/00;* G08B *21/00*
U.S. Cl. 414—401 **10 Claims**



1. A device for use in releasably securing one unit against a second unit, said device comprising an elongated member; first means adjustably carried on an end of said elongated member remote from the one unit; an attaching means carried by said member and having one end thereof extending from a second end of said elongated member nearest the one unit and being adapted to be releasably connected to the one unit, said attaching means having a second end engaging said first means, the latter being adjustable in one direction relative to said elongated member in response to a predetermined pulling force exerted on said attaching means one end; and a locking assembly on which said elongated member is mounted for controlled endwise movement, said locking assembly being adapted to be adjustably mounted on the second unit and including friction means movable independently of said elongated member between operative and inoperative positions, said friction means, when in an operative position, engaging said elongated member and allowing endwise movement thereof only in direction away from the first unit, and, when in an inoperative position, allowing endwise movement in either direction, second means engaging said friction means and biasing said friction means into said operative position, and manually actuated means adjustable independently of said elongated member for moving said friction means from an operative position to an inoperative position.

4,191,504
DUCT-MOUNTED TURBINE AND METHOD OF INSTALLING THE SAME

Leopold Haslinger, Linz, and Josef Krenn, Traun, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Oct. 25, 1977, Ser. No. 844,639
Claims priority, application Austria, Nov. 2, 1976, 8109/76
Int. Cl.^{2} F01B *25/02*
U.S. Cl. 415—1 **3 Claims**

1. A duct-mounted turbine, which comprises

a rotatably mounted runner,

an annular inner vane cover which is axially spaced from said runner and has first and second flanges,

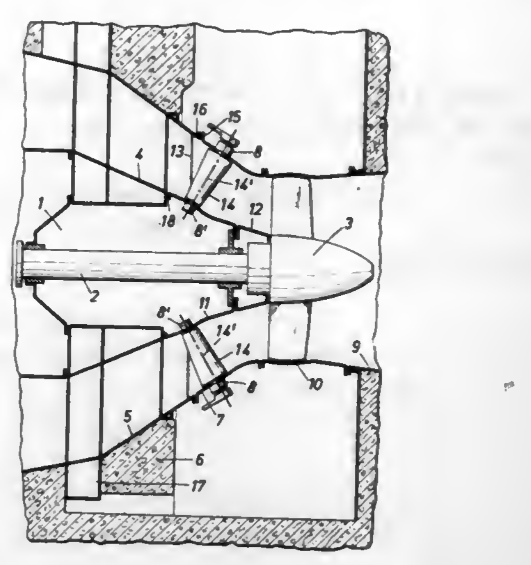
an annular water guide disposed between said runner and said inner vane cover and having a third flange which is joined to said first flange,

an inner tubular housing having a fourth flange which is joined to said second flange,

an annular runner cover which surrounds said runner and has a fifth flange,

an annular outer vane cover which surrounds said inner vane cover and is radially spaced therefrom and has a sixth flange joined to said fifth flange,

an outer tubular housing which surrounds said inner tubular housing and is radially spaced therefrom a welded interface between said outer vane cover and outer tubular housing,



outer vane mounts carried by said outer vane cover,

inner vane mounts carried by said inner vane cover and a plurality of vanes, each of which is mounted for rotation on its own axis in one of said outer vane mounts and one of said inner vane mounts,

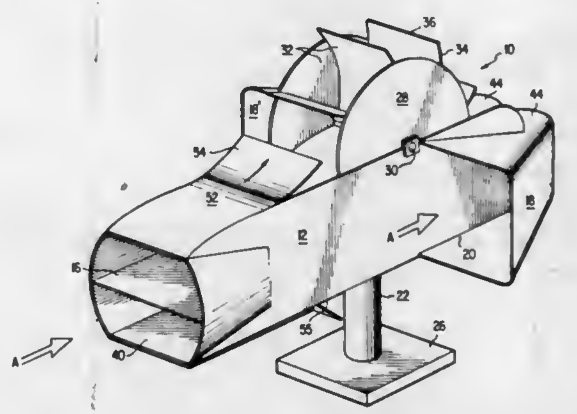
said flanges lying in parallel planes,

each of said outer vane mounts being adapted to be released for a movement in a direction which is normal to the axis of the associated vane when said inner and outer tubular housings and said inner and outer vane covers have been installed on the site and said inner and outer vane covers have been joined at said flanges.

4,191,505
WIND WHEEL ELECTRIC POWER GENERATOR

John W. Kaufman, Madison, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 24, 1978, Ser. No. 880,726
Int. Cl.^{2} F03D *3/04*
U.S. Cl. 415—2 **13 Claims**



1. A wind driven power generator, comprising:

wheel means adapted to be operatively connected to electric power generator means; and

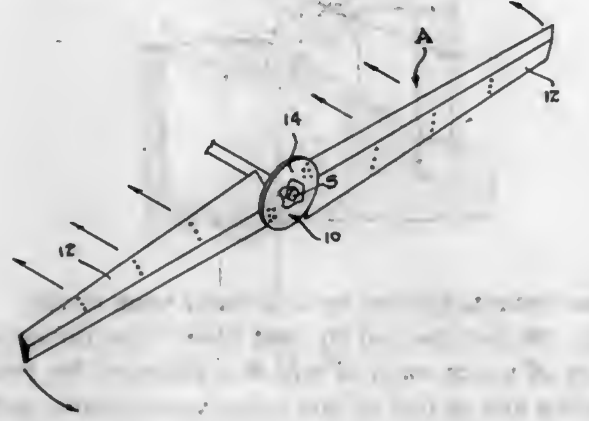
means defining a plurality of air flows for simultaneously impinging upon different portions of said wheel means for cumulatively effecting rotation of said wheel means and the operation of said electric power generator means for the generation of electric power,

said air flow means comprising a first primary air duct means for directing a first air flow onto a first portion of said wheel means; and

auxiliary air duct means for directing a second air flow onto a second portion of said wheel means, said auxiliary duct means comprising a pair of ducts disposed upon opposite sides of said wheel means, and

manifold means for receiving the air flows conducted through said pair of ducts and for merging said flows into said second air flow.

4,191,506
PROPELLER AND IMPELLER CONSTRUCTIONS
Lester M. Packham, 240 Kingsway Dr., N. Mankato, Minn. 56001
Filed Dec. 20, 1977, Ser. No. 862,367
Int. Cl.² F04D ***29/38***
U.S. Cl. 416—91 33 Claims



1. An improved propeller or impeller blade which is formed by a first relatively flat longitudinally extending plate, and a structural member bent to form second and third integrally connected relatively flat and longitudinally extending plates angulated with respect to each other, the second and third longitudinally extending plates being secured to said first plate thereby providing a substantially triangular blade in cross section and which said three plates form a substantially hollow interior chamber in said blade, one of said second or third plates functioning as a leading plate and the other of said second or third plates functioning as a trailing plate in the blade, and said first plate functioning as a ram side of said blade and serving as a pressure plate, said blade having a hub end and a tip end and said plates forming an opening at said tip end communicating with said hollow interior chamber.

4,191,507
WINDMILL
Gary J. DeBerg, 735 Elmwood, Lincoln, Nebr. 68510
Filed Jul. 17, 1978, Ser. No. 925,423
Int. Cl.² F03D ***3/06***
U.S. Cl. 416—117 10 Claims

1. A windmill comprising:

a rotatable member;

said rotatable member having a first plurality of sail supports extending at an angle thereto;

a plurality of sails;

means for causing said sails to billow outwardly when wind impinges upon them from one direction and to move to a flat low drag position when wind impinges upon them from another direction;

said sails being flexible;

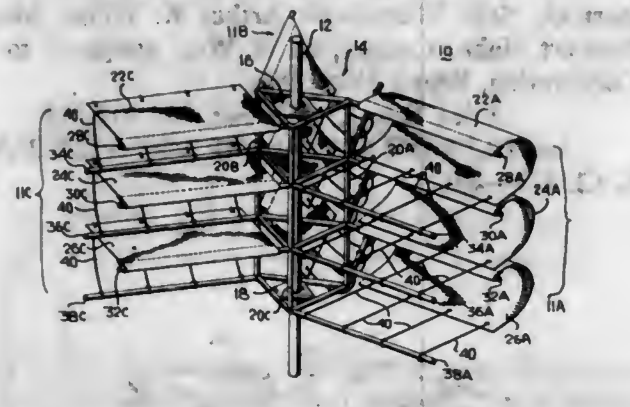
said means for causing said sails to billow outwardly including a second plurality of sail supports;

each of said second plurality of said supports corresponding to a different one of said first plurality of sail supports and extending parallel thereto;

each of said second plurality of sail supports being spaced from its corresponding first sail support by a first distance in the direction of said rotatable member and in a second direction orthogonal to said corresponding first sail support;

each of said sails being attached to a different one of said first plurality of sail supports with one edge of said sail being in close proximity to said sail support;

a plurality of elongated members;

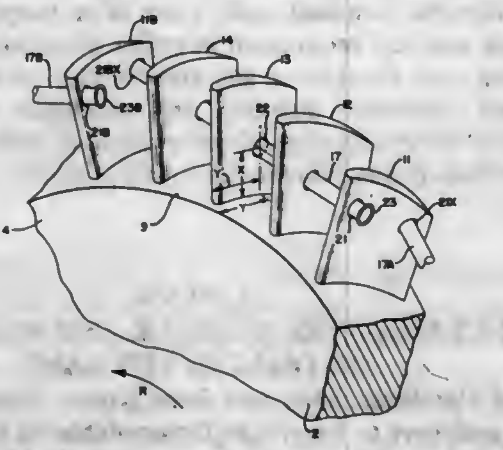


the other end of each of said sails being attached to one end of certain different ones of said elongated members;

the other ends of said certain plurality of elongated members being attached to a corresponding one of said second plurality of sail supports; and

said elongated members having a length approximately equal to said first distance and said second distance, whereby when said sails billow outwardly their lower edges are substantially beneath their upper edges and when said sails are in a flat low drag position said elongated members stretch upwardly from a corresponding one of said sail supports to the trailing edge of said sail.

4,191,508
TURBINE ROTOR CONSTRUCTION
Michio Kuroda; Yoshiaki Yamazaki; Kiyoshi Namura; Fumio Kato; Yasuaki Akatsu; Daizo Morimoto, and Satoshi Ninomiya, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan and Hitachi Kizai Kogyo Co. Ltd., Japan
Filed Jan. 31, 1978, Ser. No. 873,773
Claims priority, application Japan, Feb. 2, 1977, 52-978277
Int. Cl.² F01D ***5/10, 5/24***
U.S. Cl. 416—196 R 6 Claims

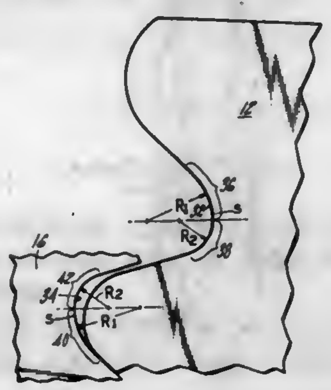


1. A turbomachine rotor arrangement having a rotor wheel and blades thereon with tie means for interconnecting adjacent blades, the arrangement comprising:

at least three adjacent blades respectively defining tie holes, wherein adjacent blades define tie holes in which the distances between centers of respective ones of said holes and the circumferential surface of the rotor wheel are different, and wherein said tie holes are disposed such that the distances between respective centers of the holes and the leading edge of the associated respective blades are also different, and

tie means for interconnecting said blades, disposed in said tie holes with frictional engagement during rotation of said rotor so as to be acted upon by different amplitudes of vibration at respective ones of said adjacent blades during rotation.

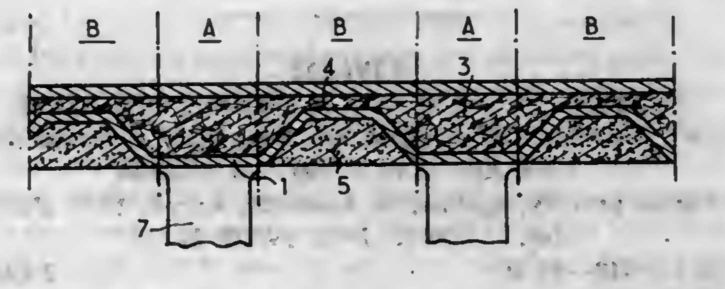
4,191,509
ROTOR BLADE ATTACHMENT
Salvatore A. Leonardi, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 27, 1977, Ser. No. 864,948
Int. Cl.² F01D ***5/30***
U.S. Cl. 416—219 R 3 Claims



1. A rotor blade of the type having a root section including a plurality of grooves in the root section for engagement with a blade restraining member, wherein the improvement comprises:

a root section having grooves formed to a first radius of curvature in a lower region of each groove and formed to a second radius of curvature in an upper region of each groove, the first radius of curvature being larger than the second radius of curvature.

4,191,510
AXIAL FLOW COMPRESSOR ROTOR DRUM
Pierre M. Teysseyre, Villejuif, and Claude P. Baudier, Orsay, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Paris, France
Filed Aug. 31, 1977, Ser. No. 829,214
Claims priority, application France, Apr. 28, 1977, 77 13475
Int. Cl.² F01D ***5/06***
U.S. Cl. 416—230 8 Claims



1. A drum for a compressor rotor having recess means for mounting rotor blades which comprises:

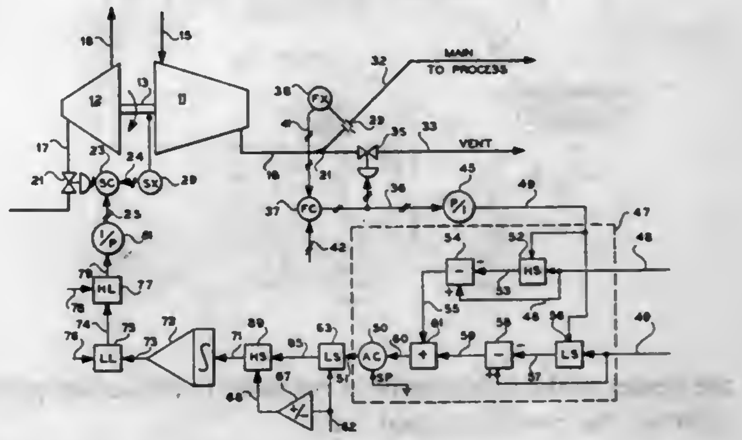
an internal layer of material;

an external layer of material;

a core layer of material sandwiched between said internal and external layers of material, said external layer of material being formed with peripheral ridges and grooves; and

tensile reinforcing rings positioned within said grooves of said external layer of material.

4,191,511
COMPRESSOR CONTROL
William S. Stewart, and James W. Hobbs, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jul. 26, 1976, Ser. No. 708,965
Int. Cl.² F04B ***49/00***
U.S. Cl. 417—18 16 Claims



1. Apparatus comprising:

means for controlling the speed of a compressor means in response to a speed set point signal to provide a compressor speed corresponding to the value of said speed set point signal;

means for dividing the flow of compressed gas from said compressor means into a main stream within a main conduit means and a vent stream within a vent conduit means;

means for automatically controlling the flow of gas through said main conduit means by varying the resistance to flow of a flow restriction means associated with said vent conduit means;

means for sensing the position of said flow restriction means and for producing a restriction signal representative thereof;

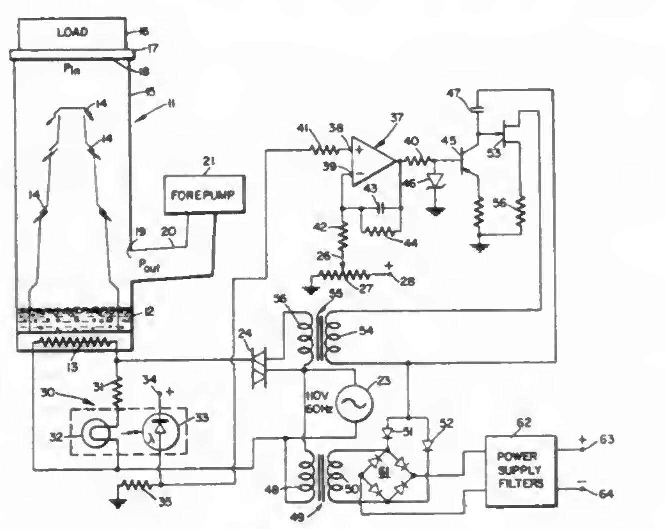
means for generating a compressor acceleration signal in response to said restriction signal being representative of a position of said flow restriction means outside a preselected position range; and

means for generating said compressor speed set point signal in response to said compressor acceleration signal.

4,191,512
APPARATUS AND METHOD FOR CONTROLLING PRESSURE RATIO IN HIGH VACUUM VAPOR PUMPS
Charles D. O'Neal, III, Bolton; Leo J. Blumle, Sudbury, and Marsbed Hablanian, Wellesley, all of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.
Filed Aug. 29, 1977, Ser. No. 828,835
Int. Cl.² F04F ***9/08***
U.S. Cl. 417—54 16 Claims

11. A method of maintaining a predetermined pressure ratio between an inlet port and an outlet port of a vacuum vapor pump having a source of fluid that is vaporized by a heater

comprising sensing a property of the pump indicative of the pressure ratio, and controlling power continuously supplied by



the heater to the fluid source in response to the sensed property to attain the predetermined ratio.

4,191,513
PUMP FOR CONVEYING CEMENT

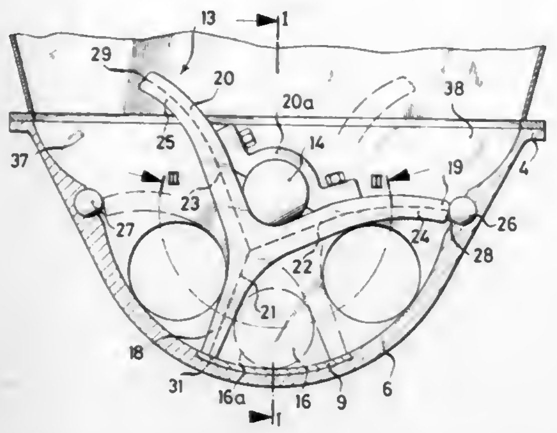
Friedrich Schwing, Herne, Fed. Rep. of Germany, assignor to Friedrich Wilhelm Schwing GmbH, Herne, Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,602

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716954

Int. Cl.² F04B *15/02*

U.S. Cl. 417—517 **4 Claims**



1. A reciprocating piston pump for conveying cement comprising two pump cylinders; an input container; a multi-limb oscillating shutter valve mounted on a horizontal shaft and arranged in front of the pump cylinders and below the input container; a housing for the oscillating shutter valve, said housing having an end wall, at least two ports and a suction connection in the housing leading from the input container, said at least two ports in the housing connected to the pump cylinders respectively; an outlet located in the end wall of the housing; and two inlet ports in the housing for placing said suction connection in communication with said ports connected to the pump cylinders respectively; said oscillating shutter being movable between two positions and including two inlet control limbs each controlling a different one of said inlet ports and an outlet control limb the forward edge of which passes over and controls said outlet.

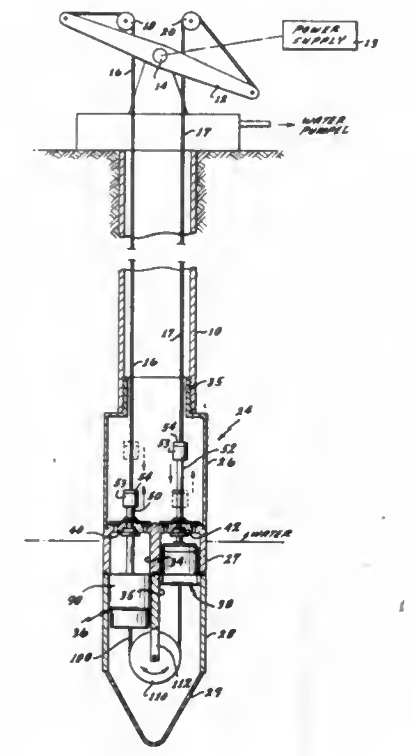
4,191,514
PUMPING ARRANGEMENTS TO CONSERVE ENERGY

Richard H. Ely, 6609 Gazette Ave., Canoga Park, Calif. 91306, and Larry E. Haynes, 22350 Paraguay, Saugus, Calif. 91350

Filed Jun. 13, 1977, Ser. No. 806,189

Int. Cl.² F04B *21/04, 39/10, 43/02*

U.S. Cl. 417—529 **2 Claims**



1. In a pumping system, in combination, a pump cylinder having a cylinder bore, a piston reciprocatable in the bore, the cylinder being in a well bore, pipe means providing communication to the surface, and flexible cable means for producing reciprocation of the piston in the bore, pulley means over which the cable means passes and means for imparting reciprocatory movement to the cable means, said last means including a walking beam, opposite ends of said beam being connected to the cable means, a second similar cylinder bore having a second piston in it, the cable means including a section connecting between the pistons whereby the pistons move in opposite directions, both said cylinder bores and said pulley means being within the pipe means, said cylinders having pistons which reciprocate oppositely to each other and a second pair of dual cylinders and pistons which reciprocate oppositely to each other, means connecting pistons whereby two of the pistons move together in each direction, first vertically aligned bores in which pistons which move together respectively operate, and second vertically aligned bores in which the other pair of pistons which move together respectively move, the said respective first bores and second bores being laterally spaced from each other, the said first bores and said second bores being offset from each other by an amount that is less than the diameter of the pistons.

4,191,515
SEALING SYSTEM FOR A ROTARY MACHINE

John P. Ettridge, 235 Diagonal Rd., Warradale, Australia (5046)

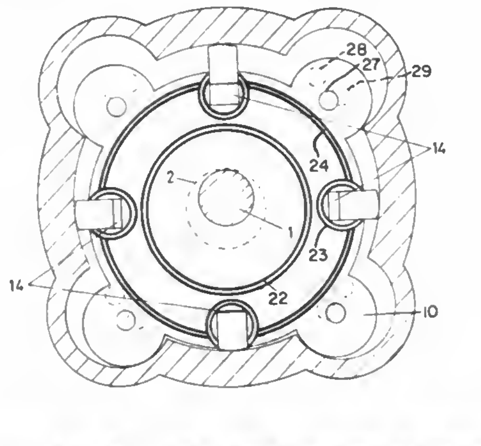
Filed Apr. 4, 1978, Ser. No. 893,344

Claims priority, application Australia, Apr. 6, 1977, PC9688

Int. Cl.² F01C *1/02, 19/08, 21/12*

U.S. Cl. 418—61 R **2 Claims**

1. A rotary machine comprising a hollow casing, a rotor freely mounted on an eccentric shaft within the cavity, spaced lobes fixed in relation to the rotor and cooperating in recesses in the casing, with the recesses and lobes constraining the rotor to partake of orbital movement without rotation during rotation of the shaft, a plurality of vanes mounted in slots in the rotor to engage the interior of the casing to form working chambers therebetween, and sealing means between the end faces of the rotor and the respective end walls of the casing to seal therebetween to prevent escape of working fluid therebetween and from around the vane slots, characterized in that the lobes form sliding valves for admitting and exhausting fluid to



the working chamber, the lobes having an aperture therethrough to cooperate with spaced apertures forming inlet and outlet ports in an end wall of the casing.

4,191,516
ATOMIZER FOR MAKING POWDER

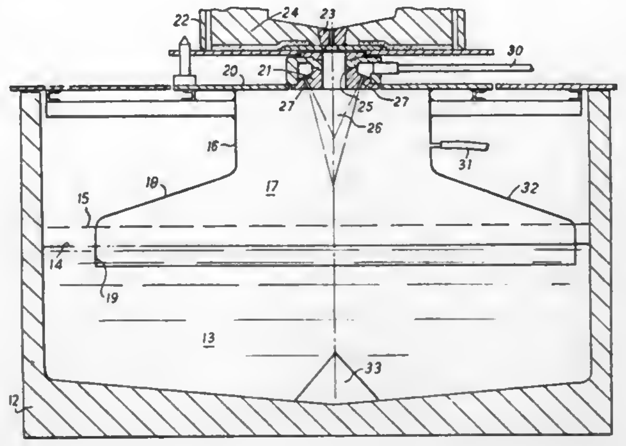
Richard J. Dain, Crouch, England, assignor to Powdrex Limited, London, England

Filed Dec. 23, 1977, Ser. No. 863,645

Claims priority, application United Kingdom, Dec. 23, 1976, 53878/76

Int. Cl.² B22D *23/08*

U.S. Cl. 425—7 **13 Claims**



1. An atomizer for making powder comprising a vessel defining an atomizing chamber located above a water bath, the vessel having a lower part which widens out to be of inverted dished shape and a lower edge which extends into the water bath, means for establishing a falling stream of molten metal through the chamber towards the water bath, nozzle means arranged to supply first and second pairs of downwardly directed, long narrow sectioned primary jets of water, each at an angle to the vertical, the jets of each pair being symmetrically on opposite sides of the path of the metal stream, the nozzles of the pairs being on lines at right angles to one another, and arranged so that the jets of the first pair intersect at a level above the level of intersection of the jets from the second of the pairs, such that in use the jets from the first of the pairs impinge on the metal stream to form it into a ribbon shape substantially in a plane containing the second pair of nozzles and the jets from the second pair impinge on the ribbon to complete atomization into discrete particles of molten metal, the jets then impinging on the water bath and inducing a secondary circulation of quench water in the water bath, up the walls of said lower part and within said lower part of the atomizing chamber, the volume of the secondary circulation being greater than the volume of the primary jet flow and acting to quench the particles into powder.

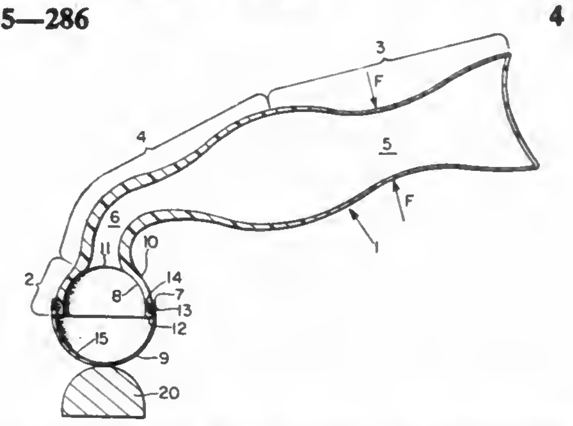
4,191,517
METHOD AND APPARATUS FOR IMPARTING A PREDETERMINED SHAPE TO PRODUCT OF DOUGH-LIKE CONSISTENCY

Alan E. Byrd, Hamilton; John S. Amneus, Cincinnati; Malcolm B. Lucas, Cincinnati; Robert H. Van Coney, Cincinnati, and James E. Van Loan, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 24, 1978, Ser. No. 909,141

Int. Cl.² B28B *7/12*

U.S. Cl. 425—286 **4 Claims**



1. A manually operable, self-contained dispensing apparatus for imparting a predetermined shape to discrete units of product of dough-like consistency dispensed therefrom, said apparatus comprising a rigid bowl embodying said predetermined shape, a resiliently deformable diaphragm substantially conforming to and disposed within said bowl releasably secured in sealed relation thereto about its periphery, a substantially rigid neck portion integrally formed with and secured to the exterior of said rigid bowl and an elongated, resiliently deformable handle portion integrally formed with and secured to said substantially rigid neck portion, said resiliently deformable handle portion comprising a resiliently deformable fluid-containing chamber having a wall of lesser thickness than said neck portion in fluid communication with the area intermediate said rigid bowl and the unsecured portion of said resiliently deformable diaphragm through said neck portion, said chamber containing a volume of said fluid sufficient to substantially invert the unsecured portion of said diaphragm from said bowl when said resiliently deformable handle is squeezed, thereby discharging said product without substantially altering its shape and without need for manual intervention to remove said product from said apparatus.

4,191,518
EQUIPMENT FOR PRODUCING SPECIAL PIPES

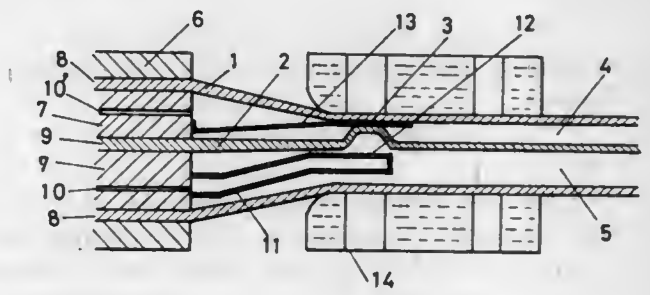
Susumu Kojimoto, Takatsuki; Takami Sato, Toyonaka, and Toshio Mori, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 723,977, Sep. 16, 1976, Pat. No. 4,113,814. This application May 8, 1978, Ser. No. 903,799

Claims priority, application Japan, Sep. 22, 1975, 50/114969; Sep. 22, 1975, 50/114970

Int. Cl.² B29D *23/04*

U.S. Cl. 425—326.1 **3 Claims**



1. Equipment for producing a special pipe, said pipe having a thermoplastic resin tubular body longitudinally partitioned by a diaphragm into two conduits and a plurality of barriers to one of the conduits forming projections extending from said

diaphragm into said one conduit and spaced along the length of the conduit to contact intimately with the inside wall of the conduit, said equipment comprising a die body having:

(a) a circular slit therein for extrusion of said tubular body;
(b) a stationary mandrel having flat slit therein for extrusion of said diaphragm, and
(c) a nozzle projecting downstream from the mandrel so as to extend longitudinally into one conduit of a tubular body extruded from said circular slit and partitioned by a longitudinally extending diaphragm, said nozzle having an opening for expelling a fluid against the diaphragm and deforming it into the other conduit thereby to form barriers.

4,191,519

DOUGH-ROUNDING MACHINE

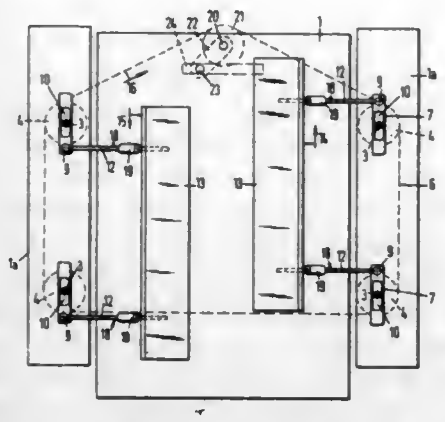
Johan Benier, 's-Hertogenbosch, Netherlands, assignor to Benier B.V., 's-Hertogenbosch, Netherlands

Continuation-in-part of Ser. No. 767,978, Feb. 11, 1977, abandoned. This application Dec. 23, 1977, Ser. No. 863,606

Claims priority, application Netherlands, Feb. 19, 1976, 7601680

Int. Cl.^{2} A21C *1/00*

U.S. Cl. 425—332 **10 Claims**



1. In a dough-rounding machine including a carrying surface, a pair of kneading plates located above the carrying surface and diverging upwardly therefrom to form an open ended trough, and driving means for reciprocating the kneading plates in opposite directions laterally and longitudinally of the trough, the improvement wherein the carrying surface is movable in the longitudinal direction of the trough and wherein there are provided means for moving the carrying surface back and forth under the kneading plates in the longitudinal direction, and wherein there are provided means for synchronizing said carrying surface moving means with said kneading plate driving means so that said moving means causes the carrying surface to advance a piece of dough through the trough from one end thereof to the other.

4,191,520

SEALING ARRANGEMENT FOR A MOLDING APPARATUS

Gunther Kiefer, Schwaigern, Fed. Rep. of Germany, assignor to Adolf Illig Maschinenbau GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 896,436

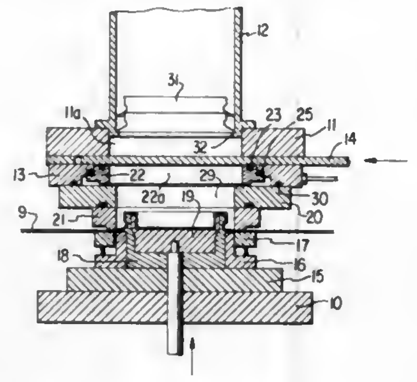
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2716680

Int. Cl.^{2} B29C *17/04*

U.S. Cl. 425—387.1 **7 Claims**

1. In an apparatus for forming articles of sheet material, including means defining a pressure chamber; a mold arranged in the pressure chamber; feeding means for intermittently advancing the sheet material into the pressure chamber; means defining a discharge opening in the pressure chamber for removing therethrough the articles formed in the mold; a slide movable across the pressure chamber and having an advanced position in which it closes the discharge opening and a withdrawn position in which it opens the discharge opening; pressurizing means for generating a fluid pressure in the pressure chamber in the advanced position of the slide for urging the sheet material into the mold; and discharge means for removing the formed article from the pressure chamber through the discharge opening in the withdrawn position of the slide; the improvement comprising

(a) a piston movably received in said chamber for displacement towards and away from said discharge opening; said piston having an advanced position and a withdrawn position;
(b) a sealing means carried on an end face of said piston oriented towards said slide; and
(c) means for moving said piston into its said advanced position and for urging said piston with said sealing means into sealing engagement with said slide when said slide is in its advanced position for sealing said pressure chamber with respect to said discharge opening.



4,191,521

BATTERY MOULDING OF PANELS

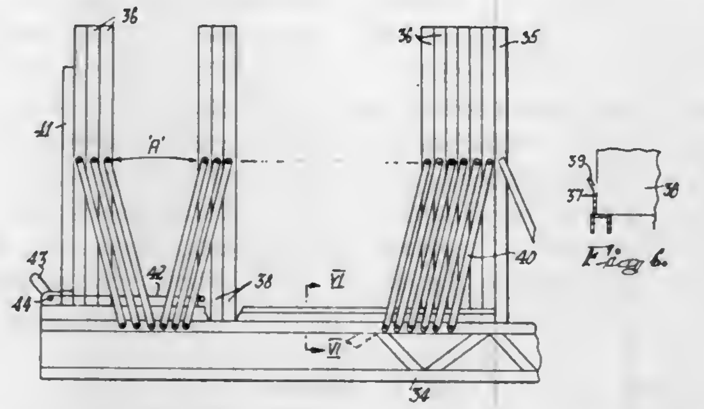
Hendrikus Muldery, 25, Lennox St., Union Extension No. 1, Germiston, Transvaal, South Africa (1401), and Heinz Schubert, 11, Becker St., South Crest, Alberton, Transvaal, South Africa (1450)

Filed Apr. 12, 1978, Ser. No. 895,805

Claims priority, application South Africa, Apr. 22, 1977, 77/2448

Int. Cl.^{2} B28B *7/26*

U.S. Cl. 425—432 **12 Claims**



1. A mould assembly comprising at least three mould members, each bounded by a peripheral edge including a top, a bottom and side edges, and each releasably co-operable with each other to define upwardly extending mould cavities between them and inlet apertures at the upper ends of such mould cavities, a supporting frame for the mould members and linkage means pivotally interconnecting each mould member and said frame, said linkage means permitting the entire peripheral edge of a mould member to be moved away from a moulded article and a co-operating mould member to open the mould cavity defined between co-operating mould members.

4,191,522

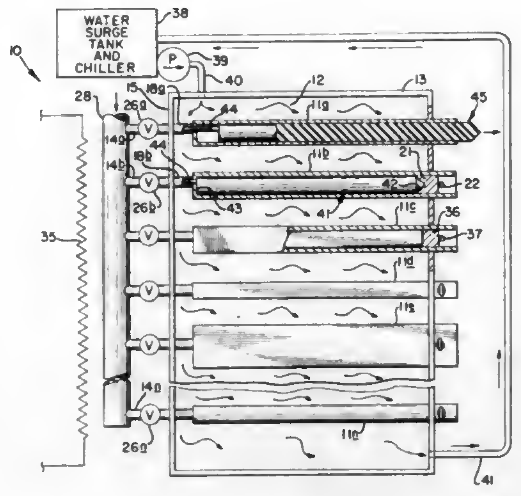
EXTRUDING MACHINE AND END PRODUCTS

James E. Turner, Southlake, Tex., assignor to Entek Corporation, Southlake, Tex.

Continuation of Ser. No. 799,244, May 23, 1977, abandoned. This application Nov. 22, 1978, Ser. No. 962,872

Int. Cl.^{2} B29H *19/00*

U.S. Cl. 425—552 **7 Claims**



1. An end product molding apparatus comprising an elongated hollow mold having a predetermined length and internal cross-sectional geometry respectively defining the length and cross-section geometry of a discrete product to be individually molded and subsequently removed from said mold; said mold having a predefined longitudinal axis of symmetry; plug means for selectively closing one end of said mold; said plug means having a mold interior facing end thereof defining a selected mold end geometry; an input supply line having a flow axis parallel to and displaced from the longitudinal axis of symmetry of said mold; said input supply line communicating with a material input port passed through the closed other end of said mold; said supply line and input port having a cross-sectional area substantially less than that of said mold; with substantially the entire cross-sectional area of said input port being displaced from the mold longitudinal axis of symmetry; said supply line being selectively connectable to a pressurized, heat fused flowable material source; enclosure means, means for maintaining the interior of said enclosure means at a chilled ambient temperature; with a predetermined longitudinal expanse of said input supply line being extended within said enclosure means and substantially all of said mold extending within said enclosure means with said one end thereof extended externally of said enclosure means.

4,191,523

PRESS APPARATUS FOR MOLDING SHAPED BODIES FROM FOAMABLE PLASTIC MATERIALS

Jean-Pierre Niederst, Bad Salzuflen, and Karl Holzinger, Bad Oeynhausen, both of Fed. Rep. of Germany, assignors to Herbert Kannegiesser Kommanditgesellschaft, Hollwiessen, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,384

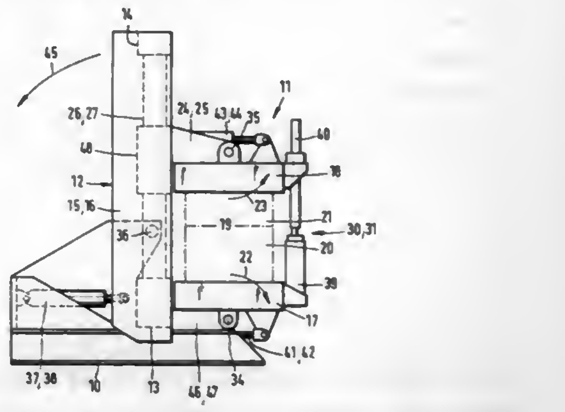
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810789

Int. Cl.^{2} B29D *27/00*

U.S. Cl. 425—589 **7 Claims**

1. An apparatus for molding shaped articles from foamable plastics material such as a foamable polyurethane resin material, including a base support (10), a mold holder (11) mounted to the support for pivotal movement about a first, generally horizontal axis (36), a pair of clamping plates (17, 18) mounted to the mold holder for pivotal movement about respective second and third axes (34, 35) each parallel to the first axis, said plates being disposed opposite each other and one above the other when said mold holder is in a vertical position, a pair of mating mold parts (20, 21) individually mounted to said clamping plates, and means for moving one of said plates toward and away from the other plate, characterized by:

(a) the mold holder comprising a rectangular frame (12) including horizontal top and bottom members (14, 13) and vertical side members (15, 16),
(b) a pair of vertical guide columns (26, 27) mounted within the frame on opposite sides thereof proximate the vertical side members and adjacent the clamping plates,
(c) a pair of first support arms (46, 47) fixedly mounted to and extending outwardly from said bottom member on a front side of the frame,
(d) means pivotally mounting a lower one (17) of said clamping plates to said first support arms,
(e) a pair of second support arms (24, 25) slidably mounted on and extending outwardly from said guide columns on the front side of the frame,
(f) means pivotally mounting an upper one (18) of said clamping plates to said second support arms, and
(g) means (28, 29) for moving said second support arms, including the upper clamping plate mounted to them, on said guide columns toward and away from the lower clamping plate.



4,191,524

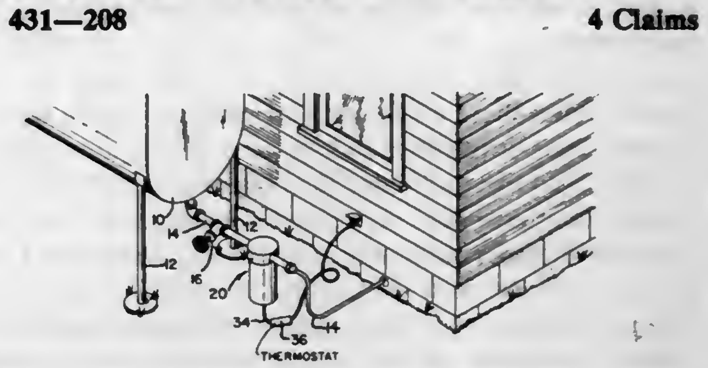
FUEL OIL SUPPLY SYSTEM HAVING AN ELECTRICALLY HEATED FILTER

Michael R. Thorn, 107 E. Sherman St., Lynn, Ind. 47355

Filed Sep. 19, 1977, Ser. No. 834,116

Int. Cl.^{2} F24D *11/44;* **B01D** *35/18;* **F24H** *1/12*

U.S. Cl. 431—208 **4 Claims**



1. In a fuel oil supply system for a fuel oil heater in a building including a storage tank for storing fuel oil located outside the building, a feed supply line running from said fuel oil tank to said building, a fuel oil heater in said building receiving fuel oil from said supply line, and a canister filter connected in said supply line for filtering fuel oil flowing therethrough, the improvement in said supply system comprising a means for heating said filter, including:

a heater enclosure defining a filter cavity sized to receive said canister filter and including a substantially cylindrical lower portion having a closed bottom and a substantially cylindrical cap portion, said lower portion and said cap portion interfitting to substantially completely enclose said filter in said filter cavity, said cap portion defining openings for passage of said supply line therethrough to and from said filter, said lower portion defining a plurality of weep holes around its periphery near the bottom thereof, said heater enclosure further including means for joining said lower portion and said cap portion,

electrical heater means comprising a light bulb mounted in said filter cavity in said heater enclosure for providing a source of heat to said canister filter, said heater means further including means mounting said light bulb on the bottom of said lower portion below the canister filter, the bottom of said lower portion being sloped downwardly away from said light bulb toward the periphery of said lower portion whereby any condensate dropping on said bottom drains out through said weep holes, and

means for supplying electrical power to said light bulb whereby said canister filter and the fuel oil therein are heated and the viscosity of said fuel oil maintained at a sufficiently low level to insure adequate flow through said filter to said heater in said building.

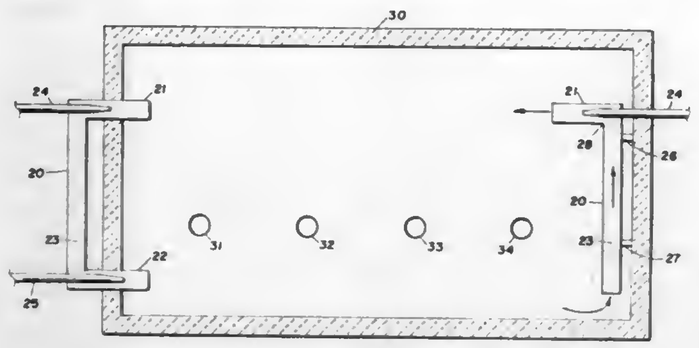
4,191,525
ASPIRATION CIRCULATION SYSTEM AND METHOD

Charles M. Sallman, Valparaiso, Ind., assignor to N L Industries, Inc., New York, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,770

Int. Cl.^{2} F26D *7/04;* F27B *3/22*

U.S. Cl. 432—21 8 Claims



1. A system for promoting temperature uniformity in a vessel having means for effecting temperature changes within said vessel and closure means for containing an atmosphere within an interior location of said vessel comprising a vessel atmosphere aspiration device in operative relationship with said vessel: said aspiration device comprising a tube-like shaped atmosphere circulation member having an open ended atmosphere exit member and an open ended atmosphere entry member, said exit and entry members being interconnected by a tube-like atmosphere recirculation passageway member with said exit member and said atmosphere passageway member being interconnected approximately perpendicular to each other; aspiration actuating means extending into said atmosphere circulation member proximate to said perpendicular interconnection and directed toward said vessel interior to a point beyond said perpendicular interconnection and into said exit member for passing an aspirating fluid into said exit member and thereby causing said vessel atmosphere to be aspirated through said atmosphere circulation member; and fluid introduction means connected to said aspiration actuating means for introducing a pressurized fluid into said aspiration actuating means; said aspiration device being operationally positioned with said vessel so that said open ended exit member and said open ended entry member extend through said closure means into an interior location of said vessel and said atmosphere passageway member is at a location that is exterior of said vessel closure means, whereby said vessel atmosphere may enter said open ended entry member, pass through said atmosphere passageway member and into said exit member, and exit back into the vessel through said exit member and thereby promote temperature uniformity within said vessel interior.

4,191,526
SUSPENSION GAS PREHEATER

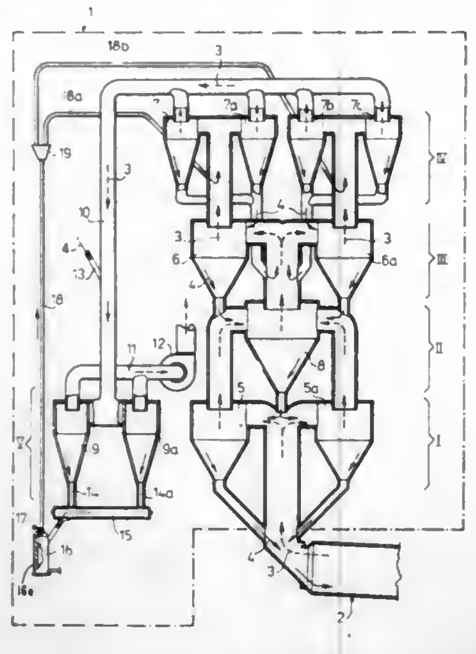
Wolfgang Triebel, Oelde, Fed. Rep. of Germany, assignor to Polysius AG, Neubeckum, Fed. Rep. of Germany

Filed Apr. 3, 1978, Ser. No. 892,739

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715790

Int. Cl.^{2} F27B *15/00*

U.S. Cl. 432—58 13 Claims



1. In a suspension gas preheater for preheating fine material, including a plurality of heat exchanger stages arranged one above the other in a stack through which material passes successively in a downward direction from one stage to a lower stage and through which gas flows upwards successively from one stage to a higher stage, wherein the plurality of heat exchanger stages includes an uppermost stage and a lowermost stage, the improvement therein comprising:

at least one additional heat exchanger stage positioned laterally adjacent the stack of the plurality of heat exchanger stages;

means for moving gas from the uppermost stage of the plurality of heat exchanger stages to and through said additional heat exchanger stage; and

a material feed system connecting said additional heat exchanger stage with the uppermost stage of the plurality of heat exchanger stages and including means for moving materials from said additional heat exchanger stage to the uppermost stage,

whereby the general direction of movement of gas is from the lowermost stage through the plurality of heat exchanger stages to said additional heat exchanger stage and the general direction of movement of materials is from said additional heat exchanger stage through the the plurality of heat exchanger stages to the lowermost stage.

4,191,527
APPARATUS FOR THE DEHYDRATION OF WASTE AND VEGETABLE MATTER

Charles Trouillard, Nantes, France, assignor to Hilda Bolli, Nyon, Switzerland

Filed Aug. 1, 1978, Ser. No. 930,045

Claims priority, application France, Aug. 4, 1977, 77 23999; Nov. 16, 1977, 77 34427

Int. Cl.^{2} F23J *5/02;* F26B *11/04;* F27B *7/10*

U.S. Cl. 432—72 10 Claims

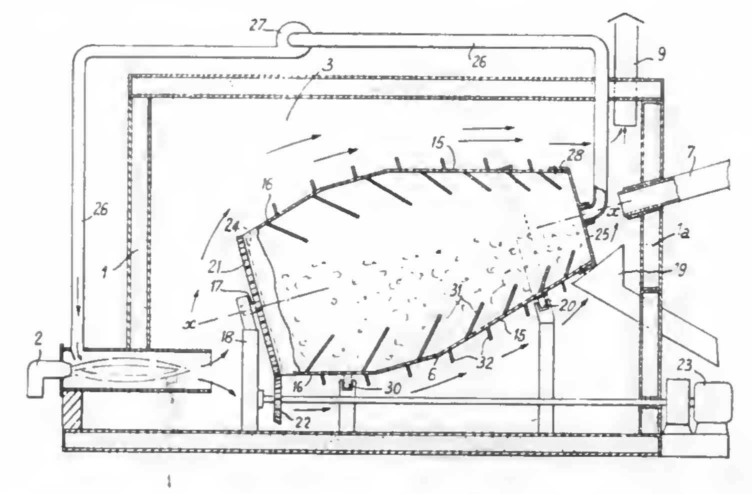
1. Apparatus for dehydrating organic waste material comprising

a heat insulated chamber,

a substantially closed oven within said chamber rotatably mounted with its axis inclined to the vertical with respect to the chamber,

means for rotating the oven about its axis,

burner means for providing heat directly to the interior of said chamber to heat the oven to cause the waste therein to give off vapors,



and conduit means connecting the oven directly to said burner means and provided with a fan which ensures the flow of the vapors from the oven to the burner means for decomposition.

4,191,528
TANK BLOCK

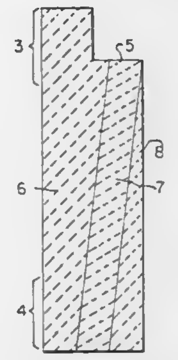
Paul Boggum, and Klaus Schulte, both of Wiesbaden, Fed. Rep. of Germany, assignors to Didier-Werke A.G., Wiesbaden, Fed. Rep. of Germany

Division of Ser. No. 750,412, Dec. 14, 1976, Pat. No. 4,130,391. This application Jun. 5, 1978, Ser. No. 912,251

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557242

Int. Cl.^{2} F27B *14/06*

U.S. Cl. 432—248 9 Claims



1. A tank block, for use in forming the walls of a glass-tank furnace, and of the type having an inner surface which faces a glass melt within the furnace, an outer surface facing away from the glass melt, an upper or head portion having therein a recess facing the outer surface, and a lower or base portion, said tank block comprising, in sequence from said inner surface to said outer surface:

an inner layer formed of a material which is highly resistant to corrosion by said glass melt, said inner layer having a thickness at said head portion extending at least to said recess said inner layer being wedge-shaped and having a thickness decreasing from a maximum at said head portion to a minimum at said base portion;

a central layer firmly joined to said inner layer and formed of a material which is less resistant to corrosion by said glass melt than said material of said inner layer; and

an outer insulating layer firmly joined to said central layer.

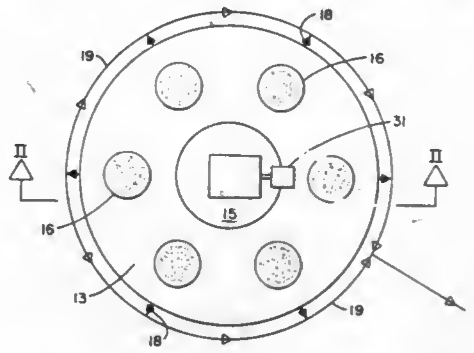
4,191,529
FURNACE FOR HEATING SOLIDS

John B. Harrell, Pittsburgh; William F. Barraclough, Corapolis, both of Pa., and Curtis O. Pederson, Urbana, Ill., assignors to Salem Furnace Co., Pittsburgh, Pa.

Filed Oct. 11, 1978, Ser. No. 950,455

Int. Cl.^{2} F27B *1/20*

U.S. Cl. 432—98 6 Claims



1. A furnace for transferring heat to divided solids, comprising an annular heating chamber having inner and outer walls and a discharge opening around the lower end of its inside wall, a plow arm affixed to a central vertical axle positioned to rotate within the said discharge opening and plow heated divided solids therethrough, heating elements positioned below said discharge opening, an effluent gas offtake in the upper portion of the annular chamber, divided solids feeding chutes positioned in the upper portion of the annular chamber extending into the chamber to a level below the effluent gas offtake, and means connected with the central vertical axle for rotating the axle.

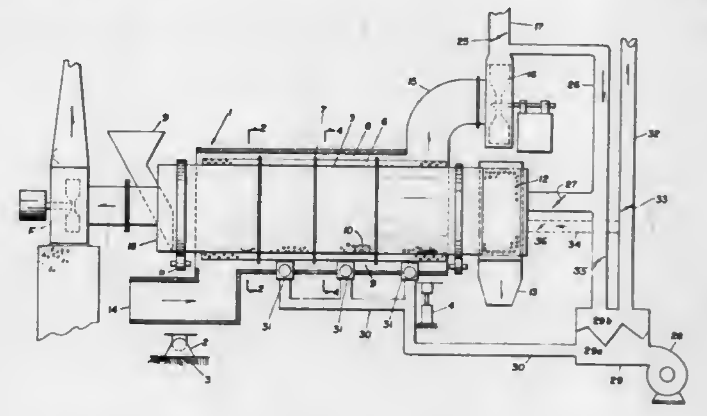
4,191,530
DRYER

Wendell E. Bearce, Box 241, St. Clairsville, Ohio 43950

Filed Sep. 21, 1978, Ser. No. 944,573

Int. Cl.^{2} F27B *7/08*

U.S. Cl. 432—107 2 Claims

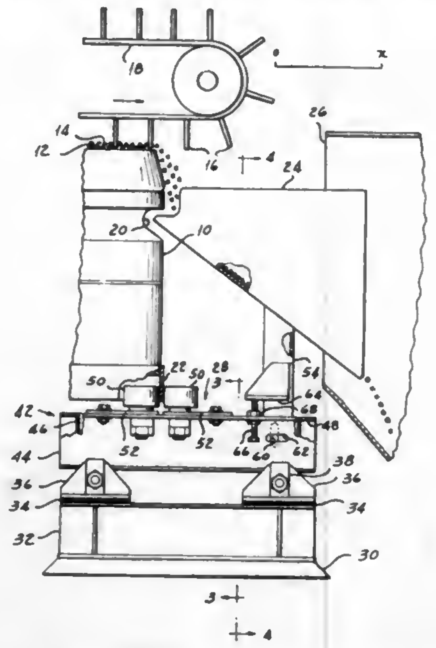


1. A dryer for drying wet particles, comprising a substantially horizontal drum mounted for rotary driving movement about its axis, a hopper for introducing said wet particles into one end opening of said drum, a stationary housing spaced from and surrounding said drum, burners in said housing for heating said drum, an exhaust opening at the opposite end of said housing for exhausting products of combustion of said housing, means including a fan for sucking air and moisture from said one end of said drum for maintaining a negative pressure in said drum, means for recirculating exhaust air from said opposite end of said housing so as to recirculate spent products of combustion and increase the efficiency of said dryer, said recirculating means including a heat exchange unit having one compartment powered by a blower for blowing draft air into said burners and another compartment of the heat exchange unit connected to said recirculating means and to a chimney, and a damper means for enabling selective flow of said spent products of combustion from said other end of said housing to either said last mentioned compartment of said heat exchange unit or to said chimney.

4,191,531
DISCHARGE CHUTE ASSEMBLY FOR CALCINING HEARTH

Percy V. Bourne, Scarborough, Canada, assignor to Calcimatic International Limited, Grand Cayman, Cayman Islands
Filed Apr. 6, 1978, Ser. No. 893,893
Int. Cl.² F27D *3/00*
U.S. Cl. 432—239 **6 Claims**

1. In an apparatus including a circular hearth for supporting material to be treated, means for rotating said hearth to carry said material through a treatment zone to a discharge station, and a discharge chute having a lip at said discharge station for receiving treated material discharged from said hearth, the improvement comprising means forming a recess below the surface of said hearth, a stationary frame at said discharge station, a carriage, rolling means for supporting said carriage on said frame for radial movement with respect to said hearth, adjustable means mounting said chute on said carriage, said adjustable means permitting vertical and radial adjustment of the position of said chute on said carriage to locate said lip in said recess, a peripheral flange on said hearth having inner and outer sides, and respective rollers on said carriage engaging said sides of said flange for maintaining a relatively constant radial position of said chute relative to the portion of said hearth at said discharge station.



CHEMICAL

4,191,532
ORGANIC COMPOUNDS

Rolf Gross, Reinach, and René Fricker, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
Filed Jan. 26, 1978, Ser. No. 872,407
Int. Cl.² D06P *1/00, 1/39*
U.S. Cl. 8—21 A **28 Claims**

1. A stable liquid dye concentrate comprising (1) at least one acid dyestuff, (2) at least one cationic dyestuff, (3) a nonionic or anionic polyglycol ether or mixture thereof, and (4) a cationic amino group-containing polyglycol ether, said dyestuffs comprising 5 to 50% by weight of said concentrate and said polyglycol ethers comprising 10–50% by weight of said concentrate.

4,191,533
PREGNANCY-SPECIFIC β_1-GLYCOPROTEIN AND PROCESS FOR ISOLATING IT

Hans Bohn, Marburg, and Ferdinand Stutzinger, Bretzenheim, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany. Continuation-in-part of Ser. No. 842,163, Oct. 14, 1977, abandoned, which is a division of Ser. No. 569,476, Apr. 18, 1975, Pat. No. 4,065,445, which is a continuation-in-part of Ser. No. 292,735, Sep. 27, 1972, abandoned. This application Dec. 9, 1977, Ser. No. 858,890
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1971, 2148587; Nov. 20, 1971, 2157610
Int. Cl.² G01N *33/16;* **A23J** *1/06;* **A61K** *39/00*
U.S. Cl. 23—230 B **1 Claim**

1. A method for detecting the presence of a pregnancy-specific β_1-glycoprotein in the blood or urine of a female animal or woman, whereby a pregnancy can be detected and supervised, which comprises contacting a sample of the blood or urine to be tested with antiserum to said pregnancy-specific β_1-glycoprotein and examining the sample for evidence of an immune reaction, said pregnancy-specific β_1-glycoprotein having an electrophoretic migration speed in agar gel in the range of β_1-globulins, a sedimentation constant of 4.6 S±0.5 S, a molecular weight of about 100 000±15 000, an extinction coefficient $E_{1\,cm}^{1\%}$ of 11.6±0.5 (278 mμ; 1/15-molar phosphate buffer, pH 7.0), and a carbohydrate content of 28.05±1.55%, comprising 10.7±1.0% of hexoses, 10.0±0.5% of hexosamine, 0.55±0.05% of fucose, and 7.0±0.5% of neuraminic acid.

4,191,534
FUEL LOG AND METHOD OF MAKING IT

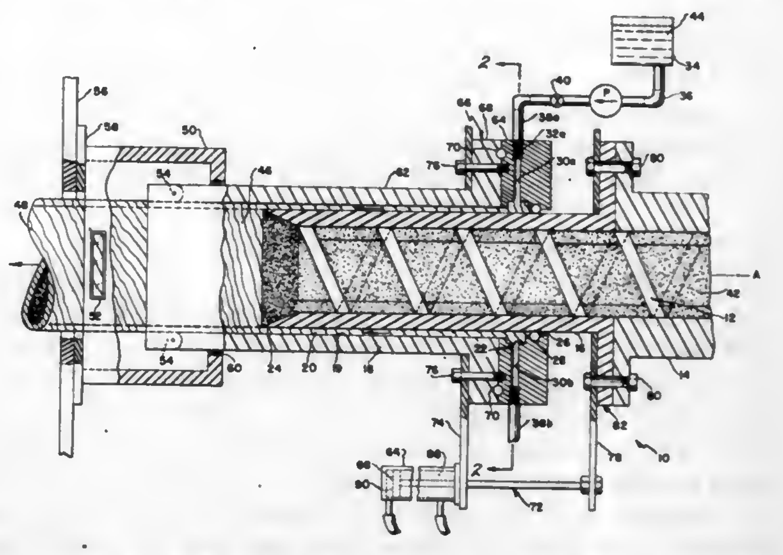
Joseph M. Bostic, P.O. Box 121, White Sulphur Springs, W. Va. 24986
Filed Jul. 19, 1978, Ser. No. 926,093
Int. Cl.² C10L *9/00, 5/00*
U.S. Cl. 44—6 **10 Claims**

6. A fuel log formed of a mixture of coal granules and a combustible, liquid contact cement by pulverizing raw coal to form granules having diameters of no more than about 0.25 inch and, spreading the granules in no more than a few layers on a conveyor, dispensing the granules from said conveyor into a mixing hopper, laterally spraying the cement into the path of said falling particles to uniformly coat the surface of each particle and compacting the mixture into an elongate configuration.

7. The fuel log of claim 6, including a combustible covering jacket covering a surface of said log.

4,191,535
COAL EXTRUSION APPARATUS AND PROCESS

Anthony H. Furman, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Sep. 25, 1978, Ser. No. 945,442
Int. Cl.² C10L *5/00, 5/22*
U.S. Cl. 44—10 R **16 Claims**



1. In an apparatus for extruding a cohesive, continuous rod-like coal-containing body including:
(a) an extruder barrel,
(b) an extruder screw disposed within said barrel,
(c) means for feeding a mixture containing powdered coal and a binder therefor into said barrel,
(d) means operatively associated with said screw for driving said screw, and
(e) die means operatively associated with and disposed adjoining the discharge portion of said barrel for receiving and shaping the mixture forcibly discharged from said barrel discharge portion,
the improvement comprising, in combination with the above,
(f) means for depositing a film of lubricant directly onto the outer surface of the forming body as it passes directly from said barrel into said die.

12. In a process for extruding a cohesive, continuous rod-like coal-containing body wherein a mixture containing powdered coal and a binder therefor is fed into an extruder barrel adjacent one end thereof, said mixture is moved through said barrel by the rotation of an extruder screw disposed therein and is forcibly discharged from the downstream end of said barrel directly through die means, the improvement comprising the step of depositing a film of lubricant directly onto the outer surface of the forming body as it passes into said die means.

4,191,536
FUEL COMPOSITIONS FOR REDUCING COMBUSTION CHAMBER DEPOSITS AND HYDROCARBON EMISSIONS OF INTERNAL COMBUSTION ENGINES

Leonard M. Niebylski, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.
Filed Jul. 24, 1978, Ser. No. 927,496
Int. Cl.² C10L *1/14*
U.S. Cl. 44—63 **21 Claims**

1. As a composition of matter, a gasoline for a spark ignited internal combustion engine comprising a mixture of (i) hydrocarbons boiling within the gasoline range, (ii) a cyclopentadienyl manganese tricarbonyl antiknock compound wherein said cyclopentadienyl is a hydrocarbon group having from 5 to 17 carbon atoms in an amount sufficient to improve the antiknock characteristics of said gasoline, and (iii) an exhaust emission and engine deposit reducing amount of tetrahydrofuran.

4,191,537

FUEL COMPOSITIONS OF POLY(OXYALKYLENE) AMINOCARBAMATE

Robert A. Lewis, Berkeley, and Lewis R. Honnen, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 887,703, Mar. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 801,441, May 27, 1977, which is a continuation-in-part of Ser. No. 730,495, Oct. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 700,922, Jun. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 698,243, Jun. 21, 1976, abandoned. This application Jun. 19, 1978, Ser. No. 917,149

The portion of the term of this patent subsequent to Jul. 10, 1996, has been disclaimed.

Int. Cl.^{2} C10L *1/22;* **C07C** *69/24*

U.S. Cl. 44—71 **41 Claims**

1. A fuel composition comprising a major portion of hydrocarbons boiling in the gasoline range, and from 30 to 2,000 ppm of a hydrocarbylpoly(oxyalkylene) aminocarbamate of molecular weight from about 600 to 10,000, and having at least one basic nitrogen atom; wherein said hydrocarbylpoly(oxyalkylene) moiety is composed of oxyalkylene units selected from 2 to 5 carbon oxyalkylene units of which at least a sufficient number are branched chain oxyalkylene units to render said carbamate soluble in said fuel composition; and said hydrocarbyl group contains from 1 to about 30 carbon atoms.

39. A concentrate of a deposit control additive for fuel compositions comprises an inert stable oleophilic organic solvent boiling in the range of from about 150° to 400° F. and from 10 to 50 weight percent of a hydrocarbyl poly(oxyalkylene) aminocarbamate of molecular weight from about 600 to 10,000, and having at least one basic nitrogen atom; wherein said hydrocarbyl poly(oxyalkylene) moiety is composed of oxyalkylene units selected from 2 to 5 carbon oxyalkylene units of which at least a sufficient number are branched chain oxyalkylene units to render said carbamate soluble in hydrocarbons boiling in the gasoline range; and said hydrocarbyl group contains from 1 to about 30 carbon atoms.

4,191,538

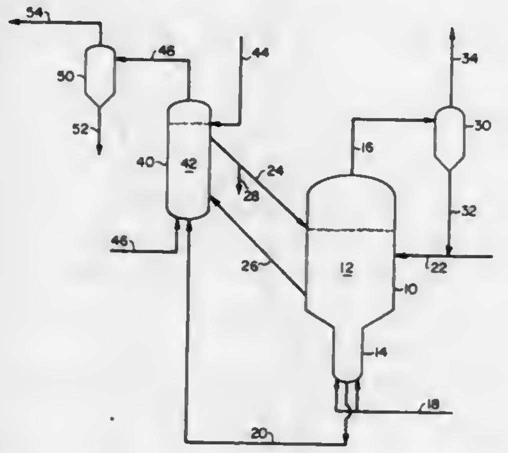
SYNTHETIC CO_2 ACCEPTOR AND GASIFICATION PROCESS THEREWITH

Everett Gorin, San Rafael, Calif., assignor to Continental Oil Company, Stamford, Conn.

Filed Mar. 12, 1979, Ser. No. 20,003

Int. Cl.^{2} C10J *3/00, 3/54*

U.S. Cl. 48—197 R **6 Claims**



1. A synthetic CO_2 acceptor consisting essentially of at least one chemically uncombined calcium compound selected from the group consisting of calcium oxide and calcium carbonate supported in a refractory carrier matrix, said carrier having the general formula

$$3CaO(SiO_2)_x(Al_2O_3)_{1-x}$$

wherein x is from about 0 to about 1 and wherein said chemically uncombined calcium compound is present in an amount equal to from about 10 to about 20 weight percent, calcium oxide equivalent based on the weight of the acceptor.

2. In a process for producing a synthesis gas by reacting a carbonaceous feedstock with water in the presence of a carbon dioxide acceptor to produce a synthesis gas rich in hydrogen with at least a portion of the carbon dioxide so produced being reacted with said calcium oxide to produce calcium carbonate, the improvement wherein, said CO_2 acceptor consists essentially of at least one chemically uncombined calcium compound selected from the group consisting essentially of calcium oxide and calcium carbonate supported in a refractory carrier matrix, said carrier having the general formula

$$3CaO(SiO_2)_x(Al_2O_3)_{1-x}$$

wherein x is from about 0 to about 1 and wherein said chemically uncombined calcium compound is present in an amount equal to from about 10 to about 20 weight percent, calcium oxide equivalent based on the weight of the acceptor.

4,191,539

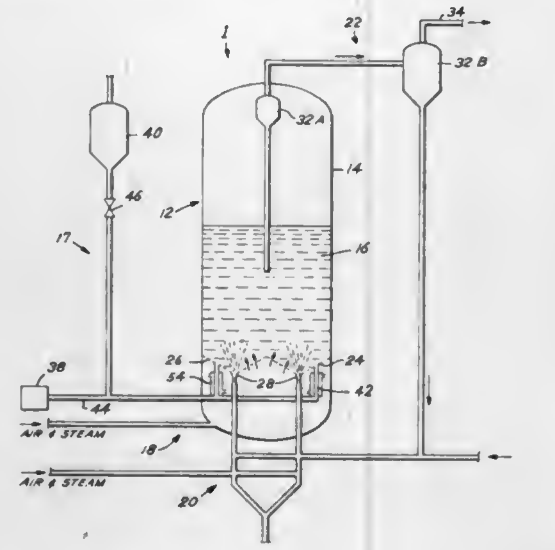
METHOD FOR FEEDING CAKING COAL PARTICLES TO A GASIFIER

Jitendra G. Patel, Bolingbrook; Frank C. Schora, Palatine, and John W. Loeding, Naperville, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 693,352, Jun. 7, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,352

Int. Cl.^{2} C10J *3/54*

U.S. Cl. 48—210 **3 Claims**



1. In a process for converting caking carbonaceous particles into a fuel gas utilizing an elongated reactor having a reactor wall and an axis therethrough, a fluidized bed in the bottom portion thereof maintained at conditions to convert said carbonaceous particles to fuel gas and means for withdrawing ash from the center, bottom portion of said reactor, the improved method of adding said carbonaceous particles to said fluidized bed which comprises:

introducing a high velocity gas stream having a velocity of 50 to 300 feet per second in admixture with said carbonaceous particles directly into the bottom of said fluidized bed without prior pretreatment of the carbonaceous particles at a plurality of equally spaced-apart points around the perimeter of the reactor; said fluidized bed operating at a temperature within the range of about 1800°–2000° F., said gas stream being introduced into said bed at a predetermined high velocity at a location in close proximity to the reactor wall and a substantial distance away from said centrally located withdrawal means, whereby said carbonaceous particles are rapidly mixed with and shock heated by contact with the fluidized bed, said high velocity gas stream and admixed carbonaceous particles being passed substantially directly upward directly into the bottom of said fluidized bed in a direction substantially parallel to the axis of the reactor without substantially altering the stability of the fluidized bed and the residence time distribution of the carbonaceous particles in the bed.

4,191,540

CARBON DIOXIDE ACCEPTOR PROCESS USING COUNTERCURRENT PLUG FLOW

David S. Mitchell, and David R. Sageman, both of San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 27, 1978, Ser. No. 890,886

The portion of the term of this patent subsequent to Jun. 5, 1996, has been disclaimed.

Int. Cl.^{2} C10J *3/54*

U.S. Cl. 48—197 R **10 Claims**

1. A CO_2 acceptor gasification process for gasifying a solid carbonaceous material in a gasification zone, which comprises:

introducing into an upper portion of the gasification zone particulate CO_2 acceptor solids at an elevated temperature;

passing said particulate CO_2 acceptor solids downwardly through the gasification zone;

introducing into a lower portion of the gasification zone particulate carbonaceous solids, the physical characteristics of the CO_2 acceptor solids and the carbonaceous solids differing such that a gas flowing upwardly through the gasification zone at a velocity greater than that necessary to fluidize the CO_2 acceptor solids and at a velocity less than that necessary to entrain said CO_2 acceptor solids will entrain the carbonaceous solids;

passing a fluidization gas containing steam upwardly through the gasification zone at a rate sufficient to fluidize the CO_2 acceptor solids and entrain the carbonaceous solids, whereby at least a portion of said steam reacts with at least a portion of said carbonaceous solids to form a gaseous product containing CO_2, which CO_2 substantially reacts with the CO_2 acceptor solids to form spent acceptor solids;

maintaining substantially plug flow of the solids and gases throughout said gasification zone by limiting gross vertical backmixing of said solids and gases;

withdrawing effluent solids, including CO_2 acceptor solids and spent acceptor solids from a lower portion of said gasification zone; and

removing from an upper portion of said gasification zone the remaining fluidization gas, the remaining gaseous product and the remaining entrained carbonaceous solids.

4,191,541

METHOD AND APPARATUS FOR GAS SAMPLE ANALYSIS

Charles W. Jenkins, Fernandina Beach, Fla., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 14, 1978, Ser. No. 933,567

Int. Cl.^{2} B01D *53/14*

U.S. Cl. 55—18 **21 Claims**

1. Apparatus for withdrawing a gas from a source and conditioning the gas for subsequent analysis for total reduced sulfur content, which comprises:

a gas probe having an inlet for a stream of gas and an outlet therefor,

a conduit, having electrical resistance means to provide heat to a gas stream flowing therein, extending from the probe outlet to a condenser,

said condenser having a passage through which a gas stream can flow and be cooled by indirect heat exchange with a cooling fluid and vapor in the gas condensed to liquid,

a second conduit from the condensor passage to a means for producing a vacuum which causes a gas stream to enter the probe and flow through the heatable conduit to and through the condenser passage and the second conduit,

a third conduit for delivering a stream of gas from the second conduit to a scrubber to wash the gas stream with a scrubbing liquid,

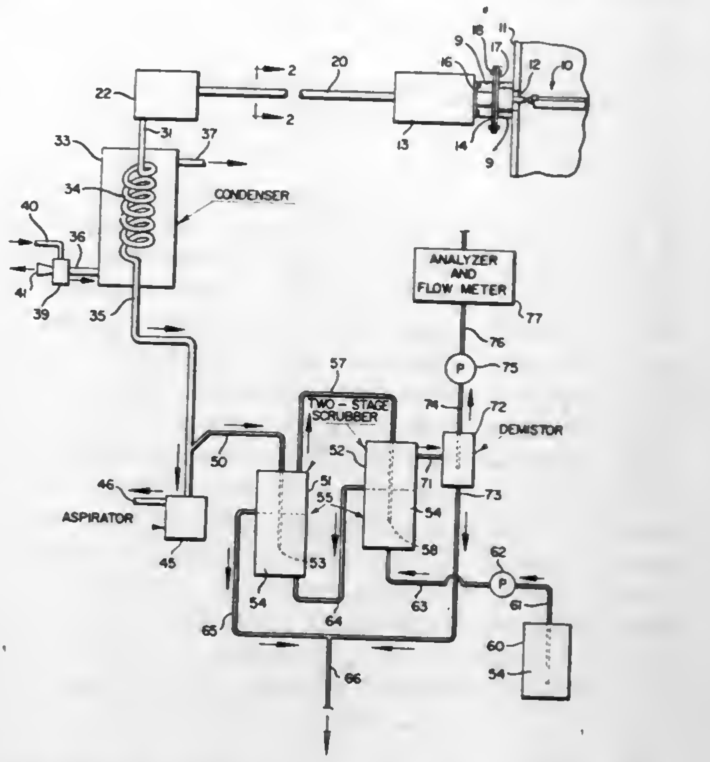
means for removing the gas stream from the scrubber and separating entrained scrubbing liquid, and

means for pumping the scrubbed gas stream, from which scrubbing liquid has been removed, to an analyzer and flow meter.

15. A method comprising:

withdrawing a stream of hot gas containing water vapor from a source believed to contain a gaseous reduced sulfur content,

continuously maintaining the withdrawn stream of hot gas at a temperature above the dew point temperature of the gas,



feeding the stream of hot gas to a condenser to condense the water vapor from the gas,

removing the condensed water with the stream of previously hot but now cooled gas from the condenser,

diverting a minor portion of the cooled gas stream, substantially devoid of water, to a scrubber,

scrubbing the cooled gas stream in the scrubber with a scrubbing liquid,

withdrawing the scrubbed gas stream from the scrubber,

separating residual scrubbing liquid from the scrubbed gas stream, and

feeding the scrubbed gas stream to an analyzer and flow meter to determine the total reduced sulfur content in the gas stream.

4,191,542

FILTERING PROCESS FOR A CARBON BLACK-CONTAINING GAS

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

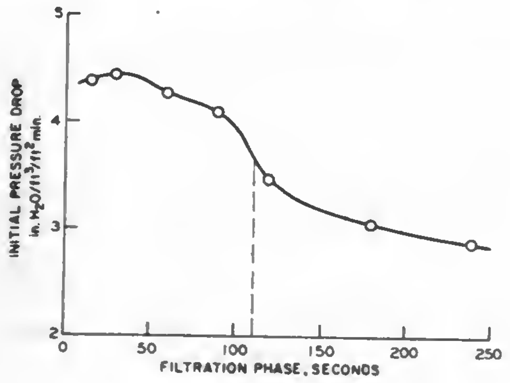
Continuation-in-part of Ser. No. 563,402, Mar. 31, 1975, abandoned. This application May 4, 1978, Ser. No. 902,656

Int. Cl.^{2} B01D *46/04*

U.S. Cl. 55—96 **6 Claims**

2. A process for recovering carbon black from a carbon black-containing gas comprising passing said carbon black-containing gas through a filter for a filtration phase which is at least as long as a critical filtration time and up to 50 percent longer, said critical filtration time being defined as the filtration phase at which the linearly plotted curve of the initial filter

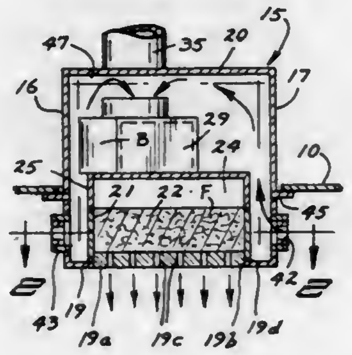
pressure drop versus the filtration phase has an inflection point and represented by the general formula



$$(cf) = \frac{1}{(cs)(vf)}\left(\frac{A}{S} + B(cs)\right)$$

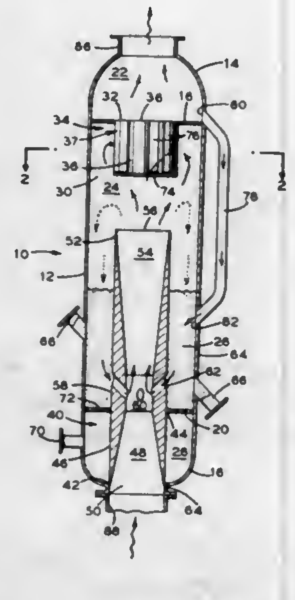
wherein cf is the critical filtration time in seconds; vf is actual (a) gas flow in cubic ft/square foot of bag surface/minute; cs is smoke concentration, lbs. of carbon black/actual (a) cubic foot of gas; A is an empirically determined constant, determined from data for each specific type of filter bag; B is an empirically determined constant, determined from data for each specific type of filter bag as was A; and (a) is the actual cubic feet at the filter temperature and pressure; stopping the flow of said carbon black-containing gas, wherein the filtration phase is the time of flow of carbon black-containing gas through the filter between two subsequent steps of emptying the filter; passing a backflow gas in a direction opposite to the flow of the carbon black-containing gas through said filter for a backflow phase, thus removing carbon black from said filter and transferring said carbon black to a collection point, stopping the flow of backflow gas and repeating said cycles.

4,191,543
STERILE AIR RECYCLING APPARATUS
Max D. Peters, 633 Turnpike Rd., Minneapolis, Minn. 55416
Filed Dec. 23, 1977, Ser. No. 863,911
Int. Cl.^{2} B01D *46/42, 46/54*
U.S. Cl. 55—279 **7 Claims**



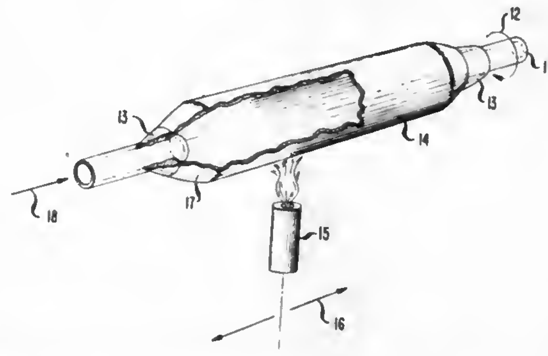
1. Sterile air recycling apparatus mountable on a wall of a room for discharging air into the room interior comprising a housing having walls joined together to form a generally rectangular box shaped enclosure, the housing walls including a front wall, a rear wall, and opposite side walls, said front wall having an outlet opening, high efficiency filter means mounted within the housing in fluid communication with the front wall opening for discharging filtered air therethrough, a blower within the housing and having an inlet and an outlet, means for attaching the blower to the housing, means within the housing and connected to the blower outlet and to the filter means for placing the blower outlet in fluid communication with the filter means to supply air under pressure to the filter means to flow therethrough to the front wall outlet opening, the filter means including a HEPA filter, the blower, the filter means and the means for connecting the blower outlet to the filter means being connected to one another and mounted in housing to in conjunction with the housing define a space within the housing that comprises a negative pressure plenum chamber, the blower inlet opening to the negative pressure plenum to draw air therefrom, the opposite side walls each having a room air inlet opening to the negative pressure plenum chamber for having air drawn therethrough and into the negative pressure plenum chamber by the blower, the housing having a fresh air inlet opening to the negative pressure plenum chamber, and means connected to the housing for supplying fresh air from exterior of the room to the fresh air inlet, the means for placing the blower outlet in fluid communication with the filter means including wall means that in conjunction with the filter means defines a supply pressure plenum chamber in fluid communication with the filter means and having an inlet, and duct means connected between the blower outlet and the wall means for fluidly connecting the blower outlet to the supply pressure plenum chamber means inlet.

4,191,544
GAS CLEANING APPARATUS
Richard H. Boll, and Walter C. Lapple, both of Alliance, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Mar. 17, 1978, Ser. No. 887,579
Int. Cl.^{2} B01D *53/12*
U.S. Cl. 55—390 **2 Claims**



1. A gas cleaning apparatus comprising a vessel, transverse plates dividing the vessel into upper, intermediate and lower chambers, a fluidized bed of contaminant adsorbing particles, the fluidized bed occupying a lower portion of the intermediate chamber, venturi-shaped duct means disposed within the vessel and having a gas outlet communicating with the intermediate chamber at a level above the fluidized bed, the duct means being formed with a constricted interior passage, means for admitting a stream of contaminated gas to the duct means, conduit means connecting the fluidized bed with the constricted passage to introduce the adsorbing particles into the gas stream thereby removing contaminants therefrom, means for centrifugally separating contaminant-laden particles from the gas stream, the separating means being disposed above and in spaced coaxial relation with the duct means and having a gas inlet communicating with the intermediate chamber and a gas outlet communicating with the upper chamber, means for discharging substantially decontaminated gas from said upper chamber, and means for returning the separated particles to said fluidized bed.

4,191,545
OPTICAL FIBER FABRICATION PROCESS
John B. MacChesney, Lebanon; Paul B. O'Connor, Plainfield, and Arthur D. Pearson, Bernardsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 2, 1979, Ser. No. 16,787
Int. Cl.^{2} C03B *37/02*
U.S. Cl. 65—3 A **23 Claims**



1. A method of forming an optical fiber comprising
rotating a substantially cylindrical mandrel about its longitudinal axis;
forming amorphous, powdery particles;
depositing the particles on the substantially cylindrical mandrel to form an intermediate tubular structure comprising amorphous, powdery particles;
fusing the intermediate tubular structure into a transparent tubular glass structure;
depositing additional material on the tubular glass structure; and
drawing the structure into a fiber, the invention characterized in that
the intermediate tubular structure is removed from the mandrel prior to fusion and is constrained against shrinkage in both the longitudinal and radial direction during fusing.

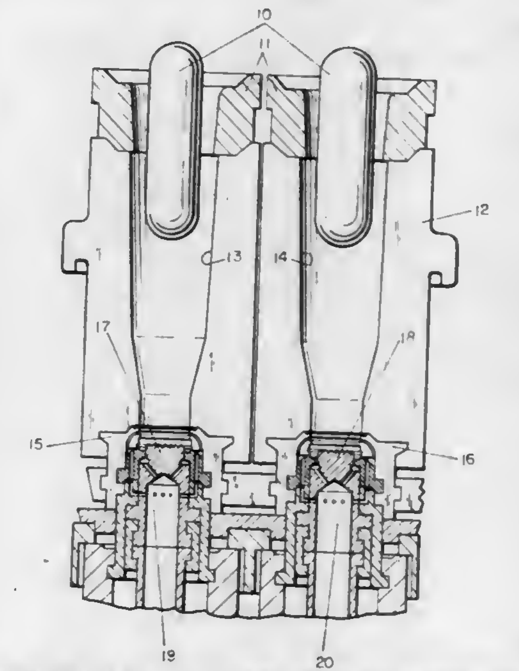
4,191,546
PROCESS OF MAKING A BLISTERED, CRYSTALLIZABLE GLASS MATERIAL
Karl K. K. Kroyer, Engtoften 3, DK-8260 Viby J., Denmark
Filed Dec. 28, 1977, Ser. No. 865,282
Claims priority, application United Kingdom, Jan. 4, 1977, 47/77
Int. Cl.^{2} C03B *19/08*
U.S. Cl. 65—20 **16 Claims**

1. A process of making a blistered crystallizable glass material with simultaneous utilization of mineral-containing waste products comprising the steps of:
supplying to the upper end of a rotary kiln as raw materials a mixture of materials originating from domestic or industrial waste products with calcareous materials and optionally other glass-forming minerals in such a mix proportion that the finished glass material made therefrom will show a content of about 20–30% by weight CaO and no more than about 5% by weight Al_2O_3 keeping said rotary kiln at a temperature sufficient to melt the raw materials supplied during their passage therethrough to form a molten bath flowing downwards through the lower part of said rotary kiln causing the molten material thus formed to flow off from the lower end of said kiln and subsequently cooling said material thereby to form a blistered crystallizable material.

4,191,547
METHOD OF MAKING PHOTOSENSITIVE COLORED GLASSES EXHIBITING ALTERABLE PHOTO-ANISOTROPIC EFFECTS
Che-Kuang Wu, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Jul. 14, 1978, Ser. No. 924,508
Int. Cl.^{2} C03C *21/00*
U.S. Cl. 65—30 R **18 Claims**

1. A method for making a photosensitive colored glass article exhibiting alterable photo-anisotropic effects consisting of a body portion and an integral hydrated surface layer of a thickness about 1–500 microns having Ag-AgCl-containing crystals therein, at least a portion of which exhibits photo-dichroic and birefringent properties, which comprises contacting an anhydrous glass body consisting essentially, in mole percent of the oxide basis, of about 70–82% SiO_2, 10–17% Na_2O and/or K_2O, 5–15% ZnO, 0.5–5% Al_2O_3, and and 0.1–3% Cl with an aqueous solution containing Ag^+ ions and acidified to a pH less than about 2, this contact being made at a temperature in excess of 200° C. and at a pressure in excess of 225 psig. for a period of time sufficient to hydrate a surface layer thereon having a thickness of about 1–500 microns, to cause the replacement of Na^+ and/or K^+ ions with Ag^+ ions in said hydrated glass, the proportion of Na^+ and/or K^+ ions in said hydrated glass being less with a corresponding increase in Ag^+ ions, and to cause a reaction between Ag^+ ions and Cl^- ions in said hydrated glasses to form Ag-AgCl-containing crystals therein, and thereafter to expose said surface layer to ultraviolet radiation at an intensity and for a time sufficient to develop photo-dichroic and birefringent properties in at least a portion thereof.

4,191,548
METHOD AND APPARATUS FOR FORMING GLASS CONTAINERS
John M. Fortner, Whitehouse, and Richard T. Kirkman, Maumee, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed May 17, 1978, Ser. No. 906,707
Int. Cl.^{2} C03B *9/36*
U.S. Cl. 65—79 **6 Claims**



1. Apparatus for forming glass parisons comprising:
an annular neck mold formed of two matching halves positioned beneath said parison mold in axial alignment therewith;
a plunger having a relatively flat, horizontal face positioned axially within said neck mold, said plunger having its horizontal face provided with shallow, concentric grooves;
face relief means formed in one neck mold half at the inter-

face of the parting line between said neck mold halves in the area of the thread-forming portion of the neck mold halves;

an annular guide ring mounted in said neck mold for guiding the neck pin;

a retractable thimble having its upper end sealingly engageable with said guide ring;

passage means extending upwardly through said guide ring and thimble at circumferentially spaced points;

a source of vacuum; and

means connecting said vacuum to said thimble, said vacuum being in communication with said guide ring for applying a vacuum to the face relief area of said neck mold.

4,191,549
SOLAR CHEMICAL PROCESS FOR SLUDGE TREATMENT

Michael Boyko, 1308 Jasmine St., Denver, Colo. 80220

Continuation of Ser. No. 766,206, Feb. 7, 1977, abandoned. This application Aug. 22, 1978, Ser. No. 935,962

Int. Cl.^{2} C05F *13/00*

U.S. Cl. 71—13 **18 Claims**

1. A process for converting dewatered gelatinous sewage sludge from a gelatinous material into a granular manageable material adapted for use as fertilizer, comprising:

(a) combining fibrous cellulose waste material with dilute acid solution,

(b) heating the combined acid and cellulose for an empirically determined time during which the acid and cellulose react, turning the cellulose into a dry substantially black carbonaceous product,

(c) mixing said dry black product with gelatinous sewage sludge in an empirically determined ratio, converting the sludge and black product mixture into a granular manageable material.

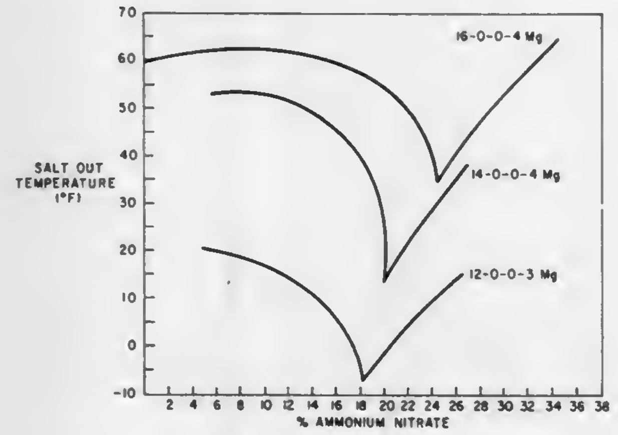
4,191,550
STORAGE-STABLE NITROGEN-MAGNESIUM FOLIAR SPRAY COMPOSITIONS

Edwin F. Hawkins, and Thomas M. Parham, Jr., both of Baton Rouge, La., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 22, 1978, Ser. No. 907,651

Int. Cl.^{2} C05C *9/00*

U.S. Cl. 71—30 **6 Claims**



1. A composition comprising a storage-stable fertilizer concentrate solution of a pH of between about 4 and 7 consisting essentially of water, about 18% to 28%, by weight, of magnesium nitrate solute, about 14% to 32% by weight, of ammonium nitrate solute, and about 3.5% to 8%, by weight, of urea, said composition having an ammonium nitrate to urea weight ratio of between about 3.5:1 and 5:1 and a nitrogen to magnesium weight ratio of between about 1.5:1 and 5:1 and a salt-out temperature below about 30° F.

4,191,551
GROWTH RETARDANTS

Willis E. Cupery, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

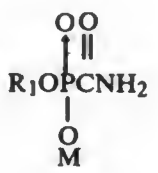
Filed May 25, 1978, Ser. No. 909,555

Int. Cl.^{2} A01N *9/36*

U.S. Cl. 71—86 **11 Claims**

1. A growth regulating spray solution, said solution including water which contains calcium and magnesium ions in excess of 100 ppm, hardness calculated as $CaCO_3$, consisting essentially of

(1) a growth regulating amount of a compound selected from the group consisting of



$$R_1O\overset{\overset{O}{\uparrow}}{\underset{\underset{M}{O}}{P}}\overset{\overset{O}{\|}}{C}NH_2$$

wherein R_1 is alkyl of 1 to 3 carbon atoms or allyl; and M is potassium, sodium, lithium or ammonium; and

(2) an effective amount of a chelating agent capable of tieing up at least a portion of the calcium ions.

4,191,552
AMINE SALTS OF SUBSTITUTED N-PHOSPHONOMETHYLUREAS AND THEIR USE AS PLANT GROWTH REGULATORS

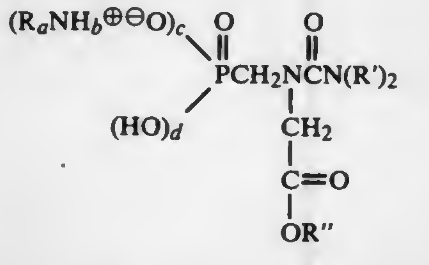
George B. Large, Orinda, and Lawrence Buren, Cupertino, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 2, 1979, Ser. No. 8,719

Int. Cl.^{2} A01N *5/00;* **C07C** *101/24*

U.S. Cl. 71—86 **27 Claims**

1. A compound having the formula



in which

R, R′, and R″ are independently C_1–C_4 alkyl;

a is 1 or 2 and b is 2 or 3, such that the sum of a and b is 4; and

c is 1 or 2 and d is 0 or 1, such that the sum of c and d is 2.

4,191,553
HERBICIDAL SULFAMATES

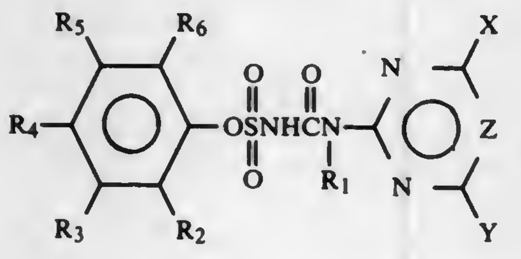
James J. Reap, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 2, 1978, Ser. No. 882,918

Int. Cl.^{2} A01N *9/22*

U.S. Cl. 71—92 **48 Claims**

1. A compound having the formula

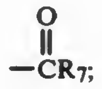


I

wherein

R_1 is H, OCH_3 or alkyl of 1–3 carbons;

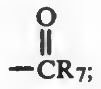
R_2 is H, Cl, F, Br, NO_2, alkyl of 1–4 carbons, alkoxy of 1–4 carbons, CF_3 or



$$-\overset{\overset{O}{\|}}{C}R_7;$$

R_3 is H, Cl, F, Br, CH_3, or alkoxy of 1–4 carbons;

R_4 is H, Cl, F, Br, NO_2, alkyl of 1–4 carbons, alkoxy of 1–4 carbons, CN or



$$-\overset{\overset{O}{\|}}{C}R_7;$$

R_5 is H, Cl, F, Br, CH_3, NO_2 or CF_3;

R_6 is H, Cl, F, Br, alkyl of 1–4 carbons or alkoxy of 1–4 carbons;

R_7 is NaO, OH, or alkoxy of 1–4 carbons;

X is CH_3, CH_3CH_2, alkoxy of 1–3 carbons, CH_3OCH_2, $CH_3OCH_2CH_2O$, CH_3S, CH_3CH_2S, CF_3 or Cl; and

Y is CH_3, CH_3CH_2, alkoxy of 1–3 carbons, CH_3OCH_2, $CH_3OCH_2CH_2O$, CH_3S or CH_3CH_2S;

Z is CH or N;

provided that

only one of R_2, R_3 or R_4 is alkoxy; and

when R_5 is NO_2, R_4 is other than NO_2.

33. A method for protecting against the growth of undesired vegetation which comprises applying to the locus to be protected an herbicidally effective amount of a compound of claim 1.

4,191,554
HERBICIDAL BENZAMIDES

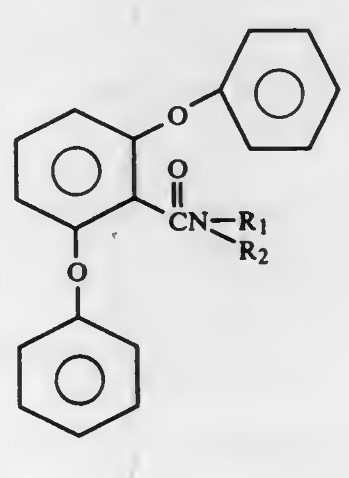
Walter A. Gregory, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 3, 1977, Ser. No. 838,958

Int. Cl.^{2} C07C *103/80;* **C07D** *295/18;* **A01N** *9/20, 9/22*

U.S. Cl. 71—95 **21 Claims**

1. A compound of the formula:



where

R_1 is hydrogen, methyl, or ethyl;

R_2 is alkyl of 1–4 carbon atoms, methoxy or cyanomethyl; and

R_1 and R_2 together can be —$(CH_2)_4$—, provided that when R_2 is alkyl of 3 or 4 carbon atoms, methoxy or cyanomethyl, R_1 cannot be ethyl.

4,191,555
MONAZA AMIDES AND AMINES AS ETHYLENE INHIBITORS

Jonathan M. Kliegman, Wayne, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,741

Int. Cl.^{2} A01N *5/00*

U.S. Cl. 71—95 **9 Claims**

1. The process of inhibiting ethylene generated by a plant, which comprises contacting said plant with an effective amount of the composition of a monaza compound selected from the group of N-methyl-2-pyrrolidone and 2-pyrrolidone and inert carrier therefor.

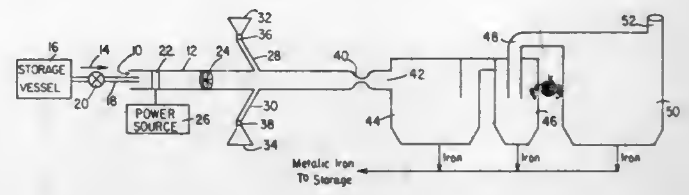
4,191,556
PROCESS FOR REDUCING METAL OXIDES TO METAL

Stephen H. Rothblatt, 2100 Lincoln Park West, Apt. 10AN, Chicago, Ill. 60614

Filed Jan. 30, 1978, Ser. No. 873,415

Int. Cl.^{2} B22F *9/00*

U.S. Cl. 75—0.5 B **6 Claims**



1. A process for reducing metal oxides to metal comprising the steps of:

establishing a flow of heat reducing gas;

entraining particles of a metal oxide in said flow of heated reducing gas; and

directing said flow of heated reducing gas and entrained particles through a constriction-expansion nozzle for promoting a reduction reaction therebetween.

4,191,557
PRODUCTION OF METALLIC POWDERS

Thomas J. Kondis, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

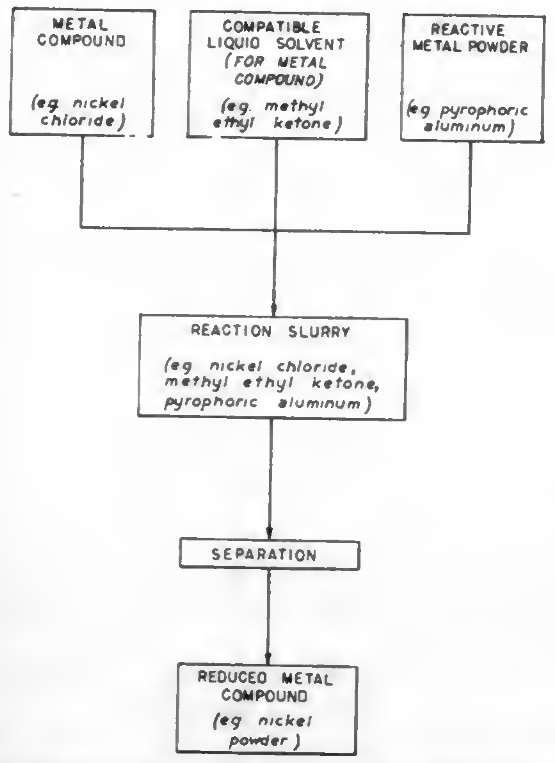
Continuation-in-part of Ser. No. 781,109, Mar. 25, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,324

Int. Cl.^{2} C22B *13/04, 23/04, 25/04, 34/32*

U.S. Cl. 75—0.5 A **11 Claims**

1. The process of producing a metallic powder by reducing a metal compound comprising the steps of:

(a) milling a slurry of (1) a compatible, non-aqueous liquid solvent, which has said metal compound dissolved therein to thereby form a solution and (2) a reactive metal powder which occupies a position in the electromotive series of elements above the position of the metal constituent in said metal compound, i.e. has a single electrode potential more negative than that of the metal constituent in said metal compound, said reactive metal powder being sufficiently reactive to reduce the metal constituent in said metal compound upon contact during the milling of said slurry as said reactive metal is made active by the milling, competing side reactions between the solvent and the active metal surfaces generated during the milling not progressing beyond self-limiting surface reactions, whereby the reduced metal appears as a finely divided solid, said reactive metal being aluminum, the finely divided reduced metal solid being characterized by an abil-



ity to be cleaned of residual aluminum or aluminum compounds; and

(b) recovering the reduced metal from the resultant slurry.

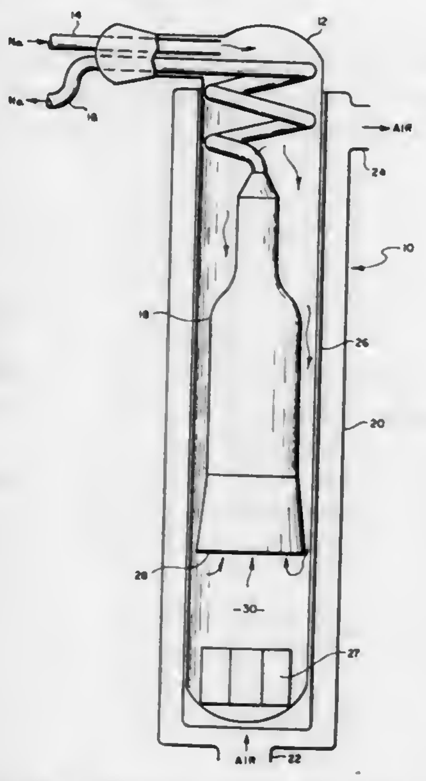
4,191,558
SODIUM PURIFICATION APPARATUS AND METHOD

Marc I. Gould, Van Nuys, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 26, 1978, Ser. No. 973,643

Int. Cl.^{2} C22B *3/02*

U.S. Cl. 75—66 **9 Claims**



1. An apparatus for removing oxide impurities from a liquid alkali metal comprising:

a housing having top and bottom ends;

inlet means adjacent the top end of said housing for introducing a liquid alkali metal containing oxide impurities into said housing;

a conduit member located in said housing having a discharge end and a terminal end, said conduit member and said housing forming an annular flow path for said liquid alkali metal, said terminal end of said conduit member and said housing forming an annular flow path of gradually reduced cross-sectional flow area and terminating in a substantially increased cross-sectional flow area defined by said housing to provide a substantial change in the velocity head of liquid alkali metal flowing therethrough to form crystals of the oxide, said conduit having an interior portion defining an inner fluid passageway and at least the portion of said inner fluid passageway adjacent the terminal end of said conduit having a cross-sectional flow area sufficiently large to ensure that the flow of liquid alkali metal therethrough has a velocity of less than that which would carry entrained oxide crystals;

outlet means for the withdrawal of liquid alkali metal from the discharge end of said conduit; and

cooling means for cooling liquid alkali metal, passing through said annular passageway defined by said housing and said conduit, to a temperature within a desired range.

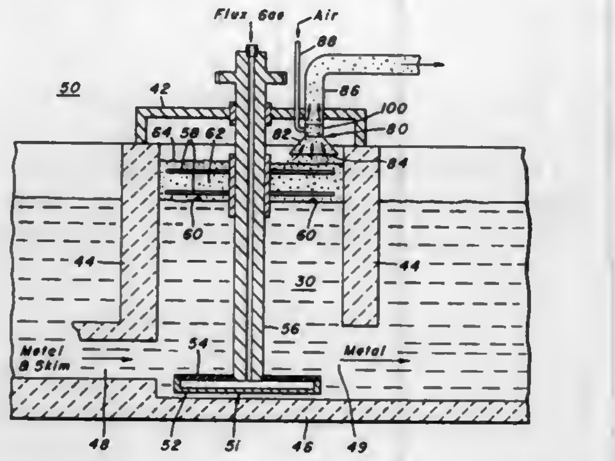
4,191,559
SKIM REMOVAL

Jan H. L. Van Linden, Allison Park; Ronald E. Miller, Murrysville, and Joseph R. Herrick, Verona, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 1, 1977, Ser. No. 856,339

Int. Cl.^{2} C22B *21/06*

U.S. Cl. 75—68 R **13 Claims**



1. A method of removing the skim from molten aluminum and alloys thereof and simultaneously therewith reducing the amount of aluminum removed with the skim comprising the steps of:

(a) providing a body of molten aluminum containing skim;

(b) passing a gas therethrough to carry particles of skim to the surface of the molten aluminum;

(c) treating the skim on the surface of the molten aluminum to reduce the amount of aluminum contained therein and to provide said skim in a substantially powdery form, the treatment characterized by being adapted to permit aluminum trapped in the skim to return to said body; and

(d) removing a portion of the treated skim from the surface of the body of molten aluminum.

4,191,560
METHOD OF EXTRACTING A METAL FROM A MELT CONTAINING THE METAL

Peter A. Wright, Oxford, England, assignor to Gulf Chemical & Metallurgical Co., Texas City, Tex.

Filed Nov. 9, 1978, Ser. No. 959,018

Int. Cl.^{2} C22B *25/00*

U.S. Cl. 75—85 **6 Claims**

1. A method of sulfidizing a metal in a melt of the metal comprising the steps of:

(a) mixing sulfur dioxide, air or oxygen, and a gaseous or liquid hydrocarbon in proportions so the gaseous reaction products of the mixture have a minimum temperature greater than the liquidus temperature of the melt or the liquidus temperature of the products of the reaction between the compounds of the melt and reaction products of the mixture, and so that the ratio of the partial pressure of carbon dioxide to the partial pressure of carbon monoxide in the reaction products of the mixture falls within a range of 2.5:1 and 4.5:1; and

(b) injecting the mixture into the melt to react the mixture components to generate heat and form a sulfide of the metal.

4,191,561
METHOD FOR THE PRODUCTION OF TRIALUMINUM NICKELIDE FIBERS

Kenneth P. Quinlan, Newton, and Joseph J. Hutta, Groton, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 12, 1978, Ser. No. 968,874

Int. Cl.^{2} C23F *1/02*

U.S. Cl. 75—101 R **2 Claims**

1. A process for separating trialuminum nickelide filaments from a solid, two-phase, composite matrix containing aluminum and trialuminum nickelide filaments which comprises the step of placing an ingot of the said aluminum composite into a leaching solution composed of 2 percent by weight oxalic acid and 0.09 percent by weight hydrogen chloride for a period of time sufficient to effect the separation of said trialuminum nickelide filaments from said matrix.

4,191,562
WEAR-RESISTANT NICKEL-BASE ALLOY

William L. Silence, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Jun. 19, 1978, Ser. No. 916,340

Int. Cl.^{2} C22C *19/05*

U.S. Cl. 75—122 **6 Claims**

1. A wear-resistant alloy consisting essentially of, in weight percent, 2 to 3.5 carbon, 7 to 15 cobalt, 20 to 35 chromium, 20 to 30 iron, 5 to 16 molybdenum, up to 4.5 tungsten, 5.5 to 16 molybdenum plus tungsten, up to 1.5 silicon, up to 1 manganese and the balance nickel and incidental impurities.

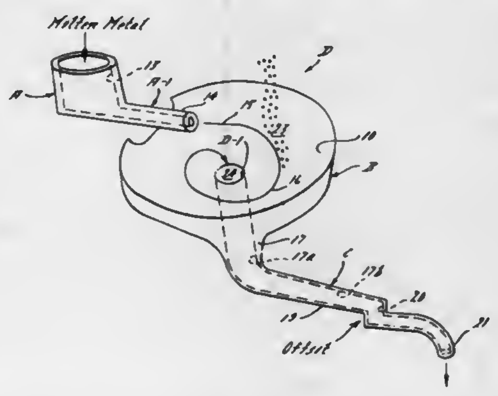
4,191,563
CONTINUOUS STREAM TREATMENT OF DUCTILE IRON

Herschel B. Smartt, and Bela V. Kovacs, both of Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 8, 1976, Ser. No. 665,019

Int. Cl.^{2} C22C *33/08*

U.S. Cl. 75—130 R **4 Claims**



1. A method of producing a treated iron, comprising:

(a) forming a vortical flow of molten treatable grey iron, said molten iron entering said vortical flow at an outer peripheral zone thereof and exiting from said vortical flow at an inner zone thereof, said vortical flow being maintained at a rate of at least 12 lbs./sec.,

(b) introducing a predetermined and continuously graduated supply of metal treating agent into the outer upper peripheral zone of said vortical flow, said treating agent containing an effective amount of magnesium to nodulize said treatable iron, and

(c) maintaining said vortical flow in a closed chamber except for said entrance and exit, said entrance and exit being closed by said flow.

4,191,564
BRASS HAVING SUPERIOR ADHESION AND WEAR RESISTANT PROPERTIES

Yutaka Hirao, Toyama; Kunio Hata, Kurobe, and Masao Hosoda, Toyama, all of Japan, assignors to Chuetsu Metal Works Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1978, Ser. No. 924,183

Claims priority, application Japan, Nov. 24, 1977, 52-140904

Int. Cl.^{2} C22C *9/04*

U.S. Cl. 75—157.5 **5 Claims**

1. A brass having superior adhesion and wear resistant properties consisting essentially of, each by weight, 45% to 75% of copper, 2.0% to 7.0% of aluminum, 0.1% to 2.0% or iron, 1.0% to 5.0% of nickel, 0.5% to 2.0% of silicon, 0.1% to 2.0% of cobalt and the remainder zinc.

4,191,565
FLAME SPRAY POWDER MIX

Mahesh S. Patel, Albertson, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Filed Jun. 15, 1978, Ser. No. 915,938

Int. Cl.^{2} B22F *1/00*

U.S. Cl. 75—252 **9 Claims**

1. A flame spray powder mixture formed of agglomerates of a metal silicide mixed with a coating metal powder,

said metal silicide being at least one selected from the group consisting of disilicides of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Co and boron silicide and magnesium, said silicide agglomerates being made of fine particles of said metal silicide of average size less than about 20 microns bound together in a matrix of a fugitive binder,

the average size of said agglomerates and said coating metal powder ranging from about 30 to 140 microns,

the composition of said powder mixture ranging from about 2% to 15% by weight of said silicide, with substantially the balance said coating metal powder.

4,191,566
ELECTROPHOTOGRAPHIC IMAGING PROCESS USING ANTHRAQUINOID BLACK PIGMENTS OR METAL COMPLEXES

Remy Jeanneret, Allschwil; Günther Zwahlen, Dornach; Christoph Frey, Aesch, and Georgios Zographos, Buchs, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

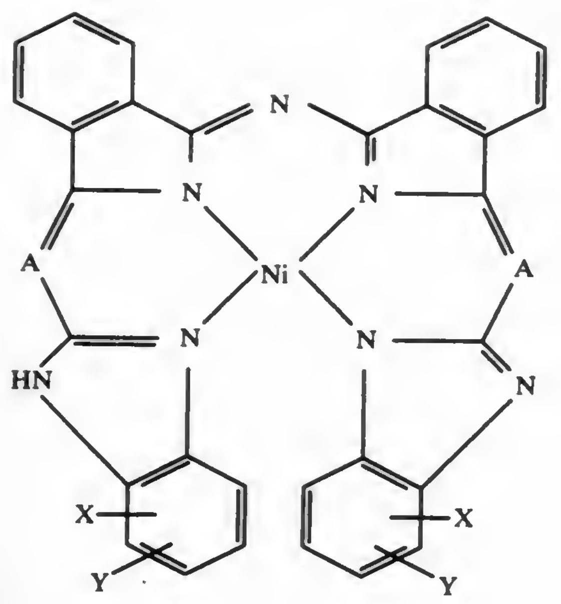
Filed Jan. 31, 1978, Ser. No. 873,818

Claims priority, application Switzerland, Feb. 7, 1977, 1456/77

Int. Cl.^{2} G03G *13/056*

U.S. Cl. 430—37 **4 Claims**

1. An electrophotographic imaging process comprising the imagewise separation of electrically photosensitive particles by the combined action of an electric field and an imagewise irradiation with electromagnetic radiation, said particles being dispersed in an isolation medium, said particles containing a black pigment which is both chromophoric and electrically photosensitive, wherein the black pigment is selected from the metal complexes of the formula



wherein

A represents a nitrogen atom or the

$=\overset{\overset{CN}{|}}{C}-$ group,

X represents a hydrogen or halogen atom or an alkyl group of 1 to 6 carbon atoms,

Y represents a hydrogen or halogen atom, an alkyl, alkoxy or alkylsulphonyl group of 1 to 6 carbon atoms, a nitro or carbamoyl group, an alkylcarbamoyl or alkoxycarbonyl group of 2 to 6 carbon atoms or an arylcarbamoyl or aryloxycarbonyl of 7 to 11 carbon atoms.

4,191,567
PROCEDURE FOR MAKING A REUSABLE PHOTOCONDUCTING CHARGE IMAGE CARRIER AND CHARGE IMAGE CARRIERS PREPARED BY THIS METHOD

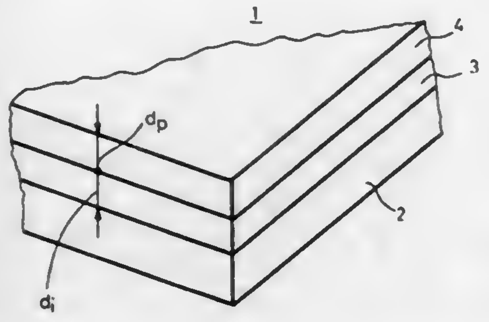
Hans Camenisch, Chur, and Jarmila Bachner, Egg, both of Switzerland, assignors to Elfotec A.G., Zumikon, Switzerland

Filed Feb. 3, 1975, Ser. No. 546,815

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1974, 2404919

Int. Cl.² G03G *5/04, 5/09, 5/08*

U.S. Cl. 430—64 **12 Claims**



1. Procedure for preparing a repeatedly reusable photoconducting charge image carrier, comprising the steps of

(A) applying to a substrate (2) a first coat with at least one insulating, nonvolatile ingredient,

(B) heating the first coat in order to produce an insulating layer (3) on the substrate (2) said layer having a softening temperature,

(C) applying to the insulating layer (3) formed in step B, a second coat containing ZnO as photoconducting material and at least one binder for the ZnO, the photoconducting material being dispersed in a solution of said binder employing a solvent which will not dissolve the insulating layer (3),

(D) drying the second coat at a temperature below said softening temperature, and

(E) conditioning the resulting charge image carrier, whereby a charge image carrier usable for at least about 4000 cycles obtained.

12. Charge image carrier having an insulating layer (3) adhering to an electrically conducting substrate (2) and above the insulating layer (3), a photoconducting layer (4) containing ZnO as pigment, said carrier being made by the method comprising the steps of

(A) applying to a substrate (2) a first coat containing at least one insulating, nonvolatile ingredient,

(B) heating the first coat in order to produce an insulating layer (3) on the substrate (2), said layer having a softening temperature;

(C) applying to the insulating layer (3) formed in step B, a second coat containing said ZnO photoconducting material and at least one binder for the ZnO, the photoconducting material being dispersed in a solution of said binder employing a solvent which will not dissolve the insulating layer (3),

(D) drying the second coat at a temperature below said softening temperature, and

(E) conditioning the resulting charge image carrier whereby a charge image carrier (1) is obtained which can be charged and then discharged by exposure to light at least 4000 times.

4,191,568
PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY WITH DYE CONTAINING OVERLAYER

Hideaki Ema, Sagamihara; Satoshi Otomura, Chiba; Chikara Imai, and Kiyoshi Sakai, both of Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1978, Ser. No. 884,836

Claims priority, application Japan, Mar. 15, 1977, 52-28260

Int. Cl.² G03G *5/14*

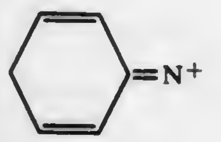
U.S. Cl. 430—66 **10 Claims**

1. An electrophotographic element, comprising:

an electrically conductive support;

a photoconductive layer superposed on said support, said photoconductive layer consisting essentially of an inorganic photoconductor or a non-dyestuff organic photoconductor;

a protective layer superposed on said photoconductive layer, said protective layer consisting of a non-photoconductive binder resin and from 0.1 to 30% by weight of one or a mixture of organic compounds containing the moiety



in the molecule, said protective layer having a thickness in the range of 0.5 to 5 μm and being thinner than said photoconductive layer, whereby said electrophotographic element exhibits a low residual electric potential after exposure to light and it retains a high proportion of an initial electric charge while it is maintained in the dark.

4,191,569
TREATING DEVELOPED LITHOPLATE WITH OLEOPHILIC COMPOSITION

Leslie E. Lawson, Kent, England, assignor to Vickers Limited, London, England

Filed Jul. 25, 1977, Ser. No. 818,572

Claims priority, application United Kingdom, Jul. 26, 1976, 31136/76

Int. Cl.² G03F *7/02;* **G03C** *1/58, 5/22*

U.S. Cl. 430—305 **10 Claims**

1. A method of processing a radiation sensitive plate comprising a substrate coated with a layer of a positive-working radiation sensitive material comprising a novolak resin sensitized with a diazonium salt or a quinone diazide, which method comprises:

(i) image-wise exposing the layer to actinic radiation using a continuous tone original in the absence of a half-tone screen,

(ii) developing the image-wise exposed layer to selectively remove the radiation-struck portions of the layer and reveal the substrate underlying these portions and desensitising the revealed substrate to render the same oleophobic,

(iii) drying the developed and desensitised plate,

(iv) coating the dried plate with a liquid composition comprising (a) an oleophilic film-forming material which is a liquid hydrocarbon solution of a normally solid material selected from the group consisting of solid hydrocarbons, solid fats, and mixtures thereof, wherein the liquid hydrocarbon constitutes from 60% to 95% by weight of the composition, and the normally solid material constitutes from 0.5 to 5% by weight of the composition, and (b) an organic solvent liquid constituting from 0.1 to 30% by weight of the composition which is capable of softening the surface of the non-radiation-struck portions,

(v) drying the coated plate to form an oleophilic layer on the non-radiation-struck portions and on said revealed substrate, and

(vi) washing the plate to remove the oleophilic layer from said revealed substrate.

4,191,570
PROCESS FOR HEAT TREATING LITHOGRAPHIC PRINTING PLATES

Hans-Peter Herting, Osterode, and Wolfgang J. Rebner, Herzberg, both of Fed. Rep. of Germany, assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,835

Int. Cl.² G03F *7/02*

U.S. Cl. 430—302 **10 Claims**

1. A process for producing a lithographic printing plate comprising exposing and developing a light-sensitive printing plate; coating the exposed and developed surface of said plate with an aqueous solution of a compound selected from the group consisting of condensed aryl sulfonates or the metal salts thereof; drying said coating and then subjecting said treated plate to a burning-in without removal of said coating composition from said surface.

4,191,571
METHOD OF PATTERN FORMING IN A PHOTOSENSITIVE COMPOSITION HAVING A RECIPROCITY LAW FAILING PROPERTY

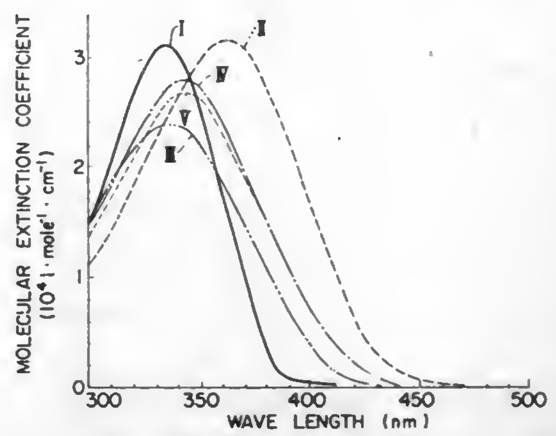
Saburo Nonogaki, Tokyo; Takahiro Kohashi, and Yoshio Hatano, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 571,483, Apr. 24, 1975, abandoned. This application Feb. 7, 1977, Ser. No. 766,348

Claims priority, application Japan, Apr. 26, 1974, 49/46476; Jun. 28, 1974, 49/73328

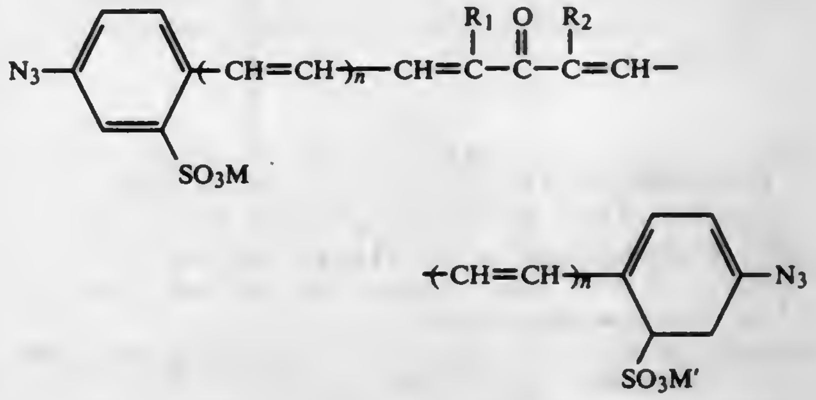
Int. Cl.² G03C *5/00, 1/68*

U.S. Cl. 430—335 **11 Claims**



1. A process for forming a pattern which comprises the steps of:

(a) preparing a photoresist layer consisting essentially of at least one water-soluble polymer selected from the group consisting of poly-N-vinylpyrrolidone, copolymers of N-vinylpyrrolidone and acrylamide-diacetoneacrylamide copolymer and a water-soluble aromatic bisazide compound on a surface of a substrate for the desired pattern, said water-soluble aromatic bisazide compound being at least one compound represented by the following general formula:



wherein n is 1 or 0, R_1 represents a hydrogen atom or an alkyl group, R_2 represents a hydrogen atom or an alkyl group, R_1 and R_2 may be linked with each other at their terminals to form a cyclic ketone structure in the molecule, M represents an atom or atomic group capable of being converted to a cation in an aqueous solution, and M' represents an atom or atomic group capable of being converted to a cation in an aqueous solution, said photoresist layer consisting of 70 to 98% by weight of said water-soluble polymer and 2 to 30% by weight of said water-soluble aromatic bisazide compound based on the total amount of photoresist,

(b) applying light to said photoresist layer by passing the light through a mask having said pattern, in the presence of an oxygen containing gas and with the Schwarzschild's constant p being in the range of greater than 0 and smaller than 0.76, to harden the photoresist layer at a surface area substantially equal to or smaller than that of apertures of said mask through which beams pass, and

(c) developing the light-applied photoresist layer to form the pattern having a surface area substantially equal to or smaller than that of apertures of said mask through which beams pass.

4,191,572

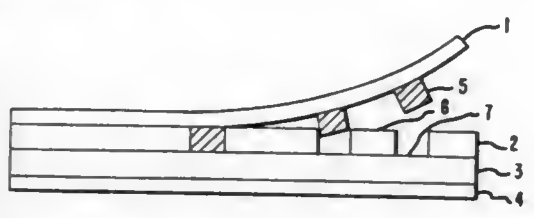
PROCESS FOR IMAGE REPRODUCTION USING MULTILAYER PHOTOSENSITIVE ELEMENT WITH SOLVENT-SOLUBLE LAYER

Abraham B. Cohen, Springfield, and Roxy Ni Fan, East Brunswick, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 747,026, Dec. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 583,455, Jun. 3, 1975, abandoned. This application Jun. 12, 1978, Ser. No. 915,062

Int. Cl.^{2} G03C *5/00*

U.S. Cl. 430—260 **19 Claims**



1. An image reproduction process comprising

(1) exposing imagewise to actinic radiation a peel apart photosensitive element consisting essentially of, in order, from top to bottom (a) a strippable cover sheet, (b) a photoadherent layer comprising material with ethylenically unsaturated or benzophenone type groups, (c) a nonphotosensitive solvent soluble, polymeric contiguous layer, and (d) optionally an auxiliary layer, and (e) a sheet support,

(2) stripping the cover sheet from the element with only the exposed or unexposed areas of the photoadherent layer adhered to the cover sheet while the other areas of said photoadherent layer remain on said contiguous layer without transfer to the cover sheet leaving an image of uncovered contiguous layer on the element, and

(3) washing out the uncovered areas of the contiguous layer from which areas of the photoadherent layer were removed.

4,191,573

PHOTOSENSITIVE POSITIVE IMAGE FORMING PROCESS WITH TWO PHOTO-SENSITIVE LAYERS

Tadao Toyama, Shizuoka, and Masayuki Iwasaki, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 621,104, Oct. 9, 1975, abandoned. This application Mar. 17, 1978, Ser. No. 887,911

Claims priority, application Japan, Oct. 9, 1974, 49/116907

Int. Cl.^{2} G03F *7/08;* **G03C** *1/54*

U.S. Cl. 430—166 **12 Claims**

1. A process for forming positive images which consists essentially of imagewise exposing to actinic light a photosensitive image forming element comprising:

a support;

a first photosensitive layer comprising an o-quinone diazide compound provided on said support; and

a second photosensitive layer which is substantially alkali insoluble directly overcoated on said first photosensitive layer, said second photosensitive layer being a homogeneous film rendered alkali-soluble upon exposure to actinic light and consisting essentially of in quantities sufficient to form an image upon development, as separate ingredients;

(i) an aryl azide compound having one or two aryl groups and at least one alkali-soluble group selected from the group consisting of a sulfonic acid group, a carboxylic acid group, and a hydroxyl group, and the alkali metal salts thereof in its molecular structure, and

(ii) a polyamide soluble in a lower alcohol, said polyamide and azide compound capable of co-acting to render areas exposed with actinic light alkali-soluble while unexposed area remain alkali-insoluble, and thereafter selectively dissolving said exposed areas in an alkaline medium.

4,191,574

PROCESS FOR FORMING A PHOTOGRAPHIC MAGENTA DYE IMAGE

Takaya Endo; Shui Sato; Shoji Kikuchi; Tamotsu Kozima; Tugumoto Usui; Hiroyuki Imamura, and Koichi Takabe, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

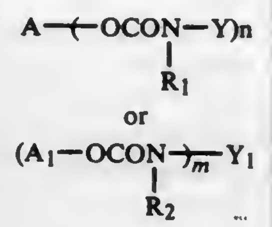
Continuation of Ser. No. 659,025, Feb. 18, 1976, abandoned. This application Aug. 2, 1978, Ser. No. 930,315

Claims priority, application Japan, Feb. 21, 1975, 50/21607

Int. Cl.^{2} G03C *7/00, 1/40*

U.S. Cl. 430—387 **11 Claims**

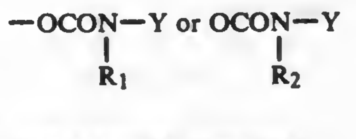
1. A process for forming a photographic magenta dye image which comprises contacting exposed silver halide with a color developing agent in the presence of a 2-equivalent magenta coupler represented by the following formula:



$$A-\!\left(\mathrm{OCO}\underset{\substack{|\\ R_1}}{\mathrm{N}}-Y\right)_n \quad \text{or} \quad \left(A_1-\mathrm{OCO}\underset{\substack{|\\ R_2}}{\mathrm{N}}\right)_m\!-Y_1$$

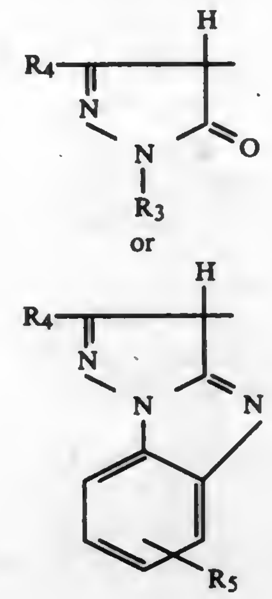
wherein R_1 and R_2 are individually hydrogen or a monovalent organic group selected from the class consisting of acyl and aliphatic hydrocarbon radicals which can have at least one substituent selected from the class consisting of halogen, nitro, cyano, aryl, alkoxy, aryloxycarboxy, alkoxycarbonyl, aryloxycarbonyl, sulfo, sulfamoyl, carbamoyl, acylamino, ureido, arylsulfonyloxy, oxo, alkyl, aryloxy, carboxy, alkylcarbamoyl, arylcarbamoyl, alkylsulfonamido, and arylsulfonamido; Y is a monovalent organic radical selected from the class consisting of an aromatic hydrocarbon residue, an aliphatic hydrocarbon residue, a heterocyclic residue, acyl, thioalkyl, and —SO_2X wherein X is an aliphatic hydrocarbon residue, all of which can have at least one substituent selected from the class consisting of halogen, nitro, cyano, aryl, alkoxy, aryloxycarboxy, alkoxycarbonyl, aryloxycarbonyl, sulfo, sulfamoyl, carbamoyl, acylamino, ureido, arylsulfonyloxy, oxo, alkyl, aryloxy, carboxy, alkylcarbamoyl, arylcarbamoyl, alkylsulfonamido, and arylsulfonamido, the heterocyclic residue being selected from the class consisting of pyridyl, quinolyl, furyl, benzothiazolyl, oxazolyl, imidazolyl, and naphthoxazolyl; Y_1 is an m-valent organic radical selected from the class consisting of m-valent residues of an aliphatic hydrocarbon residue, an aromatic hydrocarbon residue and a heterocyclic residue, all of said residues can have at least one substituent selected from the class consisting of halogen, nitro, cyano, aryl, alkoxy, aryloxycarboxy, alkoxycarbonyl, aryloxycarbonyl, sulfo, sulfamoyl, carbamoyl, acylamino, ureido, arylsulfonyloxy, oxo, alkyl, aryloxy, carboxy, alkylcarbamoyl, arylcarbamoyl, alkylsulfonamido, and arylsulfonamido, the heterocyclic residue being selected from the group consisting of residues of pyridine, quinoline, furan, benzothiazoline, oxazoline, imidazoline and naphthoxazoline; and A and A_1 are respectively n-valent and

monovalent residues of a magenta coupler which are represented by the following formula when the split-off groups



$$-\mathrm{OCO}\underset{\substack{|\\ R_1}}{\mathrm{N}}-Y \text{ or } \mathrm{OCO}\underset{\substack{|\\ R_2}}{\mathrm{N}}-Y$$

are removed from the magenta couplers:



wherein R_3 is selected from the group consisting of hydrogen, alkenyl, alkyl, which contains up to 50 carbon atoms, a cycloalkyl group which can have at least one substituent selected from halogen, nitro, cyano, aryl, alkoxy, aryloxycarbonyl, alkoxycarbonyl, aryloxycarboxy, sulfo, sulfamoyl, carbamoyl, acylamino, ureido, heterocyclic, arylsulfonyloxy and oxo, aryl which can have at least one substituent selected from halogen, alkyl, alkoxy, aryloxy, carboxy, alkoxycarbonyl, acylamino, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, arylcarbamoyl, alkylsulfonamido, arylsulfonamido, cyano and nitro, a heterocyclic radical selected from the class consisting of pyridyl, quinolyl, furyl, benzothiazolyl, oxazolyl, imidazolyl and naphthoxazolyl wherein said radicals can have at least one substituent selected from the class consisting of halogen, alkyl, alkoxy, aryloxy, carboxy, alkoxycarbonyl, acylamino, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, arylcarbamoyl, alkylsulfonamido, arylsulfonamido, cyano and nitro, carbamoyl and thiocarbamoyl; R_4 is alkyl having up to 50 carbon atoms which can have at least one substituent selected from halogen, nitro, cyano, aryl, alkoxy, aryloxycarbonyl, alkoxycarbonyl, aryloxycarboxy, sulfo, sulfamoyl, carbamoyl, acylamino, ureido, heterocyclic, arylsulfonyloxy and oxo, aryl which can have at least one substituent selected from halogen, alkyl, alkoxy, aryloxy, carboxy, alkoxycarbonyl, acylamino, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, arylcarbamoyl, alkylsulfonamido, arylsulfonamido, cyano and nitro, a heterocyclic radical selected from the class consisting of pyridyl, quinolyl, furyl, benzothiazolyl, oxazolyl, imidazolyl and naphthoxazolyl wherein said radicals can have at least one substituent selected from the class consisting of halogen, alkyl, alkoxy, aryloxy, carboxy, alkoxycarbonyl, acylamino, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, arylcarbamoyl, alkylsulfonamido, arylsulfonamido, cyano and nitro, alkoxycarbonyl, aryloxycarbonyl, aralyloxycarbonyl, an alkylthio group, an arylthio group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an amino group, a carboxy group, an amido radical, an N-alkylacylamino radical, an N-arylacylamino radical, an ureido radical, a thioureido radical, a quanidino radical a piperidino radical or a pyroridino radical; and R_5 is one to four monovalent radicals selected from a hydrogen atom, a halogen atom, an alkyl radical, an alkoxy radical, an amido radical, a carbamoyl radical and a sulfamoyl radical, and m and n are individually a positive integer.

4,191,575

TWO-STEP PHOTOGRAPHIC PROCESSING OF BLACK AND WHITE IMAGES WHICH ENHANCES THE IMAGES BY CONTROLLED BLEACHING DURING FIXING IMMEDIATELY FOLLOWING DEVELOPMENT AND WHICH PRODUCES BLACK AND WHITE IMAGES WITH REDUCED DENSITY IN LOW DENSITY AREAS

Donald J. Sykes, Upper Saddle River, and Louis D. Pratt, North Bergen, both of N.J., assignors to Philip A. Hunt Chemical Corp., Palisades Park, N.J.

Continuation of Ser. No. 312,828, Dec. 7, 1972, abandoned. This application Aug. 3, 1976, Ser. No. 711,139

Int. Cl.^{2} G03C *5/32, 5/30*

U.S. Cl. 430—418 **8 Claims**

1. A two-step method of photographic processing for non-lithographic black and white images

- (I) in which as the first step a latent image in an exposed black and white silver halide emulsion is developed in a developing first bath to form a black and white silver image and
- (II) in which as the second step the developed emulsion is fixed in an aqueous fixing second bath containing a thiosulfate salt as a fixing agent,

wherein the improvement comprises

- (III) enhancing the developed black and white silver image by controlled bleaching
  - (a) during fixing
    - (i) by including in the second bath an amount of a chelated salt
      - (1) of a metal having plural valance states selected from the group consisting of iron and cobalt,
      - (2) with a chelating acid selected from the group consisting of aminopolycarboxylic acids, polyaminocarboxylic acids and phosphonic acids,
      - (3) the metal being in its higher valance state,
    - (ii) sufficient to greatly reduce the silver in low density areas of the developed black and white silver image
    - (iii) while not substantially affecting areas of heavier density,
    - (iv) and also including in the second bath an agent for accelerating bleaching said agent being selected from the group consisting of thiourea, substituted thioureas, cyclic thioureas and polyethylene glycol.

4,191,576

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC ELEMENT CONTAINING UV ABSORBER

Yoshiharu Fuseya; Atsuo Inoue; Hiroshi Hara, and Tadashi Ikeda, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

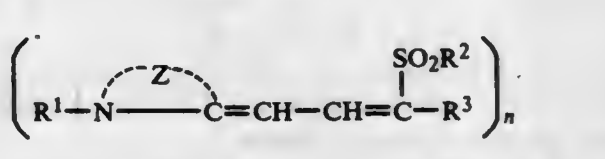
Filed Apr. 26, 1978, Ser. No. 900,376

Claims priority, application Japan, Apr. 27, 1977, 52-48953

Int. Cl.^{2} G03C *1/84*

U.S. Cl. 430—512 V **40 Claims**

1. A light-sensitive silver halide photographic element comprising a support having thereon at least one light-sensitive silver halide emulsion layer, wherein said silver halide photographic element comprises, in at least one layer coated thereon, which may be said light-sensitive emulsion layer, at least one water-insoluble compound represented by the following general formula (I):



(I)

wherein Z represents the atoms necessary to complete an oxazolidine ringe, a pyrrolidine ring or a thiazolidine ring; R^1 and R^2, which may be the same or different, each represents an alkyl group or an aryl group; R^3 represents a —COR^4 group or a —CO_2R^5 group; R^4 represents an alkyl group or an aryl group; R^5 represents a hydrogen atom, an alkyl group or an aryl group; and n is 1 or 2 and when n is 2, at least one of R^1, R^4 and R^5 represents a divalent alkylene group, a divalent arylene group or a divalent group of alkylene and arylene moieties to form a dimer, wherein if the photographic element is a positive film or layer the at least one compound of general formula I(I) is present in an amount of about 50 to about 1,500 mg/m^2 and

if the photographic element is a negative film the at least one compound of general formula (I) is present in an amount of about 5 to about 650 mg/m^2.

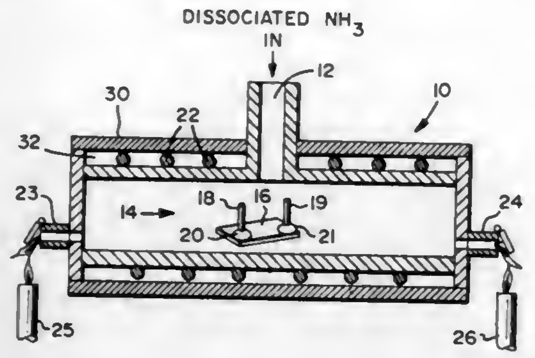
4,191,577
BRAZING SLURRY

William E. Buescher, Seneca Falls, N.Y.; Frederick J. Roberto, Emporium, and Isabelle M. Sobierajski, St. Marys, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 26, 1978, Ser. No. 955,088

Int. Cl.² C23C *1/12;* **B23K** *35/34*

U.S. Cl. 106—1.12 **4 Claims**



1. A brazing composition comprising, by weight, a substantially homogeneous suspension of about 21–22% fine particle metallic tungsten; about 7–8% calcium oxide; about 5–6% silicon dioxide; about 5–6% titanium dioxide; about 3–4% aluminum oxide; and about 55.5–57.5% of an organic binder.

4,191,578
RELEASE AGENTS

Donald S. Carter, Indianapolis, Ind., assignor to Gene Conreaux & Co., Inc., Indianapolis, Ind.

Filed Nov. 2, 1977, Ser. No. 847,829

Int. Cl.² B28B *7/36*

U.S. Cl. 106—1.13 **15 Claims**

1. A release agent used to separate patterns and core boxes from foundry molds and cores consisting essentially of a comminuted material selected from the group consisting of aluminum, copper, brass, bronze, graphite, talc and mica, or mixtures thereof, a non-thermosetting organosiloxane polymer fluid to promote adherence of the comminuted material to a pattern or core box, and a solvent vehicle from the group consisting of non-propellant grade chlorocarbon of fluorocarbon solvents which is substantially non-reactive with the comminuted material.

4,191,579
ANTIFOULING PAINT COMPRISING A COPOLYMER CONTAINING ORGANO TIN SALT AND A PIGMENT HAVING A COMPONENT WHICH REACTS WITH SEA WATER AND ANOTHER COMPONENT WHICH DOES NOT REACT WITH SEA WATER

George Hails, Whickham, and John D. Symonds, Witton Gilbert, both of England, assignors to The International Paint Company Limited, London, England

Filed Oct. 12, 1977, Ser. No. 841,535

Claims priority, application United Kingdom, Oct. 18, 1976, 43172/76

Int. Cl.² C08L *33/02*

U.S. Cl. 106—15 R **8 Claims**

1. An anti-fouling paint for ships' hulls comprising:

(a) a film-forming copolymer containing 55 to 70 percent by weight of units of at least one triorgano tin salt of an olefinically unsaturated carboxylic acid, the balance of the copolymer being units of at least one olefinically unsaturated comonomer, and

(b) a substantially water-insoluble pigment component, part of which comprises a cuprous pigment selected from the group consisting of cuprous thiocyanate and cuprous oxide capable of reacting with sea water to form a water-soluble metal compound and part of which comprises an unreactive pigment which does not react with or dissolve in sea water, the ratio of cuprous pigment to unreactive pigment being 60:40 to 90:10 by volume.

4,191,580
STABLE DISPERSIONS CONTAINING TRIALKYLTIN FLUORIDES

Charles B. Beiter, Carteret, and Leroy A. Hafner, Edison, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Continuation-in-part of Ser. No. 763,406, Jan. 28, 1977, Pat. No. 4,153,574. This application Feb. 1, 1978, Ser. No. 874,232

Int. Cl.² C09D *5/14*

U.S. Cl. 106—16 **8 Claims**

1. A stable thixotropic dispersion, said dispersion consisting essentially of:

(a) from 40 to 70% by weight of a trialkyltin fluoride of the formula R_3SnF wherein R is alkyl containing from 2 to 12 carbon atoms;

(b) from 20 to 60% by weight of at least one organic liquid having a kauri butanol value of 96 or less and selected from the group consisting of alcohols containing from 4 to 12 carbon atoms, aliphatic hydrocarbons containing from 5 to 12 carbon atoms and aromatic hydrocarbons;

(c) from 0.5 to 10% by weight of a compound selected from the group consisting of:

(1) the lithium and sodium salts of p-toluenesulfonic acid and phenylphosphonic acid,

(2) nitric acid salts of calcium, magnesium, sodium, lithium, iron and zinc,

(3) salts of p-toluenesulfonic or phenylphosphonic acid and an element selected from the group consisting of magnesium, calcium, strontium and barium,

(4) the chlorides of metallic elements selected from the group consisting of divalent tin, divalent copper, silver, gold and the elements in groups II-A, II-B, IV-B, V-A, VI-B, VII-B and VIII of the periodic table and

(5) carboxylic acid salts of lead, manganese(ous), zirconium, barium and strontium, wherein said carboxylic acid is selected from the group consisting of acetic, propionic, butyric, hexoic, heptanoic, cyclohexanecarboxylic and benzoic acids.

6. A coating composition for inhibiting the attachment and growth of fouling organisms, said composition consisting essentially of from 1.0 to 20.0% by weight of the trialkyltin fluoride containing dispersion as described in claim **1**, from 10 to 50% by weight of at least one pigment, from 10 to 50% by weight of at least one film-forming material selected from the group consisting of vinyl chloride homopolymers and copolymers, rosin and chlorinated synthetic rubbers, from 20 to 60% by weight of at least one organic solvent and from 0 to 5% by weight of a bentonite clay.

4,191,581
AQUEOUS-ALCOHOLIC, FOAM-GROWTH-CONTROLLING PRINTING INK COMPOSITIONS

Artimus C. Hamilton, Wilmington, Del., assignor to Congoleum Corporation, Kearny, N.J.

Division of Ser. No. 685,868, May 12, 1976. This application Jul. 7, 1977, Ser. No. 813,782

Int. Cl.² C09D *11/00*

U.S. Cl. 106—20 **8 Claims**

1. An aqueous-alcoholic, foam-growth-controlling printing

ink composition having a pH of from about 8 to about 12 of use in the chemical embossing of heat-foamable and expandable resinous materials, said aqueous-alcoholic, foam-growth-controlling printing ink composition being capable of being applied to the surface of a substrate comprising gelled, heat-foamable and expandable resinous materials containing a heat decomposable foaming or blowing agent comprising:

(1) from about 1% to about 15% of a foam-growth-controlling chemical agent which is soluble or dispersible in said aqueous-alcoholic, foam-growth-controlling printing ink composition and sufficiently stable therein as to retain its foam-growth-controlling properties, said foam-growth-controlling chemical agent being selected from the group consisting of benzotriazole, aminotriazoles, and mixtures of such triazoles and being capable of controlling the decomposition of said heat-decomposable foaming or blowing agent included in said substrate to which it is applied when said heat-decomposable foaming or blowing agent is raised to normally heat-decomposable temperatures; (2) from about 1% to about 9% of a water-soluble or water-dispersible alcohol having from 1 to 6 carbon atoms; (3) from about 1% to about 11% of a pH controlling or buffering agent capable of creating or maintaining the pH of said aqueous-alcoholic, foam-growth-controlling printing ink composition in the range of from about 8 to about 12; (4) from about 30% to about 75% of an aqueous printing ink composition; and (5) from about 10% to about 40% of added water, all percentages being by weight.

4,191,582
COMPOSITION CONTAINING POLYMERIC ALKOXYSILANE AND REFRACTORY MATERIAL AND METHOD FOR PREPARING A MOLD BASED THEREON

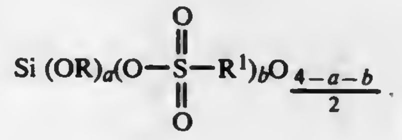
Walter L. Magee, Jr., Danbury, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 786,720, Apr. 11, 1978, abandoned, which is a division of Ser. No. 756,310, Jan. 3, 1977, Pat. No. 4,042,612. This application Aug. 21, 1978, Ser. No. 935,449

Int. Cl.² B28B *7/34*

U.S. Cl. 106—38.2 **12 Claims**

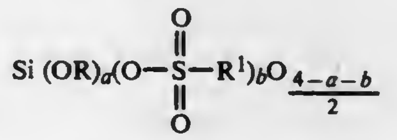
1. In the preparation of a mold from a refractory material and a binder by admixing comminuted refractory material and a binder with a solvent and then applying the resulting mixture to a pattern and allowing it to set, the improvement which comprises using as said binder a polymeric alkoxysilane having the average formula:



$$\mathrm{Si}\,(\mathrm{OR})_a(\mathrm{O}-\underset{\underset{\mathrm{O}}{\|}}{\overset{\overset{\mathrm{O}}{\|}}{\mathrm{S}}}-\mathrm{R}^1)_b\mathrm{O}_{\frac{4-a-b}{2}}.$$

wherein each R is an independently selected hydrocarbon radical or hydrocarbon ether radical free of aliphatic unsaturation, each R^1 is an independently selected hydrocarbon radical free of aliphatic unsaturation, a has a value from 1 to 3 and b has a value from 0.0001 to 1.0.

7. A composition comprising a refractory material and a polymeric alkoxysilane having the average formula



$$\mathrm{Si}\,(\mathrm{OR})_a(\mathrm{O}-\underset{\underset{\mathrm{O}}{\|}}{\overset{\overset{\mathrm{O}}{\|}}{\mathrm{S}}}-\mathrm{R}^1)_b\mathrm{O}_{\frac{4-a-b}{2}}$$

where each R is an independently selected hydrocarbon radical or hydrocarbon ether radical free of aliphatic unsaturation, each R^1 is an independently selected hydrocarbon radical free of aliphatic unsaturation, a has a value from 1 to 3 and b has a value from 0.0001 to 1.0.

4,191,583
MANGANESE CORDIERITE GLASS-CERAMICS

William H. Armistead, and Irwin M. Lachman, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 899,369, Apr. 24, 1978, abandoned. This application Sep. 22, 1978, Ser. No. 944,856

Int. Cl.² C03C *3/22*

U.S. Cl. 106—39.6 **3 Claims**

1. An impervious sintered glass-ceramic product having a cordierite crystal structure and a composition within the range 1.7–2.4 RO.1.9–2.4 Al_2O_3.4.5–5.2 SiO_2 wherein RO comprises from 10–75 mole percent MgO and from 25–90 mole percent MnO.

4,191,584
CEMENTITIOUS COMPOSITIONS

David Berry, Hull, England, assignor to BP Chemicals Limited, London, England

Filed Apr. 27, 1978, Ser. No. 900,754

Claims priority, application United Kingdom, May 17, 1977, 20676/77

Int. Cl.² C04B *7/35*

U.S. Cl. 106—90 **7 Claims**

1. A cementitious composition comprising a cement mix and an aqueous solution of a calcium polyformate in which the molar ratio of calcium cation to the formate anion is between 1:3 and 1:8.

4,191,585
ALKALI RESISTANT GLASS ARTICLE AND METHOD OF PREPARATION

Karlis L. Jaunarajs, Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jun. 26, 1978, Ser. No. 918,976

Int. Cl.² C04B *31/06*

U.S. Cl. 106—99 **20 Claims**

1. A glass fiber article having enhanced alkali resistance which comprises glass fiber coated with zinc stearate, said zinc stearate being present in an amount of from 1 to 50 percent by weight of coated fiber.

4,191,586
METHOD AND APPARATUS FOR REDUCING THE CALORIFIC CONSUMPTION OF A CEMENT PRODUCING PLANT

Francis Dambrine, Marcq en Baroeul, France, assignor to Fives-Cail Babcock, Paris, France

Continuation-in-part of Ser. No. 735,426, Oct. 26, 1976, abandoned. This application Apr. 21, 1978, Ser. No. 898,549

Claims priority, application France, Oct. 23, 1975, 75 32484

Int. Cl.² C04B *7/40*

U.S. Cl. 106—100 **3 Claims**

1. A method of reducing the calorific consumption of an installation for producing cement from dry raw material in a rotary tubular kiln, comprising the steps of

(a) heating the raw material in the kiln by hot gases therein to convert the raw material in to a clinker product,

(b) recovering the hot gases from the kiln,

(c) preheating a major portion of the raw material by the recovered hot gases,

(d) introducing the preheated major raw material portion into an inlet end of the kiln for heating in the kiln,

(e) removing the clinker product from a discharge end of the kiln,

(f) delivering fresh air to the removed clinker product to cool the same whereby the fresh air is heated by contact with the clinker product,

(g) removing a portion of the heated fresh air at a temperature of the order of 900° C. to 1000° C.

(h) bringing the removed portion of the fresh air heated to said temperature into contact with a minor fraction of the raw material whereby said heated fresh air portion is

cooled in heat exchange with the minor raw material fraction and the minor raw material fraction is heated and at least partially calcined,
(i) introducing the at least partially calcined minor raw material fraction into the kiln, and
(j) delivering at least a portion of said cooled air with the fresh air to the clinker product removed from the kiln.

4,191,587
PREPARATION OF HYDROPHOBIC SILICON DIOXIDE

Günter Kratel; Günter Stohr, both of Durach, and Hans Katzer, Munich, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,537

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754484

Int. Cl.^{2} C09C *3/12;* **C04B** *31/44*

U.S. Cl. 106—308 Q **2 Claims**

1. A process for the preparation of hydrophobic silicon dioxide which comprises treating silicon dioxide having a surface area of at least 50 m^2/g with at least one organosilicon compound having from 2 to 4 silicon atoms per molecule, in which at least 2 hydrocarbon radicals are bonded to each silicon atom and the silicon valences which are not satisfied by hydrocarbon radicals are satisfied by siloxane oxygen atoms, and at least on tin compound having radicals selected from the group consisting of Sn-bonded halogen, Sn-bonded organic radicals and mixtures thereof.

4,191,588
METHOD OF CLEANING FOULED HEAT EXCHANGERS AND OTHER EQUIPMENT

Donald A. Keyworth, Houston, and Jerome R. Sudduth, Pasadena, both of Tex., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Mar. 2, 1979, Ser. No. 16,855

Int. Cl.^{2} B08B *3/08*

U.S. Cl. 134—2 **10 Claims**

1. The process for cleaning heat exchangers and other processing equipment whose surfaces have become fouled with sludge deposits that contain a major amount of cuprous halide that comprises contacting the portions of the equipment that contain said sludge deposits with a cleaning solution that contains from 5% to 35% by weight of an alkyl aluminum halide selected from the group consisting of alkyl aluminum dihalides of the formula $AlRX_2$ and alkyl aluminum sesquihalides of the formula $R_3Al_2X_3$, wherein R is alkyl having 1 to 6 carbon atoms and X is chlorine, bromine, or fluorine, in a hydrocarbon solvent at a temperature in the range of 0° C. to 50° C. until substantially all of the deposited sludge has been loosened or removed and washing said portions of the equipment with a hydrocarbon solvent at a temperature in the range of 10° C. to 70° C. to remove loosened sludge and residual cleaning solution.

4,191,589
METHOD AND APPARATUS FOR CLEANING CARPETS AND SURFACES USING CLEANING FLUID

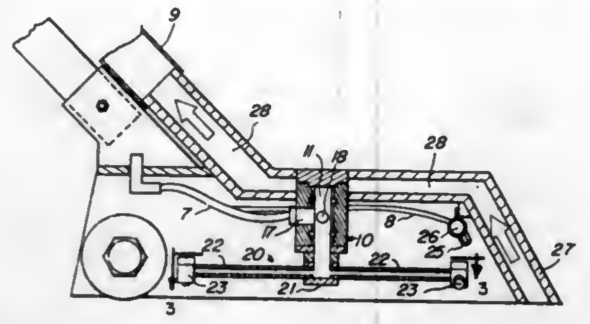
Kenneth F. Halls, and Robert R. Gibbons, both of Denver, Colo., assignors to The John J. Sundheim Family Estate, Englewood, Colo., a part interest

Filed Apr. 25, 1977, Ser. No. 790,592

Int. Cl.^{2} B08B *5/04*

U.S. Cl. 134—21 **2 Claims**

1. A method for cleaning hard and soft surfaces such as carpets, floors, streets, and the like by using three high velocity streams of cleaning fluid from a source under high pressure, said method comprising the steps of:
(a) placing the source of cleaning fluid under high pressure of about 200 to about 1,200 pounds per square inch,
(b) forming three high velocity streams of about 150 to about 400 feet per second of cleaning fluid by exposing said high pressure source of cleaning fluid to ambient pressure through three nozzle means;
(c) mounting each of said three nozzle means for rotation about an axis substantially perpendicular to the surface to be cleaned and at a distance from said respective axis,
(d) directing two of said nozzle means toward the surface to be cleaned at an inclined angle to said surface whereby said cleaning fluid under high pressure from said source issues in at least one stream from each of said two of said nozzle means toward said surface at an inclined angle thereto creating respective reaction forces on each of said two of said nozzle means which propel said three nozzle means about the respective axis of rotation in a first rotational direction at a high velocity relative to said surface,
(e) directing the third of said nozzle means toward said surface at an inclined angle thereto in a direction creating reaction forces generally opposite to and substantially less than the combined reaction forces of said two of said nozzle means to effect a superior cleaning action,
(f) moving the axis of rotation of each respective nozzle means relative to said surface, and,
(g) subjecting the surface to be cleaned to pressure less than ambient.



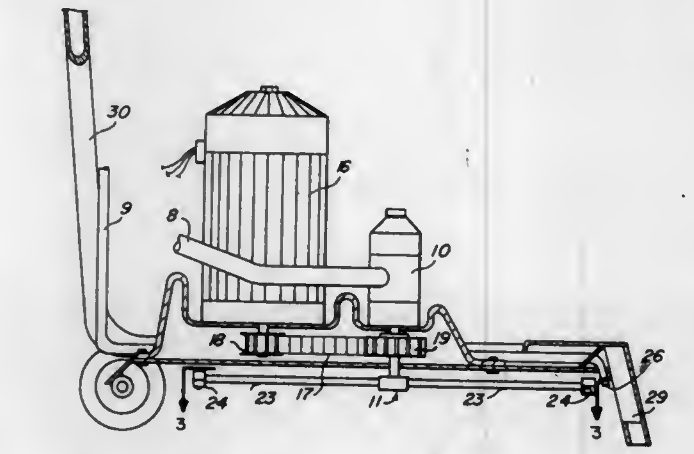
4,191,590
METHOD AND APPARATUS FOR CLEANING CARPETS AND SURFACES USING CLEANING FLUID

John J. Sundheim, Englewood, Colo., assignor to The John J. Sundheim Family Estate, Englewood, Colo.

Filed Apr. 25, 1977, Ser. No. 790,593

Int. Cl.^{2} B08B *5/04*

U.S. Cl. 134—21 **31 Claims**



1. A method for cleaning hard and soft surfaces such as carpets, floors, streets, and the like by using a plurality of high velocity streams of cleaning fluid from a source under high pressure, the method comprising the steps of:
(a) forming a plurality of high velocity streams of cleaning fluid by exposing said source of cleaning fluid under high pressure to ambient pressure through a plurality of nozzle means,
(b) mounting each of said plurality of nozzle means for rotation about an axis substantially perpendicular to the surface to be cleaned,
(c) directing each of said high velocity streams of cleaning fluid through the respective nozzle means against the surface to be cleaned at an inclined angle to said surface, and
(d) utilizing power means to move the nozzle means of each and every respective high velocity stream of cleaning fluid at a high angular velocity about said axis of rotation in a direction so that the velocity imparted to each respective stream of cleaning fluid by the respective moving of the nozzle means adds to the existing velocity to effect increased cleaning efficiency of the respective directed stream of step c.

16. A method for cleaning hard and soft surfaces such as carpets, floors, streets, concrete surfaces, tennis courts, and the like by using at least two high velocity streams of cleaning fluid from a source under pressure, said method comprising the steps of:
(a) placing the source of cleaning fluid under high pressure,
(b) forming at least two high velocity streams of cleaning fluid with different flow rates by exposing said source of cleaning fluid under high pressure to ambient pressure through at least two different openings located at least two distinct locations from an axis, said axis being substantially perpendicular to said surface, each of said high velocity streams having a head portion where the cleaning fluid under high pressure from the source meets ambient pressure at the respective opening,
(c) directing each of said high velocity streams of cleaning fluid against the surface to be cleaned at an inclined angle to said surface, each of said streams being directed against different areas of the surface, the area against which said stream with the greater flow rate is directed being spaced farther from said axis than the area against which the stream with the lesser flow rate is directed,
(d) moving the head portion of each high velocity stream of cleaning fluid at a high annular velocity about said axis, and,
(e) moving the axis of rotation relative to the surface to be cleaned whereby a section of the surface to be cleaned is first struck with a first amount of fluid from the stream with the greater flow rate, a lesser amount of fluid from the stream with the lesser flow rate, and then a third amount of fluid from the stream with the greater flow rate, said first and third amounts being equal.

4,191,591
METHOD AND APPARATUS FOR CLEANING A MATRIX OF A MAGNETIC SEPARATOR

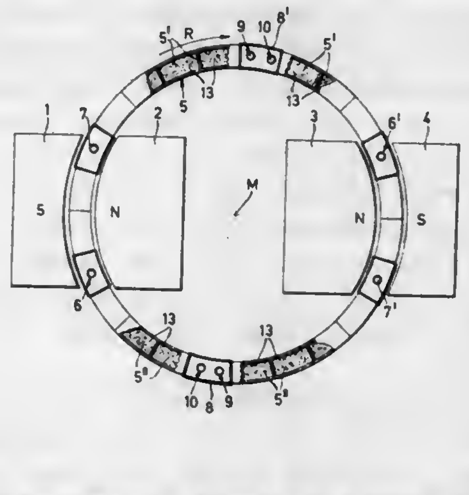
Hans Bender, Leverkusen; Georg Schnabel, Hürth-Fischenich; Gottfried Düren, Cologne, and Wolf Zabel, Seelscheid, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz, Fed. Rep. of Germany

Continuation of Ser. No. 848,645, Nov. 4, 1977, abandoned. This application Dec. 20, 1978, Ser. No. 971,644

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1976, 2650925

Int. Cl.^{2} B08B *7/04;* **B03C** *1/00*

U.S. Cl. 134—25 R **10 Claims**



1. A method for cleaning of magnetic material retained by a ferromagnetic matrix of a magnetic separator comprising the steps of cleaning the matrix to wash free the magnetic material in a high pressure rinse, said cleaning including the steps of first introducing a liquid medium into a cleaning chamber and then separately introducing at a later time a compressed gaseous medium under high pressure and without prior mixing with the liquid medium directly into the cleaning chamber lying in sealed relationship directly above the matrix such that the liquid passing downwardly through the matrix receives additional kinetic energy as a result of the introduction of the high pressure gaseous medium.

4,191,592
GLASSWASHER

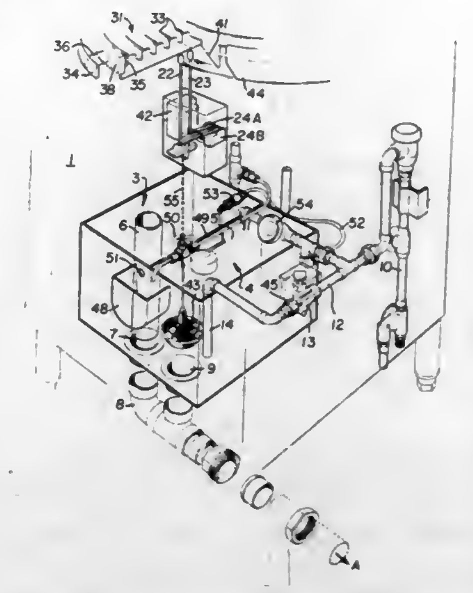
William A. Hansen, 95 Ashland Ave., Winnipeg, Manitoba, and William A. Conly, 720 Vaughn Ave., Selkirk, Manitoba, both of Canada

Filed Jan. 11, 1979, Ser. No. 2,865

Claims priority, application Canada, Jan. 20, 1978, 295366

Int. Cl.^{2} B08B *3/02, 9/08*

U.S. Cl. 134—48 **3 Claims**



1. A glasswashing machine having a glass washing section and a glass rinsing section; a wash tank and a rinse tank communicating with a drain; a washing spray assembly located above said wash tank and a rinsing spray assembly located above the rinse tank; rotatable glass conveyor means located above said assemblies, said conveyor means including driven gear means adapted, when said conveyor means has rotated a predetermined amount, to permit the rinse tank to empty to a predetermined level and then to be refilled with clean water simultaneously with the addition of a sanitizer, said driven gear means being rotatable and including a perimeter gear located beneath said conveyor means, a drive gear meshing with said perimeter gear, first and second radially spaced trip levers depending from said conveyor means and each engagable with an associated plunger adapted to activate an associated micro-switch and solenoid.

4,191,593
DOUBLE HETEROJUNCTION SOLAR CELLS

Jean A. Cacheux, Castanet-Tolosan, France, assignor to Centre National d'Etudes Spatiales, Paris, France

Filed Sep. 26, 1978, Ser. No. 946,084

Claims priority, application France, Sep. 27, 1977, 77 28984

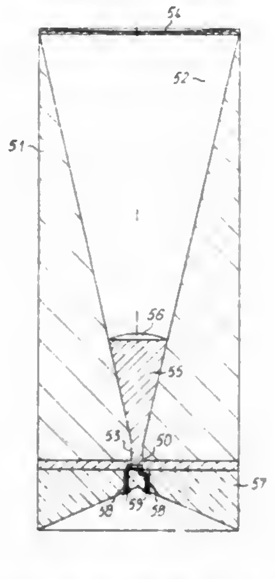
Int. Cl.^{2} H01L *31/06*

U.S. Cl. 136—89 CA **2 Claims**

1. A photovoltaic cell device comprising:
a metal parallelepipedal unit;
a tapering cavity inside said unit having a base coinciding with the upper end of the unit and an apex communicating with the lower end of the unit through a hole;
a Fresnel lens on the base of the cavity;
a transparent antireflecting insert member within said hole and the part of the cavity near the apex thereof, said insert

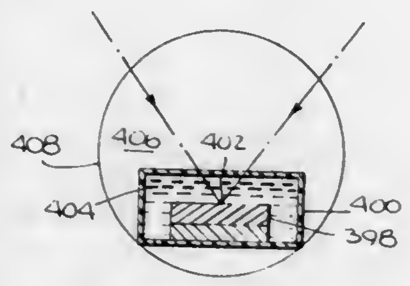
member being terminated at its upper end by a lens shaped part; and

against said hole a photovoltaic cell comprising a heterojunction between a first layer of $Ga_{1-x}Al_xAs$ of p-type conductivity and a second layer of GaAs of n-type conductivity, x varying from 0 at the junction of the first and second layers to substantially 0.9 at the outer face of the first layer; a homojunction between a third layer of Ge of p-type conductivity and a fourth layer of Ge of n-type conductivity; and a tunnel diode formed by a heavily doped part of the second layer and a heavily doped part of the third layer which are in contact therebetween.



4,191,594
SOLAR ENERGY CONVERSION

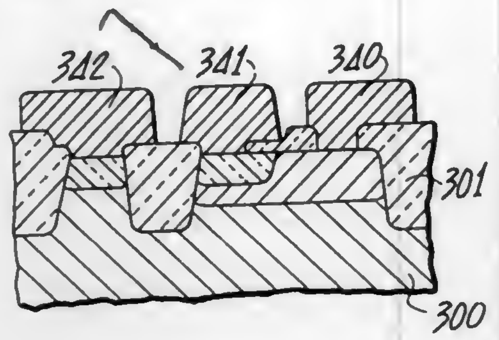
Virgil Stark, 936 Fifth Ave., New York, N.Y. 10021; Alexandre Vayda, Lausanne, Switzerland, and Paul Rousset, Cannes, France, assignors to Virgil Stark, New York, N.Y.
Division of Ser. No. 746,065, Nov. 30, 1976, Pat. No. 4,134,393. This application Dec. 30, 1977, Ser. No. 866,068
Claims priority, application France, Jul. 9, 1976, 76 20986; Oct. 8, 1976, 76 30248
Int. Cl.^{2} H01L *31/04*
U.S. Cl. 136—89 PC 14 Claims

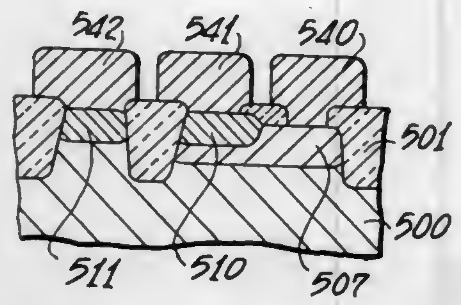


1. Apparatus for converting solar energy to electrical energy cmprising elongated collector means including an inner elongated conduit adapted to pass a fluid therethrough and an outer elongated conduit adapted to pass a fluid therethrough enclosing said inner conduit, said outer and inner conduits having substantially parallel axes and said outer and inner conduits being transparent at least in part with the transparent parts of said outer and inner conduits being in alignment, said apparatus further comprising elongated lens means having an axis extending substantially parallel to said axes of said outer and inner conduits and having an elongated focus in which the solar energy may be concentrated, said lens means and said outer and inner conduits being positioned so that the elongated focus of said lens means is adapted to extend substantially within and substantially along the length of said inner conduit, and photoelectric means disposed in said inner conduit in a heat exchanging relationship with the fluid adapted to be passed through said inner conduit, said photoelectric means being in alignment with the transparent parts of said outer and inner conduits and being adapted to receive concentrated solar energy passing through the transparent parts of said outer and inner conduits.

4,191,595
METHOD OF MANUFACTURING PN JUNCTIONS IN A SEMICONDUCTOR REGION TO REACH AN ISOLATION LAYER WITHOUT EXPOSING THE SEMICONDUCTOR REGION SURFACE

Kunio Aomura; Fujiki Tokuyoshi, and Masahiko Nakamae, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Sep. 21, 1977, Ser. No. 835,328
Claims priority, application Japan, Sep. 22, 1976, 51/114052
Int. Cl.^{2} H01L *29/72, 21/225*
U.S. Cl. 148—1.5 6 Claims





1. A method of manufacturing a semiconductor device, comprising the steps of,

preparing a semiconductor substrate of a first conductivity type,

forming an oxide layer in said substrate, thereby forming a mesa semiconductor region in said substrate defined by said oxide layer,

forming an insulator film of a uniform thickness on the upper surface of said mesa semiconductor region,

carrying out ion implantation of impurities of a second conductivity type opposite to said first conductivity type, into said mesa semiconductor region through said insulator film thereon to form in said mesa semiconductor region a first PN junction, at least one end of which terminates at a first portion of a side face of said oxide layer,

introducing impurities of said first conductivity type into an insulator film covering said upper surface to selectively convert a portion of said insulator film completely into a glass film including impurities of said first conductivity type and

thermally diffusing impurities of said first conductivity type from said glass film into said mesa semiconductor region to form a second PN junction of a depth shallower than that of said first PN junction, at least one end of said second PN junction terminating at a second portion of said side face directly over said first portion.

4,191,596
METHOD AND COMPOSITIONS FOR COATING ALUMINUM

David Y. Dollman, Doylestown, and Timothy J. O'Grady, Ambler, both of Pa., assignors to Union Carbide Corporation, New York, N.Y.
Filed Sep. 6, 1978, Ser. No. 939,983
Int. Cl.^{2} C23F *7/00;* B44D *1/36*
U.S. Cl. 148—6.27 10 Claims

1. An aqueous acidic solution for coating the surface of a metal selected from the group consisting of aluminum and alloys thereof in which aluminum is the principal ingredient, which consists essentially of:

(i) from about 0.5 to about 10 grams/liter of at least one polymer selected from the group consisting of polyacrylic acid and esters thereof, and

(ii) from about 0.2 to about 8 grams/liter of at least one acid selected from the group consisting of H_2ZrF_6, H_2TiF_6 and H_2SiF_6,

the pH of the solution being less than about 3.5.

4,191,597
HEAT TREATMENT FOR MARTENSITE CURED ALLOYS

Ralf Krumphold, Dresden; Heinrich Paul, Pappritz, both of Fed. Rep. of Germany; Juri Busalow, and Iwan Kopjew, both of Moscow, U.S.S.R., assignors to Akademie der Wissenschaften der DDR, Berlin-Adlershof, Fed. Rep. of Germany and Akademie der Wissenschaften der UdSSR, Moscow, U.S.S.R.
Filed Dec. 22, 1978, Ser. No. 973,074
Int. Cl.^{2} C21D *9/52*
U.S. Cl. 148—12 B 4 Claims

1. A process for improving the mechanical properties of martensite-cured alloys, comprising the steps of

subjecting the alloys to a cold deformation with the deformation degree greater than 30%;

thereafter subjecting the alloys to a heat treatment, wherein the following conditions must be met over the total cross-section of the portion of the alloy within the heating zone:

$$\Delta T/\Delta t = 0.9\ Tgl/t_A \geqq 50^\circ \text{ C./sec}, \tag{1}$$

(2) $20 \text{ sec} > tgl > 0.1 \text{ sec}$, and

(3) $tgl = t_G - t_A$, where

$\Delta T/\Delta t$ = mean rate of heating
Tgl = annealing temperature
t_G = total duration of the thermal treatment
t_A = total heating time
tgl = total annealing time; and

rapidly cooling the alloys below 400° C. for maximally 5 seconds or less.

4,191,598
JET RECIRCULATION METHOD FOR VACUUM CARBURIZING

James G. Conybear, and Wallace J. Titus, both of Toledo, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed Aug. 21, 1978, Ser. No. 935,491
Int. Cl.^{2} C21D *1/48*
U.S. Cl. 148—16.5 14 Claims

1. An apparatus for recirculation of an atmosphere in a vacuum furnace having a furnace chamber, which comprises:

a recirculation loop which further comprises:
  a low pressure line;
  an outlet from the furnace chamber to the low pressure line;
  a recirculation pump of the type which will translate a low pressure inlet stream to a high pressure outlet stream, connected to the low pressure line;
  a high pressure line passing from the recirculation pump;
  at least one jet inlet to the furnace chamber, for continuously forcing recirculatiing furnace atmosphere into the furnace chamber, from the high pressure line;

a means to analyze the furnace atmosphere, connected to the high pressure line;

an enriching gas line in communication with the furnace chamber;

a means to periodically withdraw gas from the furnace chamber whereby the furnace pressure is maintained.

7. A method for recirculation of an atmosphere in a vacuum furnace, having a furnace chamber and a recirculation loop with an inlet and outlet to the furnace chamber, which comprises:

starting up a recirculation pump of the type which will translate a low pressure inlet stream to a high pressure outlet stream, disposed within the recirculation loop;

drawing the atmosphere at a low pressure with the recirculation pump, from the furnace chamber, through a low pressure line, to the recirculation pump;

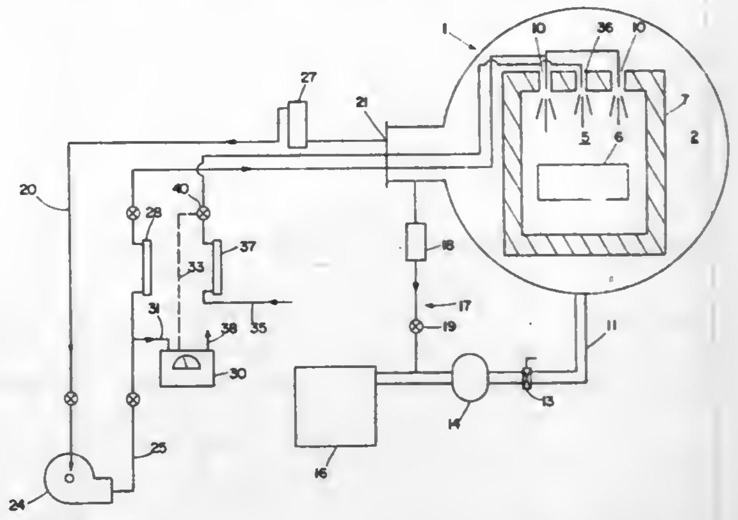
pumping the atmosphere to a higher pressure from the recirculation pump through a high pressure line and then to jet inlets into the furnace chamber;

continuously forcing recirculating atmosphere through the jet inlets into the furnace chamber to continuously circulate the atmosphere within the furnace chamber;

analyzing the atmosphere with a means to analyze which is connected to the high pressure line;

feeding enriching gas through an enriching line in communication with the furnace;

withdrawing gas periodically from the furnace chamber to maintain the pressure in the furnace chamber.



4,191,599
METHOD OF HEAT TREATING HIGH CARBON ALLOY STEEL PARTS TO DEVELOP SURFACE COMPRESSIVE RESIDUAL STRESSES

Charles A. Stickels, Ann Arbor, and Adam M. Janotik, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sep. 13, 1978, Ser. No. 942,104
Int. Cl.^{2} C21D *1/48*
U.S. Cl. 148—16.5 22 Claims

1. A method of developing compressive residual stresses in the surface region of a high carbon steel alloy article, said method comprising:

(a) constituting said steel alloy article to contain 0.8–1.6% carbon, 0.2–5% chromium, and 0–20% alloying ingredients selected from the group consisting of manganese, vanadium, molybdenum, tungsten, silicon, the remainder being iron;

(b) heating said article to a temperature of 800°–950° C. (1472°–1742° F.) for 1–2.5 hours in a carburizing atmosphere effective to generate a differential in retained austenite, primary carbides and carbon between the surface region and core region of said article; and

(c) immersing said article in a cooling medium to quench the central core of said article at a rate sufficiently fast to effectively suppress the formation of non-martensitic austenite decomposition products, thereby establishing a residual compressive stress gradient proceeding from the surface region of said article to a depth between 0.007–0.03 inches, the residual compressive stress being in the range of 5–40 Ksi.

14. A high carbon steel alloy article having gradients of compressive residual stress, and at least one of a carbon gradient and hardness gradient proceeding from the surface region of said article to its core, said article being characterized by a microstructure consisting essentially of tempered martensite, retained austenite and a carbide phase, said article having a chemical content consisting essentially of 0.8–1.6% carbon, 0.75–25% alloying ingredients including 0.2–5% chromium, the remainder being essentially iron, said article having a compressive residual stress level at its surface region of at least 10,000 psi, and tensile stresses at the article core, said article having a hardness differential between its surface and core of at least 2.0 R_c, and a volume fraction of primary carbides at its surface region of at least 0.18.

4,191,600

METHOD OF CONTINUOUSLY HEAT-TREATING STEEL SHEET OR STRIP

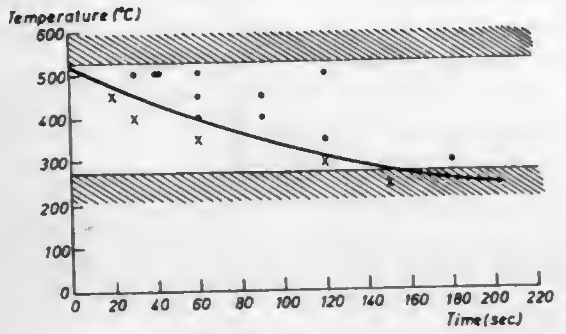
Philippe A. Paulus, and Marios Economopoulos, both of Liege, Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed May 2, 1978, Ser. No. 902,258

Claims priority, application Belgium, May 2, 1977, 854191

Int. Cl.^{2} C21D *9/48;* C22C *41/02*

U.S. Cl. 148—142 **19 Claims**



1. In a method of continuously heat treating cold-rolled steel strip or sheets, in which the strip or sheet is heated to a temperature higher than its recrystallisation temperature and subsequently cooled in two steps, the first taking place by immersion in an aqueous bath, the temperature of which is between 80° C. and 150° C., cooling taking place at a speed between 25° C./sec and 180° C./sec., the product of this speed times the thickness of the strip or sheet being higher than 25, the improvement wherein the first step ends when the temperature of the strip or sheet is between 200° C. and 425° C., and the second step also takes place in an aqueous bath, at a cooling speed between 90° C./sec and 500° C./sec to a temperature between 80° C. and 150° C., the product of the thickness of the strip or sheet times the cooling speed of the second step being higher than 75.

4,191,601

COPPER-NICKEL-SILICON-CHROMIUM ALLOY HAVING IMPROVED ELECTRICAL CONDUCTIVITY

Walter W. Edens, Hartland, and Quentin F. Ingerson, Wauwatosa, both of Wis., assignors to Ampco-Pittsburgh Corporation, Milwaukee, Wis.

Filed Feb. 12, 1979, Ser. No. 11,110

Int. Cl.^{2} C21D *1/00;* C22F *1/08*

U.S. Cl. 148—160 **8 Claims**

1. A method of heat treating a copper base alloy, consisting essentially by weight of 2.0% to 3.0% of a metal selected from the group consisting of nickel and cobalt and mixtures thereof, silicon in an amount slightly in excess of the stoichiometric amount necessary to form silicides of said metal, chromium in an amount in excess of the stoichiometric amount required to form chromium silicide with the excess silicon not combined as said metal silicides and the balance copper, comprising the steps of heating the alloy to a solution temperature, quenching the alloy, aging the alloy at a first aging temperature in the range of 900° F. to 1100° F. for a period of time sufficient to precipitate silicides, and aging the alloy at a second aging temperature in the range of 750° F. to 900° F. for a period of time sufficient to precipitate the excess chromium from solution and increase the electrical conductivity of the alloy to a value in excess of 45%.

4,191,602

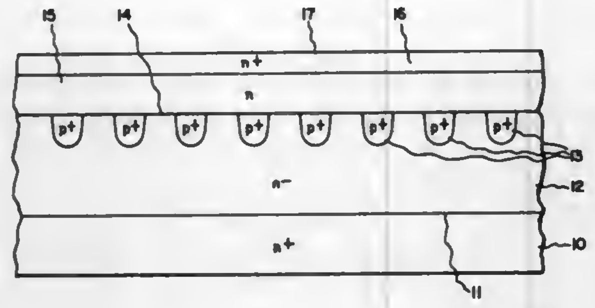
LIQUID PHASE EPITAXIAL METHOD OF MAKING A HIGH POWER, VERTICAL CHANNEL FIELD EFFECT TRANSISTOR

Bantval J. Baliga, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,119

Int. Cl.^{2} H01L *21/208, 21/74, 29/80*

U.S. Cl. 148—171 **13 Claims**



1. The method of fabricating a high power field effect transistor comprising the steps of:

depositing silicon heavily doped to one type conductivity from a melt of silicon heavily doped to said one type conductivity, epitaxially on a major surface of a monocrystalline silicon substrate lightly doped to said one type conductivity;

forming a grid of silicon heavily doped to the opposite type conductivity at the exposed major surface of said substrate, said grid extending beneath the exposed major surface of said surface;

epitaxially growing an upper layer of silicon atop said exposed major surface of said substrate, said upper layer of silicon being doped to said one type conductivity at a level intermediate that of said substrate and that of said silicon deposited epitaxially from said melt; and

forming, at the exposed major surface of said upper layer, a heavily doped region of said one type conductivity extending into said upper layer a fraction of its depth.

4,191,603

MAKING SEMICONDUCTOR STRUCTURE WITH IMPROVED PHOSPHOSILICATE GLASS ISOLATION

Paul L. Garbarino, Ridgefield, Conn.; Martin Revitz, Poughkeepsie, and Joseph F. Shepard, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1978, Ser. No. 901,901

Int. Cl.^{2} H01L *21/225*

U.S. Cl. 148—187 **6 Claims**

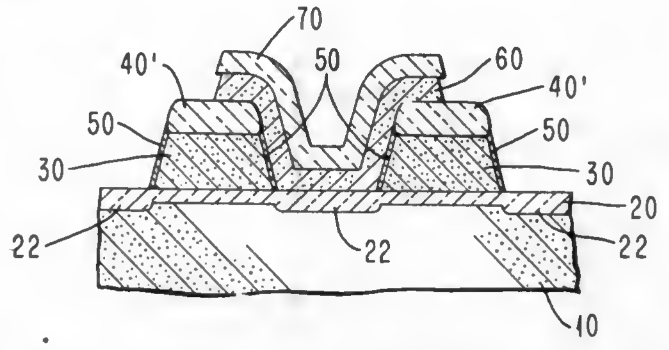
1. A process for defining areas of polysilicon material on a surface comprising:

depositing a layer of polysilicon material on said surface;

depositing a layer of phosphosilicate glass over said layer of polysilicon material;

forming a pattern of openings in the phosphosilicate glass by photolithography and etching;

using the pattern in the phosphosilicate glass to form a like pattern in the polycrystalline silicon material wherein there is undercutting under the phosphosilicate glass mask; and



substantially eliminating the undercutting under the phosphosilicate glass by heat treating the structure to cause the contraction of the phosphosilicate glass.

4,191,604

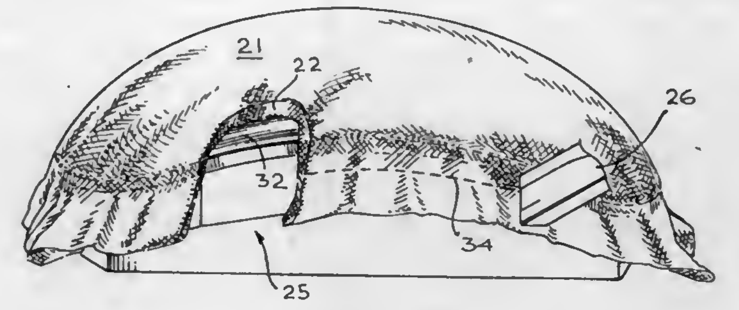
METHOD OF CONSTRUCTING THREE-DIMENSIONALLY CURVED, KNIT WIRE REFLECTOR

William L. MacTurk, Upland, Calif., assignor to General Dynamics Corporation Pomona Division, Pomona, Calif.

Continuation-in-part of Ser. No. 647,015, Jan. 7, 1976, abandoned, which is a division of Ser. No. 591,794, Jun. 30, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 899,689

Int. Cl.^{2} B29G *5/00*

U.S. Cl. 156—245 **13 Claims**



1. A method of constructing a three-dimensionally contoured, electromagnetic reflecting structure by means of first and second sheets of electric conductors, each consisting of flexible open loop knit mesh fabric, said method comprising the steps of:

constructing a mold having a three-dimensionally curved surface of desired shape;

stretching a first conductor forming a sheet of the knit mesh fabric smoothly and continuously over the curved surface of the mold;

securing edge portions of the first conductor to maintain the sheet in a stretched condition over the mold;

stretching a second conductor forming the second sheet of said knit mesh fabric over the curved surface of the mold, said second conductor being stretched approximately 50% greater so that the apertures formed between the loops of the two conductors are staggered with respect to each other to form a series of effective apertures of substantially smaller size than the apertures of either sheet, said effective apertures being less than 1/16 the wavelength of electromagnetic radiation in the range of intended use of the reflecting structure;

applying a thin coating of a thermo-setting resin into and over the meshes of said two conductors in such a manner that substantially the entire mesh fabric of said two conductors is covered by the resin;

applying at least one layer of knitted glass cloth over the coated electrical conductors; and

applying a thin coating of thermo-setting resin over the layer of glass cloth.

4,191,605

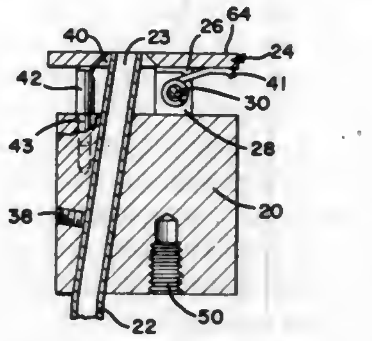
PACKAGE LABELING SYSTEM AND METHD FOR APPLYING A LABEL TO A PACKAGE

Fred H. Katterheinrich, Troy, and James R. Small, Tipp City, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Nov. 20, 1978, Ser. No. 962,295

Int. Cl.^{2} B29C *17/00;* B32B *31/00;* B65C *9/08*

U.S. Cl. 156—285 **12 Claims**



9. The method of receiving an adhesively backed label ejected from a label transport with the adhesive side of the label facing upward and applying the label to the bottom of a package, comprising the steps of:

(a) providing a package support having a label application opening therein,

(b) positioning a package on the package support above said label application opening, with the center of the package bottom offset with respect to said label opening,

(c) catching a label ejected from said label transport, with the adhesive side of the label facing upward, on a flat horizontal label supporting surface by means of a suction applied through a suction tube communicating with an aperture in the surface, said surface being positioned below said label application opening,

(d) raising said surface through said label application opening, with a label positioned thereon, to a label application position in which the bottom of said package adjacent said label application opening is contacted by said surface and raised out of contact with said package support, and said label supporting surface is tilted to reduce the suction applied through said aperture by said suction tube, whereby the adhesive side of said label causes said label to adhere to the bottom of said package.

4,191,606

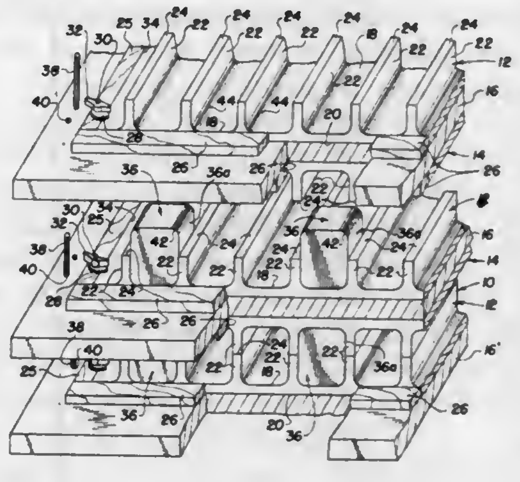
METHOD FOR SECURING COMPOSITION BOARD PANELS TOGETHER

Stephen M. Evans, 5514 Edlen Dr., Dallas, Tex. 75220

Continuation of Ser. No. 646,333, Jan. 2, 1976, abandoned. This application Jul. 5, 1978, Ser. No. 922,111

Int. Cl.^{2} B32B *31/04*

U.S. Cl. 156—288 **3 Claims**



2. A method of rigidly securing first and second elongated, flexible panels of particle board having a plurality of parallel

spaced ribs extending outwardly from a flat surface to form a single honeycombed core comprising the steps of: positioning the first panel such that the ribs extend outwardly on a first support member, said support member having a flat surface on opposite sides thereof; detachably securing said first panel from horizontal movement along the planar surface of said first support member and detachably securing said first panel from vertical movement away from said surface; securing one or more alignment members between the ribs such that they extend outwardly from the ribs of the first panel; applying adhesive to the edges of the ribs of the second panel; positioning the second panel on a second support member, said support member having a flat surface on opposite sides thereof such that the ribs extend outwardly; detachably securing said second panel from horizontal movement along the planar surface of said second support member and detachably securing said second panel from vertical movement away from said surface; positioning the second panel and second support member over the first panel and first support member such that the ribs of the second panel engage the sides of the alignment members such that the alignment members slide between the corresponding ribs of the second panel and the edges of the ribs are aligned with the edges of the corresponding ribs of the first panel; urging the edges of the ribs into engagement to form a single core; stacking a plurality of first and second combined support members relative to each other such that the individual ribs on each of the combined panels are aligned in vertical relationship to support the corresponding ribs on the adjacent panel; and applying external pressure evenly over the stack of combined first and second support members and panels for a predetermined period of time.

4,191,607

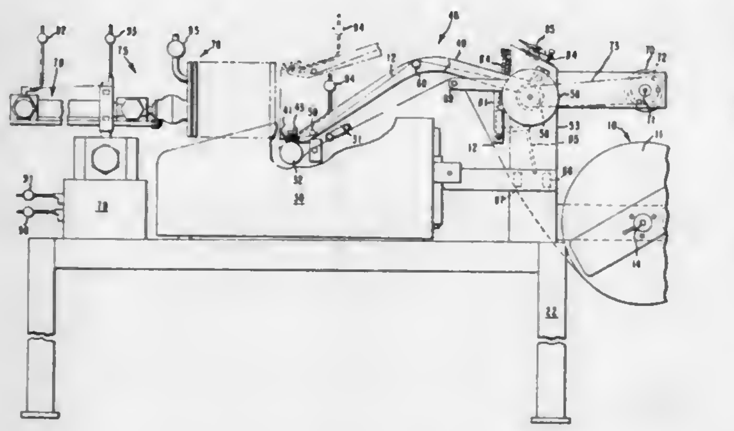
LABEL APPLICATOR

Andrew P. Cope, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1978, Ser. No. 891,399

Int. Cl.^{2} B65C *9/18, 9/28*

U.S. Cl. 156—384 **2 Claims**



1. An apparatus for transferring labels from label stock to a label holder comprising: a frame; a movable label holder mounted on said frame; means for positioning and maintaining the label stock at a location opposite and adjacent said label holder, said label stock consisting essentially of labels attached to a release coated backing material, said labels facing said label holder, said means for positioning and maintaining the label stock at a location opposite and adjacent said label holder comprising: an arm pivotally mounted at one end to said frame, the other end of said arm being biased toward said location; means located on said other end of said arm through which the label stock passes for stripping the labels from the release coated backing material; means for pulling said label stock against the bias applied to said other end of said arm and through the means for stripping the labels from the backing material; and means for propelling the label to the label holder simultaneously with its release from the backing material.

4,191,608

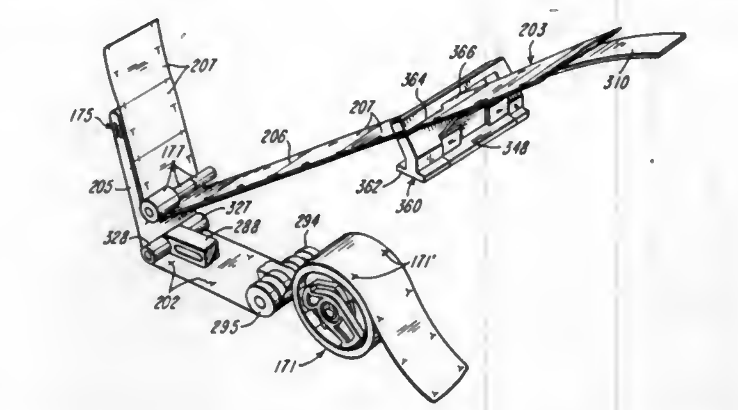
HAND-HELD LABELER

Charles B. Bussard, Kettering, and William A. Jenkins, Englewood, both of Ohio, assignors to Monarch Marking System, Inc., Dayton, Ohio

Filed Dec. 27, 1977, Ser. No. 864,491

Int. Cl.^{2} B32B *35/00*

U.S. Cl. 156—584 **7 Claims**



1. Label applying apparatus adapted to receive a web carrying a series of pressure sensitive labels, comprising means for delaminating the labels from the web, a movable feed member positioned to engage the web after the web is directed around the delaminating means, actuating means for moving the feed member to effect pulling of the web around the delaminating means for successively separating the labels from the web, guide means positioned to receive the carrier web with the labels attached, said guide means including a guide roller assembly and a guide member defining an open end slot extending laterally across the width of the web and positioned to receive either a wide carrier web or a narrow carrier web with the labels attached, said slot of said guide member having an enlarged portion with a width corresponding to the width of the narrow web for directing the narrow web with one edge disposed substantially in a plane common to the corresponding edge of the wide carrier web, and means for retaining the narrow web in said enlarged portion of said slot.

4,191,609

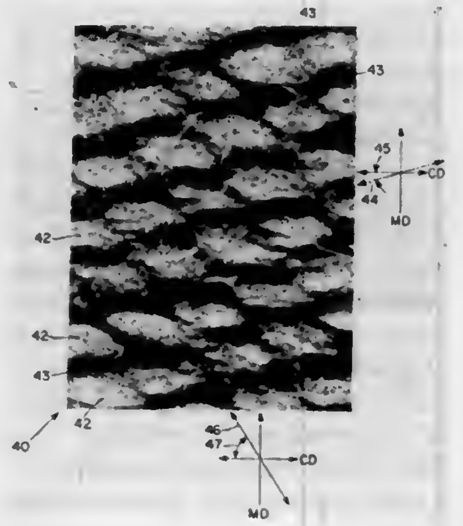
SOFT ABSORBENT IMPRINTED PAPER SHEET AND METHOD OF MANUFACTURE THEREOF

Paul D. Trokhan, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 9, 1979, Ser. No. 19,038

Int. Cl.^{2} D21H *5/02, 5/24*

U.S. Cl. 162—113 **8 Claims**



1. A soft absorbent imprinted paper sheet characterized by a patterned array of relatively closely spaced uncompressed pillow-like zones which zones are each circumscribed by a picket-like lineament comprising alternately spaced areas of compacted fibers and relatively non-compacted fibers, said zones being disposed in staggered relation in both the machine direction and the cross-machine direction of said paper sheet.

6. A method of manufacturing a soft absorbent sheet of paper characterized by a bilaterally staggered array of relatively closely spaced uncompressed pillow-like zones which zones are each circumscribed by a picket-like-lineament of alternately spaced areas of compacted fibers and relatively non-compacted fibers, said method comprising the steps of

a. forming an embryonic paper web having substantially uniform density throughout; and

b. imprinting, prior to final drying, a network of picket-like-lineaments on said embryonic web, said lineaments comprising alternately spaced areas of compacted fibers and relatively non-compacted fibers, and said network being so configured that the lineaments discretely perimetrically enclose each zone of a bilaterally staggered array of said uncompressed pillow-like zones in said embryonic paper.

4,191,610

UPGRADING WASTE PAPER BY TREATMENT WITH SULFITE WASTE LIQUOR

Eric S. Prior, Weideweg 1A, D-5166 Kreuzau-Untermaubach, Fed. Rep. of Germany

Continuation of Ser. No. 740,318, Nov. 9, 1976, abandoned, which is a continuation of Ser. No. 566,284, Apr. 9, 1975, abandoned. This application Sep. 1, 1978, Ser. No. 938,792

Int. Cl.^{2} D21H *3/18*

U.S. Cl. 162—147 **22 Claims**

1. An article of manufacture comprising a cellulosic fibrous sheet material having incorporated therein, at the wet press or size press, from about 5 to 30 percent by weight of waste sulfite liquor, which liquor has been neutralized to a pH of about 6.5 to 8.0 with sodium aluminate prior to addition to said sheet material.

4,191,611

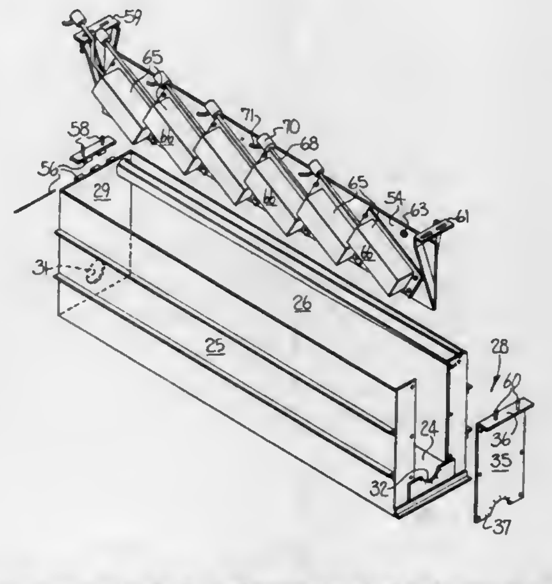
APPARATUS FOR ULTRASONICALLY CLEANING PAPER MAKING FELT

John C. Rushing, 413 E. Seven Oak Dr., Greenville, S.C. 29607; William E. Smith, Rte. 2, Box 24, and Henry L. King, P.O. Box 1255, both of Hartsville, S.C. 29550

Filed Sep. 1, 1978, Ser. No. 938,859

Int. Cl.^{2} D21F *1/32;* **B08B** *3/12*

U.S. Cl. 162—273 **7 Claims**



6. In a continuous paper making apparatus which includes an endless paper making felt upon which the slurry is received, the combination therewith of means for cleaning the fibrous residue from the felt continuously during the paper making process, and which is characterized by the ability to permit rapid removal and/or replacement of the felt, said cleaning means comprising

an open, rectangular tank adapted to be filled with a cleaning bath, said tank comprising a bottom wall, opposing side walls, and opposing first and second end walls, with said end walls including aligned openings therethrough and which are positioned adjacent said bottom wall, and with said first end wall including a removable plate section having an upper edge which defines at least a portion of the upper periphery of such end wall and a lower edge which defines the upper periphery of the associated opening,

means for guiding a moving paper making felt through the tank so as to be immersed in the cleaning bath during a portion of the return run of the felt, and including a guide roll positioned adjacent the bottom wall of said tank, said guide roll having a support shaft extending coaxially from each end and with the shafts extending through said aligned openings of said tank end walls, releasable means for sealing each support shaft to its associated end wall, and means positioned outside each end wall of said tank for rotatably and releasably mounting said support shafts, whereby the moving felt is adapted to extend around said guide roll and define a U-shaped path of travel through the tank and which includes two oppositely directed runs,

means for generating ultrasonic vibrations within the bath in said tank and including a support panel extending between said end walls and positioned between said runs of said U-shaped path of travel and directly above said guide roll, and a plurality of separate ultrasonic transducers mounted on said panel, with said generators being positioned to achieve a substantially uniform application of the ultrasonic vibrations across the full width of the moving felt, and

means for mounting said panel to said tank so as to permit the panel to be readily moved upwardly from said guide roll, whereby the endless felt may be replaced by moving the panel upwardly, releasing said sealing means, releasing the mounting of the ends of said guide roll support shafts, removing said plate section, and lifting the guide roll so that the felt may be slipped therebeneath.

4,191,612

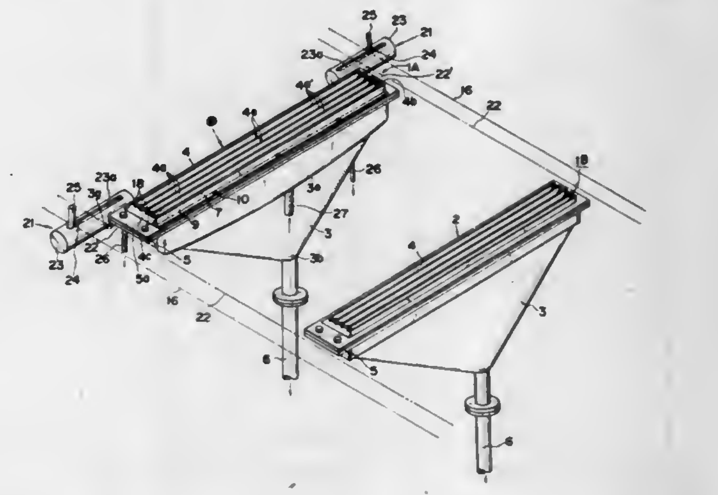
DEWATERING SUCTION APPARATUS FOR PAPER MAKING MACHINE

Ikuo Araoka, 317 Iriyamase, Fuji-shi, Shizuoka, Japan

Filed Jul. 5, 1978, Ser. No. 922,166

Int. Cl.^{2} D21F *1/52*

U.S. Cl. 162—352 **2 Claims**



1. A paper making machine including a dewatering suction apparatus having at least one suction box assembly which has opening means closed by the under surface of a wet paper conveyor belt, said suction box assembly comprising:

a plurality of foil plates extending parallel to the widthwise direction of said conveyor belt and defining a plurality of suction slots at said opening means;

an air outlet nozzle means extending parallel with said foil plates at the upstream side of the foil plates; and

auxiliary suction means at both side edge portions of said conveyor belt, each auxiliary suction means comprising:

means defining a suction inlet opening extending beyond said side edge of said conveyor belt;

valve means movable along said suction inlet opening to limit the effective suction dimension of said suction inlet opening; and

sensing finger means secured to said valve means and sensing corresponding side edges of the conveyor belt by following said side edges to control the position of the valve means.

4,191,613

MALATE DEHYDROGENASE CONJUGATES FOR ENZYME IMMUNOASSAYS

Edwin F. Ullman, Atherton, and Kenneth E. Rubenstein, Menlo Park, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 722,964, Sep. 13, 1976, Pat. No. 4,067,774, which is a continuation of Ser. No. 481,022, Jun. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 304,157, Nov. 6, 1972, Pat. No. 3,852,157, which is a continuation-in-part of Ser. No. 143,609, May 14, 1971, abandoned. This application Jan. 19, 1977, Ser. No. 760,499

The portion of the term of this patent subsequent to Dec. 3, 1991, has been disclaimed.

Int. Cl.^{2} G01N *31/14;* **C07G** *7/02*

U.S. Cl. 435—188 **18 Claims**

1. An enzyme conjugate of malate dehydrogenase bonded to on the average with from about 1 to 18 haptens of molecular weight of from about 125 to 1,200 and having at least one heteroatom, wherein said conjugated enzyme retains at least about 2% of the original enzyme activity prior to conjugation and wherein the enzymatic activity of the conjugate is reduced by at least 30% when said haptens are bound to antibodies for said haptens.

4,191,614

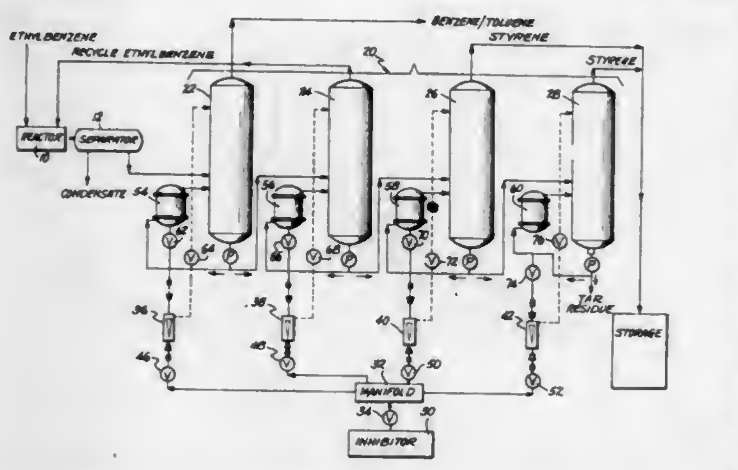
DISTILLATION APPARATUS

James M. Watson, and Michael E. Johnson, both of Big Spring, Tex., assignors to Cosden Technology, Inc.,, Big Spring, Tex.

Filed Mar. 1, 1976, Ser. No. 662,566

Int. Cl.^{2} B01D *1/00*

U.S. Cl. 202—177 **6 Claims**



1. Apparatus for the distillative purification and recovery of styrene monomer from a styrene-containing feedstock, comprising:

(a) at least one distillation column for receiving said feedstock;

(b) a reboiler operatively associated with each column;

(c) gas injection means for introducing a gaseous inhibitor into each column;

(d) gas injection means for introducing a gaseous inhibitor into each reboiler;

(e) a source of gaseous inhibitor in operative communication with each of said gas injection means;

(f) gas flow control means including at least one valve member intermediate said source of gaseous inhibitor and each of said gas injection means for permitting controlled simultaneous apportionment of said gaseous inhibitor between each column and each reboiler, whereby polymerization of said monomer is prevented; and,

(g) means to recover said monomer.

4,191,615

PROCESS FOR OPERATING EXTRACTION OR EXTRACTIVE DISTILLATION APPARATUS

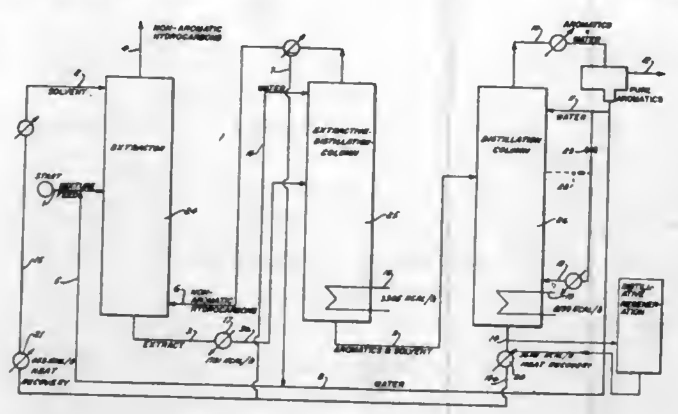
Martin Schulze, Neviges, and Gerhard Preusser, Essen, both of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 641,021, Dec. 15, 1975, abandoned. This application Dec. 23, 1977, Ser. No. 863,733

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1974, 2459534

Int. Cl.^{2} B01D *3/40;* **C23F** *11/00*

U.S. Cl. 203—3 **9 Claims**



1. The improvement in a process for recovery of pure hydrocarbon compounds from a hydrocarbon mixture containing free acid ion impurities by a solvent extractive process and subsequent isolation of said pure hydrocarbon compounds from a solvent system in which process an N-substituted morpholine is employed as the selective solvent, said improvement comprising adding to said morpholine solvent or a mixture thereof with a minor amount of water at least one of the following compounds: phosphoric acid, a salt thereof, an inorganic vanadium compound or an inorganic molybdenum compound, said addition being effected in an amount of about 0.005 to 0.02% by weight of the morpholine solvent, continuously recycling the solvent mixture containing said additive recovered from said isolation process back to said solvent extractive process and continuously determining the contents of free acid ions absorbed by said solvent from said hydrocarbon mixture and, as soon as the contents of acid ions reaches an amount of about 0.005 to 0.01% by weight of the solvent mixture, removing at least a portion of the circulating solvent and subjecting it to regenerative distillation to separate the free acid ion containing components, thus effecting the regeneration of the solvent, and continuing the distillation until the content of free acid ions is reduced to an amount between about 0.0005 and 0.001% by weight, whereby the acid ions entrained in said hydrocarbon mixture from preceding treatments applied to said mixture are substantially reduced and corrosion caused thereby is prevented.

4,191,616

PURIFICATION PROCESS

Brian Baker, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 14, 1978, Ser. No. 969,435

Claims priority, application United Kingdom, Dec. 19, 1977, 52727/77

Int. Cl.^{2} B01D *3/36;* **C07C** *51/46*

U.S. Cl. 203—44 **10 Claims**

1. A process for the purification of an alkane dicarboxylic acid having at least 4 carbon atoms which comprises co-distilling said acid with an alkylbenzene having an atmospheric pressure boiling point within the range 300° to 350° C.

4,191,617

PROCESS FOR ELECTROPLATING DIRECTLY PLATEABLE PLASTIC WITH COBALT ALLOY STRIKE AND ARTICLE THEREOF

John L. Hurley, Mahwah, N.J.; Daniel Luch, Warwick, and Charles J. Knipple, Cornwall, both of N.Y., assignors to The International Nickel Company, Inc., Suffern, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,492

Int. Cl.^{2} B23P *3/20;* **C25D** *5/10, 5/12, 5/14*

U.S. Cl. 204—40 **4 Claims**

1. A process for electroplating directly plateable plastic comprising initially electrodepositing, directly on the plastic surface, an alloy containing about 10% to about 60% cobalt, balance essentially nickel and thereafer continuing electrodepositing electrodepositable metal on said plastic while maintaining said nickel-cobalt alloy at said plastic surface.

3. A process as in claim 1, wherein the initial deposit of alloy is about 0.1 to about 0.5 μm thick and is directly coated with a nickel electrodeposit at least about 0.9 μm thick.

4. An electroplated, directly plateable plastic object having directly adhered to the plastic surface thereof an electrodeposited nickel-cobalt alloy containing about 10% to about 60% cobalt.

4,191,618

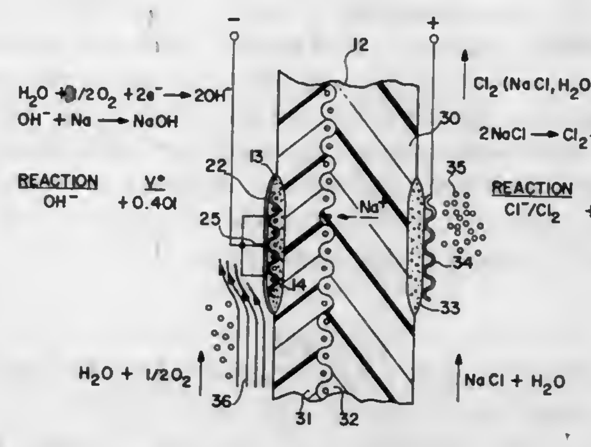
PRODUCTION OF HALOGENS IN AN ELECTROLYSIS CELL WITH CATALYTIC ELECTRODES BONDED TO AN ION TRANSPORTING MEMBRANE AND AN OXYGEN DEPOLARIZED CATHODE

Thomas G. Coker, Waltham; Russell M. Dempsey, Hamilton, and Anthony B. LaConti, Lynnfield, all of Mass., assignors to General Electric Company, Wilmington, Mass.

Continuation-in-part of Ser. No. 863,798, Dec. 23, 1977, abandoned. This application Jul. 6, 1978, Ser. No. 922,289

Int. Cl.^{2} C25B *1/46, 9/04, 11/02, 13/08*

U.S. Cl. 204—98 **25 Claims**



20. The process for generating chlorine and alkali which comprises electrolyzing an aqueous alkali metal chloride between an anode and a cathode separated by an ion exchanging membrane, at least the cathode electrode comprising a plurality of electroconductive catalytic particles bonded to said membrane to provide a gas and electrolyte permeable electrode to form a unitary electrode-membrane structure, applying a potential to the electrode through a separate electron conductive current collector in physical contact with the electrochemically active catalytic material bonded to the membrane, passing oxygen bearing gaseous stream to said cathode electrode to depolarize said electrode and to prevent hydrogen discharge at said electrode, said anode comprises a mass of electrocatalytic particles bonded to the surface of the ion exchange membrane.

4,191,619

PROCESS FOR CONVERSION OF MATERIALS IN ELECTROLYTIC SOLUTION

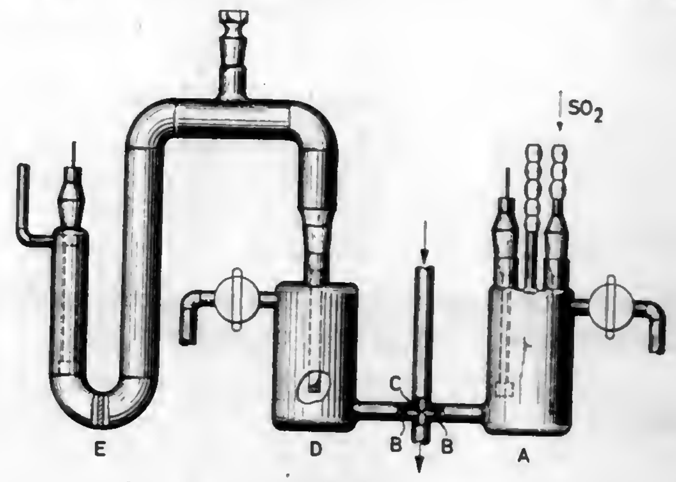
Bernd D. Struck, Langerwehe, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter, Julich, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,693

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743820

Int. Cl.^{2} C25B *1/02, 1/22*

U.S. Cl. 204—104 **9 Claims**



1. An electrochemical conversion process utilizing an electrolytic cell containing permeable partitions subdividing the cell into an anode chamber for an anolyte solution present at least between the anode and one of said partitions, a cathode chamber for a catholyte solution, present at least between the cathode and the other of said partitions, and an intermediate chamber for an electrolyte solution between said partitions, said partitions serving to oppose the migration of electrochemical reaction products from the anolyte solution to the catholyte solution and vice versa, said process comprising the steps of:

supplying for and during the application of electrolyzing potential to said cell in the anode chamber an aqueous solution essentially containing an oxidizable anions and hydrogen ions;

supplying to said intermediate and cathode chambers an initial solute in water solution essentially containing hydrogen ion and an oxidation product of the said oxidizable ions supplied to said anode chamber and circulating said solutions in said intermediate and cathode chambers during application of electrolyzing potential, the circulation of said solution in said intermediate chamber being such as to pass it through the space between said partitions in such a manner that the flow of said solution through said space is laterally bounded on opposite sides by said partitions, whereby migration of said oxidizable anion into said cathode chamber is substantially prevented.

4,191,620

ELECTROCHEMICAL CONVERSION OF SULFUR-CONTAINING ANIONS TO SULFUR

Donald C. Young, Fullerton, and Raymond N. Fleck, West Covina, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

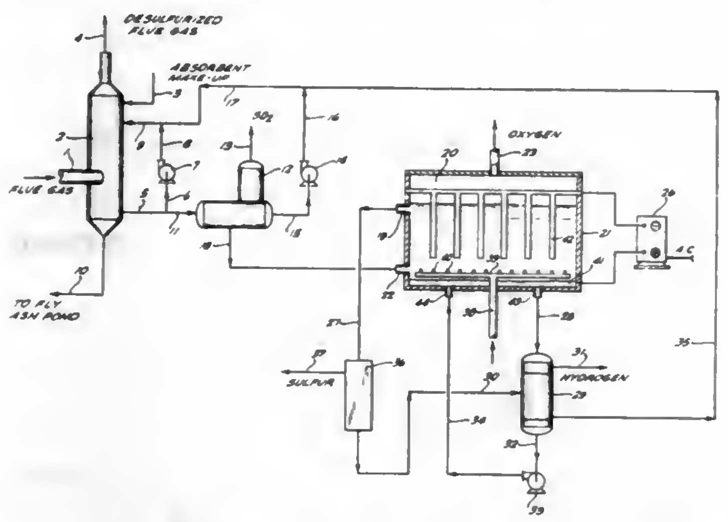
Filed Nov. 13, 1978, Ser. No. 960,300

Int. Cl.^{2} C02C *5/12;* **C25B** *1/00, 11/18*

U.S. Cl. 204—149 **10 Claims**

1. A process for electrolytically converting sulfur-containing anions in an aqueous solution into elemental sulfur, which process comprises (1) introducing an aqueous solution comprising one or more sulfur-containing anions into an electrolytic cell containing at least one electrolyte chamber wherein said aqueous solution is in intimate contact with both an anode and an elemental mercury cathode, (2) passing an electric current of sufficient voltage across said electrodes through said

aqueous solution to cause one or more of the sulfur-containing anions to be converted to elemental sulfur, and (3) withdrawing from said cell a slurry comprising an aqueous liquid product containing dispersed particles of elemental sulfur.



4,191,621

PROCESS FOR THE PRODUCTION OF SUBSTITUTED BENZAL AND BENZYL BROMIDES

Jean Riethmann, Rheinfelden; Franz Marti, Dornach, and Tibor Somlo, Birsfelden, all of Switzerland, assignors to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

Filed Sep. 26, 1978, Ser. No. 945,957

Claims priority, application Switzerland, Sep. 30, 1977, 11985/77

Int. Cl.^{2} B01J *1/10*

U.S. Cl. 204—158 HA **13 Claims**

1. A process for the production of benzal or benzyl bromides which contain electrophilic substituents in the ortho- and/or para-position, or mixtures thereof, by the side-chain bromination of correspondingly substituted toluene, which comprises introducing elementary chlorine, under irradiation with visible light, into a two-phase system consisting of an aqueous phase and an organic phase and containing a correspondingly substituted toluene, at least one metal bromide, and a base.

4,191,622

APPARATUS AND METHOD FOR PRODUCING STEREO-REGULAR POLYMERS

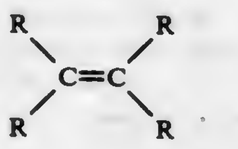
David C. Phillips, and Max Garbuny, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 28, 1975, Ser. No. 599,495

Int. Cl.^{2} C08F *2/46*

U.S. Cl. 204—159.22 **9 Claims**

1. A method of producing stereo-regular polymers from a gaseous monomer having the general formula:



where each R is independently selected from hydrogen, alkyl to C_6, aryl, and alkylene, subject to the condition that at least one R group, the resonating R group, be a group which forms a permanent electric dipole moment with the remainder of the monomer, comprising irradiating said monomer with laser light which is nearly monochromatic of a frequency which resonates with a harmonic frequency resulting from the band between said resonating R group to the remainder of said monomer.

4,191,623

METHOD OF PRODUCING MICROPOROUS FILMS

Kuniyuki Hayasaka, and Yutaka Tamaoka, both of Akashi, Japan, assignors to Honny Chemicals Company, Limited, Kobe, Japan

Filed Dec. 20, 1977, Ser. No. 862,526

Claims priority, application Japan, Dec. 21, 1976, 51/152921

Int. Cl.^{2} B01D *13/02;* **C25B** *13/00*

U.S. Cl. 204—180 R **12 Claims**

1. A method of producing a microporous film comprising applying a film-forming dope containing a film-forming polymer and a solvent together with an ionizable organic compound on a support and passing said support through a coagulation bath between electrodes under the application of an electric current.

4,191,624

ELECTRODEPOSITION OF HIGH MOLECULAR WEIGHT COPOLYMERS

Arnold J. Josefson, Park Ridge, and Loren R. Munson, Libertyville, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Oct. 6, 1977, Ser. No. 840,033

Int. Cl.^{2} C25D *13/16, 13/20*

U.S. Cl. 204—181 T **18 Claims**

1. A method of electrodepositing a primer on a substrate and then overcoating said primed substrate while the primer is still wet so that both primer and topcoat can be cured in a single baking operation comprising, anodically electrodepositing a film characterized by increased strength and reduced tackiness on a metal sheet by passing a unidirectional electrical current through an aqueous bath having dispersed therein carboxyl-functional copolymer particles and heat-hardening formaldehyde condensate for curing the same and then through said metal sheet as anode to deposit a primer coating on said metal sheet, said copolymer particles being provided by copolymerization in the presence of free radical polymerization catalyst of monoethylenic monomers including from about 1% to about 30% by weight of monoethylenic carboxylic acid in an aqueous dispersion of said monomers in a liquid mixture containing at least 0.5% by weight of polyhydric alcohol having a molecular weight in the range of about 300 to about 6000, said copolymerization providing copolymer particles having an average molecular weight in the range of 10,000 to 50,000 and an acid value of 3–200, said copolymer particles being at least partially neutralized with a base to provide a bath pH of 6 or higher, removing the primer coated metal sheet from said bath, wiping the wet surface of the electrodeposited primer coating to mechanically remove accumulations of surface water therefrom and provide a uniformly wet surface, applying over said uniformly wet surface a resinous topcoat and then curing said primer and topcoat in a single baking operation.

4,191,625

ALUMINUM MARINE ANODE ASSEMBLY WITH LOW RESISTANCE SURFACE MOUNTINGS

Rolland C. Sabins, Lakeside, Calif., assignor to Sabins Industries, Inc., San Luis Rey, Calif.

Continuation-in-part of Ser. No. 707,675, Jul. 22, 1976, and Ser. No. 512,108, Oct. 4, 1974, abandoned, said Ser. No. 707,675, is a continuation-in-part of Ser. No. 512,108, , abandoned. This application Mar. 2, 1979, Ser. No. 17,051

Int. Cl.^{2} C23F *13/00*

U.S. Cl. 204—197 **8 Claims**

1. Mounting structure for marine anodes, comprising:

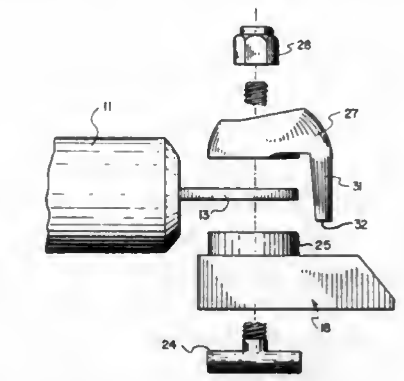
a metallic base welded to a ship's hull with sufficient weld material to provide a low resistance current path through said base to said hull, including spaced, upstanding sides and a top;

a tee bolt between said upstanding sides with a threaded shank extending up through said top;

a conductive mounting pad associated with said top and adapted to provide a low resistance current path into said

top surounding said threaded shank, constituting means for direct physical coupling to a mounting lug of a marine anode;

top washer means cooperatively adapted with said mounting pad to clamp said mounting lug therebetween; and



means for pressing said top washer down towards said mounting pad, thereby ensuring a low resistance current path from an anode associated with said mounting lug through said mounting pad and base to said hull.

4,191,626

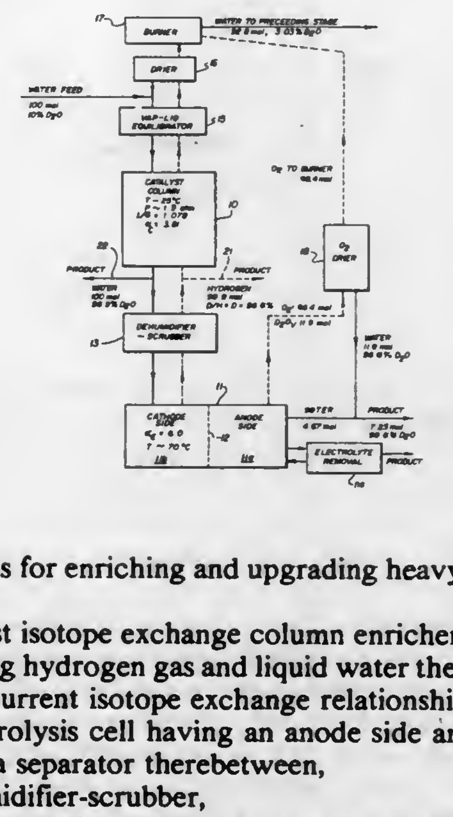
APPARATUS FOR FINISHING AND UPGRADING OF HEAVY WATER

Martin Hammerli, and John P. Butler, both of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed May 22, 1978, Ser. No. 908,226

Int. Cl.^{2} C25B *1/10, 15/08;* **C01G** *57/00;* **C01B** *4/00*

U.S. Cl. 204—266 **7 Claims**



1. Apparatus for enriching and upgrading heavy water comprising:

(a) a catalyst isotope exchange column enricher with means for passing hydrogen gas and liquid water therethrough in counter-current isotope exchange relationship,

(b) an electrolysis cell having an anode side and a cathode side and a separator therebetween,

(c) a dehumidifier-scrubber,

(d) means for passing the liquid water enriched in deuterium from the catalyst column through the dehumidifier-scrubber to the electrolysis cell,

(e) means for passing the hydrogen gas evolved in the cathode side of the cell through the dehumidifier scrubber to the catalyst column, said dehumidifier-scrubber adapted to adjust the humidity of the depleted hydrogen gas to the conditions prevailing in the enricher, to bring the deuterium concentration of the water vapor in the gas stream in isotopic equilibrium with the liquid water from the enricher, and to transfer any entrained electrolyte in the hydrogen gas to the downflowing water stream,

(f) means for passing the hydrogen gas from the catalyst column to an output,

(g) means for introducing an input water feed containing a minor proportion of heavy water to the upper portion of the catalyst column,

(i) means for taking the oxygen gas evolved in the anode side of the electrolysis cell and highly deuterated water vapor from the cell and passing it through the gas drier to remove the water,

(j) means for returning this water to the cell,

(k) a burner for recombining the output hydrogen and oxygen,

(l) means for passing the dried oxygen gas to the burner, and

(m) means for taking a product enriched in deuterium from the system.

4,191,627

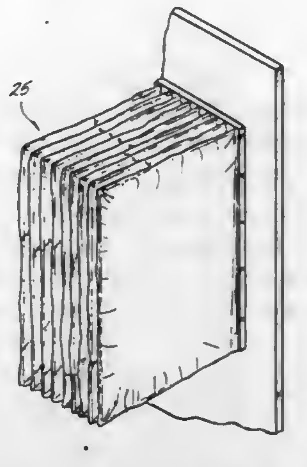
REINFORCED CASING FOR AN ELECTRODE FOR A DIAPHRAGM-TYPE ELECTROLYTIC CELL AND A METHOD OF FABRICATION

Steven J. Specht, Mentor, Ohio, assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 772,412, Feb. 28, 1977. This application Aug. 28, 1978, Ser. No. 937,358

Int. Cl.^{2} C25B *13/02, 13/08, 11/03;* **B32B** *31/00*

U.S. Cl. 204—296 **16 Claims**



1. A separator structure for use in a diaphragm-type electrolytic cell, which structure comprises:

(a) a single piece of separator material which is of sufficient length and width to form an entire separator structure but of insufficient strength to resist mechanical forces thereon during operation of said cell;

(b) said piece being doubled back and forth to form a glove-like structure of a plurality of interconnected finger portions, each finger portion having at least two closed heat sealed edges, one closed folded edge and one open edge, each of said open edges facing in a common direction;

(c) said piece having integral mechanically reinforced borders along the full length of two opposite edges of said piece; and

(d) said borders being located such that the borders pass along the full length of said heat sealed edges, thereby reinforcing said edges.

4,191,628

PROCESS FOR REMOVAL OF MINERAL PARTICULATES FROM COAL-DERIVED LIQUIDS

William J. McDowell, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 12, 1978, Ser. No. 950,875

Int. Cl.^{2} C10G *1/06, 29/12, 29/06*

U.S. Cl. 208—8 R **22 Claims**

1. A process for separating suspended mineral solids from a coal-derived liquid containing said solids comprising the steps of:

(a) contacting said coal-derived liquid containing said solids with a molten additive having a melting point of 100°–500° C. in an amount up to 50 wt.% with respect to said coal-derived liquid containing said solids, said additive being present in an amount effective to increase the particle size of said mineral solids and comprising material or mixtures of material selected from the group of inorganic salts having antimony, tin, lithium, sodium, potassium, magnesium, calcium, beryllium, aluminum, zinc, molybdenum, cobalt, nickel, ruthenium, rhodium or iron cations and chloride, iodide, bromide, sulfate, phosphate, borate, sulfite, or silicate anions; and

(b) maintaining said coal-derived liquid in contact with said molten additive at said temperature range for sufficient time to permit said mineral matter to agglomerate, thereby increasing the mean particle size of said mineral solids; and

(c) recovering a coal-derived liquid phase from said contacting having reduced mineral solids content.

2. The process of claim 1 wherein said contacting step is performed by combining said additive with solid coal and reacting said coal with hydrogen at a temperature of 200° to 500° C. and a hydrogen pressure of 100 to 4500 psig for sufficient time to provide said coal-derived liquid containing said suspended solids in contact with said additive and at a temperature above the melting point of said additive.

4,191,629
REACTOR RESIDUUM CONCENTRATION CONTROL IN HYDROCONVERSION OF COAL

Michael C. Chervenak, Pennington, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Continuation of Ser. No. 740,410, Nov. 10, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 955,677

Int. Cl.^{2} C10G *1/06*

U.S. Cl. 208—10 **5 Claims**

1. In a process for the hydroconversion of coal at elevated temperatures wherein a particulate coal having an average particle size of less than 1,000 microns is admixed with a hydrocarbon liquid to form a slurry containing about 30–50 weight percent solids, which is passed with hydrogen upwardly through an ebullated reaction zone wherein the coal is catalytically hydrogenated at reactor pressure conditions of about between 100–300 atmospheres to produce liquid and gaseous hydrocarbon products including a liquid residuum containing unconverted process solids, wherein said reaction zone liquid is maintained with a liquid residuum content of about 30–45 weight percent and unconverted process solids of between 10–25 weight percent by recycling a portion of the liquid product, the improvement which comprises:

(a) passing the hydrocarbon products to a phase separator operating under conditions of pressure not less than 90% of reactor pressure, and temperature conditions near reactor temperature for separation of gaseous hydrocarbons from liquid product;

(b) dividing a portion of the liquid product stream into a first stream for solids separation and a second stream for bypass;

(c) passing the first stream without further separation to a solids separation zone maintained substantially at reactor temperatures and pressure conditions not less than 90% of reactor pressure, whereby a portion of the solids are removed thereby forming a liquid stream containing reduced solids concentration and a stream of increased solids concentration;

(d) recovering the stream of increased solids concentration;

(e) blending the second liquid stream with a sufficient amount of the solids reduced liquid stream to form a combined liquid recycle stream containing between 5–15 weight percent solids;

(f) passing the solids reduced combined liquid stream to the reaction zone thereby maintaining the solids concentration in the reactor zone liquid between about 10–25 percent;

(g) recovering the portion of the reduced solids concentration stream not recycled; and

(h) recovering the converted product.

4,191,630
PROCESS FOR THE PRODUCTION OF SHALE OIL FROM OIL SHALES

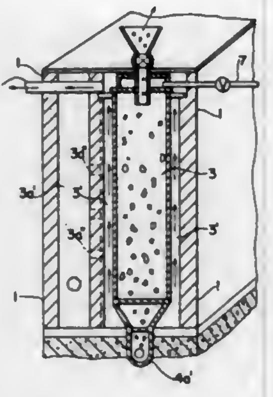
Jacque C. Morrell, 4501 Connecticut Ave. #516, Washington, D.C. 20008

Continuation-in-part of Ser. No. 769,885, Feb. 18, 1977, Pat. No. 4,105,536, which is a continuation-in-part of Ser. No. 679,315, Apr. 23, 1976, abandoned. This application Jul. 21, 1978, Ser. No. 926,638

The portion of the term of this patent subsequent to Aug. 8, 1995, has been disclaimed.

Int. Cl.^{2} C10G *1/02*

U.S. Cl. 208—11 R **3 Claims**



1. A continuous process for the production of the shale oil and other products from oil shale which includes removing a relatively small, up to substantial amounts, of the water present in the oil shale in the first step of the process prior to recovery of the major amount of the oil by retorting the same to avoid sticky or pitch deposits and interference by the latter in the retorting step of the process which comprises subjecting the said oil shale in subdivided form to a preliminary step of indirect heat treatment in a partial dehydration step, collecting the vapors and gases from the said partial dehydration step in the temperature range from the ambient up to about 212° F. to about 550° F. to remove small, up to relatively large amounts of free and combined water from the oil shale, thereafter passing the heated partially dehydrated oil shale to the retorting step for further heat treatment at a substantially higher temperature than the preliminary step in the approximate range of about 800° F. to 1000° F. in a rotating substantially horizontal cylindrical vessel said heat treatments in the partial dehydration and retorting steps being effected by indirect heat exchange with hot combustion and flue gases therefrom which gases are not in direct contact with the oil shale, said further heat treatment being conducted while rotating the partially treated oil shale in a substantially horizontal cylindrical vessel, withdrawing the vapors and gaseous products resulting from the heat treatment of the said partial dehydration and retorting steps of the process, fractionating the vapors withdrawn from the retorting step whereby there is removed a light overhead product comprising vapors of low boiling hydrocarbons, water, hydrocarbon gases and ammonia wherein the heavier conversion oil products from the oil shale are condensed and separated as a liquid for further treatment and use.

4,191,631
DEWAXING PROCESS

William P. Grisham, Jr., Pasadena, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 27, 1978, Ser. No. 881,283

Int. Cl.^{2} C10G *43/08*

U.S. Cl. 208—33 **16 Claims**

1. In a continuous multiple dilution process for dewaxing a wax-containing petroleum oil wherein a wax-containing petroleum oil feed is contacted with a ketone de-waxing solvent in a series of progressively cooler chilling zones to precipitate wax and provide wax and a wax-depleted oil, the improvement comprising, carrying out the contacting of the wax-containing oil in the presence of an effective amount of a polyalkyl acrylate crystal modified, and continuously apportioning the feed to provide in the initial contacting a solvent-oil mixture having a solvent to oil feed ratio of three or greater, and adding the remaining portion of the feed to the solvent-oil mixture when the point of incipient crystallization of the solvent-oil mixture is reached.

4,191,632
PROCESS FOR THE PRODUCTION OF BENZENE FROM HYDROCARBON FRACTIONS RICH IN ALKYL-AROMATIC HYDROCARBONS AND CONTAINING PARAFFINIC AND NAPHTHENIC HYDROCARBONS

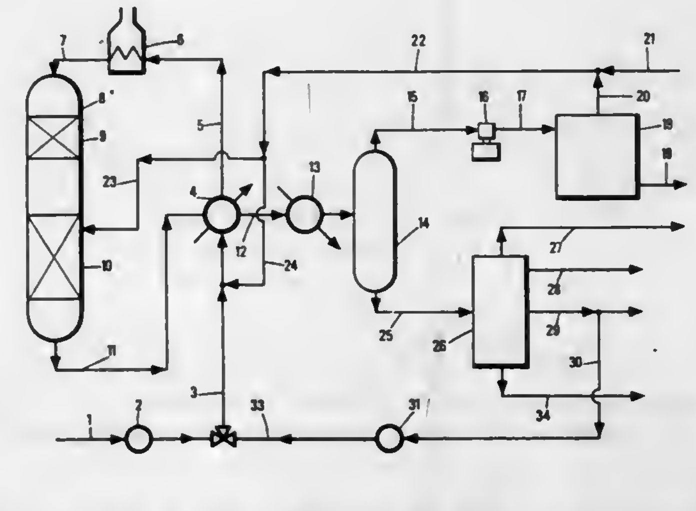
Jean Cosyns, Maule; Christian Marcilly, Houilles; Jean Miquel, Paris, and Jean-Francois Le Page, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 6, 1978, Ser. No. 893,912

Claims priority, application France, Apr. 6, 1977, 77 10685

Int. Cl.^{2} C07C *3/58;* C10G *37/10*

U.S. Cl. 585—483 **10 Claims**



1. A process for the production of benzene which comprises the steps of:

subjecting a hydrocarbon charge, rich in alkyl-aromatic hydrocarbons and containing approximately 2 to 20% by weight of iso and normal paraffinic hydrocarbons and naphthenic hydrocarbons or mixtures of these hydrocarbons, in a first catalytic zone, to a hydro-treatment carried out at a temperature of between 450° and 570° C. under a pressure of between 10 and 50 bars at a spatial velocity of between 0.1 and 10 cm^3 of liquid charge per cm^3 of catalyst and per hour with a H_2/hydrocarbon molar ratio of between 2 and 10, in the presence of a catalyst, said catalyst being a mixture containing (a) a mordenite containing less than 0.6% by weight of sodium, and having a pore size of between approximately 5 and 6 A and containing cations selected from the cations of the metals of groups VIII and IB of the Periodic Table, and (b) a reforming catalyst, the proportion of the latter forming 30 to 70% by weight of the mordenite;

passing at least a portion of the effluent from said first catalytic zone into a second zone and subjecting said effluent to hydrodealkylation, carried out either thermally at a temperature of between 620° and 720° C. or catalytically on a second catalytic bed at a temperature of between 500° and 650° C. under a pressure of between 10 and 50 bars, at a liquid spatial velocity of between 0.1 and 10, with a H_2/hydrocarbon molar ratio of between 2 and 10, the catalyst of said second catalytic bed comprising a non-selective carrier; and

separating and recovering benzene from the effluent from said second zone.

4,191,633
PROCESS FOR SUPPRESSION OF HYDROGENOLYSIS AND C_5+ LIQUID YIELD LOSS IN A REFORMING UNIT

Louis Dauber, Cranford, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 10, 1978, Ser. No. 923,191

Int. Cl.^{2} C10G *35/08*

U.S. Cl. 208—65 **9 Claims**

1. In a process for reforming, with hydrogen, a naphtha feed in a reforming unit which contains a plurality of catalyst-containing on-stream reactors connected in series, the hydrogen and naphtha feed flowing from one reactor of the series to another to contact the catalyst contained therein at reforming conditions, the improvement comprising

adding a maximum of about 0.01 percent sulfur, based on the total weight of the catalyst, to the catalyst of a reactor after the freshly prepared catalyst has been regenerated and reactivated about five times, or more, and injecting water into an on-line reactor of the series in concentration ranging from about 0.5 to about 50 wppm, based on feed, to maintain and control the sulfur level of the ctalyst.

4,191,634
OCTANE UPGRADING PROCESS FOR LIGHT PARAFFINS USING A COMBINATION OF TWO PALLADIUM-ZEOLITE CATALYSTS

Stephen J. Miller, Emeryville, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 2, 1978, Ser. No. 947,793

Int. Cl.^{2} C10G *35/08*

U.S. Cl. 208—65 **7 Claims**

1. A process for upgrading a hydrocarbon paraffinic feed (a) boiling in the range of about from 25° C. to 70° C., (b) containing at least about 25 volume percent of a C_5 component and (c) having a research octane number below about 65, which comprises:

effectively increasing said octane number by consecutively contacting said feed with a first fixed bed catalyst and second fixed-bed catalyst, said contacting being under hydrocarbon conversion conditions, including:

(1) a temperature in the range of from about 250° to 315° C.;

(2) a pressure in the range of from about 20 to 54 atmospheres gauge;

(3) a hydrogen gas to hydrocarbon mol ratio in the range of from about 3–8 to 1; and

(4) a composite liquid hourly space velocity in the range of from about 0.5 to 2;

said first catalyst consisting essentially of palladium, ultrastable H-Y zeolite and alumina, said second catalyst consisting essentially of palladium, HZSM-5-type zeolite and alumina; and said catalysts each containing, for each 100 parts by weight thereof (a) an amount of palladium in the range of from about 0.1 to 1 part and (b) an amount of alumina and the respective zeolite in the range of from about 25 to 75 parts, and said ZSM-5-type zeolite having a silica-to-alumina ratio in the range of from about 40 to 160; and recovering the resulting hydrocarbon effluent having, relative to said feed, an improved research octane number.

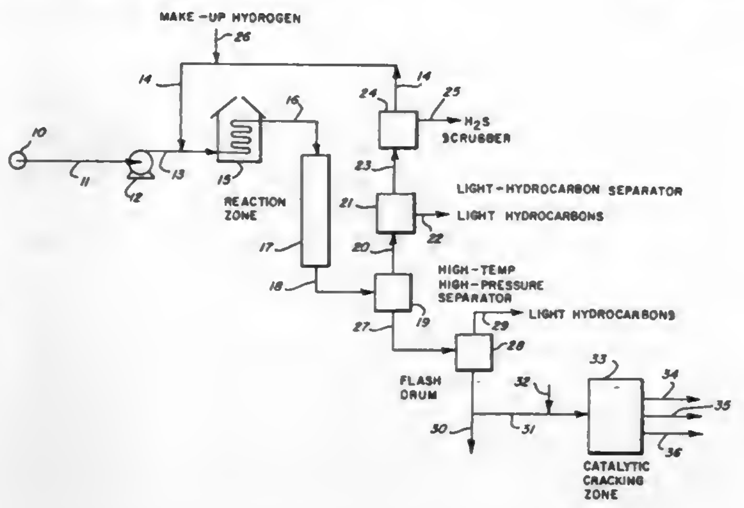
4,191,635
PROCESS FOR THE CRACKING OF HEAVY HYDROCARBON STREAMS

Leonard M. Quick, Naperville, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 862,846, Dec. 21, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,416

Int. Cl.² C10G *23/02*

U.S. Cl. 208—89 **35 Claims**



1. A process for hydrotreating and cracking a heavy hydrocarbon stream containing metals, asphaltenes, nitrogen compounds, and sulfur compounds, which process comprises: (a) contacting said stream in a hydrotreating zone under hydrotreating conditions and in the presence of hydrogen with a hydrotreating catalyst comprising molybdenum and chromium, said molybdenum and chromium being present in the elemental form, as oxides, as sulfides, or mixtures thereof, deposed on a large-pore, catalytically active alumina to reduce the metals content in said stream, to convert the asphaltenes, nitrogen compounds, and sulphur compounds in said stream, and to provide a hydrotreated product stream, said hydrotreating catalyst possessing a pore volume within the range of about 0.4 cc/gm to about 0.8 cc/gm, a surface area within the range of about 150 m^2/gm to about 300 m^2/gm, and an average pore diameter within the range of about 100 Å (10 nm) to about 200 Å (20 nm); and (b) catalytically cracking at least a portion of said hydrotreated product stream in a catalytic cracking zone under catalytic cracking conditions and in the presence of a cracking catalyst to produce gasoline and distillates in improved yields.

4,191,636
PROCESS FOR HYDROTREATING HEAVY HYDROCARBON OIL

Yoshio Fukui, Fujisawa; Yoshimi Shiroto, Yokohama; Mamoru Ando, Kawasaki, and Yasumasa Homma, Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed Jun. 6, 1978, Ser. No. 913,114

Claims priority, application Japan, Jun. 7, 1977, 52-66301

Int. Cl.² C10G *13/02, 23/02;* **B01J** *21/14*

U.S. Cl. 208—110 **11 Claims**

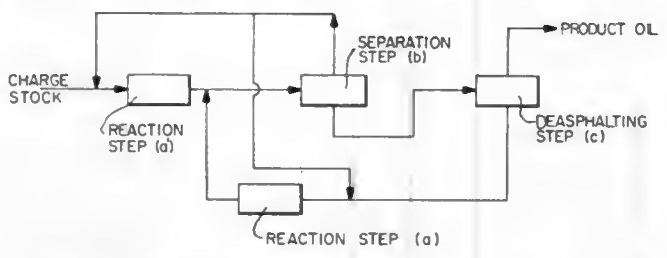
1. In a process for treating heavy hydrocarbon oil which contains asphaltene and heavy metals to continuously convert the oil into a substantially asphaltene-free and heavy metal-free oil comprising the steps of:

(a) contacting said reactor feed oil with hydrogen in the presence of a catalyst;

(b) separating said withdrawn hydrotreated product into a hydrogen-rich gas and a liquid product;

(c) separating the liquid product of step (b) into a substantially asphaltene-free and heavy metal-free light fraction and an asphaltene-containing and heavy metal-containing heavy fraction; and

(d) recycling said heavy fraction of step (c) to step (a), the improvement in step (a) comprising maintaining the reactor feed oil so as to contain at least 5 weight % of asphaltene and at least 80 ppm of vanadium, contacting said reactor feed oil with the catalyst compound of one or more catalytic metals selected from the groups Va, VIa and VIII in the Periodic Table, supported on a carrier containing magnesium silicate as the major component, and withdrawing the hydrotreated product without entraining the catalyst therein.



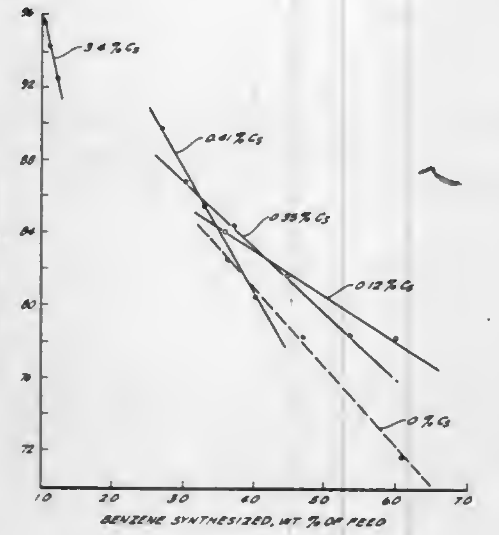
4,191,637
AROMATIZATION PROCESS AND CATALYST

Steven D. Light, Fullerton, and John W. Ward, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 842,221, Oct. 14, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,626

Int. Cl.² C10G *35/08*

U.S. Cl. 208—139 **11 Claims**



1. A process for the aromatization of a feedstock comprising C_6–C_{12} paraffinic and/or olefinic hydrocarbons having a straight chain of at least 5 carbon atoms, which comprises contacting said feedstock under dehydrocyclization conditions with a catalyst comprising alumina and supported thereon about 0.1–2 wt.% Pt, about 0.1–3 wt.% Cl and sufficient Cs to provide a Cs/Cl atomic ratio between about 0.005 and 0.2.

4,191,638
REFORMING CATALYSTS

Charles J. Plank, Woodbury; Edward J. Rosinski, Pedricktown, both of N.J., and Edwin N. Givens, Bethlehem, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 757,113, Jan. 5, 1977, Pat. No. 4,141,859, which is a continuation-in-part of Ser. No. 503,131, Sep. 4, 1974, abandoned, which is a continuation-in-part of Ser. No. 262,410, Jun. 13, 1972, abandoned. This application Oct. 23, 1978, Ser. No. 953,671

Int. Cl.² C10G *35/08*

U.S. Cl. 208—139 **19 Claims**

1. In a process for reforming a hydrocarbon charge stock

under reforming conditions by contacting said charge with a reforming catalyst, the improvement whereby the reforming catalyst is a reforming catalyst system in which the total catalyst combination comprises from about 1% to about 100% of a composite comprising

(a) an effective amount, up to about 25% by wt. of a crystalline aluminosilicate zeolite,

(b) not less than about 75%, by wt. of a carrier material,

(c) from about 0.01% to about 2%, by wt., of a platinum group metal either alone or in combination with other metals, and

(d) from about 0.01 to about 3%, by wt., of a halide

and from 0% to about 99% of a conventional reforming catalyst composition comprising

(a) a carrier material,

(b) from about 0.01% to about 2%, by wt., of a platinum group metal either alone or in combination with other metals,

(c) from about 0.01% to about 3%, by wt., of a halide

said total catalyst system having a K factor from about 1.5 to about 15, this factor being as defined in the specification in equations 2 and 3.

4,191,639
PROCESS FOR DEASPHALTING HYDROCARBON OILS

Costandi A. Audeh, and George C. Johnson, both of Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,588

Int. Cl.² C10G *21/06*

U.S. Cl. 208—309 **6 Claims**

1. In the process for deasphalting an asphaltene-containing mineral oil, which process comprises contacting said oil with a liquid deasphalting solvent under conditions of temperature and pressure effective to form two liquid phases, a deasphalted oil phase and a tar phase, separating said liquid phases and recovering deasphalted oil from said deasphalted oil phase, the improvement which comprises utilizing a liquid deasphalting solvent consisting of at least two components selected from the group consisting of hydrogen sulfide, carbon dioxide, and light hydrocarbon, said light hydrocarbon being selected from the group consisting of propane, butanes, pentanes, and blends thereof, each of said components being present in an amount equal to at least 10 percent of the total volume of said liquid solvent, and contacting said oil with said liquid solvent at a temperature less than the critical temperature, and a pressure greater than the critical pressure, of said liquid solvent.

4,191,640
DUAL PRESSURE FRACTIONATION OF HYDROCARBONS

David D. Chess; Clements A. Helbling, Jr., and Randlow Smith, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

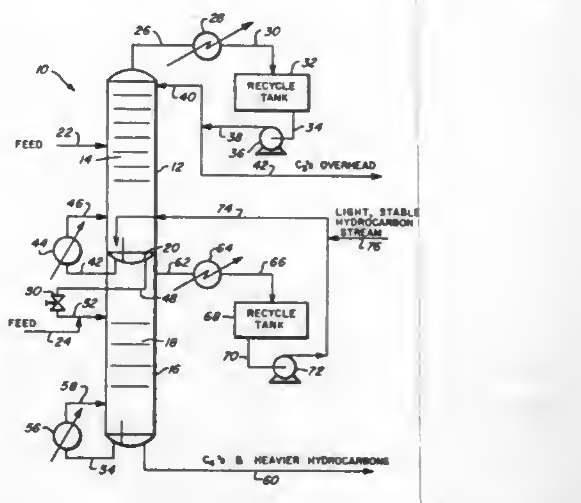
Filed Jun. 26, 1978, Ser. No. 919,197

Int. Cl.² B01D *3/10;* **C10G** *7/00*

U.S. Cl. 208—348 **24 Claims**

1. In a process for the dual pressure fractionation of a hydrocarbon feed stream containing unstable components comprising the steps of maintaining a high pressure fractionating zone, maintaining a low pressure fractionating zone, the pressure in said low pressure fractionating zone being lower than the pressure in said high pressure fractionating zone, introducing said hydrocarbon feed stream into one of said fractionating zones, recovering an overhead fraction from said low pressure fractionating zone, increasing the pressure of said recovered overhead fraction to the pressure of said high pressure fractionating zone, introducing said pressurized overhead fraction into said high pressure fractionating zone, recovering a first portion of the bottoms fraction from said high pressure fractionating zone, reducing the pressure of said recovered first portion of said bottoms fraction, introducing the depressurized first portion of said bottoms fractions into said low pressure fractionating zone, the improvement comprising:

introducing a stable hydrocarbon stream comprising hydrogenated overhead fraction from said high pressure fractionating zone into one of said fractionating zones, said stable hydrocarbon stream being stable under the conditions existing in said high pressure fractionating zone, at least a portion of said stable hydrocarbon stream having a boiling point lower than the boiling point of at least one of said unstable components which accumulates in said high pressure fractionating zone.



4,191,641
FLOTATION PROCESS WITH USE OF XANTHOGEN CHLOROPROPYL FORMATE REAGENTS

Arthur H. Fischer, New York, N.Y.; Lawrence E. Strow, and Franklin A. Bolth, both of Baltimore, Md., assignors to Mineric Corporation, New York, N.Y.

Filed Jan. 26, 1978, Ser. No. 872,562

Int. Cl.² B03D *1/02*

U.S. Cl. 209—166 **5 Claims**

4. In the flotation of copper sulfide ores, the improvement comprising using as a flotation reagent therein the water-insoluble reaction product of an alkali metal lower alkyl xanthate solution and 2-chloro isopropyl chloroformate reacted in the range of 25° to 45° C. in the presence of excess alkyl alcohol used in the preparation of said xanthate.

4,191,642
METHOD OF SEPARATING GRANULAR POURABLE MATERIALS OF DIFFERENT DENSITIES IN A GASEOUS OR LIQUID MEDIUM

Klaus Limper, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Jan. 25, 1978, Ser. No. 872,061

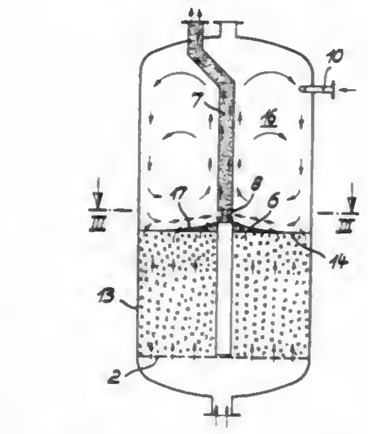
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2702987

Int. Cl.² B03B *11/00*

U.S. Cl. 209—495 **1 Claim**

1. A method of separating several granular pourable materials of different densities in fluidized bed layers including a lowest layer as well as a border surface of a next to the lowest layer formed by a fluidizing medium passing through each layer, which includes in combination the two steps of: first, successively withdrawing the layers above said lowest layer in sequence from top to bottom in downward direction from an axially located point slightly above the border surface of the next to the lowest layer, and secondly, rotating the fluidizing medium remaining above the residual portion of said next to

the lowest layer, while completely withdrawing the residual portion with the aid of a secondary radial flow toward the central region created by rotating said fluidizing medium above said residual portion.



4,191,643

METHOD FOR THE MECHANICAL PREPARATION OF ORGANIC WASTES IN A BIOLOGICAL DIGESTION PROCESS

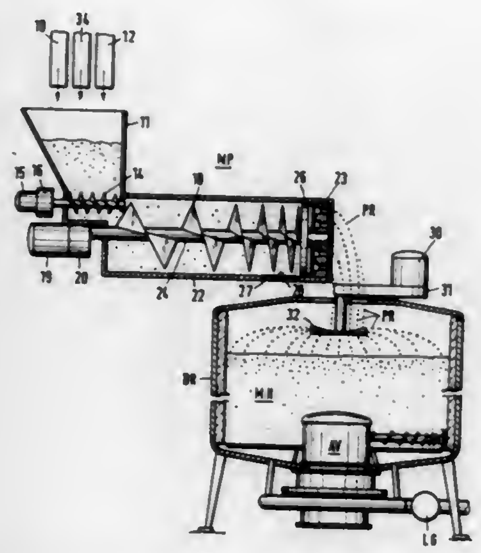
Franz X. Kneer, Eschenburg-Eibelshausen, Fed. Rep. of Germany, assignor to Gebruder Weiss K.G., Dillenburg, Fed. Rep. of Germany

Filed Feb. 17, 1978, Ser. No. 878,801

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2708313

Int. Cl.² C02C *3/00*

U.S. Cl. 210—4 **5 Claims**



1. Method of mechanically preparing organic waste, such as sewage sludge, animal defecated matter and the like, for introduction into a biological digestion process with the addition of carbon-containing matter, such as sawdust, into the organic waste, comprising the steps of moving the organic waste and added carbon-containing materials through a laterally closed housing and mixing the organic waste and added carbon-containing matter and at the same time compressing the combined material for effecting its dehydration and reducing its volume to approximately ⅓ of its initial volume at the completion of its passage through the housing, at the end of its movement through the housing discharging the material from the housing by pressing the material into and through at least one axially extending passageway having a first section followed by a second section having a diameter in the range of 10 to 20 mm, applying a further compressive force to the material with the force acting essentially perpendicularly to the axial direction of the passageway in the first section, smoothing the outside surface of the material within the second section and closing off any capillary opening in the outside surfaces of the material, forcing the material out of the second section so that a cylindrically shaped continuous piece of material of approximately 10 to 20 mm in diameter extends laterally unsupported from the second section with the laterally unsupported piece breaking off due to its own weight as it moves outwardly from the second section with the broken off pieces having a maximum length of approximately 150 mm and with each piece having a smooth surface extending in the length direction thereof and broken end surfaces, and feeding the pieces into an aeration reactor and forcing air into the reactor for effecting a spontaneous digestion process with the air flowing into the pieces through the broken end surfaces and flowing through the pieces in the length direction thereof.

4,191,644

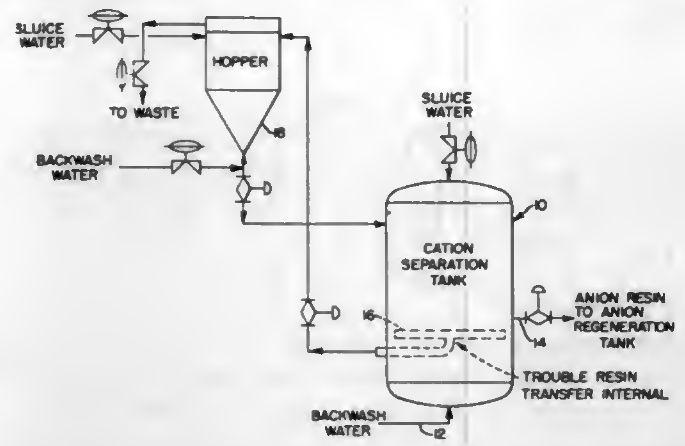
REGENERATION OF MIXED RESIN BED USED FOR CONDENSATE POLISHING

Michael J. Lembo, Scotch Plains, and James Y. Chen, Livingston, both of N.J., assignors to Belco Pollution Control Corporation, Parsippany, N.J.

Filed May 11, 1978, Ser. No. 905,078

Int. Cl.² B01D *15/06*

U.S. Cl. 210—33 **9 Claims**



1. A process for the regeneration of a spent mixed bed of cation and anion exchange resins having different densities, said process comprising:

(a) backwashing said spent mixed resin bed in a vessel to separate it into a first floating bed containing anion exchange resin granules and a minor amount of cation-exchange resin granules and a second floating bed containing the major part of the cation exchange resin;
(b) removing the major portion of the first floating bed from the vessel as a first cut;
(c) removing a second cut of resin granules consisting of the remainder of said first floating bed and a minor portion of said second floating bed, leaving the remainder of said second floating bed in the vessel as a third cut;
(d) transferring said second resin cut to a treatment zone and physically separating it into a cation resin portion and an anion resin portion;
(e) transferring said first resin cut to a anion resin treatment zone and contacting the resin with a base for regeneration of the anion resin;
(f) contacting said third resin cut with an acid for regeneration of the cation resin; and
(g) combining the regenerated cation resin of said third resin cut with the regenerated anion resin of said first resin cut to form a fresh mixed resin bed.

4,191,645

PROCESS FOR DEWATERING SEWAGE SLUDGE

Arthur J. Begala, Jr., Fairfield, and Ernest D. Kaufman, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1977, Ser. No. 860,809

Int. Cl.² C02B *1/20;* C02C *3/00*

U.S. Cl. 210—47 **5 Claims**

1. In a process for dewatering sewage sludges wherein an effective amount of an inverted water-in-oil emulsion of a cationic copolymer is admixed therewith and water is removed from the thus-treated sludge, the improvement which comprises using as the water-in-oil emulsion one which contains a cationic copolymer of a major portion of a nonionic monomer and a minor amount of a cationic comonomer of greater reactivity than said nonionic monomer and is prepared by a process which comprises (1) preparing an aqueous solution of the total quantity of said nonionic monomer to be employed and up to about 95 mol percent of the total quantity of said cationic comonomer to be employed, thus providing a withheld portion of said cationic comonomer; (2) emulsifying said aqueous solution in a sufficient quantity of a hydrocarbon oil to provide a water-in-oil emulsion in which water comprises the dispersed phase; (3) initiating the polymerization reaction in said dispersed phase; and (4) continuing the polymerization reaction in said dispersed phase while incrementally adding thereto said withheld portion of said cationic comonomer until substantially all of the nonionic monomer and cationic comonomer have reacted.

4,191,646

APPARATUS FOR CONDUCTING FLUIDS IN A DIALYSIS SYSTEM

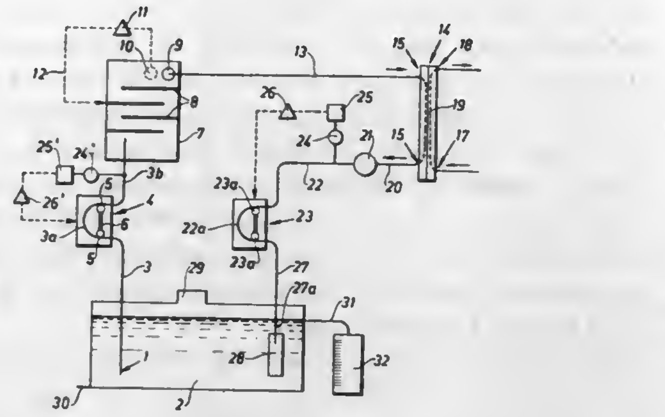
Lars-Ake L. Larsson, Loddekopinge, and Lars J. C. Traven, Lund, both of Sweden, assignors to Gambro AB, Sweden

Filed Oct. 13, 1977, Ser. No. 841,896

Claims priority, application Sweden, Oct. 14, 1976, 7611387

Int. Cl.² B01D *31/00*

U.S. Cl. 210—103 **19 Claims**



1. Apparatus for conducting fluids in a dialysis system having a dialyzer, a source of dialysis fluid for the dialyzer, heating means for heating dialysis fluid before introduction into the dialyzer, and pump means for pumping heated dialysis fluid to and through the dialyzer, said fluid conducting apparatus comprising:

a heating chamber for cooperation with said heating means to heat fluid introduced into said heating chamber, said heating chamber comprising a collapsible member having an inlet for introducing dialysis fluid into said collapsible member and an outlet for withdrawing fluid from said collapsible member;
first fluid conducting means for connection to the source of dialysis fluid and to said inlet of said heating chamber collapsible member for delivering dialysis fluid from the source of dialysis fluid to said heating chamber collapsible member;
second fluid conducting means for connection to said outlet of said heating chamber collapsible member, the dialyzer, and the pump means for conducting fluid from said heating chamber collapsible member to and through the dialyzer; and
shut-off means associated with said second fluid conducting means for terminating the flow of fluid from said heating chamber collapsible member to the dialyzer to prevent the emptying of fluid from said heating chamber collapsible member, said shut-off means comprising first and second flexible wall portions of said heating chamber collapsible member, said first and second flexible wall portions being juxtaposed to one another and arranged to be free to more between an open, separated position and a closed, abutting position, and said outlet of said heating chamber collapsible member being positioned in said first flexible wall portion so that when the amount of fluid being withdrawn from said heating chamber collapsible member exceeds the amount of fluid being introduced into said heating chamber collapsible member and the amount of fluid in said heating chamber collapsible member falls below a predetermined value, said first and second flexible wall portions are caused to move towards said closed, abutting position whereby said second flexible wall portion closes said outlet in said first flexible wall portion.

4,191,647

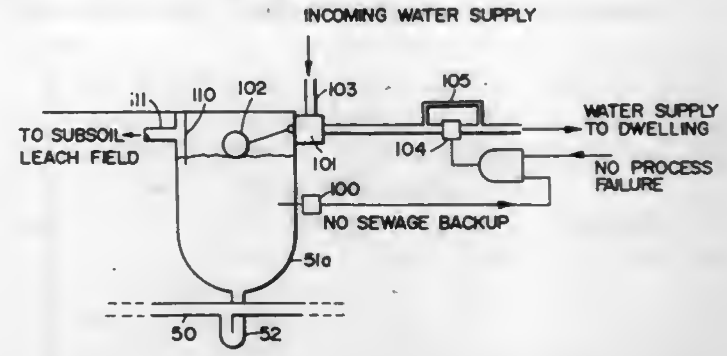
FILTRATION SYSTEM FOR HOUSEHOLD SEWAGE

Steven B. Mullerheim, Kensington, and Fred G. Williams, Jr., San Anselmo, both of Calif., assignors to Great Circle Associates, Walnut Creek, Calif.

Division of Ser. No. 752,201, Dec. 20, 1976, Pat. No. 4,137,062. This application Jan. 29, 1979, Ser. No. 7,207

Int. Cl.² B01D *35/00*

U.S. Cl. 210—128 **2 Claims**



1. A filtration system for household sewage, comprising:

a fresh water supply pipe for said household operably connected to a source of fresh water and to said household;
a sewage inlet line from the household;
filtering means for separating the sewage into liquid wastes and solid wastes;
means for delivering successive charges of sewage from the inlet line to the filtering means;
a surge reservoir connected into the sewage inlet line;
a first level sensor at a first level in the surge reservoir;
means operably connected to the first level sensor and to said fresh water supply pipe of the household for reducing the flow rate of fresh water through the supply pipe to a lower than normal rate when sewage in the surge reservoir has reached said first level;
a second level sensor at a second level in the surge reservoir, near its top; and
normally open valve means connected to the fresh water supply pipe of the household for shutting off the fresh water supply when sewage in the surge reservoir has reached said second level.

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FILTRATION DEVICE FOR FILTERING TEMPERATURE CONTROLLED FLUIDS

Stephen J. Kaplan, 4420 Cezanne Ave., Woodland Hills, Calif. 91364, and Ladislaus S. Lengyel, 25623 Bellerise Dr., Valencia, Calif. 91355

Filed Feb. 6, 1978, Ser. No. 875,599

Int. Cl.² B01D *35/18, 29/32*

U.S. Cl. 210—186 **27 Claims**

1. A filtration apparatus for filtering contaminants from a temperature controlled process fluid, said apparatus comprising:

(a) an outer housing,
(b) a wall having a size smaller than said housing located

within said housing and being spaced therefrom to form a temperature controlling fluid chamber surrounding at least a portion of said wall,

(c) a filter canister disposed within said housing and being removable therefrom, said canister having a central process fluid receiving chamber and a filtering element therein for removing contaminants from a temperature controlled process fluid delivered to said process fluid receiving chamber,

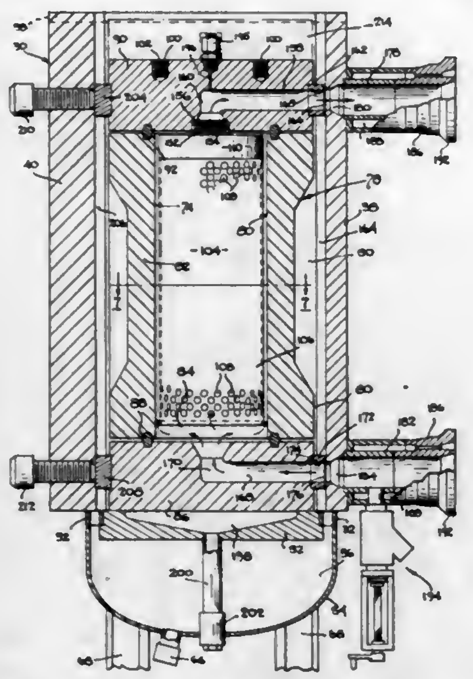
(d) a process fluid inlet on said canister for receiving the process fluid and delivering the process fluid to said filtering element,

(e) a process fluid outlet on said canister for delivering a filtered process fluid from said canister,

(f) means operatively associated with said housing for delivering a temperature controlling fluid to said temperature controlling fluid chamber to surround at least a portion of said canister and provide heat to the temperature controlled process fluid passing through said canister,

(g) means operatively associated with said housing to remove said temperature controlling fluid from the surrounding relationship around at least said portion of said canister,

(h) first process fluid transfer means operatively connected through said housing and alignable with the inlet on said canister to introduce process fluid into said process fluid receiving chamber, said first process fluid transfer means comprising a process fluid inlet pipe delivering process fluid at least to said housing,



(i) a first temperature controlling fluid jacket surrounding said inlet pipe to maintain a flow of temperature controlling fluid around said inlet pipe at least to said housing,

(j) second process fluid transfer means operatively connected through said housing and alignable with the outlet on said canister to remove said process fluid from said process fluid receiving chamber, said second process fluid transfer means comprising a process fluid outlet pipe for removing process fluid from said housing and extending to and at least partially into said housing,

(k) a second temperature controlling fluid jacket surrounding said outlet pipe to maintain a flow of temperature controlling fluid around said outlet pipe and extending into said housing,

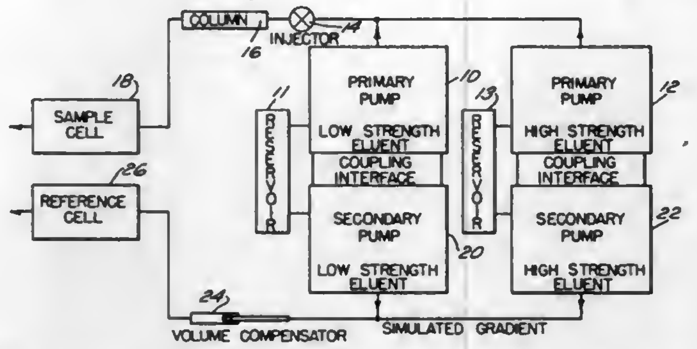
(l) means forming an opening in said housing for inserting and removing said canister from said housing, and

(m) alignment means cooperating between said housing and said canister to permit alignment of said inlet and first transfer means and outlet and second transfer means when said canister is located within said housing, in only a certain orientation such that said canister can be inserted into said housing permitting the process fluid inlet to be in fluid communication with the first process fluid transfer means without coupling of any mechanical connection and said process fluid outlet to be in fluid communication with the second process fluid transfer means without coupling of any mechanical connection, said cannister also being removable from said housing without uncoupling any mechanical connection between said process fluid inlet and said first process fluid transfer means and between said process fluid outlet and said second process fluid transfer means.

4,191,649

LIQUID CHROMATOGRAPHY SYSTEM WITH SIMULATED GRADIENT

Richard A. Hartwick, Old Mine Rd., Layton, N.J. 07851
Filed Oct. 23, 1978, Ser. No. 953,699
Int. Cl.^{2} B01D ***15/08***
U.S. Cl. 210—198 C **4 Claims**

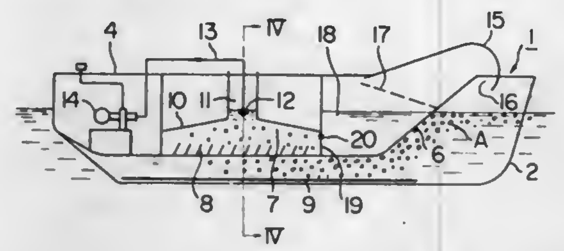


1. In a liquid chromatography system having a first and second reservoirs for eluent with first and second pumps connected thereto and a first conduit, the discharge of the pumps connected thereto, said conduit connected to a column and sample cell in series, that improvement comprising providing a reference cell, third and fourth pumps, said third and fourth pumps connected to the first and second reservoirs and discharging into a common second conduit, said common second conduit connected to a volume compensator and said reference cell in series, said third and fourth pumps driven in unison with said first and second pumps.

4,191,650

OIL-COLLECTING SHIP FOR OIL SPILLS

Hiroto Muneta, Kashiwa, Japan, assignor to Mitsui Ocean Development & Engineering Co., Ltd., Tokyo, Japan
Filed Jul. 3, 1978, Ser. No. 921,588
Claims priority, application Japan, Oct. 13, 1977, 51-136242
Int. Cl.^{2} E02B ***15/04***
U.S. Cl. 210—242 S **7 Claims**



1. An oil-collecting ship for oil spills comprising a pair of laterally-spaced side hulls forming a flow passage therebetween, a center hull having wall means forming a well having a bottom with an opening in said flow passage between said hulls, a deflector having a forwardly inclined segment formed at the forward part of said bottom to project above the water surface and deflect a stream into said flow passage below said bottom, said well opening in the bottom being behind the inclined segment to permit oil carried by the stream in said flow passage to float upwardly into said well, said segment being spaced forwardly from a forward wall of said well to form a splash chamber therebetween, a return-wave receiving splash plate curving over the top end of the inclined segment in spaced relation thereto and forming an opening between a front end of said splash plate and the inclined segment, and overlying at the other end said splash chamber rearwardly of the inclined segment, said splash plate being operable to direct upward splashes from said segment into said splash chamber, and a communication passage connecting the chamber with the well.

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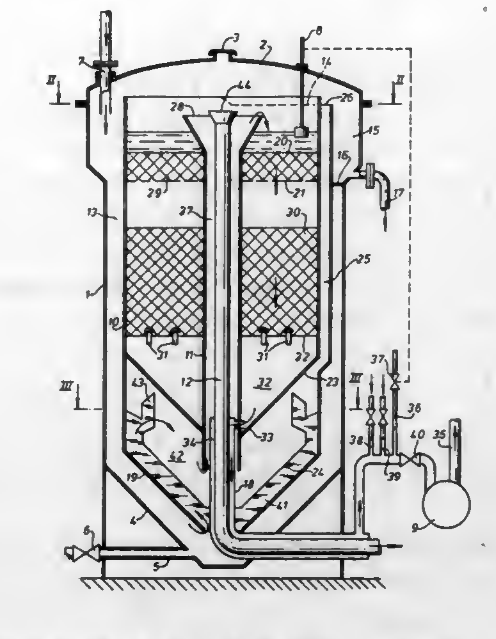
SEPARATOR FOR TWO IMMISCIBLE LIQUIDS

Philippe J. Cheysson; Luc Delons, and Yvon J. Le Guen, all of Le Havre, France, assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Feb. 21, 1978, Ser. No. 879,414
Claims priority, application France, Feb. 23, 1977, 77 05315
Int. Cl.^{2} B01D ***23/16***
U.S. Cl. 210—265 **5 Claims**

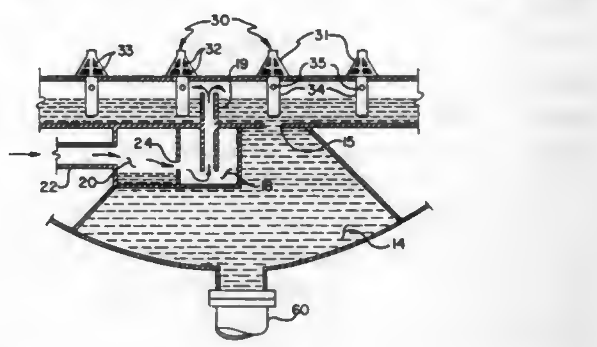


1. A separator suitable for the separation of a first liquid and a second liquid having a higher specific gravity than the first liquid from a liquid mixture containing both liquids, the liquids being mutually immiscible, the separator comprising an inlet for introducing the mixture into a first separation zone so constructed and arranged as to promote the separation by gravity of a substantial part of the first liquid from the mixture, a first liquid outlet for the discharge of separated first liquid from the separator, a second liquid outlet for the discharge of separated second liquid from the separator, means for causing first liquid separated in the first separation zone to pass to the first liquid outlet, means for causing the remaining liquid mixture containing a minor proportion of the first liquid and a major proportion of the second liquid to pass towards the second liquid outlet along a flow path including a part extending downwardly through a second separation zone, said second separation zone including an upper horizontally extending pre-filter zone contained between upper and lower perforated plate means, and a lower main filter zone disposed below said pre-filter zone, said main filter zone being partially filled with a liquid-permeable bed of powdered filter material whereby a vertically extending unfilled chamber is defined between the top of the powdered filter material and the lower perforated plate means, means for drawing fluid from the bottom of the main filter zone to the second liquid outlet, and means for periodically interrupting the separation of the mutually immiscible liquids and backwashing the second separation zone with an up-flowing mixture of the second liquid and a gas to agitate and suspend said powdered filter material in the main filter zone in the chamber below said pre-filter zone, said pre-filter zone preventing further upward travel and loss of said powdered filter material from said separator during backflushing.

4,191,652

APPARATUS FOR FILTER BACKWASHING

Edward A. Whitmore, Salt Lake City, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.
Filed Dec. 22, 1977, Ser. No. 863,380
Int. Cl.^{2} B01D ***23/24***
U.S. Cl. 210—274 **25 Claims**



11. A filtration apparatus in which a liquid to be filtered passes through a filter bed, and in which said filter bed can be backwashed by pressurized air and water, said apparatus comprising:

(a) a vessel having a floor structure to support said filter bed;

(b) a header disposed below said floor structure;

(c) a plurality of laterals disposed below said filter bed and above said header, each of said laterals being in liquid-flow communication with said header so that water rising from said header into said laterals can attain substantially the same level in each of said laterals;

(d) a plurality of nozzles connected to each of said laterals, said nozzles providing fluid communication between said laterals and said filter bed;

(e) an air distribution plenum disposed below said laterals;

(f) an air manifold in fluid communication with said distribution plenum;

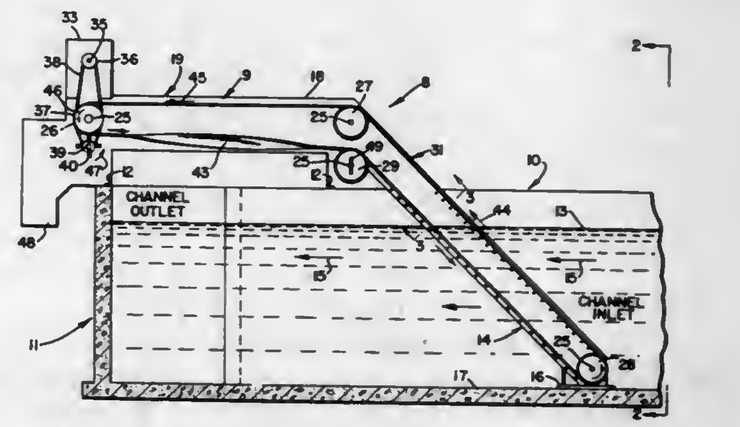
(g) a plurality of conduits, each one of said conduits providing fluid-flow communication between a corresponding one of said laterals and said air distribution plenum;

(h) means for introducing pressurized air into said air manifold so that cushions of air can be formed in said manifold, in said distribution plenum and in said laterals, thereby providing a substantially uniform air pressure for backwashing air passing into said filter bed via said nozzles.

4,191,653

SELF WASHING BELT STRAINER

Quentin L. Hampton, 129 Anchor Dr., Daytona Beach, Fla. 32019
Filed Feb. 27, 1979, Ser. No. 15,795
Int. Cl.^{2} B01D ***33/04***
U.S. Cl. 210—396 **8 Claims**



1. A self washing belt strainer comprising a rigid frame adapted to be secured partially in and partially above a flowing stream of liquid, a plurality of rollers rotatively mounted in said frame, an endless strainer trained over said rollers including an inclined front flight portion and an inclined rear flight

portion each partially submerged in the flowing stream and each inclined in a direction away from the direction of flow, drive means connected to one of said rollers, said strainer including a top flight portion forming a continuation of the upwardly traveling front flight portion and a bottom flight portion disposed directly beneath said top flight portion, a driven cleaning means disposed beneath said aforementioned rollers and around which said top and bottom flight portions travel for cleaning said bottom flight portion, said bottom flight portion being twisted 180° between said roller and a second roller over which said bottom flight portion is trained before commencing its inclined downward travel into the flowing stream, whereby the liquid of the flowing stream after being strained by the upwardly traveling inclined front flight portion will pass through said downwardly traveling rear flight portion for dislodging any foreign matter clinging to the outer downstream side thereof.

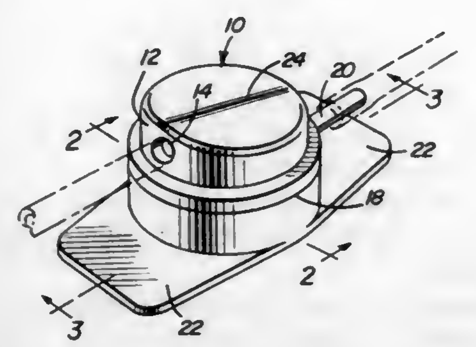
4,191,654
DEVICE FOR HOLDING MEMBRANE FILTER

Roger R. Larson, Champaign, Ill., assignor to Pharmaco, Inc., Champaign, Ill.

Filed Jul. 6, 1978, Ser. No. 925,630

Int. Cl.^{2} B01D *25/04*

U.S. Cl. 210—451 **7 Claims**



1. A membrane filter holder comprising:

(a) A first thermo-plastic enclosure having an inlet port and a first peripheral recess,

(b) A second thermo-plastic enclosure having an outlet port and a second peripheral recess,

(c) A filter membrane of flat plastic sheet material, and

(d) Means consisting of a flat porous metal support plate dimensioned and positioned to fit between and within said first peripheral recess and said second peripheral recess, said means functioning both to support said filter membrane and, when subjected to induction heating, to provide a means to fuse said first enclosure to said second enclosure, to only a dimension from within said holder sufficient to form a fluid tight plastic to plastic seal between said first enclosure and said second enclosure, while further fusing said membrane to said first enclosure sufficient to provide a fluid tight seal between said first enclosure and said membrane, but without substantial heat impairment to said membrane.

4,191,655
DEWATERING COMPOSITION

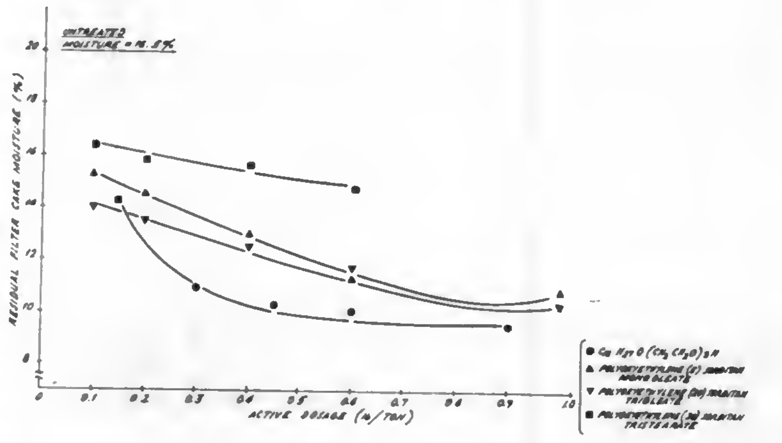
John E. Quinn; Lawrence S. Wittenbrook, both of Doylestown, Pa., and Charles E. Donegan, Tucson, Ariz., assignors to Betz Laboratories, Inc., Trevose, Pa.

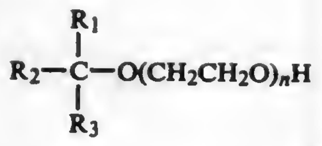
Filed Jul. 7, 1977, Ser. No. 813,573

Int. Cl.^{2} C09K *3/00*

U.S. Cl. 252—60 **18 Claims**

1. A composition for addition to an aqueous slurry of an ore concentrate to improve dewatering thereof upon subsequent filtration which composition comprises a dewatering aid having the formula





$$R_2-\overset{\displaystyle R_1}{\underset{\displaystyle R_3}{\overset{|}{\underset{|}{C}}}}-O(CH_2CH_2O)_nH$$

wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen and alkyl such that the sum of the total number of carbon atoms in R_1, R_2 and R_3 is an average of from about 6 to 17, and n is an average of about 1 to 7; and a water soluble emulsifier which will aid in promoting the dispersibility of the aid in the slurry and promote its activity; and a solvent for said aid and said emulsifier selected from the group consisting of light oil, kerosene, odorless kerosene, heavy aromatic naphtha, and naphthenic process oil.

4,191,656
NON-YELLOWING BIOCIDE FOR CONTROL OF BACTERIA IN SPIN FINISH EMULSIONS USED ON NYLON YARN

Robert M. Marshall, Chester, Va., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 5, 1978, Ser. No. 948,835

Int. Cl.^{2} D06M *16/00*

U.S. Cl. 252—8.6 **11 Claims**

1. A finish composition for treating polyamide yarn, said finish composition resisting bacteria growth and causing said treated yarn to resist yellowing under steam heat treatment, said finish composition consisting essentially of:

a. from about 99.5 to 99.995 percent by weight of an oil in water emulsion, about 10 to 20 percent by weight of said emulsion being an oil portion, said oil portion consisting essentially of from about 55 to 65 percent by weight of coconut oil, about 20 to 35 percent by weight of polyoxyethylene hydrogenated castor oil, and about 7 to 15 percent by weight of potassium salt of polyoxyethylene tridecyl phosphate; and

b. from about 0.005 to 0.500 percent by weight of 2[(hydroxymethyl)amino]ethanol.

4,191,657
COMPOSITIONS FOR ACIDIZING SUBTERRANEAN FORMATIONS

Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 643,983, Dec. 24, 1975, Pat. No. 4,103,742. This application May 2, 1978, Ser. No. 902,122

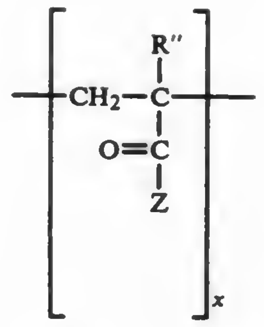
Int. Cl.^{2} E21B *43/27*

U.S. Cl. 252—8.55 C **9 Claims**

1. A gelled acidic composition, suitable for matrix-acidizing or fracture-acidizing of a porous subterranean formation susceptible of attack by an acid, comprising:

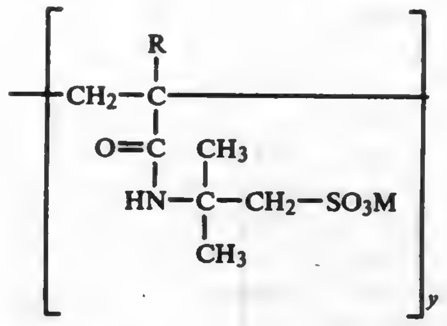
water;

from 0.2 to 3 weight percent, based on the total weight of said composition, of a water-dispersible random copolymer represented by the formula



I

$$\left[-CH_2-\overset{\displaystyle R''}{\underset{\displaystyle O=C-Z}{\overset{|}{\underset{|}{C}}}}-\right]_x$$



II

$$\left[-CH_2-\overset{\displaystyle R}{\underset{\displaystyle O=C-HN-C(CH_3)_2-CH_2-SO_3M}{\overset{|}{\underset{|}{C}}}}-\right]_y$$

wherein: R and R" are each a hydrogen atom, or a methyl radical; M is hydrogen, sodium, or potassium; Z is either $—NH_2$ or —OM in the above Type I monomer units, with the proviso that the copolymer contains at least 10 mol percent of said Type I monomer units in which Z is $—NH_2$; and x and y are the mol percent values of the respective monomer units I and II, with x being in the range of from 20 to 95 and with y being in the range of from 5 to 80;

from 0.4 to 60 weight percent, based on the total weight of said composition, of a non-oxidizing acid which is capable of reacting with a significant amount of the acid-soluble components of said formation; and

from 0.001 to 5 weight percent, based on the total weight of said composition, of a water-dispersible aldehyde selected from the group consisting of aliphatic monoaldehydes having from 1 to 10 carbon atoms, glyoxal, glutaraldehyde and terephthaldehyde;

said polymer, said acid, and said aldehyde, in the amounts used, being sufficiently compatible with each other in an aqueous dispersion thereof to permit gelation and thus form a said composition having sufficient stability to degeneration by the heat of said formation to permit good penetration of said composition into said formation when injected thereinto and the maintenance of said composition in said formation in contact therewith for a period of time usually sufficient for the acid in said composition to react significantly with the acid-soluble components of said formation and stimulate the production of fluids therefrom.

4,191,658
HOT MELT METAL WORKING LUBRICANTS AND METHODS FOR THEIR APPLICATION

Richard W. Jahnke, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 731,060, Oct. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 547,896, Feb. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 513,617, Oct. 10, 1974, abandoned. This application May 8, 1978, Ser. No. 903,640

Int. Cl.^{2} C10M *5/24, 5/22, 7/46, 7/24*

U.S. Cl. 252—32.7 E **31 Claims**

1. A method for lubricating metal during working thereof which comprises applying to said metal a lubricating composition which provides lubricity thereto and which comprises at least one ester of an aliphatic polycarboxylic acid having about 4–25 carbon atoms and a hydroxy compound having the formula $R'(OH)_n$, wherein R' is a hydrocarbon-based radical and n is an integer from 1 to 3; said composition melting within the range of about 30°–100° C.

4,191,659
SULFURIZED COMPOSITIONS

Kirk E. Davis, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 814,573, Jul. 11, 1977, Pat. No. 4,119,549, which is a continuation-in-part of Ser. No. 666,546, Mar. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 560,675, Mar. 21, 1975, abandoned. This application Oct. 6, 1978, Ser. No. 949,286

The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.

Int. Cl.^{2} C10M *1/38, 3/32;* **C07G** *17/00*

U.S. Cl. 252—45 **45 Claims**

1. A method for the preparation of a sulfurized composition which comprises the steps of reacting at about 50°–300° C., under superatomspheric pressure and in the presence of a catalyst, sulfur and hydrogen sulfide with at least one olefinic compound containing 3 to about 30 carbon atoms to form a sulfurized mixture; about 1.2–3.0 gram-atoms of sulfur and about 0.1–1.5 moles of hydrogen sulfide being used per mole of olefinic compound; and removing from said sulfurized mixture substantially all low boiling materials including unreacted olefin, mercaptan and monosulfide.

4,191,660
ORGANOLEPTIC USES OF 1-(3,3-DIMETHYL-2-NORBORNYL)-2-PROPANONE IN CATIONIC, ANIONIC AND NONIONIC DETERGENTS AND SOAPS

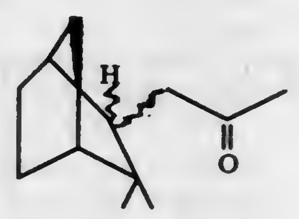
William L. Schreiber, Jackson; James N. Siano, Keyport; Manfred H. Vock, Locust, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 881,331, Feb. 27, 1978, abandoned, which is a division of Ser. No. 819,951, Jul. 28, 1977, Pat. No. 4,090,985, which is a division of Ser. No. 747,308, Dec. 3, 1976, Pat. No. 4,053,657. This application Aug. 10, 1978, Ser. No. 932,615

Int. Cl.^{2} C11D *9/44, 3/50*

U.S. Cl. 252—174.11 **2 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid detergent consisting essentially of the step of intimately admixing with a solid or liquid detergent base a compound having the structure:



wherein the wavy lines are representative of "exo" or "endo" configurations.

4,191,661
ALKALINE DISHWASHER DETERGENT

Linda A. Halas; Lawrence A. Gilbert, both of Fairfield; Robert A. Staab, Cincinnati; Royal D. Collins, Bethel, and Charles R. Ries, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 7, 1977, Ser. No. 849,131

Int. Cl.^{2} C11D *7/54*

U.S. Cl. 252—103 **16 Claims**

1. An automatic dishwashing composition providing optimum cleaning and spotting and filming characteristics consisting essentially of:

(1) from about 20% to about 50% of a sequestering builder selected from the group consisting of alkali metal, tripolyphosphates and pyrophosphates; (2) from about 8% to about 20% trisodium phosphate; (3) from about 5% to

about 20% of SiO_2 as an alkali metal silicate having an SiO_2:M_2O ratio of from about 1.6 to about 3.3, wherein M is selected from the group consisting of sodium and potassium;

(4) available chlorine at a level of from about 1% to about 3%; and

(5) from about 2.5% to about 15% of a low foaming nonionic surfactant having the formula $RO—(C_2H_4O)_xR^1$ wherein R is an alkyl group containing from about 17 to about 19 carbon atoms, x is a number from about 6 to about 15, and R^1 is selected from the group consisting of hydrogen, an alkyl or acyl group containing from one to about 5 carbon atoms and a group having the formula $—(C_yH_{2y}O)_nH$ wherein y is 3 or 4 and n is a number from one to about 4,

said composition having a pH of from about 10.5 to 11.2 at 2,500 ppm and being substantially free of (1) materials having a pH of 12 or more at a concentration of 1% in water and (2) organic chelating builders.

4,191,662

Y_2O_3:EU PHOSPHOR HAVING INCREASED BRIGHTNESS

James E. Mathers, and Ramon L. Yale, both of Ulster, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Sep. 13, 1978, Ser. No. 942,085

Int. Cl.^{2} C09K *11/46*

U.S. Cl. 252—301.4 R **2 Claims**

1. A phosphor composition consisting essentially of $(Y_{1-x}Eu_x)_2O_3$, wherein x is within the range of about 0.01 to 0.10, and from about 100 to 800 parts per million of Mg as MgO, and exhibiting increased brightness upon cathode ray and UV excitation relative to said composition without Mg.

4,191,663

PREPARATION OF SHAPE SELECTIVE ZEOLITE ALPHA AS CATALYST

Güenter H. Küehl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 26, 1978, Ser. No. 900,850

Int. Cl.^{2} B01J *29/06;* **C01B** *33/28*

U.S. Cl. 252—455 Z **45 Claims**

1. A method for synthesizing crystalline aluminosilicate zeolite Alpha containing platinum-group metal within the zeolite pores which comprises the steps of preparing a reaction mixture containing sources of sodium oxide, tetramethylammonium oxide, aluminum oxide, silicon dioxide, a cationic platinum-group metal complex and water and having a composition, in terms of mole ratios of oxides, falling within the following ranges:

SiO_2/Al_2O_3 = 4.0–12.0
$H_2O/(Na_2O + R_2O)$ = 15.0–40.0
$(Na_2O + R_2O)/Al_2O_3$ = 2.0–7.0
$Na_2O/(Na_2O + R_2O)$ = 0.2–0.75
M/Al_2O_3 = 10^{-6}–0.06

wherein R is a tetramethylammonium cation and M is a platinum-group metal, aging said mixture for from about 2 hours to about 100 hours at a temperature of from about 10° C. to about 70° C., and then heating said mixture at a temperature of from about 80° C. to about 150° C. until crystals of said zeolite are formed.

4,191,664

THERMALLY STABLE NICKEL-ALUMINA CATALYSTS USEFUL FOR METHANATION AND OTHER REACTIONS

Dennis P. McArthur, Yorba Linda, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 745,079, Nov. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 651,645, Jan. 23, 1976, Pat. No. 4,042,532, which is a continuation-in-part of Ser. No. 586,946, Jun. 16, 1975, abandoned. This application May 19, 1978, Ser. No. 907,804

The portion of the term of this patent subsequent to Aug. 16, 1994, has been disclaimed.

Int. Cl.^{2} B01J *21/04, 23/74*

U.S. Cl. 252—466 J **8 Claims**

1. A thermally stable catalyst composition comprising a substantially homogeneous composite of between about 30 and 95 weight-percent of an alumina component and about 5 and 70 weight-percent of a nickel component calculated as NiO, said nickel component comprising radiation-detectable crystallites of nickel oxide and nickel aluminate, said catalyst having been prepared by the steps of:

(1) slurrying a powdered alumina hydrate in an aqueous solution of a nickel salt for a sufficient time to effect pore saturation of said alumina hydrate with said solution, wherein a sufficient amount of said nickel salt being in the form of an ammino complex with ammonia to provide at least 2 moles of ammino ligands per mole of said nickel salt;

(2) heating the resulting slurry with agitation at a temperature and for a time sufficient to bring about a gradual decomposition of substantially all of said ammino complex with resultant liberation of ammonia and precipitation of substantially all of said nickel salt to form the hydrated precursor of said nickel component intimately composited with said alumina hydrate; and

(3) drying and calcining the resulting composite at a temperature sufficiently high to convert said alumina hydrate to gamma alumina.

4,191,665

BARIUM TITANATE SEMICONDUCTOR CERAMIC COMPOSITIONS

Harufumi Mandai, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Sep. 13, 1978, Ser. No. 941,858

Claims priority, application Japan, Sep. 16, 1977, 52/111806

Int. Cl.^{2} H01B *1/08;* **C04B** *35/46*

U.S. Cl. 252—520 **1 Claim**

1. The barium titanate semiconductor ceramic composition consisting essentially of the composition expressed by the general formula:

$$(Ba_{1-x-y-z}Ca_xHo_yMn_z)TiO_3$$

wherein x, y and z are respective mol fractions and have values in the following respective ranges:

$0.05 \leqq x \leqq 0.20$
$0.0030 \leqq y \leqq 0.0090$
$0.0010 \leqq z \leqq 0.0018$.

4,191,666

STABLE AQUEOUS EMULSIONS OF TRICHLOROTRIFLUOROETHANE AND METHOD

Pierre Chabert, Saint-Genis Laval, and Louis Foulletier, Oullins, both of France, assignors to Produits Chimiques Ugine Kuhlmann, France

Filed Jan. 9, 1976, Ser. No. 647,859

Claims priority, application France, Jan. 20, 1975, 75 01606

Int. Cl.^{2} C11D *1/78;* **B01J** *13/00*

U.S. Cl. 252—545 **8 Claims**

1. A stable emulsion consisting essentially of from about 70% to 98.5% by weight of trichlorotrifluorethane, from about 1% to 20% by weight of water, and from about 0.5% to 10% by weight of a mixture of:

at least one hydrophilic amine phosphate ester selected from the group consisting of the neutralization product of:

(a) a phosphoric compound selected from a group consisting of monophosphoric, diphosphoric, and a mixture of monophosphoric and diphosphoric compounds of:

(i) straight or branched-chain aliphatic alcohols contained from 6 to 20 carbon atoms; or

(ii) ether alcohols obtained by the ethoxylation, by 1 to 5 moles of ethylene oxide, of an alkylphenol or of a straight or branched-chain aliphatic alcohol containing from 6 to 20 carbon atoms; and

(b) a hydrophilic, water-soluble amine selected from the group consisting of primary, secondary, and a mixture of such amines; and

at least one lipophilic phosphate ester selected from the group consisting of the neutralization product of (a) and a lipophilic amine;

said mixture of amine phosphate esters containing, by weight thereof, at least 5% by weight of the hydrophilic amine phosphate ester.

7. The method of cleaning an object comprising cleaning the object with the emulsion of claim 1.

4,191,667

BUILDING ELEMENTS AND THEIR PREPARATION

Felix Wehrmann, Vienna; René-Hagen Voelkl, Maria Enzersdorf, and Edwin Wojta, Aigen, all of Austria, assignors to Isovolta, Osterreichische Isolierstoffwerke Aktiengesellschaft, Wiener Neudorf, Austria

Filed Mar. 24, 1978, Ser. No. 890,015

Claims priority, application Austria, Mar. 25, 1977, 2084/77

Int. Cl.^{2} C08J *11/00*

U.S. Cl. 260—2.3 **9 Claims**

1. An improved building material element having good mechanical properties comprising expanded vermiculite granules coated with 2 to 30% by weight, based on the weight of vermiculite, with an organic binder formed into a press cake which is then press heated to form the building element, the improvement comprising that the press cake is press heated to have a density of at least 600 kg/m^3 to form the building element, that the building element formed is trimmed, that the trimmed material is shredded to granular or powdered material, and that the granular or powdered material is recycled to comprise at least a portion of the coated vermiculite particles.

4,191,668

INDUCTION OF IMMUNOLOGICAL TOLERANCE

David H. Katz, LaJolla, Calif., assignor to Scripps Clinic and Research Foundation, La Jolla, Calif.

Filed Feb. 3, 1977, Ser. No. 764,586

Int. Cl.^{2} C08L *89/00, 77/04;* **A61K** *39/00, 37/26*

U.S. Cl. 260—6 **4 Claims**

1. A therapeutic immunosuppressive agent capable of inducing specific immunological tolerance to an antigen by supression of antibody response, comprising a conjugate of D-glutamic acid:D-lysine copolymer and the antigen insulin.

4,191,669

POLYAMIDES

Adrién G. Hinze, Dordrecht, and Hendrik G. Stigter, Berkenwoude, both of Netherlands, assignors to Emery Industries, Inc., Cincinnati, Ohio

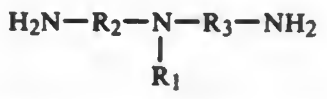
Filed Mar. 7, 1978, Ser. No. 884,446

Claims priority, application Netherlands, Mar. 7, 1977, 7702393

Int. Cl.^{2} C08G *69/34*

U.S. Cl. 260—18 N **8 Claims**

1. A polyamide comprised of groups derived from a polymeric fatty acid containing 70% to 99% dimer acid and 90–110 mole percent of an amine component consisting of 10–100 mole percent triamine of the structure



$$H_2N—R_2—\underset{\displaystyle R_1}{\underset{|}{N}}—R_3—NH_2$$

wherein R_1 is an alkyl group having from 1–3 carbon atoms and R_2 and R_3 are the same or different bivalent hydrocarbon radicals together containing from 4 up to about 24 carbon atoms and 0–90 mole percent of a C_{2-20} diamine, said polyamide having an acid value less than 15 and amine value between about 10 and 125.

4,191,670

SURFACE-TREATED MINERAL FILLER

Dieter Strauch, Zofingen, and Rudiger Werner, Oftringen, both of Switzerland, assignors to Pluss-Staufer AG, Oftringen, Switzerland

Filed May 30, 1978, Ser. No. 910,997

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1977, 2727845

Int. Cl.^{2} C08K *9/04;* **C09D** *3/74, 3/80*

U.S. Cl. 260—23 AR **35 Claims**

18. A watery paint system which contains a binder and a surface-treated mineral filler characterized by the fact that the filler is surface treated with a mixture of saturated and unsaturated aliphatic carboxylic fatty acids having from about 6 to about 22 carbon atoms, and wherein said mixture contains about 10 to about 35% by weight of said saturated acid and from about 65 to about 90% by weight of said unsaturated acid.

4,191,671

ABRASION RESISTANT RUBBER COMPOSITIONS

Nobuyuki Kataoka, Tokyo; Takuya Takahashi, Odawara; Fujio Ohkawa, Yokohama, and Shiro Anzai, Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan

Filed Apr. 7, 1977, Ser. No. 785,704

Claims priority, application Japan, Apr. 7, 1976, 51-38212

Int. Cl.^{2} C08K *3/04, 5/09, 5/14*

U.S. Cl. 260—23.7 M **29 Claims**

1. An abrasion resistant rubber composition having improved mechanical properties and flexing fatigue resistance due to component (E) below, said composition prepared by heating and curing the mixture comprising

(A) a diene elastomer,

(B) an α,β-ethylencially unsaturated carboxylic acid, wherein the ratio by weight of the component (A) to the component (B) is 87/13 to 55/45,

(C) a divalent metal compound being present in quantities of 50 to 150 parts by weight per 100 parts by weight of the component (B),

(D) an organic peroxide being present in quantities of 0.3 to 5.0 parts by weight per 100 parts by weight of the combined weight of the components (A) and (B), and

(E) an unpolymerizable carboxylic acid or a metal salt of the unpolymerizable carboxylic acid being present in quantities of 1.5 to 17 parts by weight per 100 parts by weight of the component (A).

4,191,672
POLYMER AGGREGATES

Frederik Salome, and William T. Elliott, both of New South Wales, Australia, assignors to Berger Jenson & Nicholson Ltd., London, England

Filed Oct. 21, 1977, Ser. No. 844,486

Claims priority, application Australia, Oct. 25, 1976, PC7853; Mar. 21, 1977, PC9505

Int. Cl.^{2} C08L *29/00*

U.S. Cl. 260—29.6 PM **21 Claims**

1. Substantially uniform, discrete polymer aggregates in the form of discrete particles of controlled particle size below 150 microns maximum dimension which are themselves aggregates of primary particles of a polymer or polymers derived from at least one ethylenically unsaturated monomer together with from 0 to about 400%, by weight on the weight of the monomer, of an organic thickener compatible with the monomer, said aggregate particles containing from 0 to about 95% by weight of pigment and/or extender and having been formed during polymerization of the monomer.

16. A coating composition comprising polymer aggregates as claimed in claim 1.

17. A coating composition as claimed in claim 16 in the form of a latex paint.

4,191,673
NON-BLOCKING COATING COMPOSITION

Dale C. Wiesman, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 741,232, Nov. 12, 1976, Pat. No. 4,107,380. This application Jan. 16, 1978, Ser. No. 869,753

Int. Cl.^{2} C08L *23/06*

U.S. Cl. 260—29.6 XA **3 Claims**

1. A non-blocking coating composition for application as an overcoating on the surface of a normally tacky coated flexible packaging sheet material, comprising an aqueous dispersion of between about 65 and 90 weight percent of an ethylene-vinyl acetate copolymer having a melt index between about 20 and 40 and a vinyl acetate content of between about 18 and 30%, said dispersion having suspended therein between about 10 and 35 weight percent, based on total solids content of the composition, of a solid, particulate polyethylene having a density between about 0.91 and 0.94 and an average particle size between about 20 and 50 microns.

4,191,674
ZWITTERION-CONTAINING COMPOSITIONS

Marco Wismer, Gibsonia, and Joseph F. Bosso, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 599,260, Jul. 25, 1975, Pat. No. 4,066,592, which is a division of Ser. No. 167,476, Jul. 29, 1971, Pat. No. 3,928,156, which is a continuation-in-part of Ser. No. 840,848, Jul. 10, 1969, abandoned. This application Oct. 25, 1977, Ser. No. 844,944

The portion of the term of this patent subsequent to Jan. 3, 1995, has been disclaimed.

Int. Cl.^{2} C25D *13/06*

U.S. Cl. 260—29.2 EP **6 Claims**

1. An ungelled, inherently water-dispersible, substantially epoxy group-free, synthetic organic resin containing Zwitterions, said Zwitterions consisting of a quaternary ammonium base group and an acid anion, said organic resin being derived from an epoxy resinous material.

4,191,675
FIRE SPREADING INHIBITOR COMPOSITION

Yutaka Inagaki; Hironaga Matsubara, and Kojiro Ishise, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 16, 1977, Ser. No. 778,281

Claims priority, application Japan, Mar. 16, 1976, 51/28879

Int. Cl.^{2} C09K *3/28*

U.S. Cl. 260—29.3 **7 Claims**

1. A fire spreading inhibitor composition comprising about 20 to about 40% by weight of an emulsion of a synthetic resin, about 1 to about 15% by weight of infusible organic phenolic resin fibers which exhibit a fire spreading inhibition effect, about 20 to about 70% by weight of an inorganic powder at least about 50% of which is clay and/or zinc borate, and about 5 to 20% by weight of a halogenated hydrocarbon flame retardant, all percentages being based on the dry weight as a coating.

4,191,676
AUTODEPOSITION PROCESS AND COMPOSITION

Wilbur S. Hall, Plymouth Meeting, Pa., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 664,613, Mar. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 562,898, Mar. 27, 1975, abandoned. This application May 22, 1978, Ser. No. 907,902

Int. Cl.^{2} C08L *9/08*

U.S. Cl. 260—29.7 R **55 Claims**

1. An acidic aqueous coating composition of the type which is effective in forming on a metallic surface immersed therein a resinous coating which increases in weight or thickness the longer said surface is immersed in said composition in the absence of any electrical charge on said metallic surface other than that which may be imparted thereto by said composition and characterized by the presence therein of resin particles which are:

(A) prepared by polymerizing (i) a conjugated diene, (ii) $CH_2{=}CH{-}R$ wherein R is an aryl or cyano group, (iii) a vinylidene halide, and (iv) a monoethylenically unsaturated monomer having a functional group selected from the class consisting of amide and carboxyl groups; and/or

(B) substantially chemically and physically homogeneous, wherein the concentration of surfactant, if any, in the aqueous phase of said composition is below the critical micelle concentration.

4,191,677
SELF-LOCKING THREADED FASTENER PRODUCT

Norman S. Strand, Howell, Mich., assignor to Federal Screw Works, Detroit, Mich.

Filed Oct. 21, 1977, Ser. No. 844,201

Int. Cl.^{2} C08L *63/00; F16B 39/22*

U.S. Cl. 260—37 EP **24 Claims**

1. A self-locking threaded fastener means having a patch on the threaded portion thereof to provide said self-locking properties, said patch comprising a cured thermoplastic epoxy adhesive which has been mixed together off the fastener means and applied to said fastener in an unpolymerized state and allowed to polymerize to a thermoplastic polymer on said fastener.

4,191,678
FIRE RETARDANT POLYESTER-POLYTETRAFLUOROETHYLENE COMPOSITIONS

Clive P. Smith, Wheathampstead, England, assignor to Imperial Chemical Industries Limited, United Kingdom

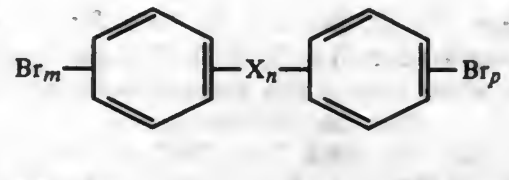
Continuation of Ser. No. 668,689, Mar. 19, 1976, abandoned. This application Aug. 24, 1977, Ser. No. 827,337

Claims priority, application United Kingdom, Apr. 10, 1975, 14792/75

Int. Cl.^{2} C08L *67/06, 67/00*

U.S. Cl. 260—40 R **11 Claims**

1. A method of producing a thermoplastic polyester composition comprising mixing a normally flammable thermoplastic polyester, an effective amount of fire-retardant additives selected from the group consisting of compounds of the formula



where X may be —O—, —S—, —SO—, —SO$_2$—and —CH$_2$—, n may be 0 or 1 and each of m and p may be from 1 to 5 and polytetrafluoroethylene in the form of an aqueous colloidal dispersion, subjecting the mixture to conditions under which the polyester becomes molten and removing volatile materials from the melt, so that there is produced a composition which has a rating of 94VO according to underwriter's laboratory's test standard UL94 when measured on a sample of 1/16" thickness and which is non-dripping.

4,191,679
PHOTOGRAPHIC POLYESTER FILM SUPPORT

Tsutomu Okita; Masami Satou; Noburo Hibino, all of Fujinomiya; Kazunobu Katoh, and Masatoshi Sugiyama, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

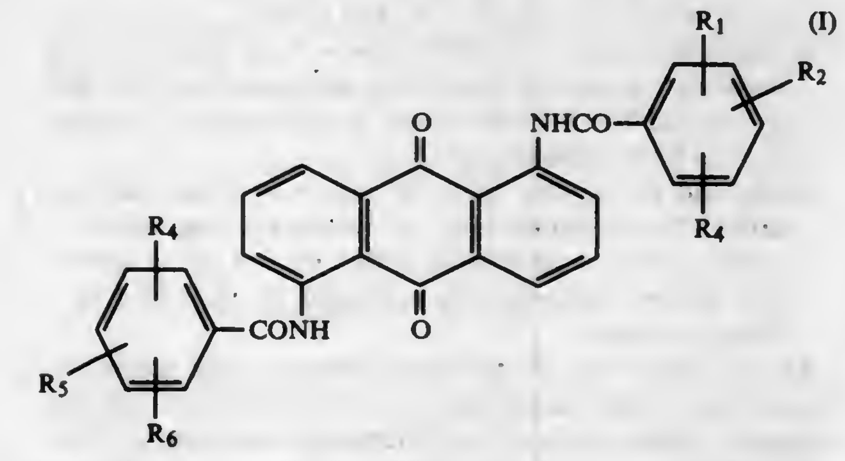
Filed Aug. 30, 1978, Ser. No. 938,161

Claims priority, application Japan, Aug. 31, 1977, 52/104400

Int. Cl.^{2} C08K *5/08; G03C 1/84*

U.S. Cl. 260—40 R **13 Claims**

1. A photographic polyester film support providing reduced halation and light-piping dyed with (a) a dye having a main absorption peak in the wavelength range of about 530 to about 570 nm, (b) a dye having a main absorption peak in the wavelength range of about 640 to about 680 nm, and (c) a dye having a main absorption peak in the wavelength range of about 420 to about 460 nm and represented by the formula (I):



(I)

wherein R$_1$, R$_2$, R$_3$, R$_4$, R$_5$ and R$_6$, which may be the same or different, each represents —H, —OH, —NH$_2$, —NHR$_7$, —NR$_7$R$_8$, —Cl, —Br, an alkyl group having 4 or less carbon atoms or an alkoxy group having 4 or less carbon atoms; and R$_7$ and R$_8$, which may be the same or different, each represents an alkyl group having 4 or less carbon atoms or an aryl group.

4,191,680
PROCESS FOR THE MANUFACTURE OF CONCENTRATED FORMULATIONS

Jacques Wegmann, Bettingen, and Hans D. Kirner, Pratteln, both of Switzerland, assignors to Rohner AG Pratteln, Pratteln, Switzerland

Filed Jul. 11, 1978, Ser. No. 923,655

Claims priority, application Switzerland, Jul. 11, 1977, 8541/77

Int. Cl.^{2} C08J *3/20*

U.S. Cl. 260—42 **14 Claims**

1. A process for the manufacture of aqueous and/or organic dispersible, free-flowing, and low-dusting concentrated formulations in powder or granular form of at least one ingredient which is sparingly soluble or insoluble in water, comprising the steps of:

(i) mechanically and/or chemically comminuting said ingredient in an aqueous medium, in the presence of a grinding auxiliary comprising a dissolved, water soluble salt of an acid resin, until a mean particle size of less than 5 μm is reached;

(ii) forming a two-phase system with said aqueous medium by adding, during or after comminution, at least one organic solvent which has a limited solubility, of at least 1% to 50%, in the aqueous medium;

(iii) turbulently mixing the resulting two-phase system with at least one sparingly water-soluble, or water-insoluble, high-molecular carrier;

(iv) reducing the volume of the organic phase, said organic phase containing said carrier and said ingredient by adding further water, until the formulation particles formed are no longer tacky;

(v) separating off said formulation particles; and

(vi) rinsing off with water said separated particles.

4,191,681
MELT PROCESSABLE WHOLLY AROMATIC POLYESTER COMPOSITION CONTAINING A PHOSPHORUS ESTER

Robert W. Stackman, Morristown, and Edward J. Kuczynski, Westfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

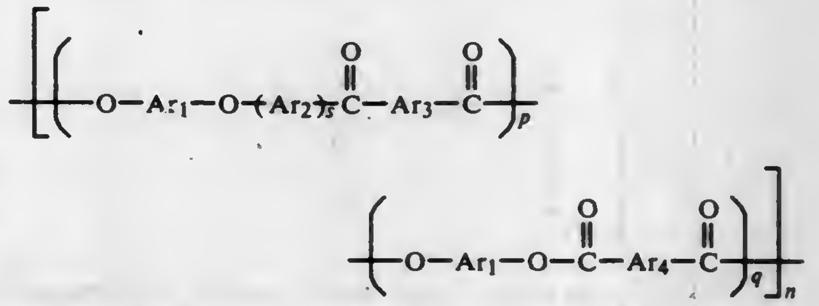
Filed Nov. 17, 1977, Ser. No. 852,384

Int. Cl.^{2} C08L *67/02, 67/04*

U.S. Cl. 260—45.7 P **54 Claims**

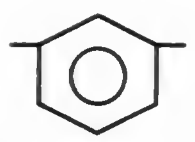
1. An improved melt processable wholly aromatic polyester composition which comprises in intimate admixture:

I. from about 95 to about 60 percent by weight of said composition of a normally non-melt processable wholly aromatic polyester having a recurring structural formula:

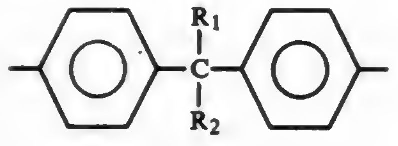


$$\left[\left(-O-Ar_1-O-(Ar_2)_s-\overset{\overset{O}{\|}}{C}-Ar_3-\overset{\overset{O}{\|}}{C}-\right)_p\left(-O-Ar_1-O-\overset{\overset{O}{\|}}{C}-Ar_4-\overset{\overset{O}{\|}}{C}-\right)_q\right]_n$$

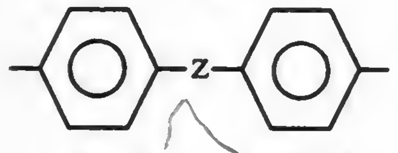
wherein n is an integer of at least 10, Ar$_1$ is a divalent alcohol derived moiety selected from the group consisting of



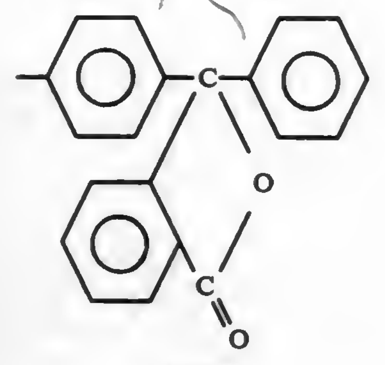
(a)



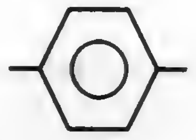
(b)



(c)



(d)

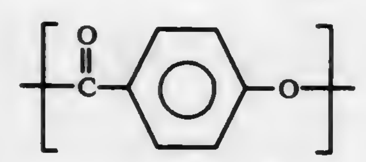


(e)

and mixtures thereof,

wherein R_1 and R_2 which may be the same or different represent hydrogen, a lower alkyl group or together constitute a cyclic hydrocarbon group and Z is selected from the group consisting of sulfide, sulfone, oxy and carbonyl;

Ar_2 is the p-hydroxy benzoic acid derived moiety

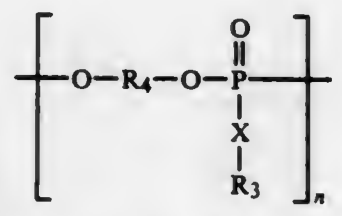


which when present is accompanied by substantially equimolar amounts of the divalent moiety Ar_1 and the acid derived moiety as represented by Ar_3 and Ar_4 collectively;

Ar_3 consists essentially of an aromatic dicarboxylic acid-derived moiety selected from the group consisting of m-phenylene, p-phenylene and naphthylene and mixtures thereof;

Ar_4 is p-phenylene; and wherein s is 0 or 1, p is at least 1, q is zero when Ar_3 is other than naphthylene and q is at least 1 when Ar_3 is naphthylene with the ratio of p and q being sufficient to yield a normally non-melt processable wholly aromatic polyester;

and (II) from about 5 to about 40 percent by weight of the total composition of a phosphorus ester having the recurring structural formula:



$$\left[-O-R_4-O-\overset{\overset{O}{\|}}{\underset{\underset{R_3}{|}}{\underset{X}{\underset{|}{P}}}}- \right]_n$$

wherein n is at least 3, X can be the same or different and represent a single bond, oxy and sulfide, R_3 can be the same or different and represent lower alkyl, aryl, haloaryl, halo alkyl, and mixtures thereof; R_4 can be the same or different and represent arylene, alkylene and haloarylene and mixtures thereof.

4,191,682

HINDERED PIPERIDINE CARBOXYLIC ACIDS, METAL SALTS THEREOF AND STABILIZED COMPOSITIONS

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

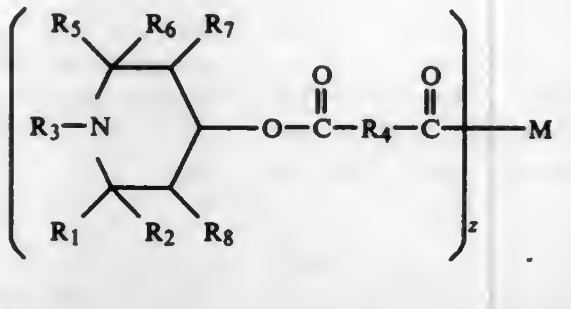
Division of Ser. No. 700,380, Jun. 28, 1976, Pat. No. 4,116,933. This application Jun. 22, 1978, Ser. No. 918,211

The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.

Int. Cl.^{2} C08K *5/34;* **C07D** *211/46*

U.S. Cl. 260—45.8 N **17 Claims**

1. A compound of the formula



I

wherein

R_1 and R_2 independently of each other are straight- or branched-chain alkyl having from 1 to 6 carbon atoms, or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group,

R_3 is hydrogen, alkyl having 1 to 12 carbon atoms β-methoxyethyl, alkenyl having 3 to 4 carbon atoms, propargyl, benzyl, benzyl substituted by 1 or 2 methyl groups or alkanoyl containing 1 to 18 carbon atoms.

R_4 is straight- or branched-chain alkylene having 1 to 8 carbon atoms, or the group $-(CH_2)_mY(CH_2)_n-$ wherein Y is oxygen or sulfur and m and n independently of each other are an integer from 1 to 3,

M is hydrogen or metal selected from the group consisting of barium, calcium, magnesium, sodium, potassium,

Z has a value of from 1 to 4, the value of Z being the same as the available valence of M, and either

(a) R_5 is alkyl of 2 to 6 carbon atoms, R_6 is alkyl of 1 to 6 carbon atoms, and R_7 and R_8 are independently hydrogen or alkyl of 1 to 5 carbon atoms, provided that R_7 and R_8 are not both hydrogen, or

(b) R_5 and R_6 together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group and R_7 and R_8 are independently hydrogen or alkyl of 1 to 5 carbon atoms.

15. A composition of matter stabilized against ultraviolet deterioration which comprises a synthetic organic polymer normally subject to ultraviolet deterioration containing from

(a) 0.005% to 5% of a stabilizing compound according to claim 1,
(b) 0 to 5% of a phenolic antioxidant,
(c) 0 to 5% of a thio co-stabilizer, and
(d) 0 to 5% of a U.V. absorber.

4,191,683

DERIVATIVES OF 4-AMINOPIPERIDINE AS STABILIZERS FOR POLYMERS

Heimo Brunetti, Reinach; Jean Rody, Basel, both of Switzerland; Nobuo Soma, and Tomoyuki Kurumada, both of Tokyo, Japan, assignors to Ciba-Geigy Corporation, Ardsley, N.Y. and Sankyo Company Limited, Tokyo, Japan

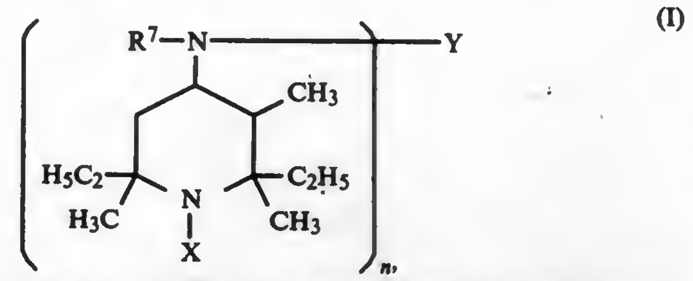
Continuation-in-part of Ser. No. 687,826, May 19, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,658

Claims priority, application United Kingdom, May 28, 1975, 23226/75

Int. Cl.^{2} C08K *5/34;* **C07D** *211/56, 211/92*

U.S. Cl. 260—45.8 N **13 Claims**

1. A compound of the formula



(I)

a mixture of isomers thereof, or an acid addition salt thereof wherein n is 1 to 3 X is hydrogen, methyl, benzyl, aliphatic acyl having 1 to 4 carbon atoms or 2-hydroxyethyl, R^7 is hydrogen, alkyl having 1 to 12 carbon atoms benzyl, or, if n is 2 and Y is alkylene having 2 to 10 carbon atoms, R^7 is hydrogen or acetyl, Y, if n is 1, represents hydrogen, $-CH_2CH_2OH$, $-CO-R^{13}$ wherein R^{13} is hydrogen, alkyl having 1 to 7 carbon atoms, alkenyl having 2 or 3 carbon atoms or phenyl, $-CONH-R^{15}$ wherein R^{15} is alkyl having 1 to 18 carbon atoms or phenyl, $-SO_2R^{16}$ wherein R^{16} is methyl, phenyl or parymethylphenyl, $-CO-R^{12}-COOH$ wherein R^{12} is $-CH_2CH_2-$, $-CH=CH-$ or o-phenylene, or Y and R^7 together with the N-atom to which they are attached form a succinimide, maleimide or phthalimide ring, if n is 2, Y represents $-CO-$, $-CO-CO-$, $-CO-R^{18}-CO-$ wherein R^{18} is alkylene having 1 to 8 carbon atoms or phenylene or $-CONH-R^{19}-NHCO-$ wherein R^{19} is alkylene having 2 to 6 carbon or tolylene, and if R^7 is hydrogen or acetyl, Y may also be alkylene having 2 to 6 carbon atoms, and, if n is 3, Y represents the 1,3,5-triazine-2,4,6-triyl residue.

7. A compound as claimed in claim 1 which is N,N′-bis-(2,6-diethyl-2,3,6-trimethyl-4-piperidyl)-hexamethylenediamine.

4,191,684

UREA DERIVATIVES, THEIR PREPARATION, AND THEIR USE AS LIGHT STABILIZERS

Hartmut Wiezer, Gersthofen; Gerhard Pfahler, Augsburg; Norbert Mayer, and Harald Knorr, both of Gersthofen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

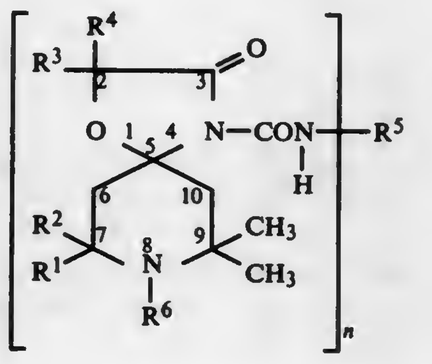
Filed Aug. 21, 1978, Ser. No. 935,470

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738340

Int. Cl.^{2} C07D *491/10, 491/20;* **C08K** *5/35*

U.S. Cl. 260—48.5 NT **5 Claims**

1. A compound of the formula (I)



I

in which

R^1 and R^2, being identical or different, each are linear or branched alkyl having from 1 to 12 carbon atoms, or R^1 and R^2 together with the carbon atom to which they are linked form a cyclopentane or cyclohexane ring which may also be methyl-substituted or a 2,2,6,6-tetramethylpiperidine ring the carbon atom 4 of which is identical with the carbon atom 7 of the spirodecane system;

R^3 is hydrogen, alkyl or isoalkyl having from 1 to 30 carbon atoms, or phenylalkyl having from 7 to 10 carbon atoms, the aliphatic chain having from 1 to 4 carbon atoms;

R^4 is hydrogen, alkyl having from 1 to 30 carbon atoms, phenyl or naphthyl, which may be substituted by a halogen atom, or alkyl radical having from 1 to 4 carbon atoms, or phenylalkyl having from 7 to 10 carbon atoms, the aliphatic chain containing from 1 to 4 of the latter carbon atoms; or

R^3 and R^4 together with the carbon atom linking them form a cycloalkane ring having from 4 to 20 carbon atoms;

R^5, when n is 1, is alkyl having from 1 to 20 carbon atoms, alkenyl having from 3 to 18 carbon atoms, cycloalkyl having from 5 to 12 carbon atoms, which may be substituted by C_1–C_4-alkyl phenyl or naphthyl which may be substituted by a chlorine atom or alkyl having from 1 to 18 carbon atoms, or phenylalkyl having from 7 to 18 carbon atoms, the aryl ring containing 6 carbon atoms;

R^5, when n is 2, is linear or branched alkylene having from 2 to 20 carbon atoms, phenylene or naphthylene which may be substituted by C_1–C_4-alkyl, or phenylalkylene having from 7 to 18 carbon atoms; and

R^6 is hydrogen, oxygen, hydroxyl or alkyl having from 1 to 4 carbon atoms.

4. Process for stablizing halogen-free aliphatic alpha-olefin homo- and copolymers and chlorine-containing vinyl homo- and copolymers against the damaging influence of light, wherein 0.01 to 5 parts by weight, based on the polymer, of a compound of claim 1 or a salt thereof with an inorganic or organic acid, is added to the polymers.

4,191,685

COMPOSITION OF POLYPHENYLENE ETHER, AROMATIC PHOSPHATE, AROMATIC HALOGEN COMPOUND AND IMPACT MODIFIER COMPRISING DIENE POLYMER

William R. Haaf, Voorheesville, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 3, 1977, Ser. No. 838,861

Int. Cl.^{2} C08K *5/02, 5/13;* **C08L** *53/02*

U.S. Cl. 260—45.95 G **17 Claims**

1. A flame retardant, impact resistant thermoplastic composition comprising

(a) a polyphenylene ether resin;
(b) an aromatic phosphate, aromatic phosphonate or aromatic phosphine oxide compound;
(c) an aromatic halogen compound; and
(d) an impact modifier comprising an elastomeric A-B-A or A-B block copolymer wherein A comprises a polymerized vinyl aromatic compound and B comprises a polymerized diene hydrocarbon, not including hydrogenated derivatives thereof, components (b) and (c) being present in an amount at least sufficient to render said composition flame retardant, and component (d) being present in an amount at least sufficient to improve the impact resistance of articles molded from said composition.

17. A composition as defined in claim 1 wherein component (a) comprises poly(2,6-dimethyl-1,4-phenylene) ether; component (b) comprises triphenyl phosphate; component (c) comprises decabromodiphenyl oxide; and compound (d) comprises an A-B-A block copolymer including polystyrene terminal blocks and polybutadiene center blocks.

4,191,686
PROCESS FOR PREPARING FIBER-REACTIVE PHTHALOCYANINE AZO DYES

Rolf Muller, Karben, and Joachim Ribka, Offenbach, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, 6 Frankfurt(Main)-Fechenheim, Fed. Rep. of Germany

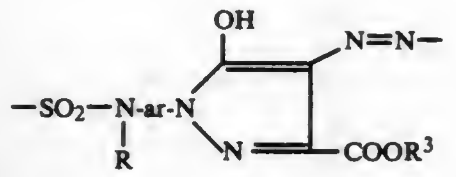
Filed Apr. 12, 1977, Ser. No. 786,819

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1976, 2617062; Apr. 17, 1976, 2617087; Apr. 17, 1976, 2617126

Int. Cl.^{2} C09B *62/02, 62/44*

U.S. Cl. 260—147 **7 Claims**

1. A process of preparing a water-soluble fiber-reactive phthalocyanine azo dye in which the phthalocyanine nucleus carries at least one group having the structure

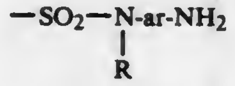


where

R is hydrogen or alkyl having up to 6 carbons, and

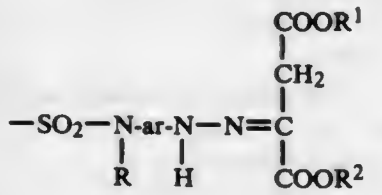
ar is a carbocylic divalent aromatic or araliphatic group containing up to two benzene rings and up to 16 carbons, a benzene ring carrying the nitrogen of the heterocycle and R^3 is hydrogen or hydrocarbyl having up to 18 carbons

the process comprising reacting a water-soluble phthalocyanine dye in which the nucleus has a sulphonyl halide group with an ar-diamine to form a



$$-SO_2-\underset{\substack{|\\ R}}{N}\text{-ar-}NH_2$$

product, diazotizing said product and coupling the diazonium compound with a aryl-succinic acid ester to yield the configuration

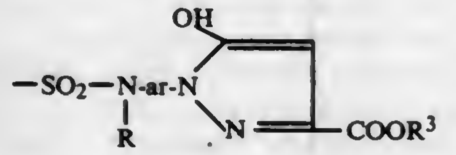


$$-SO_2-\underset{\substack{|\\ R}}{N}\text{-ar-}\underset{\substack{|\\ H}}{N}-N=\overset{\substack{COOR^1\\ |\\ CH_2\\ |}}{\underset{\substack{|\\ COOR^2}}{C}}$$

where

R^1 is hydrocarbyl having up to 18 carbons, and

R^2 is hydrocarbyl having up to 18 carbons, and then cyclizing at sufficiently high pH that configuration to the desired pyrazolone structure



followed by coupling the pyrazolone ring with another diazonium compound carrying the fiber-reactive group.

4,191,687
REACTIVE DYESTUFFS CONTAINING THE RESIDUE OF 1-HYDROXY-7-AMINO-8-(5′-AMINO-2′,4′-DISULPHOPHENYLAZO)NAPHTHALENE-3,6-DISULPHONIC ACID

Peter W. Austin, Manchester, England, assignor to Imperial Chemical Industries Limited, England

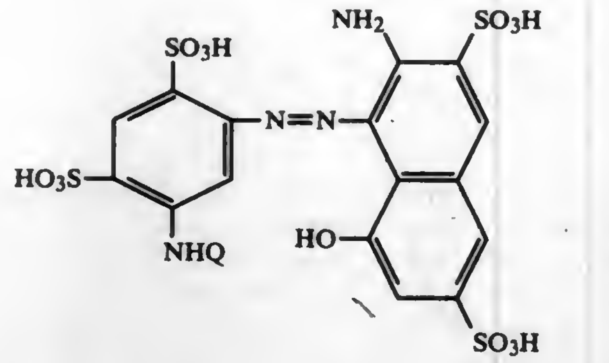
Filed Mar. 16, 1978, Ser. No. 887,338

Claims priority, application United Kingdom, Jun. 8, 1977, 23909/77

Int. Cl.^{2} C09B *62/08, 62/16, 62/24, 62/40*

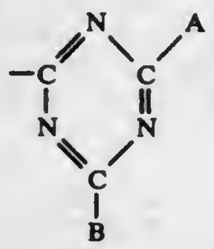
U.S. Cl. 260—153 **3 Claims**

1. A reactive dyestuff of the formula:



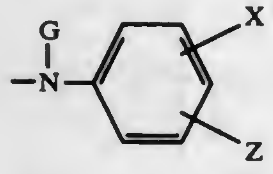
(1)

wherein Q represents a cellulose reactive group selected from
- dichloro-5-cyanopyrimidinyl
- dichloro-5-nitropyrimidinyl
- trichloropyrimidinyl
- difluoro-5-chloropyrimidinyl
- difluoro-5-cyanopyrimidinyl and
- triazinyl groups of the formula:



where A is selected from F, Br and Cl

B is selected from F, Br, Cl, C_{1-4} alkoxy C_{1-4} alkoxy, phenoxy, sulphophenoxy, C_{1-4} alkylamino, C_{1-4} alkylamino in which the C_{1-4} alkyl is substituted by SO_3H, OH or CN; di(C_{1-4} alkyl) amino, di(C_{1-4} alkyl) amino in which one or both the C_{1-4} alkyl substituted by SO_3H, OH or CN; cyclohexylamino, morpholino, piperazino, mono-, di-, trisulphonaphthylamino or a group of the formula:



(2)

where G=H, methyl, ethyl, ω-sulphomethyl, β-carboxy-β-hydroxy- or β-cyanoethyl and Z and X are each independently selected from H, COOH, SO_3H, CH_3, C_2H_5, OC_2H_5, Cl, Br, CN, NO_2, $NHCOCH_3$.

4,191,688
AMIDES OF LEUROSINE, LEUROFORMINE, DESACETYLLEUROSINE AND DESACETYLLEUROFORMINE

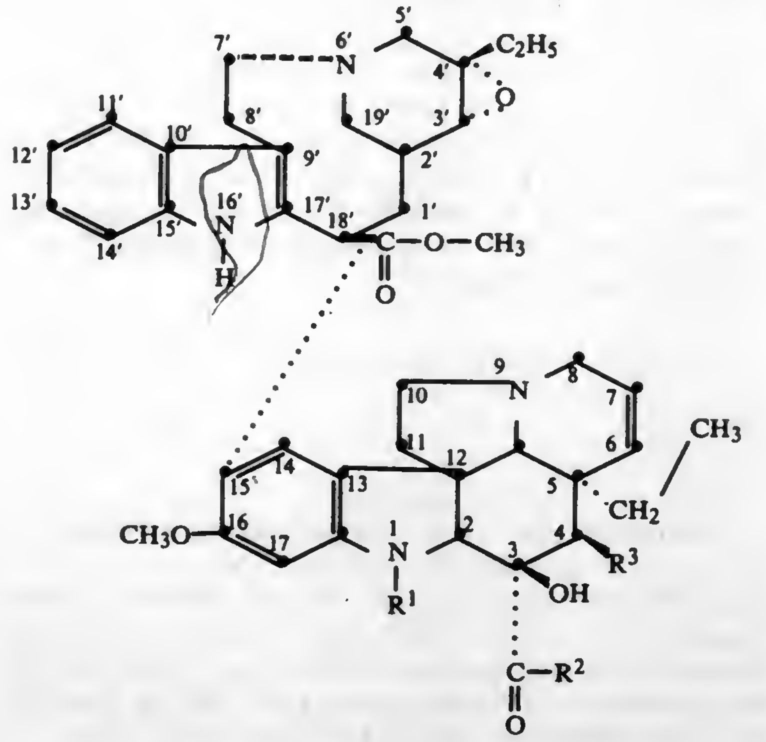
Robert A. Conrad, Indianapolis; George J. Cullinan, Trafalger; Jean C. Miller, and Koert Gerzon, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 822,464, Aug. 8, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,695

Int. Cl.^{2} C07D *519/04*

U.S. Cl. 260—244.4 **6 Claims**

1. A compound of the formula:



II

wherein R^1 is CH_3 or CHO; R^2 is NH_2, NH—CH_3, or NH—CH_2—CH_2—X, wherein X is OH or SY wherein Y is CH_3 or a bond, said bond joining two moieties of the above formula thru the C-3 carboxamido group when R^2 is NH—CH_2—CH_2—X, X is SY and Y is a bond; and R^3 is OH; and pharmaceutically-acceptable acid addition salts thereof.

4,191,689
BENZISOTHIAZOLE-1,1-DIOXIDE AND NAPHTHO-1,2-THIAZINE-1,1-DIOXIDE COMPOUNDS

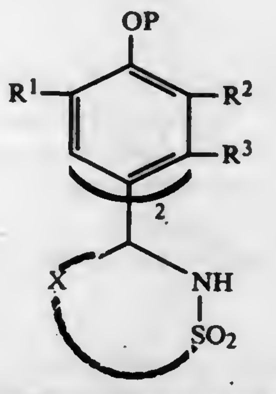
Stanley M. Bloom, Waban; Alan L. Borror, Lexington, and James W. Foley, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 23, 1977, Ser. No. 836,004

Int. Cl.^{2} C07D *275/06;* **C07F** *7/18;* **C07D** *279/02*

U.S. Cl. 548—207 **12 Claims**

1. A compound of the formula



wherein P is a protecting group selected from 2′-tetrahydropyranyl, methoxymethyl and dimethyl-t-butylsilyl, R^1 and R^2 each are selected from hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, chloro and fluoro; R^3 is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, or -OP wherein P has the same meaning given above; R^2 and R^3 taken together represent the carbon atoms necessary to complete a fused benzene ring; and X represents the atoms necessary to complete 2,3-dihydrobenz[d]isothiazole-1,1-dioxide or 2,3-dihydronaphtho[1,8-de]1,2-thiazine-1,1-dioxide.

4,191,690
SUBSTITUTED 3,6-DIAMINOPHTHALIDES

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

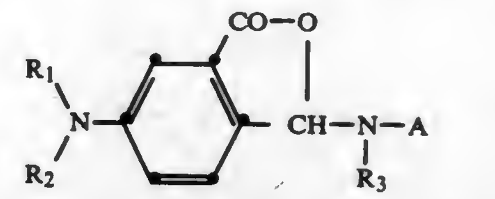
Filed Sep. 15, 1978, Ser. No. 942,840

Claims priority, application Switzerland, Feb. 10, 1978, 1513/78

Int. Cl.^{2} C07D *307/83*

U.S. Cl. 260—343.3 R **7 Claims**

1. A substituted 3,6-diaminophthalide of the formula



(I)

wherein R_1 represents hydrogen, alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cyclopentyl, cyclohexyl, benzyl, or benzyl which is substituted by halogen, lower alkyl or lower alkoxy,

R_2 represents alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cyclopentyl, cyclohexyl, benzyl, or benzyl which is substituted by halogen, lower alkyl or lower alkoxy and

R_3 represents alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cyclopentyl, cyclohexyl, phenyl, benzyl, or benzyl which is substituted by halogen, lower alkyl or lower alkoxy, or

R_1 and R_2, together with the nitrogen atom to which they are attached, represent a saturated 5- or 6- membered heterocyclic radical selected from the group consisting of pyrrolidino, piperidino, pipecolino, morpholino, thiomorpholino or piperazino, and

A represents phenyl or phenyl substituted by halogen, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy, lower alkoxycarbonyl, phenyl, phenoxy, di-(lower alkyl)amino, lower alkylcarbonyl, benzoyl, lower alkyl-sulfonyl, phenylsulfonyl, phenylamino, diphenylamino, N-lower alkyl-N-phenylamino, di-(lower alkyl)aminosulfonyl, di-(lower alkyl)aminocarbonyl, phenylaminosulfonyl or phenylaminocarbonyl, or

A represents naphthyl which is unsubstituted or substituted by halogen, cyano, nitro, lower alkyl or lower alkoxy.

4,191,691
ENLARGED-HETERO-RING PROSTACYCLIN ANALOGS

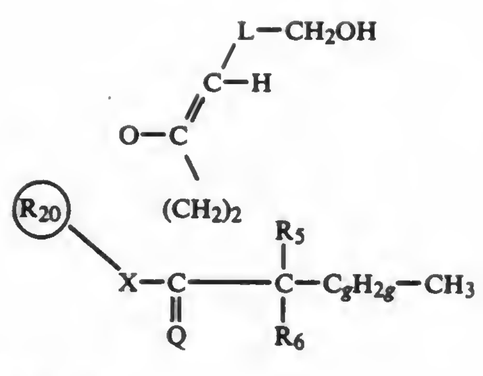
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,961

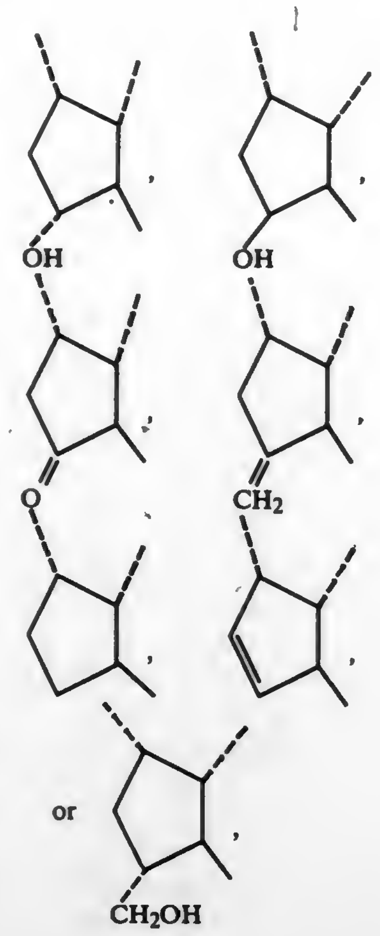
Int. Cl.^{2} C07D *311/02*

U.S. Cl. 260—345.2 **14 Claims**

1. A 4Z compound of the formula



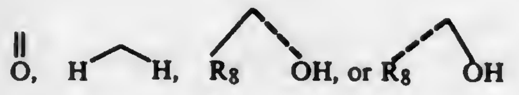
wherein (R_{20}) is



wherein L is $—(CH_2)_d—C(R_2)_2—$

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,

wherein Q is



wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $—CR_5R_6—$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro; and

wherein X is

(1) trans—CH═CH—
(2) cis—CH═CH—
(3) —C≡C—
(4) $—CH_2CH_2—$;
including the lower alkanoates thereof.

4,191,692
MANUFACTURE OF TOCOPHEROL

Paul Grafen, Weisenheim; Henning Kroesche, Frankenthal; Bernhard Schulz, Schwetzingen; Joachim Paust, Neuhofen, and Sigberg Pfohl, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 763,646, Jan. 28, 1977, abandoned. This application Apr. 14, 1978, Ser. No. 896,479

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1976, 2606830

Int. Cl.² C07D *311/72*

U.S. Cl. 260—345.5 **13 Claims**

1. In a process for the manufacture of tocopherol by reacting 2,3,5-trimethylhydroquinone with isophytol or phytol in a hydrocarbon solvent in the presence of zinc chloride and a strong protonic acid, the improvement which comprises: carrying out the reaction with isophytol or phytol which has been treated at a temperature of from about 20° C. to 200° C. with from about 0.05 to 5 percent by weight, based on the weight of isophytol or phytol, of ammonia or a primary or secondary aliphatic, cycloaliphatic or araliphatic amine having 1 to 20 carbon atoms in the chain.

4,191,693
PREPARATION OF GAMMA-PYRONES FROM 3-SUBSTITUTED FURANS

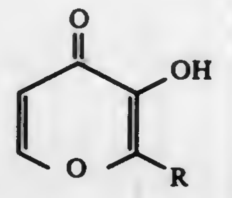
Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, Pawcatuck; Paul D. Weeks, and Donald E. Kuhla, both of Gales Ferry, all of Conn., assignors to Pfizer, Inc., New York, N.Y.

Division of Ser. No. 741,348, Nov. 12, 1976, Pat. No. 4,126,624. This application Aug. 28, 1978, Ser. No. 937,408

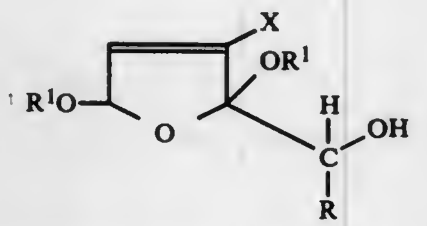
Int. Cl.² C07D *309/22*

U.S. Cl. 260—345.9 R **10 Claims**

1. A process for preparing a gamma-pyrone of the formula

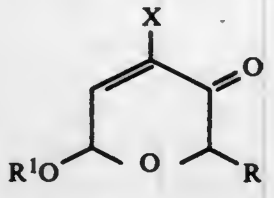


which comprises contacting a compound of the formula

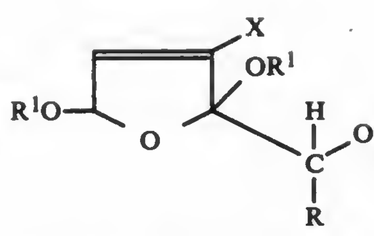


wherein R is hydrogen, alkyl of 1 to 4 carbons, phenyl or benzyl; R^1 is alkyl of 1 to 4 carbons; and X is chloro, bromo, iodo or alkoxyl of 1 to 4 carbons, with an acid having a pKa of about 5 or below until conversion to the desired gamma-pyrone is substantially complete.

8. A process for preparing a compound of the formula

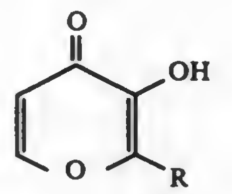


which comprises contacting a 3-substituted-2,5-dialkoxy-furfuryl alcohol of the formula

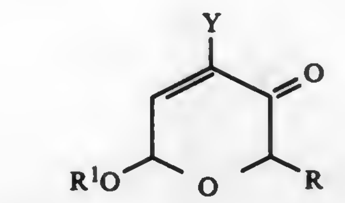


wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl; R^1 is alkyl of 1 to 4 carbon atoms; and X is chloride, bromide, iodide or alkoxyl of 1 to 4 carbon atoms, with acid in non-aqueous solution at a temperature between −50° C. and about 25° C. and separating said compound before substantial hydrolysis occurs.

9. A process for preparing a gamma-pyrone of the formula



which comprises contacting a compound of the formula



wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl; R^1 is hydrogen or alkyl of 1 to 4 carbon atoms; and Y is alkoxyl of 1 to 4 carbon atoms, with acid until conversion to the desired gamma-pyrone is substantially complete.

4,191,694
PROSTAGLANDIN-I_2 DERIVATIVES

Werner Skuballa; Bernd Radüchel; Norbert Schwarz; Helmut Vorbrüggen; Bernd Müller; Gerda Mannesmann; Olaf Loge; Ekkehardt Schillinger, and Jorge Casals-Stenzel, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

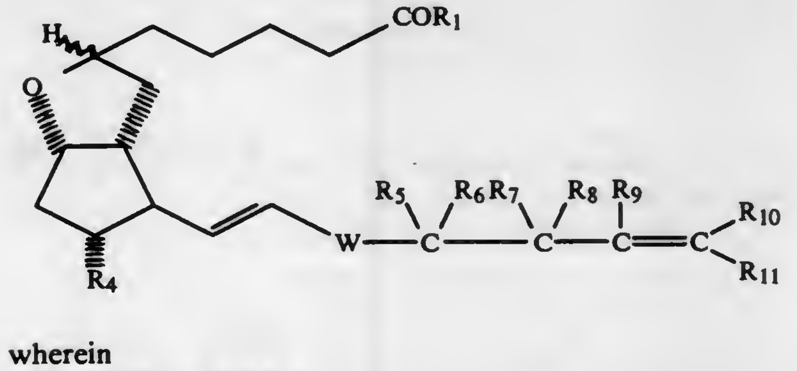
Filed Jul. 26, 1978, Ser. No. 928,126

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734791

Int. Cl.² C07D *307/93;* **A61K** *31/34*

U.S. Cl. 260—346.22 **60 Claims**

1. A prostane derivative of the formula



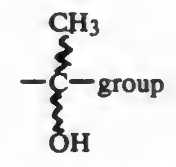
wherein

R_1 is OR_2 or NHR_3;

R_2 is hydrogen; C_{1-10} alkyl; C_{1-10} alkyl substituted by 1–3 of (a) halogen, (b) C_{1-4} alkoxy, (c) C_{6-10} aryl, (d) C_{6-10} aryl substituted by 1–3 halogen atoms, phenyl, 1–3 C_{1-4} alkyl groups, chloromethyl, fluoromethyl, trifluoromethyl, carboxyl, hydroxy or C_{1-4} alkoxy, (e) di-C_{1-4}-alkyl amino or (f) tri-C_{1-4}-alkyl ammonium; C_{4-10} cycloalkyl; C_{4-10} cycloalkyl substituted by C_{1-4} alkyl, the total number of C-atoms being 4–10; C_{6-10} aryl; C_{6-10} aryl substituted by 1–3 halogen atoms, phenyl, 1–3 C_{1-4} alkyl groups, chloromethyl, fluoromethyl, trifluoromethyl, carboxyl, hydroxy or C_{1-4} alkoxy; or a 5 or 6 membered heterocyclic ring having one hetero atom selected from O, N and S;

R_3 is the acyl residue of a hydrocarbon carboxylic or sulfonic acid of 1–15 carbon atoms;

W is (a) an OH-substituted methylene group, (b) a



wherein the OH-groups in (a) or (b) can be in the α- or β-position, or (c) such a group wherein the H atom of the OH group is replaced by the acyl residue of a hydrocarbon carboxylic or sulfonic acid of 1–15 carbon atoms or by a conventional etherifying OH-blocking group selected from tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl and tri-p-benzylsilyl;

R_4 is OH or hydroxy whose H atom is replaced as defined for W; and

R_5, R_6, R_7, R_8, R_9, R_{10} and R_{11} each independently is hydrogen or alkyl of 1–5 carbon atoms; or R_9 and R_{10} together represent a direct bond; and when R_{11} is alkyl, R_{10} can also be chlorine;

and for a derivative wherein R_2 is hydrogen, the salts thereof with physiologically compatible bases.

55. A pharmaceutical composition comprising an amount of a compound of claim **1** effective to lower blood pressure and a pharmaceutically acceptable carrier.

4,191,695
PROCESS FOR OBTAINING MALEIC ACID ANHYDRIDE

Amleto Neri; Sergio Sanchioni, both of Bergamo, and Carlo Nava, Scanzorosciate, all of Italy, assignors to Lonza Ltd., Gampel, Switzerland

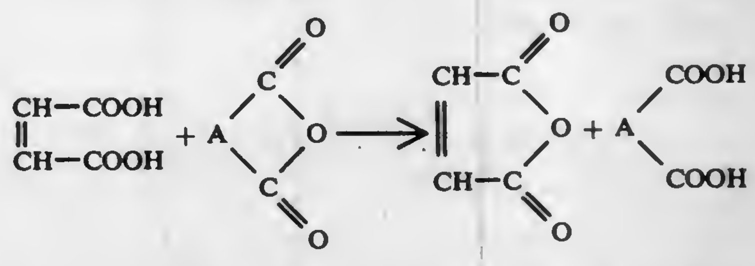
Filed Apr. 12, 1977, Ser. No. 786,764

Claims priority, application Switzerland, Apr. 12, 1976, 4592/76

Int. Cl.² C07D *307/60*

U.S. Cl. 260—346.76 **33 Claims**

1. A process for preparing maleic acid anhydride which comprises: (1) obtaining an aqueous maleic acid solution by washing the reaction gases from the gas phase oxidation of at least one organic compound having at least 4 carbon atoms with water; (ii) removing the water from the aqueous maleic acid solution, maleic acid resulting; (iii) the step which consists of dehydrating the maleic acid to maleic acid anhydride in the presence of an organic carboxylic acid anhydride, there being a H_2O exchange between the maleic acid and the organic carboxylic acid anhydride according to the following formula:



wherein A is two monovalent organic radicals or one divalent organic radical, the dehydration reaction taking place at a temperature between 100° and 130° C., and there being present from one mole to 3 moles of organic carboxylic acid anhydride per mole of maleic acid, and (iv) isolating the maleic acid anhydride, said isolation being achieved by centrifugation or filtration when the organic carboxylic acid anhydride or step (iii) is an organic dicarboxylic acid anhydride and said isolation being achieved by fractional distillation when the organic carboxylic acid anhydride of step (iii) is an organic monocarboxylic acid anhydride.

4,191,696
OXIDATION PROCESS USING METAL NITRO COMPLEX

Benjamin S. Tovrog, Parsippany; Steven E. Diamond, Randolph, and Frank Mares, Whippany, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 24, 1978, Ser. No. 927,194
Int. Cl.² C07C *5/48, 27/12, 29/02, 45/16*
U.S. Cl. 260—348.33 **11 Claims**

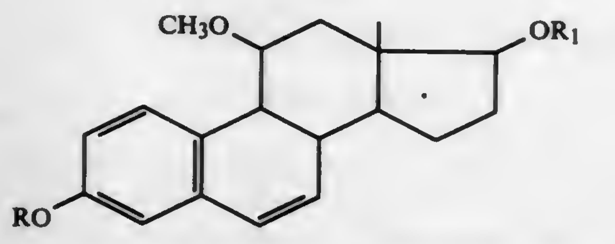
1. In a process of oxidizing an oxidizable substrate in liquid phase using molecular oxygen as the oxygen source, the improvement which comprises providing in the oxidation reaction mixture a transition metal nitro complex, representable by the general formula $M(L_4)BNO_2$ wherein M is a transition metal, L_4 is any combination of monodentate, bidentate, tridentate, and tetradentate ligands, such as to provide four bonding sites, B being a monodentate base ligand and NO_2 being the nitro ligand —N(=O)O, under conditions such that the nitro ligand of said complex can oxidize the substrate and thus be reduced to a nitrosyl ligand; and establishing conditions such that such nitrosyl ligand can be reoxidized by molecular oxygen to nitro ligand.

4,191,697
NOVEL STEROIDS

Alain Jouquey; Jean-Pierre Raynaud, and Jean Salmon, all of Paris, France, assignors to Roussel Uclaf, Paris, France

Filed Jun. 15, 1978, Ser. No. 915,601
Claims priority, application France, Jun. 27, 1977, 77 19613
Int. Cl.² C07J *1/00*
U.S. Cl. 260—397.5 **5 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen, acyl of an alkanoic acid of 1 to 5 carbon atoms, benzoyl, benzoyl substituted with at least one member of the group consisting of halogen, $—CF_3$ and alkyl and alkoxy of 1 to 5 carbon atoms, tetrahydropyranyl, trityl and trimethylsilyl and R_1 is selected from the group consisting of acyl of an alkanoic acid of 1 to 5 carbon atoms, benzoyl, benzoyl substituted with at least one member of the group consisting of halogen, $—CF_3$ and alkyl and alkoxy of 1 to 5 carbon atoms, tetrahydropyranyl, trityl and trimethylsilyl.

4,191,698
TRICYCLOPENTYLTIN FLUORIDE

Melvin H. Gitlitz, Edison, and John E. Engelhart, Westfield, both of N.J.

Continuation-in-part of Ser. No. 780,049, Mar. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 715,114, Aug. 17, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,338
Int. Cl.² C07F *7/22*
U.S. Cl. 260—429.7 **1 Claim**

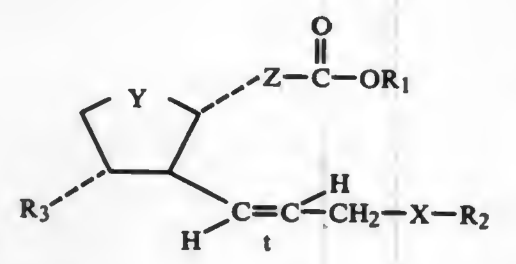
1. Tricyclopentyltin fluoride as a novel triorganotin compound.

4,191,699
VARIOUS- 15-DEOXY-16-HYDROXY-16-ETHYNYL AND 16-ETHYNYLSUBSTITUTED PROSTAGLANDINS

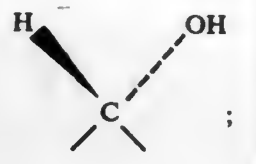
Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Nyack, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 706,343, Jul. 19, 1976, Pat. No. 4,061,670. This application Dec. 5, 1977, Ser. No. 857,714
Int. Cl.² C07C *177/00*
U.S. Cl. 260—448.2 D **29 Claims**

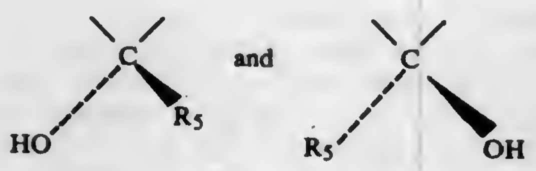
1. An optically active compound of the formula:



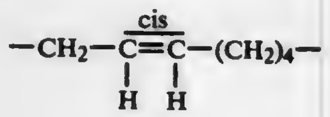
wherein Y is a divalent moiety of the formula:



R_1 is selected from the group consisting of hydrogen and C_1 to C_6 alkyl; R_2 is selected from the group consisting of C_3 to C_7 alkyl; R_3 is selected from the group consisting of hydrogen and hydroxy; X is selected from the group consisting of a divalent moiety of the formula:



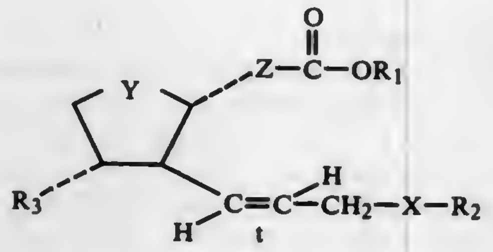
wherein R_5 is selected from the group consisting of 1-propenyl, ethynyl and trimethyl-silylethynyl; Z is selected from the group consisting of a divalent moiety of the formula:



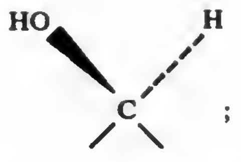
$$-CH_2-\overset{\text{cis}}{\overline{\underset{\underset{H}{|}}{C}=\underset{\underset{H}{|}}{C}}}-(CH_2)_4-$$

the racemic mixture thereof; and, when R_1 is hydrogen, the pharmacologically acceptable salts thereof.

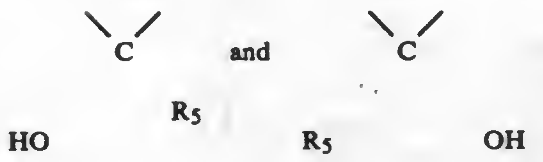
2. An optically active compound of the formula:



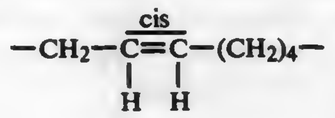
wherein Y is a divalent moiety of the formula:



R_1 is selected from the group consisting of hydrogen and C_1 to C_6 alkyl; R_2 is selected from the group consisting of C_3 to C_7 alkyl; R_3 is selected from the group consisting of hydrogen and hydroxy; X is selected from the group consisting of a divalent moiety of the formula:



wherein R_5 is selected from the group consisting of 2-propynyl, ethynyl and trimethylsilylethynyl; Z is selected from the group consisting of a divalent moiety of the formula:



$$-CH_2-\overset{\text{cis}}{\overline{\underset{\underset{H}{|}}{C}=\underset{\underset{H}{|}}{C}}}-(CH_2)_4-$$

the racemic mixture thereof; and, when R_1 is hydrogen, the pharmacologically acceptable salts thereof.

4,191,700
SYNTHETIC LIQUID FUELS

Howard E. Lebowitz, San Jose; Ronald H. Wolk, San Jose; Seymour B. Alpert, Los Altos; Norman C. Stewart, San Jose, and William C. Rovesti, Sunnyvale, all of Calif., assignors to Electric Power Research Institute, Inc., Ralo Alto, Calif.

Continuation-in-part of Ser. No. 799,831, May 23, 1977, abandoned. This application Aug. 2, 1978, Ser. No. 930,266
Int. Cl.² C07C *1/04, 31/06*
U.S. Cl. 260—449 M **8 Claims**

1. A highly efficient method of producing from coal liquid volatile products having fuel values which comprises:

(a) in a hydroliquefaction zone liquefying coal by contacting comminuted coal with hydrogen and a hydrogen donor recycle solvent boiling in the range of about 400°–975° F. under severe conditions comprising temperatures in the range of 800° to 900° F. and pressures in the range of 1,000 to 3,000 psig and a solvent to coal weight ratio of 1.5–3:1 to produce a high yield of light distillates boiling below about 650° F. said yield of light distillates comprising from about 15 to 45 weight percent of the coal (dry ash free basis), whereby a substantially gaseous effluent and a substantially liquid effluent are obtained;

(b) transferring said liquid effluent to a vacuum distillation separation zone and distilling said liquid effluent into a light distillate fraction, boiling below about 400° F., a middle distillate solvent fraction boiling between about 400° to 650° F., a heavy distillate fraction boiling between about 650° to 975° F., and vacuum bottoms slurry boiling above about 975° F., the quantity of which, when gasified, will supply substantially more gas than is required for producing hydrogen for the hydroliquefier;

(c) pumping said vacuum bottoms slurry into a partial oxidation gasifier and transforming said bottoms to synthesis gas consisting essentially of carbon monoxide and hydrogen;

(d) shifting the hydrogen to carbon monoxide ratio of the said synthesis gas to produce a hydrogen enriched gas and removing the acid gases therefrom;

(e) recycling a portion of said hydrogen enriched gas from said synthesis gas from step (d) to the hydroliquefier;

(f) reacting the remainder of said synthesis gas to produce methanol or methane;

(g) recycling at least a portion of said 400°–650° F. and said 650°–975° F. fractions in admixture as said recycle hydrogen donor solvent to said hydroliquefaction zone.

(h) utilizing excess of said 650°–975° F. as fuel for the plant.

(i) withdrawing the remainder of product boiling below about 650° F. not recycled in step (g).

4,191,701
ALCOHOL SEPARATION

Charles E. Moyer, Jr., Charleston; George E. Keller, II, South Charleston; Robert W. Beisner, and Wellington E. Walker, both of Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 674,822, Apr. 8, 1976, abandoned, which is a continuation of Ser. No. 506,862, Sep. 17, 1974, abandoned. This application Apr. 11, 1977, Ser. No. 786,584
Int. Cl.² C07C *27/06, 27/34*
U.S. Cl. 260—450 **4 Claims**

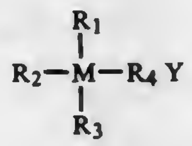
1. The process of separating products obtained from the reaction of an oxide of carbon and hydrogen in a solvent containing homogeneous liquid phase mixture containing a catalytic amount of rhodium in complex combination with carbon monoxide which comprises volatilizing said products of the reaction from the mixture at a temperature lower than that which causes the carbon monoxide to react with product, solvent or hydrogen, at a temperature which ranges from about 50° C. to about 300° C., and at a pressure which ranges from about 0.001 to about 1000 atmospheres while simultaneously maintaining the mixture in contact with added carbon monoxide gas.

4,191,702
PREPARATION OF ALKYL OR ARALKYL THIOSULFATES

Gilbert Chapelet, Bron; Patrice Lubin, Meusnes, and Robert Nouguier, Plan de Cuques, all of France, assignors to Elf Union, Paris, France

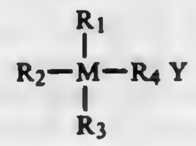
Filed Oct. 16, 1978, Ser. No. 951,521
Claims priority, application France, Oct. 11, 1978, 77 30979
Int. Cl.² C07C *153/07*
U.S. Cl. 260—453 RY **14 Claims**

1. In a process for preparing alkyl, alkaryl, acylester or aralkyl thiosulfates by reaction of an alkyl, alkylene, acylester or aralkyl halide with thiosulfate, the improvement which comprises reacting an alkyl, alkylene, acylester or aralkyl halide in an organic solvent, for said halide; immiscible with water, with an aqueous solution of the thiosulfate, in the presence of from 0.5 to 10 moles percent, based on the moles of said halide, of a phase transfer agent of the formula



$$R_2-\overset{\overset{R_1}{|}}{\underset{\underset{R_3}{|}}{M}}-R_4\,Y$$

wherein M is N or P, Y is halide or OH and R_1, R_2, R_3 and R_4 are independently aryl, alkaryl, alkyl, hydroxy alkyl, and carboxy alkyl, wherein not more than one R can be hydroxy alkyl and carboxy alkyl and the total number of carbon atoms in R_1, R_2, R_3 and R_4 is from 5 to 40, and ion exchange resins containing grafted quaternary ammonium groups of the formula



$$R_2-\overset{\overset{R_1}{|}}{\underset{\underset{R_3}{|}}{M}}-R_4\,Y$$

wherein R_1, R_2, R_3, R_4 and Y are as defined herebefore, which permits the thiosulfate ion to pass from the aqueous phase to the organic phase wherein the reaction occurs.

4,191,703

PROCESS FOR THE MANUFACTURE OF SULFURIC ACID SEMI-ESTER COMPOUNDS

Hans H. Steuernagel, Kelkheim, and Ernst Hoyer, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

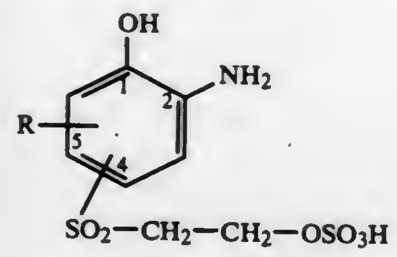
Continuation of Ser. No. 820,848, Aug. 1, 1977, abandoned. This application Jun. 8, 1978, Ser. No. 913,538

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1976, 2634787

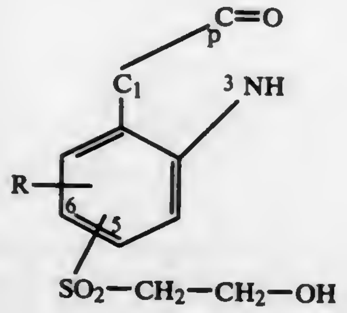
Int. Cl.^{2} C07C *141/18*

U.S. Cl. 260—458 C **5 Claims**

1. In a process for the preparation of an aminophenol-suflu-ric acid semi-ester of the formula



in which R is hydrogen, lower alkyl, nitro, chlorine or bromine, and the β-sulfatoethyl sulfonyl group is in the 4-position or 5-position of the benzene nucleus, by reaction comprising esterification by sulfuric acid, sulfur trioxide or sulfuric acid containing sulfur trioxide, and hydrolytic ring cleavage of a benzoxazolone compound of the formula



in which the β-hydroxyethylsulfonyl group is in the 5-position or 6-position of the benzoxazolone ring and R is defined as above, the improvement which comprises reacting with 1- to 2-times the equimolar amount, calculated on SO_3, of an esterifying agent selected from the group consisting of a 92 to 100% strength sulfuric acid, of sulfur trioxide and of sulfuric acid containing sulfur trioxide, optionally with the subsequent addition of water, at a temperature of from 100° to 180° C. while kneading.

4,191,704

HIGHLY CONCENTRATED ALKYL SULPHATE SOLUTIONS POURABLE AT AMBIENT

Douglas E. Mather, Whitehaven; Edward T. Messenger, High Harrington, and Bryn M. Phillips, Whitehaven, all of England, assignors to Albright & Wilson Ltd., Warley, United Kingdom

Continuation of Ser. No. 708,963, Jul. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 541,371, Jan. 15, 1975, abandoned. This application Jun. 24, 1977, Ser. No. 809,709

Claims priority, application United Kingdom, Jan. 16, 1974, 02038/74

The portion of the term of this patent subsequent to Nov. 25, 1996, has been disclaimed.

Int. Cl.^{2} C07C *141/04*

U.S. Cl. 260—459 R **13 Claims**

1. A method for the preparation of aqueous solutions of gel-forming alkyl sulphates which contain concentrations of alkyl sulphate greater than 60% by weight and which are pourable at ambient temperatures which consists essentially in mixing an acid of the formula RSO_4H, where R is an alkyl group, having an average of 12 to 16 carbon atoms and a sufficient amount of a base selected from the group consisting of ammonium hydroxide and alkylamines and alkylolamines having a total of up to six carbon atoms and mixtures thereof to provide a final pH of between 6.5 and 8.5 and in the presence of sufficient water to maintain the product in the G phase.

4,191,705

PROCESS FOR THE PREPARATION OF CARBONIC ACID ESTERS OF POLYESTER-POLYOLS

Christian Lindner, Cologne; Carlhans Süling; Herbert Bartl, both of Odenthal; Manfred Schreckenberg, Krefeld; Dieter Freitag, Krefeld-Traar, and Klaus König, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 845,174

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 2651639

Int. Cl.^{2} C07C *68/00, 69/96*

U.S. Cl. 260—463 **15 Claims**

1. A process for the preparation of a carbonic acid aryl ester of a polyester-polyol from a polyester-polyol having an average molecular weight ($\overline{M}n$) above about 250 and a carbonic acid bis-aryl ester, comprising heating the polyester-polyol with the carbonic acid bis-aryl ester at a temperature from about 100° C. to 200° C. at a pressure less than about 35 mm Hg in the presence of a catalyst, more than one mol of carbonic acid bis-aryl ester being employed per mol of OH-group, and distilling off the hydroxyaryl compound formed and the excess carbonic acid bis-aryl ester.

14. The product of the process of claim 1.

4,191,706

AROMATIC AMINE-AMIDES AND USE AS CHAIN-EXTENDERS

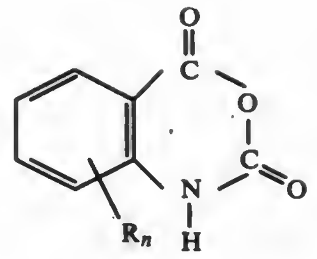
Edward T. Marquis, and Ernest L. Yeakey, both of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Filed Apr. 13, 1978, Ser. No. 895,840

Int. Cl.^{2} C07C *103/28, 103/78, 103/82, 99/04*

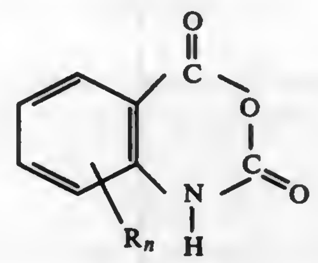
U.S. Cl. 260—559 A **6 Claims**

1. A compound comprising a reaction product of a polyoxypropylene polyamine selected from the group consisting of diamines, triamines and mixtures thereof, and having an average molecular weight of 190 to about 3000 and an isatoic anhydride of the formula:



where R is selected from the group consisting of hydrogen, alkyl nitro, halo, hydroxy, amino, and cyano, and n is a number of 1–4.

4. A polyurethane composition prepared by reacting an organic polyisocyanate with a polymeric polyhydroxy compound and a chain-extending agent comprising a reaction product of a polyoxypropylene polyamine selected from the group consisting of diamines, triamines and mixtures thereof, and having an average molecular weight of 190 to about 3000 and an isatoic anhydride of the formula:



where R is selected from the group consisting of hydrogen, alkyl nitro, halo, hydroxy, amino, and cyano, and n is a number of 1–4.

4,191,707

2-DECARBOXY-2-AMINOMETHYL-9-DEOXY-9-METHYLENE-16-PHENYL-PGF COMPOUNDS

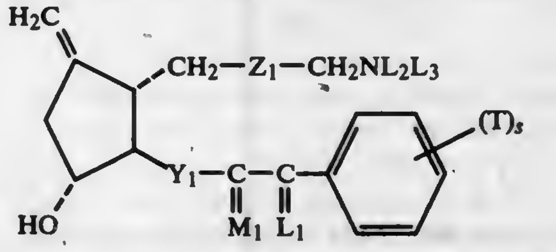
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 786,249, Apr. 11, 1977, Pat. No. 4,118,584. This application Jul. 12, 1978, Ser. No. 923,831

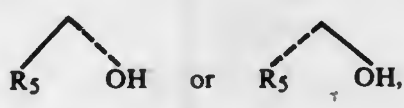
Int. Cl.^{2} C07C *87/45*

U.S. Cl. 260—570.5 CA **210 Claims**

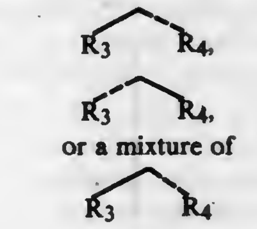
1. A prostaglandin analog of the formula



wherein Y_1 is trans-CH═CH—, —C≡C—, or —CH_2CH_2—;
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein L_1 is



and

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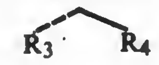
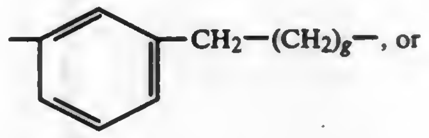


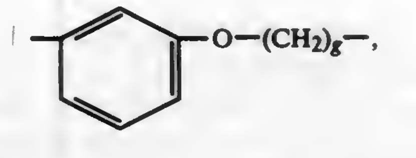
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein Z_1 is

(1) cis—CH═CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH═CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH═CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —C≡C—CH_2—$(CH_2)_g$—CH_2—,
(8) —CH_2—C≡C—$(CH_2)_g$—CH_2—,

(9)



(10)



wherein g is one, 2, or 3;
wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein L_2 and L_3 are hydrogen, or alkyl of one to 4 carbon atoms, inclusive.

4,191,708

PROCESS FOR PREPARING AND PURIFYING P-PHENYLENEDIAMINE

Hiromichi Okabe, Hirakata; Kiyomi Kishimoto, Kurashiki, and Fumio Ohi, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 10, 1978, Ser. No. 868,435

Claims priority, application Japan, Jan. 28, 1977, 52-8958

Int. Cl.^{2} C07C *85/26*

U.S. Cl. 260—582 **6 Claims**

1. In a process for preparing p-phenylenediamine by preparing p-aminoazobenzene from aniline by way of diazoaminobenzene and then reducing the p-aminoazobenzene, the improvement characterized by separating and removing o-aminoazobenzene produced as a by-product in the step of preparing p-aminoazobenzene, from the reaction product containing p-aminoazobenzene and o-aminoazobenzene as a by-product by crystallization from a solvent before p-aminoazobenzene is reduced.

4,191,709

MANUFACTURE OF AMINES FROM ALCOHOLS WITH ZEOLITE FU-1 CATALYSTS

David G. Parker, and Alan J. Tompsett, both of Middlesbrough, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 29, 1979, Ser. No. 7,612

Claims priority, application United Kingdom, Feb. 6, 1978, 4655/78

Int. Cl.^{2} C07C *85/06*

U.S. Cl. 260—583 R **9 Claims**

1. A process for the manufacture of an amine which comprises reacting an alcohol with ammonia at an elevated temperature in the presence of either the hydrogen form of zeolite

FU-1 or zeolite FU-1 in which some or all of the protons have been replaced by bivalent or trivalent cations.

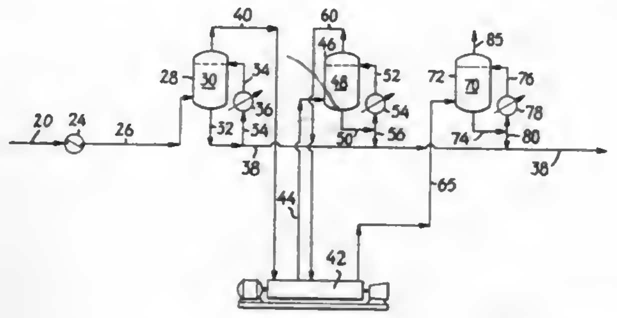
4,191,710
TREATMENT OF METHACROLEIN-CONTAINING GASES

James Leacock, New York, N.Y., assignor to Halcon Research and Development Corp., New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,736

Int. Cl.^{2} C07C *45/02, 45/16*

U.S. Cl. 260—601 R **2 Claims**



1. A process for the removal of water vapor from a gaseous stream under superatmospheric pressure up to about 50 psig and at a temperature of about 300°-500° C. produced by the catalytic oxidation of isobutylene or tertiary butyl alcohol and containing methacrolein, which comprises introducing said gaseous stream sequentially into a plurality of quenching zones arranged in series and each containing an aqueous stream with which said gaseous stream comes into direct contact in a plurality of contact stages, while increasing the superatmospheric pressure of said gaseous mixture between each of said plurality of quenching zones to a maximum pressure of about 250 psig while cooling said gaseous stream to a minimum temperature of about 35° C., the aqueous stream in each of said quenching zones being comprised of water containing dissolved components of said gaseous stream, whereby said gaseous mixture is introduced sequentially into said zones at a graduated increased pressure and the superatmospheric pressure in each succeeding zone is greater than the superatmospheric pressure in the preceding zone.

4,191,711
PROCESS FOR THE PREPARATION OF CERTAIN NUCLEAR CHLORINATED BENZOTRICHLORIDES

Manfred Lenthe, Lohmar, and Hans-Helmut Schwarz, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

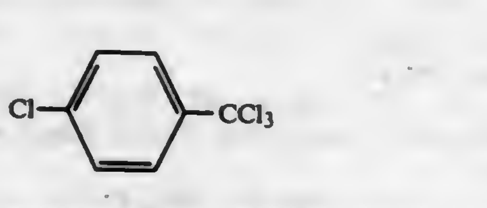
Continuation of Ser. No. 832,758, Sep. 12, 1977, abandoned. This application Jul. 17, 1978, Ser. No. 925,494

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644641

Int. Cl.^{2} C07C *25/08, 25/16*

U.S. Cl. 260—650 R **14 Claims**

1. A process for the preparation of 3,4-dichlorobenzotrichloride, 3,4,5-trichlorobenzotrichloride, 2,4,5-trichlorobenzotrichloride or 2,3,4,5-tetrachlorobenzotrichloride which comprises contacting at a temperature between 0° and 180° C. p-chlorobenzotrichloride of the formula



(I)

with chlorine or an agent which releases chlorine in the presence of an iron (III) chloride or aluminum chloride catalyst or a mixture of iron (III) chloride or aluminum chloride with sulfur dichloride or disulfur dichloride.

4,191,712
PROCESS FOR THE PREPARATION OF 1,1-DIHALO-4-METHYL-1,3-PENTADIENE COMPOUNDS

Dieter Arlt, Cologne, and Manfred Jautelat, Burscheid, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

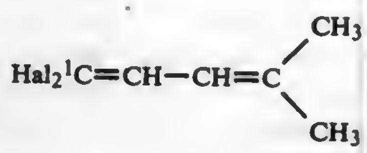
Filed Nov. 27, 1978, Ser. No. 964,216

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756271

Int. Cl.^{2} C07C *17/24*

U.S. Cl. 260—654 D **14 Claims**

1. Process for the preparation of a 1,1-dihalogeno-4-methyl-1,3-pentadiene of the formula

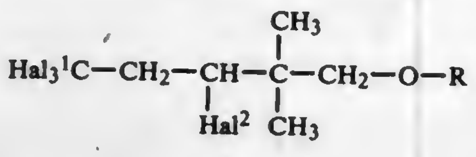


$$\mathrm{Hal_2{}^1C{=}CH{-}CH{=}C(CH_3)_2} \qquad \text{(II)},$$

in which

Hal^1 is halogen, the two Hal^1 atoms being independent of one another

which process comprises reacting a 2,2-dimethyl-3,5,5,5-tetrahalogenopent-1-yl derivative of the formula



$$\mathrm{Hal_3{}^1C{-}CH_2{-}\underset{\displaystyle Hal^2}{\underset{|}{CH}}{-}\overset{\displaystyle CH_3}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}}{-}CH_2{-}O{-}R} \qquad \text{(I)},$$

in which

Hal^1 is defined as above,

Hal^2 is halogen, and

R is hydrogen or alkanoyl of up to 5 carbon atoms with a substance having a basic reaction in a temperature range from 20° to 160° C.

4,191,713
ROOM TEMPERATURE CURABLE COMPOSITION

Kazuya Yonezawa; Yasushi Kato; Hisao Furkawa, and Masaaki Azuma, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 28, 1978, Ser. No. 973,888

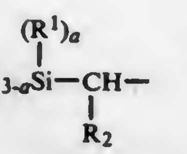
Claims priority, application Japan, Dec. 29, 1977, 52/159437

Int. Cl.^{2} C08L *43/04, 83/12*

U.S. Cl. 525—102 **12 Claims**

1. A room temperature-curable composition, comprising, as effective ingredients, the following components (A) and (B)

(A) one, or a mixture of two or more, of polyesters, ether ester block copolymers, vinyl polymers, diallyl phthalate series compounds and diallyl phthalate series copolymer having in one molecule at least one silyl group represented by the following general formula:



$$\mathrm{X_{3\text{-}a}\overset{\displaystyle (R^1)_a}{\overset{|}{Si}}{-}\underset{\displaystyle R_2}{\underset{|}{CH}}{-}}$$

wherein R^1 and R^2 each represents a hydrogen atom or a monovalent hydrocarbyl group selected from the group consisting of alkyl group, aryl group and aralkyl group having 1 to 10 carbon atoms; "X" represents a group selected from the group consisting of halogen atom, alkoxy group, acyloxy group, ketoximato group, amido group, acid amido group, aminoxy group and mercapto group, and "a" represents an integer 0, 1, or 2; and

(B) one, or a mixture of two or more, of silicon compounds containing in one molecule, at least one "V" group bound to the silicon, and containing 1-20 silicon atoms, and wherein "V" represents a group selected from the group consisting of hydride group, hydroxyl group, alkoxy group, acyloxy group, ketoximato group, amido group, acid amido group, aminoxy group and mercapto group.

4,191,714
CURABLE POLYESTER OLIGOMER AND A PROCESS FOR PRODUCING SAME

Kazuya Yonezawa; Yasushi Kato; Hisao Furukawa, and Masaaki Azuma, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

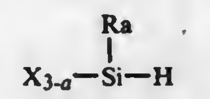
Filed Dec. 28, 1978, Ser. No. 973,889

Claims priority, application Japan, Dec. 29, 1977, 52/159436; May 31, 1978, 53/66116

Int. Cl.^{2} C08L *83/12, 43/04*

U.S. Cl. 525—102 **10 Claims**

6. A process for producing curable polyester oligomer, characterized by making a compound comprised substantially of polyester oligomer having a molecular weight of between 200 and 8,000 and at least one C—C double bond at the side chain or at the end of a molecule, to react with a hydrosilane compound represented by the formula:



$$\mathrm{X_{3\text{-}a}{-}\overset{\displaystyle Ra}{\overset{|}{Si}}{-}H}$$

wherein R represents any monovalent hydrocarbon radical having 1 to 10 carbon atoms and selected from the group consisting of alkyl radical, aryl radical and aralkyl radical, "X" represents any radical selected from the group consisting of halogen alkoxy, acyloxy, aminoxy, phenoxy, thioalkoxy and amino radicals, and "a" is an integer of 0, 1, or 2, at a temperature between 50° C. and 150° C.

8. The process of claim 6, wherein a compound comprising substantially polyester is the polymerization product of an acid anhydride with epoxy compound in the presence of alcohol.

4,191,715
FLAME RETARDING COMPOUND

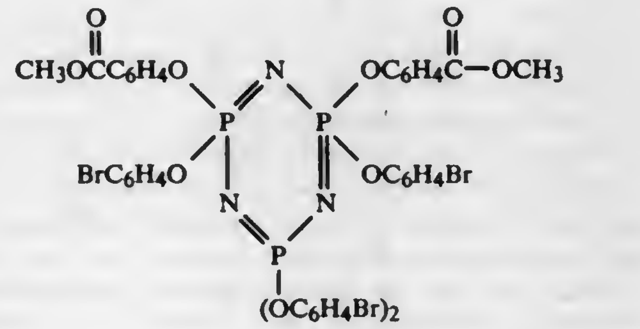
Chester C. Wu, Raleigh, N.C., and Albert Y. Garner, Yellow Springs, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 3, 1978, Ser. No. 921,649

Int. Cl.^{2} C07F *9/06*

U.S. Cl. 260—927 N **1 Claim**

1. A flame retarding agent having the formula:



4,191,716
CARBURETOR FOR INTERNAL COMBUSTION ENGINES

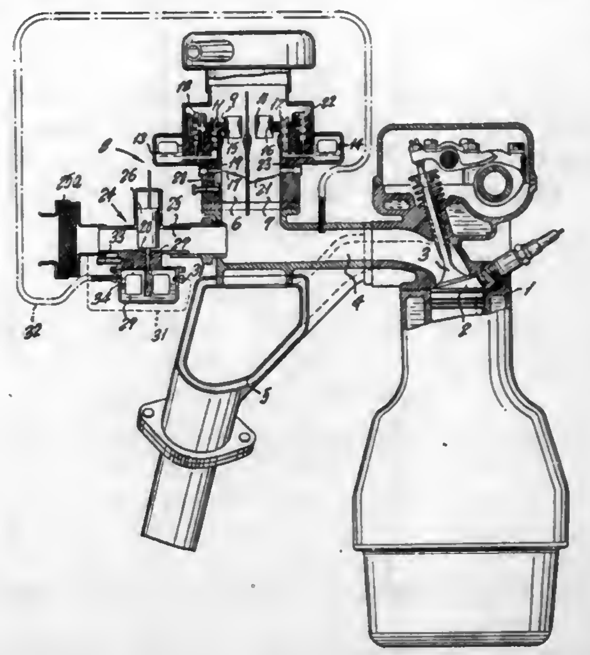
Ryuichi Yamashita, and Hiromitsu Matsumoto, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 851,264, Nov. 14, 1977, abandoned, which is a continuation of Ser. No. 649,214, Jan. 15, 1976, abandoned. This application Dec. 18, 1978, Ser. No. 970,135

Claims priority, application Japan, Feb. 26, 1975, 50-23586

Int. Cl.^{2} F02M *1/06*

U.S. Cl. 261—23 A **5 Claims**



1. A carburetor for an internal combustion engine which includes intake passage means leading to combustion chamber means of the engine, said carburetor comprising: throttle valve means provided in said intake passage means; a float chamber means having a region overlaying fuel therein; main fuel nozzle means provided in said intake passage means for supplying fuel from said main float chamber for normal operation of said engine; means for controlling supply of fuel to said main fuel nozzle means; starting air passage means which is smaller in cross-sectional area than the intake passage means and opening to the intake passage means at the downstream side of the throttle valve means; a starter valve means in said starting air passage means; means connected to said float chamber for supplying starting fuel to starting fuel nozzle means which starting fuel nozzle means opens to said starting air passage means for supplying starting fuel to said starting air passage means to form a starting air-fuel mixture, said starter valve means being provided with means for connecting said overlaying region of the float chamber means with said intake passage means at the downstream side of the throttle valve means when the starter valve means is in open position and opening said float chamber means to atmosphere when the starter valve means is in closed position, whereby the amount of starting fuel to said intake passage means is controlled in accordance with load on the engine in such a manner that the amount of starting fuel is increased as the engine load is increased.

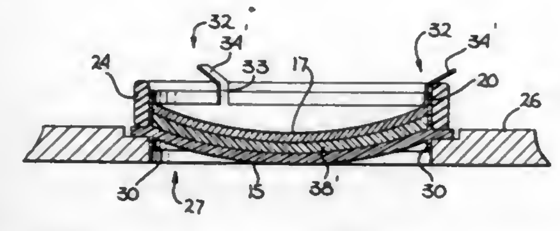
2. A carburetor for an internal combustion engine which includes intake means leading to combustion chamber means of the engine, said carburetor comprising: throttle valve means provided in said intake passage means, a main float chamber having a region overlaying fuel therein; main fuel nozzle means provided in said intake passage means for supplying fuel from said main float chamber for normal operation of said intake passage means; means for controlling supply of fuel to said nozzle means; starting air passage means which is smaller in cross-sectional area than the intake passage means and opening to the intake passage means at the downstream side of the throttle valve means; a shut-off valve in said starting air passaage means; means for supplying starting fuel to said starting air passage means to form a starting air-fuel mixture, said last-named means including starter float chamber means connected

to starting fuel nozzle means opening to said starting air passage means, said starter float chamber means having a region overlaying fuel therein; and starting fuel control means including connecting passage means for subjecting the said region of said starter float chamber means to the influence of intake pressure in the intake passage at the downstream side of the throttle valve means, whereby the amount of starting fuel to said intake passage means is controlled in accordance with load on the engine in such a manner that the amount of starting fuel is increased as the engine load is increased, said region in said main float chamber not being connected to said intake passage at the downstream side of the throttle valve means.

4,191,717

CASTING PROCESS FOR PLASTIC LENSES

Hermann P. Weber, 5506 Beckford Ave., Tarzana, Calif. 91356
Division of Ser. No. 796,699, May 13, 1977, Pat. No. 4,095,772.
This application Jan. 19, 1978, Ser. No. 870,749
Int. Cl.^{2} B29D *11/00*
U.S. Cl. 264—1 **3 Claims**



1. A process for forming a lens from a liquid plastic comprising the steps of:

metering a predetermined amount of said liquid plastic into a lower mold having a first optical surface;

placing an upper mold having a flexible support and a second optical surface on the upper surface of said liquid, said upper mold partly supported by said lower mold and partly supported by said liquid plastic;

said flexible support comprising a plurality of flexible ears providing self-compensation by which said upper mold will resist the downward movement of said mold during curing;

curing said plastic and at the same time controllably drawing down said upper mold against said resistance of said flexible ears by the action of said curing plastic and maintaining said upper mold parallel to said lower mold;

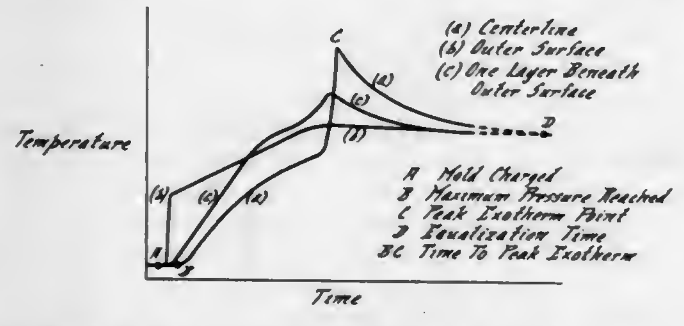
said drawing down step including the upward bending of said flexible ears;

whereby a lens is formed between said first and second optical surfaces.

4,191,718

THICK SECTION COMPRESSION MOLDED COMPOSITES

Pankaj K. Mallick, and Narasimhan Raghupathi, both of Westland, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 19, 1977, Ser. No. 861,801
Int. Cl.^{2} B29C *25/00*
U.S. Cl. 264—26 **5 Claims**



1. A method of compression molding of layered compounds comprising reinforcing glass fiber, thermosetting ester or epoxy resin and catalyst in a thickened dispersion wherein heat and pressure are applied to form structural thermosets having thick sections above about one quarter inch, which method comprises:

(A) dielectrically preheating the molding compound or portion thereof to a temperature at least about 100° F. and up to about 200° F. for less than about 2 minutes and without pregelling;

(B) introducing the preheated molding compound into a mold which is maintained at a temperature in excess of about 220° F. but below that which causes premature gelling of the molding compound and so as to cover at least about 50% of the area of the lower mold surface;

(C) applying a peak pressure of at least about 200 psi to the molding compound in the mold sufficient to cause its flow and filling of the mold to form a molded object;

(D) maintaining the molded object in the mold at elevated pressure and temperature for a time in excess of that at which the peak internal exotherm occurs;

(E) removing the molded object from the mold;

(F) optionally, post-treating the molded object by allowing it to cool after removal from the mold at an average rate in a range of up to about 15° F. per minute for the first five minutes.

4,191,719

PROCESS FOR PRODUCING MULTICELLULAR ARTICLES FROM A BLEND OF A CRYSTALLINE POLYOLEFIN AND A METAL RESINATE

James Jack, Mistley, and Godfrey A. King, Manningtree, both of England, assignors to Bakelite Xylonite Limited, London, England
Division of Ser. No. 454,763, Mar. 25, 1974, abandoned. This application Jul. 19, 1976, Ser. No. 706,594
Int. Cl.^{2} B29D *27/00*
U.S. Cl. 264—41 **11 Claims**

1. A process for the production of a multicellular stretched article, which comprises forming a blend of a crystalline polyolefin and at least one additive, the additive comprising from more than 2 to about 50% by weight, calculated on the weight of the blend, forming a shaped article from the blend and stretching the article uniaxially or biaxially to produce a multicellular stretched article, wherein the additive is at least one metal resinate which is at least partially incompatible with the polyolefin at least at the temperature at which the article is to be stretched, the blend is formed by blending the polyolefin with the metal resinate at a temperature at which both the metal resinate and the polyolefin are molten or at least soft, and stretching is effected at a temperature within the normal orientation temperature range for the polyolefin, which temperature is below the softening point of the metal resinate.

4,191,720

METHOD FOR MAKING POROUS, CRUSHABLE CORE HAVING AN INTEGRAL OUTER BARRIER LAYER

Wayne D. Pasco, Ballston Lake, and Frederic J. Klug, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 6, 1977, Ser. No. 839,992
Int. Cl.^{2} B29H *7/20*
U.S. Cl. 264—43 **13 Claims**

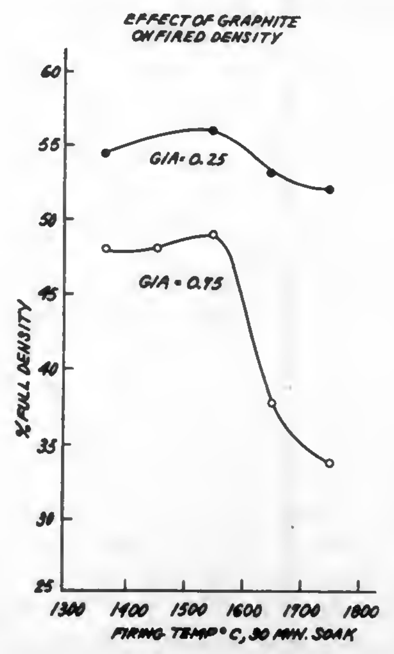
1. A method for simultaneously forming a dense integral barrier layer on selected surfaces of a fired ceramic article and for increasing the continuous porosity content and the crushability characteristics thereby including the process steps of

(a) preparing a material composition consisting essentially of an organic binder, a reactant fugitive filler material and an alumina flour which is one selected from the group consisting of alumina, yttrium aluminate, lanthanum aluminate, and magnesia doped alumina, the particle size of the alumina flour and the reactant figitive filler material is less than about 300 microns, and the binder consists of less than 50 percent by volume;

(b) working a portion of the material composition to produce a preform of a predetermined shape;

(c) heating the preform to remove the organic binder from the preform while retaining substantially all of the reactant fugitive filler material therein and to obtain desired green strength;

(d) firing the preform in a controlled atmosphere to react the alumina and the reactant fugitive filler material to produce at least one or more suboxides of alumina to produce a ceramic article having a predetermined continuous porosity content, grain morphology and crushability characteristics, and

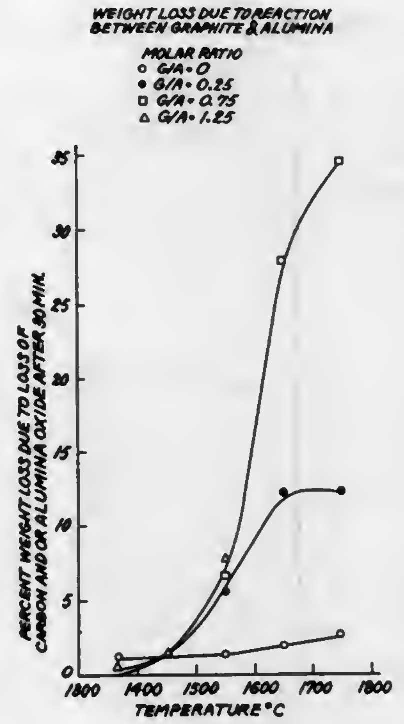


(e) oxidizing at least a portion of the suboxides of alumina to form a dense integral barrier layer of alumina at the surface of the ceramic article.

4,191,721

MAKING CERAMIC ARTICLES HAVING A HIGH DEGREE OF POROSITY AND CRUSHABILITY CHARACTERISTICS

Wayne D. Pasco, Ballston Lake; Frederic J. Klug, Amsterdam, and Svante Prochazka, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 6, 1977, Ser. No. 839,994
Int. Cl.^{2} B29H *7/20*
U.S. Cl. 264—43 **12 Claims**



1. A method for increasing the porosity and the crushability characteristics of cores and molds for investment casting including the process steps of

(a) preparing a material composition consisting essentially of an organic binder, a reactant fugitive filler material and an alumina flour which is one selected from the group consisting of alumina, yttrium aluminate, lanthanum alumina, and magnesia doped alumina, the particle size of the alumina flour and the reactant fugitive filler material is less than about 300 microns, and the binder consists of less than 50 percent by volume;

(b) working a portion of the material composition to produce a preform of a predetermined shape;

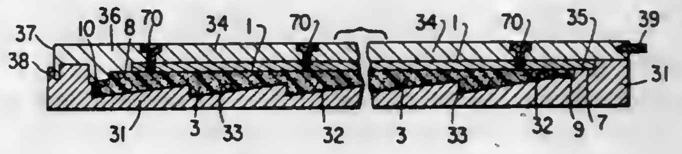
(c) heating the preform in a controlled atmosphere to remove the organic binder from the preform while retaining substantially all of the reactant fugitive filler material therein and to obtain desired green strength, and

(d) firing the preform in a controlled atmosphere to react the alumina and the reactant fugitive filler material to produce at least one or more suboxides of alumina to produce a ceramic article having a predetermined continuous porosity content, grain morphology, and crushability characteristics.

4,191,722

METHOD OF MOLDING A COMPOSITE SYNTHETIC RESIN FOAM ROOFING STRUCTURE HAVING AN INTEGRAL SKIN THEREON

Walter M. Gould, 1731 Harriman La., Redondo Beach, Calif. 90278
Continuation-in-part of Ser. No. 788,490, Apr. 18, 1977, abandoned, which is a division of Ser. No. 462,256, Apr. 19, 1974, Pat. No. 4,028,450, which is a continuation-in-part of Ser. No. 318,288, Dec. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 45,373, Jun. 11, 1970, abandoned. This application Dec. 6, 1977, Ser. No. 857,970
The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.
Int. Cl.^{2} B29D *27/04*
U.S. Cl. 264—45.5 **8 Claims**



1. A method of molding a composite foam synthetic resin product in an open cavity mold comprising:

providing an open cavity mold having a step along a first end and first side of said mold cavity;

applying a barrier coat to the inside surface of said mold cavity;

providing a pressure plate cover having a stepped portion along one side and one end said stepped portion adapted to engage a second side and end of said mold cavity;

detachably securing a base member to said pressure plate with a side and end of said base member abutting the stepped portion of said pressure plate;

chilling the mold in a chilling compartment to chill the surfaces of the mold cavity;

injecting a foamable thermosetting resin reaction mixture into the chilled mold cavity;

securing the pressure plate and attached base member into said mold with said base member lying on the stepped portion along the first side and end of said mold cavity;

curing the resin reaction mixture for a period of time sufficient to permit it to foam and adhere to said base member;

removing said pressure plate from said mold after completion of curing; and

detecting the composite foam synthetic resin product from said pressure plate whereby a portion of the base member along one side and one end is exposed and a portion of the foamed resin reaction mixture is exposed along the opposite side and end of said product.

4,191,723

PROCESS FOR FORMING NOVOLAK RESIN COMPOSITIONS INTO MOLDING GRANULES

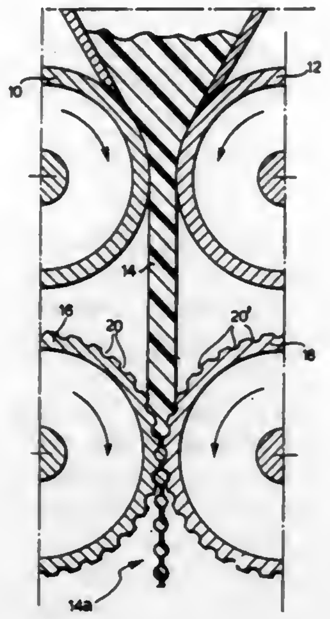
Silvio Vargiu, Casatenovo; Pier L. Manzoni, Codogno, and Mario Bernasconi, Maleo, all of Italy, assignors to Euteco S.p.A., Milan, Italy

Filed Aug. 1, 1977, Ser. No. 820,814

Claims priority, application Italy, Aug. 5, 1976, 26050 A/76

Int. Cl.^{2} B29C *17/00*

U.S. Cl. 264—129 **19 Claims**



1. A process for forming a novolak resin composition into molding granules, which comprises:

(a) homogenizing the novolak resin composition at a temperature above the melting point of the novolak resin;

(b) feeding the homogenized composition, at a temperature at which the said composition shows plasticity, but lower than the melting point of the novolak resin, between at least one pair of internally cooled rollers rotating in opposite directions with respect to each other with a peripheral speed of 0.15 to 0.30 m/sec., and having external surfaces separated from one another by a distance of 0.6 to 2 cm, so as to produce a coherent sheet by calendering;

(c) rolling said coherent sheet between a pair of internally cooled rollers, at least one of which has a plurality of indentations, rotating in opposite direction with respect to each other with a peripheral speed of 0.3 to 0.8 m/sec. and having external surfaces separated from each other by a distance of 0.02 to 0.5 cm, so as to produce a coherent embossed sheet;

(d) fracturating the said coherent embossed sheet and separating the granules having substantially the shape of the embossments from the fine and coarse fractions;

(e) mixing said granules with a liquid coating material comprising from 0.3 to 3 wt.%, with respect to the weight of the granules, of at least one coating agent selected from the group consisting of substituted phenols; polyphenols; products of the condensation, in an acid or alkaline medium, of phenol, substituted phenols or polyphenols with an aldehyde; and mixtures of said substituted phenols, polyphenols and condensation products with phenol; and

(f) heat-treating the coated granules thus obtained by flowing through the latter a stream of inert gas having a temperature not exceeding 130° C.

4,191,724

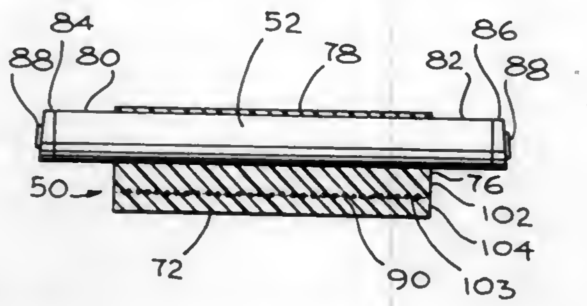
MOLDED CHARACTER BELT WITH INTEGRAL SLEEVES

Norman McMillan, Westlake Village, and Henry M. Dier, Woodland Hills, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Division of Ser. No. 639,349, Dec. 10, 1975, abandoned. This application Apr. 26, 1977, Ser. No. 790,999

Int. Cl.^{2} B29C *5/04;* B29D *3/02;* B29H *7/22*

U.S. Cl. 264—255 **4 Claims**



1. A process for fabricating a character belt comprised of an endless band of uniform width having inner and outer peripheral surfaces and elongated slugs carried by said band adjacent said outer surface and extending across the width thereof, said method comprising the steps of:

providing a mold fixture having a first substantially cylindrically shaped surface defining a central opening, said first surface being shaped to open into a plurality of elongated axial cavities which extend radially outwardly from said first surface and which are uniformly spaced therearound, and a second substantially cylindrically shaped surface spaced radially inwardly from said first surface to define a channel of substantially uniform thickness therebetween;

positioning a plurality of elongated slugs, each having a peripheral surface and first and second end surfaces, in said plurality of cavities so that each slug peripheral surface is spaced from the cavity wall;

depositing molding material into said fixture; and

rotating said fixture to flow said molding material into said channel and said spaces between said slug peripheral surfaces and said cavity walls to form an endless band having inner and outer peripheral surfaces with sleeves extending from said outer peripheral surface around said slug peripheral surfaces and bonding thereto.

4,191,725

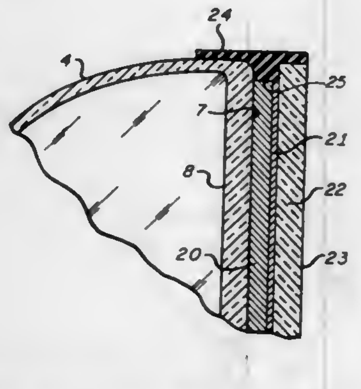
METHOD OF ASSEMBLING A CONTRAST ENHANCED DISPLAY

James B. Armstrong, Phoenix, and J. Robert Trimmier, Glendale, both of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Jun. 28, 1978, Ser. No. 920,022

Int. Cl.^{2} B29F *1/08;* H01J *9/20*

U.S. Cl. 264—261 **8 Claims**



1. A method for forming a filter-face plate combination on the viewing face of a bright display device incorporating the steps of:

supporting said bright display device with said viewing face upward,

placing an elastomer gasket on the periphery of said bright display device viewing face, said gasket having an inner annular lip, one side thereof being adapted to contact said viewing face generally at the periphery thereof,

placing a transparent face plate on the opposite side of said annular gasket lip,

applying pressure to said face plate generally at the periphery thereof thereby to form a cavity defined by said viewing face, said face plate, and the inner surface of said gasket lip, except for a generally radial filler hole extending through said gasket and communicating with said cavity,

reorienting said bright display device so that said radial filler hole is substantially vertical,

filling said cavity through said radial filler hole with a curable polymer material which includes colorants to provide the desired optical filter characteristics while avoiding formation of bubbles,

curing said polymer material,

removing said pressure from said face plate, and

removing said elastomer gasket from said bright display device.

4,191,726

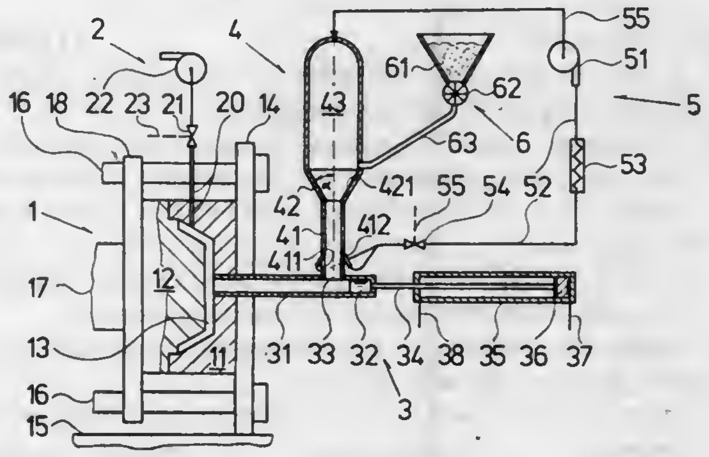
PROCESS AND APPARATUS FOR MANUFACTURING MOLDED PARTS FROM GRANULATED PLASTIC MATERIALS

Bruno Stillhard, St. Gallen, and Hans Näf, Wil, both of Switzerland, assignors to Gebrueder Buehler AG, Switzerland

Division of Ser. No. 809,680, Jun. 24, 1977, Pat. No. 4,158,540. This application Mar. 17, 1978, Ser. No. 887,553

Int. Cl.^{2} B29F *1/08*

U.S. Cl. 264—517 **8 Claims**



1. A process for the manufacture of molded parts from granulated plastic, wherein the surface of the grains of the plastic pile required for one molded part is wet with a reactive monomeric preproduct and is subjected to a surface polymerization in a thin layer in a vestibule, which is connected to a mold cavity, by a hot gas supplied thereto to make it weldable with the cores of the grains remaining cool and solid and, subsequently, the surface of the grains having become weldable, the plastics pile is abruptly pressed into the mold cavity of a hollow mold by an impact-like pressing at sufficient pressing speed and, upon termination of the compressive motion, a sufficient pressure is applied to the mold cavity, so that the plastics pile is sintered.

2. A process for the manufacture of molded parts from granulated plastics, wherein the surface of the grains of the plastic pile is required for one molded part is plasticized in a thin layer in a vestibule, which is connected to a mold cavity by a hot gas supplied thereto, the cores of the grain remaining cold and unplasticized, and subsequently, the surface of the grains having become weldable, the plastics pile is abruptly pressed into the mold cavity of the hollow mold by an impact-like pressing and sufficient pressing speeds and, upon termination of the compressive motion, a sufficient pressure is applied to the mold cavity, so that the plastics pile is sintered.

4,191,727

METHOD FOR THE SEPARATION OF A MIXTURE OF FINE PARTICLES

Wilhelm Brugger, Hösel, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed May 22, 1978, Ser. No. 908,107

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726419

Int. Cl.^{2} C22B *59/00;* C01F *17/00;* C01G *56/00;* B01D *11/00*

U.S. Cl. 423—1 **10 Claims**

1. A method for separating a given fraction from a mixture of fine particles which are insoluble in water which fraction has a surface which is more chemically reactive than the remaining fractions and which produces a suspension having a pH of no more than 6 when suspended in water which comprises:

(a) grinding the mixture until the fraction to be separated has a particle size of less than about 50 microns;

(b) suspending the ground material at a temperature below 100° C. in a diluted aqueous solution of about 0.3 to 3% by weight based on the fraction to be separated of zirconium oxychloride or zirconium oxynitrate;

(c) separating the suspension from sediment therein by decantation; and

(d) adding a base to the separated suspension in an amount sufficient to precipitate the given fraction.

4,191,728

PROCESS FOR SELECTIVE EXTRACTION OF METAL IONS FROM AQUEOUS SOLUTIONS AND EXTRACTING AGENTS SUITABLE FOR THAT PURPOSE

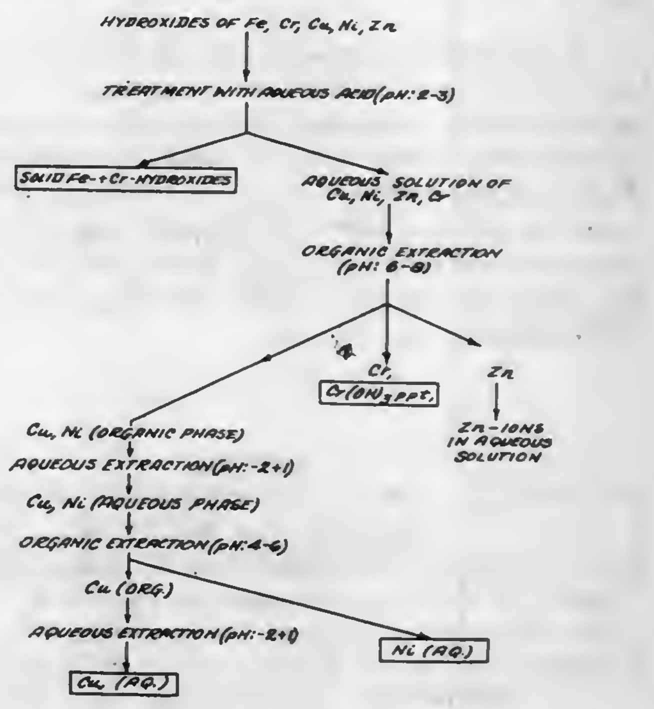
Martinus Tels; Jan P. Lotens, and Hendrikus P. M. Kivits, all of Eindhoven, Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 883,668, Mar. 6, 1978, abandoned. This application May 9, 1978, Ser. No. 907,704

Claims priority, application Netherlands, Mar. 9, 1977, 7702517

Int. Cl.^{2} C01G *3/00, 51/00, 53/00, 9/00*

U.S. Cl. 423—24 **6 Claims**


HYDROXIDES OF Fe, Cr, Cu, Ni, Zn
TREATMENT WITH AQUEOUS ACID (pH: 2-3)
SOLID Fe- + Cr-HYDROXIDES
AQUEOUS SOLUTION OF Cu, Ni, Zn, Cr
ORGANIC EXTRACTION (pH: 6-8)
Cr, Cr(OH)3 PPT.
Zn
Zn-IONS IN AQUEOUS SOLUTION
Cu, Ni (ORGANIC PHASE)
AQUEOUS EXTRACTION (pH: -2+1)
Cu, Ni (AQUEOUS PHASE)
ORGANIC EXTRACTION (pH: 4-6)
Cu (ORG.)
AQUEOUS EXTRACTION (pH: -2+1)
Ni (AQ.)
Cu (AQ.)

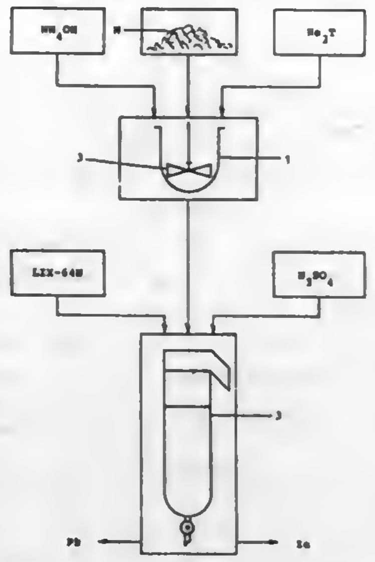
1. In a process for the selective extraction of copper and nickel ions from aqueous solution using a substantially immiscible organic extraction agent,

the improvement wherein said extraction agent is essentially composed of a mixture of (1) oleic acid, or (2) oleic acid and at least one other unsaturated fatty acid and a (cyclo) aliphatic oxime, of from 6 to 12 carbon atoms, and wherein the (1) copper and nickel ions are first extracted with said ex-

traction agent at a pH value of between 6 and 9 from an aqueous solution into said organic extraction agent,
(2) thereafter extracting the copper and nickel ions from said organic phase into a second aqueous phase at a pH of between −2 and +1, and thereafter,
(3) at a pH of between 4.0 and 6.0, selectively extracting said copper ions from said second aqueous phase with an extraction agent essentially composed of a mixture of (1) oleic acid, or (2) oleic acid and at least one other unsaturated fatty acid and a (cyclo) aliphatic oxime, of from 6 to 12 carbon atoms, and then
(4) the copper ions in the organic phase are again reabsorbed into a third aqueous phase at a pH of between −2 and +1.

4,191,729
HYDROMETALLURGICAL PROCESS FOR SEPARATING LEAD AND ZINC FROM OXIDIZED ORE

Giorgio Rinelli, and Carlo Abbruzzese, both of Rome, Italy, assignors to Consiglio Nazionale delle Ricerche, Rome, Italy
Filed Aug. 24, 1978, Ser. No. 936,386
Claims priority, application Italy, Aug. 26, 1977, 84142 A/77
Int. Cl.^{2} C01G *21/00*
U.S. Cl. 423—98 **15 Claims**



1. A hydrometallurgical process for selectively separating lead and zinc from oxidized ore, comprising the steps of leaching said ore with an aqueous ammoniacal solution having a pH value of from between about 11.5 and 12.5 and in the presence of anions of polycarboxylic acids, and subsequently selectively extracting said lead with complex-producing solvents used in the ammoniacal solution at a pH value higher than about 9, the zinc being subsequently precipitated through the heating of the aqueous zinc-bearing solution.

4,191,730
METHOD OF REMOVING NITROGEN OXIDES FROM EXHAUST GAS MIXTURES

Howard D. Batha, Tonawanda; John H. Mason, Clarence, and Stanley R. Thompson, Ransomville, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.
Continuation of Ser. No. 835,470, Sep. 21, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 934,738
Int. Cl.^{2} B01D *53/34*
U.S. Cl. 423—239 **8 Claims**

1. A method of removing NO_x from exhaust gas mixtures by exposing the gas mixture in a substantially unimpeded flow to a ceramic material containing from about 75 to about 95% by weight silicon carbide and from about 0.3 to about 10.0% by weight silica at a temperature of at least about 1050° C. and less than about 1650° C. for a time sufficient to reduce the NO_x content by at least 85%.

4,191,731
WET PROCESS USING STEEL SLAG FOR WASTE GAS DESULFURIZATION

Yoshiaki Miura; Masataka Kaneyasu, and Akira Okamoto, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Jan. 13, 1978, Ser. No. 869,221
Int. Cl.^{2} C01B *17/00*
U.S. Cl. 423—242 **4 Claims**

1. In a wet process using slag for waste gas desulfurization consisting essentially of introducing the waste gas continuously into at least one absorber to desulfurize the waste gas by an aqueous slurry of the slag and simultaneously therewith to produce gypsum, discharging a part of the spent slurry from the absorber to recover gypsum and supplying fresh aqueous slurry to the absorber at the same rate as the spent slurry is discharged from the absorber, the improvement wherein the slag is steel slag and the desulfurization of the waste gas is conducted under the condition wherein log $pH \leqq -7.6\ SO_2(\%)/(O_2(\%))+0.90$, wherein pH is the pH value of the aqueous slurry of the steel slag contained in the absorber and is in the range of 4.5 to 8; $SO_2(\%)$ is the concentration of the solfurous acid gas contained in the waste gas at the inlet of the absorber; $O_2(\%)$ is the concentration of the oxygen contained in the waste gas at the inlet of the absorber; and wherein the $SO_2(\%)/O_2(\%)$ is 0.033 or less.

4,191,732
METHOD OF REMOVING SULFUR DIOXIDE FROM GASES

Carl A. Uraneck, and Paul H. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 15, 1977, Ser. No. 851,647
Int. Cl.^{2} C01B *17/00;* B01D *19/00, 39/00*
U.S. Cl. 423—243 **11 Claims**

1. A process for removing sulfur dioxide (SO_2) from an SO_2-containing gaseous stream comprising:
(a) contacting a initial SO_2-containing gaseous stream and at least one suitable hydrocarbon comprising monoolefins, diolefins, and mixtures thereof so as to form an essentially SO_2-free gaseous stream and at least a first sulfur compound selected from the group consisting of sulfones, SO_2-containing copolymers and mixtures thereof
(b) separating said first sulfur compound from said essentially SO_2-free gaseous stream;
(c) thermally dissociating at least a portion of said first sulfur compound in a heating zone so as to generate a product mixture comprising SO_2 and said hydrocarbon;
(d) separating said hydrocarbon and said SO_2 by fractionating said product mixture in a fractionation zone; and
(e) recycling said hydrocarbon to the initial SO_2-containing gaseous stream.

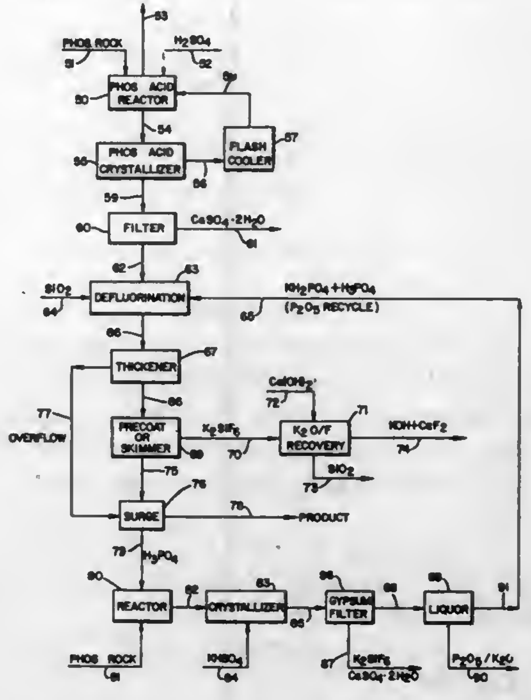
4,191,733
REDUCTION OF CARBON MONOXIDE IN SUBSTOICHIOMETRIC COMBUSTION

Harold E. Swift, Gibsonia; Ajay M. Madgavkar, Pittsburgh, and Roger F. Vogel, Butler, all of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.
Filed Jul. 3, 1978, Ser. No. 921,329
Int. Cl.^{2} B01D *53/34*
U.S. Cl. 423—245 **22 Claims**

1. A method for the partial combustion of a low heating value gas stream with reduced carbon monoxide production for venting to the atmosphere, said gas stream having an average heating value in the range of about 5 to about 500 Btu/scf. and comprising a combustible component selected from one or more aliphatic hydrocarbons having from one to about seven carbon atoms and carbon monoxide and containing up to about 50 mol percent of one or more of said aliphatic hydrocarbons, up to about 15 mol percent carbon monoxide and up to about 10 mol percent hydrogen as the major combustible components which comprises tne steps passing said gas stream admixed with air for combustion at an average air equivalence ratio of between about 0.2 and about 0.9 in contact with a supported platinum oxidation catalyst having incorporated therewith at least one metal cocatalyst selected from Groups IIA and VIIB, Group VIII up through atomic No. 45, the lanthanides, chromium, zinc, silver, tin and antimony in at least one combustion zone at a temperature high enough to initiate and maintain combustion of said gas stream, and venting said partially combusted gas stream to the atmosphere.

4,191,734
FLUORIDE-FREE PHOSPHATE REACTIONS

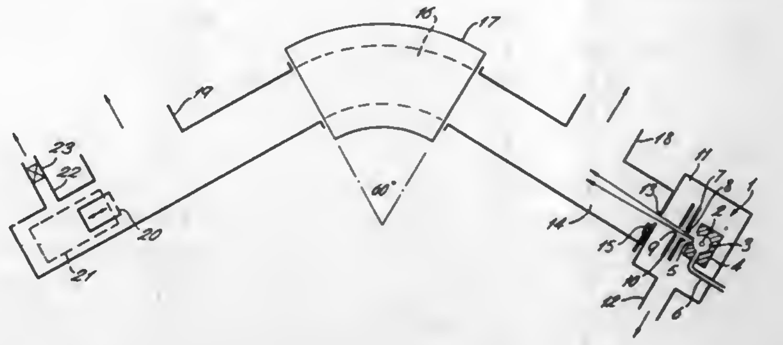
Erhart K. Drechsel, Houston, Tex., and John B. Sardisco, Shreveport, La., assignors to Pennzoil Company, Shreveport, La.
Division of Ser. No. 785,772, Apr. 7, 1977, Pat. No. 4,105,748, Division of Ser. No. 696,290, Jun. 15, 1976, Pat. No. 4,055,626. This application Mar. 20, 1978, Ser. No. 888,038
Int. Cl.^{2} C01B *25/22*
U.S. Cl. 423—320 **5 Claims**



1. A process for the production of substantially fluoride-free phosphoric acid and potassium dihydrogen phosphate which comprises:
(a) reacting phosphate rock with sulfuric acid to produce gypsum and phosphoric acid with evolution of fluoride gas;
(b) removing the gypsum solids;
(c) passing the phosphoric acid to a defluorination stage for treatment by the addition of silicon dioxide and K_2O,
  (1) the potassium ion of said K_2O being provided by addition of KH_2PO_4, said potassium ion being provided in a sufficient amount to precipitate the fluorides remaining in said phosphoric acid and in a sufficient excess amount that the phosphoric acid recovered from the reaction will contain about 0.5 to 1.0 weight percent potassium ion as K_2O; and
  (2) said silicon dioxide being provided in an amount sufficient to precipitate the fluorides remaining in said phosphoric acid;
(d) passing the resulting mixture to a separation stage wherein precipitated potassium silicofluoride is removed from the system;
(e) passing the resulting phosphoric acid to a separation stage and removing at least a portion from the system as feed grade phosphoric acid;
(f) passing the remainder of said resulting phosphoric acid to a reactor for reaction with phosphate rock and a member selected from the group consisting of potassium sulfate, potassium bisulfate, and mixtures thereof, to produce a mixture comprising KH_2PO_4, phosphoric acid, gypsum and precipitated K_2SiF_6;
(g) removing the gypsum and K_2SiF_6 solids from the system to provide a solution of phosphoric acid and KH_2PO_4;
(h) removing at least a portion of the KH_2PO_4 and phosphoric acid from the system; and
(i) recycling the remaining solution to said defluorination stage to provide said K_2O.

4,191,735
GROWTH OF SYNTHETIC DIAMONDS

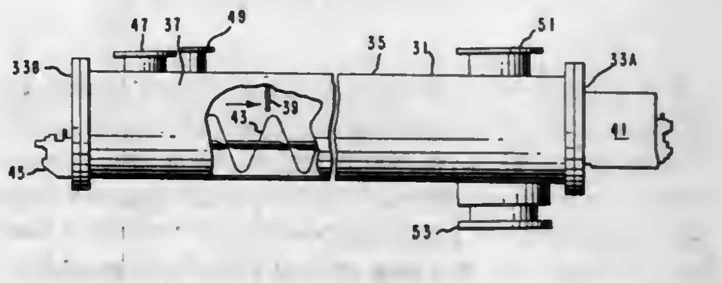
Richard S. Nelson, Reading; John A. Hudson, Radley, and David J. Mazey, Abingdon, all of England, assignors to National Research Development Corporation, London, England
Continuation-in-part of Ser. No. 711,578, Aug. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 477,280, Jun. 7, 1974, abandoned. This application Feb. 17, 1978, Ser. No. 878,862
Claims priority, application United Kingdom, Jun. 7, 1973, 27293/73; South Africa, May 30, 1977, 77/3271; United Kingdom, Jun. 2, 1977, 23468/77
Int. Cl.^{2} C01B *31/06*
U.S. Cl. 423—446 **22 Claims**



1. A method of growing a diamond crystal which comprises bombarding the diamond with a flux of carbon ions of sufficient energy to penetrate the diamond crystal and cause crystal growth which is at least predominantly internal, the temperature of the crystal being at least 400° C. and less than the graphitisation temperature, such that the diamond crystal structure is maintained during growth.

4,191,736
PROCESS FOR REACTING LIQUIDS WITH SOLIDS

Dong M. Chay, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 19, 1975, Ser. No. 633,544
Int. Cl.^{2} C01B *7/08*
U.S. Cl. 423—482 **8 Claims**



1. In a process for continuously reacting a liquid with a first solid coreactive therewith in which a gas is evolved and a second normally solid product is formed and dispersed in the liquid, the foaming tendencies of the reaction are reduced by
(1) forming a coreacting stream by admixing the liquid with granules of the first solid, the temperature of the admixture being sufficiently high to bring about the reaction; and
(2) subjecting the coreacting stream to non-turbulent flow through an enclosed conduit having a continuous vapor

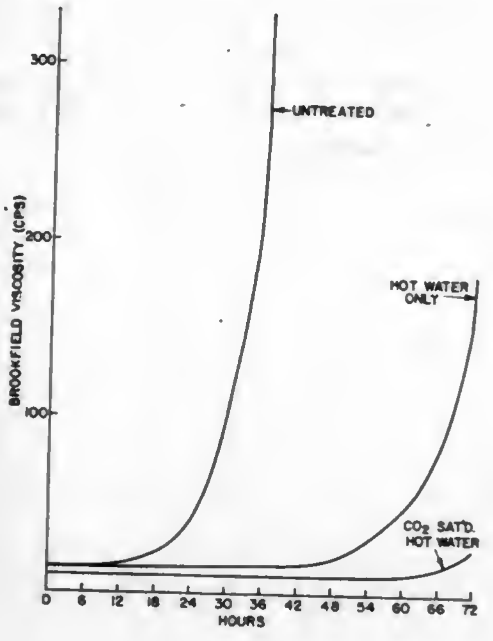
space above the admixture, while subjecting the flowing coreacting stream to mild agitation to increase the liquid-solid and gas-liquid interface areas and remove gas from the coreacting liquid into the vapor space; and

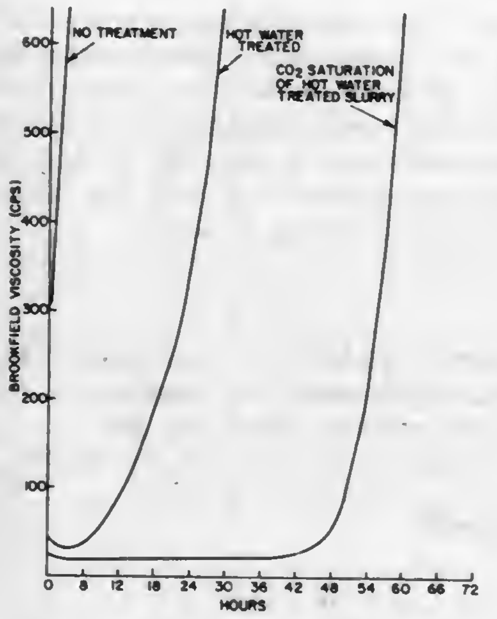
(3) continuing the flow of the coreacting stream and removal of gas therefrom for a time sufficient to attain a predetermined degree of the coreaction.

4,191,737
INCREASING ALUMINA SLURRY LIFE

John L. Irvine, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Oct. 2, 1978, Ser. No. 948,124
Int. Cl.^{2} C01F *7/00*
U.S. Cl. 423—630 **3 Claims**





1. A method for stabilizing alumina slurries against viscosity increases comprising heating alumina in water at temperature of from about 40° C. to about 100° C. for a time ranging from about 5 minutes to about 10 hours, removing the water and readding water and peptizing agents to the retained alumina to form a slurry then sparging carbon dioxide through the slurry.

4,191,738
IMMUNOASSAY FOR N-DESMETHYLDIAZEPAM

William R. Dixon, Dumont, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 7, 1978, Ser. No. 894,279
Int. Cl.^{2} G01N *33/16;* A61K *43/00, 39/00;* G21H *5/02*
U.S. Cl. 424—1 **5 Claims**

1. A composition consisting essentially of the reaction product of the reactive acyl azide of 7-chloro-1,3-dihydro-5-(4-(hydrazinocarbonylmethoxyphenyl)-2H-1,4-benzodiazepin-2-one and an immunogenic carrier material.

4,191,739
ANTIGEN-ANTIBODY REACTION ASSAY EMPLOYING PARTICLE AGGREGATION AND RESISTIVE PULSE ANALYSIS

Egidijus E. Uzgiris, and Ralph W. De Blois, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 17, 1977, Ser. No. 842,952
Int. Cl.^{2} G01N *27/00, 27/26, 31/00, 33/16*
U.S. Cl. 424—12 **10 Claims**

1. A method for detecting occurrence of an antigen-antibody reaction, comprising:

preparing a first suspension of particles of a first predetermined size, each particle of said first suspension being coated with a layer of a first protein;

preparing a second suspension of particles of a second predetermined size, each particle of said second suspension being coated with a layer of said first protein, the second predetermined size being greater than one and less than two times the volume of the first predetermined size;

combining into a mixture said first and second suspensions together with a solution to be tested for presence of a second protein specific to the first protein; and

detecting multiplets of particles to identify multiplets having a size formed only by aggregation of a particle of said first predetermined size with a particle of said second predetermined size.

4,191,740
SYNTHETIC RESIN-BASE, ANTIBIOTIC COMPOSITIONS CONTAINING AMINO ACIDS

Dietrich Heusser, and Elvira Dingeldein, both of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 26, 1977, Ser. No. 845,703
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651441; Jun. 18, 1977, 2727535
Int. Cl.^{2} A61K *9/16;* A61L *15/03*
U.S. Cl. 424—14 **5 Claims**

1. A pharmaceutical composition consisting essentially of a base of fine pearl polymer spheroid, particles having diameters of 1–20 mm of methyl methacrylate-methyl acrylate copolymer, at least one antibiotic selected from gentamycin, erythromycin, lincomycin, clindamycin, novobiocin, vancomycin, fusidic acid, rifamycin, polymyxins, neomycin, kanamycin and tobramycin in antimicrobial amounts of about 0.2–15% by weight and an antibiotic-liberating agent, wherein the antibiotic liberating agent consists essentially of 0.3–5% by weight of at least one aliphatic, monoamino, monocarboxylic amino acid containing up to 5 carbon atoms selected from glycine, alanine, threonine, valine, serine, hydroxyproline, proline and mixtures thereof.

4,191,741
REMOVABLE DRUG IMPLANT

James L. Hudson, Indianapolis, and Jack F. Wagner, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 22, 1978, Ser. No. 944,946
Int. Cl.^{2} A61M *7/00;* A61K *27/12, 9/00, 9/52*
U.S. Cl. 424—19 **7 Claims**

1. A solid, cylindrical, subcutaneous implant for improving the rate of weight gain of ruminant animals which comprises

(a) a biocompatible inert core having a diameter of from about 2 to about 10 mm. and

(b) a biocompatible coating having a thickness of from about 0.2 to about 1 mm., the composition of said coating comprising from about 5 to about 40 percent by weight of estradiol and from about 95 to about 60 percent by weight of a dimethylpolysiloxane rubber.

4,191,742
AMORPHOUS PRECIPITATED SILICEOUS PIGMENTS AND METHODS FOR THEIR PRODUCTION

Satish K. Wason, and Robert K. Mays, both of Havre de Grace, Md., assignors to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 703,496, Jul. 8, 1976, Pat. No. 4,067,746, which is a continuation of Ser. No. 472,580, May 22, 1974, abandoned. This application Nov. 23, 1977, Ser. No. 854,165
Int. Cl.^{2} A61K *7/16*
U.S. Cl. 424—49 **1 Claim**

1. An oral dentifrice composition providing good cleaning and polishing of the teeth, comprising a polishing and abrasive ingredient, said polishing and abrasive ingredient comprising an amorphous precipitated silicon dioxide characterized as having a wet cake moisture of 66 to 76% inclusive, a structure index of from 200 to 354, an oil absorption of from 125 to 175 cc/100 grams; a void volume of from 2.55 to 4.0 cc Hg/gram SiO_2, and a BET surface area of from 80 to 200 square meters per gram; said silicon dioxide produced by a process comprising

(1) forming an aqueous solution of an alkali metal silicate having a concentration of about 8 to 25% by weight and having a predetermined cumulative total of the said alkali metal silicate; said alkali metal silicate having the formula $M_2O(SiO_2)_X$, wherein M is an alkali metal selected from the group consisting of sodium and potassium, and X is from 2 to 4 inclusive; introducing a predetermined mol percentage of the said predetermined cumulative total of the said alkali metal silicate to a reaction vessel, said predetermined mol percentage comprising at least 8 mol percent and not more than 50 mol percent of said predetermined cumulative total of alkali metal silicate;

(2) continuously agitating said aqueous solution of said predetermined mol percentage of said alkali metal silicate in said reaction vessel;

(3) simultaneously adding the balance of said predetermined quantity of said alkali metal silicate to be employed in the reaction and an aqueous solution of a mineral acid selected from the group consisting of sulfuric acid, nitric acid and phosphoric acid, to the said agitated alkali metal silicate in the said reaction vessel at rates and concentrations so proportioned as to provide a controlled increase of effective alkalinity such that the maximum alkalinity produced upon the completion of the addition of the total quantity of said alkali metal silicate at the time of maximum alkalinity t_m is from 20% to 500% higher than the initial alkalinity of the predetermined mol percentage of the cumulative total of the predetermined quantity of said alkali metal silicate to be employed in the reaction provided in the reaction vessel at the inception of the reaction;

(4) continuing the addition of said mineral acid after stopping the addition of said alkali metal silicate to a reaction mass pH of less than 6.0, said resulting reaction mass after all additions have been made thereto containing from 3 to 12% by weight of SiO_2 at the time of the completion of the reaction t_f, where t_f is from 20 minutes to 4 hours, and the time to maximum alkalinity, t_m, is from 55% to 90% of t_f;

(5) maintaining the reaction temperature of said alkali metal silicate reaction mass between 50° and 90° C. throughout the reaction;

(6) filtering said reaction slurry; and

(7) washing, drying, and milling said filtered mass, and recovering said silicon dioxide, when the said mol percentage initially charged to the reaction vessel is from 14 to 35%.

4,191,743
ANTIBACTERIAL WOUND DRESSING

Klaus Klemm, and Helmut Wahlig, both of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Nov. 2, 1977, Ser. No. 847,868
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1976, 2650306
Int. Cl.^{2} A61F *13/00, 7/02;* A61L *15/03*
U.S. Cl. 424—28 **5 Claims**

1. A sterile wound dressing comprising two layers of synthetic resin arranged one above the other and an intermediate layer of an antibiotic within hardened, formed spheroids of a synthetic resin granulate, having a particle size of 0.5–3 mm., wherein the synthetic resin granulate comprises a copolymer of methacrylic acid methyl ester and methyl acrylate, and the antibiotic is selected from gentamycin, neomycin, kanamycin, tobramycin or other aminoglycoside antibiotics, erythromycin, lincomycin, clindamycin, novibiocin, vancomycin, fusidic acid, rifamycin, polymyxins, penicillins, and caphalosporins.

4,191,744
NEUTRALIZING AGENT

Conny B. Bogentoft, Mölndal, Sweden, assignor to Aktiebolaget Hassle, Mölndal, Sweden

Continuation of Ser. No. 802,416, Jun. 1, 1977, abandoned. This application Dec. 2, 1977, Ser. No. 856,912
Int. Cl.^{2} A61K *31/74*
U.S. Cl. 424—78 **16 Claims**

1. A liquid gastric acid neutralizing preparation in the form of a clear solution, consisting essentially of an aqueous solution of a substantial amount of a water-soluble, substantially non-crosslinked polyethyleneimine, at least one taste-improving acid selected from the group consisting of alginic acid, polygalacturonic acid, galacturonic acid, pectin, tannic acid, arabic acid, galactaric acid, and glutaric acid, and at least one acid selected from the group consisting of tartaric acid, fumaric acid, phosphoric acid, acetic acid, citric acid, succinic acid, and malic acid, the acid(s) from the latter group in such an amount that the pH of the preparation is 4 to 11, the preparation being substantially free from water-insoluble antacid compounds.

4,191,745
PREPARATION FOR THE TREATMENT OF HERPES ZOSTER AND OTHER HERPES INFECTIONS, AS WELL AS METHOD FOR MANUFACTURE THEREOF

Anton Mayr, Munich; Helmut Stickl, Krailling, and Melchior Westhues, Munich, all of Fed. Rep. of Germany

Filed Mar. 29, 1978, Ser. No. 891,206
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714665
Int. Cl.^{2} A61K *41/00;* C12K *7/00*
U.S. Cl. 424—90 **7 Claims**

1. A preparation for the treatment of Herpes zoster and other Herpes infections comprising an effective amount of an active principle obtained from pox and/or parapox virus of the family: poxyviridae which has suffered selective damage to its nucleic acids by γ-irradiation, without change or damage to the other structures of the virus including but not limited to its surface structure, the virus protein and the substance of the outer sheath, and a suitable carrier for said active principle.

6. A method for production of the preparation in accordance with one of the claims 1 or 2, comprising (1) innoculating cell cultures with an active principle of pox or parapox viruses of the family: poxviridae, at the peak of virus multiplication, (2) harvesting and purifying said virus, (3) preparing a titer of approximately 5×10^6 to 5×10^8 ID_{50}/ml of the virus suspension, (4) subjecting said titer to γ-irradiation whereby the nucleic acids of said virus are selectively damaged without change or damage to the other structures of the virus, including but not limited to its surface structure, the virus protein and

the substance of the outer sheath and, (5) optionally adding stabilizers and/or other therapeutic additives, whereby a preparation which can be administered either intraperitoneally or locally is prepared.

4,191,746

STERILIZATION PROCESS FOR MAMMALS

Gursaran P. Talwar, New Delhi, India, assignor to All India Institute of Medical Sciences, New Delhi, India

Filed Mar. 8, 1979, Ser. No. 18,624

Int. Cl.^{2} A61K *39/04*

U.S. Cl. 424—92 **6 Claims**

1. A method of sterilizing mammalian species, which comprises intra-testicularly injecting Bacillus of Calmette and Guerin into each testicle of sperm-producing males of the species in an amount at least effective to achieve aspermatogenesis.

4,191,747

CORRECTIVE AGENT FOR THE COVERING AND/OR FILLING OF BONE DEFECTS, METHOD FOR THE PREPARATION OF SAME AND METHOD OF USING THE SAME

Hans Scheicher, Rondell Neuwittelsbach 4, D-8000 Munich, Fed. Rep. of Germany

Filed Dec. 14, 1977, Ser. No. 860,651

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657370

Int. Cl.^{2} A61K *37/48, 35/32, 37/00, 31/70*

U.S. Cl. 424—94 **36 Claims**

1. A corrective agent for the covering and/or filling of bone defects, comprising a physiological saline solution containing (1) at least one polysaccharide and/or gelatin and (2) at least one substance stimulating bone formation and/or bone growth, said solution being in liquid solution form at a temperature above body temperature but below the temperature at which body tissue is permanently damaged or coagulates and said solution forming a stable gel at body temperature.

17. A method of covering and/or filling bone defects which comprises applying to the defective area in flowable liquid form as a corrective agent a physiological saline solution containing at least one polysaccharide and/or gelatin at a temperature above body temperature but below the temperature at which body tissue is permanently damaged or coagulates and then allowing said solution to cool to a stable gel, whereby cavities formed around the defect are filled and where an implant is used, any gaps between the defect and the implant are filled.

4,191,748

NOVEL MEDICINAL COMPOSITION, ESPECIALLY FOR THE TREATMENT OF CELLULITIS

David Holzmann, 25, Boulevard Lannes, 75016 Paris, France

Filed Jan. 24, 1978, Ser. No. 871,875

Claims priority, application France, Jan. 24, 1977, 77 01900

Int. Cl.^{2} A61K *37/48, 33/16, 31/52*

U.S. Cl. 424—94 **10 Claims**

1. A medicinal composition useful for treating cellulitis, said composition consisting essentially of a xanthic base as a phosphodiesterase inhibitor and a fluorinated compound selected from the group consisting of an alkali metal fluoride, alkaline earth metal fluoride and ammonium fluoride, the inhibitor being present in about 0.1 to 60% by weight of the inhibitor plus fluorinated compound.

4,191,749

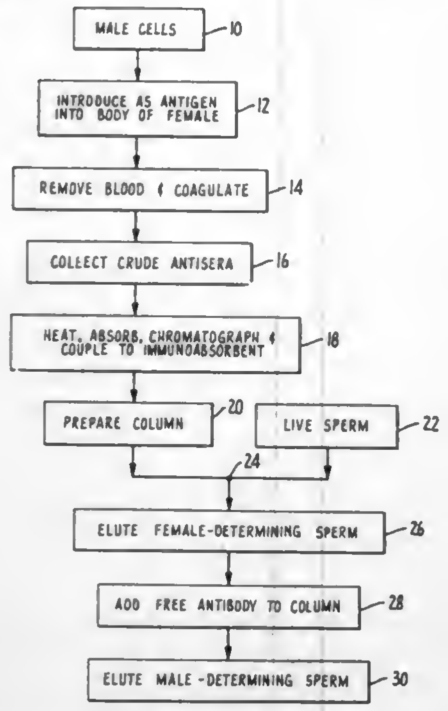
METHOD AND MATERIAL FOR INCREASING THE PERCENTAGE OF MAMMALIAN OFFSPRING OF EITHER SEX

Bernard J. Bryant, 509 Scripps Dr., Davis, Calif. 95616

Filed Oct. 11, 1977, Ser. No. 841,207

Int. Cl.^{2} A61K *35/52;* **C12K** *9/00;* **A61K** *39/00*

U.S. Cl. 424—105 **14 Claims**


MALE CELLS
10
INTRODUCE AS ANTIGEN INTO BODY OF FEMALE
12
REMOVE BLOOD & COAGULATE
14
COLLECT CRUDE ANTISERA
16
HEAT, ABSORB, CHROMATOGRAPH & COUPLE TO IMMUNOABSORBENT
18
PREPARE COLUMN
20
LIVE SPERM
22
24
ELUTE FEMALE-DETERMINING SPERM
26
ADD FREE ANTIBODY TO COLUMN
28
ELUTE MALE-DETERMINING SPERM
30

13. The method of increasing the percentage of mammalian offspring of either sex, comprising the step of selectively separating male-determining spermatazoa by contacting a body of seman with a male specific antibody capable of binding male specific sperm, said antibody being coupled to immunoabsorbent material.

4,191,750

METHOD FOR TREATING CANKER SORES

Milton Hodosh, 72 Overhill Rd., Providence, R.I. 02906

Filed Mar. 8, 1976, Ser. No. 665,161

Int. Cl.^{2} A61K *33/06, 33/00*

U.S. Cl. 424—127 **8 Claims**

1. The method of curing canker sores by applying thereto an agent, the essential ingredient of which is an effective amount of a nitrate of one of the following alkali metals: potassium, lithium, sodium, magnesium, calcium or strontium.

4,191,751

METHOD FOR PROMOTING GROWTH OF NEW CONNECTIVE TISSUE OVER SURFACE WOUNDS

Sheldon K. Gottlieb, 8708 Wandering Trail Dr., Potomac, Md. 20854

Continuation-in-part of Ser. No. 764,229, Jan. 31, 1977, Pat. No. 4,061,731, Continuation-in-part of Ser. No. 576,858, Jun. 4, 1975, Pat. No. 4,006,220. This application Dec. 5, 1977, Ser. No. 857,526

Int. Cl.^{2} A61K *37/12, 31/195*

U.S. Cl. 424—177 **10 Claims**

1. A method for promoting the growth of new connective tissue over a surface wound wherein at least a portion of the epithelium has been damaged or removed which comprises coating said wound with a composition consisting essentially of a connective tissue promoting agent of pulverized absorbable gelatin sponge, wherein plasma is present at the situs of the wound, said composition being present in an amount sufficient to promote the production of new connective tissue over said surface wound.

4,191,752

ISOLATION OF ANTI-MUTAGENIC FACTOR FROM CABBAGE JUICE

Tsuneo Kada; Tadashi Inoue, both of Tokyo, and Kazuyoshi Morita, Odawara, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Sep. 6, 1978, Ser. No. 940,089

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810293; Japan, Mar. 14, 1978, 53/28840

Int. Cl.^{2} C07G *7/04*

U.S. Cl. 424—177 **6 Claims**

1. A method for isolating an anti-mutagenic factor from cabbage juice, which comprises the steps of:

(a) centrifuging cabbage juice to remove particles of tissue including chloroplasts and mitochondria,
(b) ultracentrifuging the resultant supernatant to remove microsomes and ribosomes,
(c) contacting the resulting supernatant with an anion exchange cellulose to collect a fraction which has not been adsorbed onto said anion exchange cellulose,
(d) applying the resultant fraction to a column of a cation exchange cellulose,
(e) eluting the adsorbed substance with an aqueous eluant containing KCl or NaCl in a gradient concentration,
(f) retaining a fraction which has an absorbance peak at 280 nm containing said anti-mutagenic factor which is eluted at a KCl or NaCl concentration of 0.05 M,
(g) applying the resultant fraction onto a column of a molecular sieve, and
(h) eluting said column with a buffer at pH 8.0 and collecting a fraction containing an anti-mutagenic factor which strongly inhibits the reverse mutation of histadineless Salmonella TA98 to histadine non-requiring Salmonella TA98 induced by a mutagen.

5. Substantially pure anti-mutagenic factor consisting essentially of a hemoprotein isolated from cabbage juice and having, in its substantially pure form, a molecular weight of about 48,000 when determined by the sodium dedecylsulfate-gel electrophoresis, and the following amino acid composition in terms of molar percent:

Asp	13.22
Thr	8.43
Ser	6.70
Glu	6.38
Pro	6.56
Gly	7.22
Ala	9.89
Cys	1.73
Val	5.77
Met	1.29
Ileu	3.44
Leu	11.64
Tyr	1.31
Phe	5.36
Lys	2.59
His	1.07
Arg	7.40

said factor having characteristic absorptions at 280 nm and 404 nm as a Soret band which shifts to 436.5 nm when said factor is treated with sodium hydrosulfite.

4,191,753

ANTI-HYPERTENSIVE PEPTIDE ANALOGS

James W. Ryan, Miami, Fla., assignor to University of Miami, Miami, Fla.

Filed Nov. 6, 1978, Ser. No. 958,179

Int. Cl.^{2} A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **15 Claims**

1. A peptide comprising the amino acid sequence <Glu-Trp-A_3-Arg-A_5-Gln-Ile-A_8-A_9 wherein:

A_3 is L-Proline or L-3,4-dehydroproline,
A_5 is L-Proline or L-3,4-dehydroproline,
A_8 is L-Proline or L-3,4-dehydroproline,

A_9 is L-Proline or L-3,4-dehydroproline,
at least one of A_3, A_5, A_8 and A_9 is L-3,4-dehydroproline and all amino acids are in the L configuration.

4,191,754

BICYCLIC SOMATOSTATIN ANALOGS

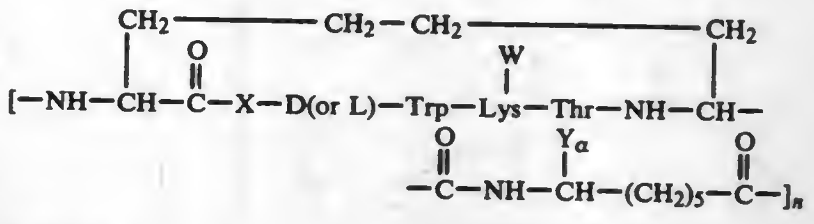
Daniel F. Veber, Ambler, and Ruth F. Nutt, Green Lane, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 28, 1979, Ser. No. 16,218

Int. Cl.^{2} A61K *37/100;* **C07C** *103/52*

U.S. Cl. 424—177 **10 Claims**

1. The compound having the structure:



$$\begin{array}{l} \quad\;\; CH_2 \text{————————} CH_2-CH_2 \text{————————} CH_2 \\ [-NH-CH-\overset{\overset{O}{\|}}{C}-X-D(\text{or L})-Trp-\overset{\overset{W}{|}}{Lys}-Thr-NH-CH- \\ \qquad\qquad\qquad\qquad\qquad -\overset{\overset{O}{\|}}{C}-NH-\overset{\overset{Y\alpha}{|}}{CH}-(CH_2)_5-\overset{\overset{O}{\|}}{C}-]_n \end{array}$$

wherein

n is 1 or 2;
X is Phe or Tyr;
Y is H or COOH and
when Y is COOH, the carbon atom designated α in aminosuberyl is D- or L-;
W on the ε-amino group of lysine is independently selected from H or INOC, and non-toxic pharmaceutically acceptable salts thereof.

10. Compositions containing compounds of claim 1 and a pharmaceutically acceptable carrier.

4,191,755

NOVEL DAUNOMYCIN DERIVATIVES, THEIR AGLYCONES AND THE USE THEREOF

Paolo Masi; Antonino Suarato; Luigi Bernardi, all of Milan, and Federico Arcamone, Nerviano, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

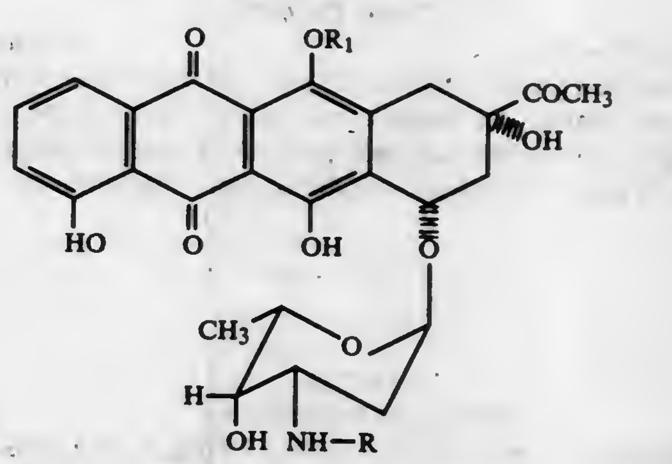
Filed May 1, 1978, Ser. No. 901,358

Claims priority, application United Kingdom, May 5, 1977, 18775/77

Int. Cl.^{2} A61K *31/71;* **C07H** *15/24*

U.S. Cl. 424—180 **5 Claims**

1. A compound of the formula I:



I

wherein R_1 is a lower alkyl having from 1 to 4 carbon atoms and R is a hydrogen atom or a trifluoroacetyl group, and the hydrochlorides thereof.

4. A pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and an inert carrier therefor.

4,191,756
DAUNOMYCIN DERIVATIVES, THEIR AGLYCONES AND THE USE THEREOF

Paolo Masi; Antonino Suarato; Luigi Bernardi, all of Milan, and Federico Arcamone, Nerviano, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

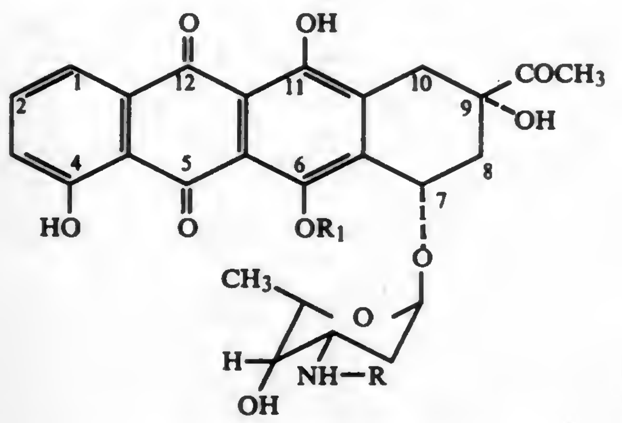
Filed May 1, 1978, Ser. No. 901,359

Claims priority, application United Kingdom, May 5, 1977, 18777/77

Int. Cl.^{2} A61K *31/71;* **C07H** *15/24*

U.S. Cl. 424—180 **5 Claims**

1. A compound of the formula I:



wherein R_1 is a lower alkyl having from 1 to 4 carbon atoms and R is a hydrogen atom or a trifluoroacetyl group, and the hydrochlorides thereof.

4. A pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1, in combination with a carrier therefor.

4,191,757
5-CHLOROMETHYL DIETHYLPHOSPHOROTHIOLOTHIONATE AS A SOIL INSECTICIDE

Max Pianka, Wembley Park, England, assignor to The Murphy Chemical Company Limited, St. Albans, England

Continuation of Ser. No. 718,608, Aug. 30, 1976, abandoned, which is a continuation of Ser. No. 575,366, May 7, 1975, abandoned, which is a continuation of Ser. No. 401,692, Sep. 28, 1973, Pat. No. 3,896,219, which is a continuation of Ser. No. 169,875, Aug. 6, 1971, abandoned, which is a continuation of Ser. No. 842,291, May 13, 1969, abandoned. This application Nov. 9, 1977, Ser. No. 850,045

The portion of the term of this patent subsequent to Jul. 22, 1992, has been disclaimed.

Int. Cl.^{2} A01N *9/36*

U.S. Cl. 424—225 **9 Claims**

1. A method for the control of insect pests and their larvae in the soil which are damaging to plants which comprises applying to soil containing said pests or larvae an effective amount of S-chloromethyl diethylphosphorothiolothionate.

4,191,758
BENZYLPYRIMIDINES

Ivan Kompis, Oberwil, and Alexander E. Wick, Riehen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

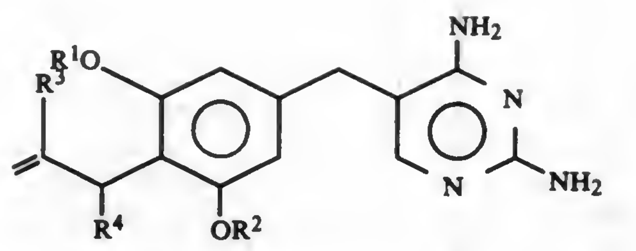
Filed Apr. 26, 1978, Ser. No. 900,358

Claims priority, application Luxembourg, May 5, 1977, 77268

Int. Cl.^{2} A61K *31/505;* **C07D** *239/48*

U.S. Cl. 424—229 **12 Claims**

1. A compound of the formula

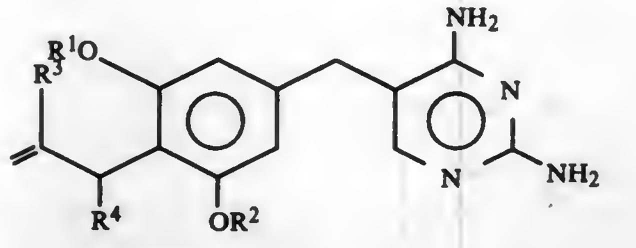


I

wherein R^1 and R^2, independently, are C_{1-3}-alkyl, and R^3 and R^4, independently, are hydrogen or methyl,

or a physiologically acceptable acid addition salt thereof.

10. An antibacterial pharmaceutical composition comprising a compound of the formula



I

wherein R^1 and R^2, independently, are C_{1-3}-alkyl, and R^3 and R^4, independently, are hydrogen or methyl,

or a physiologically acceptable acid addition salt thereof, an antibacterially active sulfonamide and a compatible pharmaceutical carrier material, said compound of formula I being present in an amount sufficient to potentiate the antibacterial activity of the sulfonamide.

4,191,759
N-SUBSTITUTED-17β-CARBAMOYLANDROST-4-EN-3-ONE 5α REDUCTASE INHIBITORS

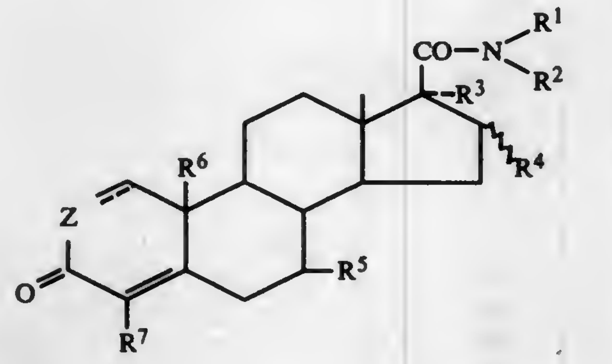
David B. R. Johnston, Warren, N.J., and Glen E. Arth, deceased, late of Cranford, N.J. (by Rose B. Arth), assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 13, 1978, Ser. No. 896,119

Int. Cl.^{2} A61K *31/56;* **C07J** *9/00*

U.S. Cl. 424—242 **11 Claims**

1. A compound of the formula:

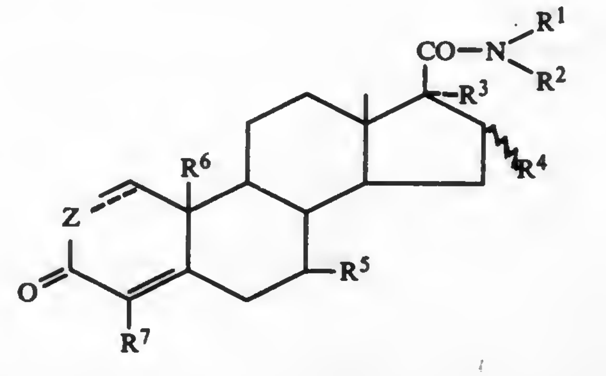


wherein

- R^1 and R^2 are the same or different and each represents: (1) hydrogen, provided that only one of R^1 and R^2 may be hydrogen (2) lower alkyl, (3) lower cycloalkyl, (4) phenyl, or
- R^1 and R^2 taken together with the nitrogen to which they are attached represents a 5–6 membered saturated ring comprising up to one other heteroatom selected from oxygen and nitrogen;
- R^3, R^4, R^5, and R^6 are the same or different and each represents:
  (1) hydrogen, or (2) lower alkyl;
- R^7 represents:
  (1) hydrogen or (2) cyano;
- Z represents:
  CH—R^9
  where R^9 is (a) hydrogen, (b) α-fluoro, or (c) α-lower alkyl;

and the dotted line between positions 1 and 2 represents the possibility of a single bond when Z is CH—R^9 and a double bond when Z is C—R^9.

5. A method of treating the hyperandrogenic conditions of acne vulgaris, seborrhea, male pattern baldness and female hirsuitism comprising topical administration to a patient in need of such treatment of a therapeutically effective amount of a compound of the formula:



wherein

- R^1 and R^2 are the same or different and each represents: (1) hydrogen, provided that only one of R^1 and R^2 may be hydrogen, (2) lower alkyl, (3) lower cycloalkyl, (4) phenyl, or
- R^1 and R^2 taken together with the nitrogen to which they are attached represents a 5–6 membered saturated ring comprising up to one other heteroatom selected from oxygen and nitrogen;
- R^3, R^4, R^5, and R^6 are the same or different and each represents:
  (1) hydrogen, or (2) lower alkyl;
- R^7 represents:
  (1) hydrogen or (2) cyano;
- Z represents:
  CH—R^9,
  where R^9 is (a) hydrogen, (b) α-fluoro, or (c) α-lower alkyl;

and the dotted line between positions 1 and 2 represents the possibility of a single bond when Z is CH—R^9 and a double bond when Z is C—R^9.

4,191,760
DIBENZODIAZEPINES

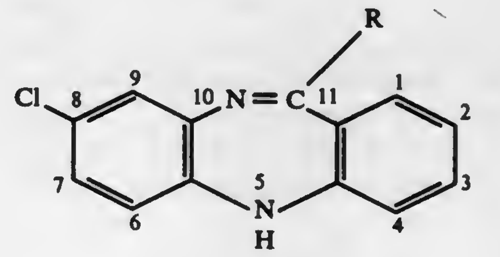
Bruce W. Horrom, and William D. Barta, both of Waukegan, Ill., assignors to Abbott Laboratories, N. Chicago, Ill.

Division of Ser. No. 771,215, Feb. 23, 1977, Pat. No. 4,096,261. This application Feb. 13, 1978, Ser. No. 877,205

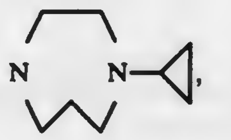
Int. Cl.^{2} A61K *31/55;* **C07D** *403/04*

U.S. Cl. 424—244 **8 Claims**

1. A compound of the structure



wherein R is



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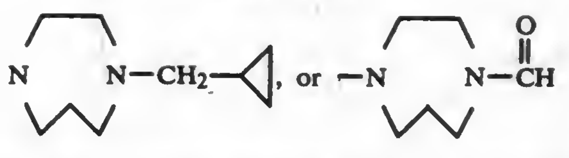
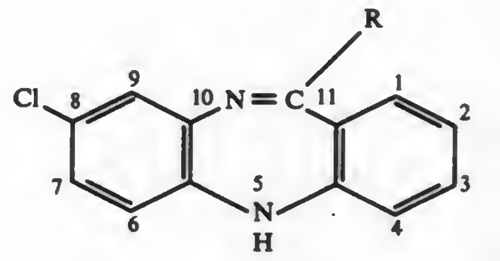
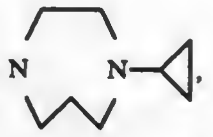
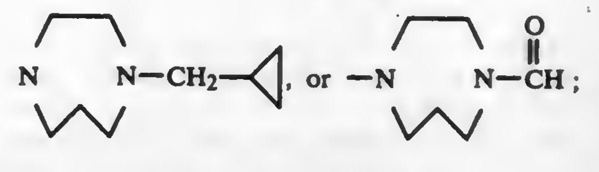


5. A composition of long lasting activity in the treatment of schizophrenics comprising as the active component an effective amount of a compound of the formula



wherein R is





and a pharmaceutically acceptable carrier.

4,191,761
COPPER COMPLEXES OF TETRAHYDROQUINOLINE DERIVATIVES HAVING ANTI-ULCER ACTIVITY

Roger Crossley, Reading, England, assignor to John Wyeth & Brother Ltd., Taplow, England

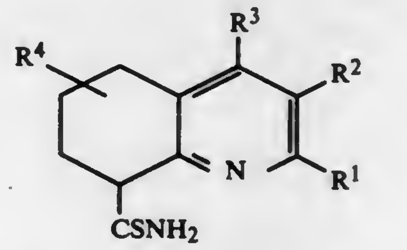
Filed Dec. 8, 1977, Ser. No. 858,482

Claims priority, application United Kingdom, Dec. 18, 1976, 52962/76

Int. Cl.^{2} C07D *215/48;* **A61K** *31/47*

U.S. Cl. 424—245 **14 Claims**

1. A crystalline copper complex consisting essentially of copper (II), a pharmaceutically acceptable anion of water-soluble copper (II) salt and a tetrahydroquinoline compound of formula I



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein R^1, R^2, R^3, and R^4 are the same or different and represent hydrogen, alkyl of 1–6 carbon atoms, phenylloweralkyl or phenyl, and R^4 may also represent gem di-methyl or R^1 and R^2 taken together represent an alkylene chain of 3 to 5 carbon atoms, which may be substituted by an R^4 radical, provided that when any two of R^1, R^2, and R^3 are alkyl groups present on adjacent carbon atoms they are selected from normal and secondary alkyl groups.

8. A pharmaceutical composition for use in treatment of ulcers or hypersecretion comprising an effective amount of a copper complex as claimed in claim 1 and a pharmaceutical carrier.

4,191,762

2-LOWER ALKYL-7-SUBSTITUTED AMINO-2 OR 3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takashi Kamiya, Suita; Tsutomu Teraji; Masashi Hashimoto, both of Toyonaka; Osamu Nakaguti, and Teruo Oku, both of Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

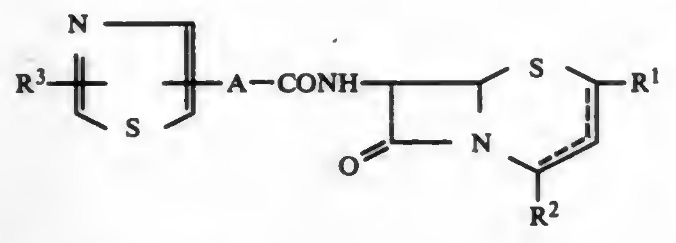
Continuation-in-part of Ser. No. 640,910, Dec. 15, 1975, Pat. No. 4,113,940, which is a continuation-in-part of Ser. No. 451,159, Mar. 14, 1974, abandoned. This application Jun. 21, 1977, Ser. No. 808,616

Claims priority, application United Kingdom, Jun. 28, 1976, 26740/76; Jan. 5, 1977, 262/77

Int. Cl.² C07D *501/20*

U.S. Cl. 424—246 **13 Claims**

1. A compound of the formula:



wherein

- R^1 is (C_1 to C_6) alkyl,
- R^2 is carboxy or a carboxy group protected by an eliminatable protective group, and
- R^3 is amino or amino group protected by an eliminatable protective group and
- A is carbonyl or hydroxy (C_1 to C_6) alkylene, and pharmaceutically acceptable salt thereof.

12. A pharmaceutical composition for the treatment of infectious disease caused by pathogenic bacteria comprising a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,191,763

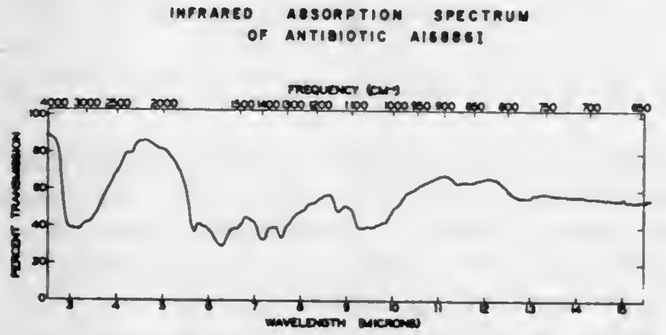
ANTIBIOTIC A16886 AND PROCESS FOR PRODUCTION THEREOF

Marvin Gorman; Calvin E. Higgens, and Ramakrishnan Nagarajan, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 62,390, Aug. 10, 1970, which is a continuation-in-part of Ser. No. 849,395, Aug. 12, 1969, abandoned. This application May 20, 1976, Ser. No. 688,212

Int. Cl.² A01K *31/545;* **A01N** *9/00, 9/12*

U.S. Cl. 424—246 **2 Claims**



1. A method for the inhibition of a plant-pathogenic bacterium which comprises applying to a plant exposed to the bacterium an amount of 7-(5-amino-5-carboxyvaleramido)-3-(carbamoyloxymethyl)-7-methoxy-3-cephem-4-carboxylic acid or a salt thereof which is effective to inhibit the growth of the bacterium.

4,191,764

5(6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE-2-CARBAMATE DERIVATIVES HAVING ANTHELMINTIC ACTIVITY

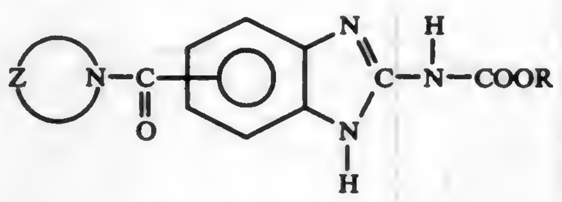
Colin C. Beard, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 758,112, Jan. 10, 1977, Pat. No. 4,139,626, which is a continuation-in-part of Ser. No. 668,778, Mar. 19, 1976, abandoned. This application Sep. 29, 1978, Ser. No. 946,985

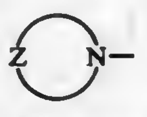
Int. Cl.² A61K *31/535;* **C07D** *295/18*

U.S. Cl. 424—248.55 **16 Claims**

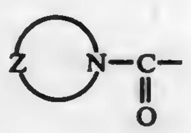
1. A compound selected from the group of compounds represented by the formula:



where R is a lower alkyl group having 1 to 4 carbon atoms;

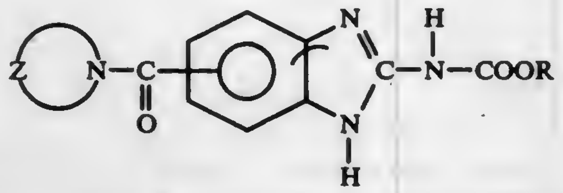


is a saturated 6 membered heterocyclic ring containing only 1 nitrogen and 1 oxygen as the only hetero atoms and which is optionally substituted with 1 hydroxy, phenyl, benzyl or oxo radical or 1 or 2 alkyl groups; the

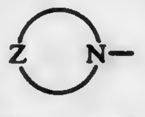


substitution being at the 5(6)- position; or a pharmaceutically acceptable salt thereof.

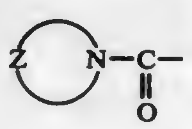
6. A composition for controlling helminths in mammals comprising a pharmaceutically acceptable non-toxic excipient and an anthelmintically effective amount of a compound selected from the group of compounds represented by the formula:



where R is a lower alkyl group of 1 to 4 carbon atoms;



is a saturated 6 member heterocyclic ring containing only one nitrogen and one oxygen as the only hetero atoms and which is optionally substituted with 1 hydroxy, phenyl, benzyl or oxo radical or 1 or 2 alkyl groups; the



substitution being at the 5(6)-position; or a pharmaceutically acceptable salt thereof.

4,191,765

1-ARYLOXY-2-HYDROXY-3-AMINOPROPANES

Werner Fritsch, Bad Soden am Taunus; Ulrich Stache, Hofheim am Taunus, and Ernst Lindner, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

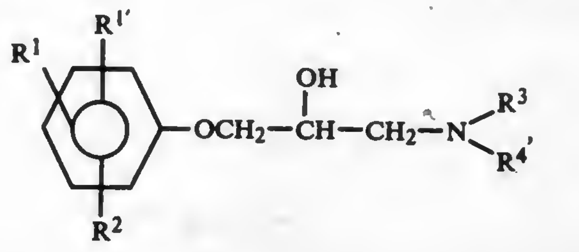
Continuation-in-part of Ser. No. 799,676, May 23, 1977, abandoned. This application Aug. 10, 1978, Ser. No. 932,504

Claims priority, application Fed. Rep. of Germany, May 25, 1977, 26233147

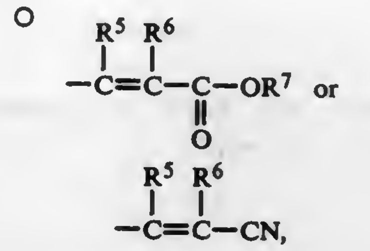
Int. Cl.² A61K *31/215, 31/275;* **C07C** *69/76, 121/80*

U.S. Cl. 424—248.53 **6 Claims**

1. A compound of the formula



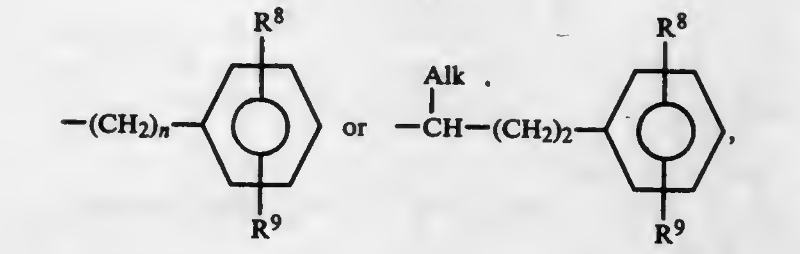
or a physiologically tolerable acid addition salt thereof, wherein R^1 and $R^{1'}$ are the same or different and are hydrogen, allyl, halogen, nitro, or alkyl or alkoxy having 1 to 4 carbon atoms; R^2 has the formula



$$-\overset{R^5}{\overset{|}{C}}=\overset{R^6}{\overset{|}{C}}-\underset{\underset{O}{\|}}{C}-OR^7 \quad \text{or}$$

$$-\overset{R^5}{\overset{|}{C}}=\overset{R^6}{\overset{|}{C}}-CN,$$

wherein R^5 is hydrogen, alkyl having 1 to 5 carbon atoms, aryl, aryl-lower alkyl, or aryl or aryl-lower alkyl substituted by lower alkyl or alkoxy, R^6 is hydrogen or alkyl having 1 to 8 carbon atoms, and R^7 is hydrogen, lower alkyl, or aryl-lower alkyl; R^3, taken alone, is hydrogen, R^4, taken alone, is



wherein Alk is alkyl having 1 to 3 carbon atoms, n is a number from 1 to 3, R^8 and R^9, taken alone, are the same or different and are hydrogen, alkoxy having 1 to 3 carbon atoms, or benzyloxy, or R^8 and R^9, taken together, are bis-methylenedioxy; or R^3 and R^4, taken together with the nitrogen atom to which they are attached, are a heterocyclic ring having 5 to 7 members, or such a ring substituted by alkyl having 1 to 4 carbon atoms, or such a ring, unsubstituted or substituted by alkyl having 1 to 4 carbon atoms, wherein one carbon atom may be replaced by oxygen, sulfur, or nitrogen, which latter may be unsubstituted or substituted by alkyl, alkoxy, oxalkyl, acyl, or carbalkoxy each having 1 to 5 carbon atoms, by pyridyl, by phenyl, or by phenyl mono-substituted or poly-substituted by hydroxy, halogen, or alkyl or alkoxy having 1 to 4 carbon atoms.

5. A method for treating coronary disease in a patient suffering therefrom which comprises administering to said patient a therapeutically-effective amount of a compound as in claim 1.

4,191,766

METHOD FOR REDUCING IMMUNOLOGICAL RESPONSE

Paul L. Warner, Jr., Clarence, and Edward J. Luber, Jr., Buffalo, both of N.Y., assignors to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 756,640, Jan. 7, 1977, abandoned. This application Dec. 8, 1977, Ser. No. 858,512

Int. Cl.² A01N *9/22;* **C07D** *487/04*

U.S. Cl. 424—250 **5 Claims**

1. A method for reducing the immunological response in a mammal which comprises administering to said mammal a therapeutically effective amount of a 4-(substituted phenyl-)imidazo[1,2-a]quinoxaline substituted in the meta- and/or para-positions of the phenyl group by an alkyl group of 1 to 2 carbon atoms, a halogen group, a cyano group, a nitro group or an amino group, said nitro or amino groups being in the para- position only, in a pharmaceutically acceptable carrier therefor.

4,191,767

METHOD FOR TREATING FUNGAL INFECTION IN MAMMALS WITH IMIDAZO [1,2-A]QUINOXALINES

Paul L. Warner, Jr., Clarence, and Edward J. Luber, Jr., Buffalo, both of N.Y., assignors to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 757,640, Jan. 7, 1977, abandoned. This application Dec. 8, 1977, Ser. No. 858,513

Int. Cl.² A01N *9/22;* **C07D** *487/04*

U.S. Cl. 424—250 **2 Claims**

1. A method for inhibiting fungal growth comprising contacting a fungus sensitive thereto with an amount sufficient to inhibit the growth of such fungus of an imidazo[1,2-a]quinoxaline substituted at the 4-position by a hydrogen, an alkyl group of from 1 to 17 carbon atoms, 9-decenyl, a trifluoromethyl group, a benzyl group, a cycloalkyl group of from 4 or 6 carbon atoms, a styryl group, a phenyl group, and a phenyl group substituted by methyl, chloro, nitro or amino, in a suitable carrier therefor.

4,191,768

PENTADIENONE HYDRAZONES, METHOD FOR PREPARING THE SAME, AND INSECTICIDAL USE THEREOF

Thomas W. Drabb, Jr., Trenton, and James B. Lovell, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 17, 1978, Ser. No. 934,441

Int. Cl.² A01N *9/20;* **C07D** *233/52*

U.S. Cl. 424—251 **9 Claims**

1. The compound 1,5-bis-[p-(trifluoromethoxy)phenyl]-1,4-pentadien-3-one (1,4,5,6-tetrahydro-5,5-dimethyl-2-pyrimidinyl)hydrazone, or inorganic acid addition salts thereof.

4,191,769

ISOTHIOUREA COMPOUNDS AND PHARMACOLOGICAL USE

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and Rodney C. Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, United Kingdom

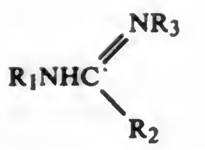
Division of Ser. No. 794,179, May 5, 1977, Pat. No. 4,109,003, which is a division of Ser. No. 551,220, Feb. 19, 1975, Pat. No. 4,036,971. This application Apr. 17, 1978, Ser. No. 896,846

Claims priority, application United Kingdom, Mar. 12, 1974, 10869/74

Int. Cl.² A61K *31/425, 31/44;* **C07D** *213/59, 277/30*

U.S. Cl. 424—263 **7 Claims**

1. A compound of the formula:



wherein R_1 represents a grouping of the structure

$$Het—CH_2—S—(CH_2)_n—$$

wherein Het is a nitrogen containing 5 or 6 membered heterocyclic ring selected from pyridine, thiazole, isothiazole, thiadiazole, isoxazole and triazole which is optionally substituted by lower alkyl, hydroxyl, halogen or amino; n is 2 or 3; R_2 is SR_4; R_3 is hydrogen, lower alkyl or R_1; and R_4 is lower alkyl, or a pharmaceutically acceptable acid addition salt.

7. A method of blocking histamine H_2-receptors, said histaime H_2-receptors being those histamine receptors which are not blocked by mepyramine but are blocked by burimamide, which comprises administering to an animal in need of blocking of said histamine H_2-receptors in an effective amount to block said histamine H_2-receptors a compound of claim 1.

4,191,770

N_1-ACYL-N_2-PHENYLDIAMINOPROPANOLS AND PHARMACEUTICAL COMPOSITIONS THEREOF

Hans Liepmann; Rolf Hueschens, both of Hanover; Wolfgang Milkowski, Burgdorf; Horst Zeugner; Henning Heinemann, both of Hanover; Klaus-Ullrich Wolf, Haenigsen; Insa Heil, and Reinhard Hempel, both of Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

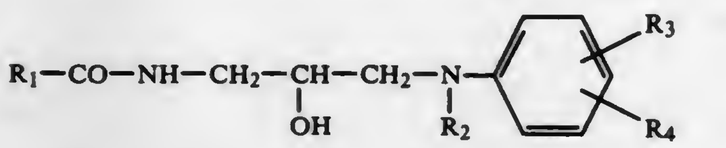
Filed Apr. 28, 1978, Ser. No. 900,998

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720915; May 10, 1977, 2720968

Int. Cl.^{2} C07D *213/56;* **A61K** *31/44*

U.S. Cl. 424—266 **17 Claims**

1. A compound selected from the group of N_1-acyl-N_2-phenyl-1,3-diaminopropan-2-ols having the formula I



(I)

wherein
- R_1 represents pyridyl, or 2-furyl,
- R_2 represents hydrogen, alkyl containing 1 to 3 carbon atoms, or methoxyethyl, and
- R_3 and R_4 are the same or different from each other and each represent hydrogen, fluorine, chlorine, bromine, iodine, alkyl containing 1 to 3 carbon atoms, or alkoxy containing 1 to 3 carbon atoms; with exception of the compound of the formula I, if R_1 represents 2-furyl,
- R_2 represents methyl,
- R_3 represents hydrogen, R_4 represents 4-chlorine; and pharmaceutically acceptable acid addition salts thereof.

4,191,771

ANALGESIC METHOD USING 1,3,4-TRISUBSTITUTED-4-ARYLPIPERIDINES

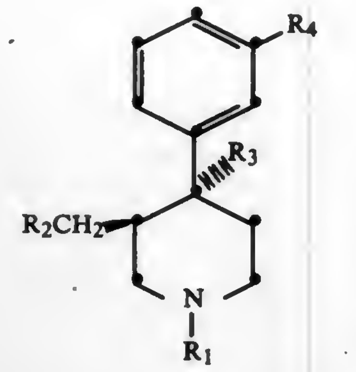
Dennis M. Zimmerman, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 905,494, May 12, 1978, which is a division of Ser. No. 852,252, Nov. 17, 1977, Pat. No. 4,115,400, which is a division of Ser. No. 690,767, May 27, 1976, Pat. No. 4,081,450, which is a continuation of Ser. No. 503,581, Sep. 6, 1974, abandoned. This application Mar. 12, 1979, Ser. No. 19,528

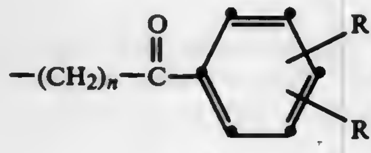
Int. Cl.^{2} A61K *31/44, 31/445*

U.S. Cl. 424—267 **10 Claims**

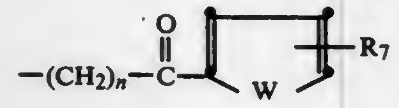
1. A method of treating narcotic addition which comprises administering to a human an effective dose of a compound having the formula



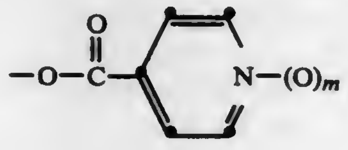
wherein: R_1 is C_1–C_8 alkyl, C_4–C_8 (cycloalkyl)alkyl, benzyl, C_3–C_8 alkenyl, C_3–C_8 alkynyl or



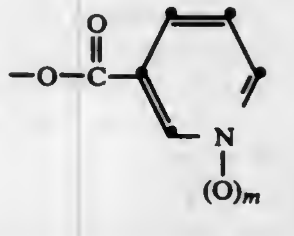
or



wherein:
- n is 1, 2, or 3;
- W is O or S;
- R_5 is C_1–C_3 alkylthio, nitro, amino, trifluoromethyl, hydroxy, or R_6;
- R_6 is hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, or halogen;
- R_7 is hydrogen or methyl;
- R_2 is hydrogen, C_1–C_4 alkyl, or C_2–C_6 alkenyl;
- R_3 is C_1–C_4 alkyl or C_2–C_6 alkenyl; and
- R_4 is hydrogen, hydroxy, C_1–C_3 alkoxy; C_1–C_{12} alkanoyloxy or



or



in which m is 0 or 1.

4,191,772

INSTILLATION COMPOSITION

Heinrich Woog, Laudenbach; and Werner Gruber, Birkenau; Werner Rothe, Hockenheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 24, 1978, Ser. No. 881,261

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714065

Int. Cl.^{2} A61K *31/435, 31/415, 31/44*

U.S. Cl. 424—273 R **4 Claims**

1. An installation composition in the form of a low viscosity triglyceride oil-in-water emulsion consisting essentially of about 60 to 90% by weight of water, 10 to 30% by weight of the triglyceride oil, 0.3 to 3% by weight of a polysaccharide derivative swelling agent, 0.5 to 10% by weight of a non-ionic emulsifier and an antibacterially effective amount of nitrofurantoin of a particle size of less than about 10 μm suspended therein.

4,191,773

SYNERGISTIC INSECTICIDAL COMPOSITION

Silvia Dorn, Dielsdorf, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 17, 1978, Ser. No. 961,784

Claims priority, application Switzerland, Nov. 25, 1977, 14477/77

Int. Cl.^{2} A01N *9/02*

U.S. Cl. 424—282 **5 Claims**

1. An insecticidal composition comprising inert carrier material and, as the active component, an amount of the combination of 2,3-(isopropylidenedioxy)phenyl-methyl carbamate and 2-nitro-4-chlorophenyl 2-propynyl ether which is effective as an insecticide and wherein the active component comprises from about 0.1 to about 10 parts by weight of 2-nitro-4-chlorophenyl 2-propynyl ether to one part by weight of 2,3-(isopropylidenedioxy)phenyl-methyl carbamate.

4,191,774

NOVEL 17-AZA-PGF$_{2\alpha}$ DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

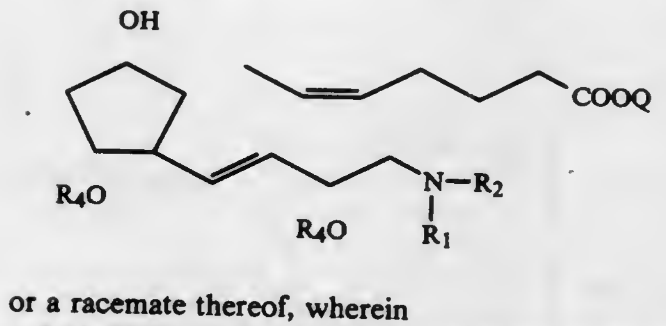
Istvan Szekely; Gabor Kovacs; Sandor Virag, and Matyas Szentivanyi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Jan. 18, 1978, Ser. No. 870,371

Int. Cl.^{2} C07C *177/00;* **A61K** *31/195, 31/215*

U.S. Cl. 424—300 **8 Claims**

1. An optically active compound of the formula



(XII)

or a racemate thereof, wherein
- R_1 is alkanoyl of one to 4 carbon atoms, alkanoyl of one to 4 carbon atoms substituted with halogen or benzyloxycarbonyl;
- R_2 is alkyl of one to 4 carbon atoms;
- R_4 is hydrogen; and
- Q is hydrogen or a pharmaceutically acceptable non-toxic cation.

4,191,775

AMIDE DERIVATIVES

Alasdair T. Glen, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

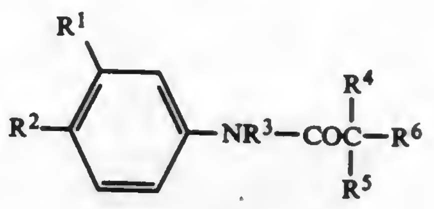
Filed Nov. 29, 1978, Ser. No. 964,726

Claims priority, application United Kingdom, Dec. 15, 1977, 52223/77

Int. Cl.^{2} A61K *31/165, 31/275;* **C07C** *103/127, 121/78*

U.S. Cl. 424—304 **9 Claims**

1. An acylanilide of the formula:



- wherein R^1 is cyano, nitro, trifluoromethyl, chloro, bromo, iodo, hydrogen or alkyl of up to 4 carbon atoms;
- wherein R^2 is cyano, nitro, trifluoromethyl, chloro, bromo or iodo;
- wherein R^3 is hydrogen or alkyl of up to 4 carbon atoms;
- wherein R^4 is alkyl of up to 4 carbon atoms;
- wherein R^5 is trifluoromethyl, difluoromethyl or monofluoromethyl;
- and wherein R^6 is hydrogen, hydroxy, halogen, alkyl or alkoxy each of up to 4 carbon atoms, arylalkoxy of up to 10 carbon atoms or alkanoyloxy of up to 15 carbon atoms.

9. A method of producing an antiandrogenic effect in a warm-blooded animal in need of such an effect which comprises administering to said animal an effective amount of an acylanilide claimed in claim 1.

4,191,776

BIPHENYL DERIVATIVES

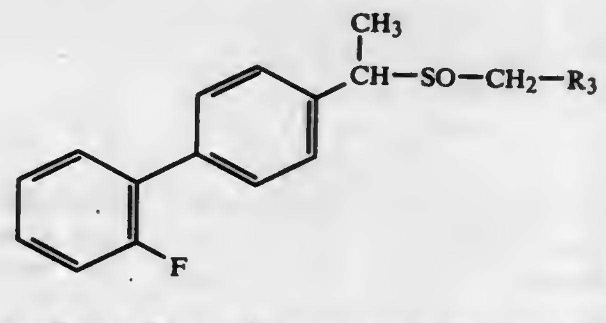
Josef Nickl; Erich Muller, both of Biberach/Riss; Berthold Narr, Mettenberg; Walter Haarmann, Biberach/Riss; Wolfgang Schroter, Biberach/Riss, and Rudolf Kadatz, Biberach/-Riss, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 711,953, Aug. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 577,169, May 14, 1975, Pat. No. 3,993,683. This application Nov. 18, 1977, Ser. No. 852,714

Int. Cl.^{2} C07C *147/107, 147/14;* **A61K** *31/44, 31/235*

U.S. Cl. 424—308 **5 Claims**

1. A diastereoisomer or optically active antipode of a compound of the formula



wherein R_3 is (alkoxy of 1 to 6 carbon atoms)-carbonyl.

4. An antithrombotic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antithrombotic amount of a compound of claim 1.

4,191,777
MALEIC ACID HALFAMIDES HAVING BLOOD PRESSURE RAISING ACTIVITY

Karl H. Kingler, Lagen; Klause Thiemer, Hanau, and Fritz Stroman, Offenbach, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

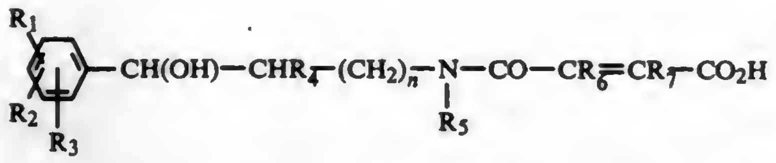
Filed Dec. 13, 1978, Ser. No. 969,068

Claims priority, application United Kingdom, Dec. 16, 1977, 52422/77

Int. Cl.² A61K *31/19, 31/205;* **C07C** *101/20*

U.S. Cl. 424—316 **37 Claims**

1. A half amide of an unsaturated aliphatic dicarboxylic acids of the formula:



I

where R_1, R_2 and R_3 are the same or different and are hydrogen, halogen, a hydroxy group, a methyl group or a methoxy group or two of these together are a methylenedioxy group, R_4 is hydrogen or a methyl group, R_5, R_6 and R_7 independently are hydrogen or C_1–C_4 alkyl groups and n is 0 or 1, or a salt of a compound of formula I with a pharmaceutically acceptable metal, ammonia or a pharmaceutically acceptable organic basically reacting compound, with the proviso that when the compound of formula I is not in the salt form it is not N-[2-(3′-hydroxyphenyl)-2-hydroxyethyl]-maleic acid monoamide.

36. A process comprising administering to a mammal an amount of a compound according to claim 1 effective to increase the blood pressure of the mammal.

4,191,778
AQUEOUS IMMUNOREGULATORY AGENT

Yuichi Yamamura, Takarazuka; Ichiro Azuma, Suita; Kazuhisa Sugimura, Toyonaka; Hiroshi Morimoto, Nishinomiya; Isuke Imada, Izumi, and Masazumi Watanabe, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

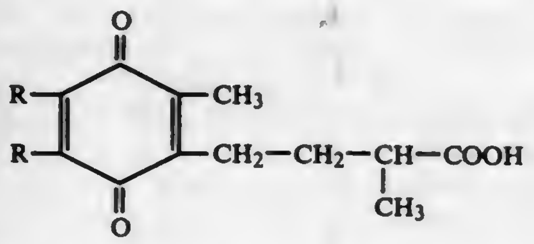
Filed Feb. 7, 1977, Ser. No. 766,505

Claims priority, application Japan, Feb. 10, 1976, 51-13584

Int. Cl.² H61K *31/19*

U.S. Cl. 424—317 **8 Claims**

1. An aqueous immunoregulatory agent containing a physiologically acceptable water-soluble alkali metal or amine salt of a quinonyl acid derivative of the formula



wherein each R represents lower alkoxy, said water-soluble salt being present in a proportion of 0.1 to 10% as the free acid, and an aqueous carrier.

4,191,779
METHOD OF TREATING BACTERIAL INFECTIONS

Elton S. Cook, Cincinnati, Ohio, and Akira Fujii, Matsudo, Japan, assignors to Stanley Drug Products, Inc., Portland, Oreg.

Filed Mar. 17, 1978, Ser. No. 887,648

Int. Cl.² A61K *31/195*

U.S. Cl. 424—319 **5 Claims**

1. A method of treating bacterial infections in mammals comprising administering to a mammal suffering from said bacterial infection an antibacterial effective amount of a para substituted benzoic acid wherein the para substituent is selected from the group consisting of $—NHC(NH)NH_2$, $—CH_2NH_2$, $—CH_2NHC(NH)NH_2$, $—(CH_2)_2NH_2$, and $—(CH_2)_2NHC(NH)NH_2$.

4,191,780
BROMHEXINE DERIVATIVES AND PROCESS FOR MAKING SAME

Carlo Tosi, Nimis, Italy, assignor to Instituto Franco Tosi S.p.A., Milan, Italy

Filed Oct. 16, 1978, Ser. No. 952,589

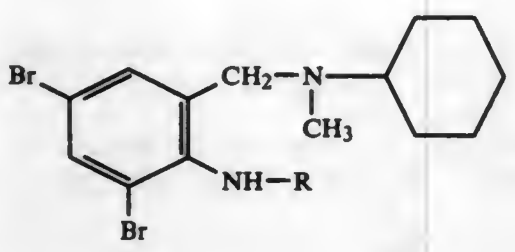
Claims priority, application Italy, May 29, 1978, 23931 A/78

Int. Cl.² A61K *31/165;* **C07C** *103/37, 103/19, 103/75*

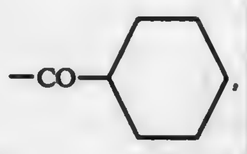
U.S. Cl. 424—324 **3 Claims**

1. A compound selected from the group consisting of those of the formula

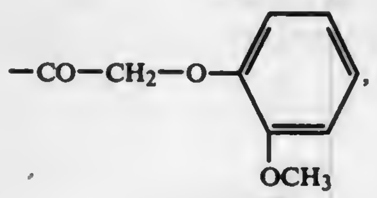
(I)



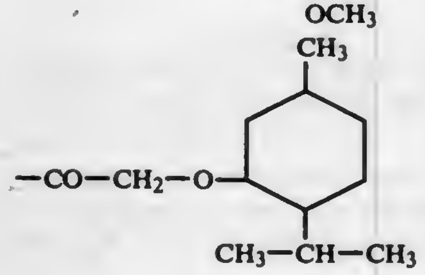
wherein R is



,



, or



and the acid addition salts thereof.

3. Pharmaceutical composition comprising an antitussive effective amount of a compound of formula I in claim 1 or its acid addition salt in a pharmaceutically acceptable carrier.

4,191,781
PET FOOD FLAVOR

Robert E. Schara, Norwalk, Conn.; Larry E. Keenberg, Kankakee, Ill., and Andrew Makar, Yonkers, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 30, 1977, Ser. No. 838,411

Int. Cl.² A23K *1/00*

U.S. Cl. 426—2 **10 Claims**

1. A process for improving the palatability of a dog food comprising incorporating into the dog food an amount of ammoniated glycyrrhizin which is effective to increase the palatability of a dog food, said amount depending on the sucrose content of the dog food and being in accordance with the following table:

Sucrose (Wt. %)	Ammoniated Glycyrrhizin (PPM)
21–25	100–400
16–21	100–300
13–16	25–250
10–13	25–175
8–10	25–150
6–8	25–100
4–6	25–75
2–4	25

4,191,782
METHOD FOR DIACETYL FLAVOR AND AROMA DEVELOPMENT IN CREAMED COTTAGE CHEESE

Ebenezer R. Vedamuthu, Bradenton, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Continuation-in-part of Ser. No. 639,052, Dec. 9, 1975, abandoned, and Ser. No. 712,692, Aug. 9, 1976. This application Sep. 14, 1977, Ser. No. 833,082

Int. Cl.² A23C *19/02*

U.S. Cl. 426—38 **10 Claims**

1. The method of providing improved diacetyl flavor and aroma in creamed Cottage cheese by adding thereto a concentrate of *Streptococcus diacetylactis* which is not mechanically concentrated to develop the flavor at refrigeration temperatures, said method consisting essentially of:

- (a) providing an aqueous growth medium containing as solids dispersed or dissolved in water, non-fat milk or milk casein digest or mixtures thereof, a yeast material containing amino acid and other essential growth factors for *Streptococcus diacetylactis*, a citrate, and separately added lactose all of which can be metabolized by *Streptococcus diacetylactis* cells, the solids being present in an amount less than about 0.25 part per part of the aqueous medium;
- (b) inoculating and then growing *Streptococcus diacetylactis* cells in the growth medium at a temperature and for a time to increase the number of cells in the medium to above 10×10^9 cells per ml of medium while adjusting the pH between 6.0 and 7.0 to produce a cell concentrate containing above said 10×10^9 cells per ml and without further concentrating the number of cells in the medium, freezing the medium to obtain a frozen cell concentrate for storage and shipment;
- (c) thawing the frozen cell concentrate; and
- (d) mixing the thawed cell concentrate in creamed Cottage cheese in an amount to provide between about 10^5 and 10^8 *Streptococcus diacetylactis* cells per gram of Cottage cheese whereby there is developed a desirable diacetyl flavor and aroma upon storage of the creamed cottage cheese at refrigeration temperatures.

4,191,783
SHELF STABLE, HIGH MOISTURE FOOD AND PROCESS

Morris P. Burkwall, Jr., Barrington, and Penelope L. Gould, Crystal Lake, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 4, 1977, Ser. No. 848,503

Int. Cl.² A23J *1/02*

U.S. Cl. 426—335 **20 Claims**

1. In a process of stabilizing a food against microbiological decomposition wherein the food comprises foodstuff and a stabilizing mixture, the improvement comprising:

- (a.) forming a foodstuff having a moisture content of from 51 to 65 percent by weight moisture, and a water activity of 0.91 to 0.95;
- (b.) admixing:
  - I. a stabilizing mixture consisting essentially of a sufficient amount of an acidic compound selected from the group consisting of acid, acid salt, and mixtures thereof to lower the pH to 4.0 to 6.8, and 2 to 19 percent polyhydric alcohol being at least one selected from the group consisting of propylene glycol and 1,3-butanediol; the amounts of acidic compound and polyhydric alcohol being selected according to the sole FIGURE of the Drawing; and
  - II. the foodstuff to form an admixture;
- (c.) cooking and shaping said admixture at a temperature of 60° to 120° C. to form a stabilized food.

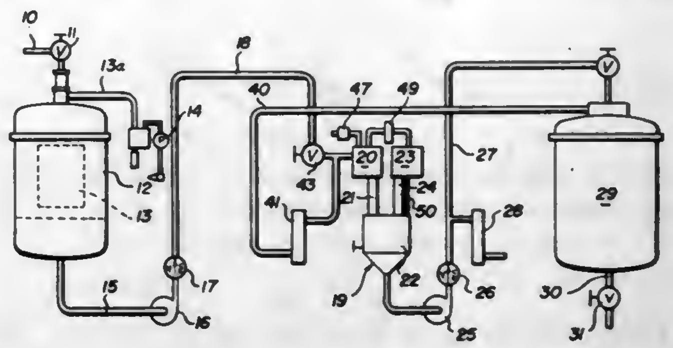
4,191,784
METHOD FOR PREPARING A CARBONATED BEVERAGE

Harry G. Mojonnier, River Forest, and Sigmund P. Skoli, Elmwood Park, both of Ill., assignors to Mojonnier Bros. Co., Chicago, Ill.

Division of Ser. No. 821,215, Aug. 2, 1977, Pat. No. 4,112,828, which is a continuation of Ser. No. 654,596, Feb. 2, 1976, abandoned. This application May 30, 1978, Ser. No. 910,184

Int. Cl.² C02D *1/04;* **A23L** *2/38*

U.S. Cl. 426—475 **2 Claims**



1. A method of preparing a beverage from a syrup and water containing dissolved air, comprising the steps of leading a quantity of water from a remote source through a check valve to a proportioner device through a first conduit at a relatively low pressure, mixing the water with syrup in the proportioner to form an uncarbonated beverage mix, leading the beverage mix from the proportioner to a carbonator, introducing an excess of carbon dioxide gas to the beverage mix, mixing the carbon dioxide gas and the beverage mix in the carbonator to form a carbonated beverage end product at a relatively high pressure, leading undissolved carbon dioxide gas at a high pressure from the carbonator to the first conduit, mixing the high pressure carbon dioxide gas and the low pressure water at a mixing point in the first conduit downstream of the check valve and upstream of the proportioner so as to drive dissolved air from the water and replace the air with the carbon dioxide gas, and exhausting removed air and undissolved carbon dioxide gas from the system at a point downstream of said mixing point and upstream from the carbonator.

4,191,785
FLAVORING WITH MIXTURES OF 2,4,6-TRIISOBUTYL-1,3,5-TRIOXANE AND 2-ISOBUTYL-DIALKYL OXAZOLINES

Donald A. Withycombe, Lincroft; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 887,626, Mar. 17, 1978, abandoned, which is a division of Ser. No. 807,056, Jun. 16, 1977, Pat. No. 4,093,752. This application Jul. 27, 1978, Ser. No. 928,716

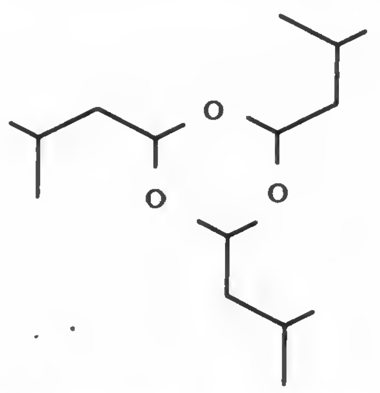
The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.

Int. Cl.² A23L *1/226, 1/234*

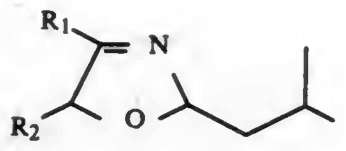
U.S. Cl. 426—536 **2 Claims**

2. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff from 5.0 parts per million up to about 100 parts per million

based on the total weight of foodstuff of a mixture of isobutyl substituted heterocyclic compounds which mixture comprises (a) 2,4,6-triisobutyl-1,3,5-trioxane having the formula:



and (b) a mixture of oxazoline compounds having the generic structure:



wherein R_1 and R_2 are different and each is selected from the group consisting of ethyl and methyl.

4,191,786
PREPARATION OF DISPERSIBLE CHOCOLATE LIQUOR BY EXTRUSION

Bernard H. Nappen, Cranford, and Nicholas G. Marotta, Green Brook, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jul. 3, 1978, Ser. No. 921,528
Int. Cl.² A23G *1/00;* A23L *2/38*
U.S. Cl. 426—593 **5 Claims**

1. A process for preparing dispersible chocolate liquor which consists essentially of the steps of:

a. mixing melted chocolate liquor and starch, in a ratio of melted chocolate liquor to starch of from 10:2.5 to 10:15, with from 5 to 25%, by total weight of the mixture, of water;

b. passing the mixture through a heated extruder at an elevated pressure and temperature within the range of 110°–135° C. for a period of time sufficient to partially hydrate the starch; and

c. extruding the mixture through an orifice.

4,191,787
PROCESS FOR PREPARING A PASTEURIZED MEAT-CONTAINING SALAD

Julius F. Bauermann, Chalfont, Pa., assignor to Horace W. Longacre, Inc., Franconia, Pa.

Filed Jul. 24, 1978, Ser. No. 927,650
Int. Cl.² A23L *1/212*
U.S. Cl. 426—615 **10 Claims**

1. A process for preparing a pasteurized meat and vegetable containing salad having a long shelf-life under refrigeration, said process consisting essentially of the following sequential steps:

(a) preparing a meat-containing salad by mixing the meat with vegetables and any other ingredients;

(b) subjecting said salad to an acid treatment by adding thereto a food grade acidulant in a sufficient amount to obtain a salad pH in the range of about 4.2 to 4.6;

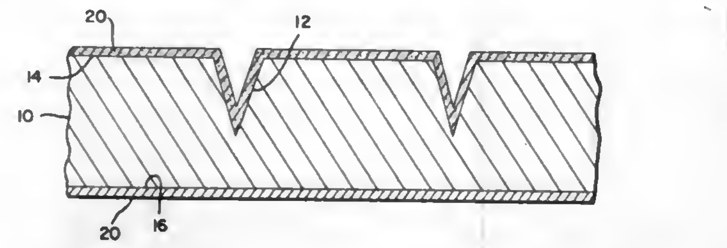
(c) then rapidly raising the internal temperature of the acid-treated salad to a temperature greater than about 150° F. and less than about 170° F.; and

(d) immediately allowing the salad to cool.

4,191,788
METHOD TO REDUCE BREAKAGE OF V-GROOVED <100> SILICON SUBSTRATE

Alan L. Harrington, Glendale, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Nov. 13, 1978, Ser. No. 959,519
Int. Cl.² H01L *21/461*
U.S. Cl. 427—82 **7 Claims**

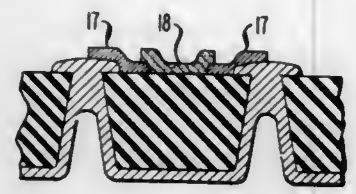


1. A method for passivating and supporting a V-grooved substrate wafer of silicon for future processing comprising the production of a thin polycrystalline intrinsic silicon layer, of approximately 7 to 10μ thickness, on the top and bottom sides of the wafer.

4,191,789
FABRICATION OF BI-LEVEL CIRCUITS

John F. Brown, Emmaus, and Robert M. Stanton, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1978, Ser. No. 956,885
Int. Cl.² H05K *1/04, 1/08*
U.S. Cl. 427—97 **14 Claims**



1. A method of fabricating bi-level circuits including metallizing holes (14 and 15) through an insulating substrate (10) comprising the steps of: depositing a thick film paste (13) onto one major surface (12) of said substrate and filling said holes, said paste including a material selected from the group consisting of a metal and metal oxide, and an organic vehicle comprising a binder and at least one solvent; heating the resulting structure to evaporate the solvent; and firing the remaining paste material to establish a desired conductivity CHARACTERIZED IN THAT the structure is heated with the deposited surface down to create a solvent concentration gradient in the paste filling the holes during heating so that the bulk of the paste accumulates in the holes near the surface (11) opposite the deposited surface to form contact pads (16) at the opposite surface and the remaining paste coats the walls of the holes near the deposited surface.

4,191,790
ABRASION RESISTANT POLYESTER CARBONATES

Daniel C. Chung, Edison, and Dusan C. Prevorsek, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

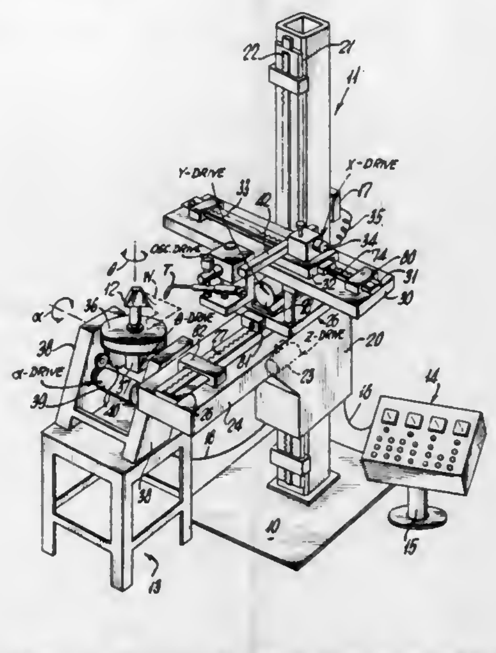
Division of Ser. No. 842,754, Oct. 17, 1977, abandoned. This application Aug. 8, 1978, Ser. No. 931,652
Int. Cl.² B05D *5/06, 3/02*
U.S. Cl. 427—164 **2 Claims**

1. Process of producing a substantially clear, abrasion resistant, impact resistant composite article which comprises forming, on a substrate of polyester-carbonate copolymer wherein the ester segments of the molecules are composed of bisphenol-A moieties and aromatic dicarboxyloyl moieties, predominantly terephthaloyl, in mole ratio in the range between 2:05 and 2:1.3 of bisphenol-A:dicarboxyloyl moieties, a layer of monomeric allyl diglycol carbonate, containing free radical-forming polymerization initiator active at temperature of 50° C.; and maintaining such substrate and the allyl diglycol carbonate layer thereon under free radical catalyzed polymerization conditions, free of elemental oxygen and at temperatures maintained in the range between 40° and 50° C. during at least the first 1 hour of the polymerization period and thereafter raised over at least 3 hours in at least 2 stages to at least 100° C. for a time at least sufficient to polymerize the allyl diglycol carbonate to the extent of producing an abrasion resistant surface.

4,191,791
METHOD OF APPLYING A METAL COATING TO A METAL SUBSTRATE

John E. Lyons, Levittown, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Division of Ser. No. 736,840, Oct. 29, 1976, Pat. No. 4,089,293. This application Oct. 21, 1977, Ser. No. 844,381
Int. Cl.² B05D *1/08, 3/08*
U.S. Cl. 427—224 **5 Claims**

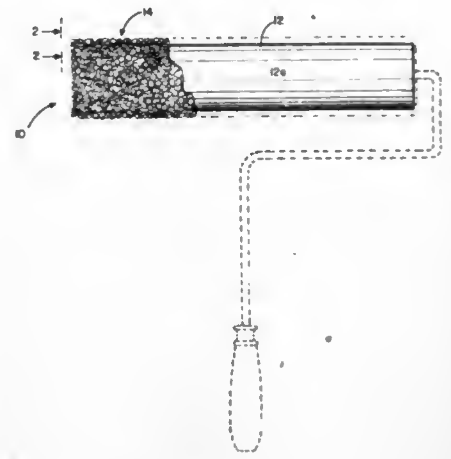


1. The method of using a gas torch to apply a smooth and continuous metal coating along a predetermined path on a surface of a metal substrate, which method comprises igniting the torch and directionally applying its discharge to a local region of said path, oscillating said discharge in a regular periodic traverse sweep of said path, continuously advancing said discharge along said path at a relatively slow rate compared to that of the oscillating traverse sweep, and intermittently adding metal powder to the torch flow in synchronism with the oscillating sweep cycle, said last step occurring in a regular pattern in which single powder-spraying sweeps involving metal-powder addition to the torch flow are spaced by full-sweep intervals of the sweep cycle without metal-powder addition, the relatively slow rate of advance along said path and the interval between successive powder-spraying sweeps being selected such that the bead of sprayed metal on the substrate for each successive powder-spraying sweep at least partially overlaps the previously sprayed bead, whereby the sweep intervals without metal-powder addition are fusing sweeps which enhance the smooth and continuous nature of the resultant metal coating and its bond to the metal substrate.

4,191,792
PAINT ROLLER

Robert I. Janssen, St. Paul, Minn., assignor to Padco, Inc., Minneapolis, Minn.

Filed Oct. 30, 1978, Ser. No. 955,918
Int. Cl.² B05D *5/02;* B05C *17/02;* B05D *1/28*
U.S. Cl. 427—260 **15 Claims**



1. A paint roller comprising:

a cylindrical core having an outer surface; and

a cover bonded to the outer surface of the cylindrical core, the cover comprising an open web of a plurality of interengaged continuous crinkled coarse filaments of resilient polymeric material, and a coating over the filaments to permanently bond the filaments together at points where they touch, to form a plurality of open loop elements having substantial interstitial open areas wherein the cover has inner and outer surfaces with portions of the cover proximate the inner surface having a higher concentration of filaments than portions proximate the outer surface, and wherein the inner surface is bonded to the outer surface of the cylindrical core.

12. A method of forming paint rollers, the method comprising:

providing a cylindrical core having inner and outer surfaces and having a length greater than a desired paint roller length;

bonding, with a two part epoxy, an open web of a plurality of interengaged continuous crinkled coarse filaments of resilient thermoplastic polymeric material bonded together at points where they touch to form a plurality of open loop elements having substantial interstitial open areas spirally to the outer surface of the cylindrical core, wherein the open web has first and second major surfaces with portions of the web proximate the first major surface having a higher concentration of filaments than portions proximate the second major surface, and wherein the first major surface is bonded to the outer surface of the cylindrical core; and

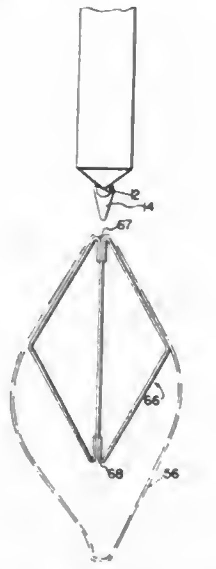
cutting, from the core having the open web bonded thereto, paint rollers of the desired paint roller length.

15. A method of producing a texture surface with texture paint material, the method comprising:

applying texture paint material to a texture paint roller having a cylindrical core and a cover bonded to its outer surface, the cover comprising an open web of a plurality of interengaged continuous crinkled coarse filaments of resilient material which are bonded together at points where they touch to form a plurality of open loop elements having substantial interstitial open areas; and

applying the texture paint material to a surface by rolling the texture paint roller over the surface, the open loop elements creating surface texture effects in the applied texture paint material as the texture paint roller is rolled.

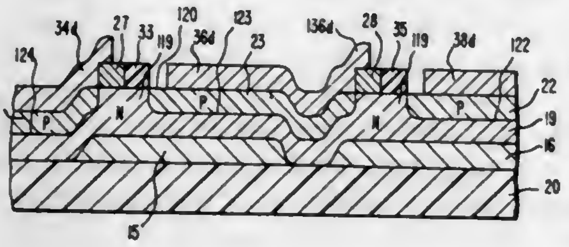
4,191,793
METHOD OF FORMING A DURABLE CREASE
James D. M. Gibson, Ilkley, and Paul Hageman, Bradford, both of England, assignors to Wool Development International Limited, London, England
Continuation of Ser. No. 841,672, Oct. 13, 1977, abandoned. This application May 17, 1978, Ser. No. 907,058
Int. Cl.^{2} A41D *1/10*
U.S. Cl. 427—276 **1 Claim**



1. A method for producing durable creases in a pair of trousers which comprises:

providing at least one elongated support structure of dimensions to fit within and at least the length of a trouser leg;
providing said structure, on each opposed upper and lower face, with a channel adapted to receive a preformed crease of a said trouser leg;
providing said support structure with a rotatable mounting so that the position of said faces may be reversed;
turning the pre-creased legs of a said trouser inside out and positioning one said turned leg on said structure whereby the length of the apex of the upper located creases lies within the associated channel;
providing the dispenser head with a slot operatively conforming to the received crease of the turned leg;
operatively associating said dispenser with the positioned leg and traversing said crease to dispense said resin therein;
rotating said support structure 180° whereby to present the opposed crease to said dispenser and dispensing said resin along the length of said opposed crease;
removing said leg from the support structure; and
turning said leg inside out; and
folding the leg flat and curing the resin whereby to form said durable crease.

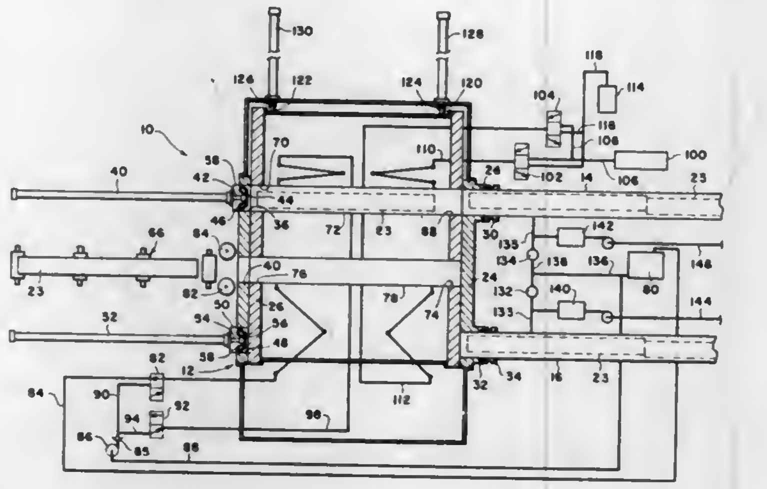
4,191,794
INTEGRATED SOLAR CELL ARRAY
Fred A. Shirland, and William J. Biter, both of Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 11, 1978, Ser. No. 905,068
Int. Cl.^{2} B05D *5/12;* **H01L** *31/06*
U.S. Cl. 427—74 **8 Claims**



1. A method for making an array of series coupled photovoltaic cells comprising the steps of:

(a) forming a first array comprising a first plurality of parallel isolated electrically conductive members on an electrically insulating surface, each of said individual members serving as a first electrode of a single cell of said array;
(b) forming a layer of semiconductor material of a first conductivity type overlying and affixed to said substrate and to said electrically conductive members;
(c) forming a second array comprising a second plurality of parallel isolated electrically conductive members affixed to the top surface of said semiconductor layer, each individual member comprising said second array serving as a second electrode of a cell of said array and solely overlapping an edge of a single individual member of said first array but spaced therefrom and electrically coupled thereto by said semiconductor layer;
(d) forming a plurality of isolated regions of semiconductor material of a second conductivity type each having an interface with said semiconductor layer with the PN junctions formed at said interface comprising the active junctions of said array of photovoltaic cells;
(e) forming a plurality of current collector grids each comprising a plurality of electrically conductive members, each region of said plurality of isolated regions of semiconductor material of a second conductivity type having a current collector grid formed thereon and electrically connected to an adjacent member of said second electrode array.

4,191,795
METHOD AND MEANS FOR TREATING TIMBERS
Jesse M. Lewis, 4410 S. Mingo Rd., Tulsa, Okla. 74145
Filed Aug. 24, 1978, Ser. No. 936,619
Int. Cl.^{2} B05D *3/12, 1/18*
U.S. Cl. 427—351 **21 Claims**

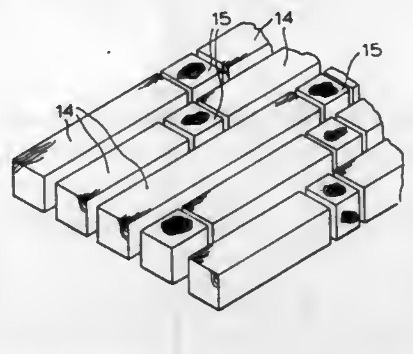


1. A method for treating timbers comprising the steps of conveying individual timbers in succession to a treating station, inserting individual timbers into a carrier, transporting the timbers independently in the carrier into the proximity of a treating chamber having a treating fluid contained therein, ejecting the timber from the carrier for insertion into the treating chamber, repeating the operation with successive timbers whereby each timber inserted into the treating chamber abuts the end of the preceding timber for moving the timbers longitudinally through the treating chamber, ejecting the treated timbers individually from the treating chamber and inserting the said treated timbers individually into a second carrier, moving the carrier into the proximity of a drying chamber, ejecting the treated timber from the second carrier and inserting the timber into the drying chamber, repeating the operation with successive timbers whereby each timber inserted into drying chamber abuts the end of the preceding timber for moving the timbers longitudinally through the drying chamber, removing the dried timbers individually from the drying chamber, and releasing the treated and dried timbers for storage.

4,191,796
METHOD OF PREVENTING PEEL OF OLD PAINT
Paul S. Eckhoff, R.F.D. #1, Moor's Hill Rd., Syosset, N.Y. 11791
Filed Oct. 23, 1978, Ser. No. 953,737
Int. Cl.^{2} B05D *1/36, 7/00*
U.S. Cl. 427—408 **1 Claim**

1. A method for preventing the peeling of old paint from a wooden substrate when a latex paint is applied thereto comprising the step of first applying to the old paint a composition consisting essentially of an aqueous resin binder formed by blending (1) an aqueous alkaline emulsion of a polyurethane resin based on a drying oil and (2) an aqueous dispersion of a thermoplastic acrylic polymer.

4,191,797
HEAT AND ELECTRICAL RESISTANT TABLE AND BENCH TOP AND METHOD OF MAKING SAME
Glenn L. Hayward, Jim Falls, Wis., assignor to Burd, Inc., St. Charles, Ill.
Filed Feb. 22, 1979, Ser. No. 14,094
Int. Cl.^{2} B32B *7/12*
U.S. Cl. 428—50 **11 Claims**



1. An industrial table or bench top having a work surface resistant to high temperatures and electrical current which comprises a core of longitudinally extending wood blocks in side by side and end to end relation, adhesive bonds uniting said blocks into the form of a planar slab, a bottom sheet of plastics material bonding particle board covering the bottom face of said planar slab, a top sheet of plastics material bonded laminar cotton fabric covering the top face of said planar slab, and cold setting glue bonds uniting said top and bottom sheets to said planar slab.

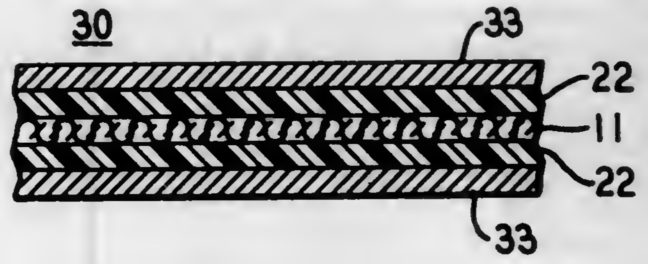
4,191,798
HIGHLY FILLED THERMOPLASTIC COMPOSITIONS BASED ON ETHYLENE INTERPOLYMERS AND PROCESSING OILS
Frederick G. Schumacher, Wilmington, Del., and Walter Yllo, Carneys Point, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 22, 1978, Ser. No. 963,111
Int. Cl.^{2} B32B *27/30*
U.S. Cl. 428—95 **20 Claims**

1. A composition consisting essentially of (a) from about 5 to about 50% by weight of at least one copolymer of ethylene with at least one comonomer selected from the group consisting of vinyl esters of saturated carboxylic acids wherein the acid moiety has up to 4 carbon atoms, unsaturated mono- or dicarboxylic acids of 3 to 5 carbon atoms, and esters of said unsaturated mono- or dicarboxylic acids wherein the alcohol moiety has 1 to 8 carbon atoms, the ethylene content of said copolymer being from about 60 to about 90% by weight, the comonomer content of said copolymer being from about 10 to about 40% by weight, and the melt index of said copolymer being from about 0.1 to about 150, provided that when said copolymer of ethylene is an ethylene/vinyl ester copolymer said copolymer can contain up to about 15% by weight of carbon monoxide or sulfur dioxide; (b) from about 2 to about 15% by weight of processing oil; and (c) from about 50 to about 90% by weight of filler.

4,191,799
BONDING CARPET BACKING USING A LATEX EXTENDED WITH GRAFTED MINERAL OIL
David P. Gruber, Northampton Township, Summit County, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
Filed Nov. 4, 1977, Ser. No. 848,625
Int. Cl.^{2} B32B *25/10, 25/14;* **C08L** *9/08, 51/00*
U.S. Cl. 428—96 **10 Claims**

1. A method which comprises coating the backing of a carpet comprising a plurality of fibers or tufts woven with a first fibrous backing with an aqueous curable adhesive composition and then applying with pressure a second fibrous backing material to said adhesive coated first fibrous backing to form a laminate, said adhesive being present in an amount sufficient to secure the ends of said fibers or tufts to said first backing material and to secure said second backing material to said first backing material, and then heating the resulting laminate at a temperature and for a time sufficient to dry said adhesive and said secondary backing and to cure said adhesive to bind the ends of the fibers or tufts of said carpet to said primary backing and said primary backing to said secondary backing together into a unitary laminate without adversely affecting the fibers or tufts of said carpet, said adhesive in said composition comprising a blend of a polymer and a minor amount by weight of extender for said polymer, said extender comprising a mineral oil containing, per 100 parts by weight of said oil, graft polymerized to said oil from about 2 to 20 parts by weight of an ethylenically unsaturated monomer having from 2 to 16 carbon atoms and said polymer being a copolymer of a diene selected from the group consisting of butadiene, isoprene and 2,3-dimethyl butadiene and at least one copolymerized monomer selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, maleic anhydride, fumaric acid, itaconic acid, vinyl benzoic acid, α-chloro acrylic acid and crotonic acid.

4,191,800
DEVICES EMPLOYING FLEXIBLE SUBSTRATES AND METHOD FOR MAKING SAME
Kenneth A. Holtzman, Clifton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation of Ser. No. 690,735, May 27, 1976, abandoned. This application Jul. 26, 1978, Ser. No. 928,067
Int. Cl.^{2} B32B *27/12, 17/10*
U.S. Cl. 428—251 **8 Claims**



1. A process for the fabrication of electronic circuits with flexible substrates comprising the steps of

a. impregnating a cloth-mat material with an epoxy resin-hardener composition free from solvent,
b. adhering a copper sheet to both sides of the impregnated cloth-mat material to form a double-sided clad flexible substrate,
c. curing the double-sided clad flexible substrate by heating, characterized in that epoxy resin-hardener composition consists essentially of, in parts by weight,

Epoxy Resin	100

-continued

Antimony Oxide	0–80
Chlorinated Hydrocarbon Flame Retardant	0–160
Maleic Anhydride Adduct of Methylcyclopentadiene	68–95
Carboxy Terminated Butadiene-Acrylonitrile	69–107
2,4,6 tri(dimethylaminomethyl) Phenol	0.5–3.0
Antioxidant	0.1–6.0

and the impregnated cloth is cured at a temperature between 150 and 180 degrees C. for a time between 24 and 96 hours.

4,191,801
HOT MELT METAL WORKING LUBRICANTS

Richard W. Jahnke, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 766,642, Feb. 8, 1977, Pat. No. 4,116,872. This application Feb. 27, 1978, Ser. No. 881,215

Int. Cl.^{2} C10M *1/26, 3/20, 7/24;* **B32B** *15/04*

U.S. Cl. 428—467 **10 Claims**

1. A metal workpiece having on the surface thereof a film of a lubricating composition which provides lubricity thereto and which melts within the range of about 30°-100° C., said composition comprising at least one substantially neutral ester defined as follows:

I. The alcohol moieties are derived from (A) a polyalkylene glycol containing about 20–50 polyoxyalkylene units, or a mixture thereof with (B) at least one saturated aliphatic alcohol having at least about 10 carbon atoms;

II. The acid moieties are derived from (C) at least one C_{12-25} aliphatic monocarboxylic acid, or a mixture thereof with (D) at least one C_{4-20} aliphatic polycarboxylic acid.

4,191,802
COATING OF FIBROUS MATERIALS WITH COMPOSITIONS CONTAINING MIXTURES OF POLYCARBAMOYL SULPHONATES AND OTHER POLYMERS

Geoffrey B. Guise, and Maxwell A. White, both of Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Continuation-in-part of Ser. No. 461,134, Apr. 15, 1974, abandoned. This application Jan. 6, 1978, Ser. No. 867,491

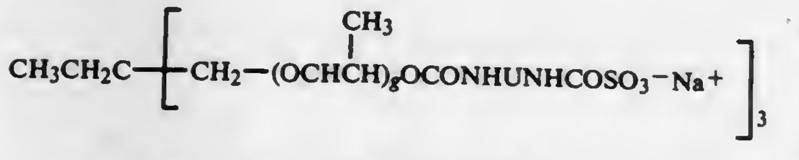
Claims priority, application Australia, Apr. 16, 1973, PB3014; Aug. 15, 1973, PB4494

Int. Cl.^{2} B05D *3/02;* **B32B** *17/02, 19/00;* **B37B** *9/02*

U.S. Cl. 428—375 **5 Claims**

1. A method for the treatment of a fibrous material, which method comprises treating the material with a composition comprising (A) at least one compound selected from the group consisting of:

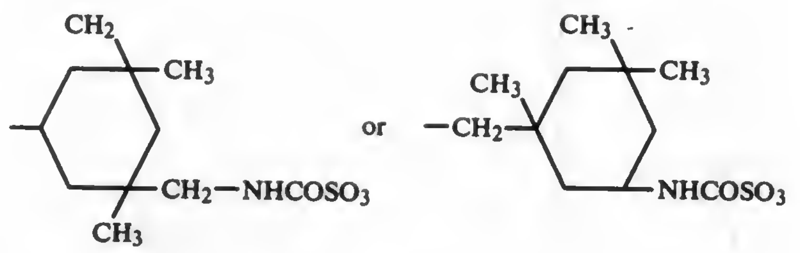
(1) products of the structure



$$\mathrm{CH_3CH_2C}\left[\mathrm{CH_2-(OCH\overset{\overset{CH_3}{|}}{C}H)_gOCONHUNHCOSO_3{}^-Na^+}\right]_3$$

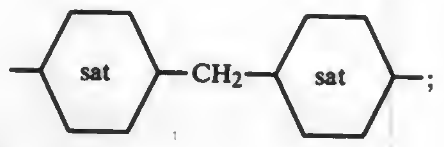
wherein $U=(CH_2)_6$, g is from 1 to 40;

(2) products of the structure stated in (1) wherein—$UNHCOSO_3$ is:



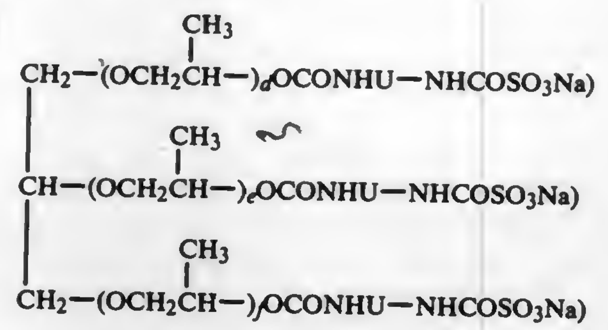
g is from 1 to 40;

(3) products of the structure stated in (1) wherein U is



g is from 1 to 40;

(41) **products of the structure**



wherein U is—$(CH_2)_6$— and d, e, and f are from 14–18;

(5) products of the structure stated in (4) wherein d, e and f are 1, and U is—$(CH_2)_6$—;

(6) products of the structure stated in (4) wherein U is as stated in (2) and d, e, and f are from 14–18;

(7) products of the structure stated in (4) wherein U is as stated in (3) and d, e and f are from 14–18;

(8) products of the structure

$CH_3CH_2C[CH_2OCONHU—NHCOSO_3{}^-Na^+]_3$

wherein U is as stated in (1), (2) or (3); and,

(9) the product of the structure

$Na^+O_3SCONH(CH_2)_6N(CONH(CH_2)_6NHCOSO_3{}^-Na^+)_2$

and (B) at least one non-halogenated polymer selected from the group consisting of

(a) acrylic polymers or copolymers;
(b) latices of polymers or copolymers of styrene; butadiene or acrylonitrile;
(c) latices of polymers or copolymers of vinyl acetate;
(d) polyurethane latices;
(e) blocked isocyanates; and,
(f) epoxy resins

and heating the treated material to remove any volatile substances present and to assist in curing of the composition.

4,191,803
EXPANDABLE PARTICLES OF A STYRENE POLYMER HAVING SMALL PARTICLE SIZE

Tetsuya Katoh, Ichihara, Japan, assignor to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,886

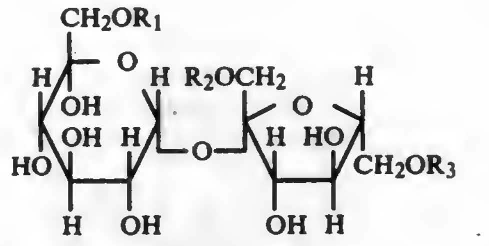
Claims priority, application Japan, Nov. 17, 1977, 52-138094

Int. Cl.^{2} C08J *9/22*

U.S. Cl. 428—407 **4 Claims**

1. Expandable particles of a styrene polymer containing therein 3 to 8% by weight of a blowing agent and having a

particle size of 0.8 to 0.25 mm., in diameter, or their preexpanded particles, which comprises an ester of sucrose represented by the formula:



wherein R_1, R_2 and R_3 each represent a hydrogen atom, an alkanoyl group having 6 to 22 carbon atoms or an alkenoyl group having 6 to 22 carbon atoms; and all of R_1, R_2 and R_3 are not hydrogen atoms at the same time, or its derivative, said ester of sucrose or its derivative being coated on the surface of said particles.

4,191,804
COATING COMPOSITION

Hermann P. Weber, Tarzana, Calif., assignor to Techsight Corp., Chatsworth, Calif.

Filed Jun. 30, 1978, Ser. No. 920,669

Int. Cl.^{2} G02B *1/10;* **B32B** *27/42;* **C08J** *7/04;* **C08L** *61/28*

U.S. Cl. 428—409 **16 Claims**

1. In a coating composition which comprises:

a pigment-free aqueous composition comprising a dispersion of colloidal silica in a lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 inclusive carbons, the vinyl radical, the cyanoethyl radical, the 3,3,3-trifluoropropyl radical, the gamma-glycidoxypropyl radical, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, said composition containing sufficient acid to provide a pH in the range of about 3.0 to about 6.0;

the improvement which comprises:

from about 3.5 percent to about 20 percent by weight based on the solids content of the silica-silanol dispersion of a pigment-free resin selected from the group consisting of amino resins and amino resins which have been at least partially alkylated with at least one aliphatic alcohol having from 1–8 carbons, and mixtures thereof, said resin being dispersible in said silica-silanol dispersion.

16. A polycarbonate surface having thereon a cured continuous coating of the coating composition as claimed in claim 1.

4,191,805
METHOD OF FORMING A LAYER OF MATERIAL FROM A SOLUTION

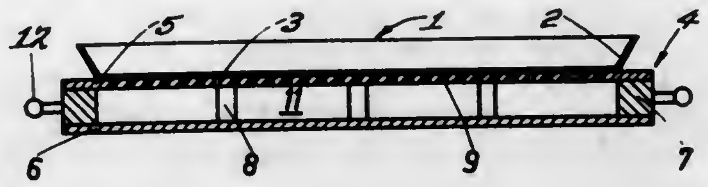
Hans-Henning Nolte, Gelsenkirchen, Fed. Rep. of Germany, assignor to BFG Glassgroup, Paris, France

Filed Sep. 12, 1977, Ser. No. 832,614

Claims priority, application United Kingdom, Sep. 24, 1976, 39782/76

Int. Cl.^{2} B32B *9/04, 31/00*

U.S. Cl. 428—539 **22 Claims**



1. A method of forming a very uniform layer of intumescent material from a solution containing the intumescent material and a solvent which comprises the steps of forming the solution into a layer in a mold, contacting at least one major face of the solution layer with a wall of the mold comprising a semipermeable film which is permeable over the area of that face substantially to the vapor phase only of said solvent, and effecting the escape of solvent simultaneously from both major faces of said layer including from at least one said major face by vapor diffusion through said wall so as to set the layer.

20. A method of manufacturing a fire-screening glazing panel comprising at least one layer of intumescent material held between two plies, of which at least one supports said layer, said method comprising forming said layer by the method as defined in claim 1 and assembling said layer between said two plies.

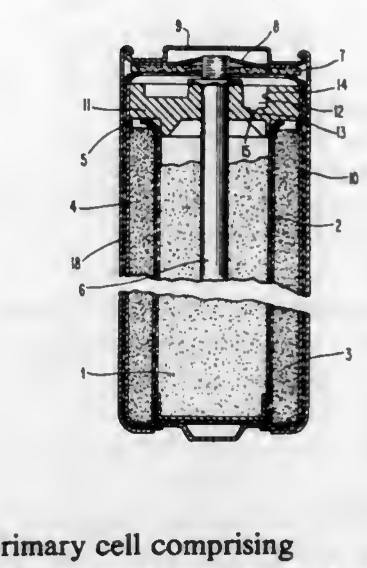
4,191,806
PRESSURE VENT FOR A SEALED PRIMARY CELL

Isaac I. Levy, Cambridge, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Aug. 28, 1978, Ser. No. 937,505

Int. Cl.^{2} H01M *2/12*

U.S. Cl. 429—56 **8 Claims**



1. A sealed primary cell comprising

a generally tubular envelope having a mouth at one end thereof;
a mass of electrolyte disposed in the envelope;
a disc having an inner and outer surface and extending across the mouth of the envelope to seal the interior of the envelope;
an outer cap assembly disposed over the disc; and
a terminal means extending through the disc and into the electrolyte;

wherein the disc is formed of polysulfone, polyphenylene oxide, polyamides, polypropylene, polyethylene, polystyrene or acrylonitrile-butadiene-styrene and has a recess, the recess defined by a wall and a diaphragm; said diaphragm having at least two radial grooves.

4,191,807
AIRCRAFT BATTERY

David L. Karpal, Redlands, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jul. 31, 1978, Ser. No. 929,345

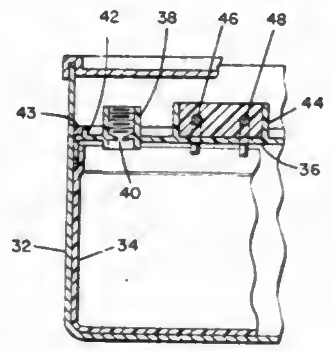
Int. Cl.^{2} H01M *2/02*

U.S. Cl. 429—176 **6 Claims**

1. In an aircraft battery, the combination comprising:

a generally box-like aluminum housing;
a battery casing of polypropylene material configured for fitting within said housing in close fitting relation therein with the top of said casing being recessed below the open end of said housing; and
means for bonding said casing within said housing said casing includes a cover portion having a substantially periph-

eral ridge in close spaced relation with the interior of said housing and said means for bonding includes a silicon composition sealant in the space between said ridge and said housing.



4,191,808
METHOD OF MEASURING DIPEPTIDYL-AMINO-PEPTIDASE ACTIVITY

Toshiharu Nagatsu, Yokohama, and Shumpei Sakakibara, Suita, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Division of Ser. No. 733,343, Oct. 18, 1976, Pat. No. 4,119,620. This application Apr. 17, 1978, Ser. No. 897,043
Claims priority, application Japan, Oct. 30, 1975, 50-130809
Int. Cl.^{2} G01N *31/14*
U.S. Cl. 435—24 **20 Claims**

1. A method of measuring X-prolyl dipeptidyl-aminopeptidase activity which comprises contacting a compound having the structure:

X-L-proline-Y

or an acid salt thereof with said X-prolyl dipeptidyl-aminopeptidase in an aqueous medium at pH 7 to 9 under conditions suitable for the enzymatic reaction to occur and assaying the enzymatically liberated Y-H, said X being a residue of an amino acid selected from the group consisting of glycine, alanine, valine, leucine, serine, threonine, phenylalanine, tyrosine, tryptophane, glutamic acid, aspartic acid, lysine and arginine; and said Y being a residue of said Y-H selected from the group consisting of p-nitroaniline, p-phenylazoaniline, and 4-phenylazo-1-naphthylanine.

4,191,809
METHOD OF MEASURING ENZYMATIC ACTIVITY USING NOVEL PEPTIDE DERIVATIVES

Toshiharu Nagatsu, Yokohama, and Shumpei Sakakibara, Suita, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Division of Ser. No. 878,826, Feb. 17, 1978, Pat. No. 4,147,692. This application Sep. 20, 1978, Ser. No. 943,778
Claims priority, application Japan, Feb. 26, 1977, 52-20663; Jun. 16, 1977, 52-71469
Int. Cl.^{2} G01N *31/14*
U.S. Cl. 435—24 **4 Claims**

1. A method of measuring X-prolyl dipeptidyl-aminopeptidase activity which comprises contacting 7-glycyl-L-prolylamino-4-methylcoumarin or acid salts thereof with said X-prolyl dipeptidyl-aminopeptidase in an aqueous medium under conditions and for a period of time sufficient to effect enzymatic hydrolysis and assaying the enzymatically formed 7-amino-4-methylcoumarin.

4,191,810
PROCESS FOR THE PRODUCTION OF IMMOBILIZED GLUCOSE ISOMERASE

Nakajima Yoshikazu; Suzuki Kazumasa, both of Okayama, and Makino Tsuyoshi, Kamakura, all of Japan, assignors to Mitsui Sugar Co., Ltd., Tokyo, Japan
Filed Dec. 1, 1977, Ser. No. 856,604
Claims priority, application Japan, Dec. 3, 1976, 51/144639
Int. Cl.^{2} C07G *7/02*
U.S. Cl. 435—177 **11 Claims**

1. A process for the preparation of immobilized glucose isomerase, which comprises heating microbial cells of Actinomycetes which have glucose isomerase activity, at a temperature of 70°–80° C. for 1–20 minutes in a culture medium adjusted to a pH value of 6–9, rapidly cooling the heated medium, collecting the microbial cells by filtration or centrifugation, treating the collected cells with freeze and thawing method, adding gelatin or sodium caseinate in an amount of 2–10% based on the weight of the cells in dry base, forming a paste by kneading the obtained mixture, impregnating the formed paste in acetone which contains 0.2–1.0% of glutaraldehyde to result in solidification, removing the solvent from the solidified microbial cells by filtration without washing and drying the filtered cells to produce immobilized glucose isomerase preparation.

4,191,811
ION EXCHANGE MEMBRANES BASED UPON POLYPHENYLENE SULFIDE AND FLUOROCARBON POLYMERIC BINDER

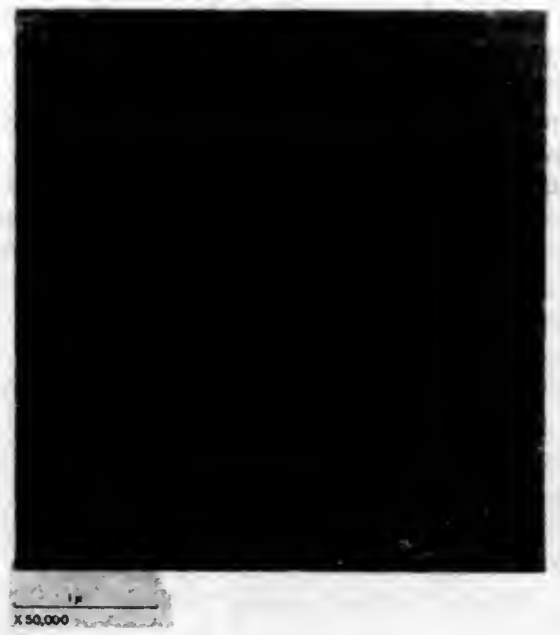
Russell B. Hodgdon, Sudbury, Mass., assignor to Ionics, Incorported, Watertown, Mass.
Division of Ser. No. 773,371, Mar. 1, 1977, Pat. No. 4,110,265. This application Aug. 7, 1978, Ser. No. 931,640
Int. Cl.^{2} B01D *13/04;* **C08J** *5/22*
U.S. Cl. 521—27 **8 Claims**

1. A method for producing a heterogeneous cation exchange membrane having increased resistance to oxidation comprising preparing a batter mixture of a sulfonated polyphenylene sulfide polyelectrolyte and a fluorocarbon polymeric film forming binder, said binder being dissolved in an appropriate solvent, forming a thin film from said batter mixture and allowing the said solvent to evaporate therefrom to form a solid substantially unfractured membrane.

4,191,812
ION EXCHANGE PROCESS INVOLVING EMULSION ION EXCHANGE RESINS

Berni P. Chong, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
Filed Sep. 19, 1978, Ser. No. 943,891
Int. Cl.^{2} C08J *3/00;* **B01D** *15/04*
U.S. Cl. 521—28 **13 Claims**

1. A process for changing the ionic form of a plurality of ion exchange resins of the same ion exchange type, at least one of the resins being in the physical form of approximately spherical, submicroscopic beads and initially being substantially in a first ionic form, and the balance of the resins being in the physical form of macrobeads and initially being in the second ionic form, which process comprises contacting the macrobeads in the second ionic form with an emulsion of the submicroscopic beads in the first ionic form until sufficient ion exchange occurs between the ions of the submicroscopic beads and the ions of the macrobeads to substantially change the ionic form of at least one of the resins.



4,191,813
POLYMERIC ADSORBENTS FROM VINYLBENZYL CHLORIDE COPOLYMER BEADS

Samuel F. Reed, Holland, and Robert K. Pinschmidt, Jr., Allentown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Filed Jul. 24, 1978, Ser. No. 927,226
Int. Cl.^{2} B01J *1/22;* **C08F** *212/36, 212/10;* **C08J** *3/24*
U.S. Cl. 521—31 **26 Claims**

1. A polymeric adsorbent comprising lightly crosslinked copolymer beads of the macronet type, containing at least 40% by weight of vinylbenzyl chloride, the balance of monomers in said copolymer beads, if any, comprising a major proportion of aromatic monomers, said lightly crosslinked copolymer beads being post-crosslinked in a swollen state with a Lewis acid catalyst.

4,191,814
POLYAMINE-CROSSLINKED ANION EXCHANGE RESIN

David R. Amick, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
Filed Jul. 24, 1978, Ser. No. 927,196
Int. Cl.^{2} C08F *8/32;* **B01J** *1/08*
U.S. Cl. 521—32 **12 Claims**

1. A crosslinked anion exchange resin produced by reacting stabilized poly(chloromethylstyrene) polymer beads with a polyamine containing at least 2 tertiary amine groups of which at least one is a terminal group.

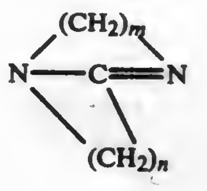
4,191,815
HYDROPHILE POLYURETHANE FOAM, PROCESS FOR PREPARING SAID FOAM AND HYDROPHILE PRODUCT BASED ON SAID FOAM

Lucien Jourquin, Wetteren, and Eddie Du Prez, St-Maria-Oudenhove, both of Belgium, assignors to s.a. PRB, Brussels, Belgium
Filed Mar. 11, 1977, Ser. No. 776,681
Claims priority, application Luxembourg, Mar. 12, 1976, 74539
Int. Cl.^{2} C08G *18/14, 18/20;* **B32B** *27/40*
U.S. Cl. 521—51 **2 Claims**

1. A process for preparing a hydrophile polyurethane foam absorption material for medical and hygienic use comprising reaction of hydrophile polyol, a polyisocyanate wherein NCO groups are not directly bonded to an aromatic ring, a foam stabilizer, a swelling agent and an effective amount of a catalyst, wherein the catalyst consists essentially of:

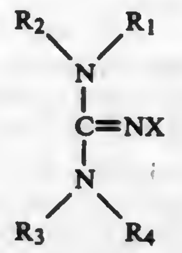
(A) at least one compound selected from the group consisting of

(1)diazabicycloalkenes of the formula:

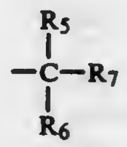

(I)

wherein m varies from 3 to 7 and n from 2 to 4, and salts thereof with organic acids the dissociation constant of which is $Ka \leqq 10^{-2}$;

(2) substituted guanidines and salts thereof of the formula:

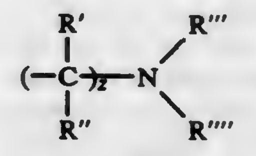

(II)

wherein R_1, R_2, R_3 and R_4 can independently represent a C_1–C_4 alkyl radical, a C_1–C_4 alkyl radical substituted by a C_1–C_4 alkoxy radical, or a heterocyclic C_5–C_7 radical comprising at most two atoms from the group consisting of sulfur and oxygen, R_1 and R_2 and/or R_3 and R_4 may form with the adjacent nitrogen a heterocyclic C_5–C_7 ring containing at most one member from the group consisting of sulfur or oxygen atom, X represents a member selected from the group consisting of hydrogen, phenyl, a phenyl group substituted by one or more C_1–C_4 alkoxy radicals, C_1–C_{12} alkyl radicals or halogens, or represents a radical of the formula:


(III)

$$-\overset{R_5}{\underset{R_6}{C}}-R_7 \qquad \text{(III)}$$

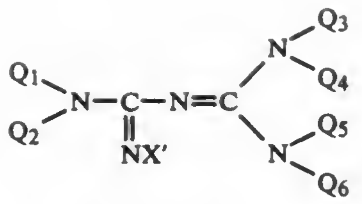
wherein R_5, R_6 and R_7 can independently represent hydrogen, a C_1–C_4 alkyl radical or a C_1–C_4 alkyl radical substituted by a member selected from the group consisting of phenyl, substituted phenyl, C_1–C_4 alkoxy, C_6–C_{15} aryloxy, nitrile or carbalkoxy, or R_7 may represent a member selected from the group consisting of a C_5–C_{18} alkyl radical, a substituted phenyl radical or a C_1–C_4 alkoxy radical; or one or two of the groups R_5–R_6, R_5–R_7 or R_6–R_7 can form a cyclic ring of more than one member selected from the group consisting of nitrogen, sulfur or oxygen atom, and X may also represent a radical of the formula:


(IV)

$$(-\overset{R'}{\underset{R''}{C}}-)_z-N\begin{matrix}R'''\\R''''\end{matrix} \qquad \text{(IV)}$$

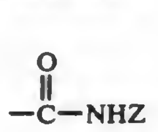
wherein z is an integer of from 2 to 12, R′ and R″ represent a member selected from the group consisting of hydrogen or a C_1–C_4 alkyl radical, R‴ and R″″ represent a member selected from the group consisting of a C_1–C_4 alkyl radical or form with the adjacent nitrogen of a C_5–C_6 cycloalkyl radical; and addition salts of said guanidines; and addition salts of guanidines;

(3) substituted biguanidines of the formula:



(V)

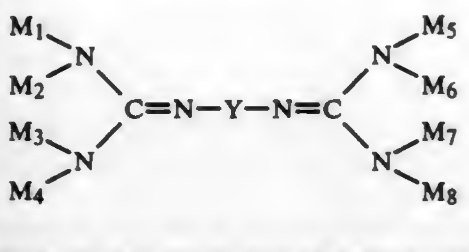
wherein Q_1 to Q_6 can independently represent a member selected from the group consisting of C_1–C_4 alkyl or a C_3–C_4 cycloalkyl radical, and X′ is hydrogen or a carbamoyl radical of the formula:



$$-\overset{\overset{\displaystyle O}{\|}}{C}-NHZ \qquad (VI)$$

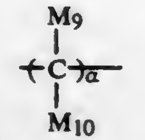
in which Z is a monovalent radical remaining after elimination of an isocyanate group from the above mentioned polyisocyanate, Q_1 to Q_6, X′ and Z may optionally be substituted by a member selected from the group consisting of chlorine, bromine or a C_1 or C_2 alkoxy radical; and

(4) substituted biguanidines of the formula:



(VII)

wherein M_1 to M_8 can independently represent a C_1–C_4 alkyl radical, Y represents a group of the formula:



$$\left(\underset{\underset{\displaystyle M_{10}}{|}}{\overset{\overset{\displaystyle M_9}{|}}{C}}\right)_{\alpha} \qquad (VIII)$$

wherein M_9 and M_{10} represent a member selected from the group consisting of hydrogen or a C_1–C_4 alkyl radical, and α is an integer from 3 to 12 or represents a divalent cyclohexyl or a divalent isophorene radical; and

(B) at least one alkali or alkaline earth metal salt of an organic acid having a dissociation constant $Ka \leqq 10^{-1}$.

4,191,816
PROCESS FOR THE PREPARATION OF OLEFINE POLYMERIZATION CATALYSTS

Alfred Columberg, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge-Geneva, Switzerland

Filed May 12, 1977, Ser. No. 796,234

Claims priority, application Switzerland, May 14, 1976, 6057/76

Int. Cl.² C08F *4/02, 10/02*

U.S. Cl. 526—124 **4 Claims**

1. A process for the polymerization of ethylene comprising the following steps:

(1) heating, while mixing and milling, for 10–30 hours at 70°–100° C. in the absence of air and moisture, at least one supporting compound selected from the group consisting of aluminum acetate, aluminum hydroxide and aluminum acetylacetonate with a mixture of acetic acid and acetic anhydride to obtain a solid product and then eliminating under heat and reduced pressure the volatile portions of the solid product;

(2) forming a homogeneous solution or dispersion of said solid product in a non-polar dry hydrocarbon solvent and adding thereto, while mixing, $TiCl_4$ for activation and heating the mixture to obtain a homogeneous solution or dispersion of an activated catalyst;

(3) polymerizing ethylene by admixing the activated catalyst, the ethylene and a metal-organic compound of formula $Al_nR_yX_{(3n-y)}$ wherein R is an alkyl group, X is a halogen, N is 1 or 2, y is an integer not exceeding 3 when n=1 and equal to 1, 3 or 5 when n=2, in a non-polar hydrocarbon at 20°–70° C. under a pressure of 2–50 atmospheres.

3. A process for the polymerization of ethylene comprising the following steps:

(1) heating, while mixing and milling, for 10–30 hours at 70°–100° C. in the absence of air and moisture, magnesium acetate with a mixture of acetic acid and acetic anhydride to obtain a solid product and then eliminating under heat and reduced pressure the volatile portions of the solid product;

(2) forming a homogeneous solution or dispersion of said solid product in a non-polar dry hydrocarbon solvent and adding thereto, while mixing, $TiCl_4$ for activation and heating the mixture to obtain a homogeneous solution or dispersion of an activated catalyst;

(3) polymerizing ethylene by admixing the activated catalyst, the ethylene and a metal-organic compound of formula $Al_nR_yX_{(3n-y)}$ wherein R is an alkyl group, X is a halogen, n is 1 or 2, y is an integer not exceeding 3 when n=1 and equal to 1, 3 or 5 when n=2, in a non-polar hydrocarbon at 20°–70° C. under a pressure of 2–50 atmospheres.

4,191,817
CURABLE COMPOSITIONS AND ELASTOMERS PREPARED THEREFROM

August Schiller, Marktl,Bergham; Eckhart Louis; Erhard Bosch, both of Burghausen, and Karl Braunsperger, Raitenhaslach, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 19, 1978, Ser. No. 925,909

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737303

Int. Cl.² C08G *77/26*

U.S. Cl. 528—38 **7 Claims**

1. A curable composition which is stable under anhydrous conditions, but when exposed to moisture, cures to an elastomer consisting essentially of (1) a diorganopolysiloxane having terminal condensable groups, (2) a silicon compound having at least 3 hydrolyzable groups per molecule, said hydrolyzable groups are selected from the group consisting of amino groups which are bonded to silicon via nitrogen, oxime groups which are bonded to silicon via oxygen and mixtures thereof and (3) at least one organosilicon compound having at least one amino group which is bonded to silicon via carbon and at least one siloxane-oxygen atom.

4,191,818
PROCESS FOR PREPARING HEAT-RESISTANT POLYURETHANE ELASTOMERS HAVING NO SECONDARY SOFTENING RANGE

Karl H. Illers, Otterstadt, and Herbert Stutz, Karlsruhe, both of Fed. Rep. of Germany, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation of Ser. No. 730,807, Oct. 8, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 923,114

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1975, 2547864

Int. Cl.² C08G *18/10*

U.S. Cl. 528—44 **4 Claims**

1. A process for the production of a castable heat-resistant polyurethane elastomer from primarily linear and substantially difunctional high-molecular-weight polyhydroxyl compound, polyisocyanate, and chain extender, characterized in that the high-molecular-weight polyhydroxyl compound is first reacted with such a quantity of polyisocyanate that the ratio of OH:NCO groups amounts to 1:0.66 to 1:0.85 to obtain an adduct of polyhydroxyl compound and an organic diisocyanate, which adduct is substantially anhydrous, and contains terminal hydroxyl groups, the adduct with terminal hydroxyl groups is then reacted with a diol as a chain extender and an excess of a symmetrical aromatic diisocyanate and with the provisos that the ratio of the number of isocyanate groups to the total number of all hydrogen atoms capable of reacting with the isocyanate groups amounts to approximately 1.0 to 1.2:1, and said chain extender forms a crystalline or crystallizable urethane with said aromatic diisocyanate, thereby obtaining a castable material exhibiting a start of softening at an advanced temperature of about 180° C. or greater.

4,191,819
ACTIVATED ANIONIC POLYMERIZATION OF LACTAM WITH PARTIALLY MASKED POLYISOCYANATE

Rolf-Volker Meyer; Rolf Dhein; Kurt Schneider, and Friedrich Fahnler, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 12, 1977, Ser. No. 823,979

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1976, 2637010

Int. Cl.² C08G *69/18*

U.S. Cl. 528—315 **5 Claims**

1. In a process for the preparation of a moldable polyamide by polymerizing a lactam having at least 5 ring members in the presence of a catalyst and an activator, the improvement wherein the activator is at least one fluid, partially masked polyisocyanate selected from the group consisting of aliphatic polyisocyanate, araliphatic polyisocyanate and cycloaliphatic polyisocyanate, said polyisocyanate being masked with 0.5–0.7 equivalents of lactam per equivalent of NCO.

4,191,820
PROCESS FOR PREPARING POLYALKYLENE POLYAMINE POLYETHERS

William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 3, 1978, Ser. No. 866,206

Int. Cl.² C08G *73/02, 65/26*

U.S. Cl. 528—405 **7 Claims**

1. A method for preparing a water-soluble amine-derived polyether, comprising:

reacting ethylenediamine with a halogen-containing polymer of an epihalohydrin in the presence of an organic solvent at a temperature ranging from about 120° C. to about 200° C., and

wherein the ratio of moles of ethylenediamine per available halogen atom is less than 3:1.

4,191,821
PROCESS FOR PURIFYING RECIRCULATING GASES OF CONDENSED POLYMER PARTICLES

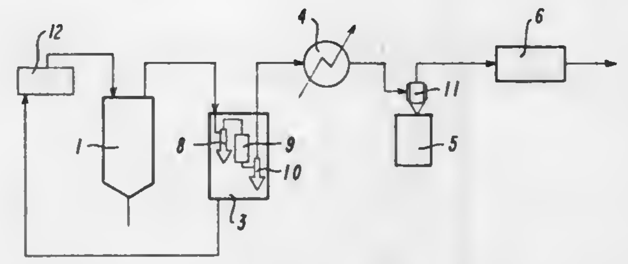
Pierre Gloriod, Lillebonne, France, assignor to Societe Chimique des Charbonnages - CdF Chimie, France

Filed Jul. 11, 1978, Ser. No. 923,656

Claims priority, application France, Jul. 13, 1977, 77 21758

Int. Cl.² C08F *220/42*

U.S. Cl. 528—501 **8 Claims**



1. A process for eliminating low molecular-weight polymers from recirculting gases of facilities carrying out polymerization or copolymerization of ethylene at a pressure of 300 to 2500 bars and a temperature of 130° C. to 350° C., in which facilities a mixture of monomer and polymer leaving the reactor is expanded into a separator operating under a pressure of 50 to 500 bars, said gases being the gaseous phase leaving said separator, comprising

(a) passing said gases, at a temperature at least 20° C. higher than the melting point of the low polymers, through at least one standard cyclone at an inlet velocity between 1 and 10 m/s to eliminate some of said low polymers;

(b) then cooling said gases from said cyclone to a temperature lower than the melting point of the low polymers; and

(c) then passing said cooled gases through at least one heated cyclone at an inlet velocity between 2 and 20 m/s to eliminate more of said low polymers.

4,191,822
5-HYDROXY-PGI₁ COMPOUNDS

Roy A. Johnson, and John C. Sih, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

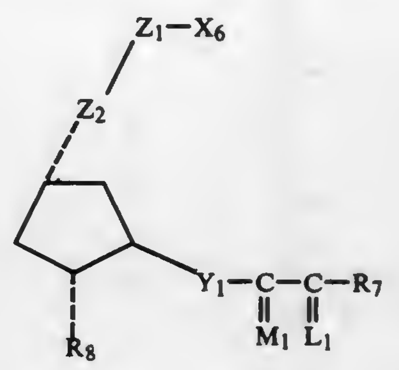
Continuation-in-part of Ser. No. 815,648, Jul. 14, 1977, Pat. No. 4,110,532. This application Jun. 28, 1978, Ser. No. 919,894

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.² C07D *307/93*

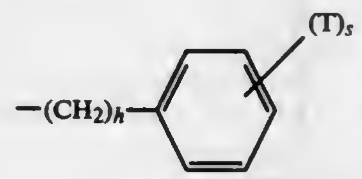
U.S. Cl. 542—416 **1 Claim**

1. A prostacyclin analog of the formula

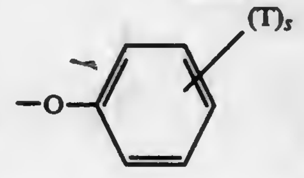


wherein R_7 is

(1) $-(CH_2)_m-CH_3$,



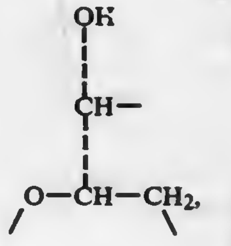
(2)



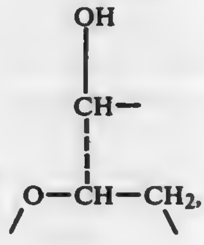
(3)

wherein m is the integer one, 2, 4, or 5; h is the integer 2 or 3; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or with the proviso that not more than two T's are other than alkyl;

wherein Z_2 is

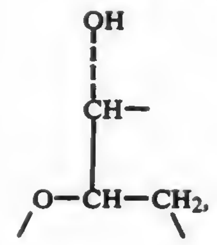


(1)

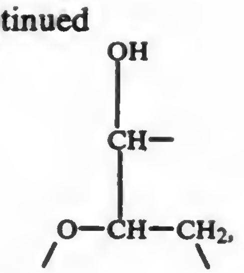


(2)

-continued

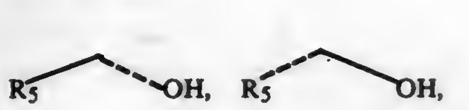


(3)

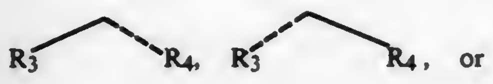


(4)

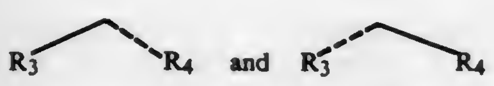
wherein Z_1 is
(1) $—(CH_2)_g—CH_2—CH_2—$,
(2) $—(CH_2)_g—CH_2—CF_2—$, or
(3) trans$—(CH_2)_q—CH{=}CH—$,
wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;
wherein Y_1 is
(1) trans$—CH{=}CH—$,
(2) cis$—CH{=}CH—$,
(3) $—CH_2CH_2—$,
(4) trans$—CH{=}C(Hal)—$, or
(5) $—C{\equiv}C—$
wherein Hal is chloro or bromo;
wherein M_1 is



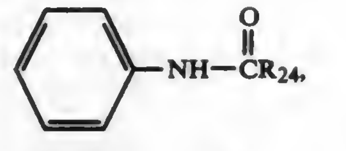
wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive;
wherein L_1 is

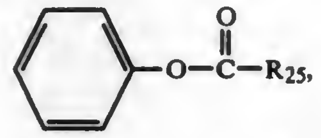


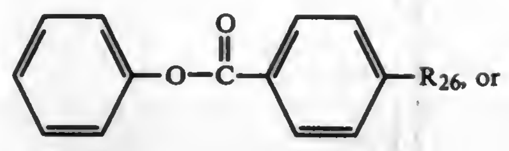
a mixture of

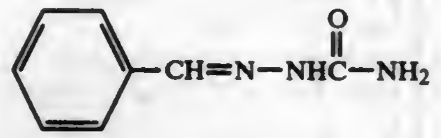


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein X_6 is
(1) $—COOR_1$; wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation,
(2) $—CH_2OH$,
(3) $—CH_2NL_2L_3$, wherein L_2 and L_3 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or $—COOR_1$, wherein R_1 is as defined above;
(4) $—COL_4$, wherein L_4 is
(a) amino of the formula $—NR_{21}R_{22}$, wherein R_{21} and R_{22} are hydrogen, alkyl of one to 12 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive;
(b) carbonylamino of the formula $—NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above; or
(c) sulphonylamino of the formula $—NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; or
(5) $—COOL_5$, wherein L_5 is p-substituted phenyl selected from the group consisting of







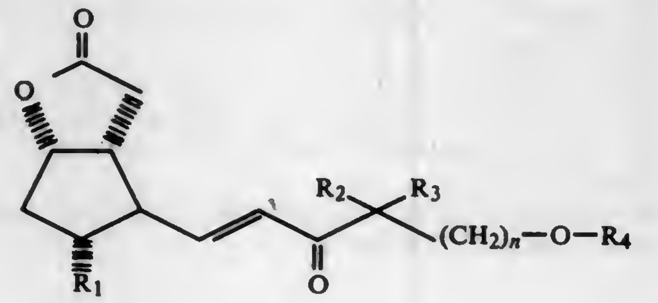


wherein R_{24} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $—NH_2$; R_{25} is methyl, phenyl, $—NH_2$, or methoxy; and R_{26} is hydrogen or acetamido, and the 1,5- and 1,15-lactones thereof.

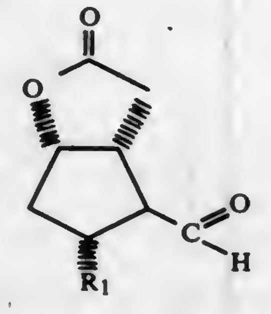
4,191,823
PROCESS FOR THE PREPARATION OF OXAPROSTAGLANDIN INTERMEDIATES

Werner Skuballa; Bernd Raduchel, and Helmut Vorbrueggen, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany
Filed Dec. 1, 1977, Ser. No. 856,544
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2655004
Int. Cl.^{2} C07D *307/83*
U.S. Cl. 542—426 **10 Claims**

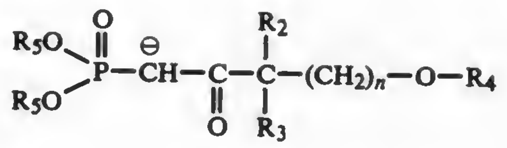
1. In a process for the preparation of an oxaprostaglandin intermediate of the formula



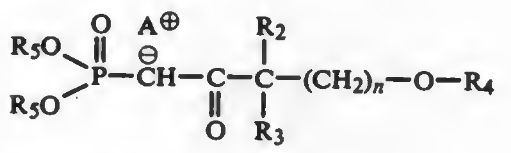
wherein
R_1 is hydrogen, alkyl, or a free or functionally modified hydroxy group;
R_2 and R_3, are the same or different and each is hydrogen, halogen or alkyl;
R_4 is alkyl or optionally substituted aryl; and
n is 0, 1, 2 or 3;
which comprises reacting an aldehyde of the formula



wherein R_1 is as defined above with an anion of the formula



wherein
n, R_2, R_3 and R_4 are as defined above; and
R_5 is alkyl;
the improvement wherein the anion is added to the reaction medium in a form which consists essentially of its crystalline alkali metal salt of the formula

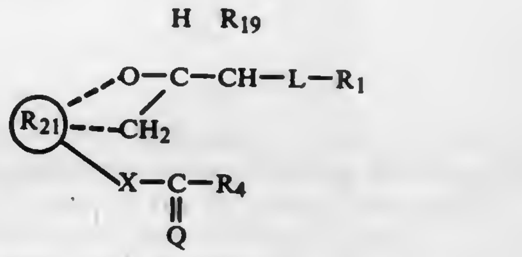


wherein A is an alkali metal atom.

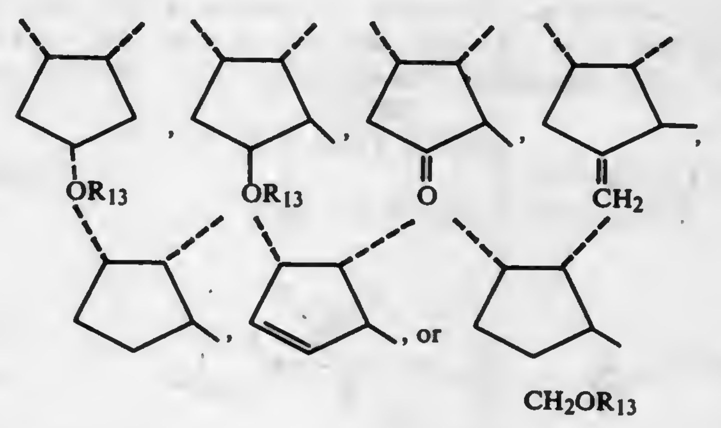
4,191,824
5-HALO PGI COMPOUNDS

Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 819,857, Jul. 28, 1977, Pat. No. 4,158,667, which is a continuation-in-part of Ser. No. 725,548, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,972, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 655,110, Feb. 4, 1976, abandoned. This application Nov. 9, 1978, Ser. No. 959,399
Int. Cl.^{2} C07D *307/93*
U.S. Cl. 542—429 **35 Claims**

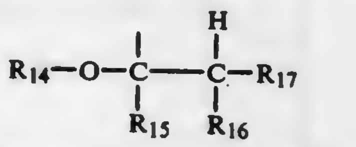
1. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof wherein ⓇR21 is

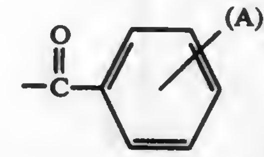


wherein R_{13} is (a) hydrogen, (b) tetrahydropyranyl, (c) tetrahydrofuranyl, (d) 1-ethoxyethyl, (e) a group of the formula



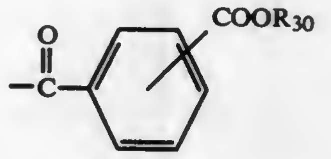
$$R_{14}-O-\underset{R_{15}}{\overset{|}{\underset{|}{C}}}-\underset{R_{16}}{\overset{H}{\underset{|}{C}}}-R_{17}$$

wherein R_{14} is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_{15} and R_{16} are the same or different, being hydrogen, alkyl of one to 4 carbon atoms, inclusive, phenyl or phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, or, when R_{15} and R_{16} are taken together, $—(CH_2)a—$ or $—(CH_2)b—O—(CH_2)c—$ wherein a is 3, 4, or 5, b is one, 2, or 3, and c is one, 2, or 3, with the proviso that b plus c is 2, 3, or 4, and wherein R_{17} is hydrogen or phenyl, or (f) carboxyacyl including



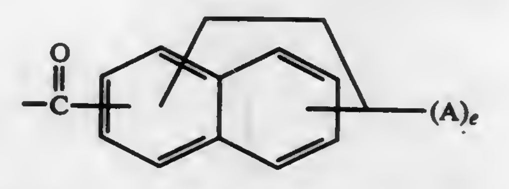
(a')

wherein "A" is alkyl of one to 4 carbon atoms, inclusive, bromo, phenylalkyl of 7 to 10 carbon atoms, inclusive, or nitro, and "e" is zero to 5, inclusive, provided that not more than two A's are other then alkyl, and that the total number of carbon atoms in the A's does not exceed 10 carbon atoms,



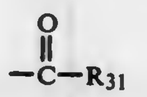
(b')

wherein R_{30} is alkyl of one to 4 carbon atoms, inclusive,



(c')

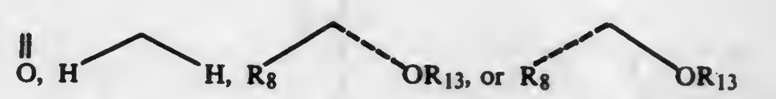
wherein "A" and "e" are as defined above, or



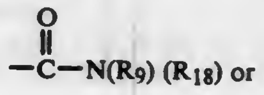
$$-\overset{O}{\overset{\|}{C}}-R_{31}$$

(d')

wherein R_{31} is alkyl of one to 7 carbon atoms, inclusive,
wherein L is
(1) $—(CH_2)d—C(R_2)_2—$
(2) $—CH_2—O—CH_2—Y—$ or
(3) $—CH_2CH{=}CH—$
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $—CH_2—$, or $—(CH_2)_2—$,
wherein Q is



wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and R_{13} is as defined above,
wherein R_1 is
(1) $—COOR_3$
(2) $—CH_2OH$
(3) $—CH_2N(R_{19})(R_{18})$

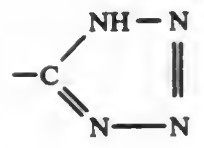


$$-\overset{O}{\overset{\|}{C}}-N(R_9)\ (R_{18})\text{ or}$$

(4)

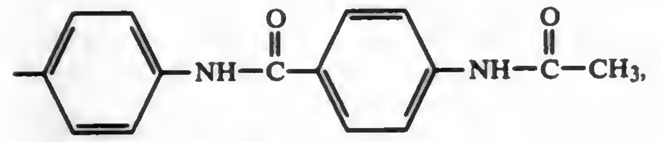
-continued

(5)

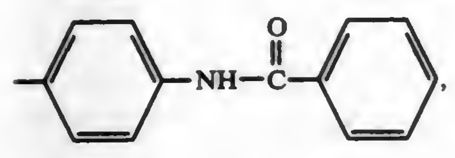


wherein R_3 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,

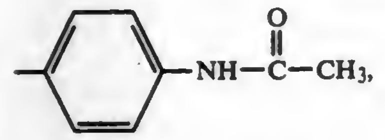
(g)



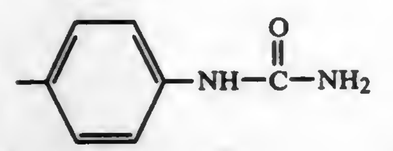
(h)



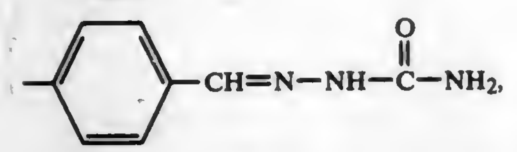
(i)



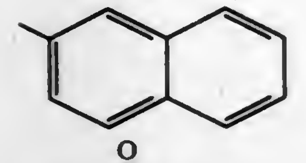
(j)



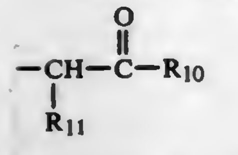
(k)



(l)



(m)

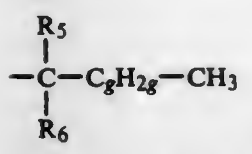


$-\underset{R_{11}}{\underset{|}{CH}}-\overset{O}{\overset{\|}{C}}-R_{10}$

wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_{11} is hydrogen or benzoyl, or (n) a pharmacologically acceptable cation, wherein R_8 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive;

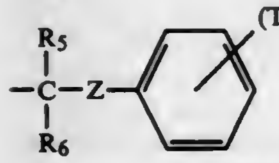
wherein R_4 is

(1)



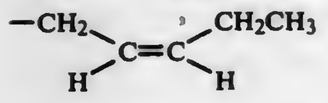
$-\overset{R_5}{\overset{|}{\underset{R_6}{\underset{|}{C}}}}-C_gH_{2g}-CH_3$

(2)



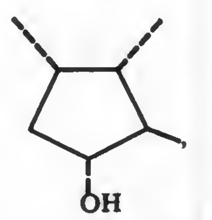
or

(3)

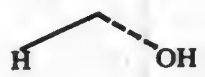


wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_2 is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the phenyl ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7-$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;

wherein R_{19} is chloro, bromo, or iodo with the proviso that R_{19} is not bromo when $\textcircled{R_{20}}$ is



Q is



L is $-(CH_2)_3-$, R_4 is n-pentyl, and X is $-C\equiv C-$; and wherein X is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) $-C\equiv C-$ or
(4) $-CH_2CH_2-$.

4,191,825
DIACYLOXYACIDS DERIVED FROM ACID S, AN ANTIBIOTIC PRODUCED BY *POLYANGIUM CELLULOSUM* VAR. *FULVUM*

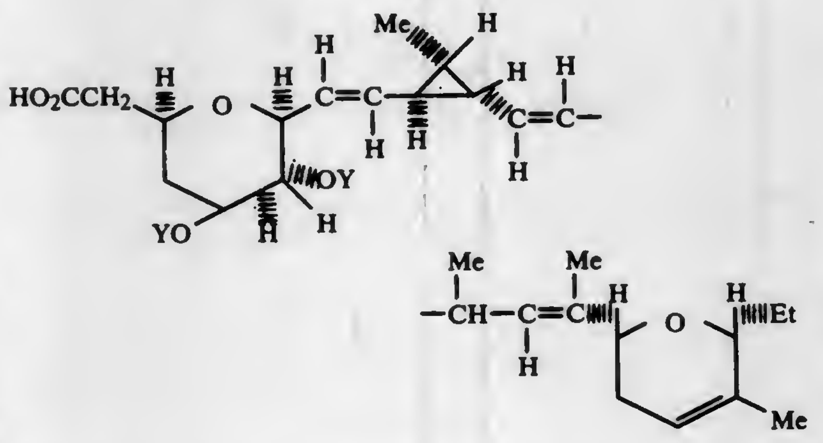
David T. Connor, Ann Arbor, Mich.; Samuel M. Ringel, Rockaway; Sidney Roemer, Flanders, both of N.J., and Maximillian von Strandtmann, New Castle, Del., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 765,568, Feb. 4, 1977, Pat. No. 4,138,550, which is a continuation-in-part of Ser. No. 693,400, Jun. 7, 1976, abandoned. This application Oct. 5, 1978, Ser. No. 948,854

Int. Cl.^{2} C09B *23/00*

U.S. Cl. 542—430 **5 Claims**

1. A compound having the formula I:



wherein Y is an acyl group derived from formic acid or derived from a lower alkyl carboxylic acid having from 3 to 7 carbon atoms.

4,191,826
BISPIPERAZIDO PHOSPHORUS ACID ESTERS

Johny C. Hermans, Wespelaar, Belgium, assignor to s.a. Texaco Belgium n.v., Brussels, Belgium

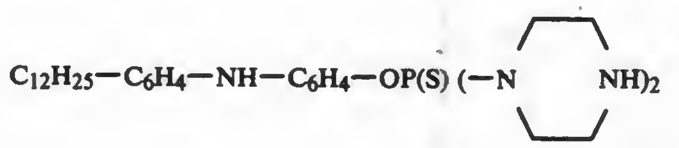
Continuation of Ser. No. 628,288, Nov. 3, 1975, Pat. No. 4,081,445. This application Mar. 27, 1978, Ser. No. 890,334

Claims priority, application United Kingdom, May 21, 1975, 21796/75

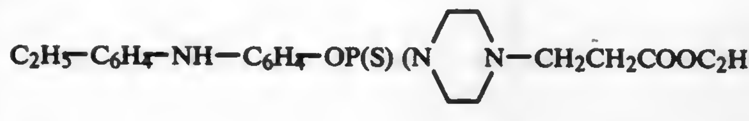
Int. Cl.^{2} C07F *9/65*

U.S. Cl. 544—337 **3 Claims**

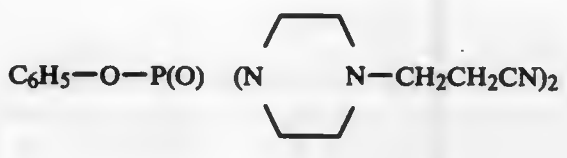
1\.



2\.



3\.



4,191,827
SUBSTITUTED 4-HYDROXY PYRIDONES

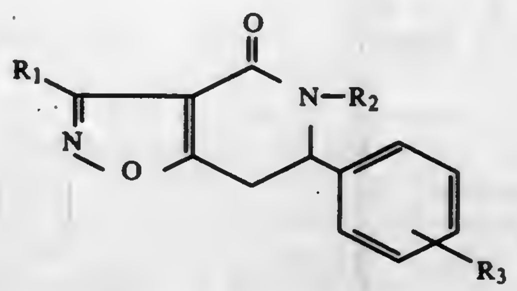
Jeffrey Nadelson, Denville, N.J., assignor to Sandoz, Inc., East Hanover, N.J.

Division of Ser. No. 819,006, Jul. 26, 1977, Pat. No. 4,131,679. This application Sep. 18, 1978, Ser. No. 943,444

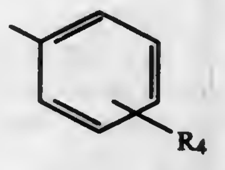
Int. Cl.^{2} C07D *498/04*

U.S. Cl. 546—116 **1 Claim**

1. A compound of the formula



wherein R_1 is straight chain lower alkyl or



where
R_4 is hydrogen or halo having an atomic weight of about 19 to 36, and
R_2 is straight chain lower alkyl, and
R_3 is hydrogen or halo as defined above,
or a pharmaceutically acceptable salt thereof.

4,191,828
PROCESS FOR PREPARING 2-(2,2-DICYCLOHEXYLETHYL)PIPERIDINE

Stephen W. Horgan; Frank P. Palopoli, both of Montgomery, Ohio, and David L. Wenstrup, Edgewood, Ky., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Apr. 14, 1976, Ser. No. 677,036

Int. Cl.^{2} C07D *24/02*

U.S. Cl. 546—185 **1 Claim**

1. A process for the preparation of 2-(2,2-dicyclohexylethyl)piperidine which comprises reducing a glacial acetic acid solution of 2-(2,2-diphenylethenyl)pyridine with hydrogen at a pressure of 40 atmospheres and a temperature of about 115° C. in the presence of a 5 percent rhodium-on-carbon catalyst until hydrogen uptake ceases, said catalyst being present in a ratio of 0.5 parts of rhodium to 100 parts of said 2-(2,2-diphenylethenyl)pyridine, filtering said catalyst to obtain a clear filtrate, evaporating said filtrate to a residue, dissolving said residue in acetone, adding a solution of maleic acid dissolved in said solvent and recovering the precipitated 2-(2,2-dicyclohexylethyl)piperidine maleate therefrom.

4,191,829
HINDERED PIPERIDINE CARBOXYLIC ACIDS AND METAL SALTS THEREOF

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

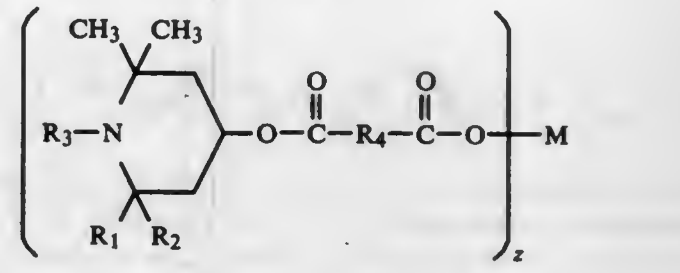
Division of Ser. No. 800,978, May 26, 1977, Pat. No. 4,139,520, which is a division of Ser. No. 592,006, Jun. 30, 1975, Pat. No. 4,031,095. This application Apr. 25, 1978, Ser. No. 899,958

The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.

Int. Cl.^{2} C07D *211/46*

U.S. Cl. 546—222 **17 Claims**

1. A compound of the formula



wherein
R_1 and R_2 independently of each other are straight-or branched-chain alkyl having from 1 to 6 carbon atoms, or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group,
R_3 is hydrogen, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 to 4 carbon atoms propargyl, benzyl, or benzyl substituted with one or two methyl groups,
R_4 is straight-chain alkenylene of 2 to 4 carbon atoms, 1,2-disubstituted cycloalkylene or cycloalkenylene having 4 to 6 carbon atoms, 2,3-disubstituted bicycloalkylene or bicycloalkenylene having 7 to 8 carbon atoms or 1,2-, 1,3- or 1,4-disubstituted phenylene, or a straight-chain alkylene of 1 to 4 carbon atoms substituted by alkyl or alkenyl of 1 to 18 carbon atoms, provided that the straight-chain alkylene substituted by alkyl has more than 8 carbon atoms,
M is hydrogen or a metal selected from the group consisting of barium, calcium, magnesium, sodium, potassium, and
z has a value of from 1 to 4, the value of z being the same as the available valence of M.

2. A compound according to claim 1 wherein R_1 and R_2 are each methyl.

14. A compound according to claim 2 which is O-mono-(2,2,6,6-tetramethylpiperidin-4-ol)phthalate.

4,191,830
SUBSTITUTED TETRAHYDROBENZOTHIOPHENES

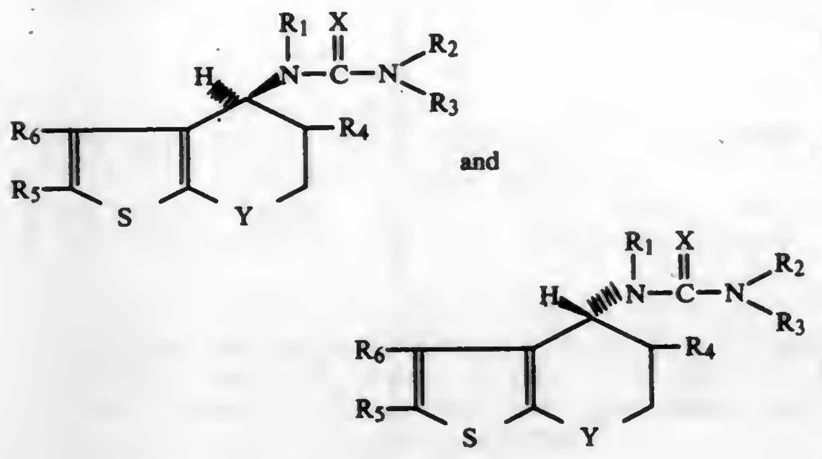
Goro Asato, Titusville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 912,813, Jun. 5, 1978, Pat. No. 4,156,670, which is a continuation of Ser. No. 699,431, Mar. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 532,449, Dec. 13, 1974, abandoned, which is a continuation-in-part of Ser. No. 436,827, Jan. 25, 1974, abandoned. This application Mar. 8, 1979, Ser. No. 18,694

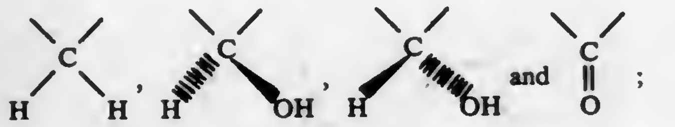
Int. Cl.² C07D *409/12*

U.S. Cl. 546—274 **8 Claims**

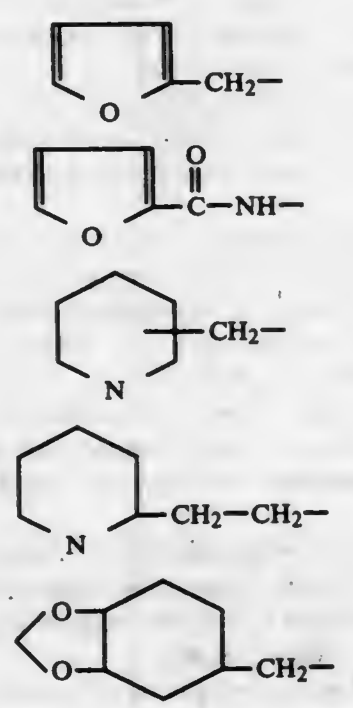
1. A compound selected from the group consisting of those of the formulae:



wherein X is oxygen or sulfur; Y is a divalent radical selected from the group consisting of those of the formulae:



R₁ is hydrogen or alkyl C_1–C_4; R₃ is selected from the group consisting of hydrogen, alkyl C_1–C_4, cycloalkyl C_3–C_6, allyl, 2-propynyl, benzyl and β-phenethyl; R₄ is hydrogen or alkyl C_1–C_4; R₅ is hydrogen, chloro, bromo or iodo; R₆ is hydrogen or alkyl C_1–C_4; R₂ is selected from the group consisting of the substituents listed in the following table:



4,191,831
IMIDAZOLYLETHOXY DERIVATIVES OF PYRIDIN-5-METHANOLS

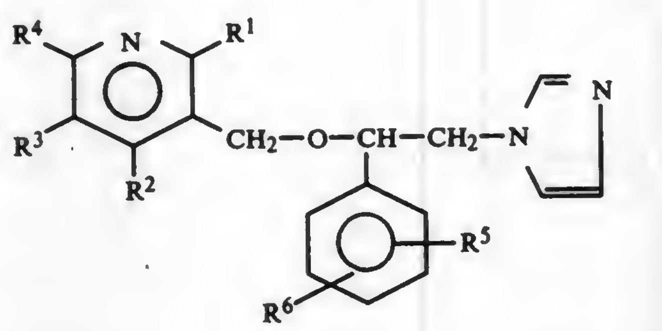
Hans Hoehn, Tegernheim, Fed. Rep. of Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 25, 1978, Ser. No. 954,730

Int. Cl.² C07D *401/12*

U.S. Cl. 546—278 **10 Claims**

1. A compound of the formula



wherein

R¹ to R⁶ each is hydrogen, lower alkyl, lower alkoxy, lower alkylthio, hydroxy or halogen;

and acid addition salts thereof.

4,191,832
SEPARATION OF SYN AND ANTI OXIMES OF 1-SULFONYL-2-AMINOBENZIMIDAZOLES

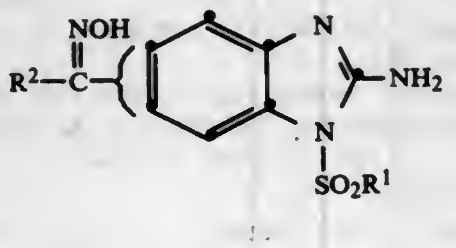
Kenneth S. Su, Indianapolis; Robert J. Templeton, and James H. Wikel, both of Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 12, 1979, Ser. No. 19,526

Int. Cl.² C07D *235/30*

U.S. Cl. 548—306 **6 Claims**

1. A process for separating syn and anti oximes of the formula



wherein:

R¹ is C_1–C_5 alkyl; and

R² is phenyl, or phenyl substituted by C_1–C_4 alkyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, chloro, bromo, iodo, nitro or trifluoromethyl, comprising dissolving a mixture of syn and anti oximes in a water mixcible organic solvent selected from acetone, methyl ethyl ketone, methanol, ethanol, isopropanol, acetonitrile, dimethylacetamide and dimethyl sulfoxide, adding a sufficient quantity of water to initate crystallization, and separating the precipitated anti oxime isomer.

4,191,833
ETHYLENICALLY UNSATURATED BLOCKED AROMATIC DIISOCYANATES

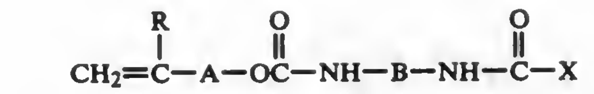
Harold A. Tucker, Shaker Heights, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 734,945, Oct. 22, 1976, Pat. No. 4,113,958, which is a division of Ser. No. 550,627, Feb. 18, 1975, Pat. No. 4,008,247, which is a division of Ser. No. 412,325, Nov. 2, 1973, abandoned. This application Jun. 19, 1978, Ser. No. 916,648

Int. Cl.² C07D *231/10*

U.S. Cl. 548—378 **3 Claims**

1. A compound of the formula

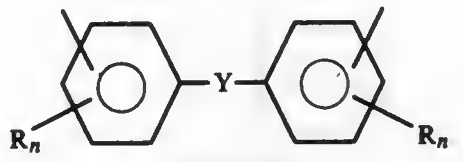


$$CH_2{=}\overset{\displaystyle R}{\overset{|}{C}}-A-O\overset{\displaystyle O}{\overset{\|}{C}}-NH-B-NH-\overset{\displaystyle O}{\overset{\|}{C}}-X$$

wherein R is hydrogen or a methyl or ethyl group;

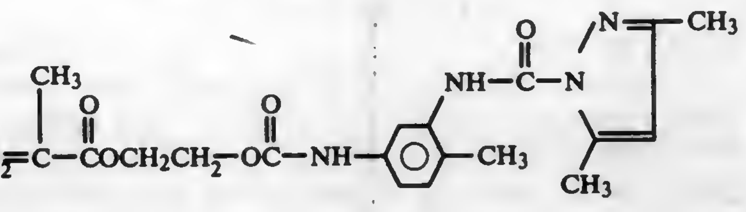
A is a carbonyloxyalkylene group having

2 to about 8 carbon atoms or an aralkylene group having 7 to about 12 carbon atoms; B is a bivalent aromatic group selected from the group consisting of arylene, naphthalene, and a group having the formula



where R is defined as above; Y is O, S, or $(CH_2)_n$; n=0 to 3; and X is the group remaining after a hydrogen atom is removed from the nitrogen atom of pyrazole.

3. A compound of claim 1 having the formula:



4,191,834
ETHYLENICALLY UNSATURATED BLOCKED AROMATIC DIISOCYANATES

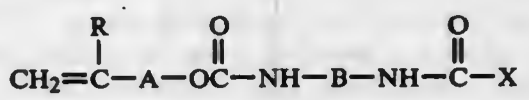
Harold A. Tucker, Shaker Heights, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 734,945, Oct. 22, 1976, Pat. No. 4,113,958, which is a division of Ser. No. 550,627, Feb. 18, 1975, Pat. No. 4,008,247, which is a division of Ser. No. 412,325, Nov. 2, 1973, abandoned. This application Jun. 19, 1978, Ser. No. 916,646

Int. Cl.² C07D *487/00*

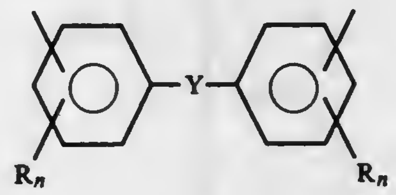
U.S. Cl. 548—305 **2 Claims**

1. A compound of the formula



$$CH_2{=}\overset{\displaystyle R}{\overset{|}{C}}-A-O\overset{\displaystyle O}{\overset{\|}{C}}-NH-B-NH-\overset{\displaystyle O}{\overset{\|}{C}}-X$$

wherein R is hydrogen or a methyl or ethyl group; A is a carbonyloxyalkylene group having 2 to about 8 carbon atoms or an aralkylene group having 7 to about 12 carbon atoms; B is a bivalent aromatic group selected from the group consisting of arylene, naphthalene, and a group having the formula



where R is defined as above; Y is O, S, or $(CH_2)_n$; n = 0 to 3; and X is the group remaining after a hydrogen atom is removed from the nitrogen atom of benzimidazole.

2. A compound of claim 1 wherein R is hydrogen or methyl group; B is phenylene, tolylene, naphthalene, or a group where Y is $(CH_2)_n$, and n = 0 to 1.

4,191,835
BIS-ANTHRANILATES OF UREA DERIVATIVES

Jürgen Habermeier, Pfeffingen, and Roland Moser, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

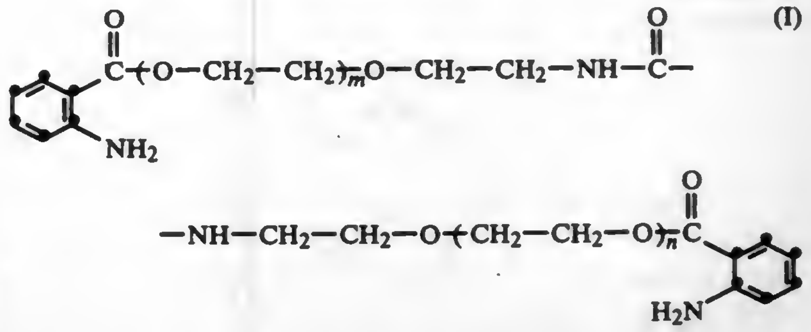
Filed Dec. 4, 1978, Ser. No. 966,425

Claims priority, application Switzerland, Apr. 27, 1978, 4587/78

Int. Cl.² C07C *101/54;* **C08G** *59/54*

U.S. Cl. 560—49 **3 Claims**

1. A bis-anthranilate of the formula I



(I)

or a mixture of such bis-anthranilates, in which, in the formula, m and n are each 0 or a number from 1 to 5 and the sum of m and n must be at least 1.

4,191,836
ANTHRANILATES OF POLYOXYETHYLATED CARBOXYLIC ACID

Jurgen Habermeier, Pfeffingen, and Roland Moser, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

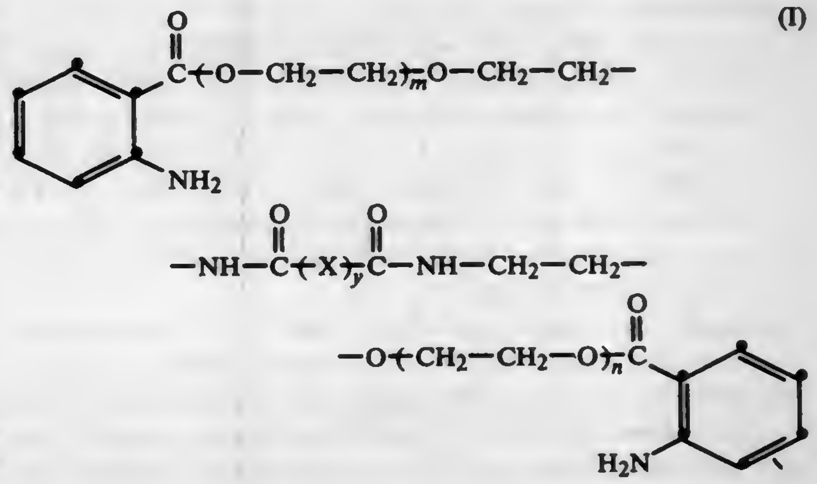
Filed Dec. 4, 1978, Ser. No. 966,420

Claims priority, application Switzerland, Apr. 27, 1978, 4586/78

Int. Cl.² C07C *101/54;* **C08G** *59/54*

U.S. Cl. 560—49 **7 Claims**

1. A bis-anthranilate of the formula I



(I)

or a mixture of such bis-anthranilates, wherein in the formula m and n are each 0 or a number from 1 to 5 and the sum of m and n must be at least 1, y is 0 or 1 and X is an alkylene having 1 to 8 C atoms, para- or meta-phenylene or para-cyclohexylene.

4,191,837
TRANS-2,3,13,14-TETRADEHYDRO-9-DEOXY-9-METHYLENE-ω-ARYL-PGF COMPOUNDS

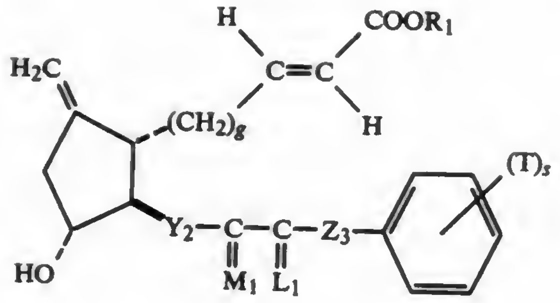
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 893,771, Apr. 5, 1978, Pat. No. 4,165,436. This application Aug. 11, 1978, Ser. No. 933,000

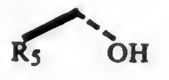
Int. Cl.² C07C *177/00*

U.S. Cl. 560—55 **14 Claims**

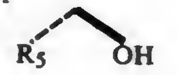
1. A prostaglandin analog of the formula



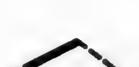
wherein Y_2 is —C≡C—;
wherein M_1 is

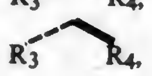


or

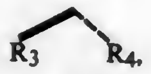


wherein R_5 is hydrogen or methyl;
wherein L_1 is

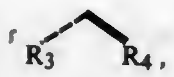




or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein g is 4, 5, or 6,

wherein Z_3 is oxa or $—(CH_2)_h—$,

wherein h is zero, one, two, or three; wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that Z_3 is oxa only when R_3 and R_4 are hydrogen or methyl, being the same or different; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,191,838

ACRYLOXY-ALKYLPROPANALS AND METHACRYLOXY-ALKYLPROPANALS

Franz Merger, Frankenthal; Friedrich Towae, and Erich Penzel, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

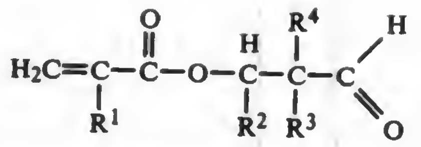
Filed May 1, 1978, Ser. No. 901,422

Claims priority, application Fed. Rep. of Germany, May 16, 1977, 2722097

Int. Cl.² C07C *69/54*

U.S. Cl. 560—205 **5 Claims**

1. An acryloxy-alkylpropanal or methacryloxy-alkylpropanal of the formula (1)



$$H_2C{=}\underset{R^1}{C}-\overset{O}{\overset{\|}{C}}-O-\overset{H}{\underset{R^2}{C}}-\overset{R^4}{\underset{R^3}{C}}-\overset{H}{C}{=}O \qquad (1)$$

where R^1 is a substituent selected from —H and CH_3, R^2 is a substituent selected from —H and alkyl of 1 to 3 carbon atoms, R^3 is alkyl of 1 or 2 carbon atoms and R^4 is alkyl of 1 to 4 carbon atoms.

4,191,839

DIRECT OXIDATION OF TOLUENE TO BENZYLIDENE DIACETATE

James E. Lyons, Wallingford; Robert W. Shinn, Aston, and George Suld, Springfield, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Mar. 27, 1978, Ser. No. 890,175

Int. Cl.² C07C *67/05, 69/16*

U.S. Cl. 560—241 **6 Claims**

1. A process for the production of benzylidene diacetate which comprises reacting toluene with air or oxygen at elevated temperatures of from about 75° to 200° C. and at pressures of from about 1 to 50 atmospheres in the presence of acetic anhydride and a strong acid catalyst consisting essentially of an alkyl or aryl sulfonic acid, an alkyl or aryl phosphonic acid, or phosphoric acid.

4,191,840

OXAMIC ACID DERIVATIVES

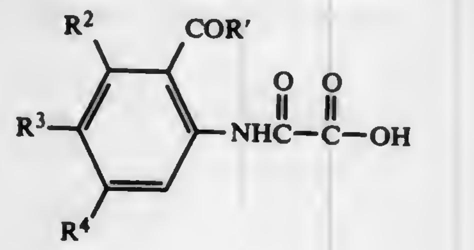
John H. Sellstedt, Pottstown; Charles J. Guinosso, King of Prussia, both of Pa., and Albert J. Begany, Tucson, Ariz., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 834,614, Sep. 19, 1977, Pat. No. 4,154,961, which is a continuation-in-part of Ser. No. 669,565, Mar. 23, 1976, Pat. No. 4,069,343, which is a continuation-in-part of Ser. No. 542,465, Jan. 20, 1975, Pat. No. 3,966,965, which is a continuation-in-part of Ser. No. 344,466, Mar. 23, 1973, abandoned. This application Feb. 7, 1979, Ser. No. 10,101

Int. Cl.² C07C *101/42*

U.S. Cl. 562—453 **7 Claims**

1. A compound of the formula:



wherein

R^1 is amino or lower(alkyl)amino;

R^2 in N-mono- or di-lower alkylamino(lower)alkoxy or mono- or di-lower alkylamino;

R^3 is hydrogen, lower alkyl, lower alkoxy, halo or nitro;

R^4 is hydrogen, lower alkyl or lower alkoxy;

or a pharmaceutically acceptable salt thereof.

4,191,841

PROCESS FOR MANUFACTURING 4-HYDROXY-3,5-DIMETHOXY BENZOIC ACID FROM 3,4,5-TRIMETHOXYBENZOIC ACID

Michel Soreau, Montmorency, and Yani Christidis, Paris, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Mar. 23, 1979, Ser. No. 23,376

Claims priority, application France, Apr. 5, 1978, 78 10053

Int. Cl.² C07C *65/04*

U.S. Cl. 562—475 **5 Claims**

1. Process for manufacturing 4-hydroxy-3,5-dimethoxybenzoic acid by the demethlylation of 3,4,5-trimethoxybenzoic acid, comprising carrying out said demethylation in the presence of an excess of alkali hydroxide in an amount of ethylene glycol just sufficient to obtain a sufficiently fluid heterogeneous medium in the course of the operation, distilling off the ethylene glycol monomethyl ether and the water produced progressively with their formation, separating the resulting 4-hydroxy-3,5-dimethoxybenzoic acid by acidification by means of a strong acid and crystallizing the product.

4,191,842

PROTECTED ALCOHOLS

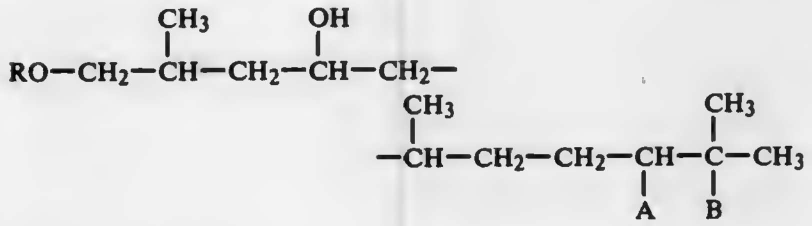
Noal Cohen, Montclair, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 802,747, Jun. 2, 1977, Pat. No. 4,151,205, which is a division of Ser. No. 639,011, Dec. 9, 1975, Pat. No. 4,051,153, which is a continuation-in-part of Ser. No. 544,163, Jan. 27, 1975, Pat. No. 4,000,161. This application Jan. 17, 1979, Ser. No. 4,102

Int. Cl.² C07C *43/04*

U.S. Cl. 568—662 **3 Claims**

1. A compound of the formula:



$$RO-CH_2-\overset{CH_3}{\overset{|}{CH}}-CH_2-\overset{OH}{\overset{|}{CH}}-CH_2-\overset{CH_3}{\overset{|}{CH}}-CH_2-CH_2-\underset{A}{\underset{|}{CH}}-\overset{CH_3}{\overset{|}{\underset{B}{\underset{|}{C}}}}-CH_3$$

where R is tetrahydropyranyl, 4-methyl-5,6-dihydro-2H-pyranyl, arylmethyl, alpha-lower alkoxy-lower alkyl, tri(loweralkyl)silyl, or t-butyl; A and B are individually hydrogen or taken together form a carbon to carbon bond.

4,191,843

PREPARATION OF BISPHENOLS

Ariën Kwantes, and Pieter A. Gautier, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 7, 1978, Ser. No. 958,576

Claims priority, application United Kingdom, Nov. 9, 1977, 46644/77

Int. Cl.² C07C *37/20, 39/16, 37/00*

U.S. Cl. 568—728 **5 Claims**

1. In a process for the preparation of bisphenols comprising reacting, in a reaction zone, at least 2 moles of a phenol with a carbonyl compound, at a temperature of from 40° to 95° C., in the presence of an acid ion exchanger, optionally partially modified with a compound having an acidic reacting group and a mercaptan group, and recovering the bisphenols from the reaction zone effluent, the improvement which comprises contacting the reaction zone effluent with an acid ion exchanger in metal salt form and/or a weak base ion exchanger.

4,191,844

HYDRODEALKYLATION PROCESS AND CATALYST

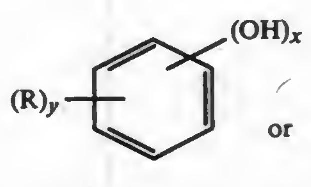
Geir Bjornson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1978, Ser. No. 902,651

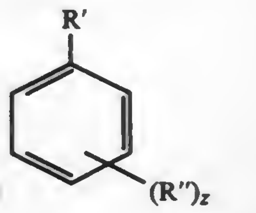
Int. Cl.² C07C *3/00*

U.S. Cl. 568—805 **11 Claims**

1. A process for the dealkylation of aromatic compounds which comprises contacting hydrogen with at least one substituted monocyclic aromatic compound having at least one of alkyl and hydroxy substituents having the general formulas



or



wherein x is 1 to 3, y is 1 to 5, z is 0 to 5, and the sum of x and y is 2 to 6, and wherein R and R′ are alkyl radicals having from 1 to 6, inclusive, carbon atoms, and R″ is hydrogen or a hydrocarbyl radical having from 1 to 6 carbon atoms selected from alkyl and cycloalkyl radicals in the presence of a catalyst consisting essentially of (a) 1-35 weight percent of manganese oxide and (b) the balance of a Group IIA metal oxide under conditions of temperature and pressure sufficient to cause disproportionation and dealkylation to occur at the ortho and para positions of the aromatic ring and produce dealkylated products and small amounts of non-recyclable dehydroxylated products such as benzene, toluene and xylenes, and the like.

4,191,845

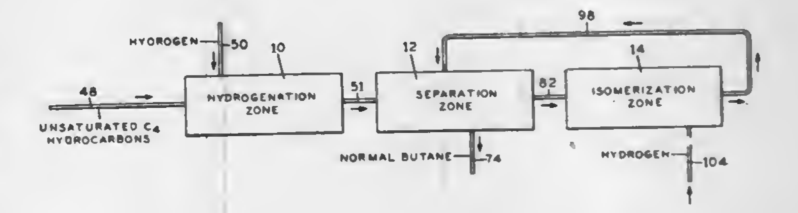
PROCESS FOR CONVERTING UNSATURATED C_4 HYDROCARBONS INTO NORMAL BUTANE

Jacob N. Rubin, Newton Highlands, and Frederick B. Seufert, Arlington, both of Mass., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 896,460, Apr. 14, 1978, abandoned. This application Jul. 25, 1978, Ser. No. 927,919

Int. Cl.² C07C *5/04, 5/28, 3/30*

U.S. Cl. 585—253 **36 Claims**



1. A process of converting unsaturated C_4 hydrocarbons into normal butane which comprises:
   a. passing a stream consisting essentially of unsaturated C_4 hydrocarbons in contact with hydrogen in a hydrogenation zone to react said hydrogen and said unsaturated C_4 hydrocarbons to form a stream of normal butane and isobutane;
   b. discharging said normal butane and isobutane stream from said hydrogenation zone and introducing said discharged normal butane and isobutane stream into a separation zone to separate said normal butane from said isobutane;
   c. discharging and recovering said normal butane from said separation zone;
   d. passing said isobutane from said separation zone into an isomerization zone to convert a portion of said isobutane into normal butane so that a stream of normal butane and isobutane is produced; and
   e. thereafter returning said stream of normal butane and isobutane produced in said isomerization zone into said separation zone to separate and recover the normal butane produced in said isomerization zone.

4,191,846
CATALYTIC DEHYDROGENATION PROCESS

Floyd Farha, Jr., and Lewis E. Drehman, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 415,943, Nov. 15, 1973, Pat. No. 3,957,688. This application Jan. 12, 1976, Ser. No. 648,448

Int. Cl.^{2} C07C *15/00*

U.S. Cl. 585—440 **14 Claims**

1. A process for the dehydrogenation of a dehydrogenatable organic compound having from 2 to 12 carbon atoms per molecule in the presence of steam and in the absence of free oxygen which comprises contacting said compound under dehydrogenation conditions with a catalyst composition consisting essentially of:

(a) a metal selected from the group consisting of nickel, palladium, platinum, iridium, osmium and mixtures thereof;

(b) tin; and,

(c) a metal selected from the group consisting of gold and silver and mixtures thereof;

each of said (a), (b) and (c) being supported on a support selected from the group consisting of alumina, silica, magnesia, zirconia, alumino-silicates, Group II aluminate spinels and mixtures thereof.

ELECTRICAL

4,191,847
CIRCUIT ARRANGEMENT FOR DETERMINING INPUT SIGNALS WHICH EXCEED A GIVEN MINIMUM DURATION, IN PARTICULAR FOR TELEPRINTER EXCHANGES

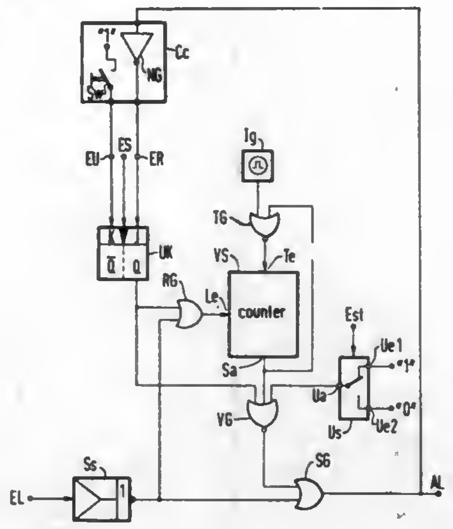
Max Mayer, Unterpfaffenhofen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 938,984

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742525

Int. Cl.^{2} H03K *9/08*

U.S. Cl. 178—3 **5 Claims**



1. In a circuit arrangement for determining whether input signals exceed a predetermined minimum duration, in which a delay circuit is triggered by the relevant input signal and a logic circuit is connected to receive the output signals of the delay circuit and connected to also receive the relevant input signal and emits an output signal in response to the duration of the input signal being at least equal to the time delay of the delay circuit, the improvement in combination therewith wherein

said delay circuit comprises a counter including first and second inputs for receiving input control signals and counting signals, respectively, and an output;

and further comprising

another logic circuit including a first input connected to said output of said counter, a second input for receiving control signals and an output connected to the first-mentioned logic circuit; and

control signal means providing first and second control signals, said control signal means including a first input connected to the output of the first-mentioned logic circuit, a second input for receiving the relevant input signal, and an output connected to said first input of said counter and to said second input of said other logic circuit and operable to provide said first control signal to release said counter to count in response to receipt of a first input signal and drive the first-mentioned logic circuit via said other logic circuit to produce an output signal upon reaching a predetermined count, and operable to provide said second control signal to maintain said counter in its rest condition so that the first-mentioned logic circuit remains in a transmissive state for incoming input signals.

4,191,848
TELETYPEWRITER MOTOR CONTROLLING

William M. Kahn, Digital Laboratories, 600 Pleasant St., Watertown, Mass. 02154

Filed Sep. 25, 1978, Ser. No. 945,203

Int. Cl.^{2} H04L *7/00;* **H04N** *1/32*

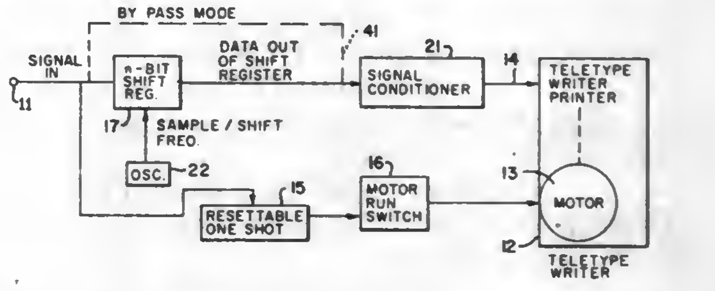
U.S. Cl. 178—4.1 R **10 Claims**

1. Teletypewriter motor controlling apparatus comprising, motor switching means for selectively enabling the teletypewriter motor,

an input terminal for receiving a teletypewriter signal,

means for periodically sampling the signal received on said input terminal to provide a sequence of sample signals characteristic of the received signal,

means responsive to the occurrence of a transition in a teletypewriter signal on said input terminal for enabling said switching means for a predetermined fixed period longer than the motor start interval for a teletypewriter motor to attain normal operating speed upon being energized after being in a stationary condition,



means for furnishing a fixed delay to the sample signals slightly greater than said motor start interval,

and means for furnishing the delayed sample signals to the input of a teletypewriter for enabling the latter to print the teletypewriter signal applied to said input terminal only after the teletypewriter motor is at normal operating speed.

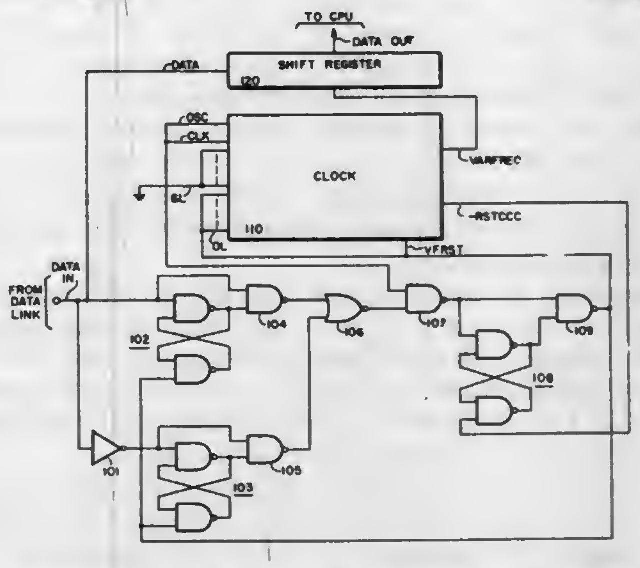
4,191,849
DATA SYNCHRONIZATION CIRCUIT

James J. Vrba, Berwyn, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 26, 1978, Ser. No. 955,281

Int. Cl.^{2} H04L *7/00*

U.S. Cl. 178—69.1 **9 Claims**



1. A data synchronization circuit for receiving data in an automatic identification of outward dialing system connected between a PABX and a telephone central office including a central processing unit, via a data link, said data synchronization circuit comprising:

a clock circuit including a controllable oscillator providing periodic pulses;

register means connected between said data link and said central processing unit and including an input circuit connection from said clock circuit operable in response to receipt of pulses from said clock circuit to store and forward data received via said data link, to said central processing unit;

first latching means connected to said data link for detecting binary state changes operated in response to said received data to produce a first output signal representing each detected state change;

gating means connected to said first latching means and to

said clock circuit for combining said first output signal and said periodic pulses to produce a second output signal;
second latching means connected between said gating means and said clock circuit, operated in response to said second output signal to transmit a reset signal to said clock circuit, whereby said clock circuit generates a clock pulse a fixed time period after each detection of a binary state change to operate said register means.

4,191,850
INTERFERENCES REDUCTION FOR USE IN AN FM RADIO RECEIVER

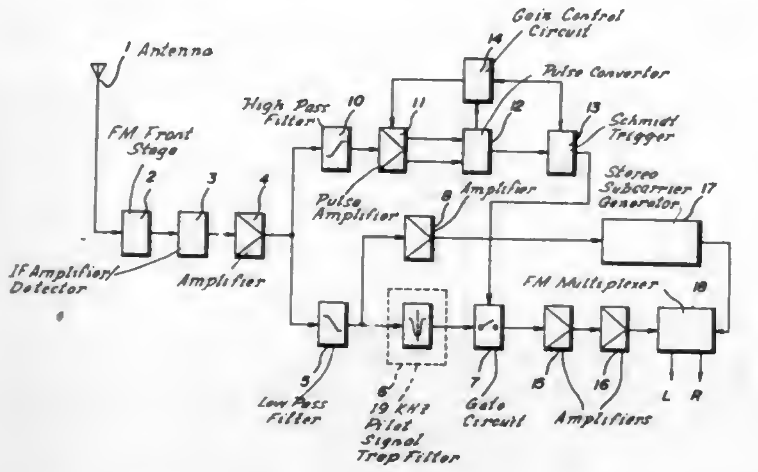
Eiji Tanada, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 16, 1978, Ser. No. 916,353

Claims priority, application Japan, Jun. 17, 1977, 52-72545; Aug. 18, 1977, 52-99250

Int. Cl.² H04H *5/00*

U.S. Cl. 179—1 GD **6 Claims**



1. An interference reduction circuit in an FM receiver wherein composite signals derived from an antenna of said receiver include information signals, FM pilot signals and interference signals, said circuit comprising:
first and second signal transmission paths which terminate at an FM multiplexer adjacent to the receiver output;
gate circuit means disposed in said first signal transmission path in series with said FM multiplexer for blocking said interference signals;
subcarrier generator means disposed in said second signal transmission path in series with said FM multiplexer;
pilot signal trap filter means disposed in said first signal transmission path in series with said gate circuit means and said FM multiplexer for attenuating said pilot signals in said first signal transmission path; and
control means coupled to said gate circuit means, said control means sensing the presence of interference signals and blocking the passage of said interference signals through said gate circuit means in response thereto.

4,191,851
FM NOISE SUPPRESSOR

Makoto Honma, Hamurs, and Takao Inoue, Kodaira, both of Japan, assignors to Hitachi, Ltd., Japan

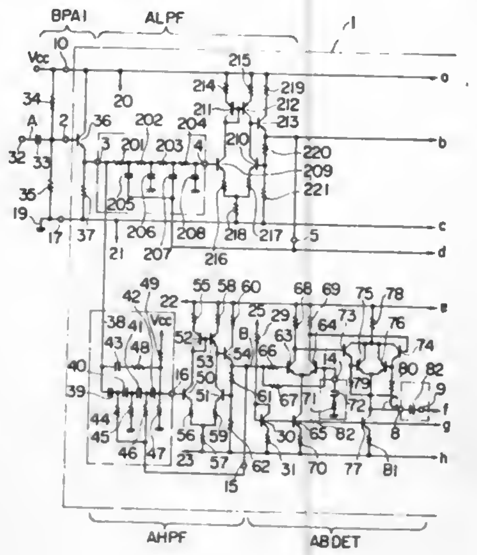
Filed Mar. 28, 1978, Ser. No. 891,032

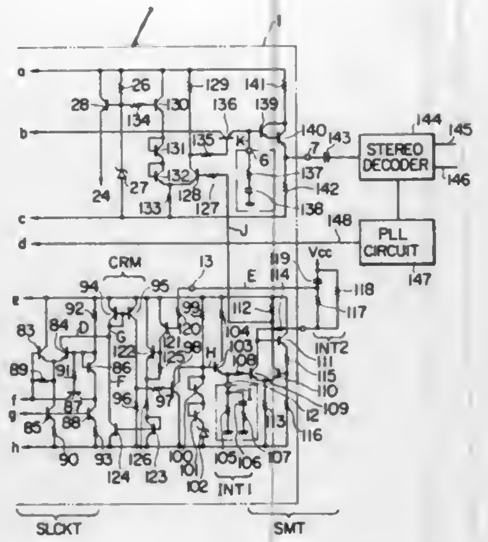
Claims priority, application Japan, Mar. 30, 1977, 52/34577

Int. Cl.² H04H *5/00*

U.S. Cl. 179—1 GD **2 Claims**

1. In an FM stereo demodulation system having
detection means which receives a detected stereo composite signal and which detects a noise pulse in said detected stereo composite signal;
gate means which receives said detected stereo composite signal at a first terminal thereof and a control terminal thereof being controlled by a control signal obtained from said detection means so as to derive a noise-suppressed signal from a second terminal thereof;
reproduction means which receives said detected stereo composite signal without intervention of said gate means and which reproduces a subcarrier signal for stereo signal demodulation in synchronism with a pilot signal in said detected stereo composite signal; and
an FM stereo demodulation means which receives said noise-suppressed signal and said subcarrier signal so as to derive a left signal and a right signal;
the improvement wherein
said reproduction means comprises a phase locked loop circuit which includes





a phase comparator circuit having a first input coupled to receive said pilot signal and a second input;
a low-pass filter circuit coupled to the output of said phase comparator circuit,
a voltage controlled oscillator circuit coupled to the output of said low-pass filter circuit, and
a frequency divider circuit coupled to the output of said voltage controlled oscillator circuit, the output of said frequency divider circuit providing a 19 KHz signal that is coupled to the second input of said phase comparator circuit.

4,191,852
STEREOPHONIC SENSE ENHANCING APPARATUS

Masao Nishikawa, Seto, Japan, assignor to Shin-Shirasuna Electric Corporation, Nagoya, Japan

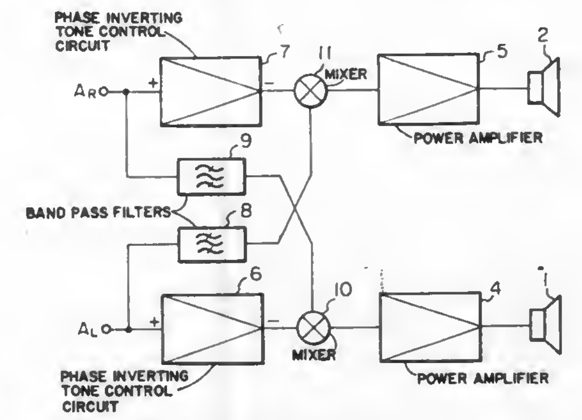
Filed May 16, 1978, Ser. No. 906,564

Int. Cl.² H04R *5/04*

U.S. Cl. 179—1 G **5 Claims**

1. A stereophonic reproducing apparatus for vectorially composing left and right sound signals applied to left and right loudspeakers, respectively, comprising:
(a) a first and a second phase reversing circuits each having inputs for receiving the left and the right sound input signals and output;

(b) a first band-pass filter having an input connected to the input of said first phase reversing circuit and an output;
(c) a second band-pass filter having an input connected to the input of said second phase reversing circuit and an output;
(d) a first mixer circuit having a first input connected to the output of said first phase reversing circuit, a second input connected to the output of said second band-pass filter, and an output; and
(e) a second mixer circuit having a first input connected to the output of said second phase reversing circuit, a second input connected to the output of said first band-pass filter, and an output.



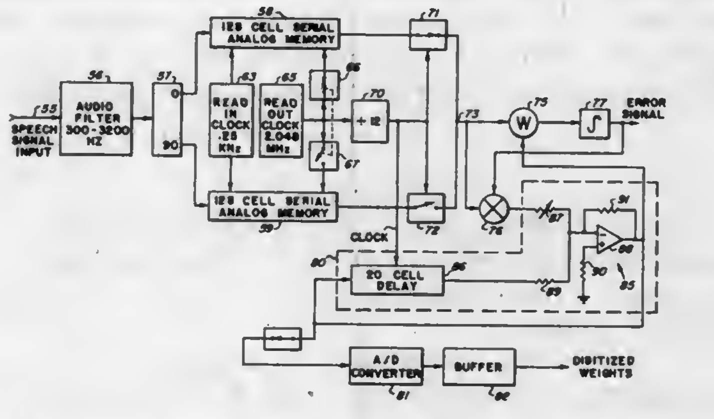
4,191,853
SAMPLED DATA FILTER WITH TIME SHARED WEIGHTERS FOR USE AS AN LPC AND SYNTHESIZER

Gregory H. Piesinger, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Oct. 10, 1978, Ser. No. 950,203

Int. Cl.² G10L *1/00*

U.S. Cl. 179—1 SA **20 Claims**



1. A speech analyzer comprising:
(a) delay means connected to receive an input signal and provide a series of output signals simulating a multitap delay line;
(b) weighting means adjustable to substantially null out signals applied thereto and provide output signals indicative of the weighting means adjustment and any error; and
(c) time sharing means coupling the weighting means to the delay means for providing a weighting means adjustment and an error signal for each of the series of output signals.

4,191,854
TELEPHONE-COUPLED VISUAL ALPHANUMERIC COMMUNICATION DEVICE FOR DEAF PERSONS

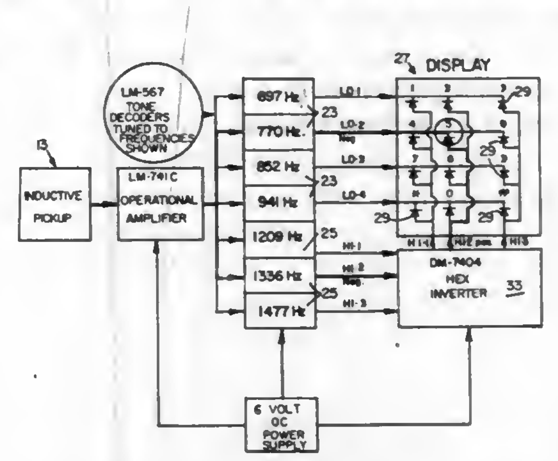
George A. Coles, 2917 S. Fifth St., Springfield, Ill. 62703

Filed Jan. 6, 1978, Ser. No. 867,535

Int. Cl.² H04M *11/06*

U.S. Cl. 179—2 R **3 Claims**

1. A receiver for converting alphanumeric two-frequency electrical signals transmitted from a push-button telephone to visible signals at a message-receiving station, said receiver comprising: an inductive pickup easily removably attachable to a telephone constituting part of said message-receiving station, an amplifier having its input connected to said inductive pickup for amplifying received electrical signals, a bank of differently tuned high-frequency detectors, a bank of differently tuned low-frequency detectors, said amplifier having its output connected to the input of said detectors, a display having a plurality of row conductors and a plurality of column conductors, a plurality of cross-points each formed by the intersection of a row conductor and a column conductor, a plurality of light-emitting diodes each connected between a row conductor and a column conductor at each cross-point, each high-frequency detector being connected to one of said column conductors and each low-frequency detector being connected to one of said row conductors, an inverter unit inserted between either the high-frequency or the low-frequency bank of detectors and the its connected conductors, and a power supply for said receiver, said receiver being electrically conductively isolated from the telephones at the sending and receiving stations.



4,191,855
FULL DUPLEX AUDIO RESPONSE DEVICE

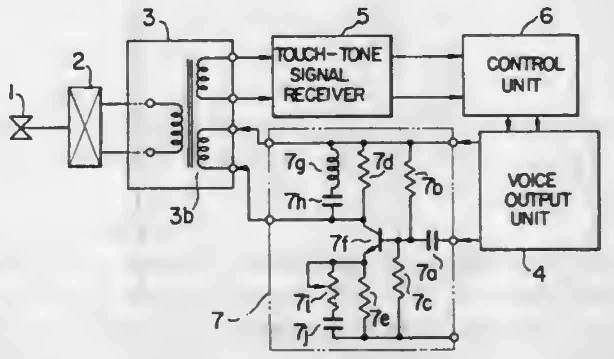
Hisao Sakai, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Aug. 26, 1977, Ser. No. 828,101

Claims priority, application Japan, Aug. 26, 1976, 51-101883

Int. Cl.² H04M *11/00*

U.S. Cl. 179—2 A **4 Claims**



1. A full duplex audio response device for use with a terminal set such as a push button calling telephone set for generating push button signals and receiving voice signals, comprising:
push button signal receiving means;
voice output means for generating a voice output signal;
a hybrid circuit coupled between said push button signal receiving means and said terminal set, wherein said push button signal receiving means receives push button from said terminal set through said hybrid circuit;
a band-pass filter coupled between said voice output means and said hybrid circuit for filtering out frequency components of the voice output signal which lie within the bandwidth of a particular push button signal, wherein said voice output signal is passed to said terminal set through said band-pass filter and said hybrid circuit;

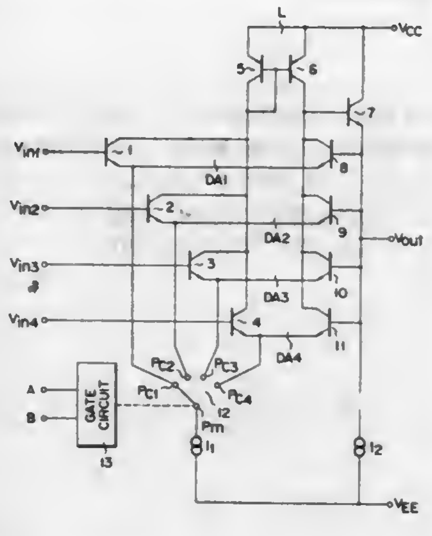
control means coupled between said push button signal receiving means and said voice output means to control said voice output means in accordance with push button signals received by said push button receiving means and to terminate transmission of said voice output signal upon said voice output means only upon the reception of said particular push button signal;

wherein when said hybrid circuit simultaneously receives said voice output signal through said band-pass filter and said particular push button signal from said terminal set, said particular push button signal will activate the control means to terminate transmission of the voice output signal without interference between the voice output signal and the particular push button signal.

4,191,856
ANALOG MULTIPLEXER

Katsumi Nagano, and Yasuo Taguchi, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 28, 1978, Ser. No. 929,022
Claims priority, application Japan, Jul. 29, 1977, 52-91150
Int. Cl.² H03K *19/40;* **H04J** *3/04*
U.S. Cl. 179—15 A **6 Claims**

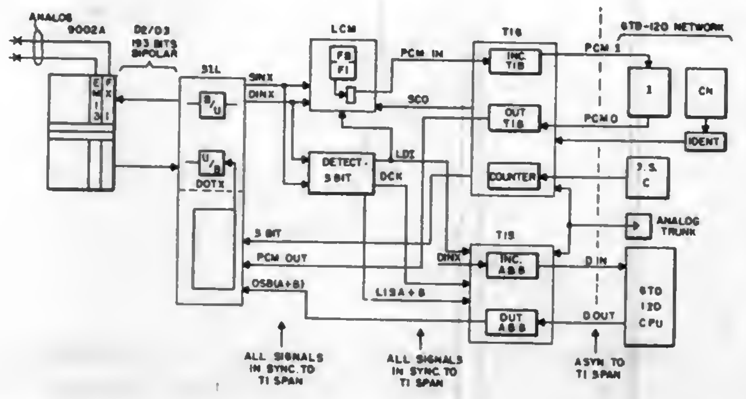


1. An analog multiplexer comprising at least one differential circuit composed of first and second bipolar transistors the emitters of which are connected in common, an analog signal input terminal connected to the base of said first bipolar transistor, an analog output terminal connected to the base of said second bipolar transistor, a load composed of a current mirror connected between the collectors of said first and second bipolar transistors and one terminal of a power source, a first constant-current source, a switch circuit with one terminal connected to the common junction of the emitters of said first and second bipolar transistors and the other terminal connected to the other terminal of said power source through a first constantcurrent source, control circuit means for controlling the conductivity between said terminals of said switch circuit, output circuit means responsive to the signal at said collector of said second bipolar transistor for connecting said one terminal of the power source to said analog output terminal, and a second constant-current source connected between said analog output terminal and said other terminal of the power source.

4,191,857
DIGITAL TRUNK SUPERVISORY DECODER MULTIPLEXOR FOR GROUND START OR E&M SIGNALLING ON A COMMON T1 SPAN

Donald W. McLaughlin, Naperville; Julius Jusinskas, Jr., Glen Ellyn, both of Ill; assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 28, 1978, Ser. No. 946,890
Int. Cl.² H04J *3/12*
U.S. Cl. 179—15 BY **7 Claims**



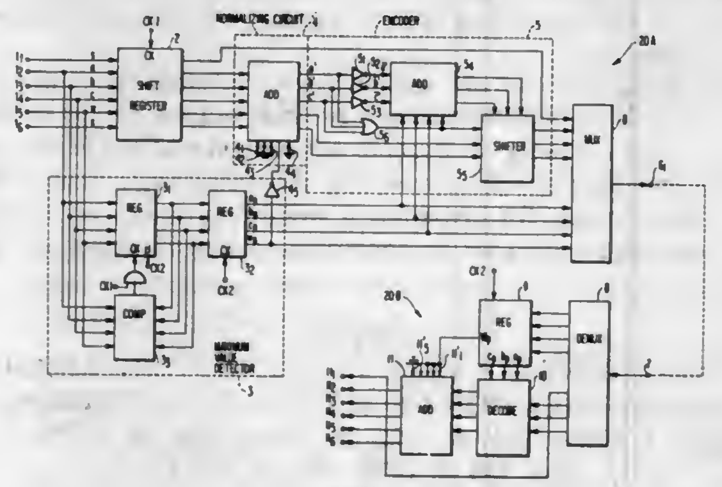
1. In a pulse code modulated control processor controlled time division communication switching system, a universal interface arrangement for the conversion of supervisory data from a first format utilized by a multi-channel carrier system to a second format utilized by said switching system and comprising:

- a first memory arranged to receive and store supervisory data incoming from said carrier system and including an output means, coding means having an output indicating the type of format utilized by said carrier system and also the supervisory format required by the trunks connected via said channels of said carrier systems;
- a plurality of sense points accessable by said central processor, a logic means connected to said coding means output and said first memory means output, responsive to said outputs to mark said sense points to indicate in proper format to said processor the incoming supervisory data.

4,191,858
BLOCK DIGITAL PROCESSING SYSTEM FOR NONUNIFORMLY ENCODED DIGITAL WORDS

Takashi Araseki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1978, Ser. No. 913,271
Claims priority, application Japan, Jun. 7, 1977, 52-67739
Int. Cl.² H03K *13/22*
U.S. Cl. 179—15.55 **8 Claims**



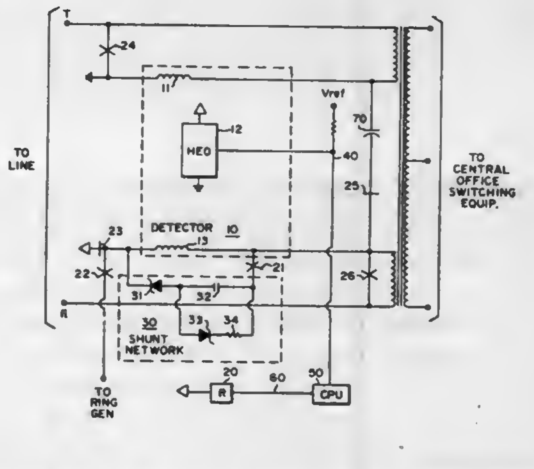
1. A block digital processing system for nonuniformly encoded digital words including a transmitter digital processor for encoding samples of a speech signal in blocks of a predetermined number of samples, and a receiver digital processor for decoding said encoded digital words into said speech signal, wherein said transmitter digital processor comprises:

- a plurality of input terminals adapted to receive nonuniformly encoded digital words which have been obtained by preliminarily encoding the respective samples of said speech signal and each of which consists of a sign bit to indicate the polarity of said sample, a plurality of segment bits to indicate a range to which the amplitude value of said sample belongs and a plurality of mantissa bits to indicate at what location in said segment said amplitude value exists;
- shift register means connected to said input terminals for delaying said digital words by a period of n times the sampling period of said speech signal to temporarily store said samples equal in number to said n (n being an ineger);
- a maximum value detector connected to said shift register means for detecting a first digital word indicating the maximum amplitude value among said n digital words representing said samples and stored in said shift register means;
- means connected to said maximum value detector for generating a correction value so that a second digital word consisting of said segment bits and at least the most significant bit of said mantissa bits from said shift register means can be converted into a third digital word which includes said segment bits in said first digital word representative of the maximum amplitude value and which includes a maximum value that can be represented by said at least the most significant bit in said first digital word and that is concatenated subsequently to the least significant bit of said segment bits;
- normalizing means receiving said correction value and connected to said shift register means for converting the second digital word given from said shift register means into a normalized digital word with said correction value;
- reencoder means responsive to said third digital word from said normalizing means for uniformly quantizing said third digital word; and
- a multiplexer for transmitting the output code of said reencoder means and said block code in a multiplex fashion.

4,191,859
LOOP, DIAL PULSE AND RING TRIP DETECTION CIRCUIT WITH CAPACITIVE SHUNT NETWORK

Robert J. Sabon, Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 1, 1978, Ser. No. 956,547
Int. Cl.² H04B *3/46;* **H04M** *3/02*
U.S. Cl. 179—18 FA **7 Claims**



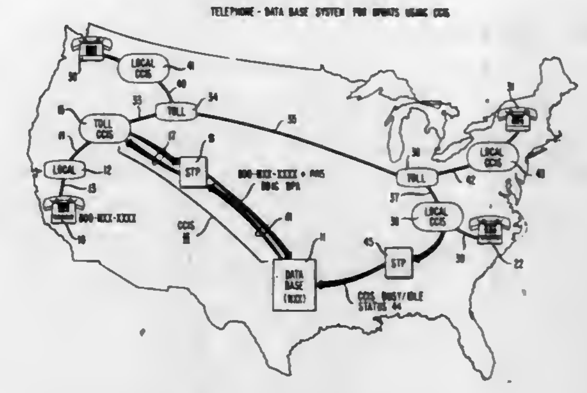
1. A telephone subscriber loop, dial pulse and ring trip detection circuit, for use in a telephone switching system including a central processing unit, at least one subscriber station including a ringer, a hookswitch and a calling device, said station connectable through said hookswitch to said detection circuit via a subscriber loop circuit, said switching system further including a ringing generator operated to generate an AC ringing voltage superimposed on DC battery, and a ringing relay connected to said central processing unit, said relay operated in response to said central processing unit to connect said ringing generator to said subscriber loop circuit, said detection circuit comprising:

- magnetic flux generating means included in said subscriber loop circuit operated to generate a magnetic flux in response to current flow associated with said ringing voltage through said magnetic flux generating means;
- magnetic flux detection means located in magnetic field proximity to said magnetic flux generating means, normally operated in response to an absence of magnetic flux to generate a first output signal, and further operated in response to the presence of said magnetic flux to generate a second output signal; and
- first threshold switching means and capacitor means series connected across said magnetic flux generating means, said first threshold switching means operated in response to voltage amplitudes associated with said ringing voltage above a predetermined value to conduct current to said capacitor, said capacitor operated to conduct alternating current around said magnetic flux generating means and to block the flow of DC current.

4,191,860
DATA BASE COMMUNICATION CALL PROCESSING METHOD

Roy P. Weber, Bridgewater, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 13, 1978, Ser. No. 924,170
Int. Cl.² H04M *3/42, 7/06*
U.S. Cl. 179—18 B **23 Claims**



1. A method of deriving call routing information from a data base system for a special service call processed by a communication switching system

characterized by

- receiving at said data base system from said switching system a special service call message including a code dialed by a caller and augmented by a code identifying the originating area of said call,
- translating said message into a call routing message at said data base system, and
- transmitting said routing message from said data base system to said switching system.

4,191,861
TELEPHONE AMPLIFIER

Wesley F. Walker, Jr., Ringgold, Ga., assignor to Walker Equipment & Service Co., Ringgold, Ga.

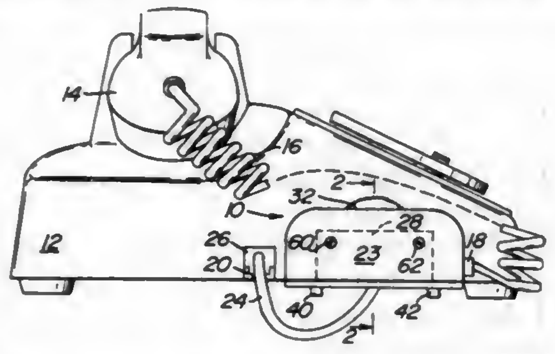
Continuation-in-part of Ser. No. 761,932, Jan. 24, 1977, Pat. No. 4,151,376. This application Jun. 6, 1977, Ser. No. 803,509
Int. Cl.² H04M *1/60*
U.S. Cl. 179—81 B **5 Claims**

1. A telephone amplifier for connection to a telephone set and a telephone handset associated therewith, the telephone set having a modular plug receptacle and the handset having a cord and a modular plug connected thereto, comprising;

- a housing having a modular plug receptacle for receiving said modular plug associated with said telephone handset cord;

means for mounting said housing on a wall of said telephone set;

an amplifier modular plug and a cord connected thereto, said amplifier modular plug being adapted for insertion into said modular plug receptacle in the telephone set;

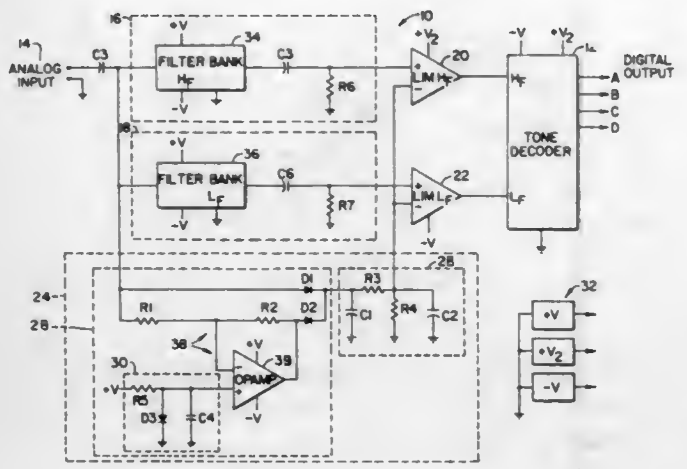


a transformer disposed within said housing and connected to said amplifier modular plug and cord; and

amplifier means, disposed within said housing, having an output and an input, said output being connected to said housing modular plug receptacle and said input being connected to said transformer.

4,191,862
DUAL FREQUENCY TONE DECODER
Raymond J. Hughes, San Jose, Calif., assignor to Rolm Corporation, Santa Clara, Calif.

Filed Aug. 7, 1978, Ser. No. 931,595
Int. Cl.^{2} H04M *1/50*
U.S. Cl. 179—84 VF **6 Claims**



1. In combination with circuitry for comparing instantaneous amplitude of input line signals and a threshold level signal and operative in response to said input line signals exceeding said threshold level signal to generate logic level signals in the form of a repetitive pulse train at frequencies of said input line signals suitable as final output signals to a telephone system digital tone decoder, circuit means for suppressing final output signals caused by short-term transient oscillations, said circuit means comprising:

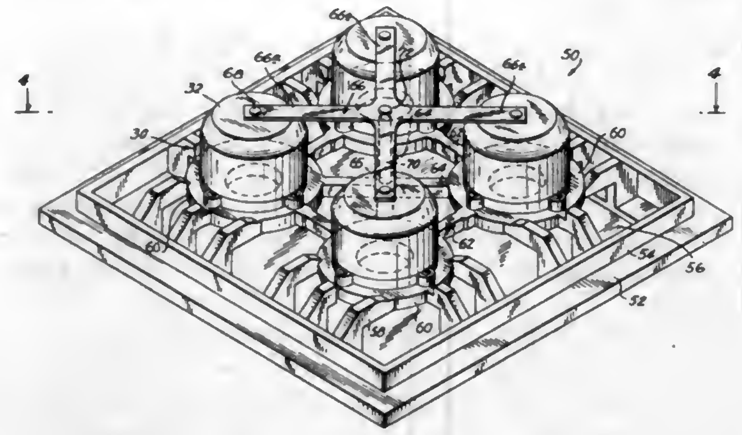
means coupled to said input line signals for sensing amplitude levels of said input line signals;

means responsive to output signals of said amplitude sensing means, and coupled to said comparing circuitry for generating a signal directing the establishment of a threshold level, wherein the generated signal is adapted to be provided to said comparing circuitry prior to availability of signals representative of said input line signals such that at least the initial transient portion of said representative signals is not propagated through said comparing circuitry; and

means coupled to said comparing circuitry to delay input to said comparing circuitry of signals representative of said input line signals.

4,191,863
SUPPORT FOR MULTI-POINT MAGNETIC DRIVER LOUDSPEAKER
Atsushi Matsuda, Tokyo, and Jun Kishigami, Urawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,903
Claims priority, application Japan, Nov. 26, 1977, 52-141852
Int. Cl.^{2} H04R *9/06*
U.S. Cl. 179—115.5 R **11 Claims**



5. A flat-plate loudspeaker comprising:

a substantially flat diaphragm having a front surface and a rear surface;

a frame surrounding the perimeter of said diaphragm;

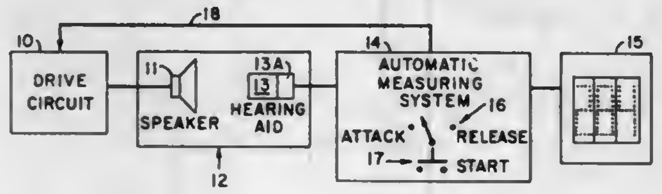
a plurality of spaced apart magnetic drivers magnetically connected to said rear surface;

support means connected to said frame for supporting said magnetic drivers at the ends thereof nearer said rear surface; and

stiffening means connecting together at least two of said magnetic drivers at the ends thereof remote from said rear surface.

4,191,864
METHOD AND APPARATUS FOR MEASURING ATTACK AND RELEASE TIMES OF HEARING AIDS
Joshua E. Sopher, Berkeley, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

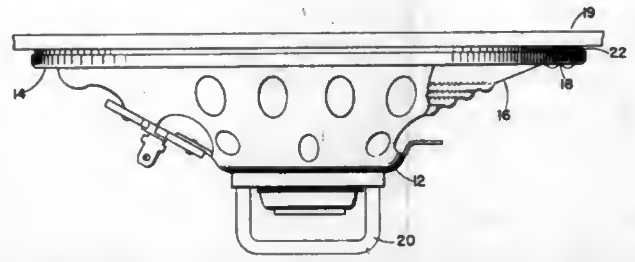
Filed Aug. 25, 1978, Ser. No. 936,735
Int. Cl.^{2} H04R *29/00*
U.S. Cl. 179—175.1 A **22 Claims**



1. Apparatus for measuring the response time of an acoustical device in a sound pressure chamber having a loud-speaker, comprising test tone signal generator means for exciting said loudspeaker with a sinusoidal signal peridically switched between a first amplitude and a second amplitude and thereby creating a corresponding acoustical test tone signal having first and second levels of intensity in said chamber; storage circuit means responsive to the output of said device for storing a signal representative of the steady state response of said device to said acoustical test tone signal at one of said levels of intensity; first circuit means receiving the output response of said device for generating an enable signal when said response is outside a predetermined recovery range relative to said stored signal; time measuring circuit means for measuring cumulative time lapse; timing circuit means for generating an initiation signal in timed relation with a change of said intensity to said one level of intensity from the other level, said initiation signal enabling said time measuring circuit means to commence measuring time lapse, said enable signal of said first circuit means terminating said measurement by said timing circuit means when said response signal is within said recovery range.

4,191,865
LOUDSPEAKER PADRING AND METHOD OF MAKING THE SAME
John A. King, Mentor, and Douglas W. O'Brien, Rocky River, both of Ohio, assignors to Essex Group, Inc., Fort Wayne, Ind.

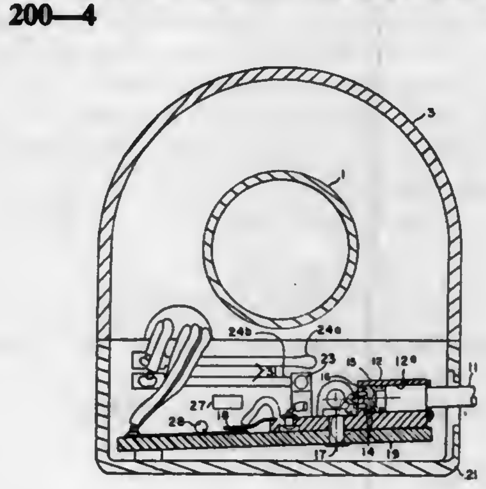
Filed Oct. 12, 1978, Ser. No. 950,934
Int. Cl.^{2} H04R *1/00, 9/02*
U.S. Cl. 179—178 **16 Claims**



1. In a loudspeaker assembly having a frame upon which the loudspeaker components are mounted and by which said loudspeaker is mounted on a baffle, and an improved padring gasket carried on said frame and situated between said frame and baffle, wherein said improved padring gasket is formed from a hot melt type material.

4,191,866
THREE-FUNCTION SWITCH FOR A MOTORCYCLE
Kunihiko Nakajima, Hamakita; Kyoshi Sato; Toshimitsu Iio, both of Hamamatsu, and Atsushi Kanda, Iwata, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

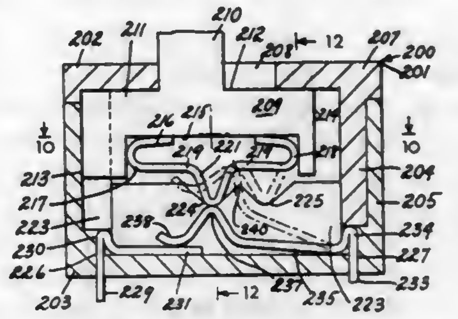
Filed Jul. 8, 1977, Ser. No. 813,843
Claims priority, application Japan, Jul. 14, 1976, 51/93571[U]
Int. Cl.^{2} H01H *9/00;* B60Q *1/26*
U.S. Cl. 200—4 **5 Claims**



1. A three-function single-lever switch for a motorcycle comprising: a base; a first mount; a first bearing means having a first axis of rotation mounting said first mount to said base for rotation around said first axis; a second mount; a second bearing means having a second axis of rotation mounting said second mount to said first mount for rotation around said second axis; a slider slidably mounted to said second mount, said slider having a free end distant from said second mount, said second mount having a third axis along which said slider is slidable, said first and second axes intersecting and being normal to one another; first and second switch means respectively operably interposed between the base and the first mount and between the first and the second mounts, each of said switch means having a first and a second switching condition established by their angular position around their respective axis, and the third switch means operably interposed between the second mount and the slider, said third switch means having a first and a second switching condition established by the axial position of the slider relative to the second mount, the movement of the first mount relative to the base being limited to rotation around the second axis, and movement of the slider relative to the second mount being limited to axial movement along said third axis, cover means enclosing said mounts and having an opening through which said free end of the slider projects, whereby simultaneous manual contact of the free end and of the first or second mount is not possible, nor is there a sufficient length of slider projecting from the cover means that the operator can contact its side while depressing the slider.

4,191,867
MINIATURE SWITCHES
Donavon L. Feaster, New Bedford, Mass., assignor to Sonitronics, Inc., Flushing, N.Y.

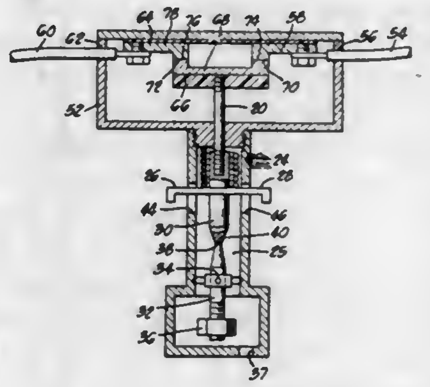
Division of Ser. No. 774,318, Mar. 4, 1977, Pat. No. 4,117,280.
This application Aug. 7, 1978, Ser. No. 939,634
Int. Cl.^{2} H01H *15/02*
U.S. Cl. 200—16 R **1 Claim**



1. An improved slide-actuated switch comprising: first and second housing elements defining a hollow casing; said first housing element defining an elongated slotted opening therethrough, a sliding member having manually engageable means projecting through said slotted opening, said sliding member including a main body portion defining a recess in an inwardly facing surface; a resilient cam means positioned within said recess, said cam means including a generally wedged-shaped projection extending outwardly of said recess; said second housing element having an inwardly extending septum thereon, said septum defining a plurality of detents selectively engaging said projection; and a pair of electrically conductive contact elements disposed in overlapping relation within said casing, one of said contact elements having cam follower means thereon slidably engaging said projection on said cam means, said cam follower, when said contacts are in closed condition being positioned in the area of one of said detents.

4,191,868
SEISMIC SAFETY CUTOFF SWITCH
Paul B. Sunde, 11356 Baird Ave., Northridge, Calif. 91324

Division of Ser. No. 745,483, Nov. 26, 1976, Pat. No. 4,131,124.
This application Aug. 25, 1978, Ser. No. 936,782
Int. Cl.^{2} H01H *35/14*
U.S. Cl. 200—61.5 **2 Claims**



1. An improved seismic safety cutoff device for use with an

electrical switch device, of the type having an electrical contactor housing and a control stem, for interrupting the flow of current in an electrical circuit, the improvement comprising:

(a) housing means connected to the electrical contactor housing;

(b) switch re-set means disposed within said housing means, said switch re-set means having a lever extending outward through said housing, for re-positioning the control stem without disassembly of the cutoff device after the flow of current in said electrical circuit has been interrupted, and for providing a visual indication of switch position;

(c) resilient biasing means vertically disposed within said housing means for exerting a force upon said switch re-set means and urging said switch re-set means and control stem to a switch-open position;

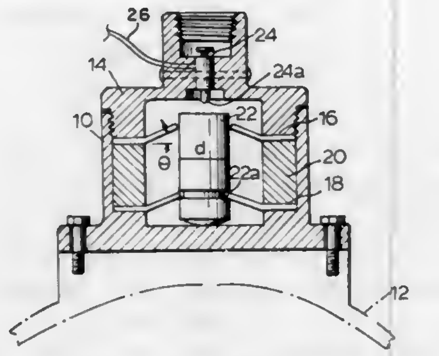
(d) a substantially vertically-mounted pivotable rod within said housing means for engaging and retaining the control stem in it's switch-closed position, the pivotable rod being position-oriented by the force of gravity; and

(e) means responsive to a predetermined level of seismic force adjustably mounted on said pivotable rod, whereby the pivotable rod will be deflected upon application of said force permitting the re-set means and control stem to be displaced substantially downward by the action of the resilient biasing means thereby opening the switch and interrupting the flow of current through the switch.

4,191,869
VIBRATION DETECTOR DEVICE

Katsufusa Tanaka, and Isamu Tanakura, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1978, Ser. No. 924,827
Claims priority, application Japan, Jul. 19, 1977, 52-86802
Int. Cl.² G01P *15/02;* H01H *35/14*
U.S. Cl. 200—61.45 R **4 Claims**



1. A vibration detector device for detecting vibration in an appliance comprising:

a main detector body for mounting on the appliance whose vibration is to be detected;

a movable member movable in response to vibration of said appliance;

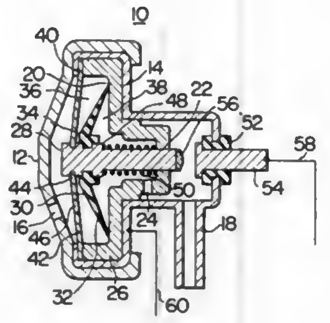
at least one leaf spring, having a first portion secured to said main detector body and a second portion abutting said movable member at an angle other than a right angle, for supporting said movable member, for permitting said movable member to move in a first direction which tends to cause said abutting angle to further depart from a right angle by sliding the portion of said movable member abutting said second portion of said leaf spring away from said leaf spring, and for preventing said movable member from moving in a second direction, opposite to said first direction, which tends to cause said abutting angle to approach a right angle by friction between said second portion of said leaf spring and said movable member; and

a limit switch arranged to actuate means for generating a signal when said movable member moves a predetermined amount in said first direction so as to contact the limit switch.

4,191,870
PRESSURE RESPONSIVE SWITCH HAVING PROTECTION FROM OVERPRESSURE OF SOURCE

Syozo Yanagisawa, Tokaimura, and Shigewo Ishikawa, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 7, 1978, Ser. No. 958,559
Claims priority, application Japan, Nov. 7, 1977, 52-132500
Int. Cl.² H01H *35/34*
U.S. Cl. 200—83 P **4 Claims**



1. A pressure responsive switch having a protection, from overpressure of a pressure source comprising:

a housing having a valve seat thereon;

a pressure responsive wall having an outer resilient peripheral portion press-fitted to said valve seat by elasticity thereof, and for forming a chamber together with said housing;

an actuating shaft rigidly fixed to the center portion of said pressure responsive wall and movable in the axial direction thereof;

a pair of contacts, the closing and opening of which are in response to the axial movement of said actuating shaft;

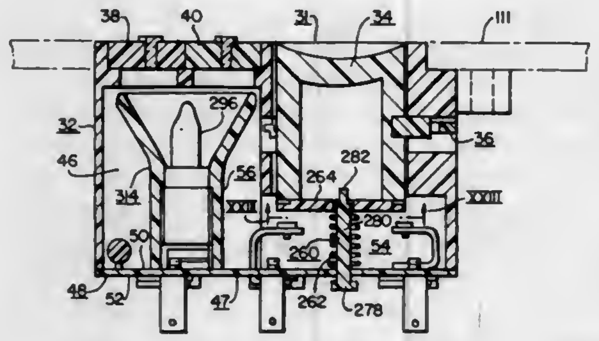
a snap-action plate connected to said actuating shaft and said housing for responding to the movement of said actuating shaft and changing rapidly said contacts from one position to the other position; and

means for applying pressure to the chamber formed of said pressure responsive wall and said housing, whereby differential pressure is produced between both sides of said pressure responsive wall and said actuating shaft moves in response to the pressure from the pressure source; and wherein the outer periphery of said pressure responsive wall lifts off said valve seat when overpressure is produced in said chamber.

4,191,871
PUSH-BUTTON ASSEMBLY

Forrest E. Coyle, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 12, 1978, Ser. No. 941,617
Int. Cl.² H01H *3/12, 9/02*
U.S. Cl. 200—159 R **13 Claims**



1. A push-button assembly, comprising:

a housing having a cavity, and recess which communicates with the cavity,

an elongated actuating member having first and second ends, and a longitudinal axis which extends therebetween,

means mounting said actuating member for movement in said recess, said mounting means orienting the actuating

member to a predetermined position about its longitudinal axis while preventing rotation of the actuating member about said longitudinal axis,

a cover mounted on said housing to cover the cavity therein,

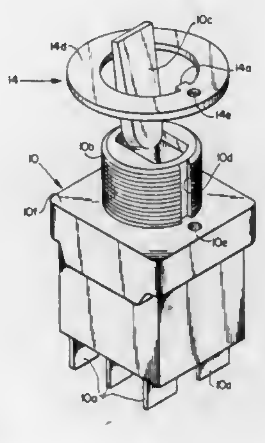
and an electrical contact assembly mounted on said cover, within the cavity of said housing, said electrical contact assembly being located on said cover in a predetermined position selected such that assembly of said cover on said housing orients it with said actuating member, said electrical contact assembly including stationary contacts fixed to the cover, a movable contact structure, a pin member having first and second ends, a stop member, and a spiral spring member, said pin member being disposed through an opening in the cover with its first end outside of the cavity, said stop member being fixed to the first end of said pin member, and said movable contact structure being fixed near the second end of said pin member, with said spiral spring being disposed about said pin member, between the cover and said movable contacts,

said electrical contact assembly and said actuating member being cooperatively configured such that assembly of said cover on said housing operatively couples said actuating member and said electrical contact assembly, with the second end of the actuating member including alignment means which cooperate with said movable contact structure to orient and provide lateral support therefor, when the cover is assembled with the housing.

4,191,872
SWITCH CASE WITH STACKABLE LOCK WASHER

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Mar. 14, 1979, Ser. No. 20,489
Int. Cl.² H01H *9/02;* F16B *43/00*
U.S. Cl. 200—296 **3 Claims**

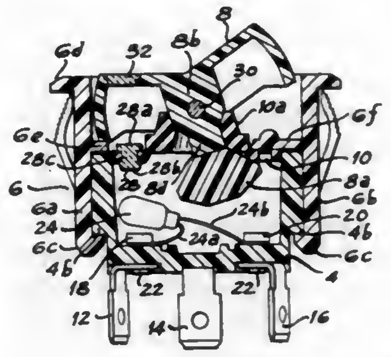


1. In a switch having a case and a threaded barrel with a slot extending from one end of the barrel to the switch case, said switch being for use in a panel with a circular opening for receiving the barrel, and the panel further including a locating hole adjacent to the circular opening for orienting the switch angularly with respect to the panel, the improvement comprising a series of stackable washers, each of which washers is adapted to be slidably received on the switch barrel for use in spacing the switch casing axially relative to the panel, each said washer having a radially inwardly projecting tab adapted to fit slidably in the barrel slot, each said washer further having axially spaced upper and lower faces, one of said faces having a projecting post defined therein adapted to be received in the panel locating hole, and the other of said washer faces defining a post opening for receiving the post on an adjacent washer, whereby each of said washers can be used not only as a washer for axial spacing of the switch with respect to the panel, but also for use in locating the switch angularly with respect to the panel.

4,191,873
ILLUMINATED SEALED ROCKER SWITCH

Tony O. Woodard, Pine Level, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 26, 1979, Ser. No. 15,350
Int. Cl.² H01H *9/04, 9/16*
U.S. Cl. 200—302 **3 Claims**

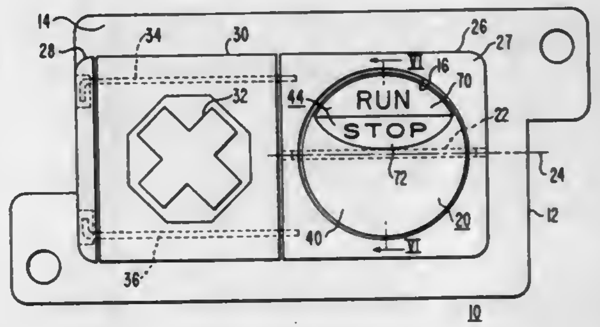


1. In an electric switch having a base housing the switching mechanism, a rocker actuator pivotally movable to effect operation of the switching mechanism, a frame mounted on the open-end of the base and affording pivotal support for the rocker, and a lamp mounted in said base illuminable to provide indication of a switch operating position, the improvement comprising, an elastic sealing member secured between said frame and the open end of said base and sealing about a portion of said rocker to resist the entrance of moisture, dust and the like into said base, a light transmitting lens mounted in sealing member in alignment with said lamp, and a window mounted in said rocker to align which said lens and said lamp in a given position of said rocker to provide light transmission exteriorally of said switch.

4,191,874
MANUALLY OPERABLE SWITCH

Denis E. Bedel, Ross, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 12, 1978, Ser. No. 941,611
Int. Cl.² H01H *3/02*
U.S. Cl. 200—339 **2 Claims**



1. A switch which facilitates actuation by choice in a preferred direction, while minimizing accidental actuation in this direction, comprising:

a housing having a substantially flat, vertically oriented, front surface,

an electrical contact assembly mounted in said housing, said electrical contact assembly being operable between first and second positions,

and an actuator member pivotally mounted in said housing on a horizontally oriented pivot axis,

said actuator member having a first portion accessible from the outside of said housing, and a second portion within the housing operatively linked with said electrical contact assembly,

said first portion having a generally spheroidal configuration, with an indentation therein for pivotally operating said actuator member between first and second angular positions which select the first and second positions, respectively, of said electrical contact assembly,

said indentation in the first portion of the actuator member including first and second substantially flat, intersecting surfaces for operating the actuator member to its first and second positions, respectively, with their planes having predetermined different spacings from the horizontally oriented pivot axis selected to cause the area of the second substantially flat surface to exceed the area of the first substantially flat surface, facilitating actuation by choice to its second position,

said first and second flat surfaces being oriented relative to one another, and to the pivot axis of the generally spheroidal configuration, such that the flat first surface of the indentation is in substantially the same plane as the front surface of the housing, and the lowest edge of the second substantially flat surface lies above the pivot axis, when the actuator member is in the first angular position, to minimize accidental operation of the actuator member to its second position and to preclude a force applied to the actuator member in a direction perpendicular to the front surface of the housing from operating the actuator member to its second condition.

4,191,875

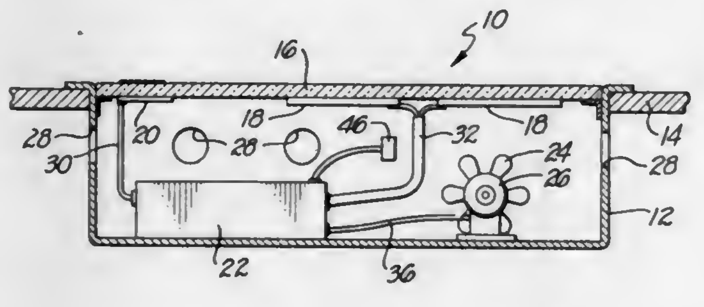
FAN SPEED CONTROL USED IN INDUCTION COOKING APPARATUS

Ronald J. Cunningham, 320 Patrician Way, Pasadena, Calif. 91105

Filed Nov. 10, 1977, Ser. No. 850,297

Int. Cl.² H05B *9/02*

U.S. Cl. 219—10.49 R **8 Claims**



1. In a heating apparatus employing a plurality of induction heating elements, electronic means for controlling the operation of said heating elements, wire means connecting said heating elements with said electronic means for the purpose of supplying power to said heating elements and an electric fan for cooling said electornic means, the improvement which comprises:

heatable means inductively heated by the passage of current through said wire means and located adjacent to said wire means intermediate said electronic means and said heating elements,

temperature sensing means including a sensing element located adjacent to said heatable means, and

switch means responsive to said temperature sensing means for controlling the operation of said electric fan independently of the operation of said heating elements and at a variable speed proportional to the degree of induction heating of said heatable means.

4,191,876

MICROWAVE OVEN HAVING RADIATION DETECTOR

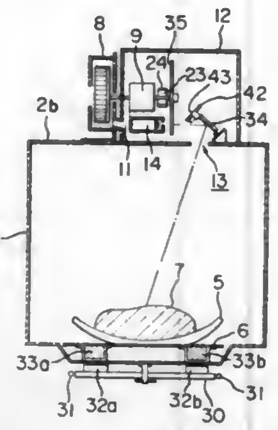
Masaru Ohkubo, Yamatokoriyama, and Tadayuki Onoda, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 10, 1978, Ser. No. 923,157

Claims priority, application Japan, Jul. 15, 1977, 52-85502

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 B **5 Claims**



1. A microwave oven with a radiation detecting device of the type for controlling the microwave output in response to the detected radiation from food characterized by the provision of

(a) a turntable upon which food to be heated is placed,

(b) a reflecting mirror for scanning said turntable linearly in the diametrical direction thereof, the rotational speed of said reflecting mirror being in synchronism with that of said turntable,

(c) a chopper for interrupting the beam of radiation redirected by said reflecting mirror, and

(d) a radiation detector for intercepting the beam of radiation transmitted through said chopper, thereby generating the signal representative of the difference between the amount of radiation from said food and the amount of radiation chopped by or transmitted through said chopper.

4,191,877

MICROWAVE OVEN EQUIPPED WITH ELECTRIC HEATING ARRANGEMENT

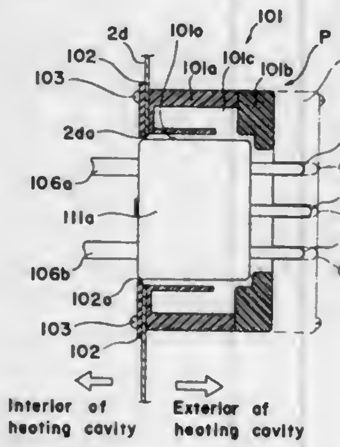
Junzo Tanaka, Fujiidera; Shigeru Kusunoki, Yamatokoriyama, and Hirofumi Yoshimura, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 4, 1978, Ser. No. 893,312

Claims priority, application Japan, Jul. 11, 1977, 52-83182

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 B **11 Claims**



1. A microwave oven which comprises:

(a) an oven defining structure;

(b) a heating cavity defined by wall members within said oven defining structure and having an access opening at one side thereof; one of said wall members having a power feeding opening therein;

(c) a door member adapted to selectively open and close said access opening;

(d) means for supplying microwave energy into said heating cavity for dielectric heating of an object to be heated placed therein;

(e) electric heating means provided in said heating cavity for electrically heating the object to be heated in said heating cavity, said electric means having a heater element which includes a heater portion having heater member and a sheath means surrounding said heater member and a power supplying base portion having power supplying electrodes sealed therein connected to said heater portion and projecting out of said base portion; and a power feeding section mounted on said one of said wall members at said power feeding opening and having a recess therein for receiving, through said power feeding opening, said power supplying base portion of said heater element, said power feeding section having jacks therein for receiving said power supplying electrodes therein in electrical contact therewith, and a choke structure on said power feeding section extending around the power feeding opening and having a choke opening facing into said recess in spaced opposed relationship with the periphery of said power supplying base portion, whereby sealing of high frequency waves is achieved between said power supplying base portion and said choke structure.

4,191,878

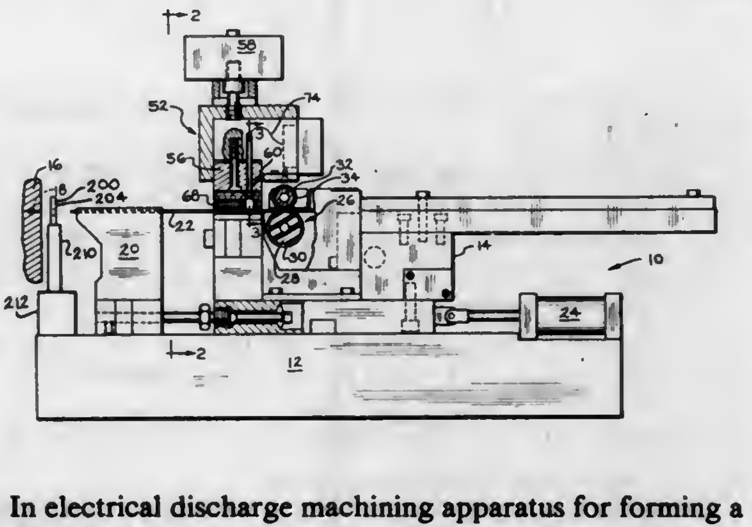
ELECTRODE POSITIONING GAGE FOR MULTIPLE ELECTRODE ELECTRICAL DISCHARGE MACHINING APPARATUS

John M. Check, Chelsea, and Gary F. Rupert, Ann Arbor, both of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 662,025, Feb. 27, 1976, Pat. No. 4,044,216. This application Aug. 19, 1977, Ser. No. 825,970

Int. Cl.² B23P *1/12*

U.S. Cl. 219—69 E **2 Claims**



1. In electrical discharge machining apparatus for forming a plurality of side-by-side holes of small diameter in a workpiece, said apparatus including a plurality of side-by-side wire electrodes, means for advancing said electrodes toward said workpiece during machining and for retracting said electrodes to positions spaced from said workpiece after machining, said electrodes being operable when maintained in positions spaced from said workpiece distances corresponding to an anti-short distance to erode material from said workpiece so as to form the desired holes therein, means for refeeding said electrodes from said retracted positions to compensate for erosion thereof during machining, and a gage member having an electrode engaging surface and being movable to a blocking position between and in general alignment with said workpiece and said retracted electrodes wherein said electrode engaging surface defines a reference surface spaced from said workpiece a distance at least as great as and substantially equal to said anti-short distance, said refeed means being operable to advance said electrodes into engagement with said reference surface in said blocking position to locate said electrodes in reference positions relative to said workpiece in which the distances between each of said electrodes and said workpiece is at least as great as and substantially equal to said anti-short distance, said refeeding means comprising drive means frictionally engageable with said electrodes and operable to apply sufficient force to said electrodes to advance the electrodes into engagement with said reference surface, said drive means being slippable on the ones of said electrodes engaged with said reference surface.

4,191,879

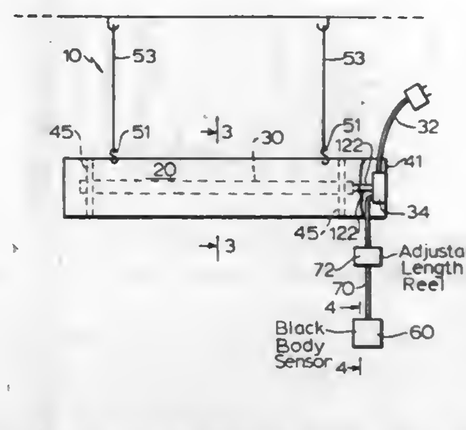
HEATING APPARATUS AND CONTROLS THEREFOR

Charles F. Kerchner, Jr., R.D. 3, Box 174A, Northampton, Pa. 18067

Continuation of Ser. No. 610,636, Sep. 5, 1975, abandoned. This application Jun. 20, 1977, Ser. No. 807,831

Int. Cl.² H05B *1/02*

U.S. Cl. 219—358 **2 Claims**



1. Heating and control apparatus for warming chicks and the like comprising

an elongated hood having a generally triangular cross-section and made up of an elongated main body portion having first and second open ends,

first end plates secured in said open ends of said hood and inwardly thereof,

second end plates secured in said open ends of said hood to close said open ends of said hood,

said second end plates having inner and outer surfaces,

an elongated infrared heating element mounted within said hood and extending between said first end plates and directly connected to said first end plates,

a curved reflector in said hood and extending behind said heating element and between said first end plates for reflecting heat from said element away from said hood,

a semiconductor control circuit for regulating current flow through said heating element said control circuit being mounted between one of said first end plates and one of said second end plates with an air space surrounding said control circuit,

said control circuit including a potentiometer and an elongated support plate, at least one circuit module mounted on said support plate, means for connecting said circuit to a power supply and to said heating element, and other means for connecting said circuit to a remote thermal sensor, said other means including a cable and an adjustable length reel,

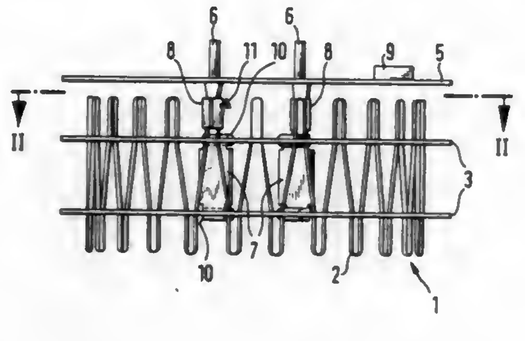
said control circuit being held rigidly in place, with said support plate held upright between and generally parallel to said first and second end plates, by means of a shaft of said potentiometer having one end secured to said support plate and the other end thereof secured to and extending through said one second end plate, the other end of said shaft carrying a potentiometer adjustment knob adjacent to the other surface of said one second end plate, and

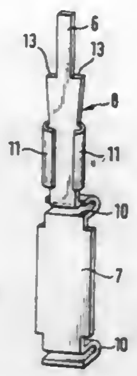
a black body sensor secured to the end of said cable remote from said hood and adjustably mounted beneath said hood by said adjustable length reel and said cable and electrically connected in said control circuit by said cable, said black body sensor comprising a cylinder having top and bottom walls and a side wall, said side wall having a black outer surface and having an opening in said bottom wall and having a semiconductor sensor secured inside said cylinder to the upper wall thereof and connected by said cable to said control circuit.

4,191,880
HEATING ELEMENT FOR ELECTRICAL APPLIANCE HAVING A BLOWER

Klaus Meywald, and Helmut Ohnmacht, both of Kandel, Fed. Rep. of Germany, assignors to Firma Fritz Eichenauer, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 904,882
Int. Cl.^{2} H05B *3/02;* F24H *3/04*
U.S. Cl. 219—375 **6 Claims**





1. A heating element for an electrical appliance having a blower, the heating element comprising a meander-form winding of resistance heating wire, a plurality of supporting plates arranged in parallel to an incident flow direction of air produced by the blower, the supporting plates being provided with openings for accommodating turns of the winding, and metallic spacer elements for connecting the supporting plates, a prolongation provided on at least one of the spacer elements and including a first portion projecting beyond one of the supporting plates, and a second portion which is deformable so as to form a sleeve engaging a turn of the winding whereby the spacer element forms a voltage tap for the heating element.

4,191,881
FOOD OVEN

David W. Ahlgren, Duluth; David A. Hassell, Coon Rapids, and Elvis S. Zimmer, Blue Hill Township, Mille Laks County, all of Minn., assignors to Jeno F. Paulucci, Duluth, Minn.

Division of Ser. No. 673,114, Apr. 2, 1976, Pat. No. 4,164,991. This application Jan. 3, 1978, Ser. No. 866,736
Int. Cl.^{2} A47J *37/06*
U.S. Cl. 219—388 **8 Claims**

1. In an electrically powerable rotary food oven for heating a food article and having

a cabinet defining a heatable oven chamber therewithin,

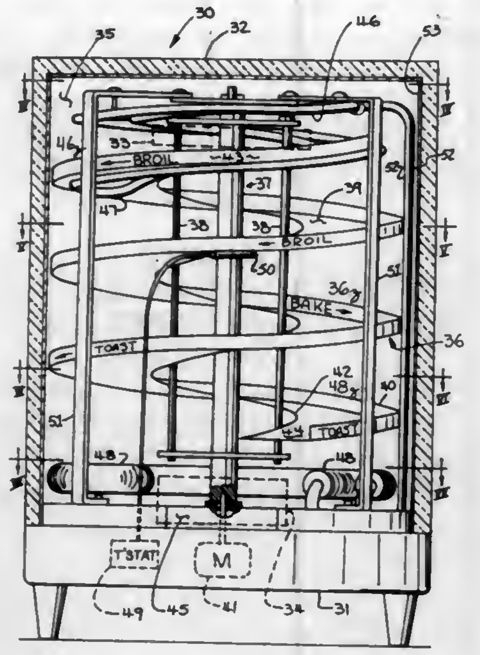
a vertical axis trackway within the oven chamber and having an annular surface for supporting a food article thereon, the annular support surface having a loading end for receiving a food package to be heated and an unloading end for the discharge of a heated food package,

an inlet through the cabinet and into the oven chamber for loading of a food package upon the trackway loading end,

a reel being rotatable about the axis of the trackway and having a drive member engagable with a food article on the trackway for advancing the food article around the trackway from the loading end to the unloading end, and

an outlet through the cabinet and from the oven chamber leading from the unloading end of the trackway for discharge of a heated food article from the oven; the improvement comprising:

(a) a broiling zone inclusive of a first portion of the length of the trackway adjacent to and including the loading end, the broiling zone being that portion of the trackway having a radiant electrical heater element mounted directly atop of the trackway support surface in directly exposed relationship thereto for applying radiant heat downwardly and directly upon the top of a food article being advanced around the trackway for the loading end immediately after the food article has been placed in the oven;



(b) a toasting zone inclusive of the last portion of the length of the trackway adjacent to and including the unloading end, the toasting zone being that portion of the trackway having an electrical air heater element mounted below and underneath the trackway support surface for convective hot air heating and toasting of the bottom of a food article being advanced on the trackway through the toasting zone and over the air heater element immediately prior to unloading of the food article from the oven; and

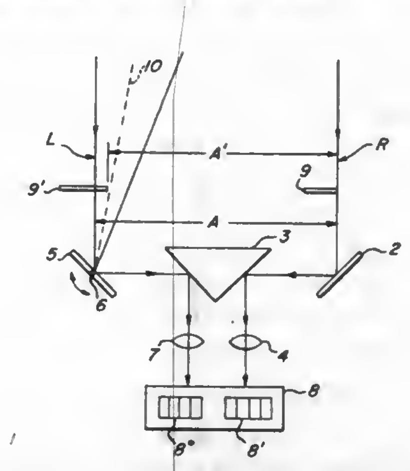
(c) a baking zone along a middle portion of the length of the trackway in between and separate from and separating the broiling zone and the toasting zone from one another, the baking zone not having a heating element and not being directly exposed to either of the said heater elements and being heatable by convective flow of air heated by the broiling or toasting electrical heater elements.

4,191,882
AUTOMATIC FOCUS ADJUSTING DEVICE

Hideharu Sato, Higashikurume, Japan, assignor to Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.), Higashimurayama, Japan

Filed Jul. 18, 1978, Ser. No. 925,677
Claims priority, application Japan, Jul. 18, 1977, 52-084979
Int. Cl.^{2} G03B *3/10*
U.S. Cl. 250—201 **8 Claims**

1. In an automatic focus adjusting system of an electrically driven and electronically controlled optical apparatus, the focus adjusting system having two optical systems at least one of which has a scanning means, and wherein the focus adjusting system is normally controlled by coincidence of light images from the two optical systems upon pairs of photoelectric elements and an electronic processing system generating timing signals from the position of the scanning means, an automatic focus adjusting device comprising:



a pair of substantially identical light filters, each placed in the light path of one of the optical systems and each having a transparent portion and a light screening portion, the light filters being spaced apart at a selected distance from one another corresponding to a desired pre-focusing distance,

whereby said pre-focusing distance is detected by the adjusting system upon viewing of low contrast object fields.

4,191,883
METHOD FOR DETERMINING RESIDUAL OIL CONCENTRATION OF A FORMATION USING THERMAL NEUTRON DECAY MEASUREMENTS

James C. Albright, and Preston L. Gant, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Jun. 1, 1978, Ser. No. 911,626
Int. Cl.^{2} G01V *5/00*
U.S. Cl. 250—259 **13 Claims**

1. In the method of determining oil saturation in a subterranean formation penetrated by a well-bore wherein the method comprises:

(a) measuring the thermal neutron decay of a liquid, said liquid having either low or high salinity, in said well-bore and said formation to obtain a first value Σ_A

(b) measuring the thermal neutron decay of a liquid, said liquid having a salinity value opposite of that used in step (a) in said well-bore and said formation to obtain a second value Σ_B and

(c) determining from Σ_A and Σ_B the oil saturation in said reservoir,

the improvement comprising adding to said low salinity liquid a sufficient amount of a material which adjusts the thermal neutron capture cross section of that part of said low salinity material which remains in the borehole so that the thermal neutron capture cross section is approximately the same as the thermal neutron capture cross section of the high salinity liquid.

4,191,884
DETERMINATION OF WATER SATURATION IN SUBSURFACE EARTH FORMATIONS ADJACENT WELL BOREHOLES

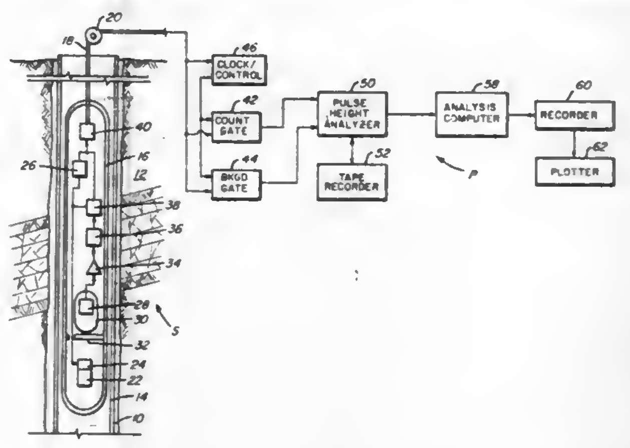
Hubert D. Scott, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 27, 1977, Ser. No. 865,052
Int. Cl.^{2} G01V *5/00*
U.S. Cl. 250—270 **17 Claims**

1. A method of determining the water saturation of an earth formation surrounding a well borehole, comprising the steps of:

(a) bombarding the earth formation with repetitive pulses of fast neutrons which are slowed down and thereafter engage in neutron capture reactions with materials in the vicinity of the bore hole;

(b) obtaining by use of a germanium gamma ray detector gamma ray spectra of the materials in the vicinity of the borehole;



(c) obtaining from the gamma ray spectra a measure of the relative presence of chlorine to that of hydrogen in the formation;

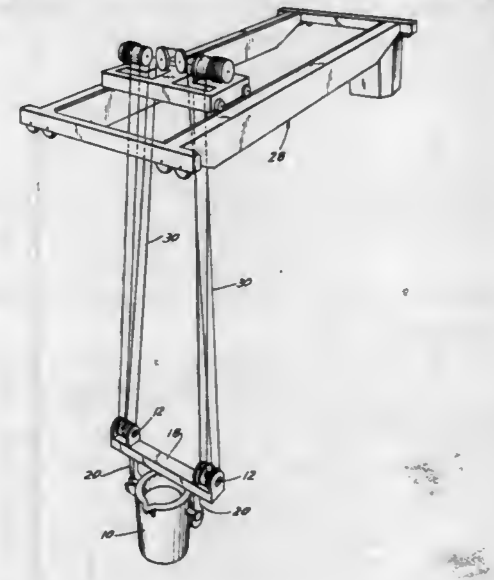
(d) obtaining a measure of apparent formation water salinity from the measure of relative presence of chlorine to hydrogen in the formation; and

(e) obtaining the water saturation of the formation utilizing the apparent formation water salinity.

4,191,885
METHOD FOR DETERMINING WEIGHT OF MOLTEN METAL IN SITU

Federico A. Rodriguez, Garza Garcia; Jorge Becerra Novoa, San Pedro Garza Garcia, and Julian Sanchez Ramirez, Monterrey, all of Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed Dec. 12, 1978, Ser. No. 968,764
Int. Cl.^{2} G09K *3/00*
U.S. Cl. 250—302 **19 Claims**



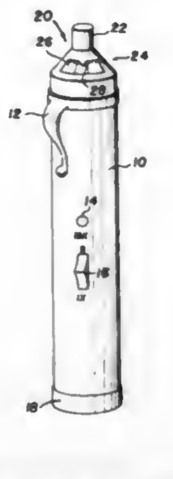
1. Method for determining the weight of molten metal in a slag-containing molten bath such as occur in an electric furnace or in a teeming ladle comprising determining weight percentage(s) of a given trace element in the molten metal and/or slag if present in a significantly measurable amount, adding to and diluting in said bath a weighed amount of said trace element, effecting good dispersal of said trace element in said bath and then determining the weight percentage(s) of said trace element in said molten metal and/or slag if present in a significantly measurable amount therein, determining the net

weight of said bath if a significantly measurable amount of said trace element is in said slag, and determining from the foregoing known weights and weight percentage(s) the weight of said molten metal.

4,191,886
RADIATION DOSE RATE INDICATOR

Michael J. Basso, West Allenhurst, and Henry B. Brown, Belford, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 31, 1978, Ser. No. 929,623
Int. Cl.² G01T *1/18*
U.S. Cl. 250—376 **18 Claims**



1. In a pocket size radiation monitor for personal use having an internal power supply for powering a Geiger-Mueller radiation sensing device located within a casing, the improvement comprising:

a user adjustable potentiometer operably coupled to said Geiger-Mueller device so as to have a voltage thereacross proportional to dose rate, said potentiometer having a slider contact which provides a selectively variable output voltage corresponding to a desired radiation dose rate to be monitored or measured;

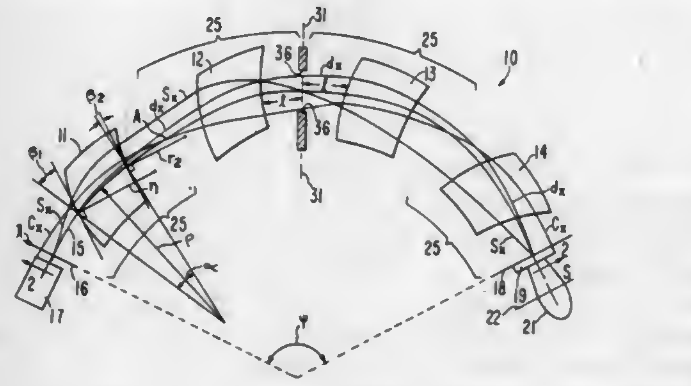
circuit means coupled to said slider contact and being responsive to said output voltage to become operable at a selected output voltage to effect energization of a light source; and

an electrically energized light source coupled to said circuit means and being energized by said power supply when said circuit means becomes operable to indicate the sensing of a predetermined dose rate.

4,191,887
MAGNETIC BEAM DEFLECTION SYSTEM FREE OF CHROMATIC AND GEOMETRIC ABERRATIONS OF SECOND ORDER

Karl L. Brown, Cupertino, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 29, 1978, Ser. No. 891,432
Int. Cl.² H01J *37/00*
U.S. Cl. 250—396 ML **6 Claims**



1. In a method for deflecting a beam of non-monoenergetic charged particles through a given bending angle in a beam deflecting system, the steps of:

directing the beam of charged particles serially through four or more magnetic beam deflecting stations:

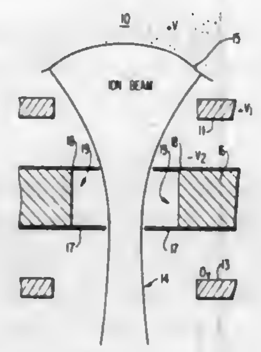
producing first magnetic field components in each of said magnetic beam deflecting stations for bending the beam of charged particles and for focusing the beam of charged particles in each of two orthogonal directions transverse to the central orbital axis of the beam, said first magnetic field components being of a strength and so directed that the beam, as deflected through the beam deflecting system, is achromatic to first order and free of transverse geometric aberrations of second order; and

subjecting the beam of charged particles to sextupole magnetic field components within each station of the beam deflecting system of such strength and direction so as to eliminate second order transverse chromatic aberrations of the deflected beam without introducing second order transverse geometric aberrations.

4,191,888
SELF-SHIELDING SMALL HOLE ACCEL GRID

George A. Meadows, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Nov. 17, 1978, Ser. No. 961,828
Int. Cl.² G21K *1/08*
U.S. Cl. 250—396 R **4 Claims**



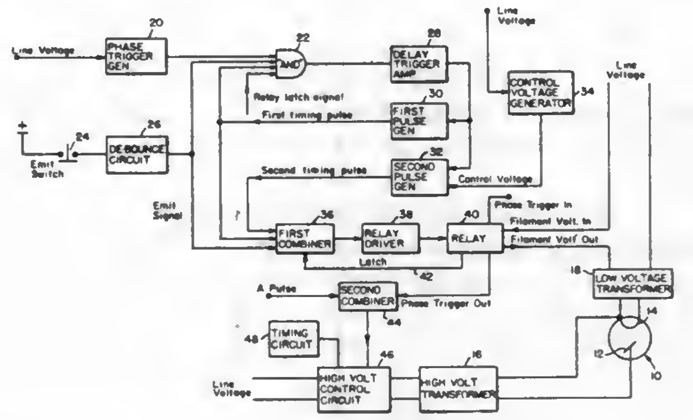
1. In an ion extraction system utilizing small hole accel grid optics and comprising within a discharge chamber a neutral highly ionized plasma source at a first voltage V_1, V_1 being positive, a plurality of electrodes downstream of said plasma source each having apertures in axial alignment and including in the following order a screen grid at said first voltage V_1 and an accel grid at a second voltage V_2, V_2 being negative, said accel grid having a relatively small aperture in the range of less than 50% to approximately 10% the size of the aperture of said screen grid, the electric field set up by said screen grid and said accel grid serving to extract an ion beam from the plasma source and focus the ion beam through the accel grid aperture, the improvement wherein said accel grid is provided with a relatively large aperture and a metallic foil on at least the downstream face thereof covering said large aperture, said relatively small aperture being etched in the metallic foil by the ion beam.

4,191,889
PREHEAT CIRCUIT FOR X-RAY TUBES

David Cowell, Webster, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,257
Int. Cl.² H05G *1/00*
U.S. Cl. 250—402 **2 Claims**

1. A preheat circuit for X-ray tubes requiring filament voltage and high voltage, said circuit consisting of a first pulse generator providing a first timing pulse of fixed duration, a second pulse generator providing a second timing pulse of variable duration less than the duration of said first timing pulse; means for enabling said first and second pulse generators so that said first timing pulse and said second timing pulse initiate simultaneously; means responsive to line voltage for controlling the length of said second timing pulse in relation to the line voltage; means responsive to said first and second timing pulses for applying filament voltage to a X-ray tube upon the termination of said second timing pulse; and means for applying high voltage to the X-ray tube after the termination of said first timing pulse.



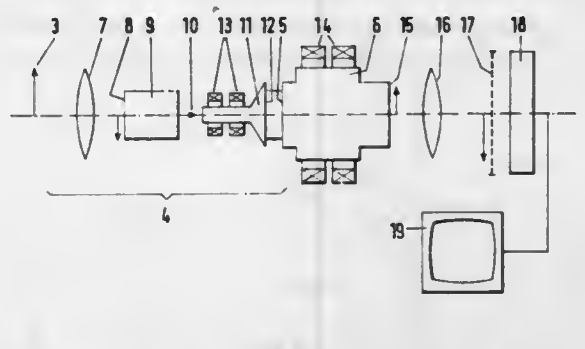
4,191,890
SYNTHETIC APERTURE SCANNER FOR DECODING A CODED IMAGE PRODUCED BY PENETRATING RADIATION, SUCH AS X-RAYS

Ronald J. Geluk, Nootdorp, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

Filed Nov. 25, 1977, Ser. No. 854,701

Claims priority, application Netherlands, Dec. 3, 1976, 7613502

Int. Cl.² G03B *41/16*
U.S. Cl. 250—402 **8 Claims**



1. Apparatus for decoding a coded image formed by penetrating radiation, such as X-rays, projected from a plurality of sources of radiation which sources are substantially point sources and arranged in a given spatial distribution pattern, the apparatus comprising means for spatially shifting a thus coded image in accordance with the distribution pattern of the radiation sources; integrating means for integrating and generating an electrical signal from the coded image obtained from such shifting means; reproduction means for bringing the electrical signal formed by said integrating and generating means into a form suitable for presentation, said shifting means including an image intensifier with an output screen having a short persistence and associated deflector means for bodily shifting an electron-optical image formed in the image intensifier according to a frame of image lines, and converter means for forming an image derived from the radiation image to be decoded on the input screen of said image intensifier; said integrating and generating means including one or more masks, each having a pattern corresponding to the distribution pattern of the sources of radiation and optically coupled to the output image of said image intensifier, and an image detector disposed behind each mask for integrating all of the image passed by said mask.

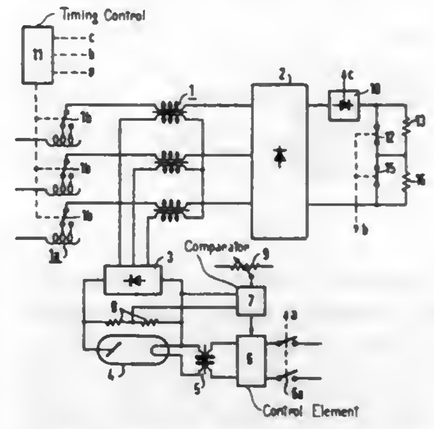
4,191,891
X-RAY DIAGNOSTIC GENERATOR IN WHICH THE X-RAY TUBE VOLTAGE IS REGULATED VIA THE X-RAY TUBE CURRENT

Heribert Amtmann, Buckenhof; Hans Ebersberger; Guenter Eckardt, both of Nuremberg, and Hans-Joachim Greiner, Buckenhof, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,231

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757505

Int. Cl.² H05G *1/30*
U.S. Cl. 250—402 **3 Claims**



1. An x-ray diagnostic generator having an x-ray tube circuit for supplying x-ray tube voltage including a high voltage transformer, a regulator circuit for the x-ray tube voltage which contains a comparator element for comparing the actual value of the x-ray tube voltage with a set point value, an x-ray tube heater circuit for supplying x-ray tube filament current, and also a control element, controlled by the output signal of the comparator element for controlling the filament current of the x-ray tube in order to adjust the actual value of the x-ray tube voltage to the set point value, characterized in a variable-ratio transformer (**1***a*) being connected in series with the high voltage transformer (**1**) for the stepwise switching of the input voltage of the high voltage transformer (**1**), the x-ray tube circuit including at least one resistor means (**13, 16**), and switch means (**12, 15**) for connecting the resistor means so as to change the x-ray tube voltage, the heater circuit of the x-ray tube (**4**), the variable-ratio transformer (**1***a*) and the switch means (**12, 15**) being controlled such that firstly the x-ray tube heater circuit is cut off in order to decrease the x-ray tube output, thereafter the resistor means (**13, 16**) is connected to decrease the x-ray tube voltage and the input voltage of the high voltage transformer (**1**) is increased to a predetermined value by means of switching the variable-ratio transformer (**1***a*), subsequently the input voltage is decreased, and then the x-ray tube heater circuit is switched on to provide for control of x-ray tube voltage at the set point value.

4,191,892
SPREAD BEAM OVERLAP METHOD

Sung-Cheng Huang, Sherman Oaks, Calif.; Carl J. Brunnett, Mayfield Heights, and Rodney A. Mattson, Mentor, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed Jun. 30, 1978, Ser. No. 921,010
Int. Cl.² G01N *21/34, 23/04*
U.S. Cl. 250—445 T **8 Claims**

1. A method for computed tomographic scanning comprising the steps of:

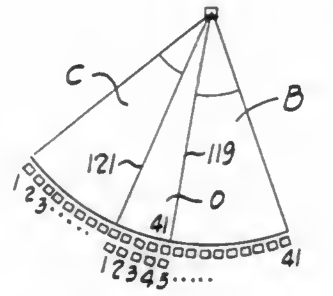
(a) providing an angular spread of electromagnetic radiation that subtends an angle ϕ;

(b) translating said beams relative to a subject while irradiating the subject with the radiation;

(c) measuring the intensity of the beams along various orientations after the radiation has passed through the subject and as it is translated;

(d) rotating the source through an angle less than ϕ, and reradiating said subject while translating the beams in their rotated orientation; the translation after rotation producing a portion of beam overlap which results in multiple intensity values for similarly oriented beam paths;

(e) performing repeated translations and rotations until the subject has been irradiated by beams variously oriented relative to the subject, said translations and rotations defining the limits of a tomographic scan;



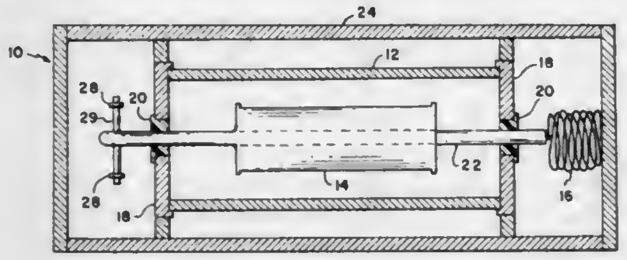
(f) calculating a modified intensity for those orientations for which multiple intensity values are available; said modified intensity produced by summing of the multiple intensity values after said multiple intensity values have been scaled by a factor variable depending upon the size of beam overlap and upon the position of the orientation in the overlap; and,

(g) constructing an image of the subject using the modified intensity.

4,191,893
NATURAL TURBULENCE ELECTRICAL POWER GENERATOR

David C. Grana, and Richard T. Wilem, both of Newport News, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 3, 1978, Ser. No. 883,090
Int. Cl.² F03B *13/12*
U.S. Cl. 290—53 **6 Claims**



1. Apparatus for converting the natural turbulence of a fluid, such as water or air, into electrical energy comprising:

a housing mounted such that it is set in motion by said natural turbulence of a fluid;

a stator means mounted in said housing and fixed relative to said housing;

a rotor means;

means for mounting said rotor means in said housing such that the movement of the rotor means is unrestrained longitudinally and rotationally relative to said stator means and such that movement of the rotor means is restrained laterally relative to the stator means with the lateral distance between the rotor means and stator means remaining essentially constant;

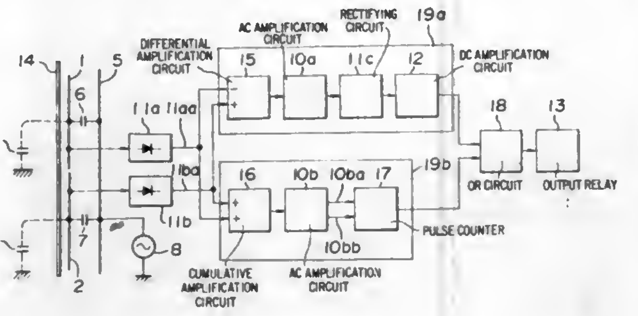
a single helical spring with one end of the helical spring attached to said housing and the other end of the helical spring attached to the center of one end of said rotor means and suspending said rotor means whereby the turbulence of said fluid causes a force to be applied parallel to the longitudinal axis of the helical spring resulting in longitudinal and rotational motion of said rotor means relative to said stator means; and

means included with said stator means and said rotor means for converting said rotational motion into electrical energy.

4,191,894
PROXIMITY DETECTOR

Masahiro Noda, and Kazuo Tokui, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1977, Ser. No. 852,835
Claims priority, application Japan, Nov. 18, 1976, 51-138756
Int. Cl.² H01H *36/00*
U.S. Cl. 307—116 **2 Claims**



2. A proximity detector adapted for opening of a door which comprises:

a pair of antennas disposed at the front edge of a door with a space;

means for converting earth electrostatic capacities of the antennas to corresponding voltage;

a first detecting circuit for detecting a differential signal of the outputs of the converting means;

a second detecting circuit for detecting a summing signal of the outputs of the converting means; and

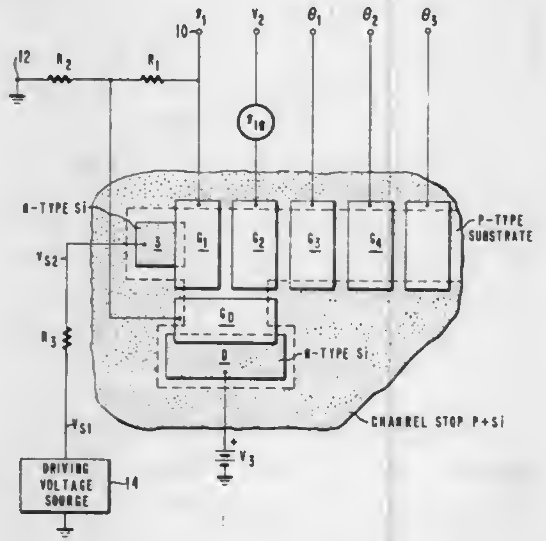
means for responding to the output of the first, or second, detecting circuits for control of the operation of the door,

wherein the pair of antennas are used as a bridge during closing of the door and as one antenna during full opening of the door.

4,191,895
LOW NOISE CCD INPUT CIRCUIT

Peter A. Levine, Trenton, and Donald J. Sauer, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 26, 1976, Ser. No. 708,351
Int. Cl.² G11C *19/28;* H01L *29/78*
U.S. Cl. 307—221 D **11 Claims**



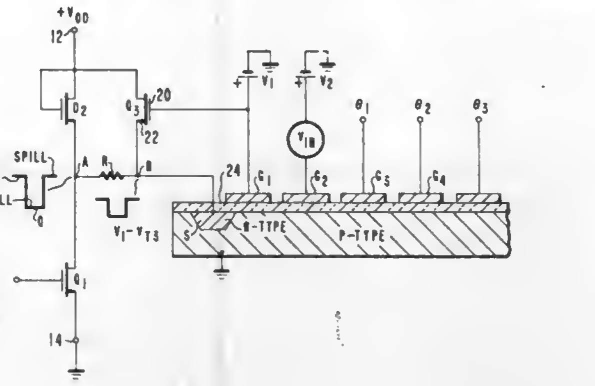
1. A method of operating a CCD in which an input potential well initially is filled by introducing charge therein from a source of charge carriers over a potential barrier, and then some of the charge in the well is spilled out of the well to leave remaining in the well an amount of charge which is a function of a signal potential between the electrode employed to form the barrier and the electrode employed to form the well, comprising the step of:

removing from the well during the filling thereof any carriers which attempt to fill the well to a level greater by more than a substantially fixed percentage, than the height of said potential barrier.

4,191,896
LOW NOISE CCD INPUT CIRCUIT

Donald J. Sauer, Plainsboro, and Peter A. Levine, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 26, 1976, Ser. No. 708,397
Int. Cl.² G11C *19/28;* H01L *29/78;* H03K *5/08, 1/12*
U.S. Cl. 307—221 D **7 Claims**



1. In an input circuit for a CCD which includes a substrate: an input region in the substrate of opposite conductivity than the substrate; a gate region of the substrate adjacent to the input region; a storage region of the substrate adjacent to the gate region; means including electrodes over said gate and storage regions, a signal source coupled between said electrodes, and a bias voltage source connected to said electrode over said gate region, for producing a shallower potential well in said gate region than in said storage region; and means for filling said potential well beneath said electrode over said storage region comprising means for applying a voltage to said input region for causing the same to emit charge carriers which pass through said shallower well to the potential well in said storage region, the improvement comprising:

means responsive to the bias voltage applied to said electrode over said gate region for maintaining said input region at a substantially fixed potential offset greater than zero from said electrode over said gate region during the period said potential well of said storage region is being filled.

4,191,897
SELF-CLOCKING CIRCUIT

Arthur R. Kopp, Lewisberry, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 21, 1978, Ser. No. 898,357
Int. Cl.² H03K *5/153*
U.S. Cl. 307—234 **8 Claims**

1. An electronic duty cycle timer circuit for separating clock and data pulses contained in an input pulse train resulting from a two frequency encoded magnetic recording, said pulses being separated by two to on time relationships, said circuit comprising:

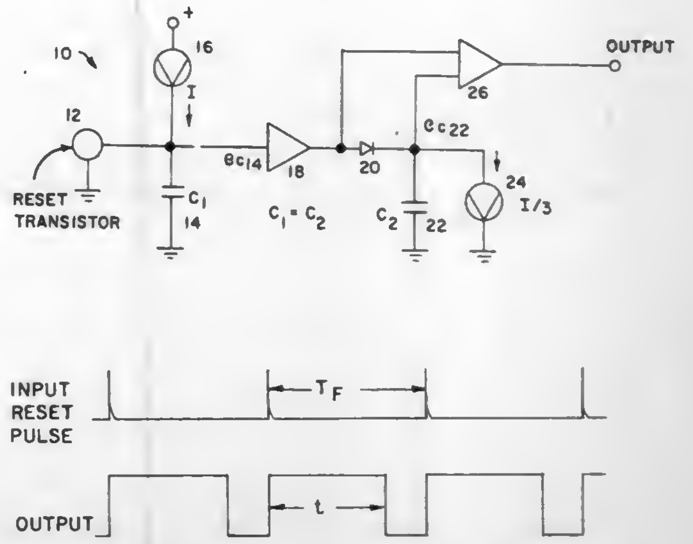
first capacitive means;

charging current source means electrically connected to said first capacitive means for delivering a constant rate of charging current thereto;

reset pulse discharge means electrically connected to said first capacitive means for delivering a reset pulse thereto to cause said first capacitive means to discharge, said charging current serving to recharge said first capacitive means following said discharge;

second capacitive means electrically connected to said first capacitive means;

unidirectional means electrically interposed between said first and second capacitive means, said unidirectional means permitting current to flow therethrough to said second capacitive means when the voltage potential level of said first capacitive means exceeds the voltage potential level of said second capacitive means, said unidirectional means preventing current to flow therethrough when the voltage potential level of said second capacitive means exceeds the voltage potential level of said first capacitive means, said unidirectional means being conductive during a second portion of an input pulse interval and nonconductive during a first duty cycle portion of said input pulse interval, and the voltage across said unidirectional means changing between said duty cycle portion and said second portion of said input pulse interval;



voltage follower impedance buffer means electrically interposed between said first and second capacitive means for providing charging current to said second capacitive means during said second portion of said input pulse interval, said second capacitive means following said first capacitive means in voltage during said second portion of said input pulse interval;

discharging current source means electrically connected to said second capacitive means for discharging said second capacitive means at a constant rate during said second portion of said input pulse interval, a duty cycle period to input pulse internal ratio being fixed by the selected relative value of said first capacitive means to said second capacitive means, and said charging current source means to said discharging current source means;

current threshold sensing switch means electrically connected to said unidirectional means for electrically sensing said change in voltage levels between said first duty cycle portion and said second portion of said input pulse interval.

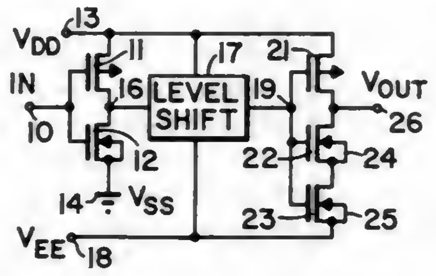
4,191,898
HIGH VOLTAGE CMOS CIRCUIT

Richard W. Ulmer, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1978, Ser. No. 902,012
Int. Cl.² H03K *17/60, 17/04, 19/08, 19/20*
U.S. Cl. 307—264 **6 Claims**

1. A CMOS monolithic integrated circuit having high voltage capability, comprising: a P channel field effect transistor having a first electrode, a second electrode and a gate electrode, the first electrode capable of being coupled to a first voltage potential; a first N channel field effect transistor having a first and a second electrode and a gate electrode, the first

electrode of the first N channel transistor being coupled to the second electrode of the P channel transistor and forming an output junction for the circuit; a second N channel field effect transistor having a first and a second electrode and a gate electrode, the first electrode of the second N channel transistor being coupled to the second electrode of the first N channel transistor, the second electrode of the second N channel transistor being capable of being coupled to a second voltage potential, each of said first and second N channel field effect transistors having a tub and wherein each tub is connected to the second electrode of each respective transistor, and the gate electrodes of the P channel and first and second N channel transistors all being coupled together; and a level shift means for providing a voltage level shift to an input voltage, the level shift means providing an output coupled to the gate electrodes of the P channel and first and second N channel transistors.



4,191,899

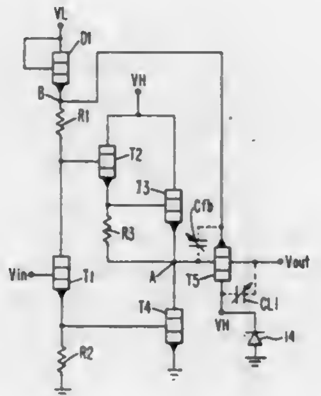
VOLTAGE VARIABLE INTEGRATED CIRCUIT CAPACITOR AND BOOTSTRAP DRIVER CIRCUIT

James J. Tomczak, Burlington, and Richard N. Wilson, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1977, Ser. No. 811,028

Int. Cl.^{2} H03K *19/08, 19/36;* **H01L** *29/92*

U.S. Cl. 307—303 **10 Claims**



1. A voltage variable integrated capacitor comprising:

three p-n junction diodes serially connected between a reference potential and a voltage node, the center one of said p-n junction diodes being oppositely poled with respect to the remaining two of said p-n junction diodes;

input means for coupling an input signal to a point between said p-n junction diode nearest said voltage node and said center p-n junction diode; and

biasing means coupled to said diodes for maintaining all three of said diodes in a reverse biased condition, said p-n junction diode nearest said voltage node providing a capacitively coupled output signal to said voltage node in response to an input signal.

4,191,900

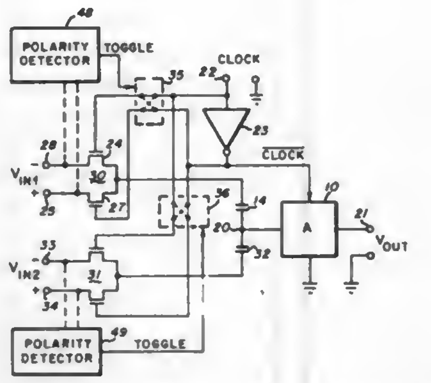
PRECISION PLURAL INPUT VOLTAGE AMPLIFIER AND COMPARATOR

Thomas P. Redfern; Joseph J. Connolly, and Thomas M. Frederiksen, all of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 27, 1978, Ser. No. 872,966

Int. Cl.^{2} H03K *5/20, 17/60*

U.S. Cl. 307—355 **9 Claims**



1. A clocked comparator having an inverting input and a non-inverting input, said inputs being transposable in response to the application of a control signal, said comparator comprising:

an inverter having an input, an output, and substantial gain;

clock means for periodically switching said inverter to its trip point;

a pair of switches having common output terminals capacitively coupled to said input of said inverter, and a pair of input terminals coupled respectively to said inverting and non-inverting input terminals of said comparator, said pair of switches being operated in complementary fashion by said clock means; and

electronic means for reversing the sense of said complementary switching in response to the application of said control signal whereby said inverting and non-inverting inputs are transposed without interrupting the signal paths of said comparator.

4,191,901

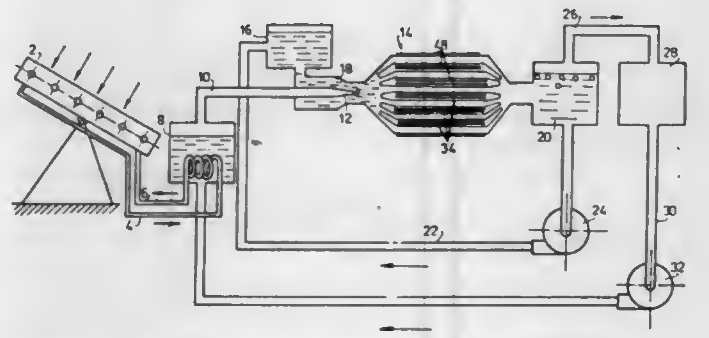
METHOD AND SYSTEM FOR CONVERTING SOLAR ENERGY INTO ELECTRICITY

Herman Branover, Beer-Sheva, Israel, assignor to Ben-Gurion University of the Negev, Beer-Sheva, Israel

Filed Apr. 27, 1977, Ser. No. 791,530

Int. Cl.^{2} H02K *45/00*

U.S. Cl. 310—11 **11 Claims**



1. A method for converting solar energy into electricity by means of a magnetohydrodynamic (MHD) generator, comprising the steps of:

(a) providing an organic liquid reservoir having an ejector nozzle positioned at the inlet port of a MHD generator;

(b) providing a liquid alloy reservoir in fluid communication with said inlet port;

(c) providing a solar energy absorber and heating said organic liquid to its boiling temperature by means of the solar energy absorbed by said absorber so as to form high pressure vapors of the organic liquid;

(d) directing the organic liquid vapors through said liquid alloy so as to form a two-phase mixture of a discontinuous vapor phase and a continuous liquid alloy phase and to propel said mixture through said MHD - generator;

(e) separating the vapors from the two-phase mixture;

(f) condensing said vapors into liquid; and

(g) recycling the organic liquid and the separated alloy liquid to their respective reservoirs, whereby solar heat energy is converted into mechanical energy and said mechanical energy is conterted into electrical energy in said generator.

4,191,902

ROTARY ELECTRIC MACHINES

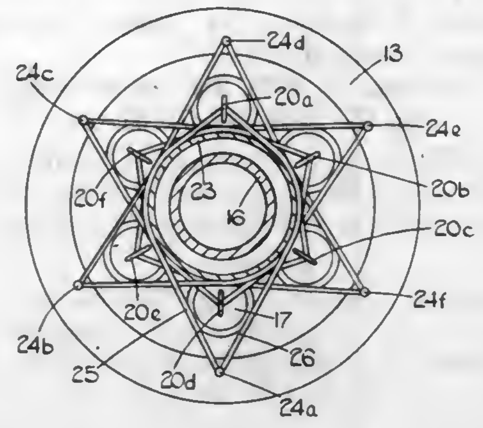
Christopher J. Yarrow, Bradford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 9, 1977, Ser. No. 859,128

Claims priority, application United Kingdom, Dec. 11, 1976, 51816/76

Int. Cl.^{2} H02K *11/00*

U.S. Cl. 310—68 D **6 Claims**



1. A rotary electric machine including a shaft, a winding mounted for rotation with said shaft, a stud-mounted diode carried by said shaft for rotation therewith radially inwardly of said winding, a terminal lug of the diode extending substantially parallel to the shaft axis, and an electric connector between said lug and a location on said winding generally diametrically opposite said lug, the arrangement being such that, in use, the centrifugal forces acting on said lug and on a first portion of said connector adjacent thereto on one side of the shaft axis is opposed by the centrifugal force acting on a second portion of said connector on the other side of the shaft axis.

4,191,903

DYNAMOELECTRIC MACHINE WITH AIR GAP ARMATURE WINDING

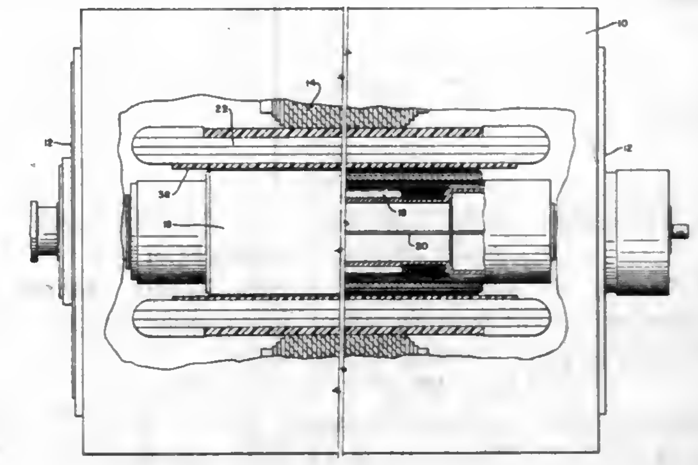
William C. Brenner, Fox Chapel Borough, and Charles C. Sterrett, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 29, 1978, Ser. No. 891,999

Int. Cl.^{2} H02K *3/14*

U.S. Cl. 310—213 **11 Claims**

1. In a dynamoelectric machine having a stator member and a rotor member carrying a field winding, the stator member including a stationary armature winding comprising a plurality of insulated conductors disposed longitudinally of the air gap in a plurality of layers, the conductors of each layer lying side-by-side with adjacent conductors substantially in contact to occupy substantially the entire circumferential extent of the air gap, the conductors having end portions extending beyond the air gap at each end thereof, the end portions of certain of said conductors lying at spaced intervals in each layer being displaced radially out of said layers into a single additional layer, and the end portions of all the conductors being angularly inclined to extend around the stator member for electrical connection to other conductors in spaced positions.



4,191,904

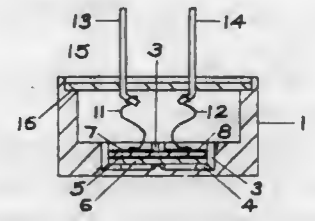
ELECTROACOUSTIC TRANSDUCERS OF THE FLEXURAL RESONANT VIBRATILE TYPE

Frank Massa, Cohasset, Mass., assignor to Fred M. Dellorfano, Jr. and Donald P. Massa, both of Cohasset, Mass., Trustees of The Stoneleigh Trust

Filed Sep. 28, 1978, Ser. No. 946,647

Int. Cl.^{2} H01L *41/10*

U.S. Cl. 310—322 **10 Claims**



1. In combination in an electroacoustic transducer, a flexural vibratile rectangular plate assembly comprising a plurality of bonded plates in which at least one plate has the property of changing its lateral dimensions upon the application of an electrical signal to said plate, a mounting structure, said mounting structure including an opening bounded by a peripheral wall surface, said opening having a shape and size to provide mechanical clearance between said peripheral wall surface and the periphery of said vibratile plate assembly, said mounting structure characterized in that it includes a first plurality of support members projecting from said peripheral wall surface adapted to serve as spacers between the peripheral wall surface of said opening in said mounting structure and the periphery of said vibratile plate assembly, and a second plurality of support members located in a plane at right angles to the peripheral wall surface of said opening, whereby said first and said second plurality of support members serve to precisely locate the position of said vibratile plate, said support members characterized in that the area of contact between said support members and said vibratile plate assembly, when said vibratile plate assembly is placed within said mounting structure, is negligibly small compared with the total area of said vibratile plate, and still further characterized in that said support members are located within said mounting structure in such position that upon placing said vibratile plate assembly within said opening said support members make contact only with the nodal regions of said vibratile plate assembly when said vibratile plate assembly vibrates at its fundamental flexural resonant mode, a resilient rubber-like adhesive between the nodal regions of said vibratile plate assembly and the surfaces of said support mem-

bers whereby the position of said vibratile plate assembly is resiliently fixed relative to the opening in said mounting structure, and electrical conductors connected to said vibratile plate assembly.

4,191,905
SEALED HOUSINGS FOR A SUBMINIATURE PIEZOELECTRIC VIBRATOR

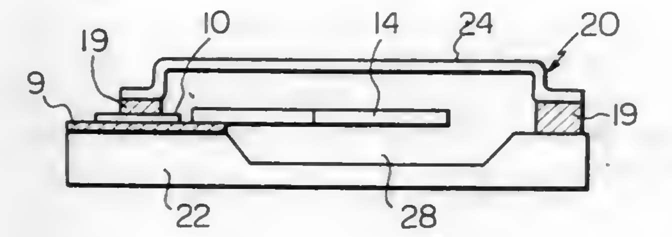
Yuh Yasuda, Higashimurayama; Sigeru Kizaki, Hanno, and Yukio Miya, Tokorozawa, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,464

Claims priority, application Japan, Jun. 17, 1977, 52-71033; Jun. 24, 1977, 52-74514; Oct. 4, 1977, 52-119138; Oct. 8, 1977, 52-121263

Int. Cl.^{2} H01L *41/10*

U.S. Cl. 310—344 **8 Claims**



1. A subminiature piezoelectric quartz crystal vibrator comprising:

a glass substrate having a recess formed in an upper surface thereof;

a pair of conductive metal layers formed on the upper surface of said glass substrate;

a quartz crystal vibrator element supported on upper surfaces of said pair of conductive layers such that the vibrator element is positioned within a periphery of said recess in said upper surface and separated by fixed distances from surfaces of said recess;

an insulating layer formed upon and partially covering said pair of conductive layers and areas of said upper surface of said glass substrate adjacent to said pair of conductive layer;

a first connecting metallic layer formed upon and partially convering said insulating layer and said upper surface of said glass substrate to form a continuous ring of metallization which surrounds said quartz crystal vibrator element; and

a housing cover sealed to said glass substrate by meas of said first connecting metallic layer.

4,191,906
TUNING FORK TYPE QUARTZ CRYSTAL RESONATOR WITH NOTCHED TINES

Shigeru Kogure, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Suwa, Japan

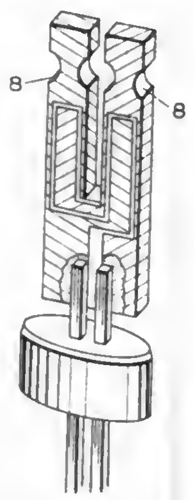
Filed Aug. 25, 1978, Ser. No. 936,941

Claims priority, application Japan, Jan. 26, 1978, 53-7574

Int. Cl.^{2} H01L *41/10*

U.S. Cl. 310—370 **6 Claims**

1. A tuning fork type quartz crystal resonator having the flexure mode of vibration and a mechanically supporting portion disposed below the roots of arms, and comprising the arms of said tuning fork type quartz crystal resonator provided with concave portions in the region of 0.65 through 0.85 from the roots of arms in the case where said roots of arms are 0 and top edges of arms are 1, said concave portions suppressing the generation of overtone by making the effective length of overtone longer to said supporting portion.



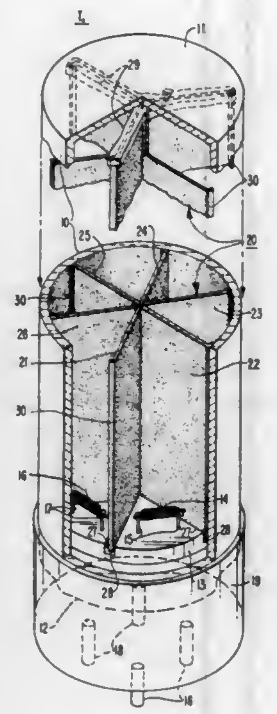
4,191,907
COMPACT SINGLE-ENDED FLUORESCENT LAMP HAVING A PARTITIONED ENVELOPE

Gerald L. Rogoff, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1978, Ser. No. 944,495

Int. Cl.^{2} H01J *17/04, 63/04*

U.S. Cl. 313—204 **10 Claims**



1. A low-pressure electric discharge lamp of the single-ended type that is adapted for use as a compact high-intensity light source, said lamp comprising:

a light-transmitting vitreous envelope of tubular configuration that has a substantially flat end wall and is terminated by a closure member which is hermetically sealed to said envelope,

lead-in conductors extending through said closure member in paired relationship,

an electrode connected to and supported by each pair of lead-in conductors and thereby providing a plurality of spaced electrode assemblies at the sealed end of the envelope,

an ionizable medium within said envelope adapted to sustain an electric discharge when the electrodes are energized,

an elongated partition assembly within said envelope extending from the substantially flat end wall thereof toward and beyond the electrodes at the sealed end of the envelope, said partition assembly comprising a plurality of planar segments that are seated against the envelope end wall and radially extend from a longitudinal axis to the arcuate walls of said envelope and thereby divide the envelope interior into a plurality of sectors which define a tortuous discharge channel that traverses the envelope in retroverted fashion, and

means holding the partition assembly in said position within the envelope comprising a support member of rigid material that extends transversely across the envelope interior and has a series of slot-like channels in its inwardly disposed face which are aligned with and accommodate the end edges of the planar segments of the partition assembly,

each of said slot-like channels containing a layer of compliant material that is in nested relationship with the end edge of the associated planar segment and thereby provides a juncture which cannot be penetrated by the discharge and thus prevents the discharge from bypassing any of the planar segments,

said lead-in conductors extending through said partition-support member and being so arranged that adjacent electrodes are physically isolated from one another by one of the planar segments of the partition assembly which completely spans the space between the partition-support member and the substantially flat end wall of the envelope.

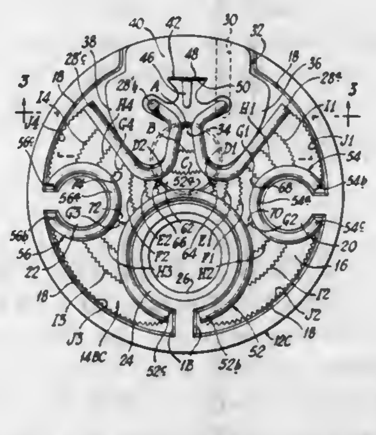
4,191,908
CURRENT LIMITING SPARK GAP FOR ACHIEVING ARC ELONGATION, DIVISION AND COMPRESSION WITHOUT THE USE OF SUPPLEMENTARY MAGNETIC MEANS

Francis V. Cunningham, Western Springs, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 967,906

Int. Cl.^{2} H01J *17/00, 21/00*

U.S. Cl. 313—325 **34 Claims**



1. A spark gap for a high voltage surge arrester comprising

a plurality of at least two generally horizontally disposed, contiguous insulating gap plates configured to form a generally horizontally extending arc elongation and cooling chamber therebetween and

means for forming a series gap within said arc chamber, said series gap forming means comprising first and second, preformed, conductive series gap electrodes and spacing means interfitting with said series gap electrodes for spacing said series gap electrodes apart to define said series gap, said spacing means comprising a gap spacer that is physically separate from, but removably engageable with at least one of said gap plates, said gap spacer including a first, integrally formed extending portion interfitting with said first series gap electrode, a second, integrally formed extending portion interfitting with said second series gap electrode and a third integrally formed bridging portion disposed between and fixedly spacing apart said first and second integrally formed portions of said gap spacer.

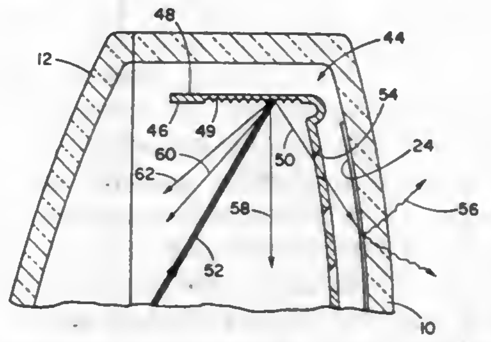
4,191,909
COLOR CRT WITH SHADOW MASK HAVING PERIPHERALLY GROOVED SKIRT

Lawrence W. Dougherty, Sleepy Hollow, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 23, 1978, Ser. No. 953,400

Int. Cl.^{2} H01J *29/07*

U.S. Cl. 313—402 **4 Claims**



1. In a color cathode ray tube having a screen, an electron gun assembly for generating a plurality of electron beams, and a shadow mask having a dished perforate central portion for selectively transmitting electrons to the screen and a rearwardly extending skirt surrounding said perforate central area, wherein the improvement comprises said shadow mask having on an inner surface of said skirt an array of substantially circumferentially oriented grooves.

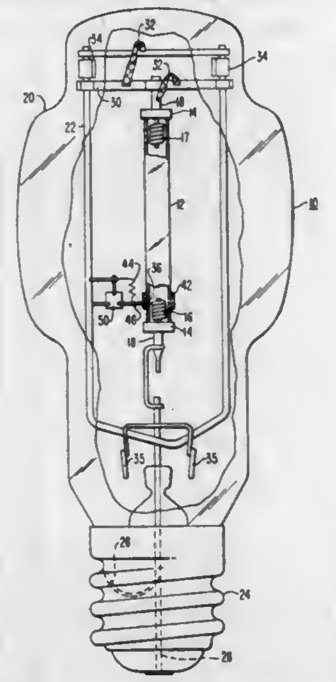
4,191,910
STARTING ARRANGEMENT FOR HIGH PRESSURE DISCHARGE SODIUM LAMP

Daniel A. Larson, Cedar Grove, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 3, 1978, Ser. No. 948,131

Int. Cl.^{2} H01J *7/44*

U.S. Cl. 315—51 **11 Claims**



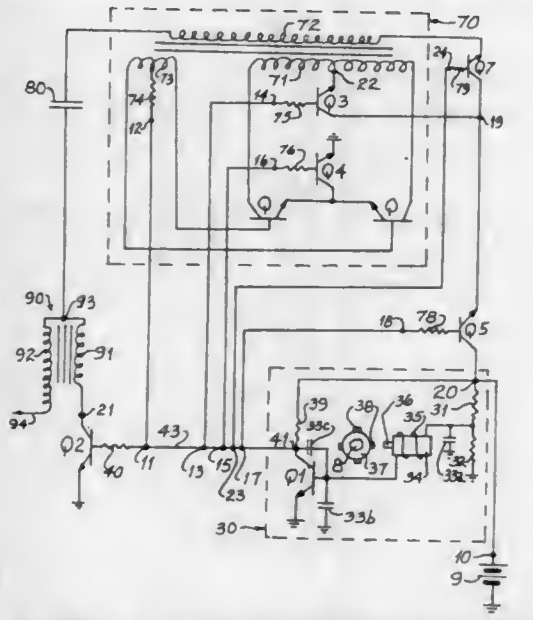
1. In combination with a high-pressure-discharge sodium lamp comprising an elongated alumina arc tube of predetermined dimensions and having longitudinal walls of predetermined thickness, said elongated arc tube sealed at the ends thereof and enclosing a discharge-sustaining filling comprising sodium and inert ionizable starting gas, electrodes operatively positioned within said arc tube proximate the ends thereof, lead-in means extending through the sealed ends of said arc tube and connecting to said electrodes, a light-transmitting protective outer envelope surrounding said arc tube, frame means positioned within said outer envelope and supporting said arc tube in predetermined position within said outer envelope, electrical adaptor means affixed to said outer envelope for connection to a source of power, a pair of electrical con-

nection means connecting said electrical adaptor means to said lead-in means, and one of said electrical connection means including said frame means to electrically connect one of said electrodes to said electrical adaptor means, the improvement which comprises:

- a. at least one small plug-like electrically conductive ceramic means of predetermined dimensions extending through the longitudinal wall of said arc tube proximate at least one of said lamp electrodes, said plug-like ceramic means comprising refractory-oxide-based ceramic matrix which is non-reactive with respect to high-temperature sodium vapor and which possesses the predetermined thermal-physical-chemical properties required to form a high-temperature seal with alumina, and said refractory-oxide-based ceramic matrix fused to the surrounding alumina arc tube wall and having embedded therein a predetermined amount of finely divided refractory metal which is inert with respect to said discharge-sustaining filling to provide said plug-like ceramic means with a predetermined electrical conductivity; and
- b. during starting of said lamp said plug-like ceramic means electrically connect, exteriorly of said arc tube, to the said electrode which is positioned proximate the opposite end of said arc tube from the connected plug-like ceramic means, and during starting of said lamp the total electrical resistance between the interior surface of said plug-like ceramic means within said arc tube and the connected opposite electrode permitting the maintenance of a glow-type discharge within said arc tube between said interior surface of said plug-like ceramic means and the said electrode which is proximate thereto to ionize the atmosphere within said arc tube.

4,191,911
AC POWER GENERATION CONTROL SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705
Filed Nov. 24, 1978, Ser. No. 963,525
Int. Cl.^{2} F02P *9/00*
U.S. Cl. 315—209 R **17 Claims**

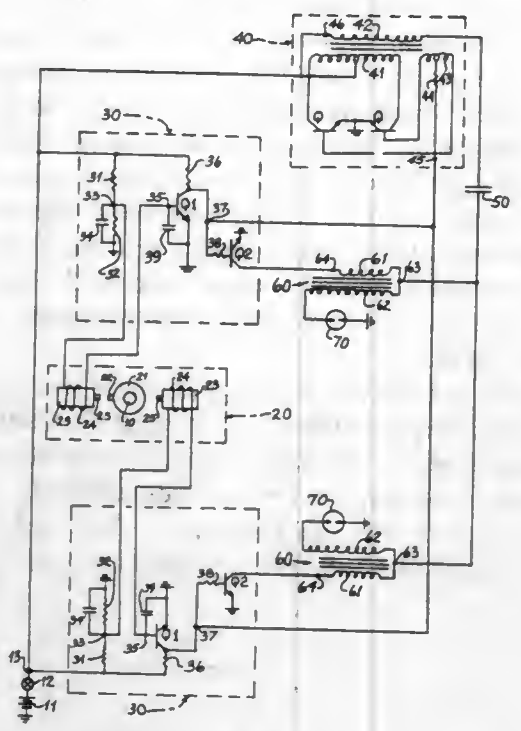


1. In an alternating current power source having solid state active devices and a transformer having an output winding for feeding an impedance load, comprising the combination of:

- a capacitor connected in series with the output winding and the load;
- logic means coupled to the transformer for activating said power source during a first mode of its operation and for deactivating said power source during a second mode of its operation; and
- control means, coupled to said transformer and triggered by the logic means, for inhibiting energy residual in said transformer from being transferred therefrom during said second mode.

4,191,912
DISTRIBUTORLESS IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705
Filed Dec. 14, 1978, Ser. No. 962,754
Int. Cl.^{2} F02P *9/00*
U.S. Cl. 315—209 R **19 Claims**

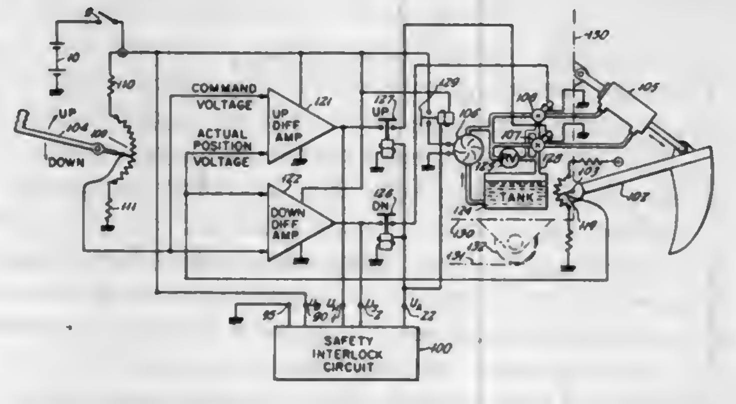


1. A distributorless ignition system comprising the combination of:

- a power source having output means for providing alternating current;
- a capacitor in series with said output means;
- a plural number of primary circuits comprising a plural number of transformer windings connected to said capacitor and output means, said capacitor, output means and one of the transformer windings comprising one primary circuit; and
- switching means, coupled to said primary circuits, one of said switching means per one said primary circuit, said alternating current power source also being means for enabling current conduction to take place through said switching means.

4,191,913
SAFETY INTERLOCK CIRCUIT FOR AN ERROR-SIGNAL-CONTROLLED SERVO SYSTEM

Winfried Arnold, Vaihingen, Enz, and Hans Kubach, Korntal-Munchingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 6, 1977, Ser. No. 857,889
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1976, 2655906
Int. Cl.^{2} G05B *9/02*
U.S. Cl. 318—563 **19 Claims**



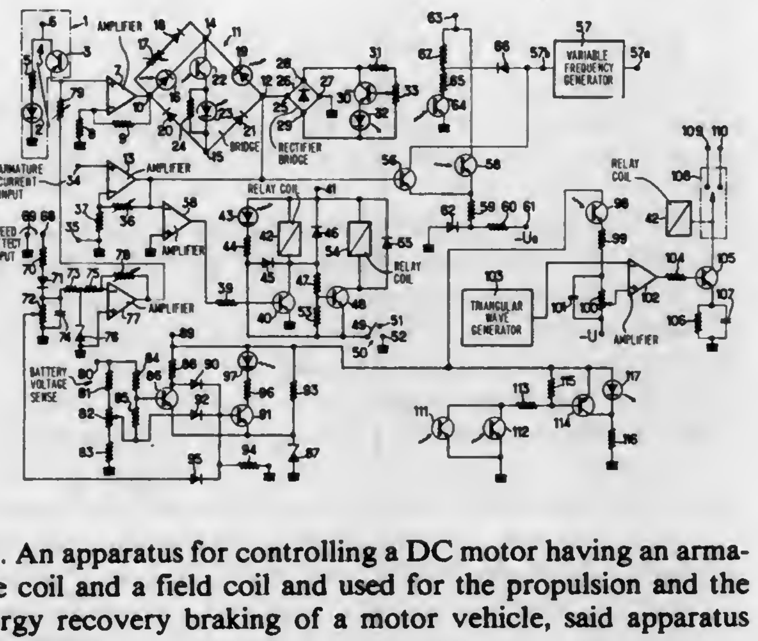
1. An electronic safety interlock circuit for a servo system

having at least one member arranged to be driven over a range of positions and movement in accordance with a command element having a corresponding range of positions, means for converting actual position of said member into an electrical value, means for converting a commanded position of said member into a corresponding electrical value, a control system for driving said member from its actual position to a commanded position by reference to comparison of said electrical values respectively produced by said converting means and a switch for putting said control system into and out of operation and further having the improvement which consists in that:

- output disabling means are provided for preventing unexpectedly violent movement of said member following operation of said switch to put said system into operation, by holding said member locked in position, and thereby disabling the output effect of said servo system, from the time of operation of said switch for so long as an initial difference exceeding a predetermined small threshold magnitude and beginning substantially at the time of operation of said switch is present between said electrical values respectively produced by said converting means.

4,191,914
CONTROL CIRCUIT FOR A DC ELECTRIC MOTOR PARTICULARLY USED IN THE PROPULSION OF AN ELECTRIC VEHICLE

Jean-François Lecluse, Douvres, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France
Filed May 8, 1978, Ser. No. 903,795
Claims priority, application France, May 12, 1977, 77 14573
Int. Cl.^{2} H02P *7/14*
U.S. Cl. 318—139 **12 Claims**

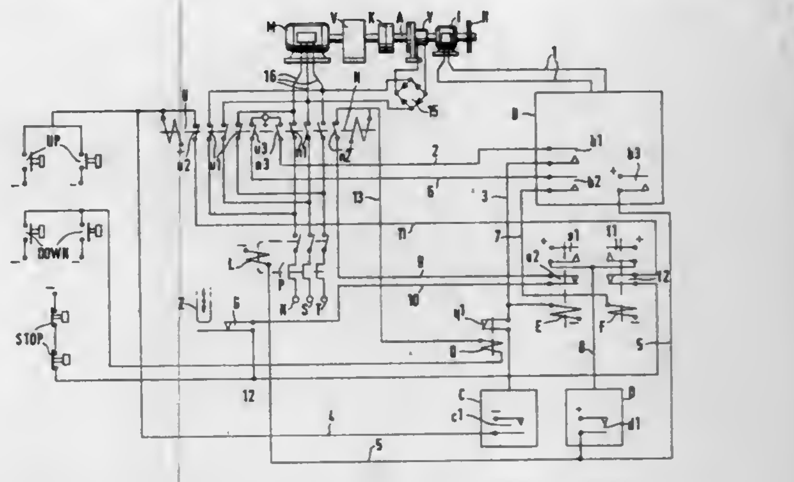


1. An apparatus for controlling a DC motor having an armature coil and a field coil and used for the propulsion and the energy recovery braking of a motor vehicle, said apparatus comprising

- an armature current chopper having a signal input and an output connected to said armature coil;
- a separate filed current chopper having first and second signal inputs and an output connected to said field coil;
- means for providing an armature current control signal;
- a plurality of safety devices;
- means for providing a control voltage proportional to requested power with a positive value when an acceleration is selected and a negative value when a braking is selected; and,
- control means for controlling both said armature current and said field current for obtaining a selected acceleration and braking comprising:
  - a first controlled means responsive to the output of a first control signal emitting means for providing a control signal to said first signal input of said field current chopper,
  - a second controlled means responsive to the output of a second control signal emitting means for providing a control signal to said second signal input of said field current chopper,
  - a third controlled means responsive to the output of a third control signal emitting means for providing a control signal to said signal input of said armature current chopper,
  - a fourth controlled means responsive to the output of a fourth control signal emitting means for progressively limiting armature current, said fourth control signal emitting means being controlled by said plurality of safety devices; and,
  - a bridge circuit comprising a first, second, third and fourth terminals, a first outer arm connected between said first and second terminals and including said first control signal emitting means and in parallel therewith an electrical circuit including a resistor, a second outer arm connected between said second and third terminals and including said second control signal emitting means, a third and fourth outer arms respectively connected between said fourth terminal and said first and third terminals, said third and fourth arms each including a diode, an inner diagonal arm connected between said second and fourth terminals and including a serial connection of said third control signal emitting means and said fourth controlled means, said first terminal being connected to the output of said means for providing a control voltage proportional to requested power and said third terminal being connected to the output of said means for providing an armature current control signal.

4,191,915
DOOR OPERATING APPARATUS

Tryggve J. Johansson, Oloupersvagen 23, Älvängen, Sweden (44600)
Filed Sep. 27, 1977, Ser. No. 836,970
Claims priority, application Sweden, Mar. 28, 1977, 7703512
Int. Cl.^{2} H02P *3/00*
U.S. Cl. 318—464 **1 Claim**



1. Apparatus for operating a vertically movable door comprising an electric motor; a friction clutch comprising a driving member and a driven member; a first transmission means connecting the motor with said driving member; said transmission means connecting said driven member with the door; circuit means for connecting the motor to a source of power, said circuit means including a first switch arranged to connect the motor for rotation in the direction causing closing of the door, a second switch arranged to connect the motor for rotation in the direction causing opening of the door, and a third switch connected in series with said first and second switches; a stop member arranged to prevent the door from moving beyond a predetermined fully-open terminal position; automatic means for switching off the motor from the source of power on arrival of the door to said terminal position, said automatic means including means for sensing the rotation of a rotary part of said second transmission means, means arranged to produce a first signal responsive to the sensing by said sensing means of a

deviation of the rate of rotation downward from a predetermined range, and control means responsive to said first signal for causing said second switch to be restored to its open-circuit condition; means for automatically reversing the motor when the door upon closing encounters an obstruction, said means including means for sensing the state of said first switch and for producing a second signal when sensing the closed state of said first switch, and a gate arranged to be controlled by said first and second signals and to respond to the simultaneous reception of said first and second signals by producing a third signal, control means responsive to said third signal for causing said switch to be restored to its open condition, and delayed control means responsive to said third signal for closing said second switch, and means sensing the state of the motor circuit and for producing, when sensing the closed state of the motor circuit, a signal circuit condition indicative of said closed state, a second and gate arranged to respond to the simultaneous presence of said signal circuit condition and said first signal by producing a fourth signal, a time delay circuit arranged to be controlled by said fourth signal and to cause said third switch to be opened when said fourth signal has lasted a predetermined time.

4,191,916

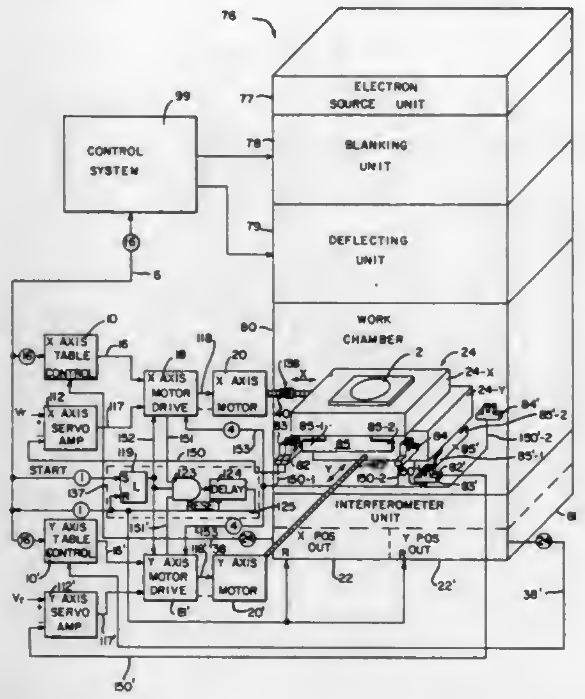
TABLE POSITIONING SYSTEM INCLUDING OPTICAL REFERENCE POSITION MEASURING TRANSDUCER

John J. Zasio, Sunnyvale, and Michael W. Samuels, San Jose, both of Calif., assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 23, 1977, Ser. No. 854,424

Int. Cl.^{2} G05B *1/06*

U.S. Cl. 318—640 **18 Claims**



1. A table positioning apparatus including in each of first and second axes,
- a movable table,
- a motor for driving the table in response to a motor drive signal,
- an optical position measuring transducer located to establish a reference position for said table in a local region defined by a light beam, and operative to provide a reference position signal as a function of the table position relative to said reference position in the local region, said position signal having a reference value when the table is at the reference position,
- an amplifier responsive to said reference position signal to produce a servo signal having a positive sign when said position signal is less than said reference value, having a zero value when said position signal is equal to said reference value, and having a negative sign when said position signal is greater than said reference value,
- a motor drive for providing said motor drive signal in response to said servo signal whereby said table is driven to said reference position and causes said servo signal to have said zero value to indicate that said table is at said reference position,
- a zero detector for detecting said zero value to provide a servo zero signal,
- an interferometer for measuring the position of said table over a table travel greater than and including said local region, said measurement unit including a digital counter for storing a count representing the position of the table as measured by said measurement unit,
- means for connecting said servo zero signal to reset said counter to establish said count to indicate said reference position.

4,191,917

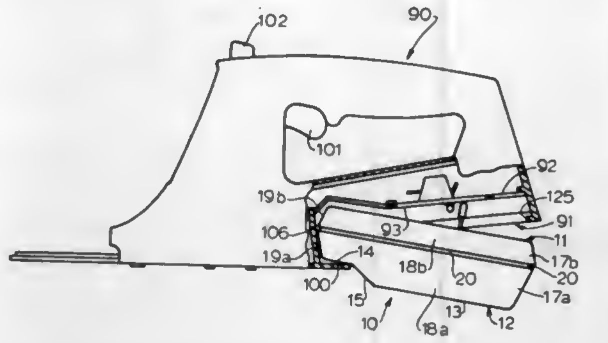
BATTERY PACK RECHARGEABLE IN RECESSED OR FLUSH-TYPE RECEPTACLES

Wayne R. Brown; John E. Jones, and Charles F. Sherrill, all of Danville, Va., assignors to Disston, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 827,694, Aug. 25, 1977, abandoned. This application Feb. 10, 1978, Ser. No. 876,934

Int. Cl.^{2} H02J *7/00*

U.S. Cl. 320—2 **8 Claims**



1. A battery pack for mounting in a portable device to be powered thereby and adapted for recharging in either a recessed or non-recessed receptacle, said battery pack comprising:
- (a) an elongated substantially rectangular housing having at least one substantially rectangular flat base wall with a plug receiving opening and said walls, the area of the base wall being greater than the area of any of the side walls;
- (b) battery means in said housing;
- (c) a rectifier in said housing;
- (d) a prong-mounting plug having a cavity formed therein and slidably mounted in said base wall opening and having a pair of external contact prongs fixed on and extending therefrom and oriented perpendicular to said base wall, said slidable plug being positionable in at least one outwardly extending position from said base wall wherein said plug and prongs are both extended and adapted for insertion into a recessed receptacle for recharging said pack and positionable to a retracted position wherein said plug retracts into said housing inwardly of the plane of said base wall and said prongs extend outwardly from said base wall for insertion into a non-recessed receptacle or into a device having mating prong recesses for recharging said pack or powering said device as the case may be;
- (e) circuit means including cooperative sliding contact means including on one side sliding contacts fixed on and movable with said plug and on the other side contacts engaged by said sliding contacts within the housing and being effective to connect said prongs to said battery means through said rectifier in any of said plug positions enabling said battery means to be recharged from either said type receptacle;
- (f) switching means having on one side contacts fixed within said housing and connected to said battery means and having on the other side contacts fixed within said plug cavity and connected to said prongs and slidable connecting and actuator means mounted within said plug cavity and movable relative to said plug for bridging said fixed housing and plug cavity contacts and spring-biased by means within said plug cavity to maintain said fixed housing and plug cavity contacts disconnected when the pack is not mounted in the device and adapted to being actuated by means on the device operative on said actuator means to connect the battery means through said fixed housing and plug cavity contacts and connecting means to discharge through the external contact prongs upon mounting the pack in said device and with said plug in said retracted position; and
- (g) releasable latching means mounted on said base wall and cooperative with said plug enabling said plug to be releasably secured in any of said positions.

8. A battery pack adapted for being mounted in a portable device to be powered thereby and for being recharged in either a recessed or non-recessed receptacle, said battery pack comprising:
- (a) an elongated housing having at least one substantially rectangular flat base wall and side walls;
- (b) battery means in said housing;
- (c) a rectifier in said housing;
- (d) a prong-mounting plug having a cavity formed therein and slidably mounted in said base wall and having a pair of external contact prongs fixed on and extending therefrom and oriented perpendicular to said base wall, said slidable plug being positionable in at least one outwardly extending position from said base wall wherein said plug and prongs are both extended and are adapted for insertion into a recessed receptacle for recharging said pack and in a retracted position wherein said plug retracts into said housing inwardly of the plane of said base wall and said prongs extend outwardly from said base wall;
- (e) positionable circuit means enabling said prongs to be connected to said battery means through said rectifier in any of said plug positions such that said battery means may be recharged from either said type receptacle; and
- (f) switching means having on one side contacts connected to said battery means and on the other side contacts within said plug cavity and connected to said prongs and positionable means within said plug cavity for bridging said contacts and operative to maintain said contacts disconnected when the pack is not mounted in the device and adapted when the pack is mounted in the device to being actuated by means on the device to connect said contacts within said plug cavity enabling said battery means to discharge through the prongs and with the plug in the retracted position.

4,191,918

AUTOMATIC ELECTRIC BATTERY CHARGING APPARATUS

Anthony T. Nicholls, Eccles, England, assignor to Chloride Group Limited, London, England

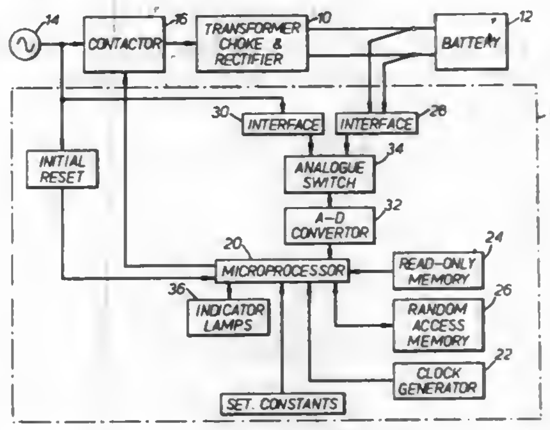
Filed Oct. 5, 1977, Ser. No. 839,451

Claims priority, application United Kingdom, Aug. 24, 1977, 35493/77

Int. Cl.^{2} H02J *7/04*

U.S. Cl. 320—23 **19 Claims**

1. Automatic electric battery charging apparatus, comprising means arranged to provide a control signal which follows variations in battery voltage comparatively rapidly, and a delayed signal which follows variations in battery voltage comparatively slowly, and means arranged to monitor the control and delayed signals and to reduce the average charging current when the difference between the control and delayed signals, or a signal which follows this difference comparatively rapidly, falls below a predetermined value.



4,191,919

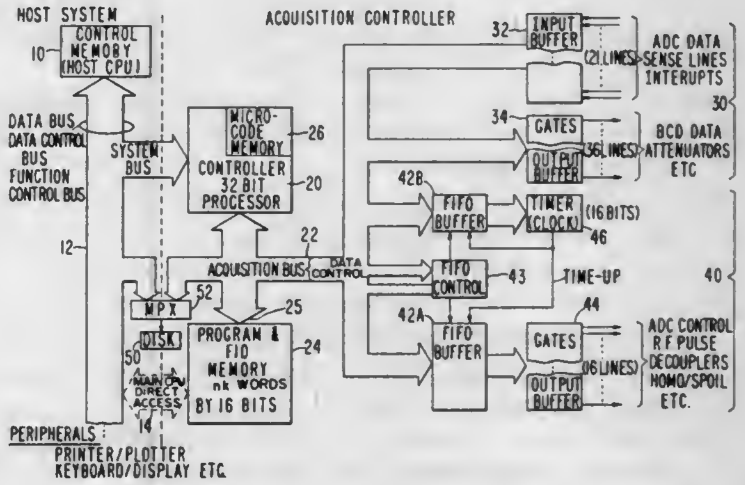
FAST NMR ACQUISITION PROCESSOR

Richard M. Haney; Robert A. Stillman, both of Palo Alto, and Robert S. Codrington, Los Altos Hills, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 22, 1978, Ser. No. 907,650

Int. Cl.^{2} G01R *33/08*

U.S. Cl. 324—312 **10 Claims**



1. In an impulse NMR spectrometer comprising a digital processor to generate gating commands for excitation of resonance and control data acquisition functions of said spectrometer, the improvement comprising:
- a FIFO register for containing a sequence of gating state words, each said word having a first portion for selecting the status of gates responsive to said gating commands and a second portion specifying the time interval for the persistence of said gating state word, said sequence of gating state words supplied by said digital processor,
- output latch means for asserting said gating commands responsive to the first portion of the currently asserted gating state word of said FIFO register, and
- timing means responsive to said second portion of said gating state word for advancing the next sequential gating state word to said output means at the expiration of the persistence inteval of the currently asserted gating state word.

4,191,920

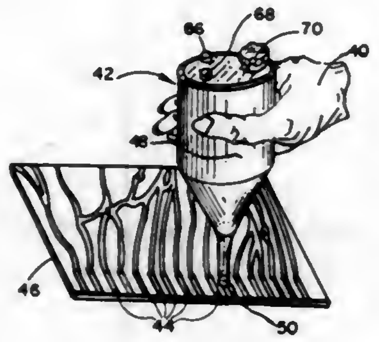
INSTRUMENT FOR DETECTING CONTAMINATION ON METALLIC SURFACES BY MEASURING SURFACE POTENTIAL DIFFERENCES

Jack D. Guttenplan, Santa Ana, and Herbert W. Yancey, Downey, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 14, 1977, Ser. No. 842,022

Int. Cl.² G01N *27/66*

U.S. Cl. 324—459 **6 Claims**



1. An instrument for sensing surface potential difference, comprising:

reference electrode means adapted for disposal adjacent to a surface of a metallic object whereby an air gap between said electrode and said surface is defined;

radioactive means for directing radiation into said air gap wherein said radioactive means is disposed within said electrode so as to ionize the air in said air gap;

means for making electrical contact directly with said metallic object;

buffer amplifier means for sensing and amplifying a potential difference between said reference electrode means and said means for making electrical contact;

said buffer amplifier means having an input circuit impedance sufficiently greater than the resistance of said air gap when said air gap is within predetermined limits of width and when the air in said air gap is ionized by said radiation so that said potential difference is substantially independent of the resistance of said air gap;

reference means for providing a selectable calibration signal level for the indication of contamination on said surface of said metallic object;

signal comparison means responsive to said potential difference and said calibration signal for providing a comparison signal signifying contamination on said surface;

housing means for supporting said reference electrode, for supporting said means for making electrical contact and for enclosing therein said buffer amplifier means and said signal comparison means;

indicating means responsive to said comparison signal for indicating the presence of contamination on said surface wherein said indicating means is so mounted on said housing means as to be viewable by a human operator; and

wherein said instrument is formed as a portable probe suitable for hand-held use by said human operator.

4,191,921

CORONA DISCHARGE DETECTION APPARATUS WHICH ELIMINATES PERIODIC NOISE

Hironori Yoshino, Takarazuka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Oct. 28, 1977, Ser. No. 846,397

Claims priority, application Japan, Oct. 30, 1976, 51-130610; Nov. 30, 1976, 51-144138

Int. Cl.² G01R *31/14;* H04B *15/00*

U.S. Cl. 324—54 **11 Claims**

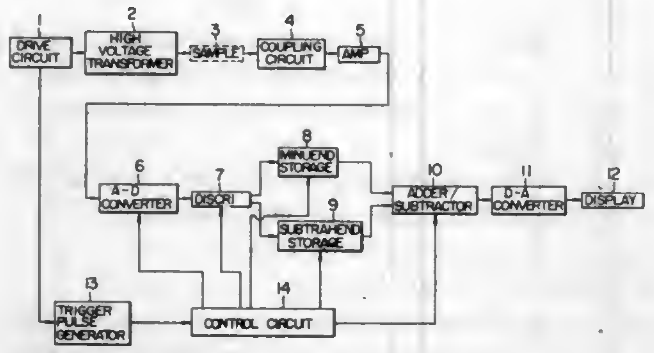
1. A corona discharge detection apparatus comprising:

an A–D converter for converting a corona signal including a noise component which is in synchronism with a frequency of a power supply voltage into a predetermined number of digital signals for each cycle of said power supply voltage;

a first storage device coupled to said A–D converter for successively storing said predetermined number of digital signals for one cycle of said power supply voltage;

a second storage device coupled to said A–D converter for successively storing said predetermined number of digital signals for a different cycle of said power supply voltage;

an arithmetic operation device coupled to said first and second storage devices for successively subtracting in the order of storage each of the predetermined number of digital signals stored in said first storage device from a corresponding one of the predetermined number of digital signals stored in said second storage device to produce a signal indicative of a detected corona discharge which is substantially free from periodic noise synchronized with the frequency of said power supply voltage;



means for providing a trigger signal synchronized with a predetermined phase of said power supply voltage; and,

a control means responsive to said trigger signal for providing timed output control signals for controlling the synchronized operation of said A–D converter, first and second storage devices and arithmetic operation device to produce the successive storage and subtraction of the digital signals from the different cycles of the power supply voltage.

4,191,922

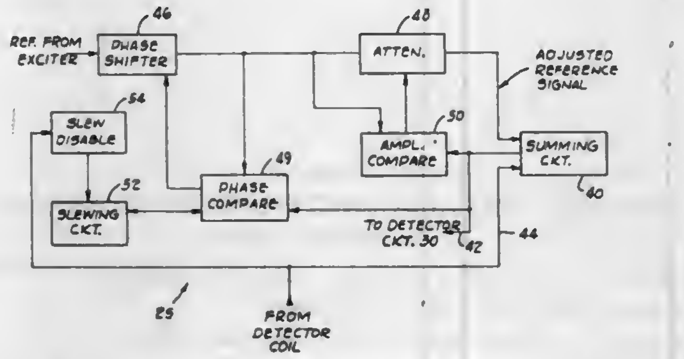
ELECTROMAGNETIC FLAW DETECTION SYSTEM AND METHOD INCORPORATING IMPROVED AUTOMATIC COIL ERROR SIGNAL COMPENSATION

Richard M. Harris, Mentor, and Wilbert J. Janos, North Ridgeville, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 14, 1978, Ser. No. 886,392

Int. Cl.² G01R *33/12*

U.S. Cl. 324—225 **15 Claims**



1. An electromagnetic flaw detection system comprising:

(a) circuitry for exciting an electromagnetic field;

(b) circuitry including a coil in the region of the field and susceptible of producing an error signal when in the field, said error signal having a phase angle with respect to a reference;

(c) apparatus for moving a metallic workpiece in the field relative to the coil, for causing the coil to produce an output in response to the passage of a flawed workpiece;

(d) circuitry coupled to the coil for detecting the coil output, and

(e) balancing circuitry responsive to the error signal including circuitry for automatically nulling error signals having a phase angle ranging over 360° with respect to the exciting field.

4,191,923

SATELLITE COMMUNICATION SYSTEMS

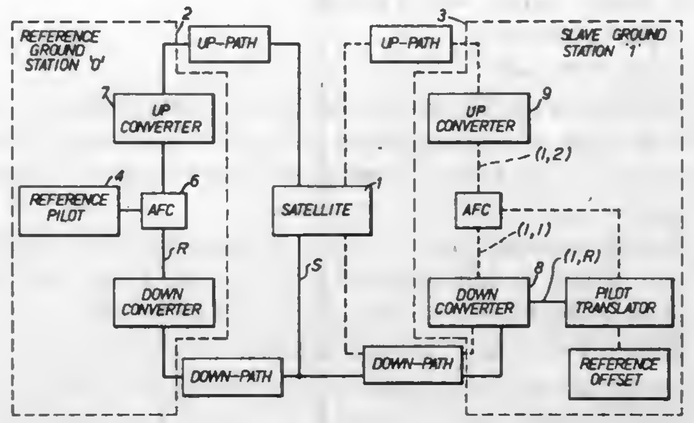
Ernst F. Schelisch, Hatfield Peverel, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Jun. 1, 1977, Ser. No. 802,508

Claims priority, application United Kingdom, Jul. 30, 1976, 31897/76

Int. Cl.² H04B *7/14*

U.S. Cl. 325—4 **7 Claims**



1. A satellite communications system including two or more ground stations arranged to communicate via a satellite, one ground station including means for generating and transmitting a reference pilot signal having a stable reference frequency which is received via the satellite by another ground station, means located at said another ground station for transmitting in a part of the communication band of the system not being used as a communication channel an auxiliary pilot frequency which is received and returned by the satellite to enable Doppler frequency shifts to be detected, and means for generating and transmitting in a designated communication channel reserved for pilots a pilot frequency compensated for the detected Doppler frequency shift so that upon reception at the satellite the pilot frequency is spaced apart in frequency from the reference frequency by a predetermined amount.

4,191,924

CHANNEL SELECTION APPARATUS

Masahiro Takeshita; Kazumi Kawashima; Minoru Ueda, all of Takatsuki, and Keisuke Yamamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 22, 1978, Ser. No. 908,539

Claims priority, application Japan, May 25, 1977, 52/61515; Jun. 15, 1977, 52/71294; Jun. 17, 1977, 52/72435

Int. Cl.² H04B *1/16*

U.S. Cl. 325—465 **18 Claims**

1. A channel selection apparatus comprising:

a tuner having a voltage dependent variable reactance element as a tuning element;

a plurality of potentiometers for presetting channel selection voltages one for each of a plurality of channels, said channel selection voltages being selectively applied to said variable reactance element of said tuner for selecting a disired channel;

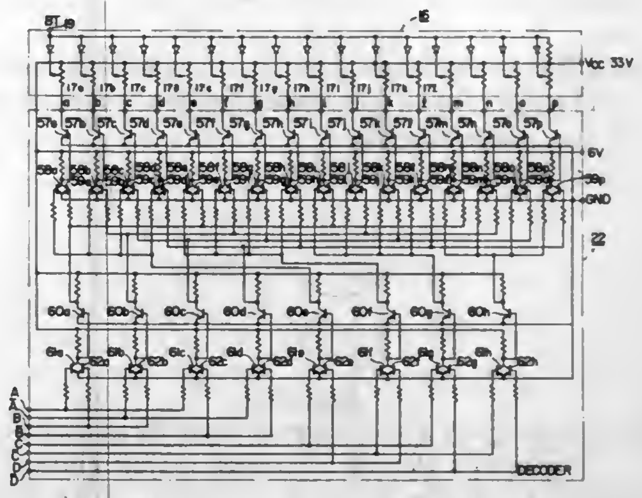
a coupling means for coupling selected one of said potentiometers to said turner such that one of said channel selection voltages taken from said selected potentiometer is applied to said variable reactance element of said tuner;

a counter including a plurality of flip-flops and connecting means for cascade-connecting said plurality of flip-flops such that a trailing edge of an AND output of an output of the flip-flop in one stage and a channel selection count input signal triggers the flip-flop of the next stage;

a clock pulse generating circuit for generating clock pulses;

a control circuit responsive to a channel selection control input applied to an input terminal thereof to extract said clock pulses and couple said counter to said clock pulse generating circuit such that said extracted clock pulses are applied to said counter as said count input signal;

a decoder including binary signal input terminals, a plurality of output terminals said decoder being responsive to said binary signal to produce an output at one of said output terminals, a plurality of output transistors connected to said plurality of output terminals, respectively, a plurality of parallel-connected transistor sets, means for coupling the bases of said output transistors to the common collectors of the respective ones of said transistor sets, and means for coupling said binary signal input terminals to the bases of the respective ones of said transistor sets;



a coupling means for coupling said output terminals of said decoder to said potentiometers to select one of said plurality of potentiometers in accordance with the output of said decoder; and

a switch means connected to said input terminal of said control circuit to apply said channel selection control input to said input terminal.

4,191,925

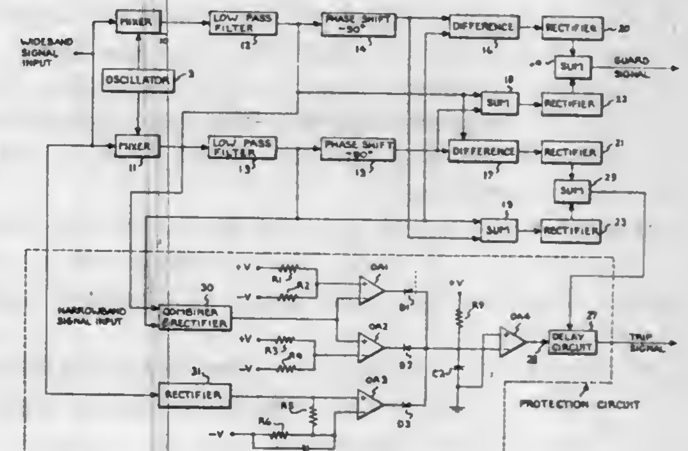
POWER LINE PROTECTION CIRCUIT

Robert P. Dixon, Rustburg, and Francis T. Shannon, Lynchburg, both of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Oct. 27, 1977, Ser. No. 845,887

Int. Cl.² H04B *1/16*

U.S. Cl. 325—474 **8 Claims**



1. In a signal receiver for receiving relatively narrowband information signals in a relatively broad band of signals and

producing said information signals at an output, an improved circuit comprising:

- a. first means for producing a first signal whose amplitude is indicative of the amplitude of said relatively broad band signals;
- b. second means connected to said first means for producing a control signal in response to the amplitude of said first signal rapidly exceeding a dynamic reference level determinated by said relatively broad band signals;
- c. third means for producing a second signal whose amplitude is indicative of the aplitude of said relatively narrowband signals;
- d. fourth means connected to said third means for producing a control signal in response to the amplitude of said second signal going outside predetermined upper and lower limits;
- e. and fifth means connected to said second and fourth means for delaying said information signals in response to either of said control signals.

4,191,926

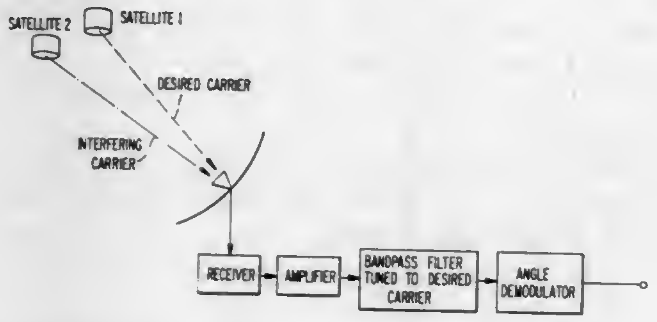
METHOD AND APPARATUS FOR INTERFERENCE CANCELLATION AT BASE-BAND USING MULTIPLICATION OF THE DESIRED INTERFERING CARRIERS

Benjamin A. Pontano, Gaithersburg, and NandKishore M. Chitre, Rockville, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 16, 1977, Ser. No. 834,027

Int. Cl.^{2} H04B *1/10*

U.S. Cl. 325—476 **7 Claims**



5. Apparatus for cancelling at baseband frequencies interference components in a first composite signal using a second composite signal, said first composite signal having a desired carrier with a constant envelope and being angle modulated with baseband $\phi_1(t)$ and a modulated interfering carrier, said second composite signal including said modulated interfering carrier, said apparatus comprising:

- (a) means for angle demodulating said first composite signal to form an angle demodulated first composite signal,
- (b) means for multiplying said first composite signal with said second composite signal to obtain a product signal having high frequency and low frequency components,
- (c) means for filtering said product signal to obtain said low frequency component,
- (d) phase shift means responsive to the output of said filtering means for selectively phase shifting said low frequency component to +90° and −90° to obtain a phase shifted signal,
- (e) attenuating means responsive to the output of said phase shift means for attenuating said phase shifted signal to obtain an attenuated signal, and
- (f) subtractor means for subtracting the output of said attenuating means from the output of said angle demodulating means.

4,191,927

MIXING CIRCUIT FOR DIGITAL SIGNALS

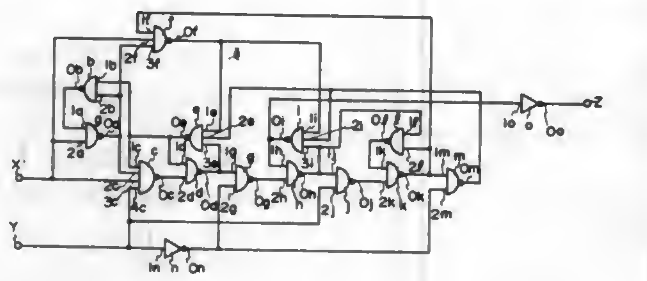
Hiroshi Minakuchi, Takashima, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 30, 1978, Ser. No. 873,496

Claims priority, application Japan, Feb. 8, 1977, 52-13237

Int. Cl.^{2} H03K *1/18, 5/20*

U.S. Cl. 328—157 **20 Claims**



1. A digital signal mixing circuit comprising:
an input terminal X,
an input terminal Y,
a first bistable circuit which changes the state thereof from a first stable to second stable state when an applied signal level at said terminal X becomes H and an applied signal level at said terminal Y becomes H,
a second bistable circuit which changes the state thereof from a first stable to second stable state when said first bistable circuit enters into said second stable state and said applied signal level at said terminal Y becomes L,
a counter circuit which counts the number of cycles of said applied signal at said terminal Y after said second bistable circuit enters into said second stable state, and
a reset circuit which resets both states of said first and second bistable circuits to said first stable state when an output signal of said counter circuit reaches a target value.

4,191,928

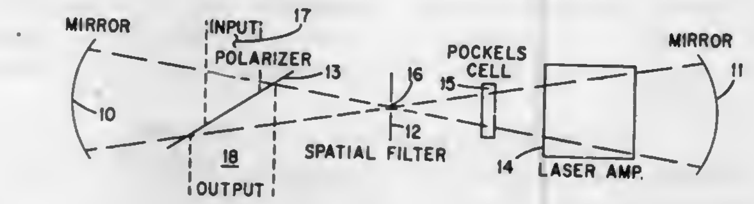
LASER SYSTEM USING REGENERATIVE AMPLIFIER

John L. Emmett, Pleasanton, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 11, 1978, Ser. No. 868,644

Int. Cl.^{2} H01S *3/05, 3/23*

U.S. Cl. 330—4.3 **32 Claims**



1. An injection laser system utilizing a regenerative amplifier comprising: at least two separated reflector members having a cross-sectional distance of 0.2 to 10.0 meters and defining a resonator cavity having a beam waist therein; at least one spatial filter assembly means for removing phase and amplitude distortion from a high energy laser beam positioned in said cavity at substantially the beam waist of said resonator cavity; at least one amplifier means positioned intermediate a reflector member and at least one said spatial filter assembly; means for injecting at least one laser pulse into said cavity for amplification thereof by multiple passes through said cavity until maximum surface flux density is in excess of 4.5 joules/cm^2; and means for extracting the amplified laser pulse from the cavity.

4,191,929

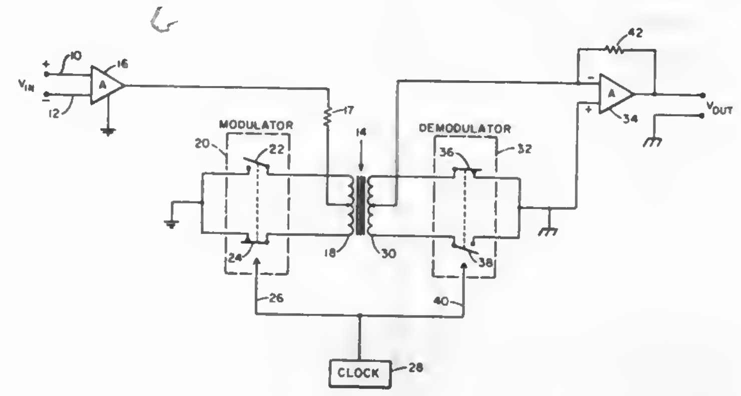
ISOLATION AMPLIFIER WITH HIGH LINEARITY

Solomon M. Max, Brookline, and Hans J. Weedon, Salem, both of Mass., assignors to Analogic Corporation, Wakefield, Mass.

Filed Jun. 5, 1978, Ser. No. 912,730

Int. Cl.^{2} H03F *3/38*

U.S. Cl. 330—10 **5 Claims**



1. An isolation amplifier comprising:
an input amplifier having first and second input terminals for receiving an input signal applied thereto and operative to provide an amplified signal proportional to the input signal;
a transformer having a center tapped primary winding, a center tapped secondary winding and a core magnetically coupling the primary and secondary windings;
means coupling said amplified signal to the center tap of said primary winding;
a modulator circuit connected to the primary winding for alternately applying the amplified signal to opposite sections of the primary winding;
a differential output amplifier having an inverting input terminal coupled to the center tap of the secondary winding and a non-inverting input terminal coupled to a common return point;
a negative feedback path from the output to the inverting input of the output amplifier providing a current through the secondary winding which tends to force the net flux through the transformer core to zero;
a demodulator circuit connected to the secondary winding for alternately connecting each end of the secondary winding to the commn return point to demodulate the output signal from the center tap of the secondary winding;
the output amplifier providing an output signal representative of the input signal and electrically isolated from the input terminals; and
clock means coupled to said modulator and demodulator and operative to control the operation thereof.

4,191,930

DIGITALLY SETTABLE FREQUENCY GENERATOR

Peter Harzer, Eningen, Fed. Rep. of Germany, assignor to Wandel u. Goltermann GmbH & Co., Eningen, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 941,955

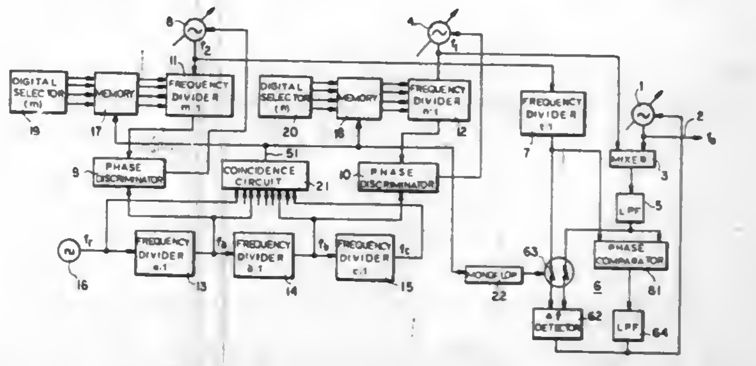
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741351

Int. Cl.^{2} H03B *3/06*

U.S. Cl. 331—1 A **10 Claims**

1. In a digitally settable frequency generator comprising selector means and a group of electronically adjustable oscillators including a final oscillator producing an output frequency and a plurality of pilot oscillators producing denominational frequencies jointly determining the magnitude of said output frequency, each of said pilot oscillators being provided with a phase-locking loop including a frequency divider with a step-down ratio digitally variable by said selector means and an associated phase discriminator with a first input connected to receive a variable frequency from said frequency divider and with a second input connected to receive one of a plurality of fixed comparison frequencies, said final oscillator being provided with control means connected between a frequency-adjusting input thereof and said pilot oscillators,

the combination therewith of a reference-frequency source with output connection to the second inputs of the phase discriminators associated with said pilot oscillators for supplying same with coherent frequencies of different magnitudes constituting said comparison frequencies, pulse-generating means connected to said source for producing a train of unblocking pulses shorter than a cycle of the highest comparison frequency and separated by intervals longer than a half-cycle of the lowest comparison frequency, and memory means inserted between said selector means and said frequency dividers for storing setting commands determining the step-down ratios thereof, said memory means having enabling inputs connected to said pulse-generating means for preventing a change in the stored setting commands except in the presence of an unblocking pulse.



4,191,931

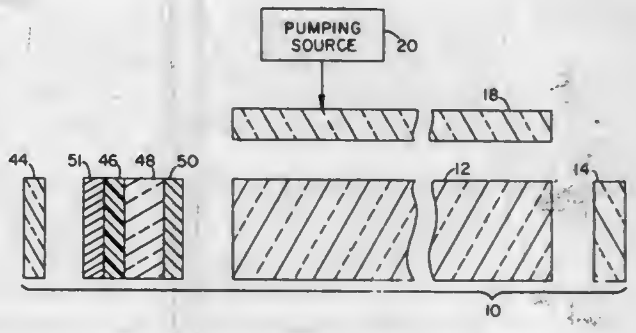
COOLED LASER Q-SWITCH

John D. Kuppenheimer, Tewksbury, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 6, 1978, Ser. No. 875,469

Int. Cl.^{2} H01S *3/113*

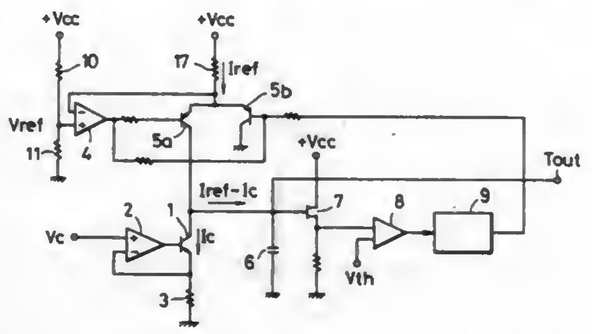
U.S. Cl. 331—94.5 Q **13 Claims**



1. In a Q-switched laser including a laser medium and a pair of resonators in combination therewith, the improvement comprising a substrate mechanically coupled to one of said resonators and a passive Q-switch mechanically coupled to said substrate to provide good thermal contact between the Q-switch and substrate such that said substrate acts as a heat sink for such Q-switch.

4,191,932
VOLTAGE-CONTROLLED OSCILLATOR

Yasuo Nagahama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Continuation of Ser. No. 758,293, Jan. 10, 1977, abandoned. This application May 19, 1978, Ser. No. 907,642
Claims priority, application Japan, Jan. 16, 1976, 51-4116; Sep. 16, 1976, 51-111160; Sep. 17, 1976, 51-111596
Int. Cl.² G10H *1/04, 5/12;* H03K *4/50*
U.S. Cl. 331—111 **5 Claims**



1. A voltage-controlled oscillator for producing a saw-tooth output having an oscillator frequency proportional to an input control voltage, said oscillator comprising:

(a) a capacitor, across which said output is produced;

(b) first means for charging said capacitor with a first constant current;

(c) second means for discharging said capacitor with a second constant current, one of said first and second constant currents being proportional to said input control voltage, the other constant current being a difference current produced by subtracting said one constant current from a separate reference constant current independent of said input control voltage; and

(d) third means, including a timing circuit, alternately rendering said one constant current and said other constant current effective upon said capacitor for respective first and second time periods, said second time period starting when the voltage across said capacitor has reached a predetermined value and ending upon the lapse of a predetermined time length controlled by said timing circuit, said first time period starting at the ending of said second time period and ending at the starting of said second time period.

4,191,933
DIFFERENTIAL MIXING SURFACE ACOUSTIC WAVE SIGNAL PROCESSOR

Gary K. Montress; Thomas W. Grudkowski, both of Glastonbury, Conn., and Thomas M. Reeder, Portland, Oreg., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 7, 1978, Ser. No. 967,322
Int. Cl.² H03H *9/26, 9/30;* G06G *7/19;* H03C *1/46*
U.S. Cl. 333—151 **2 Claims**

1. Differential surface acoustic wave, product mixing signal processing apparatus adapted to provide common mode rejection of unwanted signals and improved levels of desired components of product mixing of two fundamental surface acoustic waves, comprising:

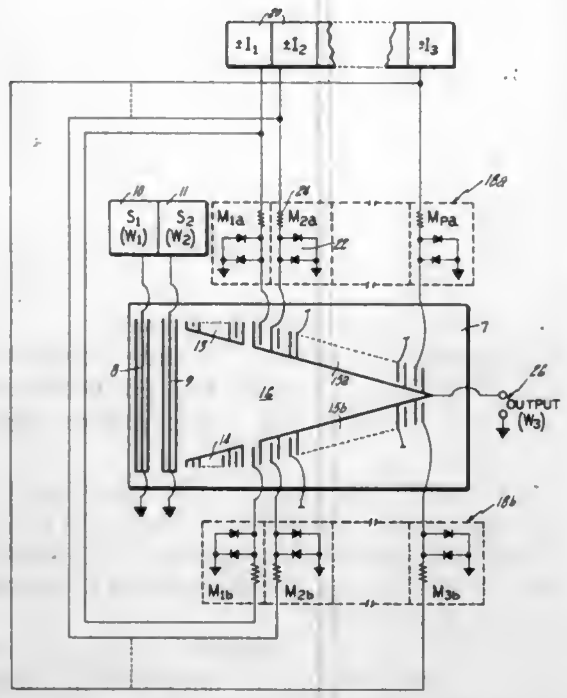
a piezoelectric substrate having a pair of electroacoustic transducers for launching a pair of piezoelectric waves in said substrate and a plurality of segmented acoustoelectric transducer taps disposed on the surface of said substrate in a region thereof in which interaction of said piezoelectric waves occurs;

a pair of wave sources connected to said launching transducers for controlling electroacoustic launching of a pair of piezoelectric waves in the substrate; and

means connected to each one of said taps for providing in conjunction with each tap components of nonlinear product mixing of piezoelectric waves propagating at the surface of said substrate adjacent to the related tap;

in which the improvement comprises:

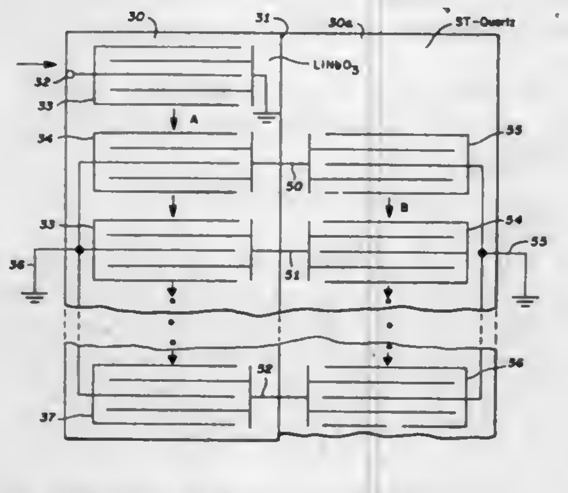
each of said taps being arranged with another in a pair, both taps in each pair having a phase center displaced along the surface of said substrate a distance from one of said launching transducers which is the same as that of the other tap in the pair, both taps in each pair having the same design center frequency, the segments of the taps in each pair being arranged with respect to the phase center of the pair so as to acoustoelectrically reproduce electric signals at one tap of the pair in response to the two piezoelectric waves propagating in said substrate which are inverted in phase with respect to electric signals acoustoelectrically reproduced at the other one of said taps in the pair in response to the two piezoelectric signals propagating in said substrate; and



means associated with each pair of taps for summing the components of nonlinear product mixing provided by both taps in said pair in conjunction with said means, whereby the electric signals reproduced from the two piezoelectric waves propagating in said substrate at one pair of taps are cancelled, while the desired components of nonlinear product mixing for said pair of taps are added.

4,191,934
HIGH EFFICIENCY WIDE BAND SURFACE ACOUSTIC WAVE COUPLER PROCESSORS

Leland P. Solie, Acton, Mass., assignor to Sperry Corporation, New York, N.Y.
Filed Dec. 11, 1978, Ser. No. 968,242
Int. Cl.² H03H *9/26, 9/30, 9/32;* H01L *41/10*
U.S. Cl. 333—155 **7 Claims**



1. Signal processing apparatus comprising:

first transmission line means having input means and a first plurality of tap means and characterized by a propagation velocity therethrough significantly dependent upon temperature over a range of operating temperatures,

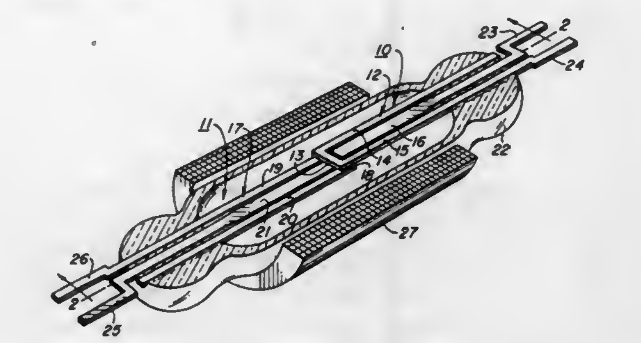
second transmission line means having output means and a second plurality of spaced tap means and characterized by a propagation velocity therethrough substantially independent of temperature over said range of operating temperatures, and

a plurality of electrical conductor means for coupling respective ones of said first plurality of spaced tap means to corresponding ones of said second plurality of spaced tap means,

said signal processing apparatus being characterized by a resultant propagation time from said input means to said output means substantially independent of temperature over said range of operating temperatures.

4,191,935
TWIN PATH REED SPRING RELAY CONSTRUCTION

Wendel E. Archer, Gahanna; Norman Wasserman, Columbus, both of Ohio, and Douglas H. Yano, Naperville, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 10, 1978, Ser. No. 876,613
Int. Cl.² H01H *1/66, 51/27*
U.S. Cl. 335—154 **11 Claims**



1. An electrical relay construction comprising a first and a second electrically conductive, magnetically responsive contacting mechanism, each comprising a yoke means having a pair of substantially parallel legs having a contact means therebetween at one end, each of said yoke means being suspended at the other ends of said legs to maintain the contact means of one yoke means in a spaced-apart and overlapping relation with the contact means of the other yoke means, and a first and second reed spring member positioned between the legs of the yoke means of each of said mechanisms, respectively, said reed spring members being also of a magnetically responsive, electrically conductive material, each of said reed spring members being suspended at one end at the other ends of said legs to maintain the other end of the reed spring member of each of said mechanisms in a spaced-apart and overlapping relation with the contact means of the other of said mechanisms.

4,191,936
IMAGE PICKUP ASSEMBLY

John J. Colgan, Jr., Haddon Heights, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Sep. 21, 1978, Ser. No. 944,338
Int. Cl.² H01F *7/00*
U.S. Cl. 335—210 **5 Claims**

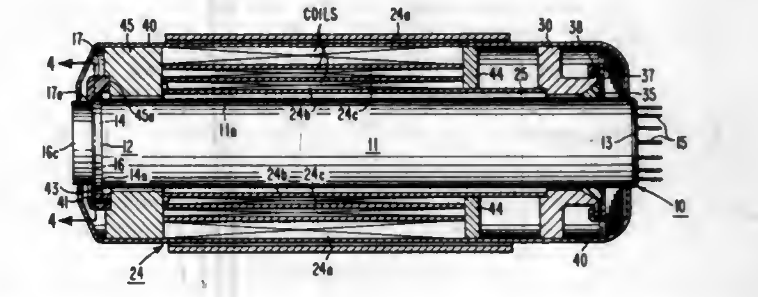
1. An image pickup assembly comprising:

a cylindrical image pickup tube having a solid flat transparent plate at the front target electrode end of said tube,

a coil assembly disposed around said tube,

an adjustable clamping element mounted to said coil assembly about said tube,

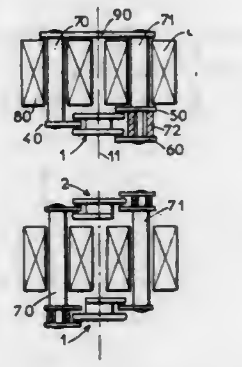
said adjustable hard material clamping element being positioned about the periphery of the said flat plate and adjusted when mounting to compresses about the periphery of said flat plate to provide a rigid mounting between the coil assembly and the tube, and



rear support means located near the end opposite plate end of the tube when mounted for centering and supporting the tube in the coil assembly.

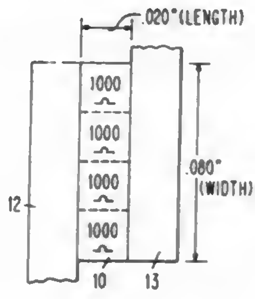
4,191,937
ELECTROMAGNET MAGNETIC CIRCUIT WITH PERMANENT-MAGNET ARMATURE

Gerard Koehler, Ville D'Avray; Jean Aguettaz, Paris; Alain Berthelot, Evreux; Claude Genter, Paris, and Daniel Arnoux, St-Germain-en-Laye, all of France, assignors to Manufacture Francaise d'Appareils Electriques de Mesure, Conches-en-Ouche, France
Filed Apr. 18, 1978, Ser. No. 897,430
Claims priority, application France, Apr. 18, 1977, 77 11605; Jan. 24, 1978, 78 01912
Int. Cl.² H01F *7/08;* H01H *51/22*
U.S. Cl. 335—230 **26 Claims**



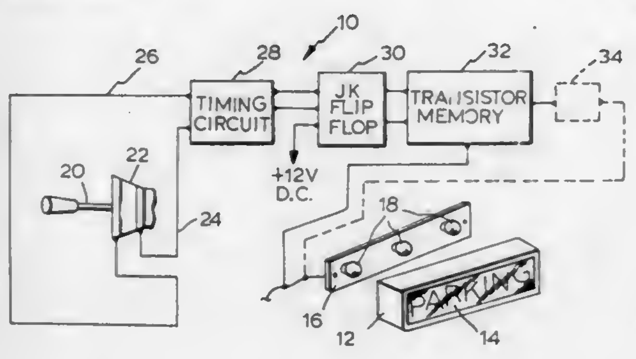
1. A magnetic circuit for a direct current electromagnet such as a relay electromagnet, comprising a fixed core, two yokes each connected to a respective free end of the core, and at least one armature movable between two end positions, said armature comprising a permanent magnet having flux input and output faces disposed at right angles to the magnet axis and each provided with a pole piece, each yoke having a flat portion having at least one air gap surface, the flat portions of the yokes being located in substantially parallel planes, said pole pieces having projecting end portions provided with air gap surfaces located on either side of the magnet axis, the flat portion of a first one of said yokes having two air gap surfaces and penetrating, with a clearance corresponding to the armature stroke, between the two mutually facing air gap surfaces of two end portions of the pole pieces located on a first side of the magnet axis, wherein the gap surfaces of the end portions of the pole pieces and of the flat portions of the yokes extend at right angles to the magnet axis, the armature is movable for translation in a direction corresponding substantially to the magnet axis, and, on a second side of the magnet axis, a second one of said yokes and a third yoke, both supported by a common free end of the core, have flat portions provided with mutually facing air gap surfaces between which two air gap surfaces belonging to at least one of the two pole pieces penetrate with a clearance substantially equal to the above-mentioned clearance.

4,191,938
CERMET RESISTOR TRIMMING METHOD
John Gow, 3rd, Owego; Herman S. Hoffman, Apalachin, and Earl Stephans, Chenango Forks, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 3, 1978, Ser. No. 921,291
Int. Cl.^{2} H01C *10/00*
U.S. Cl. 338—195 **8 Claims**



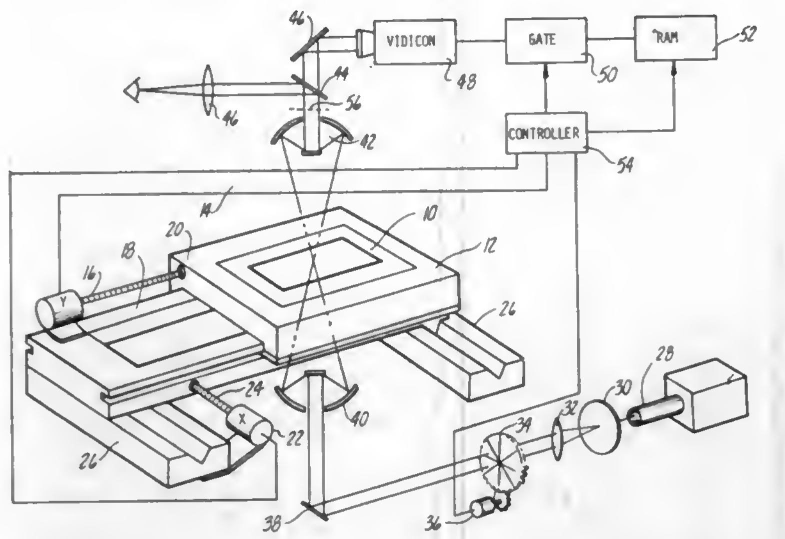
1. A method of trimming a thin film resistor which comprises the steps of:
- fabricating on a substrate a thin film resistor material having a low length to width ratio;
- establishing the sheet resistance of said material at 1000 ohms per square; and
- laser trimming said material to provide resistor values from 250 ohms to 16000 ohms.

4,191,939
VEHICLE PARKING SIGNALING DEVICE
Claire Bauman, 2860 S. Ocean Blvd., Palm Beach, Fla. 33480
Filed Sep. 18, 1978, Ser. No. 943,060
Int. Cl.^{2} B60Q *1/00*
U.S. Cl. 340—107 **2 Claims**



1. A warning device mounted upon a vehicle having left and right driver actuated turn signals and a turn signal actuating arm to provide adequate notice to a driver of a following vehicle that the lead vehicle is desirous of parking or is about to be parked, comprising:
- an illuminable display means observable from the rear of said vehicle containing indicia representative that the vehicle is to be parked connected to said vehicle;
- an electrical power supply means connected to said display means;
- a means for switching said illuminable display means from an "off" position to an "on" position which is actuated by the driver connected to said turn signal actuating arm and said electrical power supply means;
- said illuminable display means having at least one lightbulb and a translucent indicia display disposed adjacent said lightbulb; and
- said display switching means connected to the turn signal actuating arm of said vehicle and actuated by rapid sequencing of said turn signals within a predetermined period of time between the left to right or right to left turn signal position to illuminate said parking display means.

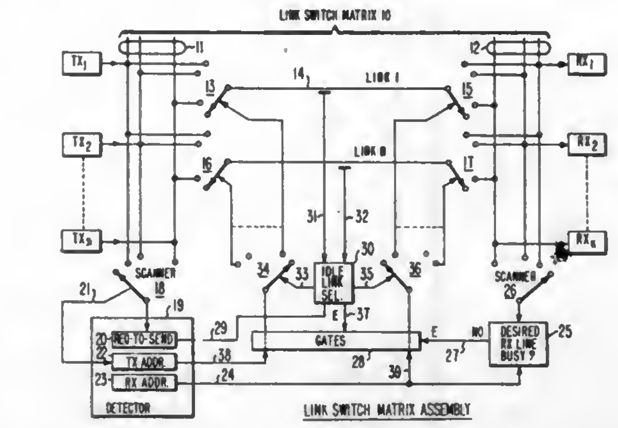
4,191,940
METHOD AND APPARATUS FOR ANALYZING MICROSCOPIC SPECIMENS AND THE LIKE
Fabian C. Polcyn; Robert E. Marshall, and H. Janney Nichols, all of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.
Filed Jan. 9, 1978, Ser. No. 867,979
Int. Cl.^{2} G06K *9/00;* G06M *11/00*
U.S. Cl. 340—146.3 B **18 Claims**



1. The method of forming an image map of a specimen based on properties of points on the specimen comprising: supporting the specimen on a stage; irradiating the specimen from a source and simultaneously detecting the resulting radiation from a particular point on the specimen at a plurality of different wavelengths to generate a first set of electrical signals having values representative of properties of said point; repeatedly translating the stage relative to the source to modify the point on the specimen from which the radiation is detected to generate a plurality of additional sets of electrical signals having values representative of the properties of other points on the object; processing each of the sets of signals to compare each subset on a multi-variate statistical basis with one of a plurality of spectral signatures representing differing properties; and generating a two-dimensional array of elements, each element having a position in the array which correlates with the position of one of the points on the specimen and each element having one of a plurality of forms dependent upon the signature with which the set of signals based on that point most closely compares as a result of said multi-variate statistical comparison process.

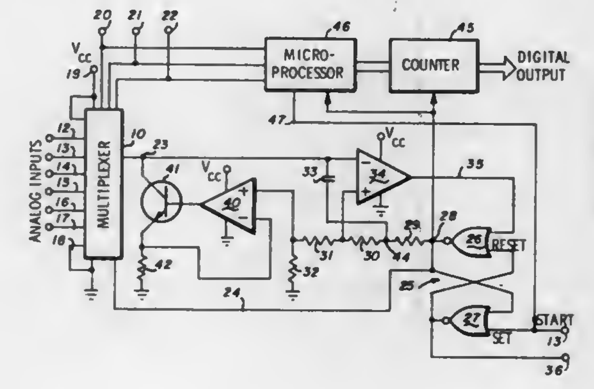
4,191,941
SWITCH MATRIX FOR DATA TRANSFERS
Joseph F. Springer, Philadelphia, Pa., and Donald H. Kaplan, Cherry Hill, N.J., assignors to RCA Corporation, New York, N.Y.
Filed Apr. 3, 1978, Ser. No. 892,905
Int. Cl.^{2} H04Q *3/00*
U.S. Cl. 340—166 R **4 Claims**

1. A switch matrix for connecting any one of a large number of communications lines transmitting a message header with any other non-busy one of the lines, comprising
- a plurality of connection links each including a multiplexer having a plurality of inputs coupled to respective transmitting lines and a transmitting address input for connecting an addressed one of the inputs to the output of the multiplexer, and a demultiplexer having an input connected to the output of the multiplexer, a plurality of outputs coupled to respective receiving lines, and a receiving address input for connecting the input to an addressed one of the outputs,
- a transmitting line scanner including a message header decoder for identifying a line carrying a request-to-send signal, the address of the line, and the address of a desired receiving line,
- means responsive to a request-to-send signal from said decoder to select an unconnected link, said means including a link activity checker for each link to continuously monitor the passage of data through the respective link,
- means responsive to the address of a desired receiving line to determine the not-busy condition of the line, and



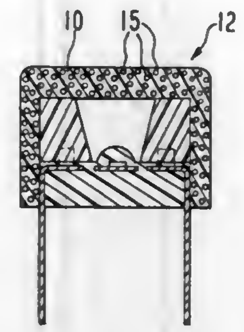
- means conditional on the availability of an unconnected link and the not-busy condition of the desired receiving line to transmit the address of the transmitting line and the address of the desired receiving line to the selected link, whereby to connect the transmitting and receiving lines for the transfer of information.

4,191,942
SINGLE SLOPE A/D CONVERTER WITH SAMPLE AND HOLD
David K. Long, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Jun. 8, 1978, Ser. No. 913,632
Int. Cl.^{2} H03K *13/02*
U.S. Cl. 340—347 AD **6 Claims**



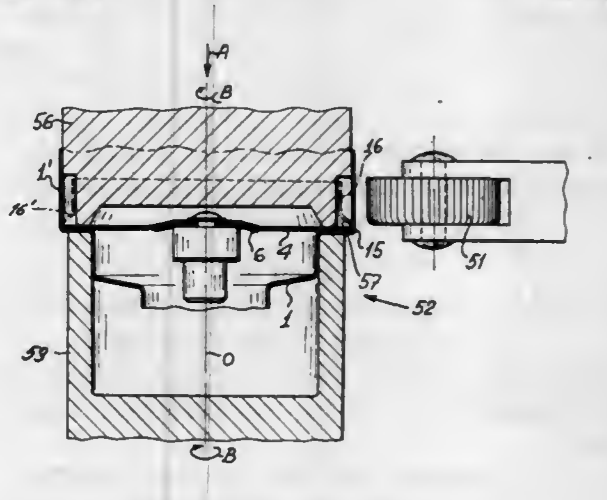
6. An analog voltage to digital pulse converter circuit comprising in combination:
- a bistable flip-flop having a first stable state defined as a conversion interval and a second stable state defined as a quiescent interval;
- means for applying a set pulse to said flip-flop to initiate said conversion interval;
- a capacitor;
- means for coupling said capacitor to an analog voltage to be converted during said quiescent interval whereby said capacitor is charged to said analog voltage;
- means for developing an increment of voltage and adding said increment to the charge on said capacitor during said conversion interval, said increment being small with respect to the expected range of analog voltages to be converted;
- means for coupling a constant current load device to discharge said capacitor during said conversion interval, said discharge producing a linear decline in voltage with time;
- means for developing a reference voltage that is greater than zero but less than said increment;
- comparison means having two inputs and an output said inputs coupled to said capacitor and to said reference potential means and said output being coupled to said flip-flop to terminate said conversion interval when said capacitor voltage falls below said reference voltage whereby said conversion interval is linearly proportional to said analog voltage just prior to said initiation of said conversion interval.

4,191,943
FILLER-IN-PLASTIC LIGHT-SCATTERING COVER
Bruce R. Cairns, Los Altos, and David B. Crockett, San Jose, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Continuation of Ser. No. 733,554, Oct. 18, 1976, abandoned. This application Mar. 17, 1978, Ser. No. 887,902
Int. Cl.^{2} G08B *5/36*
U.S. Cl. 340—378.2 **22 Claims**



1. A cover with light-scattering characteristics for use with packages for displaying alpha-numeric characters, the cover comprising a layer of plastic having a multiplicity of small, solid light-conductive particles randomly located therein and scattered therethrough, wherein said particles have an index of refraction different from the index of refraction of the plastic layer and wherein said particles comprise six to twenty-five percent by weight of the cover.

4,191,944
ELECTROMAGNETIC SOUND GENERATOR AND METHOD OF MAKING SAME
Domenico Frigo, Olmo, Italy, assignor to Fiamm S.p.A. Fabbrica Italiana Accumulatori Motocarri Montecchio, Montecchio Maggiore, Italy
Division of Ser. No. 765,077, Feb. 3, 1977, Pat. No. 4,134,200. This application Sep. 21, 1978, Ser. No. 944,567
Claims priority, application Italy, Feb. 4, 1976, 19876 A/76
Int. Cl.^{2} G08B *3/10*
U.S. Cl. 340—388 **16 Claims**

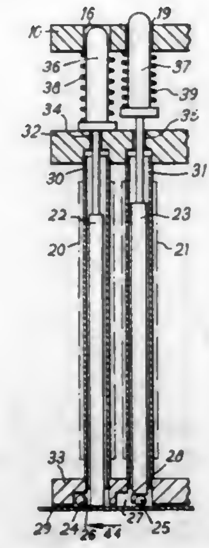


1. An electromagnetic sound generator comprising:
- a housing of ferromagnetic sheet metal provided with an open end centered on an axis;

a circular ferromagnetic membrane, centered on said axis, spanning said open end;
an electromagnetic coil in said housing axially spaced from said membrane;
a ferromagnetic armature on said membrane extending axially into said coil;
an energizing circuit for said coil including interrupter means controlled by said armature; and
resonator means supported by said housing externally of said membrane, said housing having a peripheral wall forming a seat for said membrane and an end portion extending axially beyond said seat around at least part of said resonator means.

4,191,945
TACTILE INDICATING DEVICE

Martin R. Hannen, and David V. Charlesworth, both of Melbourne House, Melbourne Rd., Wallington, Surrey, England
Filed Jan. 16, 1978, Ser. No. 869,506
Int. Cl.² G08B *21/00*
U.S. Cl. 340—407 **6 Claims**



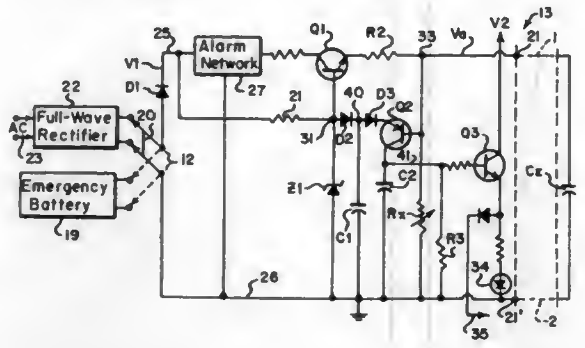
1. Electromechanical apparatus for setting up and erasing alpha-numeric characters and other symbols in braille comprising an array of spaced, parallel ferromagnetic plungers, a supporting plate, means supporting the plungers with their lower ends adjacent the supporting plate for axial movement perpendicular to the plane of the supporting plate, a solenoid winding disposed about each plunger within which the plunger is axially movable by energization of the solenoid winding, means for selectively energizing the solenoid winding for moving the plunger into operative position such that their upper ends define any desired characters and their lower ends are spaced from the supporting plate, rolling members on the supporting plate movable thereon into position beneath the lower ends of the plungers when the latter are moved into operative position, said rolling members being comprised of ferromagnetic metal so as to be drawn into said operative position beneath the lower ends of the plungers when the latter are raised from the supporting plate and means supporting the supporting plate for movement in a plane at right angles to the axis of the plunger for removing the rolling members from beneath the lower ends of the plungers to erase the characters.

4,191,946
WARNING APPARATUS WITH A LINE INTEGRITY SUPERVISORY CIRCUIT

William A. Knox, 247 W. Hazelwood Ave., Rahway, N.J. 07065, and Raymond J. Gonzalez, 115 Erie Ave., Rockaway, N.J. 07866
Filed Oct. 20, 1977, Ser. No. 843,859
Int. Cl.² G08B *21/00*
U.S. Cl. 340—506 **8 Claims**

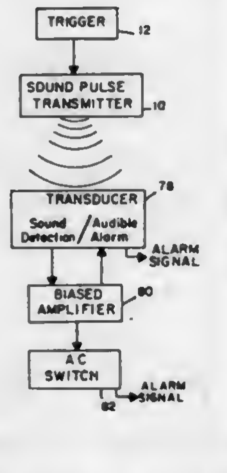
1. Warning apparatus for detecting abnormal conditions at spaced locations which comprises

(a) a two-conductor electrical transmission line,
(b) a source of substantially unfiltered rectified AC power for connection to one end of said line,
(c) a plurality of detectors connected across said line at spaced locations from said one end and adapted to respond to abnormal conditions at the respective locations,
(d) filter capacitance connected across said line at the end thereof beyond said detectors with respect to said one end for producing a DC voltage of low ripple amplitude on said line,
(e) alarm means responsive to said detectors, and
(f) supervisory means responsive to ripple voltages at said one end of the line above a predetermined amplitude greater than said low ripple amplitude for indicating a trouble condition on said line.



4,191,947
INTRUSION ALARM SYSTEM

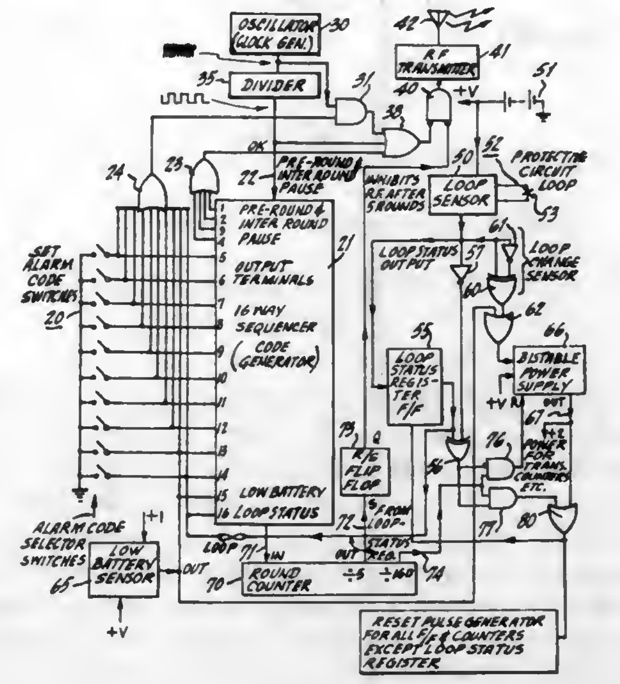
Andre C. Bouchard, Peabody; James C. Morris, Wakefield, both of Mass., and Robert L. Garrison, Henniker, N.H., assignors to GTE Sylvania Incorporated, Stamford, Conn.
Filed Sep. 6, 1978, Ser. No. 940,062
Int. Cl.² G08B *13/08*
U.S. Cl. 340—531 **14 Claims**



1. An intrusion alarm system comprising:
a sound pulse transmitter coupled to an entry means,
said transmitter including triggering means for activating said transmitter to emit a high intensity sound pulse having a predetermined discriminating characteristic upon intrusion of said entry means,
said transmitter comprising a photoflash unit and means activated by the radiant output of said photoflash unit for emitting said sound pulse,
a sound detector spaced from and in sound communication with said transmitter,
said detector including discriminating means selectively responsive to said predetermined characteristic of said sound pulse and substantially unresponsive to ambient sound conditions from other means,
and means responsive to said detector for producing an alarm signal upon detection of said sound pulse.

4,191,948
DIGITAL TRANSMISSION APPARATUS PARTICULARLY ADAPTED FOR SECURITY SYSTEMS

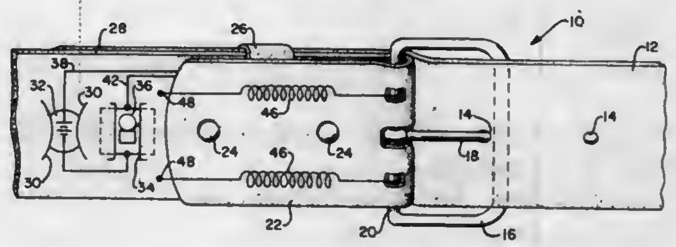
Roy Stockdale, Huntington, N.Y., assignor to Napco Security System Inc., Copiague, N.Y.
Filed Oct. 23, 1978, Ser. No. 953,482
Int. Cl.² G08B *3/10*
U.S. Cl. 340—539 **14 Claims**



1. In a security system of the type employing a transmitter capable of transmitting a signal containing information as to the address code of a secured location by monitoring the opened or closed status of a loop associated with said location and transmitting said signal when the status of said loop changes, said signal containing additional information indicative of the loop status, and a remote receiver capable of receiving said transmitted signal, the combination therewith of apparatus located at said receiver and operative to monitor the total number of loop openings and closings, comprising:
(a) means responsive to said received signal for storing therein said information associated with said address code and said loop status,
(b) means for comparing said address code with a predetermined code stored in said receiver and indicative of said transmitter location, to provide a comparison signal when said codes are equivalent, and
(c) means responsive to said comparison signal for storing said information indicative of said loop status, said means including a status counter effective to increase the count stored for one loop status and to decrease the count stored for said other loop status, whereby at the end of a desired period, the counter has stored therein the present status of said loop.

4,191,949
BELT HAVING A POSTURE WARNING DEVICE

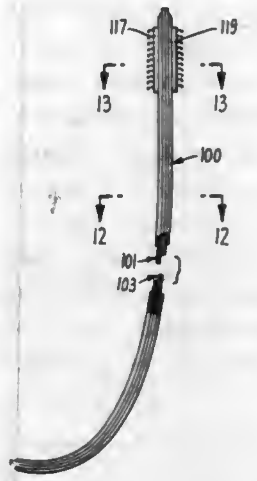
Dick T. Myers, R.D. #2, Austin Dr., Willard, Ohio 44890
Filed Oct. 16, 1978, Ser. No. 951,524
Int. Cl.² G08B *21/00*
U.S. Cl. 340—573 **10 Claims**



1. A belt having a posture warning device, comprising:
a belt strap having a buckle secured to one end thereof;
warning means interposed between said strap and said buckle for emitting a signal when relative movement between said strap and buckle exceeds a predetermined amount; and
biasing means interconnected between said buckle and strap for urging said buckle and strap into separated positional relationship with respect to each other.

4,191,950
ANTI-BED-WETTING DEVICE

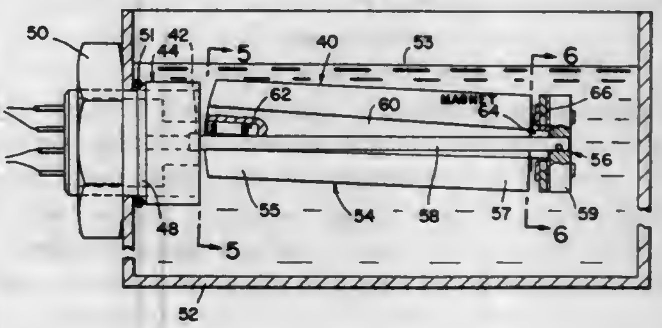
Paul D. Levin, and Anne F. Levin, both of 1595 Soquel Dr., Santa Cruz, Calif. 95065
Continuation-in-part of Ser. No. 876,221, Feb. 9, 1978, abandoned. This application Jun. 28, 1978, Ser. No. 920,066
Int. Cl.² G08B *21/00*
U.S. Cl. 340—604 **2 Claims**



1. In an anti-bed-wetting device consisting of an electrical sounder adapted to be triggered by the closing of a pair of contacts, a sensor, and an electrically conducting means between said sounder and said sensor, the improvement comprising a sensor comprising two relatively long, narrow strips of a conductive fabric wherein said fabric has a conductive side and a nonconductive side, said strips being of substantially the same size and configuration and being placed in back-to-back relationship with the nonconductive sides of each sheet in contact with the other and a sheet of fabric or cloth enclosing said strips and at one end of said sensor two small patches of electrically conductive Velcro® in back-to-back relationship, with the attaching sides of the Velcro® facing outwardly, one of said Velcro® patches being in electrical contact with each of said strips.

4,191,951
DEVICE FOR SENSING FLUID FORCES

Joe E. Fuzzell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 16, 1977, Ser. No. 797,221
Int. Cl.² G08B *21/00;* G01F *1/28*
U.S. Cl. 340—610 **4 Claims**



1. A device for sensing forces exerted by fluids comprising:
(a) switch means capable of being actuated from a normal condition to an actuated condition without the exertion of substantial mechanical force thereon;

(b) first mounting means rigidly mounting said switch means for actuation;

(c) a body of low mass elongated along a given axis and having switch actuation means at one end thereof; and

(d) second mounting means mounting said elongated body with said one end thereof adjacent said switch means, said second mounting means allowing pivotal movement of said given axis of elongation of said body in any direction about an end thereof but preventing substantial movement of said body along said given axis of elongation thereof and biasing said given axis of elongation of said body to a position in which said switch actuation means is in operative relation to said switch means actuating said switch means to said actuated condition thereof, said second supporting means comprising a pair of elongated rods of given length mounted at one end on said first mounting means and carrying a magnetic metallic plate at their other ends; said given axis of elongation of said elongated body having a length slightly shorter than said given length of said elongated rods and said elongated body having a second magnet means mounted in the other end thereof, said elongated body being carried between said elongated rods with said other end adjacent said magnetic metallic plate cooperating with said second magnetic means to bias said given axis of elongation of said body toward said position in which said switch actuation means is in operative relation to said switch means.

4,191,952

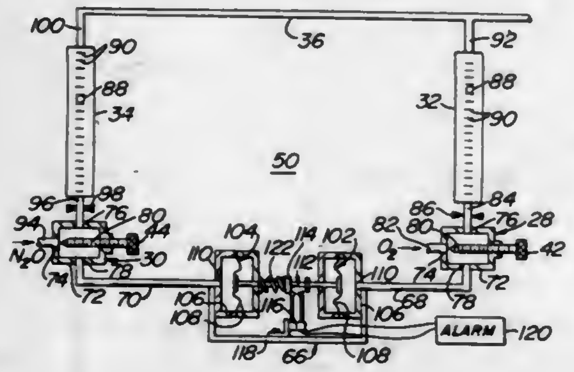
LOW OXYGEN FLOW ALARM FOR ANESTHESIA SYSTEMS

Peter J. Schreiber, and Joachim G. M. Schreiber, both of Zionsville, Pa., assignors to N.A.D., Inc., Telford, Pa.

Filed Aug. 25, 1978, Ser. No. 937,037

Int. Cl.^{2} G08B *21/00*

U.S. Cl. 340—611 **10 Claims**



1. An alarm system for use with anesthesia apparatus supplying oxygen through one line into a manifold while supplying an anesthesia gas through a second line into the manifold, said alarm system comprising first pressure actuated means responsive to the oxygen pressure in said first line and having a first output member whose position is dependent upon said oxygen pressure, second pressure actuated means responsive to the anesthesia gas pressure in said second line and having a second output member whose position is dependent upon anesthesia gas pressure, and alarm means including displaceable means, said first and second output members being coupled to said displaceable means and acting in opposition therein, such that said first output means tends to move the displaceable means in a first direction while said second output means tends to move the displaceable means in a second direction, said alarm means producing an alarm signal wherever said displaceable means has been moved in said second direction to predetermined position.

4,191,953

INTRUSION SENSOR AND AERIAL THEREFOR

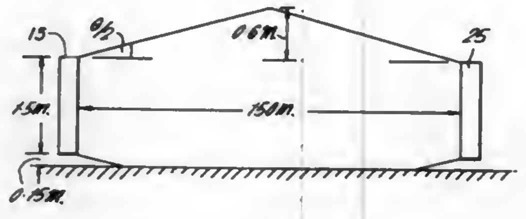
Alan D. Woode, South Queensferry, Scotland, assignor to Microwave and Electronic System Limited, Newbridge, Scotland

Continuation of Ser. No. 543,613, Jan. 23, 1975, Pat. No. 4,079,361. This application Jun. 6, 1977, Ser. No. 803,918

Claims priority, application United Kingdom, Jan. 23, 1975, 3209/75

Int. Cl.^{2} G08B *13/18*

U.S. Cl. 340—552 **11 Claims**



1. An intrusion sensor comprising a microwave transmitter and associated microwave aerial; and a microwave receiver and associated microwave aerial for receiving radiation transmitted by said microwave transmitter and its associated aerial, the transmitter, receiver and associated aerials being operable at a predetermined microwave frequency, the receiver including means responsive to a variation of the received radiation from an established level to give an intruder-indicative signal, wherein the transmitter and receiver aerials each have a vertical aperture dimensioned to provide at said predetermined frequency a beam pattern in a vertical plane, said vertical aperture being not less than 0.75 meters providing a beam pattern in a vertical plane, and said transmitter and receiver aerials are mounted adjacent the ground at opposite ends of a path to be monitored for the presence of intruders, the aerials being spaced along said path by a distance not exceeding that at which the striking angle to the ground of a notional ray traveling from the center of the receiving aerial by ground reflection equals half of the half-power beamwidth of either aerial, thereby providing in operation an intruder-sensitive zone of radiation which extends along said path contiguous to the ground substantially to each of said aerials.

4,191,954

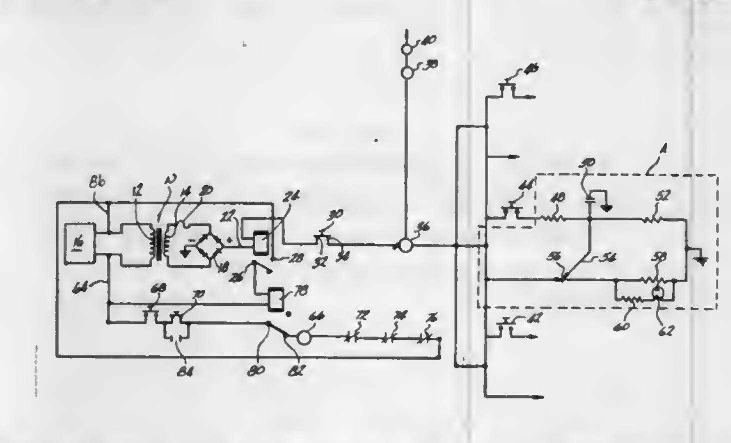
INTERRUPTED CIRCUIT TEST WITH MEMORY AND DISPLAY DEVICE

Charles G. Faris, and Edward H. Manley, both of Sedalia, Mo., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jul. 3, 1978, Ser. No. 921,817

Int. Cl.^{2} G08B *23/00*

U.S. Cl. 340—679 **8 Claims**



1. A fault detection, indication and motor cut off system, the combination comprising:

at least one fault detection circuit, said at least one fault detection circuit comprises at least one fault memory circuit;

said at least one fault memory circuit comprises a first circuit path, said first circuit path including a detector switch means and a silicon controlled rectifier gate connected in series and a second circuit path in parallel with said first circuit path, said second circuit path including a silicon controlled rectifier and a light emitting source connected in series;

a source of DC voltage;

first control circuit path having two terminals for passing current through said path, one of said terminals being connected to said at least one fault detection circuit, the other of said terminals being connected to said source of DC voltage;

fault control relay means in said first control circuit path through which current passes upon activation of said detector switch means, said fault control relay means having normally opened contacts;

motor control circuit path connected at its ends to a source of alternating voltage;

relay means in said motor control circuit path through which current passes upon energizing of said fault control relay in said first controlled path by activation of said detector switch means, said relay means having normally closed contacts; and wherein DC voltage is supplied to said silicon controlled rectifier gate and said fault control relay upon activation of said detector switch so as to pass current through said silicon controlled rectifier thereby activating said light source.

4,191,955

METHOD OF CONTROL FOR AN ANALOG DISPLAY DEVICE OF THE NON-CONTINUOUS LIQUID CRYSTAL STRIP TYPE

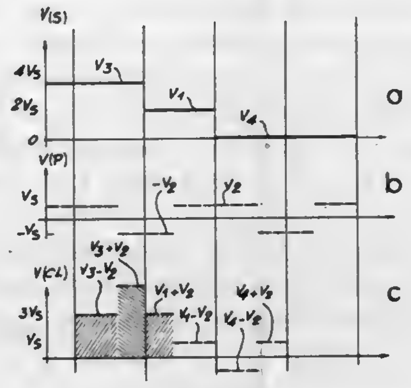
Jacques Robert, Saint-Egreve, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 16, 1977, Ser. No. 833,983

Claims priority, application France, Sep. 17, 1976, 76 27982

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—753 **7 Claims**



1. A method of control for an analog display device constituted by a band of liquid crystal along which is displayed a strip having a length which is a function of the value of a physical quantity to be displayed, said strip being non-continuous and formed by S sectors each consisting of P points, each sector being such as to comprise a plate electrode connected to a sector connection and placed opposite to P point electrodes connected to a set P of point connections, said liquid crystal being interposed between the plate electrodes and the point electrodes and being capable of assuming a first optical state 1 if the electrical excitation applied between electrodes is higher than a threshold value V_s and a second optical state 0 if said excitation is lower than said threshold value, a set of P voltages being applied to the P point connections of the device and a second set of S voltages being applied simultaneously to the S sector connections, said sets of voltages being such that in the case of one of the sectors designated as a boundary sector some points of the liquid crystal are in state 1 and other points are in state 0 and such that in the case of each of the other sectors the points of any one sector are all in one of the two states 1 or 0, wherein:

a voltage V_1 is applied to the plate connection of the boundary sector,

a voltage V_2 is applied to the point connections which are joined to the point electrodes of the boundary sector in which a state 0 must be displayed, said voltage being such that the resultant excitation at said points is lower than the threshold value V_s,

a voltage $-V_2'$ is applied to the point connections which are joined to the point electrodes of the boundary sector in which a state 1 must be displayed, said voltage being such that the resultant excitation at said points is higher than the threshold value,

a voltage V_3 is applied to the plate connections of the sectors in which all the points must be in state 1, said voltage being of sufficiently high value to ensure that the two resultant excitations at the different points of said sectors are both higher than the threshold value,

a voltage V_4 is applied to the plate connections of the sectors in which all the points must be in state 0, said voltage being of sufficiently low value to ensure that the resultant excitations are both lower than the threshold value,

all the applied voltages have the same frequency.

4,191,956

DEVICE FOR THE DISPLAY OF DATA ON A DISPLAY APPARATUS

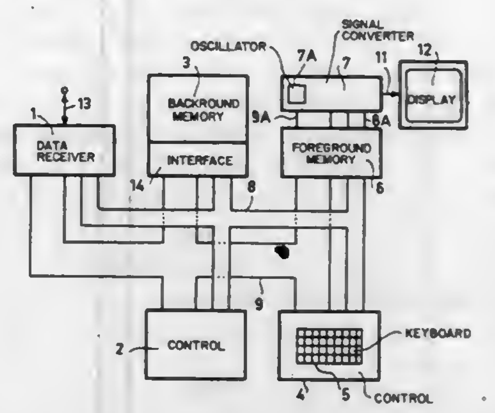
Hermanus H. H. Groothuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 17, 1978, Ser. No. 896,770

Claims priority, application Netherlands, Apr. 22, 1977, 7704398

Int. Cl.^{2} G06K *15/18*

U.S. Cl. 340—789 **13 Claims**



1. A device for the simultaneous display of data in the form of a page on a display apparatus during a given time interval, comprising:

a data connection for receiving data signals;

a foreground memory having an input which is connected to said data connection and an output which is connected to an input of said display apparatus;

said foregound memory being adapted to store the data of a page during said interval;

said device furthermore comprising:

a control device;

a control member having an output which is connected to an input of a control device for unblocking the input of the foreground memory;

a background memory connect between said data connection and said foreground memory adapted to store the data of at least two pages, the input of which connected to the data connection being unblocked by an output signal of said control device;

said background memory comprising:

at least two parallel-connected serial sub-memories which together store the complete data of one page, the data of one character field being distributed between at least two parallel connected serial sub-memories;

said background memory being adapted to successively supply the data of a page, up to a predetermined length of the data under the control of a relative starting address signal from said control device, to the foreground memory by unblocking its input in order to progressively store the data thus supplied as from a predetermined starting address in said foreground memory.

4,191,957

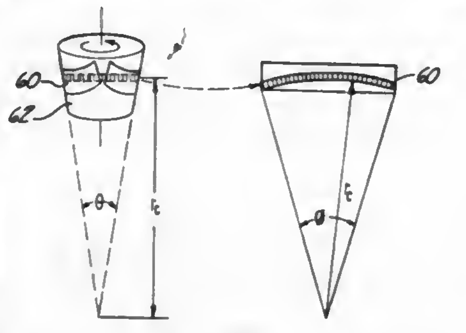
METHOD OF PROCESSING RADAR DATA FROM A ROTATING SCENE USING A POLAR RECORDING FORMAT

Jack L. Walker, and Walter G. Carrara, both of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Dec. 12, 1975, Ser. No. 640,570

Int. Cl.^{2} G01S *9/02*

U.S. Cl. 343—5 PC **13 Claims**



1. In a method of range-Doppler imaging a scene which is rotating about an axis of rotation relative to a sensor wherein return signal data are sequentially received, coherently demodulated, and recorded preparatory to spatial imaging of the scene, the improvement which comprises:

recording the return signal data on a recording medium in an ordered array with a two-dimensional polar format having radial coordinates, angular coordinates and position values such that at every point in the array the radial coordinate is in proportionate relationship to the instantaneous frequency of the signal as transmitted, the angular coordinate is in proportionate relationship to the instantaneous angular position of the rotating scene, and the position value is in proportionate relationship to instantaneous value of the radar signal strength.

4,191,958

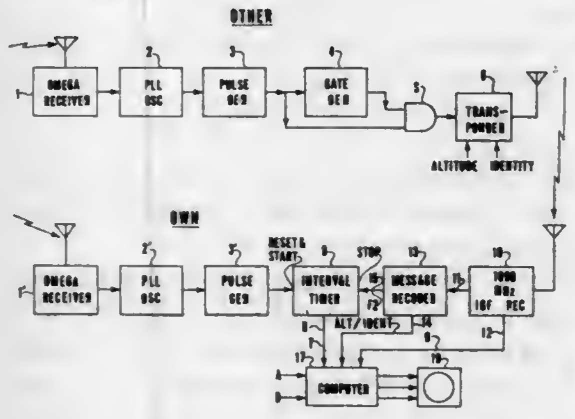
RADIOLOCATION WITH RESPECT TO AN OWN STATION, USING OMEGA SIGNALS OR THE LIKE

Burton L. Hulland, Glenwood Landing, and George B. Litchford, Northport, both of N.Y., assignors to H & L Co., Glenwood Landing, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,832

Int. Cl.^{2} G01S *1/30*

U.S. Cl. 343—105 R **10 Claims**



1. The method of determining a line of position of a transmitter-equipped Other station with respect to an Own station, comprising the steps of

(a) receiving at both stations a repetitive timing signal from a reference transmitter at a known location,

(b) generating at each station a continuous train of brief pulses in fixed time relationship to said timing signals as received,

(c) selecting single pulses at intervals from said pulse train at said Other station, said intervals being substantially longer than the pulse repetition period of said train,

(d) triggering the transmitter at said Other station with said selected pulses to transmit messages in fixed time relationship to said selected pulses,

(e) receiving said messages at said Own station,

(f) measuring at said Own station the time delay of a predetermined timing mark in each received message with respect to the next preceding pulse of said continuous train, and

(g) producing from said measurement a representation corresponding to a line of position of said Other station as a specific curve having a focus at said Own station.

4,191,959

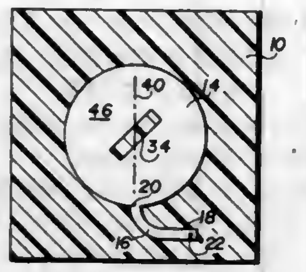
MICROSTRIP ANTENNA WITH CIRCULAR POLARIZATION

John L. Kerr, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 17, 1978, Ser. No. 925,074

Int. Cl.^{2} H01Q *1/38*

U.S. Cl. 343—700 MS **16 Claims**



1. In a microstrip antenna consisting of an electrically conductive ground plane formed on one side of a dielectric member which has a surface of metallization on the opposite side formed in a predetermined symmetrical shape to act as a radiating element when coupled to a source of RF input energy applied along an input axis traversing the radiating element from a feed point, the dimensions of the radiating element through the center along said input axis and perpendicular thereto being substantially equal, the improvement comprising:

a polarizing patch selectively located on said radiating element and consisting of the removal of a portion of the metallization of the radiating element in a predetermined elongated pattern oriented with a major axis and a minor axis each at an angle other than perpendicular relative to said input axis so as to provide two different electrical path lengths for respective orthogonal field components of the input energy, said different path lengths being adapted to produce elliptical polarization of the energy radiated from said radiating element.

4,191,960

PHASED ARRAY ANTENNA WITH REDUCED PHASE QUANTIZATION ERROR

Alfred R. Lopez, Commack, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Jan. 27, 1978, Ser. No. 872,976

Int. Cl.^{2} H01Q *1/50;* **H04B** *7/00*

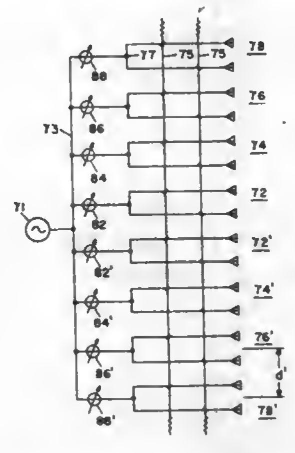
U.S. Cl. 343—854 **6 Claims**

1. A phased array antenna system, comprising:

an aperture having a plurality of antenna elements symmetrically arranged with respect to a selected reference point on said aperture;

coupling means for supplying wave energy signals to said elements, said coupling means including digital phase shifters for varying the phase of said wave energy signals in discrete phase steps in response to supplied phase control signals, the phase length of said coupling means being selected to cause said wave energy signals to be supplied to all of said elements with a phase which is approximately an integral multiple of the smallest phase step of said phase shifters from a selected nominal phase value;

and means for supplying said phase control signals to said phase shifters to cause wave energy signals supplied to said elements to have a phase which approximates an ideal phase function of a desired radiation angle for each element, said ideal phase functions being selected to cause reinforcement of radiation from said elements in said desired angle and said ideal phase functions for symmetrically arranged element pairs having an average value for any radiation angle which is displaced from said nominal phase value by a selected phase displacement to cause the phase difference between signals supplied to the elements of each pair to be approximately within one-half said smallest phase step from the difference between said phase functions for said elements.



4,191,961

MAGNETIC PRINTING PROCESS AND APPARATUS

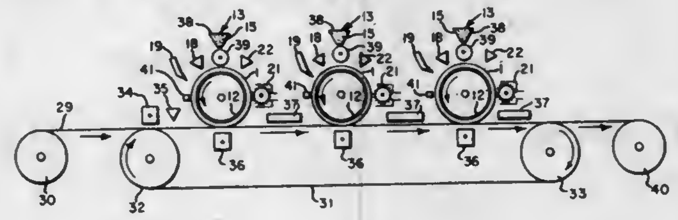
Donald W. Edwards, Wilmington, Del.; Emery J. Gorondy, Chadds Ford, and Arend van Roggen, Kennett Square, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 771,061, Feb. 25, 1977, which is a continuation-in-part of Ser. No. 672,552, Mar. 31, 1976, abandoned. This application Mar. 15, 1977, Ser. No. 777,241

The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.^{2} G01D *15/06;* **G11B** *9/00*

U.S. Cl. 346—74.1 **91 Claims**



1. Magnetic printing process comprising:

(a) providing a ferromagnetic material capable of continuously discharging an electric charge through its thickness to a grounded electrically conductive support on which it is imposed;

(b) forming a magnetic image on said ferromagnetic material by (i) magnetizing said ferromagnetic material in its entirety and thereafter heating one or more portions of said ferromagnetic material so as to at least partially demagnetize said portions; or (ii) magnetizing selected portions of said ferromagnetic material;

(c) developing said magnetic image by decorating it with a ferromagnetic toner comprising a ferromagnetic component and a resin which substantially encapsulates said ferromagnetic component;

(d) neutralizing static electricity on said ferromagnetic toner;

(e) removing from said ferromagnetic material neutralized toner particles which prior to neutralization had been adhered thereto by static electricity; and

(f) transferring the developed image to a substrate.

4,191,962

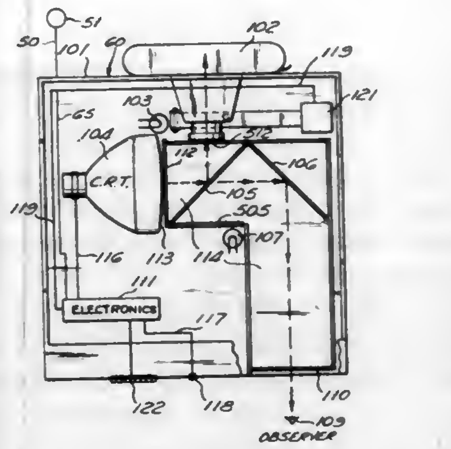
LOW COST MULTI-CHANNEL RECORDER AND DISPLAY SYSTEM FOR MEDICAL AND OTHER APPLICATIONS

Bohumir Sramek, 19211 Edgehill Dr., Irvine, Calif. 92715

Filed Sep. 20, 1978, Ser. No. 943,777

Int. Cl.^{2} A61B *5/04*

U.S. Cl. 346—110 R **11 Claims**



7. A low-cost, multi-channel recorder and display system for medical and other applications comprising:

a cathode ray tube oscilloscope for displaying physiological phenomena;

means for simultaneously (i) continuously visually viewing the display upon the screen of said cathode ray tube and (ii) photographing said display without interrupting or otherwise affecting said visual display comprising:

a two-way mirror mounted in front of said cathode ray tube to provide a reflected and a through image of said display,

a second reflecting mirror mounted in the path of one of said through or reflected images of said display,

a camera mounted in the path of one of said reflected or through images of said display, and an operator window mounted in the path of one of the other of said reflected or through images.

4,191,963

BUILT-IN NOTCHED CHANNEL MOS-FET TRIODES FOR HIGH FREQUENCY APPLICATION

Pierre E. Schmidt, Estado Miranda, Venezuela, and Mukunda B. Das, State College, Pa., assignors to Instituto Venezolano de Investigaciones Cientificas (IVIC), Estado Miranda, Venezuela

Filed Nov. 21, 1978, Ser. No. 962,765

Int. Cl.^{2} H01L *29/78*

U.S. Cl. 357—23 **19 Claims**

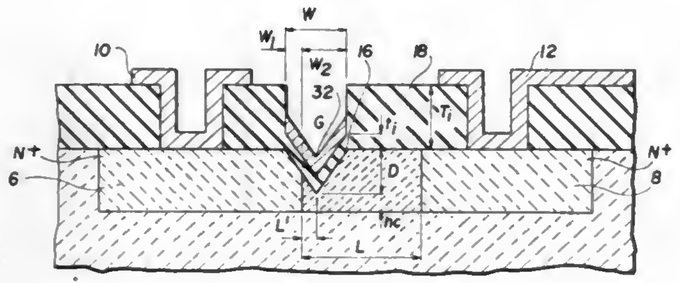
1. A built-in notched channel MOS-FET triode for high frequency application comprising:

an insulating substrate;

semiconductor material covering at least a portion of a surface of said substrate, said semiconductor material including two highly doped regions of a given type of conductivity free of contact with one another;

a region of the given conductivity type disposed between said two highly doped regions, a notch extending through the surface of said semiconductor material, the width of said notch being less than the width of said semiconductor region of the given conductivity type where width is measured along an axis perpendicular to the boundary between a highly doped semiconductor region and the region of given conductivity, said notch being disposed so that at least half of the width of said notch is in the region of given conductivity and said notch touches the boundary between one of said highly doped semiconductor regions and said region of given conductivity;

a first metal layer, covering at least some part of said notch;



insulating material of thickness T_i covering the top surface of said semiconductor material, except the area over said notch, said insulating material having an opening over each highly doped semiconductor region, and having a thickness of t_i over said notch, said insulating material of thickness t_i being disposed between sai notch and said first metal layer, and $T_i >> t_i$; and

a second metal layer disposed in the opening in said insulating material which covers each highly doped semiconductor region, said metal layer functioning as an electrode.

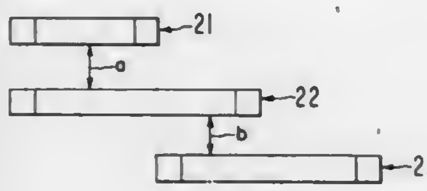
4,191,964
HEADLESS RESISTOR

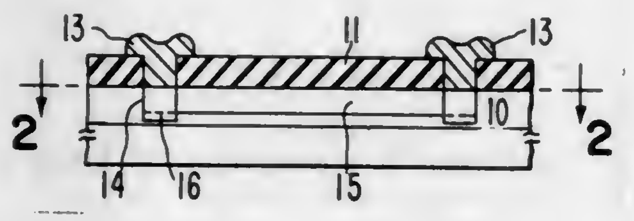
Rajni Kant, San Jose, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Continuation of Ser. No. 760,593, Jan. 19, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,637

Int. Cl.^{2} H01L *27/02*

U.S. Cl. 357—51 **5 Claims**





1. A diffused resistor formed in a body of semiconductor material, said semiconductor material having an impurity concentration of less than 10^{17} atoms per cubic centimeter and having an overlying insulating layer, said diffused resistor comprising:

a resistor diffusion formed in said semiconductor material body;

two contact diffusions formed in non-adjacent portions of said resistor diffusion, the configuration of said contact diffusions being substantially coincident with the shape of said resistor diffusion and adjacent said body of semiconductor material at the locations at which each of the contacts is made, said contact diffusion of such concentration to form an ohmic contact to a Schottky contact forming material; and

two ohmic contacts of a Schottky contact forming material for ohmically contacting each of said contact diffusions, each of said ohmic contacts being substantially coincident with the corresponding contact diffusion, said two ohmic contacts being substantially coincident with the corresponding contact diffusion, said two ohmic contacts being formed at a temperature of less than 520° C. to thereby form a Schottky diode between any portion of said ohmic contacts which is formed in contact with any portion of said semiconductor body.

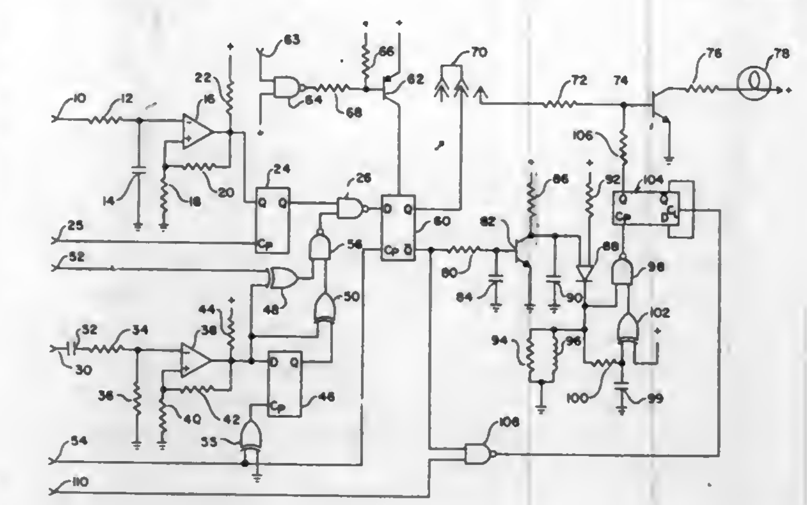
4,191,965
APPARATUS AND METHOD FOR TESTING COLOR SEQUENCING OF SECAM COLOR TELEVISION SIGNALS

Larry A. Nelson, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 799,417, May 23, 1977, abandoned. This application Jul. 11, 1978, Ser. No. 923,755

Int. Cl.^{2} H04N *9/62*

U.S. Cl. 358—10 **11 Claims**



1. The method of testing color sequencing of multiple color television signals, which comprises:

providing first signals representative of the sequence of the color television signals to be tested;

providing second signals representative of the sequence of a reference color television signal;

comparing said first and said second signals to obtain a third signal if the sequence of the color television signals to be tested is different from the sequence of said reference color television signal, said third signal providing immediate identification of said difference.

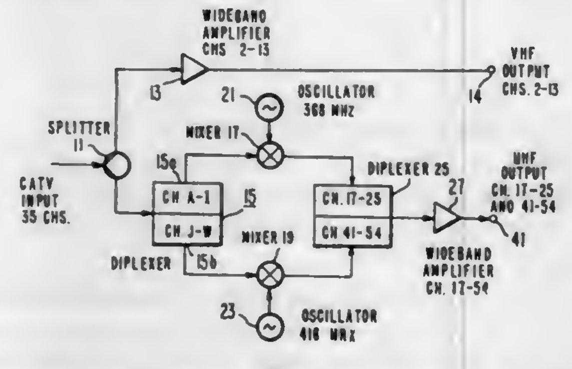
4,191,966
CATV BLOCK CONVERTER

John L. Ovnick, Jr., Los Angeles, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,014

Int. Cl.^{2} H04N *7/16*

U.S. Cl. 358—86 **5 Claims**



1. A cable TV converter for converting the cable TV midband channel frequencies of 120 to 174 MHz and the superband channel frequencies of 216 to 300 MHz to conventional TV tuner frequencies comprising:

filtering means responsive to said midband and superband cable channel frequencies for separating said midband and superband channel frequencies,

first upconverting means coupled to said filtering means and responsive to said midband signals for upconverting all of said midband channel frequencies by a same fixed frequency to a first block of UHF TV tuner channel frequencies,

second upconverting means coupled to said filtering means responsive to said superband channel frequencies for upconverting all of said superband channel frequencies by a same fixed frequency to a second block of different UHF TV tuner channel frequencies, and

means coupled to said first and second upconverting means for combining said UHF channel frequencies.

4,191,967
INFRARED IMAGING DEVICE USING A PYROELECTRIC IMAGE TUBE

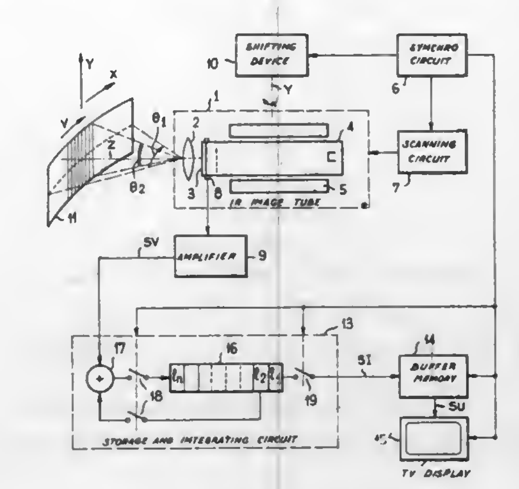
Jean Dansac; Christian Pepin, and Henri Cammas, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 6, 1978, Ser. No. 867,408

Claims priority, application France, Jan. 21, 1977, 77 01741

Int. Cl.^{2} H04N *3/16*

U.S. Cl. 358—113 **7 Claims**



1. An infrared imaging device utilizing a pyroelectric image tube and comprising: shifting means for shifting the viewing axis of the tube relative to an observed scene to carry out a panning surveillance, reading means for scanning line by line the infrared image formed on the target of the tube to provide a corresponding video signal, and processing means for processing the video signal for use in a line scan television display, the said shifting means and reading means being so designed that the direction of the lines is perpendicular to the shifting direction of the axis and in that the speed of the shift is lower than that of the frame scan to cover a distance of a predetermined whole number R of line intervals such that $1 \leq R \leq n/2$, in the course of one frame period which comprises n lines and in that the processing means comprise storage and integrating circuits for storing the video signal of an image scan, line by line and point by point in each line after being added to the video signal stored in the course of the preceding image scan and which signal corresponds to the same point in the observed scene and thus to obtain a video signal integrated $K = n/R$ times for each point after K successive frame periods, and a buffer memory device to store the said integrated video signal and to provide the intended display signal.

4,191,968
VIDEO SIGNAL COMMUNICATIONS SYSTEM WITH IMPROVED SIGNAL-TO-NOISE RATIO

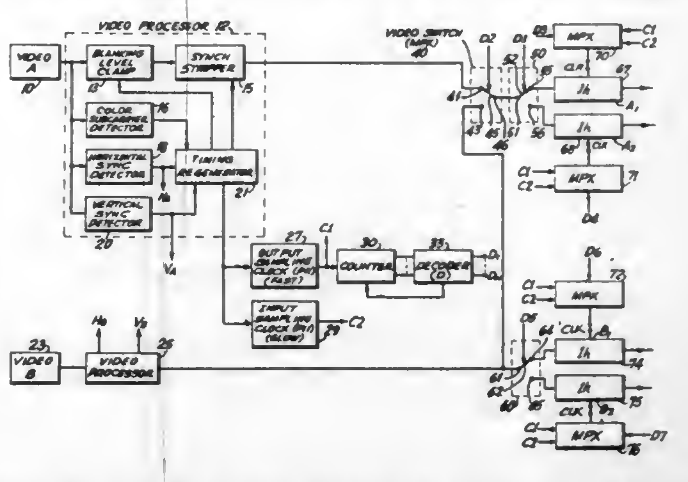
Donald Kirk, Jr., St. Petersburg, Fla., assignor to Digital Communications, Inc., St. Petersburg, Fla.

Filed Feb. 22, 1978, Ser. No. 879,860

Int. Cl.^{2} H04N *5/21, 7/00*

U.S. Cl. 358—141 **5 Claims**

1. In combination in apparatus for improving the signal-to-noise ratio of a transmitted video signal, a source of video information, storage means, means for reading a segment of the video information from said source thereof into said storage means, video signal processing means connected to said video source, said video processing means including means for providing a first signal comprising a measure of the average value of the video information over said segment and means for providing a second signal comprising a measure of the dynamic range of said video information relative to said direct current value over said timed segment, cascaded voltage shifting means and variable gain means each connected to said video processing means and respectively controlled by said first and second signal provided thereby, and means for reading information out of said storage means to said voltage shifting means, said voltage shifting means including means for selectively substantially reducing said direct current video segment value, and said variable gain means including means for selectively amplifying the output of said voltage shifting means.



4,191,969
VIDEO COMPOSITE TRANSMISSION SYSTEM INTEGRATING ENCODED DATA CHANNELS INTO BLANKING AND SYNCHRONIZING SIGNAL

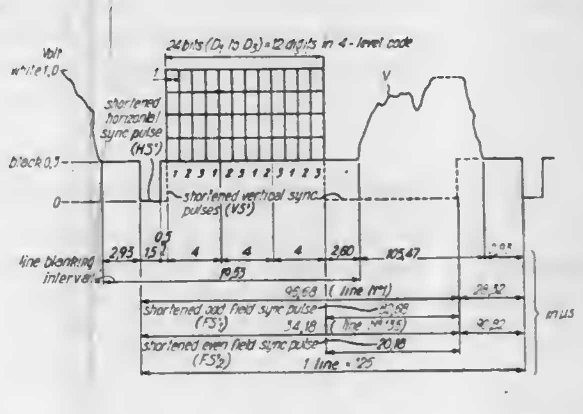
Marcel E. Briand, 67, rue de la Fougeraie Levis-St-Nom, Le Mesnil St Denis, France (78320), and Georges A. Pannetier, 12, rue de l'Amiral Roussin, Paris, France (75015)

Filed Mar. 27, 1978, Ser. No. 890,497

Claims priority, application France, Apr. 29, 1977, 77 12990

Int. Cl.^{2} H04N *7/08*

U.S. Cl. 358—145 **4 Claims**



1. A video composite transmission system connecting a camera and a picture receiver of a picture transmitting device and a plurality of data terminals to a video switching network via an analog two-path line transmitting an analog video composite signal, comprising:

means for shortening synchronizing pulses of first analog synchronizing signals transmitting from said camera, and thereby obtaining second analog shortened synchronizing signals having back blanking porches greater than those of said first synchronizing signals;

means for integrating and companding each of first digital data channels transmitting from first data terminals solely into the back blanking porches of each recurrent line of said second shortened synchronizing signals:

means for extracting and reshaping said first digital data channels in response to said first digital companded data channels included in said second shortened synchronizing signals transmitted from said video switching network;

means for multiplexing and demultiplexing said first digital companded data channels into a first digital multiplex data channel;

means for reshaping said first analog synchronizing signals transmitted to said picture receiver in response to said shortened synchronizing pulses of said second analog synchronizing signals transmitted from said video switching network;

means for integrating and companding each of second digital data channels transmitting from second data terminals solely into the trace interval of each available black line of vertical blanking and synchronizing signal transmitted from said camera;

means for multiplexing and demultiplexing said second digital companded data channels into a second digital multiplex data channel;

means for digitally mixing said first and second digital multiplex data channels and thereby obtaining a digital mixed data channel;

means for converting said digital mixed data channel from binary code used in said data terminals into a mixed analog data channel in a 2^M-level code, M being an integer greater than or equal to 2;

means for analogically mixing said analog mixed data channel, said second analog shortened synchronizing signals and said video signal transmitted from said camera, and thereby obtaining said analog video composite signal transmitted to said video switching network;

means for analogically separating said analog mixed data channel, said second analog shortened synchronizing signals and said video signal in response to said analog video composite signal transmitted from said video switching network;

means for converting said analog mixed data channel in said 2^M-level code into said digital mixed data channel in binary code;

means for digitally separating said first and second digital multiplex data channels in response to said digital mixed data channel; and

means for extracting and reshaping said second digital data channels in response to said second digital companded data channels issued from said demultiplexing means of said second digital multiplex data channel.

4,191,970

INTERFRAME CODER FOR VIDEO SIGNALS

Hans S. Witsenhausen, Millburn, and Aaron D. Wyner, Maplewood, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

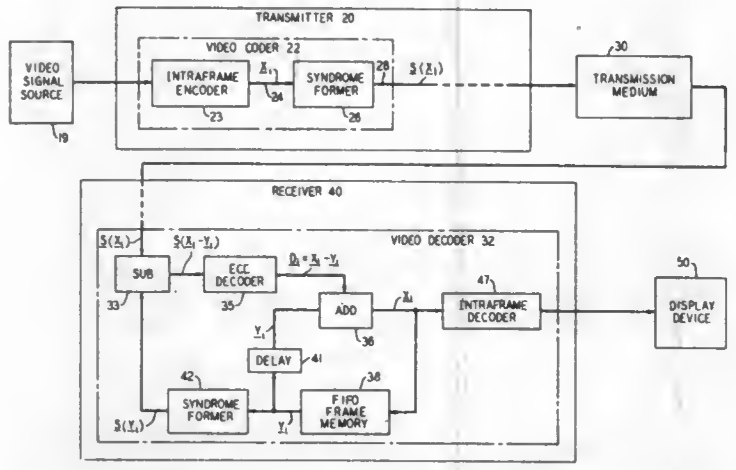
Filed May 15, 1978, Ser. No. 906,115

Int. Cl.^{2} H04N *5/21, 7/12, 7/04;* H04L *1/10*

U.S. Cl. 358—167 **7 Claims**

3. A decoder for decoding received error-correcting code syndrome signals, said syndromes being derived from respective blocks of picture signals of a first frame of a video signal, said decoder characterized by

means for storing blocks of picture signals representing the frame of said video signal prior to said first frame, means including said storing means for forming the bit-by-bit exclusive-OR function of each received syndrome signal with a signal representing the syndrome of a corresponding block from the frame prior to said first frame to form a combined syndrome signal, an error correcting code decoder for decoding said combined syndrome signal to form a difference word signal, and means including said storing means for forming the bit-by-bit exclusive-OR function of a signal representing said previous-frame block with said difference word signal, whereby a signal representing each of said first-frame blocks is recovered.



4,191,971

SYSTEM FOR CONNECTING A PLURALITY OF VIDEO SENDING TELEVISION APPARATUS

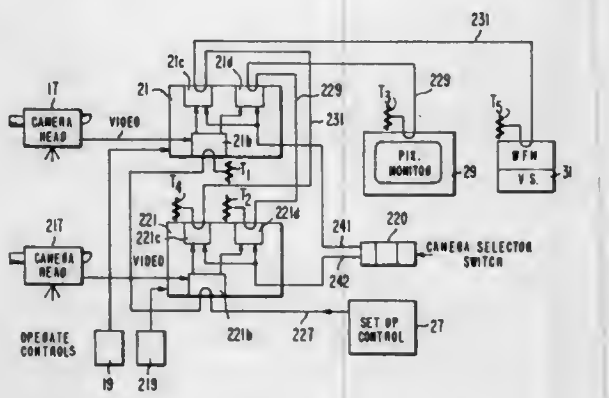
Robert A. Dischert, Burlington, and Laurence J. Thorpe, Marlton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 24, 1978, Ser. No. 909,040

Claims priority, application United Kingdom, May 30, 1977, 22806/77

Int. Cl.^{2} H04N *5/30*

U.S. Cl. 358—210 **6 Claims**



1. A system for connecting a plurality of similar television video sending apparatus to a common receiver apparatus, comprising:

a plurality of television video sending apparatus each providing a source of video signals,

video receiver apparatus,

a single continuous cable transmission line terminated at both ends by a fixed impedance load and routed continuously and serially through each of said video sending apparatus and receiver apparatus,

each of said video sending apparatus including a current source, said current source coupled to said cable at said apparatus between said terminations, and means for applying said video signals at said apparatus to said current source to modulate the current and thereby provide video signals across said terminations without changing the impedance across the transmission line.

4,191,972

FLYING SPOT SINGLE FIELD SCAN TELECINE APPARATUS

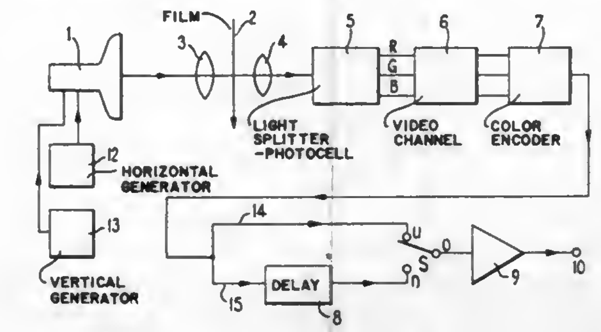
Raymond Matchell, Ware, England, assignor to The Rank Organisation Limited, London, England

Filed Dec. 30, 1977, Ser. No. 865,773

Claims priority, application United Kingdom, Jan. 27, 1977, 3336/77

Int. Cl.^{2} H04N *3/36*

U.S. Cl. 358—214 **10 Claims**



1. In a flying spot telecine apparatus comprising means for driving a cinema film past a scanning position at a predetermined rate of film frames per second, means for optically scanning consecutive frames of a cinema film in raster fashion by a light beam of small cross-section, opto-electronic detector means for converting the picture information thereby modulated on the light beam into electrical video signal form, and video processing circuit means for deriving from the electrical video information a television signal of which consecutive groups of television fields contain picture information derived from scanning respective consecutive film frames, the improvement wherein the film driving means is adapted to drive the film with continuous motion, wherin the scanning means is adapted to make at least one field scan of each film frame, and wherein the video processing circuit means comprises means for deriving the picture information for all the television fields of each group from the said one field scan only of the respective film frame.

4,191,973

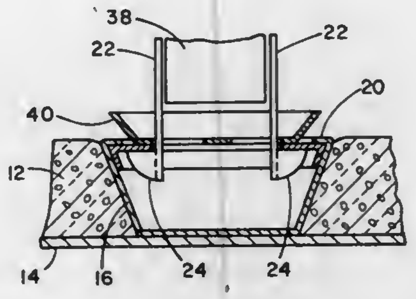
SHIELDING MEANS FOR TELEVISION PICTURE TUBE ELECTRICAL FEED-THROUGH RECEPTACLES

William J. Szydlowski, Deerfield, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 24, 1978, Ser. No. 927,313

Int. Cl.^{2} H04N *5/65*

U.S. Cl. 358—245 **3 Claims**



1. In a television cathode ray picture tube having a glass envelope including a funnel and a faceplate, said tube generating X-radiation internally and incidental to its operation, said envelope having a wall in which is sealingly embedded open-side-out a cup-like receptacle having an inwardly turning annular lip for detachably engaging a mating electrical connector, an improved shielding means for enhancing the X-radiation-inhibiting characteristics of said receptacle comprising a cover of radiation-resistant material retained against said annular lip in a manner effective to close the opening of said cup-like receptacle whereby the shielding characteristics of said receptacle are enhanced by said cover.

4,191,974

FACSIMILE ENCODING COMMUNICATION SYSTEM

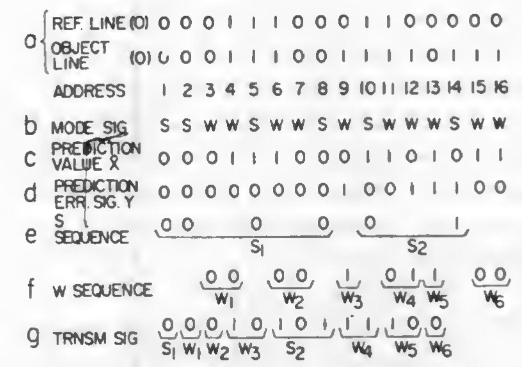
Fumitaka Ono; Takayoshi Semasa; Yutaka Ueno, and Shuzi Iwata, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1978, Ser. No. 875,909

Claims priority, application Japan, Feb. 8, 1977, 52-13432; Jun. 8, 1977, 52-68233

Int. Cl.^{2} H04N *1/00*

U.S. Cl. 358—261 **3 Claims**


a
REF. LINE (0) 0 0 0 1 1 1 0 0 0 1 1 0 0 0 0 0
OBJECT LINE (0) 0 0 0 1 1 1 0 0 1 1 1 1 0 1 1 1
ADDRESS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
b MODE SIG S S W W S W W S W S W W W S W W
c PREDICTION VALUE X 0 0 0 1 1 1 0 0 0 1 1 0 1 0 1 1
d PREDICTION ERR. SIG. Y 0 0 0 0 0 0 0 0 1 0 0 1 1 1 0 0
e S SEQUENCE 0 0 0 0 0 1
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W5
W6
g TRNSM SIG 0 0 0 1 0 1 0 1 1 1 1 0 0
S1 W1 W2 W3 S2 W4 W5 W6

3. An encoding communication system for facsimile signals comprising means for sequentially obtaining prediction signals from picture elements adjacent to object picture elements in accordance with a predetermined prediction function; means for comparing said prediction signals with signals from corresponding ones of said object picture elements to generate a sequence of prediction error signals; means for encoding and transmitting said signal sequence of prediction error signals; said means for encoding and transmitting including: a mode selection circuit for selecting any one of a plurality of code forms predetermined by a pattern of adjacent picture elements upon encoding; an encoding means for encoding said prediction error signals on the basis of said code form selected by said mode selection circuit; and a mode switching means for sequentially transmitting said coded signals, starting with the coded signal in the mode having an untransmitted symbol pattern with the least address number among said signals to be encoded.

4,191,975

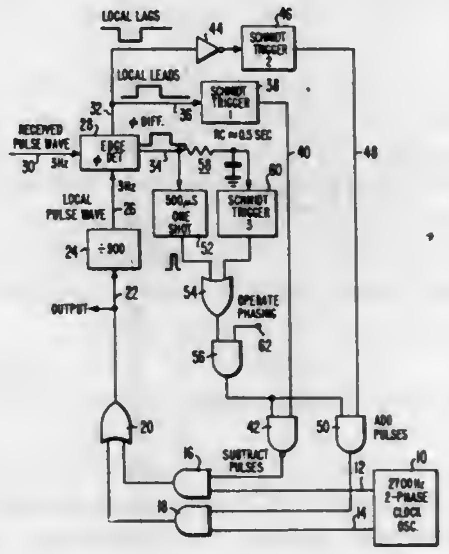
DIGITAL PHASE SYNCHRONIZING SYSTEM

Hugh E. White, Pennington, and Robert J. Petri, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 23, 1978, Ser. No. 935,960

Int. Cl.^{2} H04N *1/36*

U.S. Cl. 358—264 **6 Claims**



1. A system for phasing a local pulse wave with a received pulse wave, comprising

a phase detector having a local pulse wave inut and being receptive to the received pulse wave, and having an output,

a two-phase clock having two outputs,

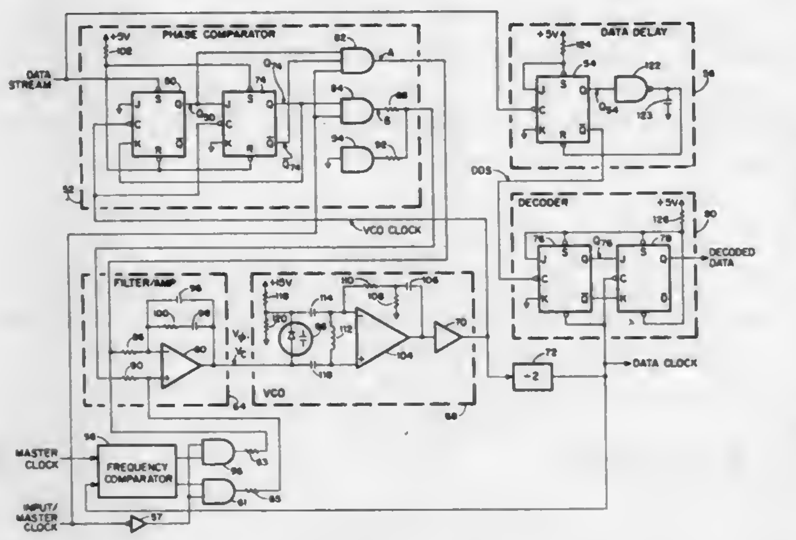
a pulse frequency divider coupled between the outputs of said clock and the local pulse wave input of said phase detector,

means responsive to the output of the phase detector to interrupt the flow of pulses from one output of the clock to the divider for a period equal to the amount the local pulse wave leads the received pulse wave,

means responsive to the output of the phase detector to enable the flow of pulses from the other output of the clock to the divider for a period equal to the amount the local pulse wave lags the received pulse wave, and

means operative when the phase difference between the local and received pulse waves is small to limit the interruption of clock pulses from the one output of the clock, and to limit the enabling of clock pulses from the other output of the clock.

4,191,976
CIRCUIT INDICATING PHASE RELATIONSHIP
William A. Braun, Acton, Mass., assignor to Data General Corporation, Westboro, Mass.
Filed Sep. 26, 1978, Ser. No. 945,980
Int. Cl.^{2} G11B *5/09*
U.S. Cl. 360—51 **20 Claims**



1. A circuit for providing a comparison signal representing phase relationship between a first clock pulse train and a variable rate input pulse train, comprising:

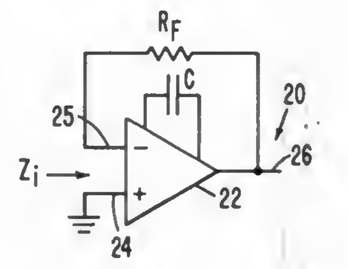
means for measuring phase difference between each pulse of said input pulse train and a respective pulse of said first clock pulse train, said phase difference having a minimum value and a maximum value and related discontinuities at said minimum and maximum values;

means responsive to operation of said measuring means for generating a first signal proportional to said phase difference;

means for providing a second signal representing a selected value of said phase difference, said selected value being greater than said minimum value and less than said maximum value; and,

means for comparing said first and second signals to provide said comparison signal which represents difference between said selected and measured phase difference.

4,191,977
BIASING OF MAGNETORESISTIVE READ HEAD USING GYRATORS
Julian Lewkowicz, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 29, 1978, Ser. No. 947,308
Int. Cl.^{2} G11B *5/47, 5/12*
U.S. Cl. 360—66 **17 Claims**



1. A reproducing device, for use with the read chain of a recording channel, comprising in combination:

an M-R transducer;

a voltage supply source connected to the transducer;

a first operational amplifier means connected to a first terminal of the transducer;

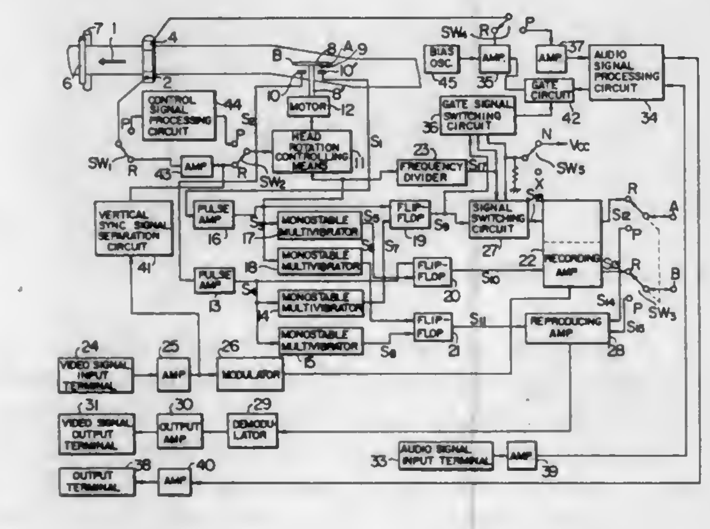
a second operational amplifier means connected to a second terminal of the transducer;

a shared capacitive means interconnecting the first operational amplifier means and the second operational amplifier means;

a first feedback resistor operably associated with the first operational amplifier means; and

a second feedback resistor operably associated with the second operational amplifier means whereby each amplifier means, together with its associated feedback resistor and the shared capacitive means simulates an inductive means suitable for biasing said M-R transducer.

4,191,978
METHOD FOR ADJUSTING ROTARY HEAD TYPE MAGNETIC VIDEO RECORDING AND REPRODUCING APPARATUS
Mitsunobu Furumoto, Yao; Osahiko Yano, Kadoma; Satoshi Kikuya, Katano; Kanji Kubo, Katano, and Hideki Sakumoto, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 29, 1977, Ser. No. 855,707
Claims priority, application Japan, Dec. 3, 1976, 51-145788
Int. Cl.^{2} G11B *5/56, 27/32*
U.S. Cl. 360—75 **5 Claims**



CONTROL SIGNAL PROCESSING CIRCUIT
MOTOR
HEAD ROTATION CONTROLLING MEANS
BIAS OSC.
AMP.
AUDIO SIGNAL PROCESSING CIRCUIT
GATE CIRCUIT
GATE SIGNAL SWITCHING CIRCUIT
FREQUENCY DIVIDER
VERTICAL SYNC SIGNAL SEPARATION CIRCUIT
PULSE AMP
MONOSTABLE MULTIVIBRATOR
FLIP-FLOP
SIGNAL SWITCHING CIRCUIT
RECORDING AMP
REPRODUCING AMP
VIDEO SIGNAL INPUT TERMINAL
MODULATOR
VIDEO SIGNAL OUTPUT TERMINAL
OUTPUT AMP
DEMODULATOR
AUDIO SIGNAL INPUT TERMINAL
OUTPUT TERMINAL
SW₁
SW₂
SW₃
SW₄
SW₅
Vcc

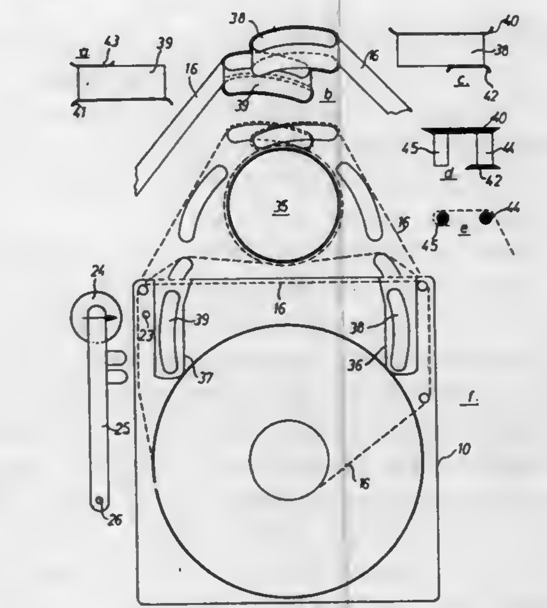
1. A method for testing and adjusting a rotary head type magnetic video recording and reproducing apparatus having a first rotary head for recording and reproducing a video signal and a first composite head having a first control head and a first audio head, which comprises the steps of:

preparing a reference tape by recording a video signal intermittently to produce at least one unrecorded video track on said tape for every predetermined number of video tracks formed on said tape, said intermittent video signal being recorded by the scan of a second rotary head of a reference rotary head type magnetic video recording apparatus having a second composite head including a second control head and a second audio head which are arranged in a predetermined positional relation relative to a mounting position of said second rotary head with the head gaps of said second control head and said second audio head being in a predetermined positional relation, and recording an audio signal on said tape intermittently by said second audio head in synchronism with the intermittence of said video signal;

reproducing the intermittently recorded video and audio signals on said reference tape by said first rotary head and said first composite head of the rotary head type magnetic video recording and reproducing apparatus under test; and

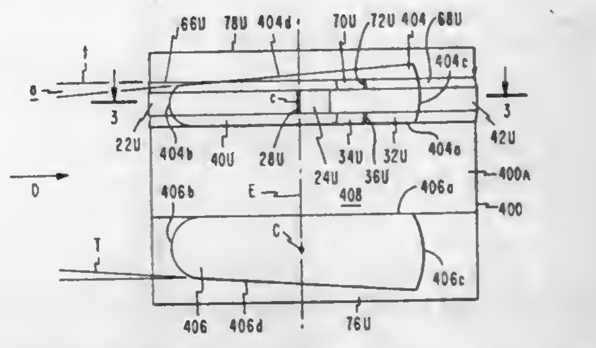
adjusting the position of said first composite head with respect to a mounting position of said first rotary head such that the intermittence relation between a reproduced video signal from said first rotary head and a reproduced audio signal from said first audio head coincides with the intermittence relation between the video and audio signals during recording.

4,191,979
DEVICE FOR EXTRACTING AND POSITIONING VIDEO TAPE FROM A CASSETTE TO AROUND A SLIT HEAD DRUM
Herbert Poehler, Rosenstrasse 17, 6055 Hausen, Fed. Rep. of Germany
Filed Jul. 6, 1978, Ser. No. 922,499
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730727; Aug. 10, 1977, 2735963
Int. Cl.^{2} G11B *15/00*
U.S. Cl. 360—85 **20 Claims**



1. An apparatus for the recording and reproduction of signals, particularly video signals, on a magnetic tape (16) which is disposed in a cassette (1) on spools (11, 12) which lie concentrically one above the other, and having means whereby it is adapted to be laid, in two loops moving in opposite directions towards one another, against the periphery of a slit head drum (35), in which at least one magnetic head rotates, comprising a tape extraction device having a pair of grippers (38, 39) initially positioned within the cassette on the side of the tape remote from the drum, said device being mounted on a chassis plate, said grippers (38, 39) being disposed in different planes in their end position in which the magnetic tape (16) spans helically and contacts over an angle of at least 360° circumferentially around the head drum (35), the head drum having means whereby it is obliquely adjustable in relation to the chassis plate, one of said grippers being an upper gripper and said upper gripper (38) being in the form of an arcuate tape guide body and being disposed at a greater normal distance from the chassis plate (50), and having an upper edge (40) for positioning the upper edge of the tape, and the other gripper being a lower gripper (39) being disposed at a lesser normal distance from the chassis plate and being likewise in the form of an arcuate tape guide body and having a lower guide edge (41) for positioning the bottom edge of the tape, the vertical height of each gripper (38, 39) is slightly greater than the width of the magnetic tape (16), said upper gripper (38) in said end position being supported by a portion of its lower edge on a portion of the upper edge of the lower gripper (39), and the horizontal length of said tape guide bodies defined by said grippers (38, 39) holds at a distance from the periphery of the head drum the tape loops guided towards and away from the head drum (35).

4,191,980
TRANSDUCERS WITH TAPERED EDGE PROFILES AND ASSEMBLY THEREOF
Francis K. King, San Jose, Calif.; Ronald J. Maurine, and Donald J. Wanek, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1978, Ser. No. 974,633
Int. Cl.^{2} G11B *5/60, 5/82, 25/04*
U.S. Cl. 360—99 **8 Claims**



1. A magnetic transducer for use with a magnetic disk comprising:

a transducer body having a pair of magnetically permeable core pieces extending therethrough,

an active surface on said transducer body having a pair of lands adapted to contact or be in near contact with the magnetic disk as the disk rotates with said lands being separated by a groove extending longitudinally of said active surface,

said core portions having a transducing gap therebetween on one of said lands on said active surface,

each of said lands broadening longitudinally of said surface from a leading end of the transducer to the trailing end of the transducer whereby to modify the air pressure effective on the lands due to rotation of the disk.

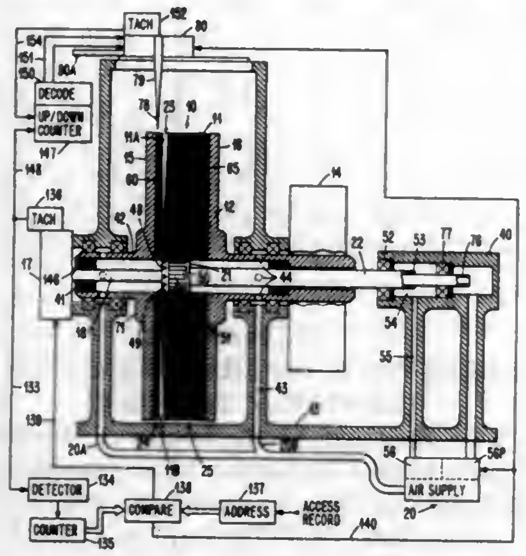
4,191,981
RECORD STORAGE APPARATUS EMPLOYING ENHANCED TRANSDUCER POSITIONING SERVOMECHANISMS
Howard E. Van Winkle, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 19, 1975, Ser. No. 642,646
Int. Cl.^{2} G11B *5/012, 5/016*; G05B *11/18*
U.S. Cl. 360—99 **5 Claims**

1. Positioning apparatus for relatively moving first and second members with respect to a third member, including in combination:

a first servomechanism having motive means for relatively moving said first and third members to a commanded position;

means for indicating relative position of said first and third members at least at said commanded position;

a second servomechanism having motive means for relatively moving said second and third members in accordance with said indication including means comparing said indication with relative position of said second and third members for stopping said relative movement of said second and third members upon obtaining a predetermined comparison and for actuating said relative movement of said second and third members upon other than said predetermined comparison and said second servo-



mechanism only being capable of relatively moving said second and third members slower than said first servomechanism relatively moves said first and third members whereby said first and second members are first relatively positioned to said commanded position such that said second servomechanism follows the positioning movements of said first and third members with a predetermined time lag.

4,191,982

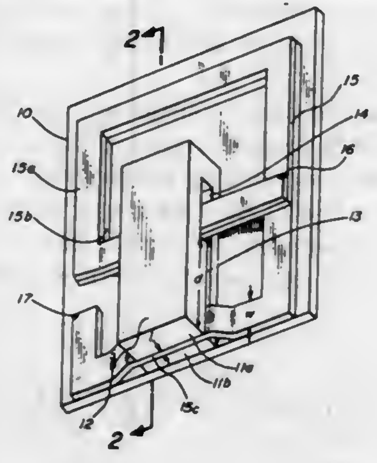
MAGNETIC TRANSDUCING HEAD WITH A TURN IN THE GAP

William P. Wood, St. Louis Park, and Raymond E. Jutila, Wayzata, both of Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Jul. 24, 1978, Ser. No. 927,320

Int. Cl.^{2} G11B *5/20*

U.S. Cl. 360—123 **6 Claims**



1. A magnetic transducing head comprising

(a) a magnetic core having a transducing face, a loop area defined by an opening through the core, and a flux gap extending from the transducing face to the loop area and defined by flux gap faces, said flux gap having a length dimension substantially parallel to the transducing face which is substantially shorter than the maximum loop area dimension in the flex gap length direction; and

(b) a multi-turn winding having end taps serving as signal terminals, and having at least one turn passing through the loop area and surrounding a part of the core defining the loop area, and at least one other turn passing through the flux gap between the flux gap faces adjacent the transducing face, surrounding a part of the core defining the loop area, and occupying substantially less than the entire gap height in the gap;

whereby a portion of the flux generated by the gap turn when current is passed through it leaks through the flux gap between the loop area and the gap turn and opposes flux generated by the loop turn, thereby increasing the apparent gap reluctance and fringing flux adjacent the transducing face.

4,191,983

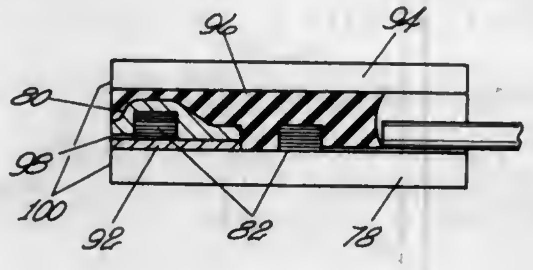
THIN FILM MAGNETIC HEAD ASSEMBLY HAVING A THIN FILM MAGNETIC TRANSDUCER ENCAPSULATED IN INSULATING BONDING MATERIAL

George W. Gibson, Goleta, Calif., assignor to Applied Magnetics Corporation, Goleta, Calif.

Division of Ser. No. 809,924, Jun. 24, 1977, Pat. No. 4,143,458. This application Apr. 4, 1978, Ser. No. 893,472

Int. Cl.^{2} G11B *5/12, 5/20, 5/22*

U.S. Cl. 360—125 **4 Claims**



1. A thin film magnetic head assembly comprising

a substrate formed of a ceramic material having a support surface and a treated surface which is substantially parallel to and intersects with said support surface, said treated surface being adapted to be positioned relative to an information storing media;

at least one thin film magnetic transducer mounted on said support surface and having a transducing portion located along the line of intersection of said support surface and said treated surface and terminal pads extending from said thin film transducer along said support surface;

a superstrate formed of a ceramic material having a protective surface and a treated surface which is substantially parallel to and intersects with said protective surface, said superstrate being positioned relative to said substrate with said protective surface spaced from said support surface with said thin film transducer located therebetween, said treated surface of the substrate and superstrate and the transducing portion of said thin film transducer being positioned in planar alignment;

an insulating bonding material located in the space between said protective surface and said support surface and bonded thereto; said insulating bonding material being selected of a material which is electrically and mechanically compatible with the thin film magnetic transducer and which has a melting point temperature below a thermal stress temperature at which at least one of the electrical characteristics and the magnetic characteristics of the thin film magnetic transducer are permanently distorted and encapsulate said thin film transducer with the transducing portion thereof being exposed to and in planar alignment with said treated surface.

4,191,984

TAPE CASSETTE

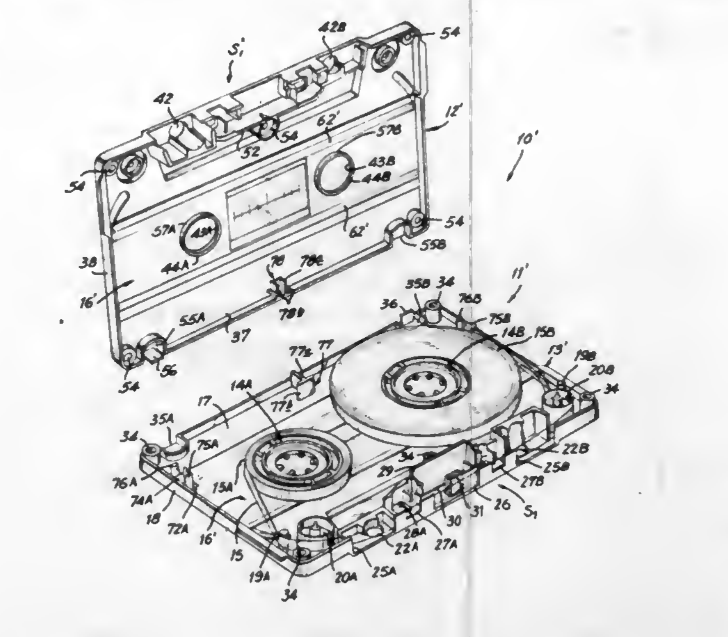
Yoshitaka Tsukidate, Tagajyo, and Shin Sasaki, Tagahyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 9, 1978, Ser. No. 914,574

Claims priority, application Japan, Jun. 10, 1977, 52-74776[U]

Int. Cl.^{2} G11B *23/06, 15/32;* G03B *1/04*

U.S. Cl. 360—132 **13 Claims**



1. A tape cassette comprising:

a housing including a pair of opposed, spaced apart walls, each of said walls having a pair of spaced apart openings therein which are aligned with corresponding openings in the other of said walls and annular flanges extending around said openings and being directed axially therefrom at the side of the respective wall facing toward said other wall;

a pair of hubs disposed within said housing between said walls, each of said hubs including an outer peripheral portion having a cylindrical circumferential surface and an annular rib spaced radially inward from said circumferential surface and having an axial dimension greater than the axial width of said circumferential surface so as to project axially beyond opposite flanks of said outer peripheral portion into close proximity to said walls, said rib of each of said hubs extending rotatably around said annular flanges associated with respective ones of said aligned openings in said walls of the housing;

a magnetic tape in said housing wound on the cylindrical circumferential surfaces of said hubs; and

a pair of lubricating sheets disposed against the sides of said walls which face toward each other, each of said lubricating sheets having a pair of holes therein aligned with said openings in the adjacent one of said walls and with said annular flanges of said adjacent wall extending through said holes of the lubricating sheet, and each of said lubricating sheets further having a pair of ridges projecting therefrom in the direction away from said adjacent wall, said ridges on each sheet being spaced apart with said holes located between said ridges and with the distance between said ridges, at least at the region of each of said holes, being larger than the outer diameter of said rib of each hub and no greater than the diameter of said circumferential surface of the hub, each of said sheets having flat surface portions between said holes and said ridges engageable by said ribs of the hubs for providing axial bearings for the latter, and said ridges of the lubricating sheets extending at least substantially to said flanks of the outer peripheral portion of each of said hubs for accurately guiding said tape therebetween when being wound on said hubs.

4,191,985

INTERRUPTER

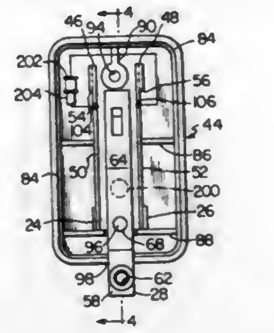
Charles M. Phillips, Jr., 315 Haven St., Clearwater, Fla. 33516

Continuation-in-part of Ser. No. 644,422, Dec. 24, 1975, Pat. No. 4,075,676, and a continuation-in-part of Ser. No. 713,844, Aug. 12, 1976. This application Sep. 16, 1977, Ser. No. 833,767

The portion of the term of this patent subsequent to Feb. 21, 1995, has been disclaimed.

Int. Cl.^{2} H02H *3/22*

U.S. Cl. 361—56 **9 Claims**



1. An interrupter device for interrupting electrical current used by a household electrical appliance and for diverting current from electrical equipment connected to telephone lines, comprising:

a housing supporting a grounding prong means and two prong means adapted to be inserted into a grounded electrical outlet and a female receptacle including three apertures adapted to receive the electrical plug connector of an appliance;

a plurality of conductor means for electrically interconnecting of each same prong means to a corresponding element of said female receptacle, said plurality of conductor means including three conductive elements being unitary portions of said prong means and forming contact portions below said appertures of said female receptacle;

two of said conductive elements being rectangular and each having a unitary prong means extending substantially perpendicular from one end of said conductive elements in a first direction and a contact portion extending substantially perpendicular from the other end of said conductive elements in an direction opposite said first direction;

variable impedance means connected between two conductors of said interconnecting conductor means for temporarily interrupting current flow to said female receptacle at high voltage levels by creating a path of low resistance between said two interconnecting conductor means, said variable impedance means including a varistor in series with a thermofuse, said varistor and said thermofuse being in thermal cooperation whereby heat generated by said varistor causes said thermofuse to actuate and said thermofuse becomes an open circuit.

4,191,986

POWER LINE TRANSIENT SUPPRESSORS

Kwang ta Huang, Ventura, and Brian R. Milner, Camarillo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1978, Ser. No. 905,323

Int. Cl.^{2} H02H *3/08*

U.S. Cl. 361—58 **5 Claims**

1. In an electrical circuit having a first pair of terminals connected to an input source of AC electrical energy and a second pair of terminals connected to a load which is energized by said AC energy source, the improvement comprising a transient energy suppression circuit, connected in series with the load for rejecting or attenuating voltage transients which occur in circuit power lines to the load, and which comprises:

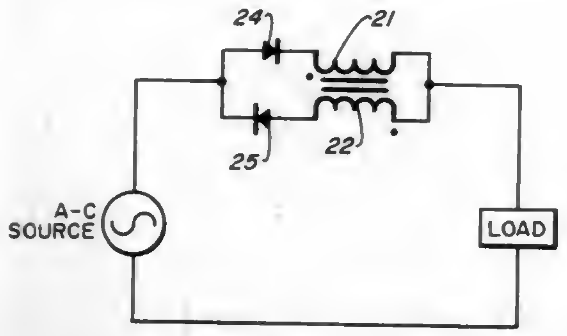
a. a first and a second inductor means connected in series with the load;

b. a first and a second one-way electrical valve means connected in series with said first and second inductor means, respectively, permitting current to flow in one direction only through each of said first and said second inductor means alternately during alternate half-cycles of energy from said AC source;

c. said first and second inductor means being magnetically coupled together;

d. said first and said second inductor means connected together in series with respective said first and said second one-way electrical valve means comprising:

said first inductor means and a first diode in series connected in parallel with said second inductor means and a second diode in series;



the series connections being of the same polarity and the parallel connections being of reverse polarity;

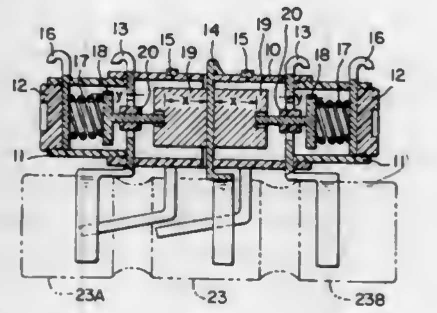
said magnetic coupling of said first and said second inductors and the connection arrangement resulting in inductor currents being reduced to zero alternately in said first and second inductors during alternate half-cycles thereby avoiding continuous circulating currents simultaneously in both inductors;

e. said circuit operating to attenuate and absorb energy caused by high transient voltages that may occur due to power supply anomalies, thereby protecting the load.

4,191,987

CLIP-ON PROTECTOR

Gerald Coren, 18 Willben La., Plainview, N.Y. 11803
Filed Feb. 24, 1978, Ser. No. 880,756
Int. Cl.^{2} H02H *3/22*
U.S. Cl. 361—124 **17 Claims**

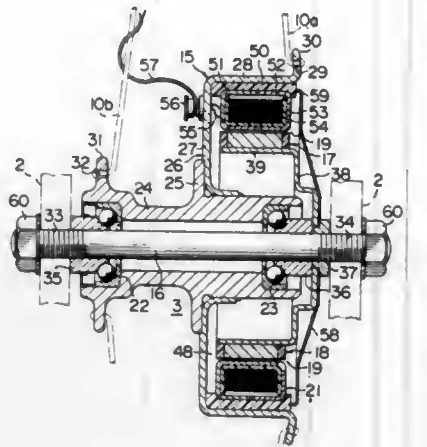


1. Supplementary protection means for preventing the burn out of an over-voltage protector and the apparatus protected by same and wherein the over-voltage protector has a casing and spaced electrodes, comprising plungers with shafts substantially parallel to the axis of the protector to conserve space, each of said plungers connected to ground and oriented to potentially ground a different spaced electrode of said protector, resilient means urging said plungers towards a condition of electrical contact with said electrodes, heat conduction means for conducting heat from said protector case to fusible means during sustained overload, said fusible means comprising a fusible element in pressure engagement with said plunger, said fusible means located at a place remote from the protector but oriented to maintain said plungers and said electrodes in insulating relationship except during a condition of sustained overload threatening to burn out said protector which condition causes said fusible means to fuse whereupon said grounded plungers are urged into electrical contact with said electrodes, and grounding means for grounding said plungers whereupon fusing of said fusible means causes said electrodes to be grounded.

4,191,988

IDENTIFICATION LAMP APPARATUS

Shokichi Kumakura, 5-3, Funabori 2 chome, Edogawa-ku, Tokyo, Japan
Filed Dec. 27, 1977, Ser. No. 864,290
Int. Cl.^{2} F21L *13/00*
U.S. Cl. 362—72 **3 Claims**

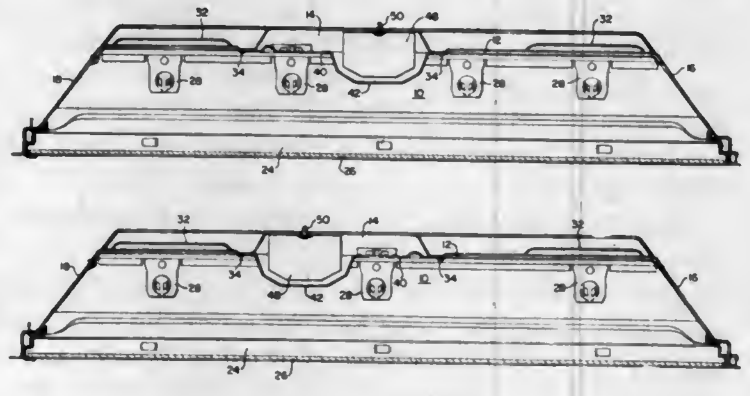


1. An identification lamp apparatus to be mounted on a wheel of a bicycle which rotates around a stationary shaft, comprising a lamp carried by the wheel, a hub rotatably mounted on the shaft, a hub wheel secured to the hub and including a first annular portion which defines an annular space around the hub, a drum member having a second annular portion which extends axially into the annular space, a sideplate mounted on the drum member and disposed radially to extend perpendicularly to the second annular portion, a stator assembly including permanent magnets and slidably supported on the outer surface of the second annular portion, a rotor assembly including a coil to produce an electric power thereacross, the rotor assembly being fixedly mounted on the inner surface of the first annular portion, a lining mounted between the permanent magnets and the outer surface of the second annular portion, and adjusting screw means provided on the sideplate and extending into said annular space for selectively locking the permanent magnets to the drum member to adjust whether the lamp is to be energized or deenergized.

4,191,989

RECESSED INTERIOR FLUORESCENT LUMINAIRE

Burford J. Page, and Winfried N. Westermann, both of Vicksburg, Miss., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Feb. 9, 1978, Ser. No. 876,394
Int. Cl.^{2} F21S *3/00*
U.S. Cl. 362—220 **5 Claims**



1. An interior fluorescent luminaire of either the four lamp or three lamp type comprising:

a luminaire housing including;

a top wall, a pair of end walls and a pair of side walls defining a bottom opening;

a refractor closing off said bottom opening for distributing light emanating from said luminaire;

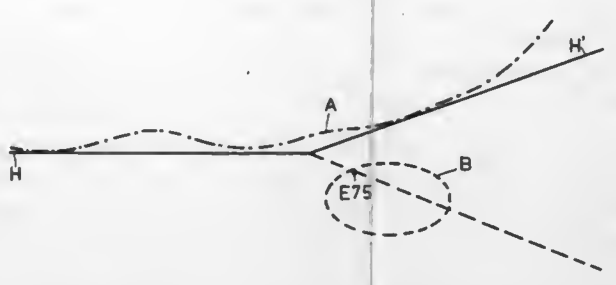
a plurality of oppositely disposed lamp holders mounted to each of said end walls; and

a reversible ballast housing cover mounted to the underside of said top wall constructed and arranged to be removably secured thereto in either a first or second position to thereby accommodate either three or four equidistantly spaced fluorescent lamps in a planar array.

4,191,990

ARRANGEMENT FOR ADJUSTING HEADLIGHTS

Maarten C. Beeftink, Heerlen, Netherlands, and Manfred Helgers, Geilenkirchen-Lindern, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 15, 1977, Ser. No. 824,522
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637485
Int. Cl.^{2} F21V *11/00*
U.S. Cl. 362—276 **8 Claims**

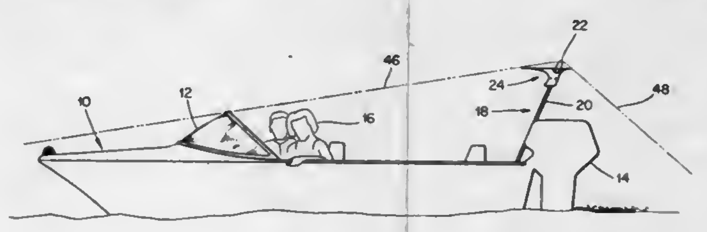


1. An arrangement for monitoring the brightness distribution of the light beam produced by a headlight comprising a convergent lens for passing the lightbeam onto a frosted glass screen, a television camera arranged to pick-up the brightness picture on the frosted glass screen, a non-linear amplifier, and means connecting the output of the television camera through said non-linear amplifier to the input of a monitor.

4,191,991

LIGHT SHIELD FOR MAST-MOUNTED NAVIGATION LIGHTS

Charles J. Sorlien, 7005 W. 23rd St., St. Louis Park, Minn. 55426
Filed Oct. 17, 1977, Ser. No. 842,726
Int. Cl.^{2} F21Y *17/02*
U.S. Cl. 362—319 **9 Claims**

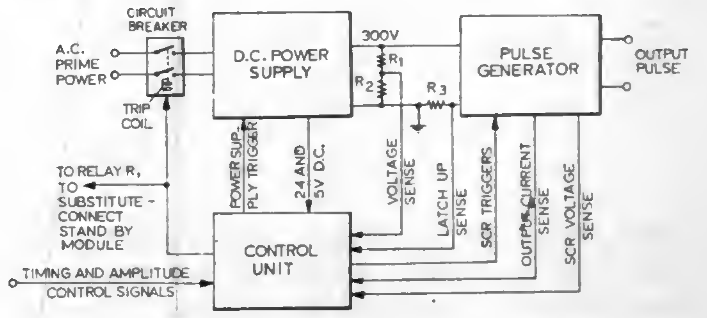


1. A shield for mast-mounted navigation lights comprising a shade panel having a hole therein for accommodating the upper portion of the mast supporting the navigation light at the top thereof, a pair of side panels having edges thereof secured to the underside of said shade panel and said side panels extending downwardly from said shade panel in the vicinity of said hole, and means for clamping said side panels against opposite sides of said mast so as to adjustably position said shade panel in a preferred position in relation to the navigation light atop said mast.

4,191,992

METHOD OF AND APPARATUS FOR ENABLING SOFT-FAILURE OF MODULAR POWER CONVERTER SYSTEMS, INCLUDING RF GENERATOR SYSTEMS, EMBODYING SWITCHING COMPONENTS IN THE POWER CONVERSION

Paul R. Johannessen, Lexington, Mass., assignor to Megapulse Incorporated, Bedford, Mass.
Filed Feb. 23, 1978, Ser. No. 880,842
Int. Cl.^{2} H02M *1/18*
U.S. Cl. 363—50 **20 Claims**



13. Power conversion apparatus having, in combination, a plurality of pulse generator modules having input circuits connected to a control module and output circuits coupled to a common load; each pulse generator module comprising a pulse generator comprising switching means such as SCRs, an individual DC power supply fed by circuit-breaker means from an AC power source to supply main DC power to the pulse generator that is switched by the switching means, and a control unit connected to said control module to receive timing and amplitude control signals therefrom and connected to trigger the DC power supply and the SCR operation in said pulse generator; a first feedback connection from the said pulse generator to said control unit sensing output current of the said pulse generator to control the output pulse amplitude and timing and to enable fault detection; a second feedback connection from the said pulse generator to said control unit sensing the SCR voltage to protect the SCR switching means in the pulse generator from overvoltage; a latch-up sense connection from the input of said pulse generator to said control unit; and means connected with said control unit and responsive to failure indication by any of the latch-up sensing, pulse generator output current and fault sensing, and SCR overvoltage sensing, for controlling said circuit breaker means to render the failed pulse generator module ineffective in said system.

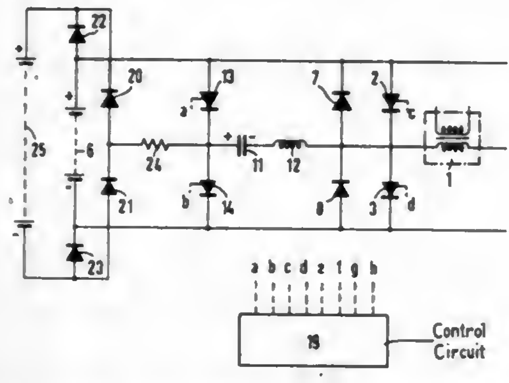
4,191,993

INVERTER COMPRISING AT LEAST TWO CONTROLLABLE LOAD THYRISTORS

Gerhard Kratz, Erlangen, and Werner Kuehnel, Uttenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Sep. 18, 1978, Ser. No. 943,067
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746099
Int. Cl.^{2} H02M *7/515*
U.S. Cl. 363—135 **5 Claims**

1. An inverter comprising at least two controllable load thyristors to which a control device is connected which alternately switches them on for the purpose of alternate connection of a load to the poles of a feed d.c. voltage source, wherein there is connected, in antiparallel fashion, with each load thryistor, one diode each which is a component of a commutation installation for the corresponding load thyristor, which commutation installation manifests an LC-series oscillatory circuit dimensioned for a specified load current, and which manifests, for each load thyristor, a controllable commutation thyristor connected to the control device, whereby each commutation thyristor forms a closed circuit with the LC-series oscillatory circuit and its diode, such that the energy of the LC-series oscillatory circuit, during commutation in each

instance changes over to a low-impedance commutation path which is free of the load and of the feed d.c. voltage source, characterized in that the LC-series oscillatory circuit (11, 12) is connected via a reloading circuit (20 to 24) to an auxiliary d.c. voltage source (25) of a constant voltage, which is independent of the feed d.c. voltage source (6), and that the reloading circuit (20 through 24) limits the maximum capacitor voltage to the voltage of the auxiliary d.c. voltage source (25).



4,191,994

INVERTER COMPRISING AT LEAST TWO CONTROLLABLE LOAD THYRISTORS

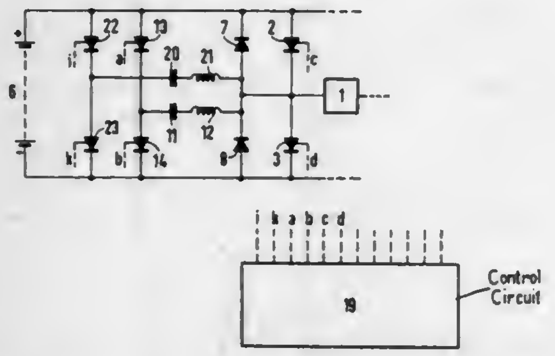
Gerhard Kratz, Erlangen, and Werner Kuehnel, Uttenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,068

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746115

Int. Cl.^{2} H02M *7/515*

U.S. Cl. 363—135 **2 Claims**



1. An inverter comprising at least two controllable load thyristors to which a control device is connected which alternately switches them on for the purpose of alternate connection of a load to the poles of a d.c. voltage source, wherein one diode each is connected in antiparallel fashion to each load thyristor, said diode being a component of a commutation installation for the corresponding load thyristor which commutation installation manifests an LC-series oscillatory circuit dimensioned for a specified load current and a controllable commutation thyristor, connected to the control device, for each load thyristor, whereby each commutation thyristor forms a closed circuit with the LC-series oscillatory circuit and its diode, such that the energy of the LC-series oscillatory circuit, during commutation, in each instance swings over to a low-impedance commutation path which is free of the load and the d.c. voltage source, characterized in that an additional LC-series oscillatory circuit (20, 21), dimensioned for a second load current, is present, to which switching means (22, 23) are connected which connect the latter into the commutation installation (7, 8, 11 through 14, 20 through 23), instead of the first-mentioned LC-series oscillatory circuit (11, 12).

4,191,995

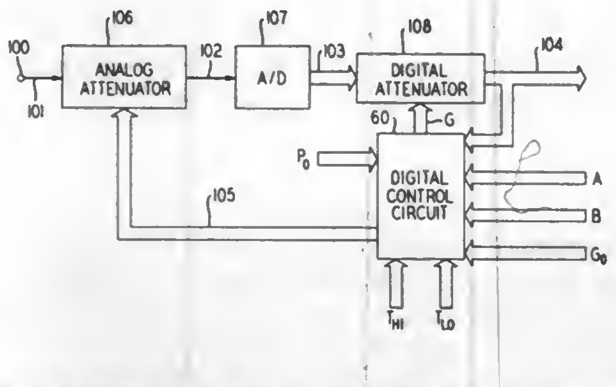
DIGITAL AUTOMATIC GAIN CONTROL CIRCUIT

Cecil W. Farrow, Highlands, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 2, 1979, Ser. No. 5

Int. Cl.^{2} G06F *15/46*

U.S. Cl. 364—113 **10 Claims**



1. Digital automatic gain control apparatus of the type including a first variable attenuator (106, 107) responsive to a first control signal (105) for applying controlled attenuation to an analog input signal (101) and a second variable attenuator (108) for applying controlled attenuation to a digital representation (103) of an output signal from the first attenuator (106, 107) to generate a gain adjusted output signal (104),

digital control means (60) responsive to the gain adjusted output signal (104) for generating the first control signal (105) and for generating a second control signal (G) to cause incremental adjustment of the attenuation applied by the second attenuator (108) when the first control signal (105) maintains the attenuation applied by the first attenuator (106, 107) nominally constant and to cause a substantial adjustment of the attenuation applied by the second attenuator (108) to a prescribed intermediate setting (G_0) between predetermined maximum and minimum attenuation settings (T_{HI},T_{LO}) for the second attenuator (108) counteracting the simultaneous attenuation adjustment of the first attenuator (106, 107).

4,191,996

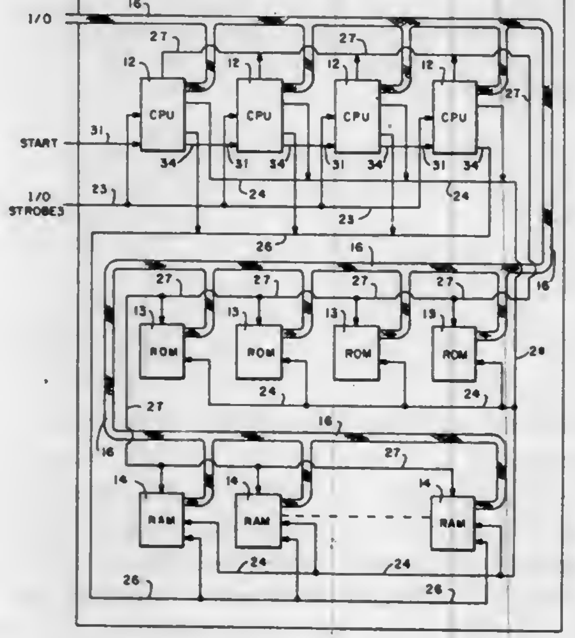
SELF-CONFIGURABLE COMPUTER AND MEMORY SYSTEM

Gilman D. Chesley, 22431 Starling Dr., Los Altos, Calif. 94022

Filed Jul. 22, 1977, Ser. No. 818,235

Int. Cl.^{2} G06F *11/04*

U.S. Cl. 364—200 **14 Claims**



1. In an integrated circuit structure: a semiconductor wafer having a plurality of CPU, ROM and RAM modules formed thereon, each of said ROM modules containing CPU and

RAM testing information, a common bus on the wafer connected directly to each of the CPU, ROM, and RAM modules, means for enabling a first one of the CPU modules to seqeuntially test the ROM modules until a good ROM is found, means for successively enabling the CPU modules to sequentially test themselves with information from the good ROM module until a good CPU module is found, and means for enabling the good CPU to test the RAM modules.

4,191,997

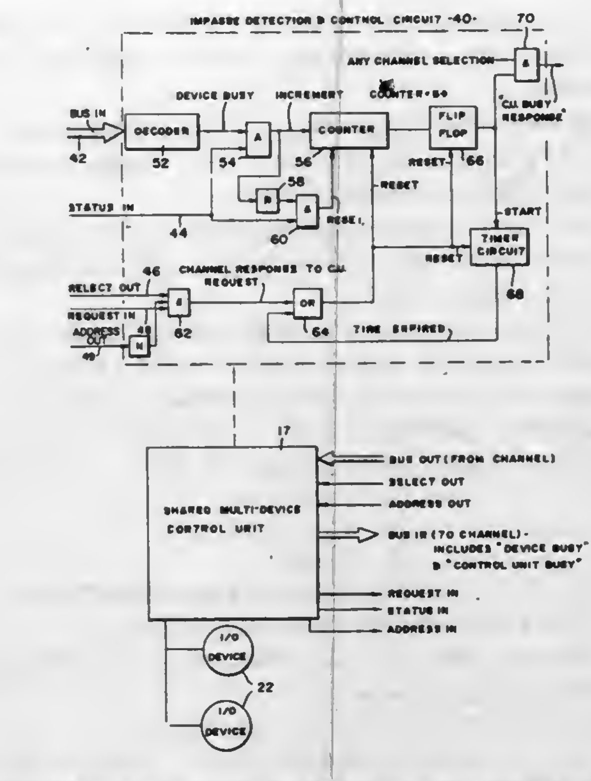
CIRCUITS AND METHODS FOR MULTIPLE CONTROL IN DATA PROCESSING SYSTEMS

Fernando A. Luiz, Monte Sereno, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1978, Ser. No. 894,738

Int. Cl.^{2} G06F *3/04*

U.S. Cl. 364—200 **12 Claims**



1. In a system in which different asynchronous processors operate in conjunction with a shared control unit which in turn controls and monitors the status of more than one peripheral device, with the control unit responding to processor initiatives with indications of the status of peripheral devices and the control unit itself while also being required to reconnect to a processor for completion of a previously initiated sequence, but with the control unit normally functioning as a slave which may be required to respond repetitively to initiatives without being able to effect completion of a previously initiated action, such that an impasse condition can be reached in which needed action cannot be generated, the improvement comprising:

means for detecting an unbroken sequence of predetermined length of device busy response signals provided from said control unit;

means responsive to the detecting means for initiating a control unit busy signal such that the control unit independently initiates a busy indication to at least one of the processors, and

timer means responsive to said detecting means and coupled to said initiating means to terminate said control unit busy signal after a predetermined limited interval, whereby said control unit can attempt for the interval to make a reconnection.

4,191,998

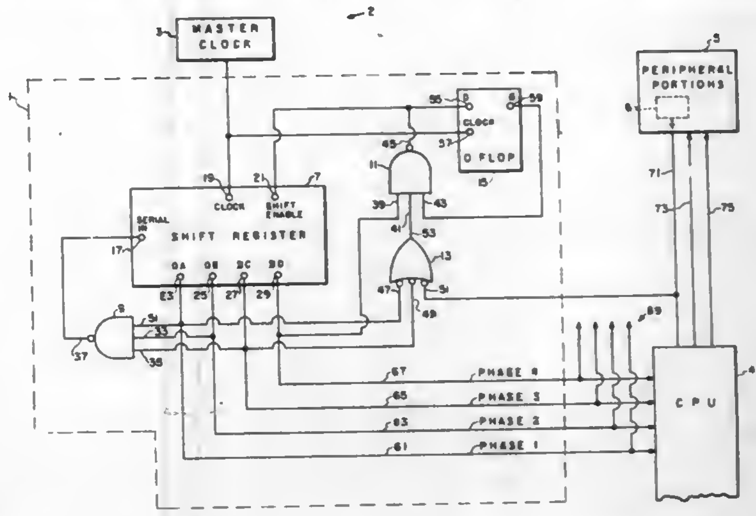
VARIABLE SYMMETRY MULTIPHASE CLOCK GENERATOR

Joseph P. Carmody, Willow Grove, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 29, 1978, Ser. No. 891,076

Int. Cl.^{2} G06F *1/04*

U.S. Cl. 364—200 **14 Claims**



1. In clock generator apparatus including a circulating shift register portion having a master clock input connection, a shift enable connection, and a plurality of parallel output connections, said portion, in the presence of a shift enabling signal on said shift enable connection, being responsive to a master clock signal applied to said clock input connection to circulate a logic bit among said output connections under the control of said master clock signal, thereby to produce at each of said output connections a corresponding one of a group of clock phase signals, each of which consists of a series of pulses of widths related to the master clock signal period, the improvement for imparting a desired nonsymmetry to said clock phase signals, comprising

gating means having inputs connected to said output connections to receive said clock phase signals, having an output connected to said shift enable connection, and operative to apply a shift enabling signal to said shift enable connection in the presence of certain of said pulses to terminate the latter, and to suspend said application of said shift enabling signal to said shift enable connection in the presence of others of said pulses to widen the latter, and

bistable means connected to receive said shift enabling signal and connected to said inputs of said gating means to cause the latter to produce said shift enabling signal in each master clock signal period following one in which the application of said shift enabling signal was suspended, thereby to limit the extent of said widening of said other pulses.

4,191,999

SYSTEM OF DISPLAYING TO A CUSTOMER AN AMOUNT OF PAPER MONEY DELIVERED AS A CHANGE

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,499

Claims priority, application Japan, Jul. 15, 1977, 52-84850

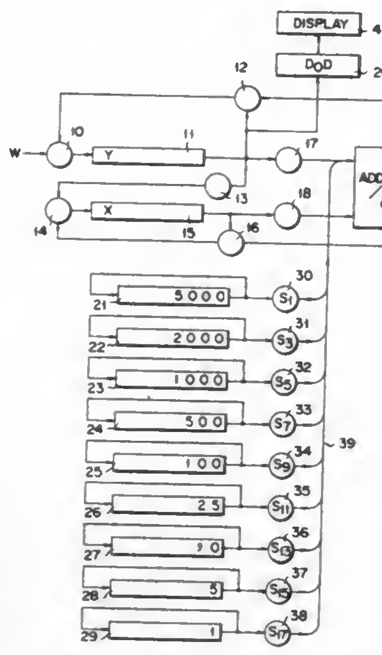
Int. Cl.^{2} G06F *15/20*

U.S. Cl. 364—405 **2 Claims**

1. In an electronic change circulation and dispensing apparatus for calculating change based upon a sales amount and a tendered money amount, and automatically dispensing coins as part of said change, the improvement comprising a paper money amount displaying system including:

calculating means for calculating said change based upon a sales amount and a tendered money amount;

means coupled to said calculating means for converting said change calculated by said calculating means into the corresponding units of money according to the denominations of the money; and

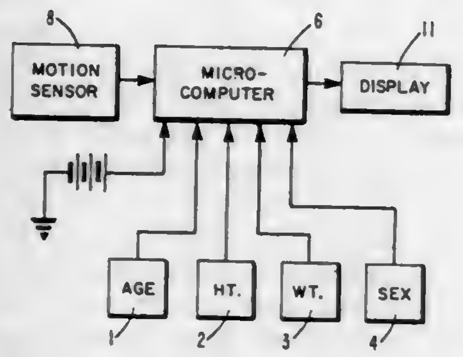


display means coupled to said converting means for displaying the number of those of said corresponding units of money which are represented at least by paper money.

4,192,000

ELECTRONIC CALORIE COUNTER

Elmer M. Lipsey, McLean, Va., assignor to Calorie Counter Limited Partnership, Springfield, Va.
Filed Jul. 14, 1977, Ser. No. 815,854
Int. Cl.^{2} G01L *3/00*
U.S. Cl. 364—415 5 Claims

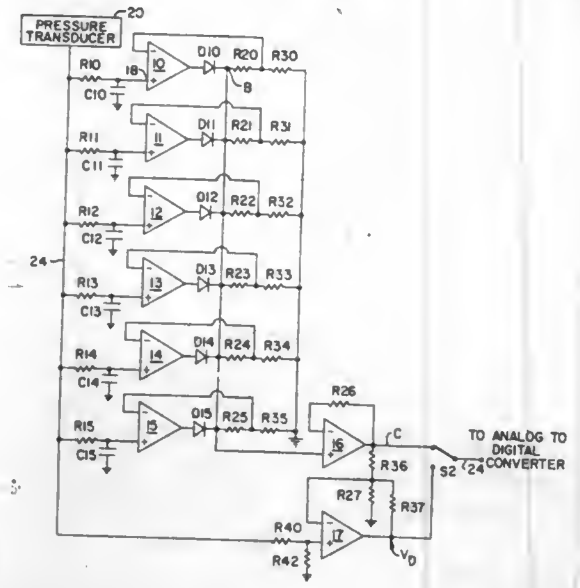


1. An electronic consumption calculator including
(1) an activity sensor having
(a) a housing, a first magnet having a fixed position in said housing
(b) a second magnet movable within said housing and having a pole aligned to confront the same pole on said fixed magnet so that the second magnet occupies a reference position at a distance from said first magnet, and
(c) a means for defining an axis between said first magnet's fixed position and said second magnet's reference position, said axis being intercepted by said second movable magnet in response to activity by a user of said calculator, and
(2) means for calculating the number of calories expended in the course of said activity comprising
(a) means for defining a first variable as a function of the time the second magnet intercepts said axis,
(b) means for deriving a second variable as a function of the physical characteristics of said user including age, sex, height and weight, and
(c) processing means for calculating and displaying the number of calories expended on the basis of said first and second variable.

4,192,001

DECOMPRESSION ASCENT COMPUTER

Francesco Villa, 307 College Ave., Palo Alto, Calif. 94306
Filed Dec. 2, 1977, Ser. No. 856,819
Int. Cl.^{2} G06F *15/42;* G06G *7/60*
U.S. Cl. 364—418 23 Claims

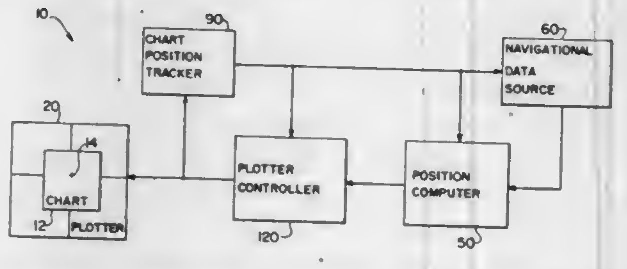


1. A portable decompression ascent computer for underwater use by a diver using a breathing mixture containing an inert gas comprising:
simulating means for generating values representing inert gas partial pressure in at least two body tissues in response to a measured hydrostatic pressure;
scaling means responsive to said simulating means for generating normalized values of said values representing inert gas partial pressure; and
arithmetic means responsive to said scaling means for combining the largest of said normalized values with a quantity proportional to the measured hydrostatic pressure and for generating therefrom indicia of whether a decompression ascent schedule will be required.

4,192,002

APPARATUS AND METHODS FOR POSITION DETERMINING AND PLOTTING

George L. Draper, Camp Springs, Md., assignor to Nav-All, Incorporated, Camp Springs, Md.
Filed Feb. 3, 1978, Ser. No. 875,009
Int. Cl.^{2} G06F *15/50*
U.S. Cl. 364—449 27 Claims



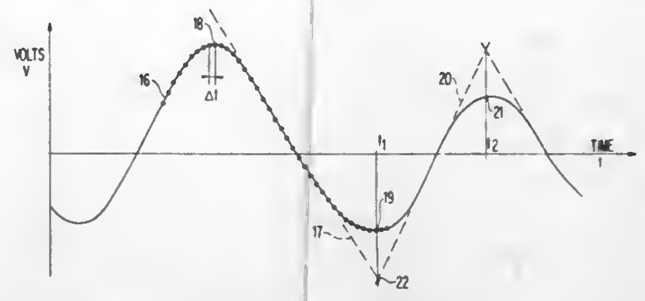
1. Apparatus for determining the relative location of an observation point with respect to a reference point charted on a map, and for plotting the relative location on the map, the apparatus comprising:
plotter means having indicia means defining a position point and drive means for effecting relative displacement of the map and said position point with respect to each other such that said position point may be aligned with different map locations;
means operable when actuated for determining the distances between three charted reference points which are spaced with respect to each other so as to define a triangle, and such that no two of the charted reference points are colinear with the observation point;

means operable when actuated for determining the included angles defined by said three charted reference points and the observation point;
means responsive to said distance determining and to said angle determining means for mathematically determining the relative location of the observation point with respect to at least one of said three reference points based on said included angles and said distances between said three reference points; and
means responsive to said location determining means for controlling said plotter means so as to position the map with respect to said position point such that the map location corresponding to the relative location of the observation point is aligned with said position point.

4,192,003

SIGNAL RECOVERY METHOD AND APPARATUS

George W. Brock; Edward J. Pawlowski, both of Boulder, and Ricardo R. Stone, Eldorado Springs, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 13, 1978, Ser. No. 896,117
Int. Cl.^{2} G06F *15/20*
U.S. Cl. 364—487 12 Claims



1. A signal recovery apparatus comprising:
input means for receiving a noisy input signal having a generally sinusoidal waveform but with peaks substantially obliterated by a high level of noise and representative of a desired input signal with clearly identifiable signal peaks;
means for repeatedly measuring successively adjacent slopes of the most linear portions having at least a given minimal linear extent of the noisy input signal between two successive like polarity signal peaks;
determining means receiving said measurement indications for repeatedly determining points of intersection of said most linear portions extrapolated using said measured slopes to identify signal peaks of unlike polarity to and between said two successive like polarity signal peaks; and
means responsive to said determining means for generating the desired input signal using said determined points of intersection.

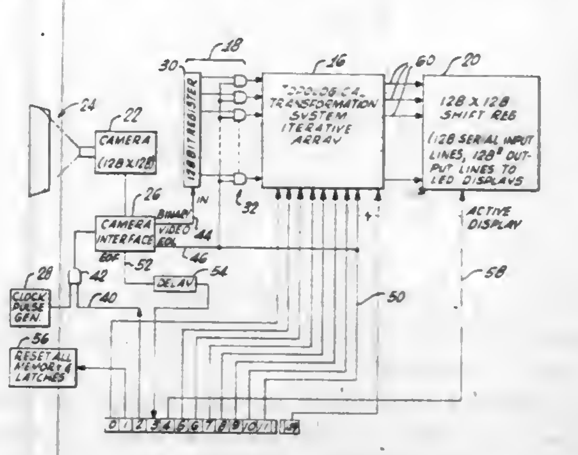
4,192,004

TOPOLOGICAL TRANSFORMATION SYSTEM

Walter R. Buerger, 20920 Anza Ave., Apt. 4-107, Torrance, Calif. 90503
Filed Sep. 8, 1977, Ser. No. 831,390
Int. Cl.^{2} G06F *15/20*
U.S. Cl. 364—518 11 Claims

1. A topological transformation system for transforming and analyzing data distributions residing in topological n-dimensional metric spaces, said system comprising:
transducer means for converting a data distribution in an n-dimensional space into electrical signals;
an iterative array of storage cells, wherein each cell represents one elemental portion of the original space and each cell contains a plurality of storage block pairs which hold pairs of elements of duplicate images;
means for inputting said electrical signals, representative of the original data distribution, to said iterative array;
means for manipulating the contents of said iterative array by simultaneously translating contained duplicate pairs of images of the data distribution in a multiplicity of contravariant or opposing directions along preplanned trajectories in the n-dimensional space, to allow transformation of the data distribution into another form; and,
means for comparing the contents of storage block pairs within a cell during translation of the duplicate image pairs, and thereby detecting features relating to forms within or the topology of the original data distribution;
where n is an integer such as 1, 2, 3 or 4.

9. A method for analyzing a two-dimensional image to locate images of holes, said method comprising the steps of:
storing a two-dimensional image in electrical form in an iterative array of storage cells each of which has four primary storage blocks and a plurality of secondary storage blocks;
copying the image into all four primary storage blocks to provide four copies of the image;



shifting the four image copies simultaneously in four respective directions, one cell at a time, by shifting the contents of each primary storage element to its counterpart in the adjacent cell in the direction of shifting;
comparing on each shift the content in each cell of the left- and right-shifted images and of the up- and down- shifted images, to determine overlap or non-overlap of the images;
determining on each such shift and for each cell whether there was a transition from an overlapping to a non-overlapping condition, or vice versa, for both the left- and right-shifted images and the up- and down-shifted images;
recording such transitions in one of said secondary storage blocks to indicate centers of holes in an up/down and a left/right sense;
logically combining the transitions to determine the exact hole centers; and,
displaying the results in a display device.

4,192,005

COMPENSATED PRESSURE TRANSDUCER EMPLOYING DIGITAL PROCESSING TECHNIQUES

Anthony D. Kurtz, Englewood, N.J., assignor to Kulite Semiconductor Products, Inc., Ridgefield, N.J.
Filed Nov. 21, 1977, Ser. No. 853,219
Int. Cl.^{2} G06F *15/20*
U.S. Cl. 364—571 10 Claims

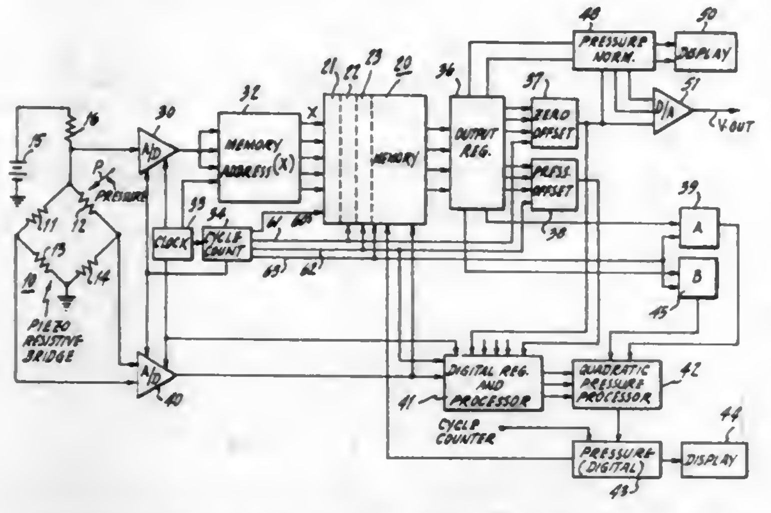
1. A pressure transducer of the type employing semiconductor sensor elements capable of providing a change in resistance according to the magnitude of an applied pressure, said elements when biased, undesirably providing specified error voltages due to variations inherent in said elements as fabricated with a first error voltage indicative of errors due to a predetermined temperature change, a second error voltage due to changes by a reference pressure applied over a given temperature range, and a third error voltage due to a linear incremental pressure level applied to said elements over a predetermined pressure range, comprising:
(a) memory means having stored at predetermined address locations values indicative of said undesired error voltages,

(b) means coupled to said semiconductor elements and responsive to the temperature of operation for generating a code indicative of one of said predetermined memory address locations,

(c) means for applying said code to said memory to access a value indicative of each of said undesired error voltages,

(d) means for applying a pressure to said semiconductor sensor elements to cause the same to provide a change in resistance according to said pressure, including means coupled to said sensor elements to provide a signal indicative of said pressure,

(e) logic means responsive to said signal and said value indicative of each of said error voltages to compensate said signal sequentially according to the magnitude of each of said values as stored to provide at an output, a compensated signal indicative of said applied pressure and relatively independent of each of said error voltages.



4,192,006

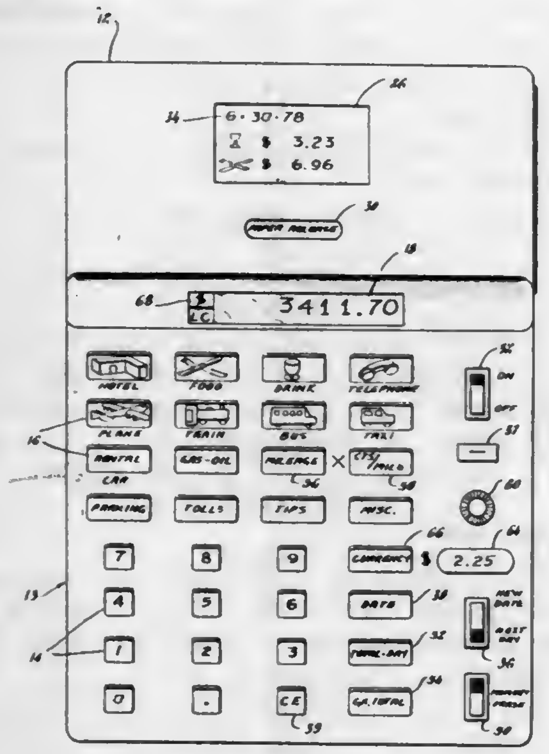
PORTABLE TRAVEL EXPENSE TABULATOR

Harry H. Hausdorff, 270 Westport Rd., Wilton, Conn. 06897

Filed Aug. 7, 1978, Ser. No. 931,363

Int. Cl.^{2} G06F *15/30*

U.S. Cl. 364—715 **13 Claims**



1. A portable travel expense tabulator capable of recording, printing and storing records of various expenses commonly incurred on business trips, said tabulator comprising:

a set of numerical input keys, each of said numerical input keys having a numerical representation associated therewith;

a set of expense designating input keys, each of said expense designating input keys having a symbolic travel expense representation associated therewith;

control circuitry responsive to actuation of said numerical input keys and said expense designating input keys;

a recording device including a memory and a printer controlled by said control circuitry for recording and printing numerical inputs from said numerical input keys with associated travel expense representations from said expense designating input keys,

and means associated with said printer for storing printed records,

said control circuitry including means for selectively electrically coupling said numerical input keys and said expense designating input keys to said recording device.

4,192,007

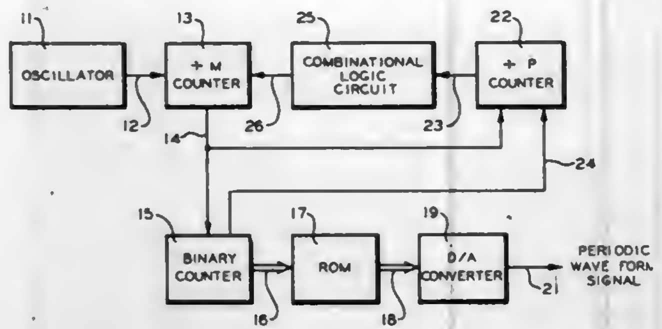
PROGRAMMABLE RINGING GENERATOR

Dustin J. Becker, Rocky River, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed May 30, 1978, Ser. No. 910,685

Int. Cl.^{2} H03B *19/00;* G06F *15/20*

U.S. Cl. 364—721 **24 Claims**



1. In an apparatus for generating a plurality of magnitude values defining a periodic wave form at a predetermined selected frequency the period between predetermined ones of said magnitude values being variable according to a predetermined sequence comprising:

(a) a source of clocking signals generated at a predetermined frequency;

(b) a first counting means responsive to said clocking signals for repetitively counting a first predetermined number of said signals said first counting means generating a first signal when said first predetermined number is counted;

(c) means for storing said plurality of magnitude values, said storage means being responsive to said first signal for generating successive ones of said magnitude values; and

(d) a second counting means responsive to said first signal for repetitively counting a second predetermined number of said first signals, said second predetermined number being the number of times said first counting means counts said first predetermined number of said clocking signals, said second counting means generating upon the occurance of said second predetermined number a count inhibiting signal to said first counting means, said first counting means responsive to said inhibiting signal to inhibit for a predetermined number of clocking signals the counting of said first counting means, whereby the period between predetermined ones of said generated magnitude values is varied according to the predetermined sequence.

4,192,008

WAVE DIGITAL FILTER WITH MULTIPLEXED ARITHMETIC HARDWARE

Gordon J. Mandeville, Lawrence, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

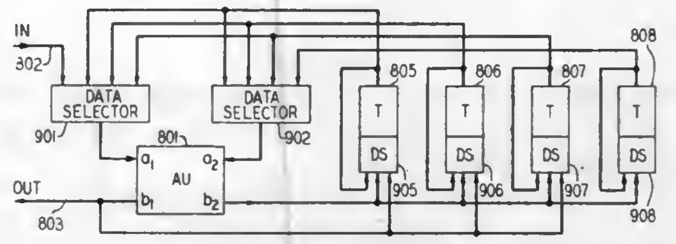
Filed Aug. 23, 1978, Ser. No. 935,873

Int. Cl.^{2} G06F *15/34;* H03H *7/10*

U.S. Cl. 364—724 **9 Claims**

1. A wave digital filter having minimum arithmetic digital hardware derived from a symmetric lattice reference filter for filtering input digital samples of a signal comprising:

an arithmetic unit having first and second inputs and first and second outputs, said arithmetic unit including first combining means for digitally combining the signals at said first and second inputs. multiplying means for digitally multiplying by a multiplicand the combined signals from said first and second inputs, second combining means for digitally combining the multiplied combined signals with the signal at said first input to generate a digital signal at said second output, and third combining means for digitally combining the multiplied combined signals with the digital signal at said second input to produce a digital signal at said first output, said multiplying means being adaptively controlled to vary at predetermined instants its multiplicand in a predetermined cyclical manner, at each of said instants said first, second and third combining means and said multiplying means forming arithmetic combinations of the digital signals present at said first and second inputs at that instant to form the digital signals at said first and second outputs,



a plurality of storage means for storing signals from the outputs of said arithmetic unit;

first selection means for selectively inputting to said inputs of said arithmetic unit in a predetermined cyclical manner at said predetermined instants said input digital samples and the signals stored in said plurality of storage means;

second selection means for selectively inputting to said plurality of storage means in a predetermined cyclical manner at said predetermined instants the signals at said outputs of said arithmetic unit; and

means combining selected outputs of said arithmetic unit to generate digital samples of the filtered input signal.

4,192,009

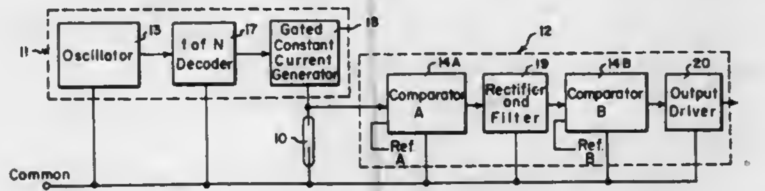
COULOMETRIC DEVICE FOR PERFORMING TIME INTEGRATION

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Inc., Mount Kisco, N.Y.

Filed Mar. 10, 1978, Ser. No. 885,279

Int. Cl.^{2} G06G *7/18, 7/161*

U.S. Cl. 364—829 **10 Claims**



6. A coulometric device for integrating a variable with respect to time comprising:

a source of pulsed d.c. current having a variable duty cycle and a substantially constant peak current;

a mercury coulometer to which said pulsed d.c. current is applied;

means for varying said duty cycle substantially in proportion to said variable to be integrated; and

means for detecting a reduction in the voltage drop across said coulometer.

8. A coulometric device for integrating the product of the two variables with respect to time comprising:

a source of pulsed d.c. current having a variable duty cycle and a variable peak current;

a mercury coulometer to which said pulsed d.c. current is applied;

means for varying said duty cycle substantially in proportion to one of said two variables;

means for varying said peak current substantially in proportion to the other of said two variables; and

means for detecting a reduction in the voltage drop across said coulometer.

4,192,010

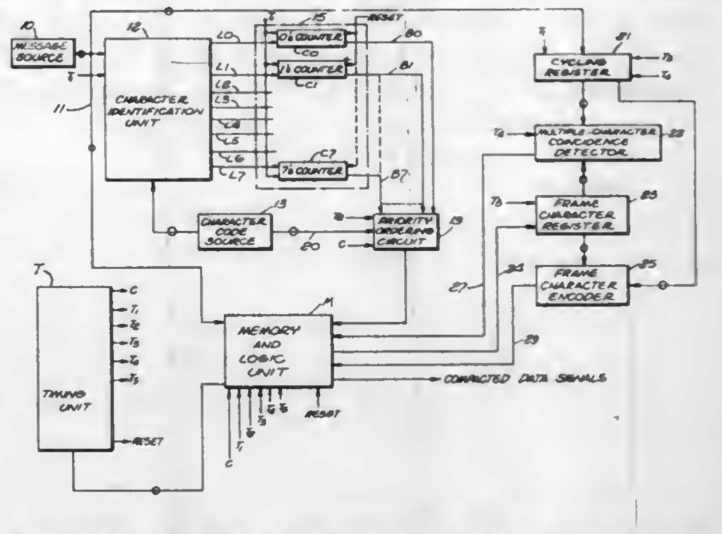
DATA REDUCTION SYSTEM

William R. Kerner, 16186 Rimrock Rd., and Jarred Morton, 19095 Corwin Rd., both of Apple Valley, Calif. 92307

Filed Nov. 28, 1977, Ser. No. 855,484

Int. Cl.^{2} G06F *7/22*

U.S. Cl. 364—900 **9 Claims**



1. A system of data reduction applicable for reducing a sequence of individual characters each of which may have been defined by a code having a predetermined number of bits, comprising:

means for sequentially selecting different sets of said individual characters, controlled by the extent of presence of said characters in said sequence of characters;

means for encoding each of said characters in said sets wherein set characters are distinguished from each other, within a set, by abbreviated codes;

means for developing a first signal component for each of said sets to indicate those positions in said sequence of characters that are occupied by said set characters of a set;

means for developing a second signal component for each of said sets to represent those occurrences of said set characters in said sequence, said second signal component representing said set characters by said abbreviated codes; and

means for providing said signal components for said sets to represent said sequence of characters.

4,192,011

MAGNETIC DOMAIN PACKAGING

Paul V. Cooper, Northampton, and Steven J. Adamson, Towcester, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

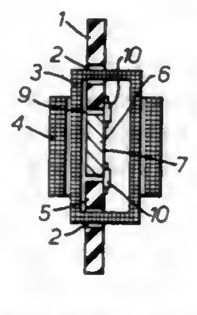
Filed Apr. 26, 1978, Ser. No. 900,143

Claims priority, application United Kingdom, Apr. 28, 1977, 17709/77

Int. Cl.^{2} G11C *5/04, 19/08*

U.S. Cl. 365—2 **6 Claims**

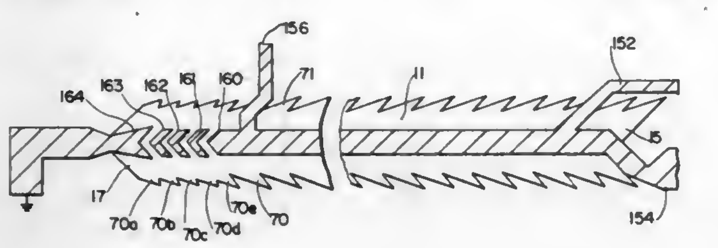
1. A magnetic domain device comprising a substrate, a magnetic domain device chip, the chip having an active surface, a pair of coils each having a central axis and each coil extending around the device chip for providing a rotating magnetic field in the plane of the chip, conductive interconnecting means



connecting the device chip to the substrate and arranged to support the device chip so that the active surface is substantially coplanar with a surface of the substrate and with a plane containing the central axes of the coils.

4,192,012
CROSSTIE MEMORY BIT STRETCHER DETECTOR

Leonard J. Schwee, Colesville; Wallace E. Anderson, Beltsville; Yuan-Jye Liu, Rockville, and Ronald N. Lee, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 8, 1978, Ser. No. 958,913
Int. Cl.^{2} G11C *19/08*
U.S. Cl. 365—87 **6 Claims**



1. A circuit for non-destructively detecting the presence and absence of binary information within an area of a shift register of the type suitable for storage and propagation of Bloch line-crosstie pairs, comprising:

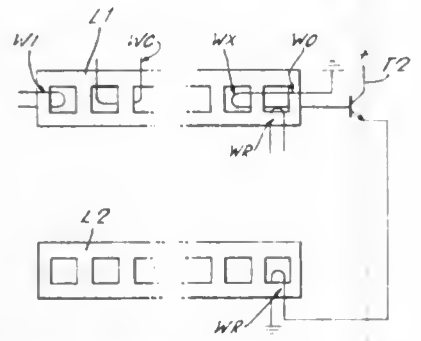
a thin-film strip of magnetic material of uniform thickness exhibiting a continuous, stationary domain wall spaced between opposite oblong margins;

an electrical conductor of a substance characterized by a lower resistivity than the magnetic material, deposited upon one surface of the thin-film strip and spaced between the opposite oblong margins; and

the electrical conductor having an open segment formed by a terminal section having edges facing conformal edges of an adjacent terminal section, the edges of each terminal section being symmetrically arranged obliquely about the principal longitudinal axis of the thin-film strip.

4,192,013
SAFETY CIRCUITS FOR COUPLING LADDICS IN CASCADE

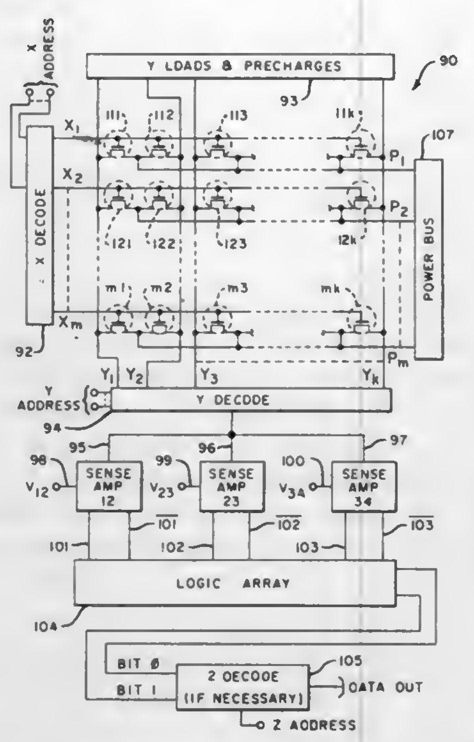
Albert B. Keats, Dorchester, and Dudley W. Leggett, Weymouth, both of England, assignors to United Kingdom Atomic Energy Authority, London, England
Continuation of Ser. No. 708,228, Jul. 23, 1976, abandoned. This application Jun. 1, 1978, Ser. No. 911,631
Claims priority, application United Kingdom, Jul. 24, 1975, 31063/75; Dec. 2, 1975, 49445/75
Int. Cl.^{2} G11C *11/08*
U.S. Cl. 365—91 **2 Claims**



2. An electric circuit comprising a first laddic component, a second laddic component, and a coupling circuit for coupling the first and the second laddic components in cascade and including an emitter follower transistor, an output winding of the first laddic component which extends across an end leg of said first laddic component and a leg adjacent said end leg and is connected to the base of said transistor, and a reset winding of the second laddic component connected to the emitter of said transistor such that when the magnetic flux in the first laddic component falls from saturation to remanence reset noise in the coupling circuit is substantially reduced.

4,192,014
ROM MEMORY CELL WITH 2^n FET CHANNEL WIDTHS

Donald G. Craycraft, Spring Valley, Ohio, assignor to NCR Corporation, Dayton, Ohio
Filed Nov. 20, 1978, Ser. No. 962,572
Int. Cl.^{2} G11C *17/00*
U.S. Cl. 365—104 **8 Claims**



1. In a read-only memory wherein information storage is provided by a field-effect transistor, the improvement comprising: the transistor channel having a conductance value selected from 2^n possible values ($n > 1$) to provide a predetermined electrical output which is characteristic of a particular set of n binary digit values, and means for decoding said electrical output into said set of n binary digit values.

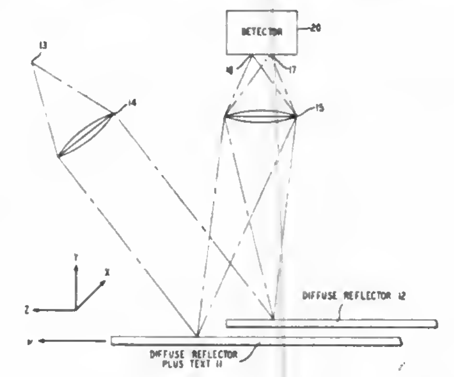
4,192,015
OPTICAL IMAGE SENSOR SEMICONDUCTOR APPARATUS

Michael F. Tompsett, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 6, 1978, Ser. No. 883,476
Int. Cl.^{2} G11C *11/42, 13/04*
U.S. Cl. 365—114 **10 Claims**

8. Semiconductor apparatus which comprises

(a) a first linear array of N substantially identical photoresponsive semiconductor charge storage cells, each cell located in a single crystal semiconductor body at a major surface thereof;

(b) a second linear array of N photoresponsive semiconductor charge storage cells parallel to the first linear array, each cell of said second array located in said semiconductor body at the major surface thereof, characterized in that the N cells of the second array have dither coded photosensitivities.



4,192,016
CMOS-BIPOLAR EAROM

David L. Taylor, Melbourne, Fla., assignor to Harris Semiconductor, Melbourne, Fla.
Filed Oct. 20, 1978, Ser. No. 953,316
Int. Cl.^{2} G11C *11/40*
U.S. Cl. 365—163 **17 Claims**

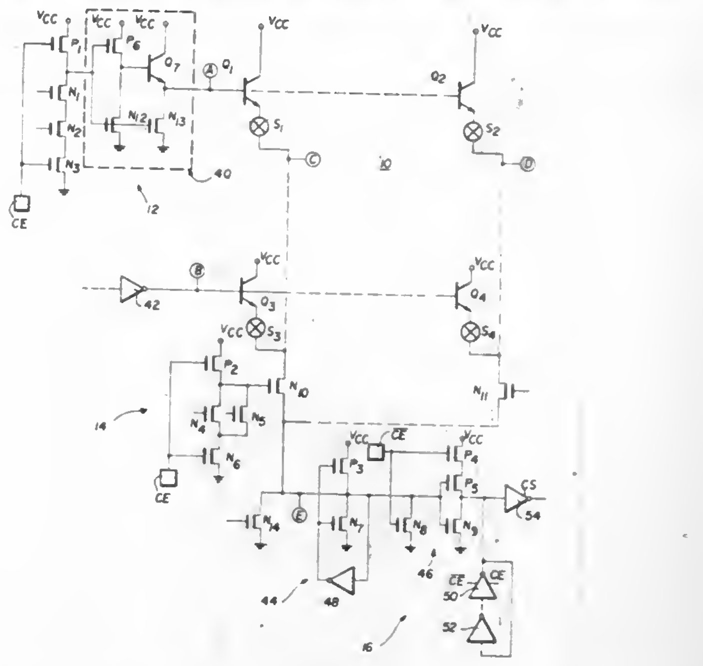
15. A monolithic electrically alterable memory comprising:

an array of memory cells each including an electrically alterable device and an NPN bipolar transistor in an emitter follower configuration;

row drivers, each including CMOS devices and an NPN bipolar transistor output element in an emitter follower configuration, said row driver NPN transistor and respective array NPN transistors being connected in a Darlington configuration;

CMOS column drivers and transmission gates; and

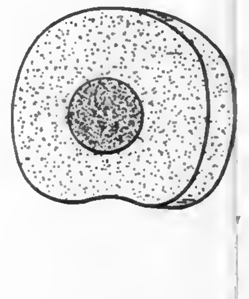
CMOS output means.



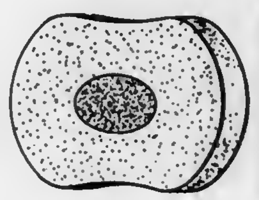
DESIGNS

MARCH 4, 1980

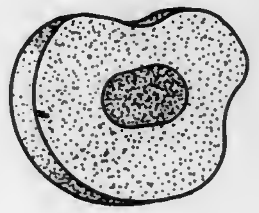
254,336
ANIMAL FOOD PRODUCT
Timothy A. Miller, Worden, and Carlo J. Hansen, Waterloo, both of Ill., assignors to Ralston Purina Company, St. Louis, Mo.
Filed Mar. 9, 1977, Ser. No. 775,815
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—27



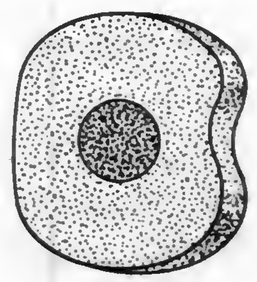
254,337
ANIMAL FOOD PRODUCT
Timothy A. Miller, Worden, and Carlo J. Hansen, Waterloo, both of Ill., assignors to Ralston Purina Company, St. Louis, Mo.
Filed Mar. 9, 1977, Ser. No. 775,817
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—27



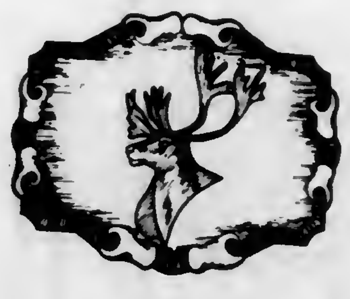
254,338
ANIMAL FOOD PRODUCT
Timothy A. Miller, Worden, and Carlo J. Hansen, Waterloo, both of Ill., assignors to Ralston Purina Company, St. Louis, Mo.
Filed Mar. 9, 1977, Ser. No. 775,818
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—27



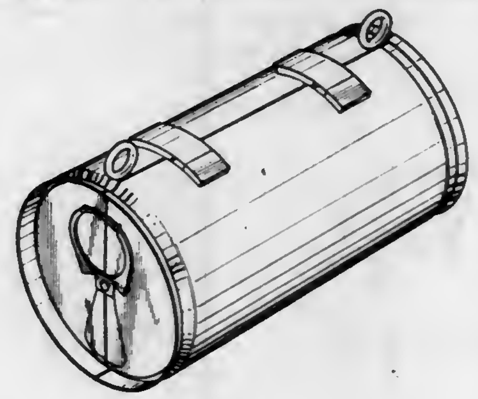
254,339
ANIMAL FOOD PRODUCT
Timothy A. Miller, Worden, and Carlo J. Hansen, Waterloo, both of Ill., assignors to Ralston Purina Company, St. Louis, Mo.
Filed May 5, 1977, Ser. No. 793,978
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—27



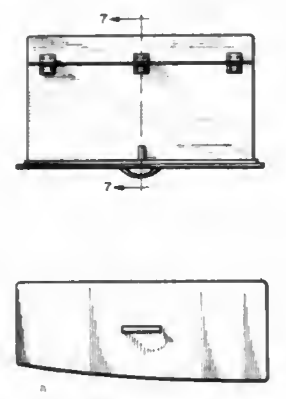
254,340
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Oct. 28, 1977, Ser. No. 846,624
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—431



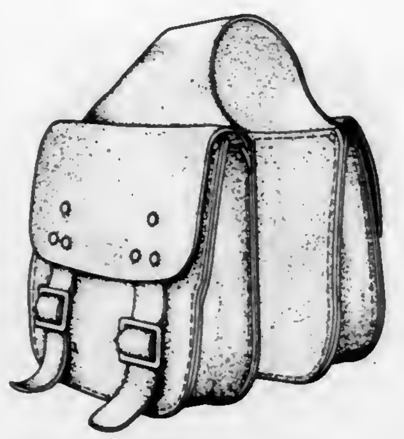
254,341
BAG
Anna M. Sacks, 9 David Ave., Glenashley, Durban North, 4051, South Africa
Filed Dec. 1, 1977, Ser. No. 857,352
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—44



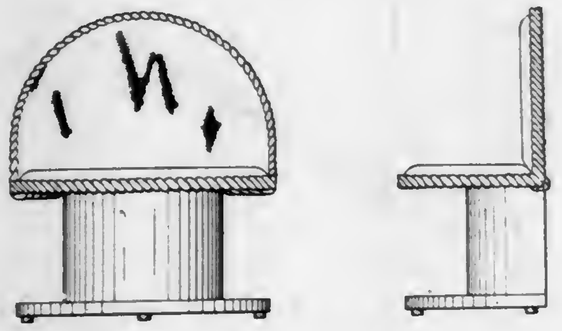
254,342
COLD STORAGE FOOD DRAWER FOR A BOAT OR THE LIKE
Philip C. Sunset, 7735 Quinby Way, Sacramento, Calif. 95816
Filed Feb. 19, 1976, Ser. No. 659,416
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—78



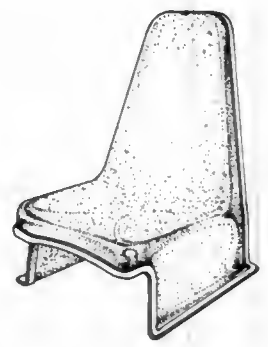
254,343
SADDLE BAGS
Joe J. Babcock, 706 Jerome St., Owosso, Mich. 48867
Filed Jan. 30, 1978, Ser. No. 873,707
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—79



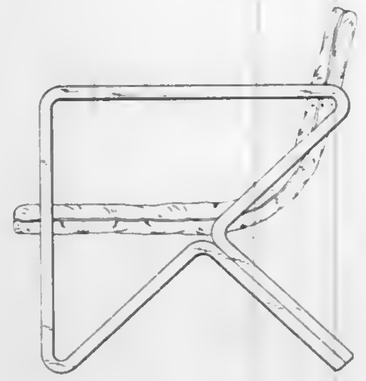
254,344
UPHOLSTERED CHAIR OR THE LIKE
Gregory L. Simmons, 7863 Denham Rd. E., Jacksonville, Fla. 32208
Filed Aug. 29, 1977, Ser. No. 828,556
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



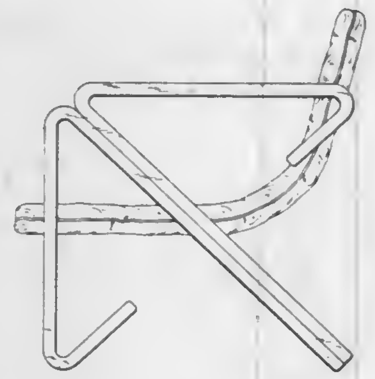
254,345
BOAT SEAT
Andrew Labor, 6501 Fairfield Ave., Shreveport, La. 71106
Filed Oct. 25, 1977, Ser. No. 844,884
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



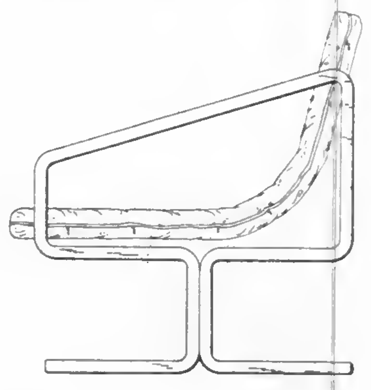
254,346
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Continuation-in-part of Ser. No. 677,623, Apr. 16, 1976. This application Feb. 15, 1978, Ser. No. 878,173
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



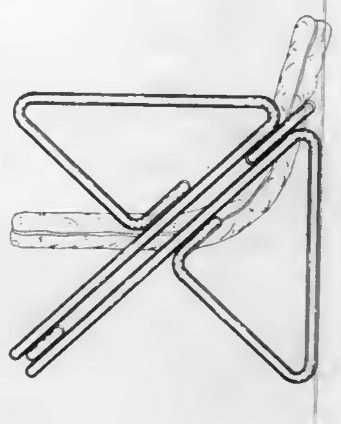
254,347
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Division of Ser. No. 677,630, Apr. 16, 1976, abandoned. This application Feb. 15, 1978, Ser. No. 878,175
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



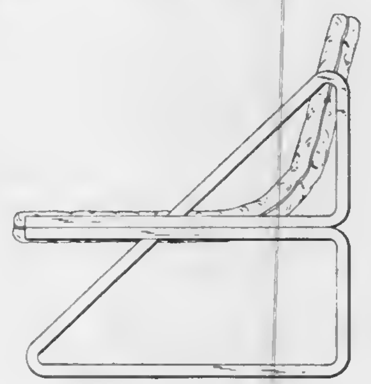
254,348
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Division of Ser. No. 677,627, Apr. 16, 1976. This application Jun. 1, 1978, Ser. No. 911,468
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



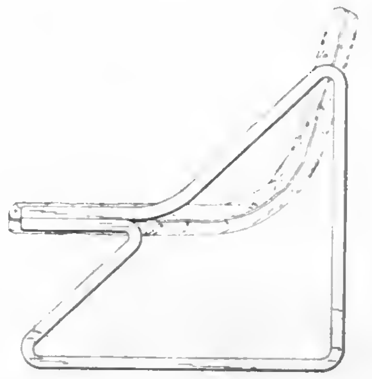
254,349
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Division of Ser. No. 677,619, Apr. 16, 1976. This application Jul. 5, 1978, Ser. No. 922,178
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



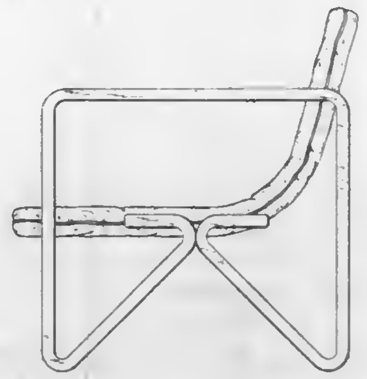
254,350
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Division of Ser. No. 677,626, Apr. 16, 1976. This application Jun. 1, 1978, Ser. No. 911,469
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



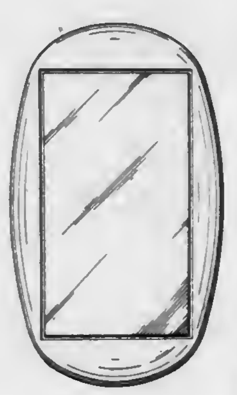
254,351
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Division of Ser. No. 677,626, Apr. 16, 1976. This application Jun. 1, 1978, Ser. No. 911,471
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



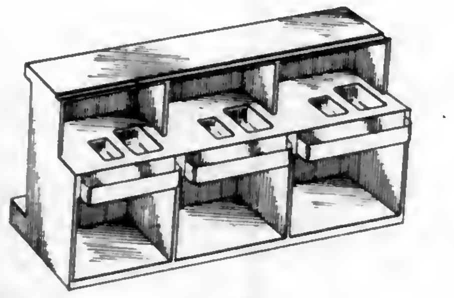
254,352
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Division of Ser. No. 677,747, Apr. 16, 1976. This application Jun. 1, 1978, Ser. No. 911,470
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



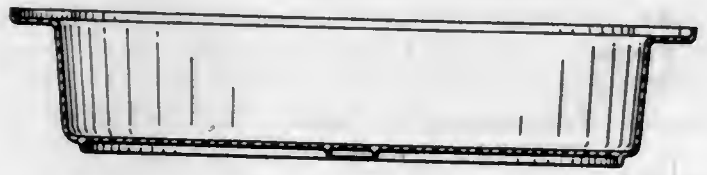
254,353
BATHROOM CABINET
James J. Palka, Arlington Heights, Ill., assignor to General Bathroom Products Corp., Elk Grove Village, Ill.
Filed Nov. 17, 1977, Ser. No. 852,370
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—104



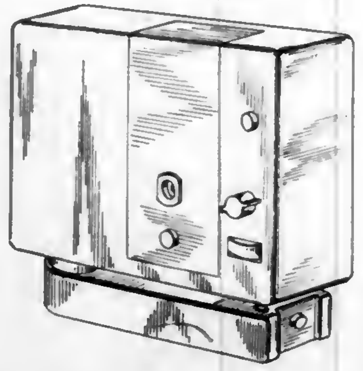
254,354
TRAINING BAR FOR BARTENDERS
Marcia J. McElwee, 283 Fern Dr., Bonaventure, Fort Lauderdale, Fla. 33325
Filed Dec. 5, 1977, Ser. No. 857,878
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144

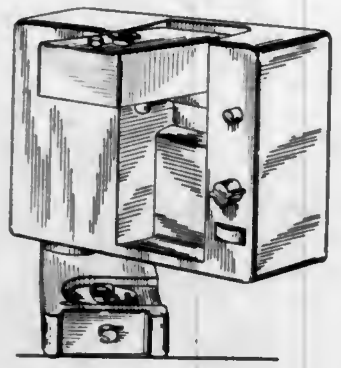


254,355
DISH
Sharon Ottier, 15 Wray Ct., Rexdale, Ontario, Canada
Filed Apr. 20, 1978, Ser. No. 898,494
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—20

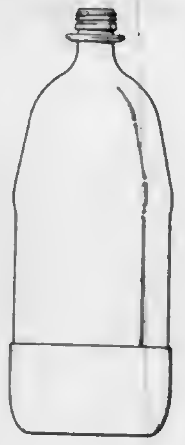


254,356
POWER UNIT FOR KITCHEN APPLIANCES
Karl L. Carlsson, Åtvidaberg, Sweden, assignor to Aktiebolaget Electrolux
Filed Sep. 8, 1977, Ser. No. 831,486
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—153

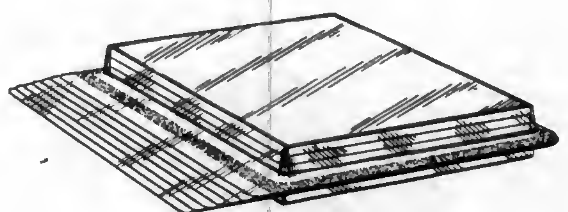




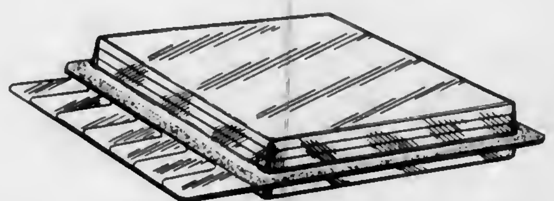
254,357
BOTTLE
Gregory M. Fehn, Maumee, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio
Filed Oct. 11, 1977, Ser. No. 841,638
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—10



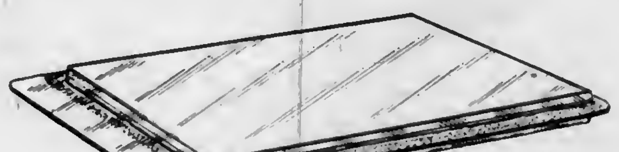
254,358
PACKAGING CONTAINER FOR A SLICED FOOD PRODUCT OR THE LIKE
Theodore P. Seda, Green Bay, Wis., assignor to L. D. Schreiber Cheese Co., Inc., Green Bay, Wis.
Continuation-in-part of Ser. No. 544,906, Jan. 29, 1975, abandoned. This application Feb. 18, 1977, Ser. No. 770,215
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192



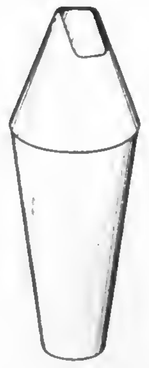
254,359
PACKAGING CONTAINER FOR A SLICED FOOD PRODUCT OR THE LIKE
Theodore P. Seda, Green Bay, Wis., assignor to L. D. Schreiber Cheese Co., Inc., Green Bay, Wis.
Continuation-in-part of Ser. No. 544,907, Jan. 29, 1975, abandoned. This application Feb. 18, 1977, Ser. No. 770,216
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192



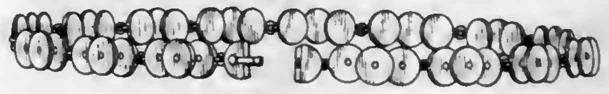
254,360
PACKAGING CONTAINER FOR A SLICED FOOD PRODUCT OR THE LIKE
Theodore P. Seda, Green Bay, Wis., assignor to L. D. Schreiber Cheese Co., Inc., Green Bay, Wis.
Filed Feb. 18, 1977, Ser. No. 770,217
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192



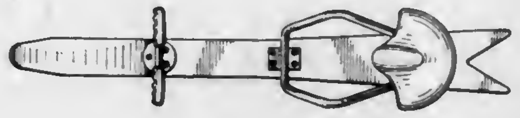
254,361
POPCORN DISPENSER
Earl L. Pitts, 2840 W. 163rd St., Gardena, Calif. 90247
Filed Jul. 11, 1977, Ser. No. 814,156
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



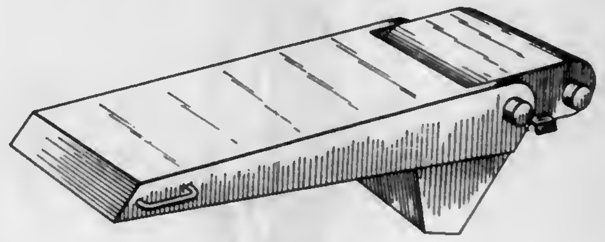
254,362
BRACELET OR SIMILAR ARTICLE
Gary E. Minassian, 465 S. Ranchview Cr., #50, Anaheim, Calif. 92807
Filed Oct. 18, 1977, Ser. No. 843,353
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—14



254,363
SLED
Maurice A. Joyce, 231 Fourteenth Ave., Tauranga, New Zealand
Filed Nov. 1, 1976, Ser. No. 737,891
Claims priority, application New Zealand, Aug. 4, 1976, 14626
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—10

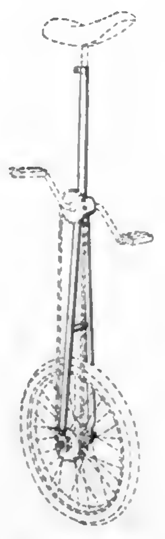


254,364
TRAILER LOADING RAMP
Jack E. Moll, New Berlin, Wis., assignor to Miller Tilt-Top Trailer, Inc., Milwaukee, Wis.
Filed Jun. 30, 1977, Ser. No. 812,005
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—53



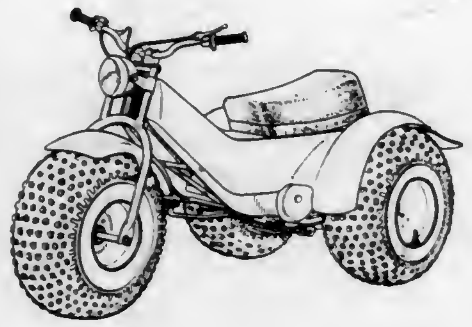
254,365
UNICYCLE FRAME

Frank P. Brilando, Niles, Ill., assignor to Schwinn Bicycle Company, Chicago, Ill.
Filed Feb. 2, 1978, Ser. No. 874,567
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—107



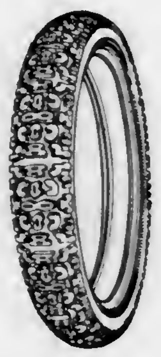
254,366
MOTORTRICYCLE

Kenji Ekuan, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Jul. 17, 1978, Ser. No. 925,318
Claims priority, application Japan, Feb. 1, 1978, 53-3324
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



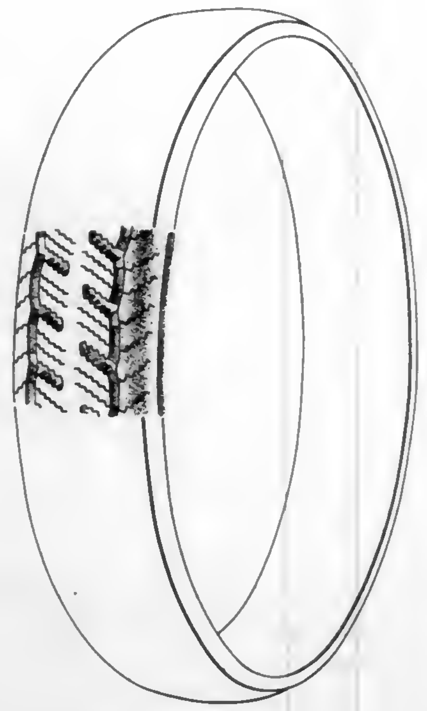
254,367
VEHICLE TIRE

Tadashi Kamiya, Niiza, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan
Filed May 30, 1978, Ser. No. 910,752
Claims priority, application Japan, Nov. 30, 1977, 52-47022
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—136



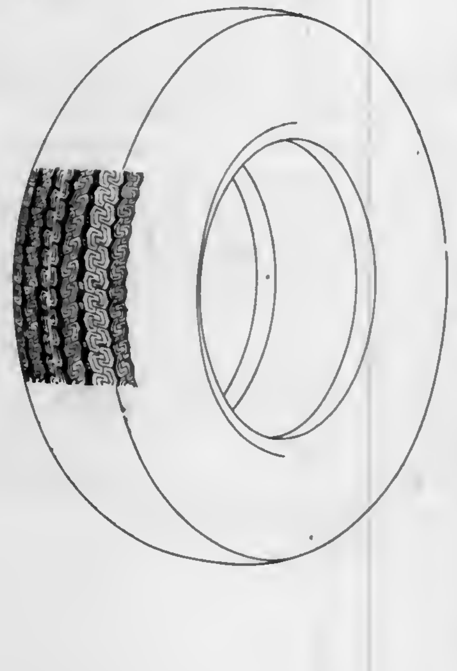
254,368
PNEUMATIC TIRE TREAD AND BUTTRESS

Carl F. Smajd, St. Clair Shores, Mich., assignor to Uniroyal, Inc.
Filed Aug. 14, 1978, Ser. No. 933,390
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—141



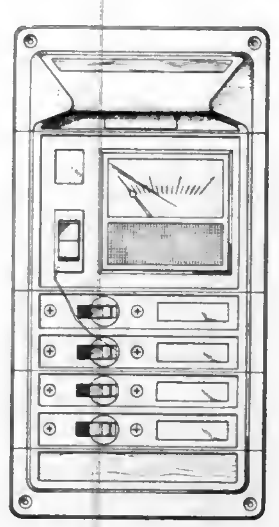
254,369
TIRE

Harold D. Fetty, Birmingham, Mich.; William F. Martin, Uniontown, Ohio; Gary A. Tatum, Akron, Ohio, and Lyle L. Worley, Kent, Ohio, assignors to The Goodyear Tire & Rubber Company
Filed Dec. 23, 1977, Ser. No. 863,834
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142



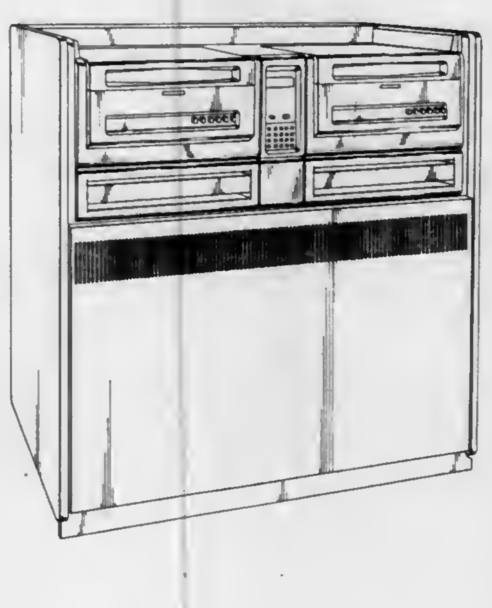
254,370
MODULAR CONTROL PANEL

Barnet Weinstein, 14 Robert Rd., Marblehead, Mass. 01945, and John F. Price, Peabody, Mass., assignors to Barnet Weinstein, Marblehead, Mass.
Filed Apr. 19, 1978, Ser. No. 897,924
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12



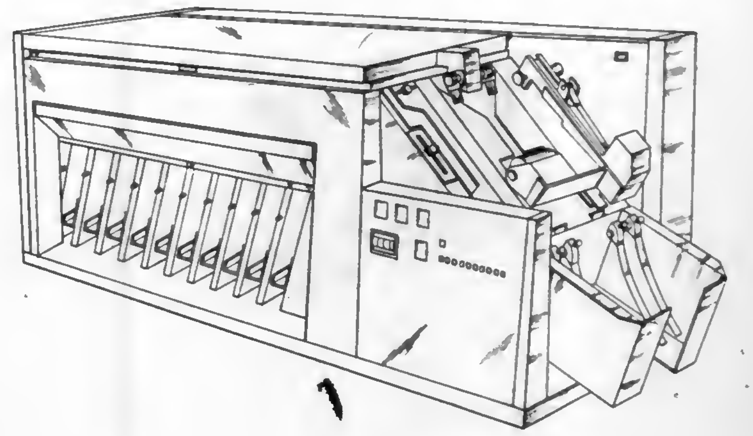
254,371
DATA PROCESSING SYSTEM CONSOLE

Richard L. Boudrot, Framingham; William R. Hall, Norwood, both of Mass., and Allan E. Weaver, Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Mar. 10, 1978, Ser. No. 885,230
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—42



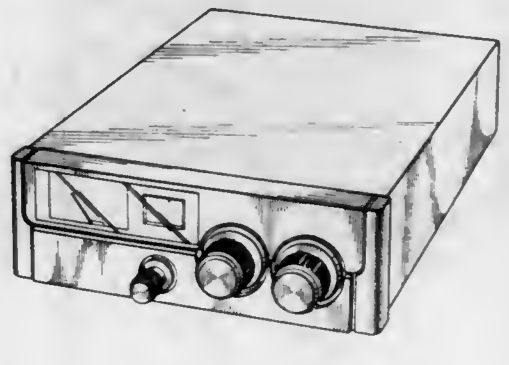
254,372
COLLATING MACHINE

Hans J. Sinn, Stamford; William A. Weirsman, Monroe, and George H. Woods, Fairfield, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Oct. 25, 1977, Ser. No. 845,168
Term of patent 14 years
Int. Cl. D14—*02;* D18—*99*
U.S. Cl. D14—48

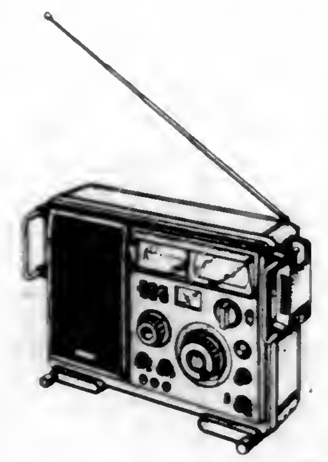


254,373
MOTOR VEHICULAR CITIZENS' BAND TRANSCEIVER

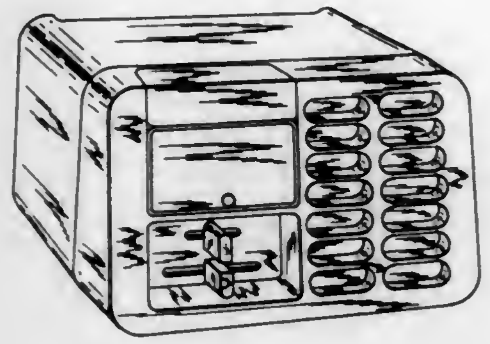
Kikuo Ohta, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jul. 20, 1977, Ser. No. 817,296
Claims priority, application Japan, Jan. 20, 1977, 52-1477
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



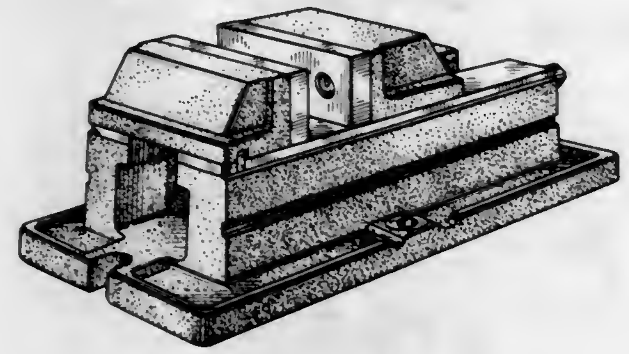
254,374
RADIO RECEIVER
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 13, 1977, Ser. No. 796,816
Claims priority, application Japan, Dec. 17, 1976, 51-49314
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



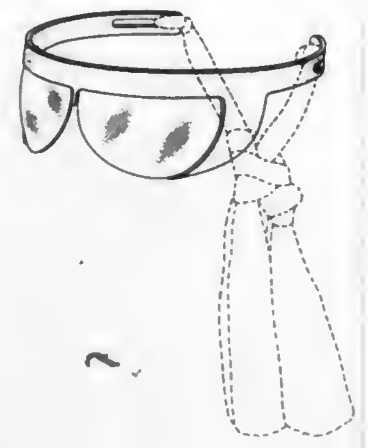
254,375
RADIO
John C. Coons, and Phillip L. Brookshire, both of Cincinnati, Ohio, assignors to Masco Corporation of Indiana
Filed Feb. 14, 1977, Ser. No. 772,509
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—71



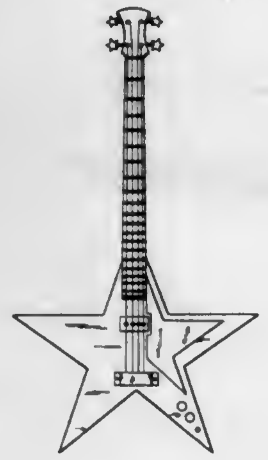
254,376
MACHINE VISE
Frank A. Glomb, Thornton, and William S. Griffith, Chicago, both of Ill., assignors to Chicago Tool and Engineering Company, Chicago, Ill.
Filed Aug. 15, 1977, Ser. No. 824,861
Term of patent 14 years
Int. Cl. D15—*09*; D8—*05*
U.S. Cl. D15—140



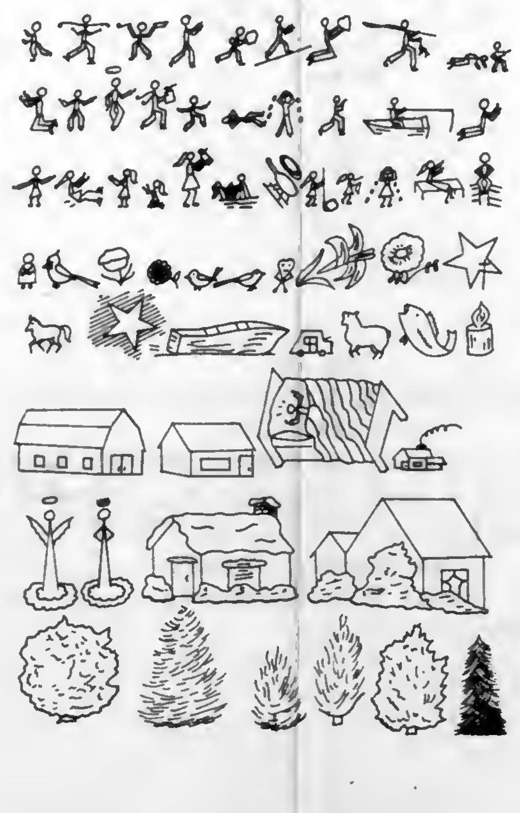
254,377
PAIR OF SPECTACLES
Germaine Czerefkow, 1 rue de la Paix, Paris, France
Filed Apr. 18, 1978, Ser. No. 897,461
Term of patent 3½ years
Int. Cl. D16—*06*
U.S. Cl. D16—65



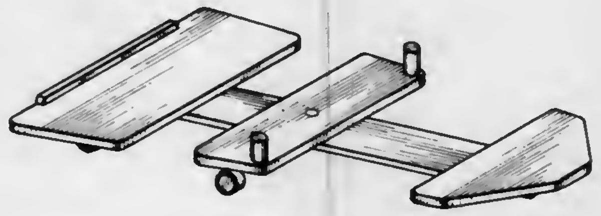
254,378
ELECTRIC GUITAR
John A. Whitesel, II, 7109 Grandview Dr., Indianapolis, Ind. 46202
Filed Aug. 11, 1977, Ser. No. 823,845
Term of patent 7 years
Int. Cl. D17—*03*
U.S. Cl. D17—18



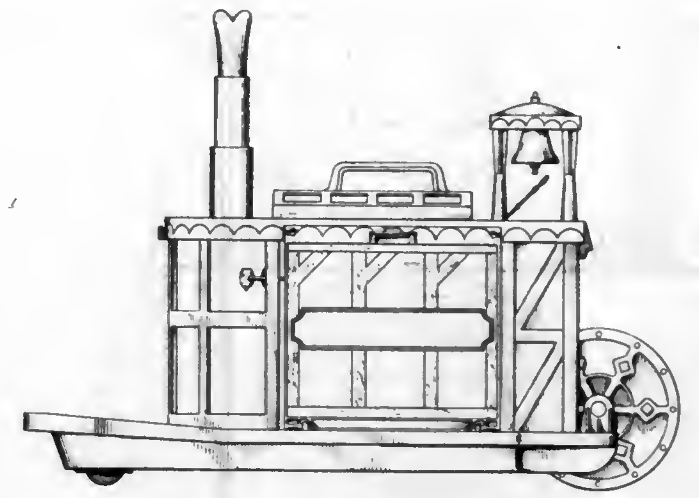
254,379
FONT OF ILLUSTRATION FIGURES FOR CHILDREN'S STORIES AND CARDS
Avis M. Dickey, South Milford, Ind., assignor to Dickey, Inc., South Milford, Ind.
Filed Apr. 18, 1977, Ser. No. 788,676
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—33



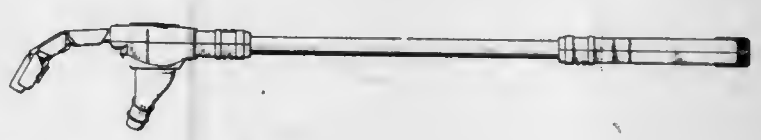
254,380
TOY COASTER
Richard F. Thomas, 1217 Rockhaven Dr., San Jose, Calif. 95120
Filed Nov. 7, 1977, Ser. No. 849,491
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—76



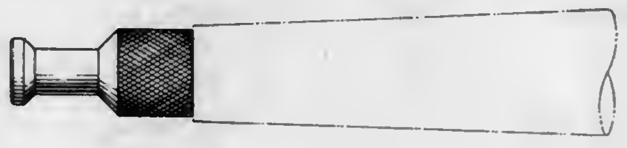
254,381
TOY BOAT
John E. Holden, R.D. #1, Box 304, Mount Joy, Pa. 17552
Filed Mar. 1, 1977, Ser. No. 773,343
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—130



254,382
TOY ROBOT HAND
Toshio Suzuki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Apr. 4, 1978, Ser. No. 893,523
Claims priority, application Japan, Nov. 29, 1977, 52-47251
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—189



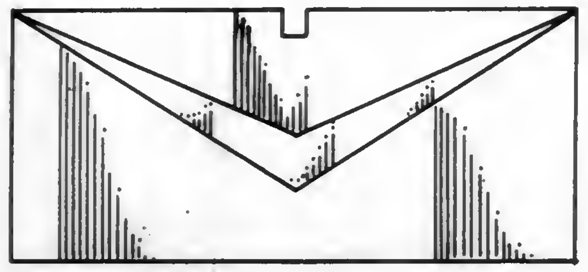
254,383
COMBINED CUE PROTECTOR AND TIP SCUFFER
Richard D. Poliquin, 18951 Newton St., Santa Ana, Calif. 92703
Filed Mar. 20, 1978, Ser. No. 888,110
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—210



254,384

GOLF CLUB HEAD OR SIMILAR ARTICLE

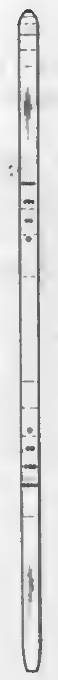
Edward L. Cicero, 52-62 66 St., Maspeth, N.Y. 11378
Filed Sep. 17, 1976, Ser. No. 724,477
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



254,385

SKI

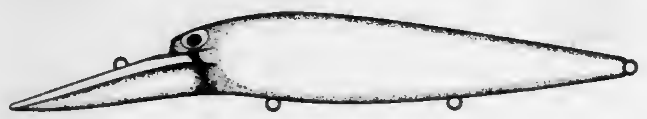
Anton Arnsteiner, Mittersill, Austria, assignor to Blizzard Gesellschaft m.b.H., Mittersill, Austria
Filed May 23, 1977, Ser. No. 799,759
Claims priority, application Austria, Nov. 22, 1976, 12498
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—229



254,386

FISHING LURE

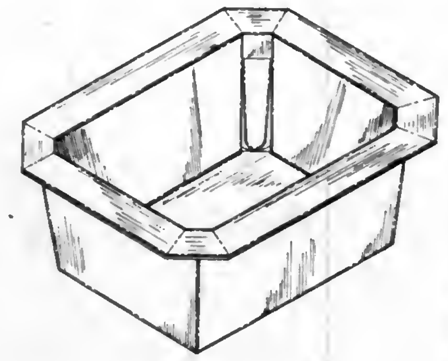
William D. Storm, Norman, Okla., assignor to Storm Plastics, Inc., Norman, Okla.
Filed Dec. 12, 1977, Ser. No. 859,659
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



254,387

WHIRLPOOL BATHTUB

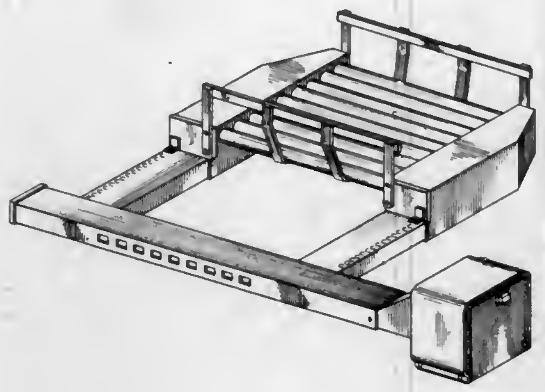
Philip I. Ogden, 510 E. 46 St., Boise, Id. 83204
Filed Dec. 5, 1977, Ser. No. 857,360
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



254,388

COMBINED GRATE AND FIREPLACE HEAT EXCHANGER

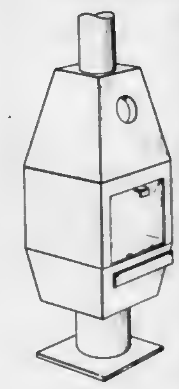
Amos E. Chesnut, Columbus, and Albert J. Parrigin, Scipio, both of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.
Filed Feb. 21, 1978, Ser. No. 879,099
Term of patent 14 years
Int. Cl. D7—*08;* D23—*03*
U.S. Cl. D23—95



254,389

STOVE

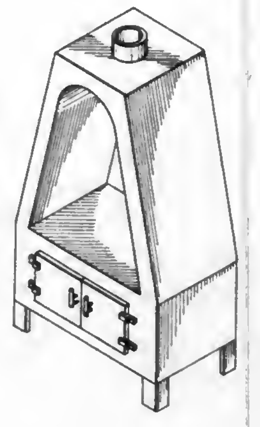
Daryl D. Freeland, 2729 Robinhood Dr., Greensboro, N.C. 27408
Filed Feb. 3, 1978, Ser. No. 874,929
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



254,390

FIREPLACE UNIT

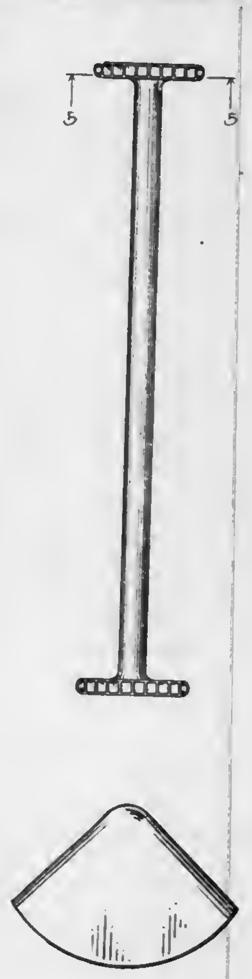
William T. Smith, 5500 Morrow Way, #88, La Mesa, Calif. 92041
Filed Jul. 27, 1978, Ser. No. 928,848
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



254,391

ROOM HEAT RECIRCULATOR

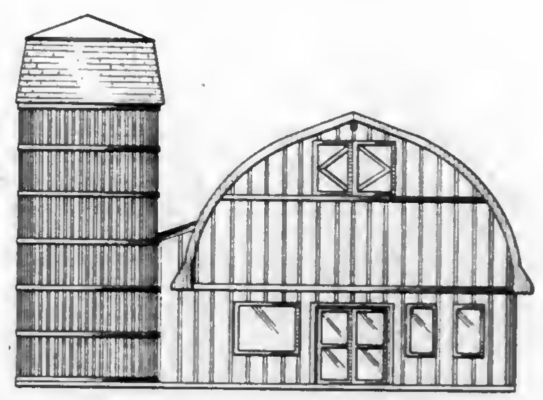
Lawrence G. Montecalvo, 5845 Shafer Rd., Warren, Ohio 44481
Filed Nov. 2, 1977, Ser. No. 847,728
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



254,392

BUILDING

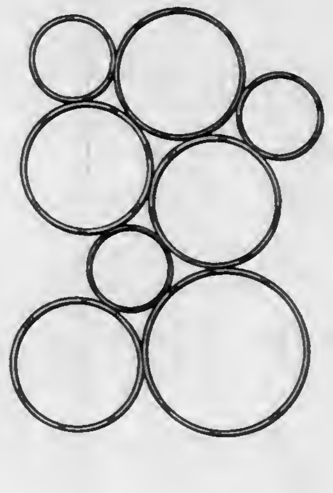
Howard Cooper, Chicago, Ill., assignor to Barn and Silo Stores Inc., Chicago, Ill.
Filed Nov. 18, 1977, Ser. No. 853,633
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—14



254,393

COMBINED PLANT TRELLIS AND WINDOW GUARD

Richard E. Cone, Kent, Ohio, assignor to Questor Corporation, Toledo, Ohio
Filed Nov. 10, 1977, Ser. No. 850,084
Term of patent 14 years
Int. Cl. D8—*99;* D25—*02*
U.S. Cl. D25—53



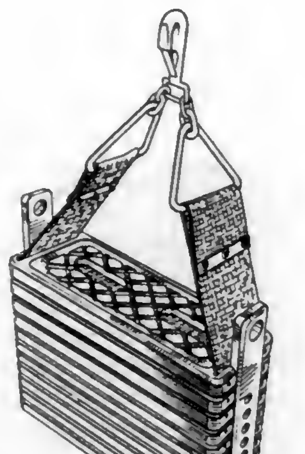
254,394

COLLAPSED WEB LADDER

Frank B. Leslie, 8883 Niagara River Pkwy., Niagara Falls, Ontario 6S6, and Alexander S. Kiss, P.O. Box 209, Queenston, Ontario, both of Canada

Filed Feb. 21, 1978, Ser. No. 879,690
Term of patent 14 years
Int. Cl. D6—*99*

U.S. Cl. D25—64



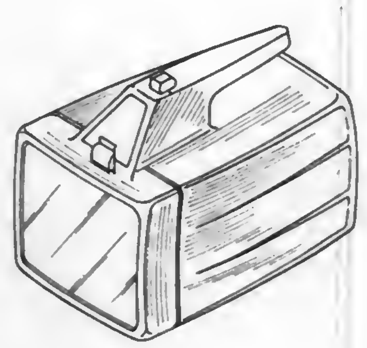
254,395

FLASHLIGHT

Ronald R. Klawitter, Hermann, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.

Filed Apr. 17, 1978, Ser. No. 896,916
Term of patent 14 years
Int. Cl. D26—*02*

U.S. Cl. D48—24 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF MARCH, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Niro Atomizer: *See—*
  Christensen, Mogens A.; Hovmand, Svend; Laursen, Jens K.; and Mortensen, Henrik B., 4,190,963, Cl. 34-57.00A.
AB Gustavsberg: *See—*
  Teglund, Lars; and Oldani, Melchiorre, 4,190,910, Cl. 4-421.000.
AB Nordstroms Linbanor: *See—*
  Wahlstrom, Ake E. T., 4,191,314, Cl. 222-506.000.
AB Volvo Penta: *See—*
  Borgersen, Kjell-Idar, 4,191,063, Cl. 74-388.00R.
  Pichl, Heinz, 4,191,238, Cl. 164-100.000.
Abbott Laboratories: *See—*
  Horrom, Bruce W.; and Barta, William D., 4,191,760, Cl. 424-244.000.
  Keeler, Robert J., 4,191,186, Cl. 128-214.400.
Abbott, Tony. Massage apparatus. 4,191,177, Cl. 128-51.000.
Abbruzzese, Carlo: *See—*
  Rinelli, Giorgio; and Abbruzzese, Carlo, 4,191,729, Cl. 423-98.000.
Ablaza, Sariel G. G. Apparatus and method for surgical repair of dissecting thoracic aneurysms and the like. 4,190,909, Cl. 3-1.400.
Abramov, Valentin S.: *See—*
  Stepantsov, Georgy K.; Abramov, Valentin S.; Bloschitsyn, Jury N.; and Zaripov, Raif R., 4,191,045, Cl. 72-407.000.
Acker, Richard C., to Weatherhead Company, The. Automotive quick connect tube coupling. 4,191,408, Cl. 285-113.000.
Adamson, Steven J.: *See—*
  Cooper, Paul V.; and Adamson, Steven J., 4,192,011, Cl. 365-2.000.
Adolf Illig Maschinenbau GmbH & Co.: *See—*
  Kiefer, Gunther, 4,191,520, Cl. 425-387.100.
Aeronca, Inc.: *See—*
  Mattson, Frank J.; Lawler, John T.; Stegall, Jack L.; and Dawkins, Kenneth R., 4,191,209, Cl. 137-486.000.
Agence Nationale de Valorisation de la Recherche: *See—*
  Lehmann, Robert; Lyonnet, Andre; and Rochas, Paul, 4,191,010, Cl. 57-208.000.
Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
  Lecluse, Jean-Francois, 4,191,914, Cl. 318-139.000.
AGFA-Gevaert, A.G.: *See—*
  Dolling, Ludvik; Haag, Wilhelm; and Heindze, Herbert, 4,191,213, Cl. 137-625.170.
Aguettaz, Jean: *See—*
  Koehler, Gerard; Aguettaz, Jean; Berthelot, Alain; Genter, Claude; and Arnoux, Daniel, 4,191,937, Cl. 335-230.000.
Ahlgren, David W.; Hassell, David A.; and Zimmer, Elvis S., to Paulucci, Jeno F. Food oven. 4,191,881, Cl. 219-388.000.
Air Test Labs, Inc.: *See—*
  Jacoby, Marvin; Jacoby, Richard; and Ellson, Robert, 4,191,054, Cl. 73-421.50R.
Aisin Seiki Kabushiki Kaisha: *See—*
  Kawata, Shoji; and Sakakibara, Naoji, 4,191,051, Cl. 73-347.000.
  Kodama, Hisashi, 4,191,142, Cl. 123-90.580.
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  Nagatsu, Toshiharu; and Sakakibara, Shumpei, 4,191,808, Cl. 435-24.000.
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  Hawkins, Edwin F.; and Parham, Thomas M., Jr., 4,191,550, Cl. 71-30.000.
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- Armstrong, James J., to Texas Instruments Incorporated. Method for facilitating attachment of wires to a motherboard. 4,190,951, Cl. 29-628.000.
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- Ashmun, Raymond V.; Baker, Steven R.; and Damerell, Jerry A., to Caterpillar Tractor Co. Engine mounting base. 4,191,356, Cl. 248-678.000.
- Ateliers de la Motobecane, S.A.: *See—*
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- Atlas Copco Aktiebolag: *See—*
  - Schoeps, Knut C., 4,191,282, Cl. 192-0.034.
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  - Hammerli, Martin; and Butler, John P., 4,191,626, Cl. 204-266.000.
- Atwood Vacuum Machine Company: *See—*
  - Leonhardt, Robert F., 4,191,353, Cl. 248-425.000.
- Auburn, Robert M. Laproscopic trocar. 4,191,191, Cl. 128-347.000.
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- Ausnit, Steven, to Minigrip, Inc. Integral extruded construction for bags. 4,191,230, Cl. 150-3.000.
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- Austin, Peter W., to Imperial Chemical Industries Limited. Reactive dyestuffs containing the residue of 1-hydroxy-7-amino-8-(5'-amino-2',4'-disulphophenylazo)naphthalene-3,6-disulphonic acid. 4,191,687, Cl. 260-153.000.
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  - Tucker, Harold A., 4,191,833, Cl. 548-378.000.
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  - Camenisch, Hans; and Bachner, Jarmila, 4,191,567, Cl. 430-64.000.
- Bacsanyi, Thomas J.: *See—*
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  - Jack, James; and King, Godfrey A., 4,191,719, Cl. 264-41.000.
- Baker, Brian, to Imperial Chemical Industries Limited. Purification process. 4,191,616, Cl. 203-44.000.
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- Baker, Larry W. Automatic wind brace for side roll irrigation system. 4,191,206, Cl. 137-344.000.
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- Ballard, Henry G. Fireplace water heater. 4,191,163, Cl. 126-132.000.
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  - Burnside, Walter M., 4,191,377, Cl. 273-143.00R.
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- Barkan, Yale. Stone disintegrator. 4,191,189, Cl. 128-328.000.
- Barksdale, Lester T. Tail gate step. 4,191,388, Cl. 280-166.000.
- Barner, Harold R. Trunk retainer assembly. 4,191,413, Cl. 292-262.000.
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- Barnett, Haynes & Barnett, International: *See—*
  - Barnett, George D., 4,191,490, Cl. 404-70.000.
- Barnett, Ronald R., to General Motors Corporation. Occupant restraint cushion system. 4,191,392, Cl. 280-740.000.

- Barnsbee, Clive D., to Eastman Kodak Company. Apparatus for selectively reclaiming parts from film cartridges. 4,191,201, Cl. 134-104.000.
- Barraclough, William F.: *See—*
  - Harrell, John B.; Barraclough, William F.; and Pederson, Curtis O., 4,191,529, Cl. 432-98.000.
- Barrett, George M. Fluid transmission. 4,191,018, Cl. 60-428.000.
- Barta, William D.: *See—*
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- Bartl, Herbert: *See—*
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  - Grafen, Paul; Kroesche, Henning; Schulz, Bernhard; Paust, Joachim; and Pfohl, Sigberg, 4,191,692, Cl. 260-345.500.
  - Merger, Franz; Towae, Friedrich; and Penzel, Erich, 4,191,838, Cl. 560-205.000.
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  - Illers, Karl H.; and Stutz, Herbert, 4,191,818, Cl. 528-44.000.
  - Langdon, William K., 4,191,820, Cl. 528-405.000.
- Baso, Loris. Tension element for a ski boot fastener. 4,190,969, Cl. 36-50.000.
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  - Charron, Francis, 4,190,941, Cl. 29-156.70C.
- Basso, Michael J.; and Brown, Henry B., to United States of America, Army. Radiation dose rate indicator. 4,191,886, Cl. 250-376.000.
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  - Columberg, Alfred, 4,191,816, Cl. 526-124.000.
- Baudier, Claude P.: *See—*
  - Teysseyre, Pierre M.; and Baudier, Claude P., 4,191,510, Cl. 416-230.000.
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  - Lyons, William E.; and Egan, John J., 4,191,338, Cl. 241-245.000.
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- Baughman, Kenneth E.; and Doyle, Earl N. Apparatus and method for plugging voids in a ground stratum. 4,191,254, Cl. 166-286.000.
- Bauman, Claire. Vehicle parking signaling device. 4,191,939, Cl. 340-107.000.
- Baumgartner, Paul A. Motorcycle carrier. 4,191,316, Cl. 224-42.03B.
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  - Rubin, Laurence A.; and Baker, William S., 4,191,234, Cl. 150-52.00R.
  - Winchell, David A.; Martin, Jerry D.; and Roe, Frank L., 4,191,231, Cl. 150-8.000.
- Bayer Aktiengesellschaft: *See—*
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  - Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Schreckenberg, Manfred; Freitag, Dieter; and Konig, Klaus, 4,191,705, Cl. 260-463.000.
  - Meyer, Rolf-Volker; Dhein, Rolf; Schneider, Kurt; and Fahnler, Friedrich, 4,191,819, Cl. 528-315.000.
- Bearce, Wendell E. Dryer. 4,191,530, Cl. 432-107.000.
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- Beaver, Danny D.: *See—*
  - Wendt, Michael E.; and Beaver, Danny D., 4,191,245, Cl. 165-69.000.
- Becerra Novoa, Jorge: *See—*
  - Rodriguez, Federico A.; Becerra Novoa, Jorge; and Sanchez Ramirez, Julian, 4,191,885, Cl. 250-302.000.
- Becker, Dustin J., to Lorain Products Corporation. Programmable ringing generator. 4,192,007, Cl. 364-721.000.
- Becker, Robert F. Gas-bag supported structural foundation. 4,191,496, Cl. 405-229.000.
- Bedel, Denis E., to Westinghouse Electric Corp. Manually operable switch. 4,191,874, Cl. 200-339.000.
- Beeftink, Maarten C.; and Helgers, Manfred, to U.S. Philips Corporation. Arrangement for adjusting headlights. 4,191,990, Cl. 362-276.000.
- Begala, Arthur J., Jr.; and Kaufman, Ernest D., to American Cyanamid Company. Process for dewatering sewage sludge. 4,191,645, Cl. 210-47.000.
- Begany, Albert J.: *See—*
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  - Bohn, Hans; and Stutzinger, Ferdinand, 4,191,533, Cl. 23-230.00B.
- Beisner, Robert W.: *See—*
  - Moyer, Charles E., Jr.; Keller, George E., II; Beisner, Robert W.; and Walker, Wellington E., 4,191,701, Cl. 260-450.000.
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- Belco Pollution Control Corporation: *See—*
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- Bell, Norman G.: *See—*
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  - Archer, Wendel E.; Wasserman, Norman; and Yano, Douglas H., 4,191,935, Cl. 335-154.000.
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  - Brown, John F.; and Stanton, Robert M., 4,191,789, Cl. 427-97.000.
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  - Holtzman, Kenneth A., 4,191,800, Cl. 428-251.000.
  - MacChesney, John B.; O'Connor, Paul B.; and Pearson, Arthur D., 4,191,545, Cl. 65-3.00A.
  - Mandeville, Gordon J., 4,192,008, Cl. 364-724.000.
  - Schramm, Eugene C., 4,191,440, Cl. 339-17.00C.
  - Tompsett, Michael F., 4,192,015, Cl. 365-114.000.
  - Weber, Roy P., 4,191,860, Cl. 179-18.00B.
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  - Kasselmann, John T., 4,191,394, Cl. 280-432.000.
  - Reitz, Richard J.; and Kruke, Edward J., 4,191,429, Cl. 303-58.000.
  - Taplin, Lael B., 4,191,146, Cl. 123-117.00R.
- Beni, Gerardo; Gottesfeld, Shimshon; McIntyre, James D. E.; and Shay, Joseph L., to Bell Telephone Laboratories, Incorporated. Iridium oxide based electrochromic devices. 4,191,453, Cl. 350-357.000.
- Benier B.V.: *See—*
  - Benier, Johan, 4,191,519, Cl. 425-332.000.
- Benier, Johan, to Benier B.V. Dough-rounding machine. 4,191,519, Cl. 425-332.000.
- Benjamin, Benjamin C., to Schmelzer Corporation. Time delay assembly. 4,191,096, Cl. 92-143.000.
- Benjamin, Robert N.: *See—*
  - Gleasman, Vernon E.; and Benjamin, Robert N., 4,191,071, Cl. 74-715.000.
- Benzinger, Theodor H. Touch free tympanic thermometer. 4,191,197, Cl. 128-736.000.
- Berger Jenson & Nicholson Ltd.: *See—*
  - Salome, Frederik; and Elliott, William T., 4,191,672, Cl. 260-29.6PM.
  - Salome, Frederik; and Elliott, William T., 4,191,672, Cl. 260-29.6PM.
- Bergvall, Bengt A., to Husqvarna AB. Stitch forming element control using stepping motors which can be calibrated. 4,191,120, Cl. 112-158.00E.
- Bernardi, Luigi: *See—*
  - Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,191,755, Cl. 424-180.000.
  - Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,191,756, Cl. 424-180.000.
- Bernasconi, Mario: *See—*
  - Vargiu, Silvio; Manzoni, Pier L.; and Bernasconi, Mario, 4,191,723, Cl. 264-129.000.
- Berner, John M., to Garven, David H., a part interest. Snow remover. 4,190,972, Cl. 37-43.00D.
- Bernhardt Apparatebau GmbH & Co.: *See—*
  - Bernhardt, Jost; Hase, Georg; Hase, Peter; and Hagen, Klaus, 4,191,310, Cl. 222-5.000.
- Bernhardt, Jost; Hase, Georg; Hase, Peter; and Hagen, Klaus, to Bernhardt Apparatebau GmbH & Co. Device for inflating lifesaving equipment. 4,191,310, Cl. 222-5.000.
- Berry, David, to BP Chemicals Limited. Cementitious compositions. 4,191,584, Cl. 106-90.000.
- Berthelot, Alain: *See—*
  - Koehler, Gerard; Aguettaz, Jean; Berthelot, Alain; Genter, Claude; and Arnoux, Daniel, 4,191,937, Cl. 335-230.000.
- Betz Laboratories, Inc.: *See—*
  - Quinn, John E.; Wittenbrook, Lawrence S.; and Donegan, Charles E., 4,191,655, Cl. 252-60.000.
- Beugelsdyk, Anthony F.: *See—*
  - Golobay, Gary L.; Deubner, Ted E.; and Beugelsdyk, Anthony F., 4,191,065, Cl. 74-489.000.
- BFG Glassgroup: *See—*
  - Nolte, Hans-Henning, 4,191,805, Cl. 428-539.000.
- BICC Limited: *See—*
  - Dean, Noel S.; Lawton, Kenneth L.; and Yates, Vincent A., 4,191,448, Cl. 350-96.230.
- Bickerton, Harry, to Harry Bickerton Limited. Securement arrangement for bicycle bearing assembly. 4,191,488, Cl. 403-370.000.
- Biermann, Peter; and Ewald, Otto, to Vereinigte Baubeschlagfabriken Gretsch and Company GmbH. Cross country ski binding. 4,191,396, Cl. 280-615.000.
- Birt, Isobel J. Bed clothing support. 4,190,915, Cl. 5-505.000.

Biter, William J.: *See—*

Shirland, Fred A.; and Biter, William J., 4,191,794, Cl. 427-74.000.

Bivens, Jon A.; and Cochran, Wilson V., to Toro Company, The. Stream reversing director. 4,191,331, Cl. 239-231.000.

Bjornson, Geir, to Phillips Petroleum Company. Hydrodealkylation process and catalyst. 4,191,844, Cl. 568-805.000.

Blake, William S.; and Hammett, Roy, to James D. Pauls and J. Claybrook Lewis and Associates, Limited. Trigger operated dispenser with means for obtaining continuous or intermittent discharge. 4,191,313, Cl. 222-335.000.

Blessing, Hubert, to Levi Strauss & Co. Automatic stitching pattern control system and method for a sewing machine. 4,191,118, Cl. 112-121.110.

Bloch, Christopher D.: *See—*

Goldberg, Jerome; and Bloch, Christopher D., 4,191,274, Cl. 180-282.000.

Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., to Polaroid Corporation. Benzisothiazole-1,1-dioxide and naphtho-1,2-thiazine-1,1-dioxide compounds. 4,191,689, Cl. 548-207.000.

Bloschitsyn, Jury N.: *See—*

Stepantsov, Georgy K.; Abramov, Valentin S.; Bloschitsyn, Jury N.; and Zaripov, Raif R., 4,191,045, Cl. 72-407.000.

Blumle, Leo J.: *See—*

O'Neal, Charles D., III; Blumle, Leo J.; and Hablanian, Marsbed, 4,191,512, Cl. 417-54.000.

Boase, Elmer E.; DiFrancesco, Alphonse B.; and Ring, Stuart F., to Eastman Kodak Company. Apparatus for producing simplex of duplex copies. 4,191,465, Cl. 355-3.0SH.

Bocharov, Jury A.: *See—*

Grigorenko, Anatoly S.; Moroz, Jury A.; Kortusov, Leonid I.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,191,044, Cl. 72-354.000.

Bock, Horst: *See—*

Ehrlinger, Friedrich J.; and Bock, Horst, 4,191,072, Cl. 74-732.000.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*

Gonner, Winfried K., 4,191,215, Cl. 137-870.000.

Boehringer Ingelheim GmbH: *See—*

Nickl, Josef; Muller, Erich; Narr, Berthold; Haarmann, Walter; Schroter, Wolfgang; and Kadatz, Rudolf, 4,191,776, Cl. 424-308.000.

Boehringer Mannheim GmbH: *See—*

Woog, Heinrich; and Gruber, Werner, 4,191,772, Cl. 424-273.00R.

Bogentoft, Conny D., to Aktiebolaget Hassle. Neutralizing agent. 4,191,744, Cl. 424-78.000.

Boggum, Paul; and Schulte, Klaus, to Didier-Werke A.G. Tank block. 4,191,528, Cl. 432-248.000.

Bohn, Hans; and Stutzinger, Ferdinand, to Behringwerke Aktiengesellschaft. Pregnancy-specific β_1-glycoprotein and process for isolating it. 4,191,533, Cl. 23-230.00B.

Boll, Richard H.; and Lapple, Walter C., to Babcock & Wilcox Company, The. Gas cleaning apparatus. 4,191,544, Cl. 55-390.000.

Bolli, Hilda: *See—*

Trouillard, Charles, 4,191,527, Cl. 432-72.000.

Bollmer, Jacob A.; Stearns, Joseph E.; and Brooks, Alvin R., Jr., to Dayco Corporation. Rotary anvil construction. 4,191,076, Cl. 83-13.000.

Bolth, Franklin A.: *See—*

Fischer, Arthur H.; Strow, Lawrence E.; and Bolth, Franklin A., 4,191,641, Cl. 209-166.000.

Bontrager, Kenneth L.; Bontrager, Marion R.; Taylor, Robert J.; and Card, David C., to Diamond Insulation Industries, Inc. Apparatus for making cellulose insulation. 4,191,224, Cl. 141-100.000.

Bontrager, Marion R.: *See—*

Bontrager, Kenneth L.; Bontrager, Marion R.; Taylor, Robert J.; and Card, David C., 4,191,224, Cl. 141-100.000.

Boren, Charles F. Rotary cultivator and mulcher. 4,191,259, Cl. 172-43.000.

Borg-Warner Corporation: *See—*

Thelander, W. Vincent, Sr.; and Lindquist, Terry K., 4,191,285, Cl. 192-111.00A.

Borgersen, Kjell-Idar, to AB Volvo Penta. Servo device, especially for reversible gears in motorboats. 4,191,063, Cl. 74-388.00R.

Borror, Alan L.: *See—*

Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,191,689, Cl. 548-207.000.

Borsuk, Leslie M., to International Telephone and Telegraph Corporation. Fiber optic termination and method of making same. 4,191,447, Cl. 350-96.200.

Bosch, Erhard: *See—*

Schiller, August; Louis, Eckhart; Bosch, Erhard; and Braunsperger, Karl, 4,191,817, Cl. 528-38.000.

Bose, Tejandra N.: *See—*

Patel, Harshad H.; and Bose, Tejandra N., 4,191,148, Cl. 123-119.0CD.

Bosse-Platiere, Michel J., to Schlumberger Technology Corporation. Well bore perforating apparatus. 4,191,265, Cl. 175-4.560.

Bosso, Joseph F.: *See—*

Wismer, Marco; and Bosso, Joseph F., 4,191,674, Cl. 260-29.2EP.

Bostic, Joseph M. Fuel log and method of making it. 4,191,534, Cl. 44-6.000.

Bouchard, Andre C.; Morris, James C.; and Garrison, Robert L., to GTE Sylvania Incorporated. Intrusion alarm system. 4,191,947, Cl. 340-531.000.

Bourgeois, Leonard. Powder transfer system. 4,191,223, Cl. 141-18.000.

Bourne, Percy V., to Calcimatic International Limited. Discharge chute assembly for calcining hearth. 4,191,531, Cl. 432-239.000.

Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., to Charles Stark Draper Laboratory, Inc., The. System for measuring ocean current. 4,191,049, Cl. 73-170.00A.

Boyer, Hugh J., to Fieldcrest Mills, Inc. Sheeting fabric formed of corespun yarns. 4,191,221, Cl. 139-426.00R.

Boyko, Michael. Solar chemical process for sludge treatment. 4,191,549, Cl. 71-13.000.

BP Chemicals Limited: *See—*

Berry, David, 4,191,584, Cl. 106-90.000.

Braatz, Paul O.; Grinberg, Jan; Jacobson, Alexander D.; and Waldner, Michael, to Hughes Aircraft Company. Continuous silicon MOS AC light valve substrate. 4,191,454, Cl. 350-342.000.

Braatz, Paul O.: *See—*

Grinberg, Jan; Braatz, Paul O.; Waldner, Michael; and Jacobson, Alexander D., 4,191,452, Cl. 350-342.000.

Bradbury, Christopher G., to Leesona Corporation. Sheet shaping method. 4,191,039, Cl. 72-60.000.

Bradley, Robert A., to Tru-Spoke, Inc. Simulated knock off spinner nut. 4,191,427, Cl. 301-108.00S.

Bradley, William E.; Timm, Gerald W.; Klatt, William M.; and Graves, Wayne H., to American Medical Systems, Inc. Profilometry method and apparatus. 4,191,196, Cl. 128-733.000.

Brannegan, Daniel P.: *See—*

Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,191,693, Cl. 260-345.90R.

Branover, Herman, to Ben-Gurion University of the Negev. Method and system for converting solar energy into electricity. 4,191,901, Cl. 310-11.000.

Bratt, Jan C.; Moodysson, Bengt-Ove M.; and Rosenqvist, Nils K. G., to Kommanditbolaget United Stirling (Sweden) AB & Co. Double-acting hot gas engine assemblage. 4,191,019, Cl. 60-525.000.

Bratton, David: *See—*

Fermi, Rudy; Pickard, John; Kocsis, Alex; Bratton, David; and Kasner, Gerald, 4,191,106, Cl. 101-415.100.

Brauer, Hans; and Demny, Werner, to Friedrich Kocks GMBH & Company. Rolling mills. 4,191,041, Cl. 72-235.000.

Braun, William A., to Data General Corporation. Circuit indicating phase relationship. 4,191,976, Cl. 360-51.000.

Braunsperger, Karl: *See—*

Schiller, August; Louis, Eckhart; Bosch, Erhard; and Braunsperger, Karl, 4,191,817, Cl. 528-38.000.

Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., to Pfizer, Inc. Preparation of gamma-pyrones from 3-substituted furans. 4,191,693, Cl. 260-345.90R.

Brennan, Timothy E., to Wing Industries, Inc. Energy exchange wheel and method of fabrication. 4,191,241, Cl. 165-10.000.

Brenner, William C.; and Sterrett, Charles C., to Westinghouse Electric Corp. Dynamoelectric machine with air gap armature winding. 4,191,903, Cl. 310-213.000.

Brent, Robert G., to Textron, Inc. Polarity control valve. 4,191,202, Cl. 137-112.000.

Bretone, John, Jr. Pipe coupling for plumbing apparatus. 4,191,407, Cl. 285-56.000.

Briand, Marcel E.; and Pannetier, Georges A. Video composite transmission system integrating encoded data channels into blanking and synchronizing signal. 4,191,969, Cl. 358-145.000.

Bridgestone Tire Company, Limited: *See—*

Kadono, Mamoru; Saigusa, Tetsuji; Nakajima, Yoshiyuki; and Koga, Tomohiro, 4,191,217, Cl. 138-109.000.

Kataoka, Nobuyuki; Takahashi, Takuya; Ohkawa, Fujio; and Anzai, Shiro, 4,191,671, Cl. 260-23.70M.

British-American Tobacco Company Limited: *See—*

Baker, Richard R.; and Bunn, Barry G., 4,191,046, Cl. 73-38.000.

British Petroleum Company Limited, The: *See—*

Buckley, Peter S.; and Grist, Dennis M., 4,191,252, Cl. 166-272.000.

British Steam Specialties Limited, The: *See—*

Walker, Robert M., 4,191,211, Cl. 137-512.150.

Brock, George W.; Pawlowski, Edward J.; and Stone, Ricardo R., to International Business Machines Corporation. Signal recovery method and apparatus. 4,192,003, Cl. 364-487.000.

Brook, Neil R.; and Maling, Peter J., to PYE (Electronic Products) Limited. Automatic transport mechanism and a carrier member for use therewith. 4,191,287, Cl. 198-472.000.

Brookhyser, Byron B., to Weyerhaeuser Company. Apparatus for feeding thin sheets. 4,191,368, Cl. 271-10.000.

Brooks, Alvin R., Jr.: *See—*

Bollmer, Jacob A.; Stearns, Joseph E.; and Brooks, Alvin R., Jr., 4,191,076, Cl. 83-13.000.

Broudy, Charles E., to Hart Schaffner & Marx. Railing display rack. 4,191,298, Cl. 211-126.000.

Brown, Henry B.: *See—*

Basso, Michael J.; and Brown, Henry B., 4,191,886, Cl. 250-376.000.

Brown, Jim W. Process for recovering magnetite from fly ash. 4,191,336, Cl. 241-21.000.

Brown, John F.; and Stanton, Robert M., to Bell Telephone Laboratories, Incorporated. Fabrication of bi-level circuits. 4,191,789, Cl. 427-97.000.

Brown, Karl L., to Varian Associates, Inc. Magnetic beam deflection system free of chromatic and geometric aberrations of second order. 4,191,887, Cl. 250-396.0ML.

Brown, Robert J., to Dana Corporation. Self lubricating one way coupling. 4,191,279, Cl. 188-82.840.

Brown, Ronald W. Dental organizer and container. 4,191,291, Cl. 206-369.000.

Brown & Sharpe Manufacturing Company: *See—*

Vanslette, Robert A., 4,191,059, Cl. 74-25.000.

Brown, Wayne R.; Jones, John E.; and Sherrill, Charles F., to Disston, Inc. Battery pack rechargeable in recessed or flush-type receptacles. 4,191,917, Cl. 320-2.000.

Brown & Williamson Tobacco Corporation: *See—*

Sullivan, James W., 4,191,199, Cl. 131-96.000.

Bruce Plastics, Inc.: *See—*

Szabo, Bela G., 4,191,232, Cl. 150-12.000.

Brugger, Wilhelm, to Th. Goldschmidt AG. Method for the separation of a mixture of fine particles. 4,191,727, Cl. 423-1.000.

Brunetti, Heimo; Rody, Jean; Soma, Nobuo; and Kurumada, Tomoyuki, to Ciba-Geigy Corporation; and Sankyo Company Limited. Derivatives of 4-aminopiperidine as stabilizers for polymers. 4,191,683, Cl. 260-45.80N.

Brunnett, Carl J.: *See—*

Huang, Sung-Cheng; Brunnett, Carl J.; and Mattson, Rodney A., 4,191,892, Cl. 250-445.00T.

Bryant, Bernard J. Method and material for increasing the percentage of mammalian offspring of either sex. 4,191,749, Cl. 424-105.000.

Buckley, Peter S.; and Grist, Dennis M., to British Petroleum Company Limited, The. Method for the recovery of oil. 4,191,252, Cl. 166-272.000.

Buerger, Walter R. Topological transformation system. 4,192,004, Cl. 364-518.000.

Buescher, William E.; Roberto, Frederick J.; and Sobierajski, Isabelle M., to GTE Sylvania Incorporated. Brazing slurry. 4,191,577, Cl. 106-1.120.

Bulanda, John J.; and Lopata, John E., to Panduit Corp. Cable tie. 4,191,334, Cl. 24-16.0PB.

Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-9-deoxy-9-methylene-16-phenyl-PGF compounds. 4,191,707, Cl. 260-570.5CA.

Bundy, Gordon L., to Upjohn Company, The. Trans-2,3,13,14-tetradehydro-9-deoxy-9-methylene-ω-aryl-PGF compounds. 4,191,837, Cl. 560-55.000.

Bunn, Barry G.: *See—*

Baker, Richard R.; and Bunn, Barry G., 4,191,046, Cl. 73-38.000.

Burck, Joseph M.: *See—*

Kulesza, Ralph J.; Wildman, John R.; Burck, Joseph M.; Meyer, Burton C.; and Wozniak, Walter J., 4,191,374, Cl. 273-30.000.

Burd, Inc.: *See—*

Hayward, Glenn L., 4,191,797, Cl. 428-50.000.

Buren, Lawrence: *See—*

Large, George B.; and Buren, Lawrence, 4,191,552, Cl. 71-86.000.

Burford, Roy T. Shoe cleaning device. 4,190,919, Cl. 15-4.000.

Burkwall, Morris P., Jr.; and Gould, Penelope L., to Quaker Oats Company, The. Shelf stable, high moisture food and process. 4,191,783, Cl. 426-335.000.

Burnside, Walter M., to Bally Manufacturing Corporation. Indexing means for rotating drums of amusement apparatus. 4,191,377, Cl. 273-143.00R.

Burri, Peter, to Ciba-Geigy Corporation. Substituted 3,6-diaminophthalides. 4,191,690, Cl. 260-343.30R.

Burroughs Corporation: *See—*

O'Neill, Charles F., 4,191,365, Cl. 269-46.000.

Busalow, Juri: *See—*

Krumphold, Ralf; Paul, Heinrich; Busalow, Juri; and Kopjew, Iwan, 4,191,597, Cl. 148-12.00B.

Bussard, Charles B.; and Jenkins, William A., to Monarch Marking System, Inc. Hand-held labeler. 4,191,608, Cl. 156-584.000.

Busta, Heinz H., to Gould Inc. Inversion layer sprain gauge. 4,191,057, Cl. 73-777.000.

Butler, John P.: *See—*

Hammerli, Martin; and Butler, John P., 4,191,626, Cl. 204-266.000.

Butter, Charles D., to Honeywell Inc. Laser-fiber optic interferometric strain gauge. 4,191,470, Cl. 356-35.500.

B.V. Machinefabriek Breda v/h Backer & Rueb: *See—*

Versteeg, Jacobus C., 4,191,247, Cl. 165-158.000.

Byrd, Alan E.; Amneus, John S.; Lucas, Malcolm B.; Van Coney, Robert H.; and Van Loan, James E., to Procter & Gamble Company, The. Method and apparatus for imparting a predetermined shape to product of dough-like consistency. 4,191,517, Cl. 425-286.000.

Cabinet Lavoix: *See—*

Pravaz, Marcel H., 4,191,349, Cl. 244-145.000.

Cable Belt Limited: *See—*

Thomson, Ian M., 4,191,009, Cl. 57-202.000.

Cabot Corporation: *See—*

Silence, William L., 4,191,562, Cl. 75-122.000.

Cacheux, Jean A., to Centre National d'Etudes Spatiales. Double heterojunction solar cells. 4,191,593, Cl. 136-89.0CA.

Cairns, Bruce R.; and Crockett, David B., to Fairchild Camera and Instrument Corporation. Filler-in-plastic light-scattering cover. 4,191,943, Cl. 340-378.200.

Calcimatic International Limited: *See—*

Bourne, Percy V., 4,191,531, Cl. 432-239.000.

Calco Manufacturing Company: *See—*

Fueyo, Albert, 4,191,347, Cl. 244-76.00A.

Calistrat, Michael M., to Koppers Company, Inc. Diaphragm coupling. 4,191,030, Cl. 64-13.000.

Calleance, David. Baffled watermattress construction. 4,190,917, Cl. 5-457.000.

Calorie Counter Limited Partnership: *See—*

Lipsey, Elmer M., 4,192,000, Cl. 364-415.000.

Calzaturificio Giuseppe Garbuio S.A.S.: *See—*

Annovi, Giuseppe, 4,190,970, Cl. 36-50.000.

Camenisch, Hans; and Bachner, Jarmila, to Elfotec A.G. Procedure for making a reusable photoconducting charge image carrier and charge image carriers prepared by this method. 4,191,567, Cl. 430-64.000.

Cameron Iron Works, Inc.: *See—*

Croy, David G.; Rafferty, Andrew J.; and Jolly, Richard D., 4,191,256, Cl. 166-343.000.

Cammas, Henri: *See—*

Dansac, Jean; Pepin, Christian; and Cammas, Henri, 4,191,967, Cl. 358-113.000.

Campbell, Billy H.; Debona, Edward J.; and Laird, William J., to United States of America, Army. Rocket detent and release mechanism. 4,191,087, Cl. 89-1.806.

Canon Kabushiki Kaisha: *See—*

Fujiki, Makoto, 4,191,460, Cl. 354-25.000.

Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Fumio; Murakami, Hiroyashu; and Ito, Tadashi, 4,191,458, Cl. 354-23.00D.

Carba S.A.: *See—*

Gabus, Jean-Claude, 4,191,481, Cl. 400-87.000.

Carborundum Company, The: *See—*

Batha, Howard D.; Mason, John H.; and Thompson, Stanley R., 4,191,730, Cl. 423-239.000.

Card, David C.: *See—*

Bontrager, Kenneth L.; Bontrager, Marion R.; Taylor, Robert J.; and Card, David C., 4,191,224, Cl. 141-100.000.

Carey, Van P.: *See—*

Walch, Robert L., Jr.; Carey, Van P.; and Thomas, Michael J., 4,191,172, Cl. 126-421.000.

Carlingswitch, Inc.: *See—*

Sorenson, Richard W., 4,191,872, Cl. 200-296.000.

Carlisle, Jeffrey A. Intravenous infusion regulation system with reciprocal metering means. 4,191,184, Cl. 128-214.00F.

Carmody, Joseph P., to Honeywell Inc. Variable symmetry multiphase clock generator. 4,191,998, Cl. 364-200.000.

Carrara, Walter G.: *See—*

Walker, Jack L.; and Carrara, Walter G., 4,191,957, Cl. 343-5.0PC.

Carreiro, Ronald. Method, system and components for preserving wooden gutters. 4,190,988, Cl. 52-16.000.

Carrell, David R. Solar panel. 4,191,170, Cl. 126-449.000.

Carrier Corporation: *See—*

Samurin, Norman A.; and Straslicka, William A., 4,191,485, Cl. 403-15.000.

Carter, Donald S., to Gene Conreaux & Co., Inc. Release agents. 4,191,578, Cl. 106-1.130.

Carter, Ernest E., Jr.: *See—*

Baker, Eugene E.; and Carter, Ernest E., Jr., 4,191,383, Cl. 277-1.000.

Casals-Stenzel, Jorge: *See—*

Skuballa, Werner; Raduchel, Bernd; Schwarz, Norbert; Vorbruggen, Helmut; Muller, Bernd; Mannesmann, Gerda; Loge, Olaf; Schillinger, Ekkehardt; and Casals-Stenzel, Jorge, 4,191,694, Cl. 260-346.220.

Cascade Corporation: *See—*

Farmer, Stanley E., 4,191,092, Cl. 91-189.00R.

Farmer, Stanley E.; and Olson, Harlan D., 4,191,276, Cl. 187-9.00E.

Casio Computer Co., Ltd.: *See—*

Kashio, Toshio, 4,191,999, Cl. 364-405.000.

Casper, Robert S. Forearm rest for fishing rods. 4,190,977, Cl. 43-21.200.

Cassell, Don S., to Combustion Engineering, Inc. Device to reduce local heat flux through a heat exchanger tube. 4,191,246, Cl. 165-134.00R.

Cassella Aktiengesellschaft: *See—*

Muller, Rolf; and Ribka, Joachim, 4,191,686, Cl. 260-147.000.

Castillo, Tomas R.: *See—*

Gardiner, Arthur L.; and Castillo, Tomas R., 4,191,088, Cl. 89-33.00C.

Caterpillar Tractor Co.: *See—*

Ashmun, Raymond V.; Baker, Steven R.; and Damerell, Jerry A., 4,191,356, Cl. 248-678.000.

Dezelan, Joseph E., 4,191,017, Cl. 60-420.000.

Fuzzell, Joe E., 4,191,951, Cl. 340-610.000.

Keske, Frank E., 4,191,244, Cl. 165-69.000.

Krolak, Ronald L.; and Nelson, Delbert G., 4,191,401, Cl. 280-796.000.

Ritter, Arthur J., Jr., 4,191,073, Cl. 74-764.000.

Roley, Robert D.; and Maguire, Roy L., 4,191,431, Cl. 305-18.000.

Cavagna, Giancarlo A., to Westvaco Corporation. Dry refining process and apparatus. 4,191,335, Cl. 241-17.000.

Caveney, Jack E.; and Moody, Roy A., to Panduit Corp. Electrical connector and method of fabricating a wire harness using the connector. 4,191,442, Cl. 339-99.00R.

Celanese Corporation: *See—*

Stackman, Robert W.; and Kuczynski, Edward J., 4,191,681, Cl. 260-45.70P.

Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See—*

Paulus, Philippe A.; and Economopoulos, Marios, 4,191,600, Cl. 148-142.000.

Centre National d'Etudes Spatiales: *See—*

Cacheux, Jean A., 4,191,593, Cl. 136-89.0CA.

Cha, Chang Y., to Occidental Oil Shale, Inc. Process for recovering carbonaceous values from in situ oil shale retorting. 4,191,251, Cl. 166-260.000.

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- Dezelan, Joseph E., to Caterpillar Tractor Co. Motor displacement control system. 4,191,017, Cl. 60-420.000.
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  - Boase, Elmer E.; DiFrancesco, Alphonse B.; and Ring, Stuart F., 4,191,465, Cl. 355-3.0SH.
- Digital Communications, Inc.: *See—*
  - Kirk, Donald, Jr., 4,191,968, Cl. 358-141.000.
- DiMatteo, Paul L.; and Diaferia, Henry V., to Solid Photography Inc. Invalid bed arrangement. 4,190,913, Cl. 5-81.00R.
- Dingeldein, Elvira: *See—*
  - Heusser, Dietrich; and Dingeldein, Elvira, 4,191,740, Cl. 424-14.000.
- Dischert, Robert A.; and Thorpe, Laurence J., to RCA Corporation. System for connecting a plurality of video sending television apparatus. 4,191,971, Cl. 358-210.000.
- Disston, Inc.: *See—*
  - Brown, Wayne R.; Jones, John E.; and Sherrill, Charles F., 4,191,917, Cl. 320-2.000.
- Dixon, Robert P.; and Shannon, Francis T., to General Electric Company. Power line protection circuit. 4,191,925, Cl. 325-474.000.
- Dixon, William R., to Hoffmann-La Roche Inc. Immunoassay for N-desmethyldiazepam. 4,191,738, Cl. 424-1.000.
- Dolling, Ludvik; Haag, Wilhelm; and Heindze, Herbert, to AGFA-Gevaert, A.G. Change over device for continuously casting various emulsions for photographic purposes. 4,191,213, Cl. 137-625.170.
- Dollman, David Y.; and O'Grady, Timothy J., to Union Carbide Corporation. Method and compositions for coating aluminum. 4,191,596, Cl. 148-6.270.
- Donegan, Charles E.: *See—*
  - Quinn, John E.; Wittenbrook, Lawrence S.; and Donegan, Charles E., 4,191,655, Cl. 252-60.000.
- Donzis, Byron A. Channel beam having heat transfer fluid volume defined therein. 4,191,243, Cl. 165-45.000.
- Dorlini, Peter J. Shopping cart with auxiliary sled attachment. 4,191,391, Cl. 280-9.000.
- Dorn, Silvia, to Hoffmann-La Roche Inc. Synergistic insecticidal composition. 4,191,773, Cl. 424-282.000.
- Dougherty, Lawrence W., to Zenith Radio Corporation. Color CRT with shadow mask having peripherally grooved skirt. 4,191,909, Cl. 313-402.000.
- Doveri, Carlo, to Piaggio & C. S.p.A. Two-stroke, water-cooled internal combustion engine having the cylinder liners removable from the cylinder block. 4,191,156, Cl. 123-193.00C.
- Doyle, Earl N.: *See—*
  - Baughman, Kenneth E.; and Doyle, Earl N., 4,191,254, Cl. 166-286.000.
- Doyle, Richard C., to Slater Electric Inc. Electrical connector means. 4,191,443, Cl. 339-103.00R.
- Drabb, Thomas W., Jr.; and Lovell, James B., to American Cyanamid Company. Pentadienone hydrazones, method for preparing the same, and insecticidal use thereof. 4,191,768, Cl. 424-251.000.
- Draper, George L., to Nav-All, Incorporated. Apparatus and methods for position determining and plotting. 4,192,002, Cl. 364-449.000.
- Drechsel, Erhart K.; and Sardisco, John B., to Pennzoil Company. Fluoride-free phosphate reactions. 4,191,734, Cl. 423-320.000.
- Dreher, Hans C.: *See—*
  - Chopko, Michael E.; and Dreher, Hans C., 4,191,198, Cl. 131-76.000.
- Drehman, Lewis E.: *See—*
  - Farha, Floyd, Jr.; and Drehman, Lewis E., 4,191,846, Cl. 585-440.000.
- Dresser Europe S.A.: *See—*
  - Ely, Peter, 4,191,426, Cl. 299-39.000.
- Drzewiecki, Tadeusz M., to United States of America, Army. Non-contact flueric temperature sensing method and apparatus. 4,191,052, Cl. 73-357.000.
- Dunne, William A. Water chillers and air cooled refrigeration units. 4,191,029, Cl. 62-428.000.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Chay, Dong M., 4,191,736, Cl. 423-482.000.
  - Cohen, Abraham B.; and Ni Fan, Roxy, 4,191,572, Cl. 430-260.000.
  - Cope, Andrew P., 4,191,607, Cl. 156-384.000.
  - Cupery, Willis E., 4,191,551, Cl. 71-86.000.
  - Edwards, Donald W.; Gorondy, Emery J.; and van Roggen, Arend, 4,191,961, Cl. 346-74.100.
  - Gregory, Walter A., 4,191,554, Cl. 71-95.000.
  - Reap, James J., 4,191,553, Cl. 71-92.000.
  - Schumacher, Frederick G.; and Yllo, Walter, 4,191,798, Cl. 428-95.000.
- Du Prez, Eddie: *See—*
  - Jourquin, Lucien; and Du Prez, Eddie, 4,191,815, Cl. 521-51.000.
- Durametallic Corporation: *See—*
  - Hershey, Lowell E., 4,191,386, Cl. 277-22.000.
- Duran, John A., to Avibank Mfg., Inc. Captive panel fastener assembly. 4,191,236, Cl. 151-69.000.
- Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Isothiourea compounds and pharmacological use. 4,191,769, Cl. 424-263.000.
- Duren, Gottfried: *See—*
  - Bender, Hans; Schnabel, Georg; Duren, Gottfried; and Zabel, Wolf, 4,191,591, Cl. 134-25.00R.
- Durling, Harold, to Midland-Ross Corporation. Air brake system with pressure holding valve. 4,191,428, Cl. 303-6.00M.
- Durr, Helmut E.; and Mock, George E., to Western Electric Company, Incorporated. Apparatus for supporting a reel of cable for rotation. 4,191,339, Cl. 242-54.00R.
- Durst A.G. Fabrik Fototechnischer Apparate: *See—*
  - Gandini, Mario, 4,191,466, Cl. 355-35.000.
- Dutta, Rathindra; Rosgen, Josef; and Rosemann, Gerd, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Carburetors for internal combustion engines. 4,191,149, Cl. 123-119.0EC.
- Dyno Industrier A.S: *See—*
  - Hiorth, Hans, 4,191,480, Cl. 366-336.000.
- E. R. Squibb & Sons, Inc.: *See—*
  - Hoehn, Hans, 4,191,831, Cl. 546-278.000.
- Easterwood, Michael L.: *See—*
  - Colley, Donna J.; and Easterwood, Michael L., 4,191,180, Cl. 128-207.170.
- Eastman Kodak Company: *See—*
  - Barnsbee, Clive D., 4,191,201, Cl. 134-104.000.
  - Boase, Elmer E.; DiFrancesco, Alphonse B.; and Ring, Stuart F., 4,191,465, Cl. 355-3.0SH.
- Eaton Corporation: *See—*
  - Keranen, John J., 4,191,066, Cl. 74-527.000.
  - Woodard, Tony O., 4,191,873, Cl. 200-302.000.
- Eaton, Edward M. Quick acting coupling. 4,191,406, Cl. 285-35.000.
- Eberle, John H.: *See—*
  - Strem, Robert C.; Strem, R. C.; and Eberle, John H., 4,191,153, Cl. 123-133.000.
- Ebersberger, Hans: *See—*
  - Amtmann, Heribert; Ebersberger, Hans; Eckardt, Guenter; and Greiner, Hans-Joachim, 4,191,891, Cl. 250-402.000.
- Eckardt, Guenter: *See—*
  - Amtmann, Heribert; Ebersberger, Hans; Eckardt, Guenter; and Greiner, Hans-Joachim, 4,191,891, Cl. 250-402.000.
- Eckhoff, Paul S. Method of preventing peel of old paint. 4,191,796, Cl. 427-408.000.
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  - Paulus, Philippe A.; and Economopoulos, Marios, 4,191,600, Cl. 148-142.000.

- Edens, Walter W.; and Ingerson, Quentin F., to Ampco-Pittsburgh Corporation. Copper-nickel-silicon-chromium alloy having improved electrical conductivity. 4,191,601, Cl. 148-160.000.
- Edwards, Donald W.; Gorondy, Emery J.; and van Roggen, Arend, to Du Pont de Nemours, E. I., and Company. Magnetic printing process and apparatus. 4,191,961, Cl. 346-74.100.
- Edwards, Richard L.; and Kesten, Martin, to Preston Engravers, Inc. Bearing block with air supply passage. 4,191,077, Cl. 83-99.000.
- Egan, John J.: *See—*
  - Lyons, William E.; and Egan, John J., 4,191,338, Cl. 241-245.000.
- Eguchi, Yasukata; and Makabe, Hachiro, to Janome Sewing Machine Co. Ltd. Buttonhole stitch control system for a sewing machine. 4,191,121, Cl. 112-158.00B.
- Ehrlinger, Friedrich J.; and Bock, Horst, to Zahnradfabrik Friedrichshafen AG. Transmission with hydrodynamic torque converter and retarder. 4,191,072, Cl. 74-732.000.
- Electric Power Research Institute, Inc.: *See—*
  - Lebowitz, Howard E.; Wolk, Ronald H.; Alpert, Seymour B.; Stewart, Norman C.; and Rovesti, William C., 4,191,700, Cl. 260-449.00M.
  - Sisk, Francis J.; and Veyo, Stephen E., 4,191,023, Cl. 62-79.000.
  - Sisk, Francis J., 4,191,026, Cl. 62-140.000.
- Electrometal Acos Finos S. A.: *See—*
  - De Souza, Jose D., 4,190,946, Cl. 29-527.700.
- Elf Union: *See—*
  - Chapelet, Gilbert; Lubin, Patrice; and Nouguier, Robert, 4,191,702, Cl. 260-453.0RY.
- Elfotec A.G.: *See—*
  - Camenisch, Hans; and Bachner, Jarmila, 4,191,567, Cl. 430-64.000.
- Eli Lilly and Company: *See—*
  - Conrad, Robert A.; Cullinan, George J.; Miller, Jean C.; and Gerzon, Koert, 4,191,688, Cl. 260-244.400.
  - Gorman, Marvin; Higgens, Calvin E.; and Nagarajan, Ramakrishnan, 4,191,763, Cl. 424-246.000.
  - Hudson, James L.; and Wagner, Jack F., 4,191,741, Cl. 424-19.000.
  - Su, Kenneth S.; Templeton, Robert J.; and Wikel, James H., 4,191,832, Cl. 548-306.000.
  - Zimmerman, Dennis M., 4,191,771, Cl. 424-267.000.
- Elias, Pauline. Bathtub mop. 4,190,922, Cl. 15-244.00A.
- Elliott, William G., to Roger's Plating Limited. Collapsible barbecue. 4,191,160, Cl. 126-9.00R.
- Elliott, William T.: *See—*
  - Salome, Frederik; and Elliott, William T., 4,191,672, Cl. 260-29.6PM.
- Ellson, Robert: *See—*
  - Jacoby, Marvin; Jacoby, Richard; and Ellson, Robert, 4,191,054, Cl. 73-421.50R.
- Ely, Peter, to Dresser Europe S.A. Improved sealing guard for a surface treating machine. 4,191,426, Cl. 299-39.000.
- Ely, Richard H.; and Haynes, Larry E. Pumping arrangements to conserve energy. 4,191,514, Cl. 417-529.000.
- Ema, Hideaki; Otomura, Satoshi; Imai, Chikara; and Sakai, Kiyoshi, to Ricoh Co., Ltd. Photosensitive material for electrophotography with dye containing overlayer. 4,191,568, Cl. 430-66.000.
- Emery Industries, Inc.: *See—*
  - Hinze, Adrien G.; and Stigter, Hendrik G., 4,191,669, Cl. 260-18.00N.
- Emmert, Raymond L. Bench folding leg and brace structure. 4,191,111, Cl. 108-132.000.
- Emmett, John L., to United States of America, Energy. Laser system using regenerative amplifier. 4,191,928, Cl. 330-4.300.
- Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, to Konishiroku Photo Industry Co., Ltd. Process for forming a photographic magenta dye image. 4,191,574, Cl. 430-387.000.
- Engelhart, John E.: *See—*
  - Gitlitz, Melvin H.; and Engelhart, John E., 4,191,698, Cl. 260-429.700.
- Entek Corporation: *See—*
  - Turner, James E., 4,191,522, Cl. 425-552.000.
- Environmental Research Institute of Michigan: *See—*
  - Polcyn, Fabian C.; Marshall, Robert E.; and Nichols, H. Janney, 4,191,940, Cl. 340-146.30B.
  - Walker, Jack L.; and Carrara, Walter G., 4,191,957, Cl. 343-5.0PC.
- Envirotech Corporation: *See—*
  - Whitmore, Edward A., 4,191,652, Cl. 210-274.000.
- Equipment Company of America: *See—*
  - Maldonado, Felipe, 4,191,112, Cl. 108-53.300.
- Ercolani, Dario: *See—*
  - Arrigoni, Virgilio; Ercolani, Dario; and Ferrini, Francesco, 4,191,047, Cl. 73-61.400.
- Erickson, Chad S., to Alternative Pioneering Systems, Inc. Food dehydrator. 4,190,965, Cl. 34-196.000.
- Ernst Leitz Wetzlar GmbH: *See—*
  - Schick, Dieter, 4,191,477, Cl. 356-373.000.
- ESB Incorporated: *See—*
  - Levy, Isaac I., 4,191,806, Cl. 429-56.000.
- ESGE-Marby GmbH & Co.: *See—*
  - Niemann, Heinz, 4,191,393, Cl. 280-289.00A.
- Essex Group, Inc.: *See—*
  - King, John A.; and O'Brien, Douglas W., 4,191,865, Cl. 179-178.000.
- Etablissement d'Occident: *See—*
  - Panigati, Pier L., 4,191,203, Cl. 137-112.000.
- Etablissements Francois Salomon et Fils: *See—*
  - Salomon, Georges P. J., 4,191,395, Cl. 280-613.000.
- Etat Francais Represente par le Ministere de l'Environment et du Cadre de Vie Laboratorie Central des Ponts et Chaussees: *See—*
  - Ray, Michel; and Nissoux, Jean L., 4,191,489, Cl. 404-51.000.
- Ethyl Corporation: *See—*
  - Niebylski, Leonard M., 4,191,536, Cl. 44-63.000.
- Ettridge, John P. Sealing system for a rotary machine. 4,191,515, Cl. 418-61.00R.
- Euteco S.p.A.: *See—*
  - Vargiu, Silvio; Manzoni, Pier L.; and Bernasconi, Mario, 4,191,723, Cl. 264-129.000.
- Eutectic Corporation: *See—*
  - Lyons, John E., 4,191,791, Cl. 427-224.000.
  - Patel, Mahesh S., 4,191,565, Cl. 75-252.000.
- Evans, Stephen M. Method for securing composition board panels together. 4,191,606, Cl. 156-288.000.
- Ewald, Otto: *See—*
  - Biermann, Peter; and Ewald, Otto, 4,191,396, Cl. 280-615.000.
- Exxon Research & Engineering Co.: *See—*
  - Cheysson, Philippe J.; Delons, Luc; and Le Guen, Yvon J., 4,191,651, Cl. 210-265.000.
  - Dauber, Louis, 4,191,633, Cl. 208-65.000.
- Fahnler, Friedrich: *See—*
  - Meyer, Rolf-Volker; Dhein, Rolf; Schneider, Kurt; and Fahnler, Friedrich, 4,191,819, Cl. 528-315.000.
- Fairchild Camera and Instrument Corporation: *See—*
  - Cairns, Bruce R.; and Crockett, David B., 4,191,943, Cl. 340-378.200.
  - Kant, Rajni, 4,191,964, Cl. 357-51.000.
- Farha, Floyd, Jr.; and Drehman, Lewis E., to Phillips Petroleum Company. Catalytic dehydrogenation process. 4,191,846, Cl. 585-440.000.
- Faris, Charles G.; and Manley, Edward H., to Swiss Aluminium Ltd. Interrupted circuit test with memory and display device. 4,191,954, Cl. 340-679.000.
- Farlow, Don M. Cattle chute with directional restricting means. 4,191,131, Cl. 119-155.000.
- Farmer, Stanley E., to Cascade Corporation. Telescopic ram. 4,191,092, Cl. 91-189.00R.
- Farmer, Stanley E.; and Olson, Harlan D., to Cascade Corporation. High-visibility two-stage mast assembly for lift trucks. 4,191,276, Cl. 187-9.00E.
- Farmitalia Carlo Erba S.p.A.: *See—*
  - Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,191,755, Cl. 424-180.000.
  - Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,191,756, Cl. 424-180.000.
- Farrow, Cecil W., to Bell Telephone Laboratories, Incorporated. Digital automatic gain control circuit. 4,191,995, Cl. 364-113.000.
- Fassett, Kendall G.; and Norris, Jeffery G. Portable chair and storage unit. 4,191,420, Cl. 297-194.000.
- Fastway Fasteners, Inc.: *See—*
  - Schuplin, Jerome T., 4,191,352, Cl. 248-317.000.
- Faudarole, Ernesto, to Stars Stampaggio Resine Speciali S.p.A. Break-sun shield operating as a collector. 4,191,165, Cl. 126-445.000.
- Faull, James K. Rocker fixtures. 4,191,355, Cl. 248-594.000.
- Feaster, Donavon L., to Sonitronics, Inc. Miniature switches. 4,191,867, Cl. 200-16.00R.
- Federal Screw Works: *See—*
  - Strand, Norman S., 4,191,677, Cl. 260-37.0EP.
- Feldmuhle Aktiengesellschaft: *See—*
  - Dessauer, Guido; Riecke, Kurt; and Land, Ferdinand, 4,191,403, Cl. 282-27.500.
- Fenton, John W. Tool assembly. 4,191,228, Cl. 145-50.00A.
- Fermi, Rudy; Pickard, John; Kocsis, Alex; Bratton, David; and Kasner, Gerald, to K and Manufacturing Company, Inc. Printing plate clamping assembly. 4,191,106, Cl. 101-415.100.
- Ferrara, Rudolph A., to General Motors Corporation. Vehicle seat. 4,191,417, Cl. 296-65.00R.
- Ferri, Johann W., to Luwa AG. Shutoff device. 4,191,358, Cl. 251-5.000.
- Ferrini, Francesco: *See—*
  - Arrigoni, Virgilio; Ercolani, Dario; and Ferrini, Francesco, 4,191,047, Cl. 73-61.400.
- Ferris, Ray L.; and Marulic, Walter J., to Pullman Incorporated. Articulated railway car. 4,191,107, Cl. 105-4.00R.
- Fiamm S.p.A. Fabbrica Italiana Accumulatori Motocarri Montecchio: *See—*
  - Frigo, Domenico, 4,191,944, Cl. 340-388.000.
- Fiducia, Christopher S. Child's drinking container. 4,191,302, Cl. 220-1.00R.
- Fieldcrest Mills, Inc.: *See—*
  - Boyer, Hugh J., 4,191,221, Cl. 139-426.00R.
- Figalla, Zdenek: *See—*
  - Uruba, Vladimir; and Figalla, Zdenek, 4,191,375, Cl. 273-65.0EB.
- Fikkers, John T. Garbage chute clearing device. 4,190,920, Cl. 15-104.050.
- Finch, Walter G.: *See—*
  - McLean, William B., deceased, 4,191,346, Cl. 244-3.160.
- Finger, Eugene P., to Curtis Instruments, Inc. Coulometric device for performing time integration. 4,192,009, Cl. 364-829.000.
- Firebaugh, Dale C.: *See—*
  - Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., 4,191,166, Cl. 126-430.000.
- Fischer, Arthur H.; Strow, Lawrence E.; and Bolth, Franklin A., to Mineric Corporation. Flotation process with use of xanthogen chloropropyl formate reagents. 4,191,641, Cl. 209-166.000.

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  - Dambrine, Francis, 4,191,586, Cl. 106-100.000.
- Fiziko-Teknichesky Institut Akademii Nauk Belorusskoi SSR: *See*—
  - Morgunsky, Evgeny I.; Sidorenko, Valery A.; and Plotnikov, Vladmir A., 4,191,075, Cl. 82-36.00R.
- Fleck, Raymond N.: *See*—
  - Young, Donald C.; and Fleck, Raymond N., 4,191,620, Cl. 204-149.000.
- Flex-o-lators, Inc.: *See*—
  - Mundell, Donald D., 4,191,424, Cl. 297-459.000.
- Flippo, Robert V., to Sundstrand Corporation. Power drive unit. 4,191,094, Cl. 91-506.000.
- Flossdorf, Josef; Schillig, Henning; and Schindler, Klaus-Peter, to Gesellschaft fur biotechnologische Forschung m.b.H. Interference optical sensing device for a centrifuge. 4,191,469, Cl. 356-23.000.
- Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. Various-15-deoxy-16-hydroxy-16-ethynyl and 16-ethynylsubstituted prostaglandins. 4,191,699, Cl. 260-448.20D.
- Foley, James W.: *See*—
  - Bloom, Stanley M.; Borror, Alan L.; and Foley, James W., 4,191,689, Cl. 548-207.000.
- Ford Motor Company: *See*—
  - Mallick, Pankaj K.; and Raghupathi, Narasimhan, 4,191,718, Cl. 264-26.000.
  - Ryder, William C.; and Hobbs, John C., 4,191,441, Cl. 339-17.00F.
  - Smartt, Herschel B.; and Kovacs, Bela V., 4,191,563, Cl. 75-130.00R.
  - Stickels, Charles A.; and Janotik, Adam M., 4,191,599, Cl. 148-16.500.
- Forney Engineering Company; *See*—
  - Holley, Thomas H.; and George, Robert J., 4,191,214, Cl. 137-630.200.
- Forsheda Gummifabrik AB: *See*—
  - Svedberg, Lennart, 4,191,384, Cl. 277-1.000.
- Fortner, John M.; and Kirkman, Richard T., to Owens-Illinois, Inc. Method and apparatus for forming glass containers. 4,191,548, Cl. 65-79.000.
- Foster Wheeler Energy Corporation: *See*—
  - Stevens, William D., 4,191,133, Cl. 122-235.00R.
- Foulletier, Louis: *See*—
  - Chabert, Pierre; and Foulletier, Louis, 4,191,666, Cl. 252-545.000.
- Fowler, Albert L., to Hughes Microelectronics Limited. Vacuum sensor. 4,191,145, Cl. 123-117.00A.
- Fox, Rosemary M., executrix: *See*—
  - Fox, Wayne L., deceased; and Fox, Rosemary M., executrix, 4,191,385, Cl. 277-3.000.
- Fox, Stephen N. W.; Snook, Edward H.; and Stimson, Norman F., deceased (by Stimson, Verity S., personal representative), to General Motors Corporation. Gearshift linkages for tilt-car vehicles. 4,191,271, Cl. 180-77.0TC.
- Fox, Wayne L., deceased; and by Fox, Rosemary M., executrix. Vacuum-sealed gas-bearing assembly. 4,191,385, Cl. 277-3.000.
- Franetzki, Manfred; Prestele, Karl; and Funke, Helmut, to Siemens Aktiengesellschaft. Apparatus for infusion of liquids. 4,191,181, Cl. 128-213.00R.
- Franke, Walter. Two-stroke engine with auxiliary fluid means. 4,191,141, Cl. 123-65.00A.
- Frederiksen, Thomas M.: *See*—
  - Redfern, Thomas P.; Connolly, Joseph J.; and Frederiksen, Thomas M., 4,191,900, Cl. 307-355.000.
- Frei, Heinz. Storage and transportation apparatus. 4,191,415, Cl. 294-67.00R.
- Freiberger, Ronald D.; and Reprogle, Richard D., to General Motors Corporation. Vacuum toggle. 4,191,090, Cl. 91-52.000.
- Freitag, Dieter: *See*—
  - Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Schreckenberg, Manfred; Freitag, Dieter; and Konig, Klaus, 4,191,705, Cl. 260-463.000.
- Frey, Christoph: *See*—
  - Jeanneret, Remy; Zwahlen, Gunther; Frey, Christoph; and Zographos, Georgios, 4,191,566, Cl. 430-31.000.
- Fricker, Rene: *See*—
  - Gross, Rolf; and Fricker, Rene, 4,191,532, Cl. 8-21.00A.
- Friedrich Kocks GMBH & Company: *See*—
  - Brauer, Hans; and Demny, Werner, 4,191,041, Cl. 72-235.000.
- Friedrich Wilhelm Schwing GmbH: *See*—
  - Schwing, Friedrich, 4,191,513, Cl. 417-517.000.
- Frigo, Domenico, to Fiamm S.p.A. Fabbrica Italiana Accumulatori Motocarri Montecchio. Electromagnetic sound generator and method of making same. 4,191,944, Cl. 340-388.000.
- Fritsch, Werner; Stache, Ulrich; and Lindner, Ernst, to Hoechst Aktiengesellschaft. 1-Aryloxy-2-hydroxy-3-aminopropanes. 4,191,765, Cl. 424-248.530.
- Fritz Eichenauer, Firma: *See*—
  - Meywald, Klaus; and Ohnmacht, Helmut, 4,191,880, Cl. 219-375.000.
- Froess, Jacob; and Spector, George. Battery lock. 4,191,034, Cl. 70-258.000.
- Fueyo, Albert, to Calco Manufacturing Company. Flap control circuitry. 4,191,347, Cl. 244-76.00A.
- Fuji Photo Film Co., Ltd.: *See*—
  - Fuseya, Yoshiharu; Inoue, Atsuo; Hara, Hiroshi; and Ikeda, Tadashi, 4,191,576, Cl. 430-512.00V.
  - Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sugiyama, Masatoshi, 4,191,679, Cl. 260-40.00R.
  - Toyama, Tadao; and Iwasaki, Masayuki, 4,191,573, Cl. 430-166.000.
- Fujii, Akira: *See*—
  - Cook, Elton S.; and Fujii, Akira, 4,191,779, Cl. 424-319.000.
- Fujiki, Makoto, to Canon Kabushiki Kaisha. Camera with automatic focus adjustment device. 4,191,460, Cl. 354-25.000.
- Fujisawa Pharmaceutical Co., Ltd.: *See*—
  - Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,191,762, Cl. 424-246.000.
- Fujita, Yoshiki: *See*—
  - Miki, Toshio; Fujita, Yoshiki; and Kawakami, Yoshihisa, 4,191,432, Cl. 308-187.000.
- Fujitsu Limited: *See*—
  - Zasio, John J.; and Samuels, Michael W., 4,191,916, Cl. 318-640.000.
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  - Franetzki, Manfred; Prestele, Karl; and Funke, Helmut, 4,191,181, Cl. 128-213.00R.
- Funke, Ludwig F. Closure. 4,191,315, Cl. 222-553.000.
- Funke, Ludwig F. Refrigerator storage system. 4,191,437, Cl. 312-305.000.
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  - Yonezawa, Kazuya; Kato, Yasushi; Furkawa, Hisao; and Azuma, Masaaki, 4,191,713, Cl. 525-102.000.
- Furman, Anthony H., to General Electric Company. Coal extrusion apparatus and process. 4,191,535, Cl. 44-10.00R.
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- Futer, Rudolph E., to Futerized Systems, Inc. Live storage system. 4,191,499, Cl. 406-34.000.
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  - Futer, Rudolph E., 4,191,499, Cl. 406-34.000.
- Fuzzell, Joe E., to Caterpillar Tractor Co. Device for sensing fluid forces. 4,191,951, Cl. 340-610.000.
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  - Kliegman, Jonathan M., 4,191,555, Cl. 71-95.000.
- GALA, narodni podnik: *See*—
  - Uruba, Vladimir; and Figalla, Zdenek, 4,191,375, Cl. 273-65.0EB.
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  - Andersson, Roland J. E.; Larsson, Lars-Ake L.; and Traven, Lars J. C., 4,191,359, Cl. 251-9.000.
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  - Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,191,769, Cl. 424-263.000.
- Gant, Preston L.: *See*—
  - Albright, James C.; and Gant, Preston L., 4,191,883, Cl. 250-259.000.
- Garbarino, Paul L.; Revitz, Martin; and Shepard, Joseph F., to International Business Machines Corporation. Making semiconductor structure with improved phosphosilicate glass isolation. 4,191,603, Cl. 148-187.000.
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  - Phillips, David C.; and Garbuny, Max, 4,191,622, Cl. 204-159.220.
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- Gardner, Lawrence R., to Chicago Bridge & Iron Company. Chain drive and automatic chain tensioning unit. 4,191,062, Cl. 74-242.11R.
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  - Wu, Chester C.; and Garner, Albert Y., 4,191,715, Cl. 260-927.00N.
- Garrison, Robert L.: *See*—
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- Garven, David H.: *See*—
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- Garvey, Louis P.; and Rhamstine, Chester F., to General Motors Corporation. Vehicle occupant restraint system. 4,191,399, Cl. 280-806.000.
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- Geaslin, William E., to Solartech Systems Corporation. Single-pipe hot water solar system. 4,191,329, Cl. 126-427.000.
- Gebruder Weiss K.G.: *See*—
  - Kneer, Franz X., 4,191,643, Cl. 210-4.000.

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  - Stillhard, Bruno; and Naf, Hans, 4,191,726, Cl. 264-517.000.
- Gelenkwellenbau GmbH: *See*—
  - Schultenkamper, Josef, 4,191,487, Cl. 403-337.000.
- Gelfand, Mikhail L.: *See*—
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  - Carter, Donald S., 4,191,578, Cl. 106-1.130.
- General Bathroom Products, Inc.: *See*—
  - Palka, James J., 4,190,929, Cl. 16-169.000.
- General Dynamics Corporation Pomona Division: *See*—
  - MacTurk, William L., 4,191,604, Cl. 156-245.000.
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  - Baliga, Bantval J., 4,191,602, Cl. 148-171.000.
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  - Pasco, Wayne D.; and Klug, Frederic J., 4,191,720, Cl. 264-43.000.
  - Pasco, Wayne D.; Klug, Frederic J.; and Prochazka, Svante, 4,191,721, Cl. 264-43.000.
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  - Smith, Donald F.; and Ostrelich, Michael J., 4,191,444, Cl. 339-107.000.
  - Uzgiris, Egidijus E.; and De Blois, Ralph W., 4,191,739, Cl. 424-12.000.
  - Webb, William M., 4,191,025, Cl. 62-135.000.
  - Wendt, Michael E.; and Beaver, Danny D., 4,191,245, Cl. 165-69.000.
- General Foods Corporation: *See*—
  - Schara, Robert E.; Keenberg, Larry E.; and Makar, Andrew, 4,191,781, Cl. 426-2.000.
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  - Stamm, Russell D., 4,191,058, Cl. 74-10.330.
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  - Ballantyne, David B., 4,191,409, Cl. 285-189.000.
  - Barnett, Ronald R., 4,191,392, Cl. 280-740.000.
  - Ferrara, Rudolph A., 4,191,417, Cl. 296-65.00R.
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  - Jones, John E., 4,191,014, Cl. 60-290.000.
  - Reed, James, R.; Way, Terrance; and Leal, Richard A., 4,191,126, Cl. 118-50.000.
  - Siewert, Robert M., 4,191,150, Cl. 123-119.00B.
  - Sweeney, Ralph B.; and Verdouw, Albert J., 4,191,011, Cl. 60-39.320.
  - Walch, Robert L., Jr.; Carey, Van P.; and Thomas, Michael J., 4,191,172, Cl. 126-421.000.
  - Wanamaker, Joseph L., 4,191,151, Cl. 123-119.0EC.
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  - Gruber, David P., 4,191,799, Cl. 428-96.000.
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  - Flossdorf, Josef; Schillig, Henning; and Schindler, Klaus-Peter, 4,191,469, Cl. 356-23.000.
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  - Poklekowski, Helmut; Seeberger, Klaus; and Harmsma, Gunther, 4,191,497, Cl. 405-296.000.
  - Weirich, Walter; and Rosenberg, Harry, 4,191,498, Cl. 405-302.000.
- Gibbons, Robert R.: *See*—
  - Halls, Kenneth F.; and Gibbons, Robert R., 4,191,589, Cl. 134-21.000.
- Gibson, George W., to Applied Magnetics Corporation. Thin film magnetic head assembly having a thin film magnetic transducer encapsulated in insulating bonding material. 4,191,983, Cl. 360-125.000.
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- Gitlitz, Melvin H.; and Engelhart, John E. Tricyclopentyltin fluoride. 4,191,698, Cl. 260-429.700.
- Givens, Edwin N.: *See*—
  - Plank, Charles J.; Rosinski, Edward J.; and Givens, Edwin N., 4,191,638, Cl. 208-139.000.
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- Gleasman, Vernon E.; and Benjamin, Robert N. Torque equalizer or unbalancer for a cross-axis planetary differential gear complex. 4,191,071, Cl. 74-715.000.
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- Goldberg, Jerome; and Bloch, Christopher D., to Spring Hill Laboratories, Inc. Adjusting automobile suspension system. 4,191,274, Cl. 180-282.000.
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- Goldner, Walther, to Recaro GmbH & Co. Headrest for vehicles. 4,191,423, Cl. 297-408.000.
- Golobay, Gary L.; Deubner, Ted E.; and Beugelsdyk, Anthony F. Throttle twist grip. 4,191,065, Cl. 74-489.000.
- Gonner, Winfried K., to Bodenseewerk Perkin-Elmer & Co., GmbH. Digital fluid flow rate controller. 4,191,215, Cl. 137-870.000.
- Gonzalez, Raymond J.: *See*—
  - Knox, William A.; and Gonzalez, Raymond J., 4,191,946, Cl. 340-506.000.
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  - Edwards, Donald W.; Gorondy, Emery J.; and van Roggen, Arend, 4,191,961, Cl. 346-74.100.
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  - Beni, Gerardo; Gottesfeld, Shimshon; McIntyre, James D. E.; and Shay, Joseph L., 4,191,453, Cl. 350-357.000.
- Gottlieb, Sheldon K. Method for promoting growth of new connective tissue over surface wounds. 4,191,751, Cl. 424-177.000.
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  - Busta, Heinz H., 4,191,057, Cl. 73-777.000.
- Gould, Marc I., to Rockwell International Corporation. Sodium purification apparatus and method. 4,191,558, Cl. 75-66.000.
- Gould, Penelope L.: *See*—
  - Burkwall, Morris P., Jr.; and Gould, Penelope L., 4,191,783, Cl. 426-335.000.
- Gould, Walter M. Method of molding a composite synthetic resin foam roofing structure having an integral skin thereon. 4,191,722, Cl. 264-45.500.
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- Grafen, Paul; Kroesche, Henning; Schulz, Bernhard; Paust, Joachim; and Pfohl, Sigberg, to BASF Aktiengesellschaft. Manufacture of tocopherol. 4,191,692, Cl. 260-345.500.
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  - Bradley, William E.; Timm, Gerald W.; Klatt, William M.; and Graves, Wayne H., 4,191,196, Cl. 128-733.000.
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  - Mullerheim, Steven B.; and Williams, Fred G., Jr., 4,191,647, Cl. 210-128.000.
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  - Braatz, Paul O.; Grinberg, Jan; Jacobson, Alexander D.; and Waldner, Michael, 4,191,454, Cl. 350-342.000.
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  - Buckley, Peter S.; and Grist, Dennis M., 4,191,252, Cl. 166-272.000.
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- Groothuis, Hermanus H. H., to U.S. Philips Corporation. Device for the display of data on a display apparatus. 4,191,956, Cl. 340-789.000.
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  - Morin, Wilfred F.; Martini, Joseph A.; Marich, Peter; and Gross, Harvey A., 4,191,378, Cl. 273-162.00R.
- Gross, Rolf; and Fricker, Rene, to Sandoz Ltd. Organic compounds. 4,191,532, Cl. 8-21.00A.
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- Gruber, Werner: *See—*
  - Woog, Heinrich; and Gruber, Werner, 4,191,772, Cl. 424-273.00R.
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  - Montress, Gary K.; Grudkowski, Thomas W.; and Reeder, Thomas M., 4,191,933, Cl. 333-151.000.
- Grudzinskas, Charles V.: *See—*
  - Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,191,699, Cl. 260-448.20D.
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  - Courten, Henry C.; and Mattal, Joseph P., 4,191,471, Cl. 356-154.000.
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  - Gmuer, Bruno; and Grundbacher, Willy, 4,191,004, Cl. 53-378.000.
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  - Sabon, Robert J., 4,191,859, Cl. 179-18.0FA.
  - Vrba, James J., 4,191,849, Cl. 178-69.100.
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  - Bouchard, Andre C.; Morris, James C.; and Garrison, Robert L., 4,191,947, Cl. 340-531.000.
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  - Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., 4,191,840, Cl. 562-453.000.
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  - Wright, Peter A., 4,191,560, Cl. 75-85.000.
- Gulf Research and Development Company: *See—*
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- Guttenplan, Jack D.; and Yancey, Herbert W., to Rockwell International Corporation. Instrument for detecting contamination on metallic surfaces by measuring surface potential differences. 4,191,920, Cl. 324-459.000.
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  - Hulland, Burton L.; and Litchford, George B., 4,191,958, Cl. 343-105.00R.
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  - O'Neal, Charles D., III; Blumle, Leo J.; and Hablanian, Marsbed, 4,191,512, Cl. 417-54.000.
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- Hagar, Donald K., to Damper Design, Inc. Multiple blade damper assembly. 4,191,212, Cl. 137-601.000.
- Hageman, Paul: *See—*
  - Gibson, James D. M.; and Hageman, Paul, 4,191,793, Cl. 427-276.000.
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  - Bernhardt, Jost; Hase, Georg; Hase, Peter; and Hagen, Klaus, 4,191,310, Cl. 222-5.000.
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  - Neff, Robert O.; White, Arthur K.; and Hahn, Norbert, 4,191,503, Cl. 414-401.000.
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- Hall, Wilbur S., to Union Carbide Corporation. Autodeposition process and composition. 4,191,676, Cl. 260-29.70R.
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  - Baker, Eugene E.; and Carter, Ernest E., Jr., 4,191,383, Cl. 277-1.000.
- Halls, Kenneth F.; and Gibbons, Robert R., to John J. Sundheim Family Estate, The, a part interest. Method and apparatus for cleaning carpets and surfaces using cleaning fluid. 4,191,589, Cl. 134-21.000.
- Hamilton, Artimus C., to Congoleum Corporation. Aqueous-alcoholic, foam-growth-controlling printing ink compositions. 4,191,581, Cl. 106-20.000.
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- Hammes, Alvin T.: *See—*
  - Allen, James R.; and Hammes, Alvin T., 4,191,308, Cl. 221-202.000.
- Hammett, Roy: *See—*
  - Blake, William S.; and Hammett, Roy, 4,191,313, Cl. 222-335.000.
- Hampton, Quentin L. Self washing belt strainer. 4,191,653, Cl. 210-396.000.
- Hampton, Ralph C. Locator for vertical reinforcing bars. 4,190,999, Cl. 52-687.000.
- Haney, Richard M.; Stillman, Robert A.; and Codrington, Robert S., to Varian Associates, Inc. Fast NMR acquisition processor. 4,191,919, Cl. 324-312.000.
- Hannen, Martin R.; and Charlesworth, David V. Tactile indicating device. 4,191,945, Cl. 340-407.000.
- Hansch, Theodor W. Method of and apparatus for measuring the absolute wavelength of a source of unknown frequency radiation. 4,191,473, Cl. 356-300.000.
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- Hara, Hiroshi: *See—*
  - Fuseya, Yoshiharu; Inoue, Atsuo; Hara, Hiroshi; and Ikeda, Tadashi, 4,191,576, Cl. 430-512.00V.
- Haraguchi, Keisuke: *See—*
  - Urano, Fumio; Haraguchi, Keisuke; and Arai, Akihiro, 4,191,463, Cl. 354-217.000.
- Hardman, Olin A. Support and cover restraining device for refuse containers. 4,191,297, Cl. 211-83.000.
- Harkins, Lane J. Toilet paper unrolling fixture. 4,191,317, Cl. 225-77.000.
- Harmsma, Gunther: *See—*
  - Poklekowski, Helmut; Seeberger, Klaus; and Harmsma, Gunther, 4,191,497, Cl. 405-296.000.
- Harrell, John B.; Barraclough, William F.; and Pederson, Curtis O., to Salem Furnace Co. Furnace for heating solids. 4,191,529, Cl. 432-98.000.
- Harrington, Alan L., to TRW Inc. Method to reduce breakage of V-grooved <100> silicon substrate. 4,191,788, Cl. 427-82.000.
- Harris, Richard M.; and Janos, Wilbert J., to Republic Steel Corporation. Electromagnetic flaw detection system and method incorporating improved automatic coil error signal compensation. 4,191,922, Cl. 324-225.000.
- Harris Semiconductor: *See—*
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  - Bickerton, Harry, 4,191,488, Cl. 403-370.000.
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  - Broudy, Charles E., 4,191,298, Cl. 211-126.000.
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  - Schindler, Rudolf; and Hartmann, Werner, 4,190,996, Cl. 52-309.130.
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- Harvell, Glenn M. Combination folding cushion and carrying assembly. 4,190,918, Cl. 5-465.000.
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  - Bernhardt, Jost; Hase, Georg; Hase, Peter; and Hagen, Klaus, 4,191,310, Cl. 222-5.000.
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- Hausdorff, Harry H. Portable travel expense tabulator. 4,192,006, Cl. 364-715.000.
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- Hermans, Johny C., to s.a. Texaco Belgium n.v. Bispiperazido phosphorus acid esters. 4,191,826, Cl. 544-337.000.
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- Herskind, Boris A. Convertible garment. 4,190,908, Cl. 2-213.000.
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- Hiorth, Hans, to Dyno Industrier A.S. Continuous flow static mixer for mixing powder and/or suspension materials with liquid materials. 4,191,480, Cl. 366-336.000.
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  - Sakai, Hisao, 4,191,855, Cl. 179-2.00A.
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- Hobart Corporation: *See—*
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  - Dixon, William R., 4,191,738, Cl. 424-1.000.
  - Dorn, Silvia, 4,191,773, Cl. 424-282.000.
  - Kompis, Ivan; and Wick, Alexander E., 4,191,758, Cl. 424-229.000.
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- Hoggan, Daniel H. Double clip lettering guide adjustment wedge. 4,191,450, Cl. 350-121.000.
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- Holley, Thomas H.; and George, Robert J., to Forney Engineering Company. Sequential operating mechanism for valves. 4,191,214, Cl. 137-630.200.
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  - Orem, Donald E.; Holmes, Vernon P.; and Bacsanyi, Thomas J., 4,191,055, Cl. 73-462.000.
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  - Suffern, Bruce C., 4,191,290, Cl. 206-150.000.
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  - Baker, Brian, 4,191,616, Cl. 203-44.000.
  - Glen, Alasdair T., 4,191,775, Cl. 424-304.000.
  - Parker, David G.; and Tompsett, Alan J., 4,191,709, Cl. 260-583.00R.
  - Smith, Clive P., 4,191,678, Cl. 260-40.00R.
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  - Ogle, Robert W., 4,191,225, Cl. 141-329.000.
- Inaba, Shizuo, to Pioneer Electronic Corporation. Turntable rotation control device. 4,191,382, Cl. 274-15.00R.
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- Ingerson, Quentin F.: *See—*
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- Institute of Gas Technology: *See—*
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- Instituto Franco Tosi S.p.A.: *See—*
  - Tosi, Carlo, 4,191,780, Cl. 424-324.000.
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  - Schmidt, Pierre E.; and Das, Mukunda B., 4,191,963, Cl. 357-23.000.
- Instruments S.A.: *See—*
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  - Brock, George W.; Pawlowski, Edward J.; and Stone, Ricardo R., 4,192,003, Cl. 364-487.000.
  - Garbarino, Paul L.; Revitz, Martin; and Shepard, Joseph F., 4,191,603, Cl. 148-187.000.
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  - King, Francis K.; Maurine, Ronald J.; and Wanek, Donald J., 4,191,980, Cl. 360-99.000.
  - Lewkowicz, Julian, 4,191,977, Cl. 360-66.000.
  - Luiz, Fernando A., 4,191,997, Cl. 364-200.000.
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  - Van Winkle, Howard E., 4,191,981, Cl. 360-99.000.
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  - Schreiber, William L.; Siano, James N.; Vock, Manfred H.; and Shuster, Edward J., 4,191,660, Cl. 252-174.110.
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  - Kerber, Dathan R.; Johnson, Orlin W.; and Week, Robert D., 4,191,006, Cl. 56-11.600.
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  - Hurley, John L.; Luch, Daniel; and Knipple, Charles J., 4,191,617, Cl. 204-40.000.
- International Paint Company Limited, The: *See—*
  - Hails, George; and Symonds, John D., 4,191,579, Cl. 106-15.00R.
- International Paper Company: *See—*
  - Nehring, John R., 4,191,204, Cl. 137-205.000.
- International Telephone and Telegraph Corporation: *See—*
  - Borsuk, Leslie M., 4,191,447, Cl. 350-96.200.
- Inventio AG: *See—*
  - Meyer, Fritz; Heine, Josef; and Vig, Ladislav, 4,191,277, Cl. 187-29.00R.
- Ionics, Incorported: *See—*
  - Hodgdon, Russell B., 4,191,811, Cl. 521-27.000.
- Irvine, John L., to Conoco, Inc. Increasing alumina slurry life. 4,191,737, Cl. 423-630.000.
- Isaacs, Roger H.; Sandelman, David; and Shprecher, Daniel E., to Rapidcircuit Corp. Integral thermostat-digital clock unit. 4,191,328, Cl. 236-46.00R.
- Ishida, Yasuhiko: *See—*
  - Katahira, Eturou; Yamaguchi, Shunzo; Kida, Masashi; Ishida, Yasuhiko; and Miyagi, Hideo, 4,191,013, Cl. 60-276.000.
- Ishidoshiro, Hiroshi: *See—*
  - Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,190,966, Cl. 34-242.000.
- Ishikawa, Shigewo: *See—*
  - Yanagisawa, Syozo; and Ishikawa, Shigewo, 4,191,870, Cl. 200-83.00P.
- Ishise, Kojiro: *See—*
  - Inagaki, Yutaka; Matsubara, Hironaga; and Ishise, Kojiro, 4,191,675, Cl. 260-29.300.
- Isleif, Karl-Heinz: *See—*
  - Jardin, Hans; Hirschberger, August; and Isleif, Karl-Heinz, 4,191,068, Cl. 74-625.000.
- Isovolta, Osterreichische Isolierstoffwerke Aktiengesellschaft: *See—*
  - Wehrmann, Felix; Voelkl, Rene-Hagen; and Wojta, Edwin, 4,191,667, Cl. 260-2.300.
- ITI Limited: *See—*
  - Mougin, Georges L., 4,191,491, Cl. 405-52.000.
- Ito, Fumio: *See—*
  - Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Fumio; Murakami, Hiroyashu; and Ito, Tadashi, 4,191,458, Cl. 354-23.00D.
- Ito, Sumio: *See—*
  - Nohira, Hidetaka; Ito, Sumio; and Ohki, Hisashi, 4,191,135, Cl. 123-30.00C.
- Ito, Susumu: *See—*
  - Sato, Katsutoshi; Ito, Susumu; Kanaya, Tadashi; Onishi, Hiroaki; Ichiishi, Tsuneo; and Osaka, Akira, 4,191,286, Cl. 193-40.000.
- Ito, Tadashi: *See—*
  - Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Fumio; Murakami, Hiroyashu; and Ito, Tadashi, 4,191,458, Cl. 354-23.00D.
- ITT Industries, Incorporated: *See—*
  - Belart, Juan; and Kircher, Dieter, 4,191,210, Cl. 137-505.130.
- Iwasaki, Masayuki: *See—*
  - Toyama, Tadao; and Iwasaki, Masayuki, 4,191,573, Cl. 430-166.000.
- Iwata, Shuzi: *See—*
  - Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; and Iwata, Shuzi, 4,191,974, Cl. 358-261.000.
- J. M. Huber Corporation: *See—*
  - Wason, Satish K.; and Mays, Robert K., 4,191,742, Cl. 424-49.000.
- J. M. Voith GmbH: *See—*
  - Schiel, Christian, 4,190,964, Cl. 34-114.000.
- Jack, James; and King, Godfrey A., to Bakelite Xylonite Limited. Process for producing multicellular articles from a blend of a crystalline polyolefin and a metal resinate. 4,191,719, Cl. 264-41.000.
- Jacobi, Edgar F.; and Madden, Mark R., to Colkhi, Inc. Irrigation pipe control system. 4,191,207, Cl. 137-344.000.
- Jacobson, Alexander D.: *See—*
  - Braatz, Paul O.; Grinberg, Jan; Jacobson, Alexander D.; and Waldner, Michael, 4,191,454, Cl. 350-342.000.
  - Grinberg, Jan; Braatz, Paul O.; Waldner, Michael; and Jacobson, Alexander D., 4,191,452, Cl. 350-342.000.
- Jacoby, Marvin; Jacoby, Richard; and Ellson, Robert, to Air Test Labs, Inc. Atmospheric sampling apparatus. 4,191,054, Cl. 73-421.50R.
- Jacoby, Richard: *See—*
  - Jacoby, Marvin; Jacoby, Richard; and Ellson, Robert, 4,191,054, Cl. 73-421.50R.
- Jagst, Peter, to Trutzschler GmbH & Co. KG. Apparatus for breaking textile fiber bales. 4,190,933, Cl. 19-81.000.
- Jahnke, Richard W., to Lubrizol Corporation, The. Hot melt metal working lubricants and methods for their application. 4,191,658, Cl. 252-32.70E.
- Jahnke, Richard W., to Lubrizol Corporation, The. Hot melt metal working lubricants. 4,191,801, Cl. 428-467.000.
- James D. Pauls and J. Claybrook Lewis and Associates, Limited: *See—*
  - Blake, William S.; and Hammett, Roy, 4,191,313, Cl. 222-335.000.
- James, Reginald S.; Grier, Thomas M.; and Schmidt, Robert D., to General Electric Company. Method and apparatus for aligning turbine internal components. 4,190,961, Cl. 33-180.00R.
- Janome Sewing Machine Co. Ltd.: *See—*
  - Eguchi, Yasukata; and Makabe, Hachiro, 4,191,121, Cl. 112-158.00B.
- Janos, Wilbert J.: *See—*
  - Harris, Richard M.; and Janos, Wilbert J., 4,191,922, Cl. 324-225.000.
- Janotik, Adam M.: *See—*
  - Stickels, Charles A.; and Janotik, Adam M., 4,191,599, Cl. 148-16.500.
- Janssen, Robert I., to Padco, Inc. Paint roller. 4,191,792, Cl. 427-260.000.
- Jardin, Hans; Hirschberger, August; and Isleif, Karl-Heinz, to Webasto-Werk W. Baier GmbH and Co. Drive arrangement for sliding roofs, window panes and other similar members in motor vehicles. 4,191,068, Cl. 74-625.000.
- Jarman, Alonzo B.: *See—*
  - Zeuner, Kenneth W.; and Jarman, Alonzo B., 4,191,091, Cl. 91-52.000.
- Jaulmes, Eric, to Ateliers de la Motobecane, S.A. Two-cycle internal combustion engine. 4,191,138, Cl. 123-73.00R.
- Jaunarajs, Karlis L., to Johns-Manville Corporation. Alkali resistant glass article and method of preparation. 4,191,585, Cl. 106-99.000.
- Jautelat, Manfred: *See—*
  - Arlt, Dieter; and Jautelat, Manfred, 4,191,712, Cl. 260-654.00D.
- Jeanneret, Remy; Zwahlen, Gunther; Frey, Christoph; and Zographos, Georgios, to Ciba-Geigy Corporation. Electrophotographic imaging process using anthraquinoid black pigments or metal complexes. 4,191,566, Cl. 430-31.000.
- Jelinek, Jerry G., to Parker-Hannifin Corporation. Sealing washer. 4,191,389, Cl. 277-166.000.
- Jenkins, Charles W., to Container Corporation of America. Method and apparatus for gas sample analysis. 4,191,541, Cl. 55-18.000.
- Jenkins, William A.: *See—*
  - Bussard, Charles B.; and Jenkins, William A., 4,191,608, Cl. 156-584.000.
- Jensen, Hans P., to Julius Koch USA Inc. Lockbar for fence post mounting. 4,191,361, Cl. 256-12.500.
- Johannessen, Paul R., to Megapulse Incorporated. Method of and apparatus for enabling soft-failure of modular power converter systems, including RF generator systems, embodying switching components in the power conversion. 4,191,992, Cl. 363-50.000.
- Johansson, Tryggve J. Door operating apparatus. 4,191,915, Cl. 318-464.000.
- John C. Lehman, Inc.: *See—*
  - Lehman, John C., 4,191,435, Cl. 312-266.000.
- John J. Sundheim Family Estate, The: *See—*
  - Halls, Kenneth F.; and Gibbons, Robert R., 4,191,589, Cl. 134-21.000.
  - Sundheim, John J., 4,191,590, Cl. 134-21.000.
- John Wyeth & Brother Ltd.: *See—*
  - Crossley, Roger, 4,191,761, Cl. 424-245.000.
- Johns-Manville Corporation: *See—*
  - Jaunarajs, Karlis L., 4,191,585, Cl. 106-99.000.
- Johnson, Bruce K., to Polaroid Corporation. Fixed focus exposure control apparatus with reverse spherical aberration corrective characteristic. 4,191,462, Cl. 354-139.000.
- Johnson, Claude D., to Akzona Incorporated. Freeze indicator. 4,191,125, Cl. 116-219.000.
- Johnson, George C.: *See—*
  - Audeh, Costandi A.; and Johnson, George C., 4,191,639, Cl. 208-309.000.
- Johnson & Johnson: *See—*
  - Lemieux, Francis P., 4,191,185, Cl. 128-214.400.
- Johnson, Michael E.: *See—*
  - Watson, James M.; and Johnson, Michael E., 4,191,614, Cl. 202-177.000.
- Johnson, Orlin W.: *See—*
  - Kerber, Dathan R.; Johnson, Orlin W.; and Week, Robert D., 4,191,006, Cl. 56-11.600.

Johnson, Paul H.: *See—*
  Uraneck, Carl A.; and Johnson, Paul H., 4,191,732, Cl. 423-243.000.
Johnson, Roy A., to Upjohn Company, The. Enlarged-hetero-ring prostacyclin analogs. 4,191,691, Cl. 260-345.200.
Johnson, Roy A.; and Sih, John C., to Upjohn Company, The. 5-Hydroxy-PGI_1 compounds. 4,191,822, Cl. 542-416.000.
Johnston, David B. R.; and Arth, Glen E., deceased (by Arth, Rose B.), to Merck & Co., Inc. N-substituted-17β-carbamoylandrost-4-en-3-one 5α reductase inhibitors. 4,191,759, Cl. 424-242.000.
Johnstun, Dick E. Marker manifold. 4,191,405, Cl. 282-28.00A.
Jolly, Richard D.: *See—*
  Croy, David G.; Rafferty, Andrew J.; and Jolly, Richard D., 4,191,256, Cl. 166-343.000.
Jones, Jeffery C. Tie down anchor. 4,191,108, Cl. 410-110.000.
Jones, John E., to General Motors Corporation. Power mode air switching diverter valve. 4,191,014, Cl. 60-290.000.
Jones, John E.: *See—*
  Brown, Wayne R.; Jones, John E.; and Sherrill, Charles F., 4,191,917, Cl. 320-2.000.
Jones, Marvin H.: *See—*
  Houk, Richard D.; and Jones, Marvin H., 4,191,064, Cl. 74-475.000.
Josefson, Arnold J.; and Munson, Loren R., to DeSoto, Inc. Electrodeposition of high molecular weight copolymers. 4,191,624, Cl. 204-181.00T.
Joseph L. Herman Family Trust, The: *See—*
  Herman, Joseph L., 4,191,127, Cl. 118-57.000.
Joslyn Mfg. and Supply Co.: *See—*
  Cunningham, Francis V., 4,191,908, Cl. 313-325.000.
Jouquey, Alain; Raynaud, Jean-Pierre; and Salmon, Jean, to Roussel Uclaf. Novel steroids. 4,191,697, Cl. 260-397.500.
Jourquin, Lucien; and Du Prez, Eddie, to s.a. PRB. Hydrophile polyurethane foam, process for preparing said foam and hydrophile product based on said foam. 4,191,815, Cl. 521-51.000.
Julius Koch USA Inc.: *See—*
  Jensen, Hans P., 4,191,361, Cl. 256-12.500.
Jusinskas, Julius, Jr.: *See—*
  McLaughlin, Donald W., 4,191,857, Cl. 179-15.0BY.
Jutila, Raymond E.: *See—*
  Wood, William P.; and Jutila, Raymond E., 4,191,982, Cl. 360-123.000.
K and Manufacturing Company, Inc.: *See—*
  Fermi, Rudy; Pickard, John; Kocsis, Alex; Bratton, David; and Kasner, Gerald, 4,191,106, Cl. 101-415.100.
Kabushiki Kaisah Maekawa Seisakusho: *See—*
  Inoue, Wahei, 4,191,027, Cl. 62-185.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
  Komatsu, Mitsuaki; and Yokoyama, Akinori, 4,191,015, Cl. 60-361.000.
Kabushiki Kaisha Seikosha: *See—*
  Oishi, Masaaki; Ashida, Itaru; and Suzuki, Tetsuro, 4,191,067, Cl. 74-577.00M.
Kabushiki Kaisha Suwa Seikosha: *See—*
  Kogure, Shigeru, 4,191,906, Cl. 310-370.000.
Kada, Tsuneo; Inoue, Tadashi; and Morita, Kazuyoshi, to Kanebo, Ltd. Isolation of anti-mutagenic factor from cabbage juice. 4,191,752, Cl. 424-177.000.
Kadatz, Rudolf: *See—*
  Nickl, Josef; Muller, Erich; Narr, Berthold; Haarmann, Walter; Schroter, Wolfgang; and Kadatz, Rudolf, 4,191,776, Cl. 424-308.000.
Kadono, Mamoru; Saigusa, Tetsuji; Nakajima, Yoshiyuki; and Koga, Tomohiro, to Bridgestone Tire Company, Limited. Reinforcing rubber hose. 4,191,217, Cl. 138-109.000.
Kahn, William M. Teletypewriter motor controlling. 4,191,848, Cl. 178-4.10R.
Kalfoglou, George, to Texaco Inc. Surfactant waterflood oil recovery method. 4,191,253, Cl. 166-275.000.
Kali-Chemie Pharma GmbH: *See—*
  Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ullrich; Hell, Insa; and Hempel, Reinhard, 4,191,770, Cl. 424-266.000.
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, to Fujisawa Pharmaceutical Co., Ltd. 2-Lower alkyl-7-substituted amino-2 or 3-cephem-4-carboxylic acid compounds. 4,191,762, Cl. 424-246.000.
Kanaya, Tadashi: *See—*
  Sato, Katsutoshi; Ito, Susumu; Kanaya, Tadashi; Onishi, Hiroaki; Ichiishi, Tsuneo; and Osaka, Akira, 4,191,286, Cl. 193-40.000.
Kanda, Atsushi: *See—*
  Nakajima, Kunihiko; Sato, Kyoshi; Iio, Toshimitsu; and Kanda, Atsushi, 4,191,866, Cl. 200-4.000.
Kanebo, Ltd.: *See—*
  Kada, Tsuneo; Inoue, Tadashi; and Morita, Kazuyoshi, 4,191,752, Cl. 424-177.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
  Yonezawa, Kazuya; Kato, Yasushi; Furkawa, Hisao; and Azuma, Masaaki, 4,191,713, Cl. 525-102.000.
  Yonezawa, Kazuya; Kato, Yasushi; Furukawa, Hisao; and Azuma, Masaaki, 4,191,714, Cl. 525-102.000.
Kaneyasu, Masataka: *See—*
  Miura, Yoshiaki; Kaneyasu, Masataka; and Okamoto, Akira, 4,191,731, Cl. 423-242.000.
Kant, Rajni, to Fairchild Camera & Instrument Corp. Headless resistor. 4,191,964, Cl. 357-51.000.
Kaplan, Donald H.: *See—*
  Springer, Joseph F.; and Kaplan, Donald H., 4,191,941, Cl. 340-166.00R.
Kaplan, Stephen J.; and Lengyel, Ladislaus S. Filtration device for filtering temperature controlled fluids. 4,191,648, Cl. 210-186.000.
Karasudani, Yasuo, to Tokico Ltd. Slidable support structure for a disc brake caliper. 4,191,278, Cl. 188-73.300.
Karpal, David L., to Teledyne Industries, Inc. Aircraft battery. 4,191,807, Cl. 429-176.000.
Kashio, Toshio, to Casio Computer Co., Ltd. System of displaying to a customer an amount of paper money delivered as a change. 4,191,999, Cl. 364-405.000.
Kask, Eugene, to Rogers Corporation. Liquid level indicating floats. 4,191,050, Cl. 73-322.500.
Kasner, Gerald: *See—*
  Fermi, Rudy; Pickard, John; Kocsis, Alex; Bratton, David; and Kasner, Gerald, 4,191,106, Cl. 101-415.100.
Kassai Kabushikikaisha: *See—*
  Kassai, Kenzo, 4,191,397, Cl. 280-647.000.
Kassai, Kenzo, to Kassai Kabushikikaisha. Baby carriage. 4,191,397, Cl. 280-647.000.
Kasselmann, John T., to Bendix Corporation, The. Trailer hitch. 4,191,394, Cl. 280-432.000.
Katahira, Eturou; Yamaguchi, Shunzo; Kida, Masashi; Ishida, Yasuhiko; and Miyagi, Hideo, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Device for purifying exhaust gases from internal combustion engine. 4,191,013, Cl. 60-276.000.
Kataoka, Nobuyuki; Takahashi, Takuya; Ohkawa, Fujio; and Anzai, Shiro, to Bridgestone Tire Company, Limited. Abrasion resistant rubber compositions. 4,191,671, Cl. 260-23.70M.
Kato, Fumio: *See—*
  Kuroda, Michio; Yamazaki, Yoshiaki; Namura, Kiyoshi; Kato, Fumio; Akatsu, Yasuaki; Morimoto, Daizo; and Ninomiya, Satoshi, 4,191,508, Cl. 416-196.00R.
Kato, Yasushi: *See—*
  Yonezawa, Kazuya; Kato, Yasushi; Furkawa, Hisao; and Azuma, Masaaki, 4,191,713, Cl. 525-102.000.
  Yonezawa, Kazuya; Kato, Yasushi; Furukawa, Hisao; and Azuma, Masaaki, 4,191,714, Cl. 525-102.000.
Katoh, Kazunobu: *See—*
  Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sugiyama, Masatoshi, 4,191,679, Cl. 260-40.00R.
Katoh, Tetsuya, to Hitachi Chemical Company, Ltd. Expandable particles of a styrene polymer having small particle size. 4,191,803, Cl. 428-407.000.
Katterheinrich, Fred H.; and Small, James R., to Hobart Corporation. Package labeling system and methd for applying a label to a package. 4,191,605, Cl. 156-285.000.
Katz, David H., to Scripps Clinic and Research Foundation. Induction of immunological tolerance. 4,191,668, Cl. 260-6.000.
Katzer, Hans: *See—*
  Kratel, Gunter; Stohr, Gunter; and Katzer, Hans, 4,191,587, Cl. 106-308.00Q.
Kaufman, Ernest D.: *See—*
  Begala, Arthur J., Jr.; and Kaufman, Ernest D., 4,191,645, Cl. 210-47.000.
Kaufman, John W., to United States of America, National Aeronautics and Space Administration. Wind wheel electric power generator. 4,191,505, Cl. 415-2.000.
Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
  Deutsch, Ralph; and Deutsch, Leslie J., 4,191,081, Cl. 84-1.030.
Kawai, Takeo: *See—*
  Kuramoto, Akio; and Kawai, Takeo, 4,191,272, Cl. 180-84.000.
Kawakami, Yoshihisa: *See—*
  Miki, Toshio; Fujita, Yoshiki; and Kawakami, Yoshihisa, 4,191,432, Cl. 308-187.000.
Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Fumio; Murakami, Hiroyashu; and Ito, Tadashi, to Canon Kabushiki Kaisha. Photographic information settiong display circuit. 4,191,458, Cl. 354-23.00D.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
  Komatsu, Tadaomi, 4,191,502, Cl. 414-140.000.
Kawashima, Kazumi: *See—*
  Takeshita, Masahiro; Kawashima, Kazumi; Ueda, Minoru; and Yamamoto, Keisuke, 4,191,924, Cl. 325-465.000.
Kawata, Shoji; and Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Engine idling speed control signal generator. 4,191,051, Cl. 73-347.000.
Kaye, Dianne, to Tripoint, Inc. Triaxial fabric pattern. 4,191,219, Cl. 139-383.00R.
Kazumasa, Suzuki: *See—*
  Yoshikazu, Nakajima; Kazumasa, Suzuki; and Tsuyoshi, Makino, 4,191,810, Cl. 435-177.000.
Kearney & Trecker Corporation: *See—*
  Kielma, Ervin J., 4,190,948, Cl. 29-568.000.
Keats, Albert B.; and Leggett, Dudley W., to United Kingdom Atomic Energy Authority. Safety circuits for coupling laddics in cascade. 4,192,013, Cl. 365-91.000.
Keeler, Robert J., to Abbott Laboratories. Removable digit engageable means for separating a catheter and stylet. 4,191,186, Cl. 128-214.400.
Keeling, K. Bailey, Jr.: *See—*
  Powell, John M.; and Keeling, K. Bailey, Jr., 4,191,434, Cl. 312-214.000.
Keenberg, Larry E.: *See—*
  Schara, Robert E.; Keenberg, Larry E.; and Makar, Andrew, 4,191,781, Cl. 426-2.000.

Keeny, Harry F., III, to Warner Electric Brake & Clutch Company. Helical spring coupling with programmable control collar. 4,191,283, Cl. 192-26.000.
Keith, Roger H., to Minnesota Mining and Manufacturing Company. Pivotably interlocking rigid heat-resistant tiles. 4,190,998, Cl. 52-591.000.
Keller, Dennis H. Tennis trainer device. 4,191,372, Cl. 273-29.00A.
Keller, Ervin J. Vehicle tire sun shield and method of installing same. 4,190,939, Cl. 29-451.000.
Keller, George E., II: *See—*
  Moyer, Charles E., Jr.; Keller, George E., II; Beisner, Robert W.; and Walker, Wellington E., 4,191,701, Cl. 260-450.000.
Kelly, Donald A. Dual conversion steam and electric solar power system. 4,191,164, Cl. 126-439.000.
Keranen, John J., to Eaton Corporation. Pushbutton locking attachment with tolerance compensating latch. 4,191,066, Cl. 74-527.000.
Kerber, Dathan R.; Johnson, Orlin W.; and Week, Robert D., to International Harvester Company. Floating cutterbar knife drive. 4,191,006, Cl. 56-11.600.
Kerchner, Charles F., Jr. Heating apparatus and controls therefor. 4,191,879, Cl. 219-358.000.
Kerner, William R.; and Morton, Jarred. Data reduction system. 4,192,010, Cl. 364-900.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter: *See—*
  Struck, Bernd D., 4,191,619, Cl. 204-104.000.
Kerr, John L., to United States of America, Army. Microstrip antenna with circular polarization. 4,191,959, Cl. 343-700.0MS.
Keske, Frank E., to Caterpillar Tractor Co. Modular heat exchanger with resilient mounting and sealing element. 4,191,244, Cl. 165-69.000.
Kessler & Luch GmbH: *See—*
  Gersch, Dietfried, 4,191,098, Cl. 98-40.00N.
Kesten, Martin: *See—*
  Edwards, Richard L.; and Kesten, Martin, 4,191,077, Cl. 83-99.000.
Keyworth, Donald A.; and Sudduth, Jerome R., to Tenneco Chemicals, Inc. Method of cleaning fouled heat exchangers and other equipment. 4,191,588, Cl. 134-2.000.
Kida, Masashi: *See—*
  Katahira, Eturou; Yamaguchi, Shunzo; Kida, Masashi; Ishida, Yasuhiko; and Miyagi, Hideo, 4,191,013, Cl. 60-276.000.
Kiefer, Gunther, to Adolf Illig Maschinenbau GmbH & Co. Sealing arrangement for a molding apparatus. 4,191,520, Cl. 425-387.100.
Kielma, Ervin J., to Kearney & Trecker Corporation. Vertical spindle machine tool with tiltable spindle and tiltable automatic tool changer. 4,190,948, Cl. 29-568.000.
Kihara, Kazuo: *See—*
  Ikeda, Masashi; and Kihara, Kazuo, 4,190,949, Cl. 29-571.000.
Kikuchi, Shoji: *See—*
  Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, 4,191,574, Cl. 430-387.000.
Kikuya, Satoshi: *See—*
  Furumoto, Mitsunobu; Yano, Osahiko; Kikuya, Satoshi; Kubo, Kanji; and Sakumoto, Hideki, 4,191,978, Cl. 360-75.000.
Kimball International, Inc.: *See—*
  Wilcox, Brian N.; Schroeder, Melvin J.; Whittington, Billy J.; and Robinson, John W., 4,191,083, Cl. 84-1.280.
King, Francis K.; Maurine, Ronald J.; and Wanek, Donald J., to International Business Machines Corporation. Transducers with tapered edge profiles and assembly thereof. 4,191,980, Cl. 360-99.000.
King, Gerald D. Clutch with fluid actuator. 4,191,284, Cl. 192-85.0AA.
King, Godfrey A.: *See—*
  Jack, James; and King, Godfrey A., 4,191,719, Cl. 264-41.000.
King, Henry L.: *See—*
  Rushing, John C.; Smith, William E.; and King, Henry L., 4,191,611, Cl. 162-273.000.
King, John A.; and O'Brien, Douglas W., to Essex Group, Inc. Loudspeaker padring and method of making the same. 4,191,865, Cl. 179-178.000.
Kinghorn, Mark D., Jr.: *See—*
  Kinghorn, Mark D., Sr.; and Kinghorn, Mark D., Jr., 4,191,303, Cl. 220-222.000.
Kinghorn, Mark D., Sr.; and Kinghorn, Mark D., Jr. Liquid storage tank sealing system. 4,191,303, Cl. 220-222.000.
Kingler, Karl H.; Thiemer, Klause; and Stroman, Fritz, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Maleic acid halfamides having blood pressure raising activity. 4,191,777, Cl. 424-316.000.
Kinney, Alfred W., to Phillips Petroleum Company. Pleated closure construction. 4,191,322, Cl. 229-5.800.
Kinsella, Florence A. Neck protector. 4,190,903, Cl. 2-60.000.
Kircher, Dieter: *See—*
  Belart, Juan; and Kircher, Dieter, 4,191,210, Cl. 137-505.130.
Kirchoff, Francis D., to Alco Electronic Products, Inc. Watertight seal for toggle switches. 4,191,387, Cl. 277-30.000.
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  Bender, Hans; Schnabel, Georg; Duren, Gottfried; and Zabel, Wolf, 4,191,591, Cl. 134-25.00R.
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  Schirmer, Klaus, 4,191,430, Cl. 303-109.000.
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Kondis, Thomas J., to Aluminum Company of America. Production of metallic powders. 4,191,557, Cl. 75-0.50A.

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- Konishiroku Photo Industry Co., Ltd.: *See—*
  - Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, 4,191,574, Cl. 430-387.000.
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- Kopp, Arthur R., to AMP Incorporated. Self-clocking circuit. 4,191,897, Cl. 307-234.000.
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  - Calistrat, Michael M., 4,191,030, Cl. 64-13.000.
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  - Grigorenko, Anatoly S.; Moroz, Jury A.; Kortusov, Leonid I.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,191,044, Cl. 72-354.000.
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  - Miki, Toshio; Fujita, Yoshiki; and Kawakami, Yoshihisa, 4,191,432, Cl. 308-187.000.
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  - Girguis, Sobhy L.; and Krude, Werner, 4,191,031, Cl. 64-21.000.
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  - Reitz, Richard J.; and Kruke, Edward J., 4,191,429, Cl. 303-58.000.
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- Kuehl, Guenter H., to Mobil Oil Corporation. Preparation of shape selective zeolite alpha as catalyst. 4,191,663, Cl. 252-455.00Z.
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  - Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,191,693, Cl. 260-345.90R.
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- Kulesza, Ralph J.: *See—*
  - Meyer, Burton C.; Kulesza, Ralph J.; and Imatt, Alex, 4,191,370, Cl. 272-120.000.
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  - Kurtz, Anthony D., 4,192,005, Cl. 364-571.000.
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  - Saitoh, Shigeru; and Suzuki, Noboru, 4,191,114, Cl. 110-248.000.
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  - Armistead, William H.; and Lachman, Irwin M., 4,191,583, Cl. 106-39.600.
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  - Coker, Thomas G.; Dempsey, Russell M.; and LaConti, Anthony B., 4,191,618, Cl. 204-98.000.
- Ladegast, Larry, Jr. Modular design of multi-sided awning for recreational vehicles. 4,191,418, Cl. 296-163.000.
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  - Hansson, Knut; and Larson, Lars, 4,191,493, Cl. 405-150.000.
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  - Miller, Wayne R.; Latham, David D.; and Spencer, Joseph C., 4,191,061, Cl. 74-108.000.
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  - Mattson, Frank J.; Lawler, John T.; Stegall, Jack L.; and Dawkins, Kenneth R., 4,191,209, Cl. 137-486.000.
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- Lawson, Leslie E., to Vickers Limited. Treating developed lithoplate with oleophilic composition. 4,191,569, Cl. 430-305.000.
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- Lee, Ronald N.: *See—*
  - Schwee, Leonard J.; Anderson, Wallace E.; Liu, Yuan-Jye; and Lee, Ronald N., 4,192,012, Cl. 365-87.000.
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  - Keats, Albert B.; and Leggett, Dudley W., 4,192,013, Cl. 365-91.000.
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  - Cheysson, Philippe J.; Delons, Luc; and Le Guen, Yvon J., 4,191,651, Cl. 210-265.000.
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- LeKander, William R., to Lyon Metal Products, Incorporated. Door closure apparatus. 4,191,412, Cl. 292-182.000.
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- Leonardi, Salvatore A., to United Technologies Corporation. Rotor blade attachment. 4,191,509, Cl. 416-219.00R.
- Leonhardt, Robert F., to Atwood Vacuum Machine Company. Pedestal for supporting a swivel seat in a vehicle. 4,191,353, Cl. 248-425.000.
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  - Blessing, Hubert, 4,191,118, Cl. 112-121.110.
- Levin, Anne F.: *See—*
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- Lewis, Jesse M. Method and means for treating timbers. 4,191,795, Cl. 427-351.000.
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- Light, Steven D.; and Ward, John W., to Union Oil Company of California. Aromatization process and catalyst. 4,191,637, Cl. 208-139.000.
- Limper, Klaus, to L. & C. Steinmuller GmbH. Method of separating granular pourable materials of different densities in a gaseous or liquid medium. 4,191,642, Cl. 209-495.000.
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  - Heyl, Walter, 4,191,095, Cl. 92-78.000.
- Lindfors, Kaj: *See—*
  - Stroucken, Klaus; Winberg, Torbjorn; and Lindfors, Kaj, 4,191,325, Cl. 233-20.00A.
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- Lindner, Ernst: *See—*
  - Fritsch, Werner; Stache, Ulrich; and Lindner, Ernst, 4,191,765, Cl. 424-248.530.
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  - Thelander, W. Vincent, Sr.; and Lindquist, Terry K., 4,191,285, Cl 192-111.00A.
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- Long, David K., to National Semiconductor Corporation. Single slope A/D converter with sample and hold. 4,191,942, Cl. 340-347.0AD.
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  - Neri, Amleto; Sanchioni, Sergio; and Nava, Carlo, 4,191,695, Cl. 260-346.760.
- Looser, Gottlieb. Winding apparatus and method. 4,191,341, Cl. 242-56.00A.
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  - Bulanda, John J.; and Lopata, John E., 4,191,334, Cl. 24-16.0PB.
- Lopez, Alfred R., to Hazeltine Corporation. Phased array antenna with reduced phase quantization error. 4,191,960, Cl. 343-854.000.
- Lor, Inc.: *See—*
  - Rives, Allen K., 4,191,255, Cl. 166-297.000.
- Lorain Products Corporation: *See—*
  - Becker, Dustin J., 4,192,007, Cl. 364-721.000.
- Lotens, Jan P.: *See—*
  - Tels, Martinus; Lotens, Jan P.; and Kivits, Hendrikus P. M., 4,191,728, Cl. 423-24.000.
- Louie, Albert: *See—*
  - Roth, Albert B.; and Louie, Albert, 4,191,016, Cl. 60-371.000.
- Louis, Eckhart: *See—*
  - Schiller, August; Louis, Eckhart; Bosch, Erhard; and Braunsperger, Karl, 4,191,817, Cl. 528-38.000.
- Lovelace, Donald E.: *See—*
  - Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., 4,191,166, Cl. 126-430.000.
- Lovell, James B.: *See—*
  - Drabb, Thomas W., Jr.; and Lovell, James B., 4,191,768, Cl. 424-251.000.
- Luber, Edward J., Jr.: *See—*
  - Warner, Paul L., Jr.; and Luber, Edward J., Jr., 4,191,766, Cl. 424-250.000.
  - Warner, Paul L., Jr.; and Luber, Edward J., Jr., 4,191,767, Cl. 424-250.000.
- Lubin, Patrice: *See—*
  - Chapelet, Gilbert; Lubin, Patrice; and Nouguier, Robert, 4,191,702, Cl. 260-453.0RY.
- Lubrizol Corporation, The: *See—*
  - Davis, Kirk E., 4,191,659, Cl. 252-45.000.
  - Jahnke, Richard W., 4,191,658, Cl. 252-32.70E.
  - Jahnke, Richard W., 4,191,801, Cl. 428-467.000.
- Luc, Andre R., to Tridon-Serflex S.A. Method of shaping a screw type clamping collar. 4,191,123, Cl. 113-116.00H.
- Lucas Industries Limited: *See—*
  - Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,191,137, Cl. 123-32.0EH.
  - Yarrow, Christopher J., 4,191,902, Cl. 310-68.00D.
- Lucas, Malcolm B.: *See—*
  - Byrd, Alan E.; Amneus, John S.; Lucas, Malcolm B.; Van Coney, Robert H.; and Van Loan, James E., 4,191,517, Cl. 425-286.000.
- Luch, Daniel: *See—*
  - Hurley, John L.; Luch, Daniel; and Knipple, Charles J., 4,191,617, Cl. 204-40.000.
- Luiz, Fernando A., to International Business Machines Corporation. Circuits and methods for multiple control in data processing systems. 4,191,997, Cl. 364-200.000.
- Luwa AG: *See—*
  - Ferri, Johann W., 4,191,358, Cl. 251-5.000.
- Luzzi, John J.: *See—*
  - Ramey, Chester E.; and Luzzi, John J., 4,191,682, Cl. 260-45.80N.
  - Ramey, Chester E.; and Luzzi, John J., 4,191,829, Cl. 546-222.000.
- Lyman, Harold T., Jr. Navigation devices. 4,190,962, Cl. 33-363.00K.
- Lyon Metal Products, Incorporated: *See—*
  - LeKander, William R., 4,191,412, Cl. 292-182.000.
- Lyonnet, Andre: *See—*
  - Lehmann, Robert; Lyonnet, Andre; and Rochas, Paul, 4,191,010, Cl. 57-208.000.

Lyons, James E.; Shinn, Robert W.; and Suld, George, to Suntech, Inc. Direct oxidation of toluene to benzylidene diacetate. 4,191,839, Cl. 560-241.000.

Lyons, John E., to Eutectic Corporation. Method of applying a metal coating to a metal substrate. 4,191,791, Cl. 427-224.000.

Lyons, William E.; and Egan, John J., to Bauer Bros. Co., The. Infeed disc for disc-type refiners. 4,191,338, Cl. 241-245.000.

M&T Chemicals Inc.: *See—*
Beiter, Charles B.; and Hafner, Leroy A., 4,191,580, Cl. 106-16.000.

Macan Engineering & Manufacturing Company, Inc.: *See—*
Belt, Kenneth W.; and McCarrell, Stuart G., 4,191,188, Cl. 128-303.130.

Macart Textiles (Machinery) Limited: *See—*
Marshall, Brian, 4,191,222, Cl. 139-453.000.

MacChesney, John B.; O'Connor, Paul B.; and Pearson, Arthur D., to Bell Telephone Laboratories, Incorporated. Optical fiber fabrication process. 4,191,545, Cl. 65-3.00A.

Machida, Keisuke. Defrosting method and cooling apparatus in a refrigeration system. 4,191,024, Cl. 62-80.000.

MacTurk, William L., to General Dynamics Corporation Pomona Division. Method of constructing three-dimensionally curved, knit wire reflector. 4,191,604, Cl. 156-245.000.

Madden, Mark R.: *See—*
Jacobi, Edgar F.; and Madden, Mark R., 4,191,207, Cl. 137-344.000.

Madgavkar, Ajay M.: *See—*
Swift, Harold E.; Madgavkar, Ajay M.; and Vogel, Roger F., 4,191,733, Cl. 423-245.000.

Magee, Walter L., Jr., to Stauffer Chemical Company. Composition containing polymeric alkoxysilane and refractory material and method for preparing a mold based thereon. 4,191,582, Cl. 106-38.200.

Magnetic Peripherals Inc.: *See—*
Wood, William P.; and Jutila, Raymond E., 4,191,982, Cl. 360-123.000.

Maguire, Roy L.: *See—*
Roley, Robert D.; and Maguire, Roy L., 4,191,431, Cl. 305-18.000.

Makabe, Hachiro: *See—*
Eguchi, Yasukata; and Makabe, Hachiro, 4,191,121, Cl. 112-158.00B.

Makar, Andrew: *See—*
Schara, Robert E.; Keenberg, Larry E.; and Makar, Andrew, 4,191,781, Cl. 426-2.000.

Maldonado, Felipe, to Equipment Company of America. Internestable storage rack. 4,191,112, Cl. 108-53.300.

Maling, Peter J.: *See—*
Brook, Neil R.; and Maling, Peter J., 4,191,287, Cl. 198-472.000.

Mallick, Pankaj K.; and Raghupathi, Narasimhan, to Ford Motor Company. Thick section compression molded composites. 4,191,718, Cl. 264-26.000.

Malterer, Thomas J., to State of Minnesota as represented by the Commissioner of Natural Resources. Peat sampling probe. 4,191,263, Cl. 173-28.000.

Mandai, Harufumi, to Murata Manufacturing Co., Ltd. Barium titanate semiconductor ceramic compositions. 4,191,665, Cl. 252-520.000.

Mandeville, Gordon J., to Bell Telephone Laboratories, Incorporated. Wave digital filter with multiplexed arithmetic hardware. 4,192,008, Cl. 364-724.000.

Manley, Edward H.: *See—*
Faris, Charles G.; and Manley, Edward H., 4,191,954, Cl. 340-679.000.

Mannesmann, Gerda: *See—*
Skuballa, Werner; Raduchel, Bernd; Schwarz, Norbert; Vorbruggen, Helmut; Muller, Bernd; Mannesmann, Gerda; Loge, Olaf; Schillinger, Ekkehardt; and Casals-Stenzel, Jorge, 4,191,694, Cl. 260-346.220.

Mansfield, Martin J., Jr., to Cla-Mar International Corp. Safety harness kit. 4,191,275, Cl. 182-3.000.

Manufacture Francaise d'Appareils Electriques de Mesure: *See—*
Koehler, Gerard; Aguettaz, Jean; Berthelot, Alain; Genter, Claude; and Arnoux, Daniel, 4,191,937, Cl. 335-230.000.

Manzoni, Pier L.: *See—*
Vargiu, Silvio; Manzoni, Pier L.; and Bernasconi, Mario, 4,191,723, Cl. 264-129.000.

Marcilly, Christian: *See—*
Cosyns, Jean; Marcilly, Christian; Miquel, Jean; and Le Page, Jean-Francois, 4,191,632, Cl. 585-483.000.

Marconi Company Limited, The: *See—*
Schelisch, Ernst F., 4,191,923, Cl. 325-4.000.

Mares, Frank: *See—*
Tovrog, Benjamin S.; Diamond, Steven E.; and Mares, Frank, 4,191,696, Cl. 260-348.330.

Marich, Peter: *See—*
Morin, Wilfred F.; Martini, Joseph A.; Marich, Peter; and Gross, Harvey A., 4,191,378, Cl. 273-162.00R.

Marlen Research Corporation: *See—*
Alley, Lewis F.; and White, James E., 4,191,309, Cl. 222-1.000.

Marotta, Nicholas G.: *See—*
Nappen, Bernard H.; and Marotta, Nicholas G., 4,191,786, Cl. 426-593.000.

Marotta, Vincent G., to North American Systems, Inc. Brewing apparatus for coffee and the like. 4,191,100, Cl. 99-299.000.

Marquis, Edward T.; and Yeakey, Ernest L., to Texaco Development Corp. Aromatic amine-amides and use as chain-extenders. 4,191,706, Cl. 260-559.00A.

Marsh, Paul A., Jr.; and Thomas, Tom A., III. Filler panel clip for prestressed concrete double-tee roof or floor construction. 4,190,994, Cl. 52-262.000.

Marshall, Brian, to Macart Textiles (Machinery) Limited. Weft presenter mechanisms. 4,191,222, Cl. 139-453.000.

Marshall, Robert E.: *See—*
Polcyn, Fabian C.; Marshall, Robert E.; and Nichols, H. Janney, 4,191,940, Cl. 340-146.30B.

Marshall, Robert M., to Allied Chemical Corporation. Non-yellowing biocide for control of bacteria in spin finish emulsions used on nylon yarn. 4,191,656, Cl. 252-8.600.

Marti, Franz: *See—*
Riethmann, Jean; Marti, Franz; and Somlo, Tibor, 4,191,621, Cl. 204-158.0HA.

Martin, Howard; and Norris, James P. Endodontic drill-file. 4,190,958, Cl. 433-102.000.

Martin, Jerry D.: *See—*
Winchell, David A.; Martin, Jerry D.; and Roe, Frank L., 4,191,231, Cl. 150-8.000.

Martin, Paul F. Incubator openings. 4,191,174, Cl. 128-1.00B.

Martini, Joseph A.: *See—*
Morin, Wilfred F.; Martini, Joseph A.; Marich, Peter; and Gross, Harvey A., 4,191,378, Cl. 273-162.00R.

Marulic, Walter J.: *See—*
Ferris, Ray L.; and Marulic, Walter J., 4,191,107, Cl. 105-4.00R.

Marv Hodges, Inc.: *See—*
Hodges, Marvin P., 4,191,451, Cl. 350-126.000.

Marvin Glass & Associates: *See—*
Kulesza, Ralph J.; Wildman, John R.; Burck, Joseph M.; Meyer, Burton C.; and Wozniak, Walter J., 4,191,374, Cl. 273-30.000.
Meyer, Burton C.; Kulesza, Ralph J.; and Imatt, Alex, 4,191,370, Cl. 272-120.000.

Mascia, Carmen T., to Continental Group, Inc., The. Can opener. 4,190,956, Cl. 30-410.000.

Mascia, Carmen T.: *See—*
Hasegawa, Gary K.; and Mascia, Carmen T., 4,190,957, Cl. 30-411.000.

Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. Novel daunomycin derivatives, their aglycones and the use thereof. 4,191,755, Cl. 424-180.000.

Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. Daunomycin derivatives, their aglycones and the use thereof041913468. 4,191,756, Cl. 424-180.000.

Mason, Derek. Apparatus for the elevation of coins. 4,191,472, Cl. 356-243.000.

Mason, John H.: *See—*
Batha, Howard D.; Mason, John H.; and Thompson, Stanley R., 4,191,730, Cl. 423-239.000.

Massa, Donald P.: *See—*
Massa, Frank, 4,191,904, Cl. 310-322.000.

Massa, Frank, to Stoneleigh Trust, Fred M. Dellorfano, Jr. & Donald P. Massa, Trustees, The. Method of manufacturing electroacoustic transducer elements which operate in the vicinity of resonance. 4,190,937, Cl. 29-25.350.

Massa, Frank, to Dellorfano, Fred M., Jr.; and Massa, Donald P., Trustees of The Stoneleigh Trust. Electroacoustic transducers of the flexural resonant vibratile type. 4,191,904, Cl. 310-322.000.

Masuda, Toyoaki: *See—*
Ogawa, Akira; Masuda, Toyoaki; and Miura, Osamu, 4,191,101, Cl. 99-323.300.

Matchell, Raymond, to Rank Organisation Limited, The. Flying spot single field scan telecine apparatus. 4,191,972, Cl. 358-214.000.

Mather, Douglas E.; Messenger, Edward T.; and Phillips, Bryn M., to Albright & Wilson Ltd. Highly concentrated alkyl sulphate solutions pourable at ambient. 4,191,704, Cl. 260-459.00R.

Mathers, James E.; and Yale, Ramon L., to GTE Sylvania Incorporated. Y_2O_3:Eu phosphor having increased brightness. 4,191,662, Cl. 252-301.40R.

Matsubara, Hironaga: *See—*
Inagaki, Yutaka; Matsubara, Hironaga; and Ishise, Kojiro, 4,191,675, Cl. 260-29.300.

Matsuda, Atsushi; and Kishigami, Jun, to Sony Corporation. Support for multi-point magnetic driver loudspeaker. 4,191,863, Cl. 179-115.50R.

Matsuda, Genji; and Hosobuchi, Fumio, to Oriental Photo Industrial Co., Ltd. Means for guiding sheet-like printing paper. 4,191,369, Cl. 271-299.000.

Matsuda, Yoshio, to Yoshida Kogyo K.K. Slide fastener stringer. 4,190,935, Cl. 24-205.16C.

Matsumoto, Hiromitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,191,136, Cl. 123-30.00C.

Matsumoto, Hiromitsu; and Kurahashi, Toshio, to Yamaha Hatsudoki Kabushiki Kaisha. Induction flow guide device for internal combustion engine intake manifold. 4,191,140, Cl. 123-52.0MB.

Matsumoto, Hiromitsu: *See—*
Yamashita, Ryuichi; and Matsumoto, Hiromitsu, 4,191,716, Cl. 261-23.00A.

Matsushita Electric Industrial Co., Ltd.: *See—*
Furumoto, Mitsunobu; Yano, Osahiko; Kikuya, Satoshi; Kubo, Kanji; and Sakumoto, Hideki, 4,191,978, Cl. 360-75.000.
Minakuchi, Hiroshi, 4,191,927, Cl. 328-157.000.
Ohkubo, Masaru; and Onoda, Tadayuki, 4,191,876, Cl. 219-10.55B.
Takeshita, Masahiro; Kawashima, Kazumi; Ueda, Minoru; and Yamamoto, Keisuke, 4,191,924, Cl. 325-465.000.
Tanaka, Junzo; Kusunoki, Shigeru; and Yoshimura, Hirofumi, 4,191,877, Cl. 219-10.55B.
Yoshino, Hironori, 4,191,921, Cl. 324-54.000.

Mattal, Joseph P.: *See—*
Courten, Henry C.; and Mattal, Joseph P., 4,191,471, Cl. 356-154.000.

Mattila, Alvin J. Body massaging apparatus. 4,191,179, Cl. 128-58.000.

Mattson, Frank J.; Lawler, John T.; Stegall, Jack L.; and Dawkins, Kenneth R., to Aeronca, Inc. Air flow sensing device for air conditioning systems. 4,191,209, Cl. 137-486.000.

Mattson, Rodney A.: *See—*
Huang, Sung-Cheng; Brunnett, Carl J.; and Mattson, Rodney A., 4,191,892, Cl. 250-445.00T.

Maurine, Ronald J.: *See—*
King, Francis K.; Maurine, Ronald J.; and Wanek, Donald J., 4,191,980, Cl. 360-99.000.

Max, Solomon M.; and Weedon, Hans J., to Analogic Corporation. Isolation amplifier with high linearity. 4,191,929, Cl. 330-10.000.

Mayer, Max, to Siemens Aktiengesellschaft. Circuit arrangement for determining input signals which exceed a given minimum duration, in particular for teleprinter exchanges. 4,191,847, Cl. 178-3.000.

Mayer, Norbert: *See—*
Wiezer, Hartmut; Pfahler, Gerhard; Mayer, Norbert; and Knorr, Harald, 4,191,684, Cl. 260-48.5NT.

Mayr, Anton; Stickl, Helmut; and Westhues, Melchior. Preparation for the treatment of Herpes zoster and other Herpes infections, as well as method for manufacture thereof. 4,191,745, Cl. 424-90.000.

Mays, Robert K.: *See—*
Wason, Satish K.; and Mays, Robert K., 4,191,742, Cl. 424-49.000.

Mazey, David J.: *See—*
Nelson, Richard S.; Hudson, John A.; and Mazey, David J., 4,191,735, Cl. 423-446.000.

McAllister, Jack G. Frame assembly. 4,190,990, Cl. 52-66.000.

McAllister, John A.: *See—*
Thomas, Philip J.; and McAllister, John A., 4,190,952, Cl. 29-629.000.

McArthur, Dennis P., to Union Oil Company of California. Thermally stable nickel-alumina catalysts useful for methanation and other reactions. 4,191,664, Cl. 252-466.00J.

McCarrell, Stuart G.: *See—*
Belt, Kenneth W.; and McCarrell, Stuart G., 4,191,188, Cl. 128-303.130.

McDavid, Robert F. Athletic brassiere. 4,191,192, Cl. 128-457.000.

McDowell, William J., to United States of America, Energy. Process for removal of mineral particulates from coal-derived liquids. 4,191,628, Cl. 208-8.00R.

McGrath, James W., Jr.; and Seifried, Paul E., to American Cyanamid Company. Empty capsule ejector. 4,191,294, Cl. 209-135.000.

McIntyre, James D. E.: *See—*
Beni, Gerardo; Gottesfeld, Shimshon; McIntyre, James D. E.; and Shay, Joseph L., 4,191,453, Cl. 350-357.000.

McKay, Gordon. Ski covers. 4,191,233, Cl. 150-52.00R.

McKenna, John F., Jr.: *See—*
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,191,049, Cl. 73-170.00A.

McKinniss, Chester L. Planetary transmission with plural power paths. 4,191,070, Cl. 74-682.000.

McLaughlin, Donald W., to Jusinskas, Julius, Jr.; and GTE Automatic Electric Laboratories Incorporated. Digital trunk supervisory decoder multiplexor for ground start or E&M signalling on a common T1 span. 4,191,857, Cl. 179-15.0BY.

McLean, LaVerne J., Mark A. McLean, and California Bank, trustees: *See—*
McLean, William B., deceased, 4,191,346, Cl. 244-3.160.

McLean, William B., deceased (by McLean, LaVerne J., Mark A. McLean, and California Bank, trustees), to Finch, Walter G. Target seeking gyro. 4,191,346, Cl. 244-3.160.

McMillan, Norman; and Dier, Henry M., to Dataproducts Corporation. Molded character belt with integral sleeves. 4,191,724, Cl. 264-255.000.

McMullan, James P. Bassinet. 4,190,916, Cl. 5-451.000.

Mead Corporation, The: *See—*
Lee, Yu-Sun; and Shackle, Dale R., 4,191,404, Cl. 282-27.500.

Meadows, George A., to Communications Satellite Corporation. Self-shielding small hole accel grid. 4,191,888, Cl. 250-396.00R.

"Meci" Materiel Electrique de Controle et Industriel: *See—*
Arvai, Tibor, 4,191,119, Cl. 112-158.00R.

Megapulse Incorporated: *See—*
Johannessen, Paul R., 4,191,992, Cl. 363-50.000.

Mendelson, Barry. Mixing chamber for use in plural medical liquid intravenous administration set. 4,191,183, Cl. 128-214.00R.

Merck & Co., Inc.: *See—*
Johnston, David B. R.; and Arth, Glen E., deceased, 4,191,759, Cl. 424-242.000.
Veber, Daniel F.; and Nutt, Ruth F., 4,191,754, Cl. 424-177.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Heusser, Dietrich; and Dingeldein, Elvira, 4,191,740, Cl. 424-14.000.
Klemm, Klaus; and Wahlig, Helmut, 4,191,743, Cl. 424-28.000.

Merger, Franz; Towae, Friedrich; and Penzel, Erich, to BASF Aktiengesellschaft. Acryloxy-alkylpropanals and methacryloxy-alkylpropanals. 4,191,838, Cl. 560-205.000.

Messenger, Edward T.: *See—*
Mather, Douglas E.; Messenger, Edward T.; and Phillips, Bryn M., 4,191,704, Cl. 260-459.00R.

Messenger, Joseph U., to Mobil Oil Corporation. Technique for cementing casing in an offshore well to seafloor. 4,191,250, Cl. 166-253.000.

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Schindler, Rudolf; and Hartmann, Werner, 4,190,996, Cl. 52-309.130.

Messrs. BIG Spielwavenfabrik Dipl.-Ing. Ernst A. Bettag: *See—*
Rahmstorf, Dietmar, 4,190,982, Cl. 46-161.000.

Meyer, Burton C.; Kulesza, Ralph J.; and Imatt, Alex, to Marvin Glass & Associates. Pneumatic exercising device. 4,191,370, Cl. 272-120.000.

Meyer, Burton C.: *See—*
Kulesza, Ralph J.; Wildman, John R.; Burck, Joseph M.; Meyer, Burton C.; and Wozniak, Walter J., 4,191,374, Cl. 273-30.000.

Meyer, Fritz; Heine, Josef; and Vig, Ladislav, to Inventio AG. Apparatus for transmitting control signals to elevators or the like. 4,191,277, Cl. 187-29.00R.

Meyer, Rolf-Volker; Dhein, Rolf; Schneider, Kurt; and Fahnler, Friedrich, to Bayer Aktiengesellschaft. Activated anionic polymerization of lactam with partially masked polyisocyanate. 4,191,819, Cl. 528-315.000.

Meywald, Klaus; and Ohnmacht, Helmut, to Fritz Eichenauer, Firma. Heating element for electrical appliance having a blower. 4,191,880, Cl. 219-375.000.

Michlin, Irving R., to Transkrit Corporation. Form for control and/or recording purposes. 4,191,402, Cl. 282-23.00R.

Microlife Technics, Inc.: *See—*
Vedamuthu, Ebenezer R., 4,191,782, Cl. 426-38.000.

Microwave and Electronic System Limited: *See—*
Woode, Alan D., 4,191,953, Cl. 340-552.000.

Midland-Ross Corporation: *See—*
Conybear, James G.; and Titus, Wallace J., 4,191,598, Cl. 148-16.500.
Durling, Harold, 4,191,428, Cl. 303-6.00M.

Miki, Toshio; Fujita, Yoshiki; and Kawakami, Yoshihisa, to Koyo Seiko Company Limited. Seal assembly for bearing. 4,191,432, Cl. 308-187.000.

Milkowski, Wolfgang: *See—*
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ullrich; Hell, Insa; and Hempel, Reinhard, 4,191,770, Cl. 424-266.000.

Miller, Arthur, to Hewlett-Packard Company. Coupling circuit with driven guard. 4,191,195, Cl. 128-696.000.

Miller, Jean C.: *See—*
Conrad, Robert A.; Cullinan, George J.; Miller, Jean C.; and Gerzon, Koert, 4,191,688, Cl. 260-244.400.

Miller, Ronald E.: *See—*
Van Linden, Jan H. L.; Miller, Ronald E.; and Herrick, Joseph R., 4,191,559, Cl. 75-68.00R.

Miller, Stephen J., to Chevron Research Company. Octane upgrading process for light paraffins using a combination of two palladium-zeolite catalysts. 4,191,634, Cl. 208-65.000.

Miller, Wayne R.; Latham, David D.; and Spencer, Joseph C., to Deere & Company. Solenoid-operated fuel flow control for fuel injection system. 4,191,061, Cl. 74-108.000.

Milner, Brian R.: *See—*
ta Huang, Kwang; and Milner, Brian R., 4,191,986, Cl. 361-58.000.

Minakuchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Mixing circuit for digital signals. 4,191,927, Cl. 328-157.000.

Mineric Corporation: *See—*
Fischer, Arthur H.; Strow, Lawrence E.; and Bolth, Franklin A., 4,191,641, Cl. 209-166.000.

Minigrip, Inc.: *See—*
Ausnit, Steven, 4,191,230, Cl. 150-3.000.

Minnesota Mining and Manufacturing Company: *See—*
Keith, Roger H., 4,190,998, Cl. 52-591.000.

Minolta Camera Kabushiki Kaisha: *See—*
Watanabe, Yutaka; Yamagishi, Seiichi; and Toriumi, Shiro, 4,191,455, Cl. 353-27.00A.

Miquel, Jean: *See—*
Cosyns, Jean; Marcilly, Christian; Miquel, Jean; and Le Page, Jean-Francois, 4,191,632, Cl. 585-483.000.

Mitchell, David S.; and Sageman, David R., to Chevron Research Company. Carbon dioxide acceptor process using countercurrent plug flow. 4,191,540, Cl. 48-197.00R.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Noda, Masahiro; and Tokui, Kazuo, 4,191,894, Cl. 307-116.000.
Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; and Iwata, Shuzi, 4,191,974, Cl. 358-261.000.
Tanaka, Katsufusa; and Tanakura, Isamu, 4,191,869, Cl. 200-61.45R.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Kumagai, Naotake, 4,191,242, Cl. 165-11.000.

Mitsubishi Petrochemical Co. Ltd.: *See—*
Seo, Iwao, 4,191,193, Cl. 128-675.000.

Mitsui Ocean Development & Engineering Co., Ltd.: *See—*
Muneta, Hiroto, 4,191,650, Cl. 210-242.00S.

Mitsui Sugar Co., Ltd.: *See—*
Yoshikazu, Nakajima; Kazumasa, Suzuki; and Tsuyoshi, Makino, 4,191,810, Cl. 435-177.000.

Mittleman, John; Warrell, Charles O.; and Peterson, Ronald S., to United States of America, Navy. Camera jig for underwater stereoscopic photography. 4,191,461, Cl. 354-64.000.

Miura, Osamu: *See—*
Ogawa, Akira; Masuda, Toyoaki; and Miura, Osamu, 4,191,101, Cl. 99-323.300.

Miura, Yoshiaki; Kaneyasu, Masataka; and Okamoto, Akira, to Nippon Steel Corporation. Wet process using steel slag for waste gas desulfurization. 4,191,731, Cl. 423-242.000.

- Miya, Yukio: *See—*
  - Yasuda, Yuh; Kizaki, Sigeru; and Miya, Yukio, 4,191,905, Cl. 310-344.000.
- Miyagi, Hideo: *See—*
  - Katahira, Eturou; Yamaguchi, Shunzo; Kida, Masashi; Ishida, Yasuhiko; and Miyagi, Hideo, 4,191,013, Cl. 60-276.000.
- Miyoshi, Tsutomu; Yanagita, Shuichi; and Komachi, Yushi, to Tanita Corporation. Digital weighing machine. 4,191,268, Cl. 177-210.00C.
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  - Audeh, Costandi A.; and Johnson, George C., 4,191,639, Cl. 208-309.000.
  - Kuehl, Guenter H., 4,191,663, Cl. 252-455.00Z.
  - Messenger, Joseph U., 4,191,250, Cl. 166-253.000.
  - Plank, Charles J.; Rosinski, Edward J.; and Givens, Edwin N., 4,191,638, Cl. 208-139.000.
- Mock, George E.: *See—*
  - Durr, Helmut E.; and Mock, George E., 4,191,339, Cl. 242-54.00R.
- Mohler, Johann G. Sprinkler-sealing device. 4,191,257, Cl. 169-90.000.
- Mojonnier Bros. Co.: *See—*
  - Mojonnier, Harry G.; and Skoli, Sigmund P., 4,191,784, Cl. 426-475.000.
- Mojonnier, Harry G.; and Skoli, Sigmund P., to Mojonnier Bros. Co. Method for preparing a carbonated beverage. 4,191,784, Cl. 426-475.000.
- Molina, Orlando G., to Rockwell International Corporation. Red-visible dye penetrant composition and method employing same. 4,191,048, Cl. 73-104.000.
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  - Bussard, Charles B.; and Jenkins, William A., 4,191,608, Cl. 156-584.000.
- Moncrief, Jack W.: *See—*
  - Popovich, Robert P.; Antwiler, Glen D.; and Moncrief, Jack W., 4,191,182, Cl. 128-214.00R.
- Monie, Yvan: *See—*
  - Beghi, Rene; Desmars, Gabriel; Monie, Yvan; and Pessayre, Raymond, 4,191,300, Cl. 212-41.000.
- Monsanto Company: *See—*
  - Wu, Chester C.; and Garner, Albert Y., 4,191,715, Cl. 260-927.00N.
- Monteith, Donald A., to Steiger Tractor, Inc. Control for tractor power takeoff shaft. 4,191,270, Cl. 180-53.00D.
- Montgomery, Harry T.; and Nagati, Rashed N., to Pennsylvania Engineering Corporation. Support for metallurgical vessels. 4,191,364, Cl. 266-246.000.
- Montress, Gary K.; Grudkowski, Thomas W.; and Reeder, Thomas M., to United Technologies Corporation. Differential mixing surface acoustic wave signal processor. 4,191,933, Cl. 333-151.000.
- Moody, Roy A.: *See—*
  - Caveney, Jack E.; and Moody, Roy A., 4,191,442, Cl. 339-99.00R.
- Moodysson, Bengt-Ove M.: *See—*
  - Bratt, Jan C.; Moodysson, Bengt-Ove M.; and Rosenqvist, Nils K. G., 4,191,019, Cl. 60-525.000.
- Mookherjee, Braja D.: *See—*
  - Withycombe, Donald A.; Mookherjee, Braja D.; Vock, Manfred H.; and Vinals, Joaquin F., 4,191,785, Cl. 426-536.000.
- Moore, David M., to Armstrong Store Fixture Corporation. Partition with resilient tongues for engaging perforated shelving. 4,191,299, Cl. 211-184.000.
- Morgan Construction Company: *See—*
  - Salter, Lowell S., Jr., 4,191,042, Cl. 72-247.000.
- Morgan, J. Robert. Article dispensing rack. 4,191,296, Cl. 211-49.00D.
- Morgunsky, Evgeny I.; Sidorenko, Valery A.; and Plotnikov, Vladmir A., to Fiziko-Teknichesky Institut Akademii Nauk Belorusskoi SSR. Rotary cutting tool. 4,191,075, Cl. 82-36.00R.
- Mori, Toshio: *See—*
  - Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, 4,191,518, Cl. 425-326.100.
- Morimoto, Daizo: *See—*
  - Kuroda, Michio; Yamazaki, Yoshiaki; Namura, Kiyoshi; Kato, Fumio; Akatsu, Yasuaki; Morimoto, Daizo; and Ninomiya, Satoshi, 4,191,508, Cl. 416-196.00R.
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  - Yamamura, Yuichi; Azuma, Ichiro; Sugimura, Kazuhisa; Morimoto, Hiroshi; Imada, Isuke; and Watanabe, Masazumi, 4,191,778, Cl. 424-317.000.
- Morin, Wilfred F.; Martini, Joseph A.; Marich, Peter; and Gross, Harvey A. Golf putter with detachable magnetic tape player cartridge. 4,191,378, Cl. 273-162.00R.
- Morishita, Yasomatsu, to Ryobi, Ltd. Spinning reel with improved drag and spool oscillation mechanisms. 4,191,343, Cl. 242-84.21R.
- Morita, Kazuyoshi: *See—*
  - Kada, Tsuneo; Inoue, Tadashi; and Morita, Kazuyoshi, 4,191,752, Cl. 424-177.000.
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  - Grigorenko, Anatoly S.; Moroz, Jury A.; Kortusov, Leonid I.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,191,044, Cl. 72-354.000.
- Morrell, Jacque C. Process for the production of shale oil from oil shales. 4,191,630, Cl. 208-11.00R.
- Morris, James C.: *See—*
  - Bouchard, Andre C.; Morris, James C.; and Garrison, Robert L., 4,191,947, Cl. 340-531.000.
- Morrison, Donald R. Concrete reinforcement mesh lifting tool. 4,191,360, Cl. 254-129.000.
- Mortensen, Henrik B.: *See—*
  - Christensen, Mogens A.; Hovmand, Svend; Laursen, Jens K.; and Mortensen, Henrik B., 4,190,963, Cl. 34-57.00A.
- Morton, Jarred: *See—*
  - Kerner, William R.; and Morton, Jarred, 4,192,010, Cl. 364-900.000.
- Moser, Roland: *See—*
  - Habermeier, Jurgen; and Moser, Roland, 4,191,835, Cl. 560-49.000.
  - Habermeier, Jurgen; and Moser, Roland, 4,191,836, Cl. 560-49.000.
- Motoren- und Turbinen-Union Friedrichshafen GmbH: *See—*
  - Deutschmann, Herbert, 4,191,152, Cl. 123-119.00C.
- Motorola Inc.: *See—*
  - Piesinger, Gregory H., 4,191,853, Cl. 179-1.0SA.
  - Ulmer, Richard W., 4,191,898, Cl. 307-264.000.
- Mougin, Georges L., to ITI Limited. Creating and maintaining a pool of fresh water on a tabular iceberg. 4,191,491, Cl. 405-52.000.
- Moyer, Charles E., Jr.; Keller, George E., II; Beisner, Robert W.; and Walker, Wellington E., to Union Carbide Corporation. Alcohol separation. 4,191,701, Cl. 260-450.000.
- Mueller, Hans W., to SCM Corporation. Typewriter key action. 4,191,483, Cl. 400-369.000.
- Muldery, Hendrikus; and Schubert, Heinz. Battery moulding of panels. 4,191,521, Cl. 425-432.000.
- Muldner, Lawrence C. Mat for growing lawns or other vegetation. 4,190,981, Cl. 47-56.000.
- Muller, Bernd: *See—*
  - Skuballa, Werner; Raduchel, Bernd; Schwarz, Norbert; Vorbruggen, Helmut; Muller, Bernd; Mannesmann, Gerda; Loge, Olaf; Schillinger, Ekkehardt; and Casals-Stenzel, Jorge, 4,191,694, Cl. 260-346.220.
- Muller, Erich: *See—*
  - Nickl, Josef; Muller, Erich; Narr, Berthold; Haarmann, Walter; Schroter, Wolfgang; and Kadatz, Rudolf, 4,191,776, Cl. 424-308.000.
- Muller, Rolf; and Ribka, Joachim, to Cassella Aktiengesellschaft. Process for preparing fiber-reactive phthalocyanine azo dyes. 4,191,686, Cl. 260-147.000.
- Mullerheim, Steven B.; and Williams, Fred G., Jr., to Great Circle Associates. Filtration system for household sewage. 4,191,647, Cl. 210-128.000.
- Multilam Corporation: *See—*
  - Deal, Robert S., 4,191,445, Cl. 339-252.00R.
- Mundell, Donald D., to Flex-o-lators, Inc. Support grid for upholstered seating. 4,191,424, Cl. 297-459.000.
- Muneta, Hiroto, to Mitsui Ocean Development & Engineering Co., Ltd. Oil-collecting ship for oil spills. 4,191,650, Cl. 210-242.00S.
- Munson, Loren R.: *See—*
  - Josefson, Arnold J.; and Munson, Loren R., 4,191,624, Cl. 204-181.00T.
- Murakami, Hiroyashu: *See—*
  - Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Fumio; Murakami, Hiroyashu; and Ito, Tadashi, 4,191,458, Cl. 354-23.00D.
- Murata Manufacturing Co., Ltd.: *See—*
  - Mandai, Harufumi, 4,191,665, Cl. 252-520.000.
- Murphy Chemical Company Limited, The: *See—*
  - Pianka, Max, 4,191,757, Cl. 424-225.000.
- Murphy, Kent D. Advertising or novelty device. 4,190,975, Cl. 40-2.00A.
- Murray, Thomas E.: *See—*
  - Anderson, Arthur H.; and Murray, Thomas E., 4,191,327, Cl. 236-42.000.
- Musgrave, Harry J. Chick processing apparatus. 4,191,130, Cl. 119-22.000.
- Myers, Dick T. Belt having a posture warning device. 4,191,949, Cl. 340-573.000.
- Mylander, Gerald D. Automatic fill-stop valve. 4,191,208, Cl. 137-393.000.
- N.A.D., Inc.: *See—*
  - Schreibor, Peter J.; and Schreiber, Joachim G. M., 4,191,952, Cl. 340-611.000.
- N L Industries, Inc.: *See—*
  - Roth, Albert B.; and Louie, Albert, 4,191,016, Cl. 60-371.000.
  - Sallman, Charles M., 4,191,525, Cl. 432-21.000.
- Nadelson, Jeffrey, to Sandoz, Inc. Substituted 4-hydroxy pyridones. 4,191,827, Cl. 546-116.000.
- Naf, Hans: *See—*
  - Stillhard, Bruno; and Naf, Hans, 4,191,726, Cl. 264-517.000.
- Nagahama, Yasuo, to Nippon Gakki Seizo Kabushiki Kaisha. Voltage-controlled oscillator. 4,191,932, Cl. 331-111.000.
- Nagano, Katsumi; and Taguchi, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Analog multiplexer. 4,191,856, Cl. 179-15.00A.
- Nagarajan, Ramakrishnan: *See—*
  - Gorman, Marvin; Higgens, Calvin E.; and Nagarajan, Ramakrishnan, 4,191,763, Cl. 424-246.000.
- Nagashima, Tomoyuki; Tanaka, Masayuki; and Shinomiya, Shigeo, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle body frame arrangement. 4,191,269, Cl. 180-27.000.
- Nagati, Rashed N.: *See—*
  - Montgomery, Harry T.; and Nagati, Rashed N., 4,191,364, Cl. 266-246.000.
- Nagatsu, Toshiharu; and Sakakibara, Shumpei, to Ajinomoto Co., Inc. Method of measuring dipeptidyl-amino-peptidase activity. 4,191,808, Cl. 435-24.000.
- Nagatsu, Toshiharu; and Sakakibara, Shumpei, to Ajinomoto Co., Inc. Method of measuring enzymatic activity using novel peptide derivatives. 4,191,809, Cl. 435-24.000.
- Nagle, William L. Method and apparatus for repetitively producing a noise-like audible signal. 4,191,175, Cl. 128-1.00C.

- Naidus, Edward S., to RCA Corporation. Double dome heat and smoke vent structure. 4,190,987, Cl. 52-1.000.
- Naifeh, Woodrow W. Adjustable spring tension pocketknife. 4,190,953, Cl. 30-155.000.
- Nakaguti, Osamu: *See—*
  - Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,191,762, Cl. 424-246.000.
- Nakajima, Kunihiko; Sato, Kyoshi; Iio, Toshimitsu; and Kanda, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Three-function switch for a motorcycle. 4,191,866, Cl. 200-4.000.
- Nakajima, Yoshiyuki: *See—*
  - Kadono, Mamoru; Saigusa, Tetsuji; Nakajima, Yoshiyuki; and Koga, Tomohiro, 4,191,217, Cl. 138-109.000.
- Nakamae, Masahiko: *See—*
  - Aomura, Kunio; Tokuyoshi, Fujiki; and Nakamae, Masahiko, 4,191,595, Cl. 148-1.500.
- Nakamura, Koji; Ogata, Masaru; and Nakatsuka, Takuzo, to Shibata Kogyo Co., Ltd; and Nippon Kokan Kabushiki Kaisha. Apparatus of effecting buoyancy on submerged articles. 4,191,494, Cl. 405-171.000.
- Nakamura, Shozo; Kuroda, Michio; and Oshima, Ryoichiro, to Hitachi, Ltd. Small power plant utilizing waste heat. 4,191,021, Cl. 60-657.000.
- Nakano, Jiro: *See—*
  - Nohira, Hidetaka; Kobashi, Kiyoshi; and Nakano, Jiro, 4,191,144, Cl. 123-117.00R.
- Nakatsuka, Takuzo: *See—*
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- Namura, Kiyoshi: *See—*
  - Kuroda, Michio; Yamazaki, Yoshiaki; Namura, Kiyoshi; Kato, Fumio; Akatsu, Yasuaki; Morimoto, Daizo; and Ninomiya, Satoshi, 4,191,508, Cl. 416-196.00R.
- Napco Security System Inc.: *See—*
  - Stockdale, Roy, 4,191,948, Cl. 340-539.000.
- Nappen, Bernard H.; and Marotta, Nicholas G., to National Starch and Chemical Corporation. Preparation of dispersible chocolate liquor by extrusion. 4,191,786, Cl. 426-593.000.
- Narr, Berthold: *See—*
  - Nickl, Josef; Muller, Erich; Narr, Berthold; Haarmann, Walter; Schroter, Wolfgang; and Kadatz, Rudolf, 4,191,776, Cl. 424-308.000.
- Nash, Franklin A. Thermoplastic check valve. 4,191,205, Cl. 137-375.000.
- National Optronics, Incorporated: *See—*
  - Sinklier, Robert W.; and Venditto, Virgil A., Jr., 4,191,501, Cl. 409-104.000.
- National Research Development Corporation: *See—*
  - Nelson, Richard S.; Hudson, John A.; and Mazey, David J., 4,191,735, Cl. 423-446.000.
  - Pollard, Harry C., 4,191,476, Cl. 356-349.000.
  - Wright, Basil M., 4,191,187, Cl. 128-218.00A.
- National Semiconductor Corporation: *See—*
  - Long, David K., 4,191,942, Cl. 340-347.0AD.
  - Redfern, Thomas P.; Connolly, Joseph J.; and Frederiksen, Thomas M., 4,191,900, Cl. 307-355.000.
- National Starch and Chemical Corporation: *See—*
  - Nappen, Bernard H.; and Marotta, Nicholas G., 4,191,786, Cl. 426-593.000.
- Nav-All, Incorporated: *See—*
  - Draper, George L., 4,192,002, Cl. 364-449.000.
- Nava, Carlo: *See—*
  - Neri, Amleto; Sanchioni, Sergio; and Nava, Carlo, 4,191,695, Cl. 260-346.760.
- NCR Corporation: *See—*
  - Craycraft, Donald G., 4,192,014, Cl. 365-104.000.
- Neff, Robert O.; White, Arthur K.; and Hahn, Norbert, to Rite-Hite Corporation. Device for releasably securing one unit against a second unit. 4,191,503, Cl. 414-401.000.
- Nehring, John R., to International Paper Company. Pressure responsive fluid collection system. 4,191,204, Cl. 137-205.000.
- Nelles, Wilhelm. Expanding fixture and hammering device therefor. 4,190,991, Cl. 52-127.000.
- Nelson, David J. Sash tie and holder. 4,190,904, Cl. 2-137.000.
- Nelson, Delbert G.: *See—*
  - Krolak, Ronald L.; and Nelson, Delbert G., 4,191,401, Cl. 280-796.000.
- Nelson, Donald C. Collapsible playhouse made of two equal parts. 4,190,978, Cl. 46-12.000.
- Nelson, Larry A., to Tektronix, Inc. Apparatus and method for testing color sequencing of secam color television signals. 4,191,965, Cl. 358-10.000.
- Nelson, Richard S.; Hudson, John A.; and Mazey, David J., to National Research Development Corporation. Growth of synthetic diamonds. 4,191,735, Cl. 423-446.000.
- Neri, Amleto; Sanchioni, Sergio; and Nava, Carlo, to Lonza Ltd. Process for obtaining maleic acid anhydride. 4,191,695, Cl. 260-346.760.
- Nesbitt, James G. Duplicator for bowling ball finger and thumb holes. 4,191,357, Cl. 249-205.000.
- Newman, Morris M. Blister package. 4,191,293, Cl. 206-467.000.
- NGK Spark Plug Co., Ltd.: *See—*
  - Nishio, Kanemitsu; Yoshida, Mitsutaka; Suzuki, Takashi; and Sunohara, Junji, 4,191,155, Cl. 123-148.00P.
- Ni Fan, Roxy: *See—*
  - Cohen, Abraham B.; and Ni Fan, Roxy, 4,191,572, Cl. 430-260.000.
- Nicholls, Anthony T., to Chloride Group Limited. Automatic electric battery charging apparatus. 4,191,918, Cl. 320-23.000.
- Nichols, H. Janney: *See—*
  - Polcyn, Fabian C.; Marshall, Robert E.; and Nichols, H. Janney, 4,191,940, Cl. 340-146.30B.
- Nicholson, James A. Animal grooming device. 4,190,924, Cl. 15-402.000.
- Nickl, Josef; Muller, Erich; Narr, Berthold; Haarmann, Walter; Schroter, Wolfgang; and Kadatz, Rudolf, to Boehringer Ingelheim GmbH. Biphenyl derivatives. 4,191,776, Cl. 424-308.000.
- Niebylski, Leonard M., to Ethyl Corporation. Fuel compositions for reducing combustion chamber deposits and hydrocarbon emissions of internal combustion engines. 4,191,536, Cl. 44-63.000.
- Niederst, Jean-Pierre; and Holzinger, Karl, to Herbert Kannegiesser Kommanditgesellschaft. Press apparatus for molding shaped bodies from foamable plastic materials. 4,191,523, Cl. 425-589.000.
- Niemann, Heinz, to ESGE-Marby GmbH & Co. Bicycle luggage carrier attachment arrangement. 4,191,393, Cl. 280-289.00A.
- Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.): *See—*
  - Sato, Hideharu, 4,191,882, Cl. 250-201.000.
- Nilsson, Lars A. H. Lifting device. 4,190,912; Cl. 5-83.000.
- Ninomiya, Satoshi: *See—*
  - Kuroda, Michio; Yamazaki, Yoshiaki; Namura, Kiyoshi; Kato, Fumio; Akatsu, Yasuaki; Morimoto, Daizo; and Ninomiya, Satoshi, 4,191,508, Cl. 416-196.00R.
- Nippon Electric Co., Ltd.: *See—*
  - Aomura, Kunio; Tokuyoshi, Fujiki; and Nakamae, Masahiko, 4,191,595, Cl. 148-1.500.
  - Araseki, Takashi, 4,191,858, Cl. 179-15.550.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  - Koike, Masahiko, 4,191,082, Cl. 84-1.190.
  - Nagahama, Yasuo, 4,191,932, Cl. 331-111.000.
- Nippon Kokan Kabushiki Kaisha: *See—*
  - Nakamura, Koji; Ogata, Masaru; and Nakatsuka, Takuzo, 4,191,494, Cl. 405-171.000.
- Nippon Soken, Inc.: *See—*
  - Katahira, Eturou; Yamaguchi, Shunzo; Kida, Masashi; Ishida, Yasuhiko; and Miyagi, Hideo, 4,191,013, Cl. 60-276.000.
- Nippon Steel Corporation: *See—*
  - Miura, Yoshiaki; Kaneyasu, Masataka; and Okamoto, Akira, 4,191,731, Cl. 423-242.000.
- Nishikawa, Masao; and Yamamoto, Hitoshi, to Honda Giken Kogyo Kabushiki Kaisha. Damping-force control mechanism in a hydraulic shock absorber. 4,191,281, Cl. 188-319.000.
- Nishikawa, Masao, to Shin-Shirasuna Electric Corporation. Stereophonic sense enhancing apparatus. 4,191,852, Cl. 179-1.00G.
- Nishio, Kanemitsu; Yoshida, Mitsutaka; Suzuki, Takashi; and Sunohara, Junji, to NGK Spark Plug Co., Ltd. Internal combustion engine ignition noise preventing device. 4,191,155, Cl. 123-148.00P.
- Nissan Motor Company, Limited: *See—*
  - Inasawa, Hideho; and Akiyama, Yoshinori, 4,191,422, Cl. 297-391.000.
- Nissoux, Jean L.: *See—*
  - Ray, Michel; and Nissoux, Jean L., 4,191,489, Cl. 404-51.000.
- Nist, Edward. Lift assembly. 4,191,416, Cl. 294-74.000.
- Noda, Masahiro; and Tokui, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Proximity detector. 4,191,894, Cl. 307-116.000.
- Nohira, Hidetaka; Ito, Sumio; and Ohki, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,191,135, Cl. 123-30.00C.
- Nohira, Hidetaka; Kobashi, Kiyoshi; and Nakano, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method for controlling ignition timing in an internal combustion engine. 4,191,144, Cl. 123-117.00R.
- Nolte, Hans-Henning, to BFG Glassgroup. Method of forming a layer of material from a solution. 4,191,805, Cl. 428-539.000.
- Nonogaki, Saburo; Kohashi, Takahiro; and Hatano, Yoshio, to Hitachi, Ltd. Method of pattern forming in a photosensitive composition having a reciprocity law failing property. 4,191,571, Cl. 430-335.000.
- Norris, James P.: *See—*
  - Martin, Howard; and Norris, James P., 4,190,958, Cl. 433-102.000.
- Norris, Jeffery G.: *See—*
  - Fassett, Kendall G.; and Norris, Jeffery G., 4,191,420, Cl. 297-194.000.
- Norsk Hydro A.S.: *See—*
  - Skaadel, Johannes; and Omdal, Bjarne, 4,191,229, Cl. 150-1.000.
- North American Systems, Inc.: *See—*
  - Marotta, Vincent G., 4,191,100, Cl. 99-299.000.
- Nouguier, Robert: *See—*
  - Chapelet, Gilbert; Lubin, Patrice; and Nouguier, Robert, 4,191,702, Cl. 260-453.0RY.
- Novo Laboratories, Inc.: *See—*
  - Spina, Joseph; and Weibel, Michael K., 4,191,176, Cl. 128-1.00R.
- Nutt, Ruth F.: *See—*
  - Veber, Daniel F.; and Nutt, Ruth F., 4,191,754, Cl. 424-177.000.
- N.V. Optische Industrie "De Oude Delft": *See—*
  - Geluk, Ronald J., 4,191,890, Cl. 250-402.000.
- Oberg, Carl L.; and Hood, George A., to Rockwell International Corporation. Dense-phase feeder method. 4,191,500, Cl. 406-146.000.
- O'Brien, Douglas W.: *See—*
  - King, John A.; and O'Brien, Douglas W., 4,191,865, Cl. 179-178.000.
- Occidental Oil Shale, Inc.: *See—*
  - Cha, Chang Y., 4,191,251, Cl. 166-260.000.
- O'Connor, Paul B.: *See—*
  - MacChesney, John B.; O'Connor, Paul B.; and Pearson, Arthur D., 4,191,545, Cl. 65-3.00A.

- Ogata, Masaru: *See—*
  - Nakamura, Koji; Ogata, Masaru; and Nakatsuka, Takuzo, 4,191,494, Cl. 405-171.000.
- Ogawa, Akira; Masuda, Toyoaki; and Miura, Osamu, to Toshiba Kikai Kabushiki Kaisha. Apparatus for preparing a cup of hot drink. 4,191,101, Cl. 99-323.300.
- Ogle, Robert W., to IMS Limited. Pharmaceutical cocktail package. 4,191,225, Cl. 141-329.000.
- O'Grady, Timothy J.: *See—*
  - Dollman, David Y.; and O'Grady, Timothy J., 4,191,596, Cl. 148-6.270.
- Ohi, Fumio: *See—*
  - Okabe, Hiromichi; Kishimoto, Kiyomi; and Ohi, Fumio, 4,191,708, Cl. 260-582.000.
- Ohkawa, Fujio: *See—*
  - Kataoka, Nobuyuki; Takahashi, Takuya; Ohkawa, Fujio; and Anzai, Shiro, 4,191,671, Cl. 260-23.70M.
- Ohki, Hisashi: *See—*
  - Nohira, Hidetaka; Ito, Sumio; and Ohki, Hisashi, 4,191,135, Cl. 123-30.00C.
- Ohkubo, Masaru; and Onoda, Tadayuki, to Matsushita Electric Industrial Co., Ltd. Microwave oven having radiation detector. 4,191,876, Cl. 219-10.55B.
- Ohlsson, Jarl E. S. I., to Sisenca S.A. Printing apparatus. 4,191,105, Cl. 101-415.100.
- Ohnmacht, Helmut: *See—*
  - Meywald, Klaus; and Ohnmacht, Helmut, 4,191,880, Cl. 219-375.000.
- Oishi, Masaaki; Ashida, Itaru; and Suzuki, Tetsuro, to Kabushiki Kaisha Seikosha. Ratchet feed mechanism. 4,191,067, Cl. 74-577.00M.
- Okabe, Hiromichi; Kishimoto, Kiyomi; and Ohi, Fumio, to Sumitomo Chemical Company, Limited. Process for preparing and purifying p-phenylenediamine. 4,191,708, Cl. 260-582.000.
- Okabe, Katsuhiko, to Copal Company Limited. Printer having swingable printing character supporting endless belts. 4,191,104, Cl. 101-93.140.
- Okamoto, Akira: *See—*
  - Miura, Yoshiaki; Kaneyasu, Masataka; and Okamoto, Akira, 4,191,731, Cl. 423-242.000.
- Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sugiyama, Masatoshi, to Fuji Photo Film Co., Ltd. Photographic polyester film support. 4,191,679, Cl. 260-40.00R.
- Oku, Teruo: *See—*
  - Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,191,762, Cl. 424-246.000.
- Oldani, Melchiorre: *See—*
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  - Specht, Steven J., 4,191,627, Cl. 204-296.000.
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  - Fortner, John M.; and Kirkman, Richard T., 4,191,548, Cl. 65-79.000.
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- Patel, Mahesh S., to Eutectic Corporation. Flame spray powder mix. 4,191,565, Cl. 75-252.000.
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- Paulos, Louis B.: *See—*
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  - Ahlgren, David W.; Hassell, David A.; and Zimmer, Elvis S., 4,191,881, Cl. 219-388.000.
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- Pawlowski, Edward J.: *See—*
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  - MacChesney, John B.; O'Connor, Paul B.; and Pearson, Arthur D., 4,191,545, Cl. 65-3.00A.
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  - Harrell, John B.; Barraclough, William F.; and Pederson, Curtis O., 4,191,529, Cl. 432-98.000.
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  - Montgomery, Harry T.; and Nagati, Rashed N., 4,191,364, Cl. 266-246.000.
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  - Drechsel, Erhart K.; and Sardisco, John B., 4,191,734, Cl. 423-320.000.

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  - Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,191,693, Cl. 260-345.90R.
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- Pharmaco, Inc.: *See—*
  - Larson, Roger R., 4,191,654, Cl. 210-451.000.
- Philip A. Hunt Chemical Corp.: *See—*
  - Sykes, Donald J.; and Pratt, Louis D., 4,191,575, Cl. 430-418.000.
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  - Cheng, Paul J., 4,191,542, Cl. 55-96.000.
  - Farha, Floyd, Jr.; and Drehman, Lewis E., 4,191,846, Cl. 585-440.000.
  - Kinney, Alfred W., 4,191,322, Cl. 229-5.800.
  - Stewart, William S.; and Hobbs, James W., 4,191,511, Cl. 417-18.000.
  - Swanson, Billy L., 4,191,657, Cl. 252-8.55C.
  - Uraneck, Carl A.; and Johnson, Paul H., 4,191,732, Cl. 423-243.000.
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- Pierce, Wendel D. Method for constructing a shrubbery shaper. 4,190,984, Cl. 47-58.000.
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- Pioneer Electronic Corporation: *See—*
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- Plank, Charles J.; Rosinski, Edward J.; and Givens, Edwin N., to Mobil Oil Corporation. Reforming catalysts. 4,191,638, Cl. 208-139.000.
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- Ploeger, Carl W. Printing ribbon package having ink absorbing means. 4,191,482, Cl. 400-207.000.
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- Pluss-Staufer AG: *See—*
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- Poehler, Herbert. Device for extracting and positioning video tape from a cassette to around a slit head drum. 4,191,979, Cl. 360-85.000.
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- Pollard, Harry C., to National Research Development Corporation. Optical inspection. 4,191,476, Cl. 356-349.000.
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- Powell, John M.; and Keeling, K. Bailey, Jr., to General Electric Company. Refrigerator compartment partitioning means. 4,191,434, Cl. 312-214.000.
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- Presto Products Incorporated: *See—*
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- Preston Engravers, Inc.: *See—*
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- Prior, Eric S. Upgrading waste paper by treatment with sulfite waste liquor. 4,191,610, Cl. 162-147.000.
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  - Halas, Linda A.; Gilbert, Lawrence A.; Staab, Robert A.; Collins, Royal D.; and Ries, Charles R., 4,191,661, Cl. 252-103.000.
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  - Strahl, Victor H., 4,191,099, Cl. 98-60.000.
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- Rabner, Walter P. Stamp dispenser. 4,191,306, Cl. 221-33.000.
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- Raynaud, Jean-Pierre: *See—*
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  - Levine, Peter A.; and Sauer, Donald J., 4,191,895, Cl. 307-221.00D.
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  - Springer, Joseph F.; and Kaplan, Donald H., 4,191,941, Cl. 340-166.00R.
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- Reed, James, R.; Way, Terrance; and Leal, Richard A., to General Motors Corporation. Apparatus for coating catalyst supports. 4,191,126, Cl. 118-50.000.
- Reed, Samuel F.; and Pinschmidt, Robert K., Jr., to Rohm and Haas Company. Polymeric adsorbents from vinylbenzyl chloride copolymer beads. 4,191,813, Cl. 521-31.000.
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- Reinhold, Ronald W. Adjustable roll mandrel. 4,191,342, Cl. 242-68.000.
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- Rene, Ralph. Flame tip for soldering torch. 4,191,333, Cl. 239-543.000.
- Renny, Arthur B. Art of exhibiting fish. 4,191,129, Cl. 119-5.000.
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  - Garvey, Louis P.; and Rhamstine, Chester F., 4,191,399, Cl. 280-806.000.
- Rhee, Jhoon G. Protective device for the elbow, arm, palm and hand. 4,190,902, Cl. 2-16.000.
- Ribka, Joachim: *See—*
  - Muller, Rolf; and Ribka, Joachim, 4,191,686, Cl. 260-147.000.
- Rice, Edward K., to Unicon Parking Structures, Inc. Demountable multiple level building structure. 4,191,002, Cl. 52-747.000.
- Richards, Lewis B.; and Romick, Kenneth R., to Washington Universal Security Products. Door locking assembly. 4,190,985, Cl. 49-16.000.
- Richardson-Merrell Inc.: *See—*
  - Horgan, Stephen W.; Palopoli, Frank P.; and Wenstrup, David L., 4,191,828, Cl. 546-185.000.
- Richdel, Inc.: *See—*
  - Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., 4,191,166, Cl. 126-430.000.
- Ricoh Co., Ltd.: *See—*
  - Ema, Hideaki; Otomura, Satoshi; Imai, Chikara; and Sakai, Kiyoshi, 4,191,568, Cl. 430-66.000.
- Riecke, Kurt: *See—*
  - Dessauer, Guido; Riecke, Kurt; and Land, Ferdinand, 4,191,403, Cl. 282-27.500.
- Ries, Charles R.: *See—*
  - Halas, Linda A.; Gilbert, Lawrence A.; Staab, Robert A.; Collins, Royal D.; and Ries, Charles R., 4,191,661, Cl. 252-103.000.
- Riethmann, Jean; Marti, Franz; and Somlo, Tibor, to Ciba-Geigy Aktiengesellschaft. Process for the production of substituted benzal and benzyl bromides. 4,191,621, Cl. 204-158.0HA.
- Rim Jerusalem Furniture Limited: *See—*
  - Cohen, Arik, 4,191,439, Cl. 312-330.00R.
- Rinelli, Giorgio; and Abbruzzese, Carlo, to Consiglio Nazionale della Ricerche. Hydrometallurgical process for separating lead and zinc from oxidized ore. 4,191,729, Cl. 423-98.000.
- Ring, Stuart F.: *See—*
  - Boase, Elmer E.; DiFrancesco, Alphonse B.; and Ring, Stuart F., 4,191,465, Cl. 355-3.0SH.
- Ringel, Samuel M.: *See—*
  - Connor, David T.; Ringel, Samuel M.; Roemer, Sidney; and von Strandtmann, Maximillian, 4,191,825, Cl. 542-430.000.
- Rite-Hite Corporation: *See—*
  - Neff, Robert O.; White, Arthur K.; and Hahn, Norbert, 4,191,503, Cl. 414-401.000.
- Ritter, Arthur J., Jr., to Caterpillar Tractor Co. Drive assembly having an improved sun gear mounting. 4,191,073, Cl. 74-764.000.
- Rivacoba, Jose U.; and Galdos, Alberto T., to Sener, Ingenieria y Sistemas S.A. Sea platforms to support industrial installations. 4,191,495, Cl. 405-195.000.
- Rives, Allen K., to Lor, Inc. Method and apparatus for cutting and pulling tubular and associated well equipment submerged in a water covered area. 4,191,255, Cl. 166-297.000.
- Robert Bosch GmbH: *See—*
  - Arnold, Winfried; and Kubach, Hans, 4,191,913, Cl. 318-563.000.
- Robert, Jacques, to Commissariat a l'Energie Atomique. Method of control for an analog display device of the non-continuous liquid crystal strip type. 4,191,955, Cl. 340-753.000.
- Roberto, Frederick J.: *See—*
  - Buescher, William E.; Roberto, Frederick J.; and Sobierajski, Isabelle M., 4,191,577, Cl. 106-1.120.
- Roberts Corporation: *See—*
  - Cina, Ronald A.; and Kluge, Albert D., 4,191,239, Cl. 164-200.000.
- Robinson, John W.: *See—*
  - Wilcox, Brian N.; Schroeder, Melvin J.; Whittington, Billy J.; and Robinson, John W., 4,191,083, Cl. 84-1.280.
- Rochas, Paul: *See—*
  - Lehmann, Robert; Lyonnet, Andre; and Rochas, Paul, 4,191,010, Cl. 57-208.000.
- Rockwell International Corporation: *See—*
  - Gould, Marc I., 4,191,558, Cl. 75-66.000.
  - Guttenplan, Jack D.; and Yancey, Herbert W., 4,191,920, Cl. 324-459.000.
  - Molina, Orlando G., 4,191,048, Cl. 73-104.000.
  - Oberg, Carl L.; and Hood, George A., 4,191,500, Cl. 406-146.000.
- Rockwell-Rimoldi, S.p.A.: *See—*
  - Della Torre, Giancarlo, 4,191,117, Cl. 112-2.000.
- Rodgers, Milas M. Child safe latch. 4,191,411, Cl. 292-87.000.
- Rodriguez, Federico A.; Becerra Novoa, Jorge; and Sanchez Ramirez, Julian, to Hylsa, S.A. Method for determining weight of molten metal in situ. 4,191,885, Cl. 250-302.000.
- Rody, Jean: *See—*
  - Brunetti, Heimo; Rody, Jean; Soma, Nobuo; and Kurumada, Tomoyuki, 4,191,683, Cl. 260-45.80N.
- Roe, Frank L.: *See—*
  - Winchell, David A.; Martin, Jerry D.; and Roe, Frank L., 4,191,231, Cl. 150-8.000.
- Roemer, Sidney: *See—*
  - Connor, David T.; Ringel, Samuel M.; Roemer, Sidney; and von Strandtmann, Maximillian, 4,191,825, Cl. 542-430.000.
- Rogers Corporation: *See—*
  - Kask, Eugene, 4,191,050, Cl. 73-322.500.
- Rogers, Howard D., to Singer Company, The. Safety stopping device for a sewing machine. 4,191,122, Cl. 112-261.000.
- Rogers, John W. Breakaway uncoiler. 4,191,318, Cl. 225-103.000.
- Roger's Plating Limited: *See—*
  - Elliott, William G., 4,191,160, Cl. 126-9.00R.

- Rogoff, Gerald L., to Westinghouse Electric Corp. Compact single-ended fluorescent lamp having a partitioned envelope. 4,191,907, Cl. 313-204.000.
- Rohm and Haas Company: *See—*
  - Amick, David R., 4,191,814, Cl. 521-32.000.
  - Chong, Berni P., 4,191,812, Cl. 521-28.000.
  - Reed, Samuel F.; and Pinschmidt, Robert K., Jr., 4,191,813, Cl. 521-31.000.
- Rohner AG Pratteln: *See—*
  - Wegmann, Jacques; and Kirner, Hans D., 4,191,680, Cl. 260-42.000.
- Roley, Robert D.; and Maguire, Roy L., to Caterpillar Tractor Co. Track-type vehicle undercarriage and link assembly. 4,191,431, Cl. 305-18.000.
- Rolm Corporation: *See—*
  - Hughes, Raymond J., 4,191,862, Cl. 179-84.0VF.
- Romick, Kenneth R.: *See—*
  - Richards, Lewis B.; and Romick, Kenneth R., 4,190,985, Cl. 49-16.000.
- Romualdi, James P.: *See—*
  - Pohlman, Joe C.; and Romualdi, James P., 4,190,993, Cl. 52-249.000.
- Rose, Elizabeth H. Cleaning device. 4,190,921, Cl. 15-225.000.
- Rosemann, Gerd: *See—*
  - Dutta, Rathindra; Rosgen, Josef; and Rosemann, Gerd, 4,191,149, Cl. 123-119.0EC.
- Rosenberg, Harry: *See—*
  - Weirich, Walter; and Rosenberg, Harry, 4,191,498, Cl. 405-302.000.
- Rosenqvist, Nils K. G.: *See—*
  - Bratt, Jan C.; Moodysson, Bengt-Ove M.; and Rosenqvist, Nils K. G., 4,191,019, Cl. 60-525.000.
- Rosgen, Josef: *See—*
  - Dutta, Rathindra; Rosgen, Josef; and Rosemann, Gerd, 4,191,149, Cl. 123-119.0EC.
- Rosinski, Edward J.: *See—*
  - Plank, Charles J.; Rosinski, Edward J.; and Givens, Edwin N., 4,191,638, Cl. 208-139.000.
- Rostomily, Clifford R. Severed-tree support device. 4,190,983, Cl. 47-40.500.
- Roth, Albert B.; and Louie, Albert, to N L Industries, Inc. Pumping jack. 4,191,016, Cl. 60-371.000.
- Roth, Dieter: *See—*
  - Wolf, Franz-Josef; and Roth, Dieter, 4,191,390, Cl. 277-219.000.
- Rothblatt, Stephen H. Process for reducing metal oxides to metal. 4,191,556, Cl. 75-0.50B.
- Rotocrop International, Ltd.: *See—*
  - Wilson, Clifford A., 4,191,337, Cl. 241-224.000.
- Roussel Uclaf: *See—*
  - Jouquey, Alain; Raynaud, Jean-Pierre; and Salmon, Jean, 4,191,697, Cl. 260-397.500.
- Rousset, Paul: *See—*
  - Stark, Virgil; Vayda, Alexandre; and Rousset, Paul, 4,191,594, Cl. 136-89.0PC.
- Rovesti, William C.: *See—*
  - Lebowitz, Howard E.; Wolk, Ronald H.; Alpert, Seymour B.; Stewart, Norman C.; and Rovesti, William C., 4,191,700, Cl. 260-449.00M.
- Rubel, Peter A.: *See—*
  - Rule, Clinton; and Rubel, Peter A., 4,191,240, Cl. 165-1.000.
- Rubenstein, Kenneth E.: *See—*
  - Ullman, Edwin F.; and Rubenstein, Kenneth E., 4,191,613, Cl. 435-188.000.
- Rubin, Jacob N.; and Seufert, Frederick B., to Stone & Webster Engineering Corporation. Process for converting unsaturated C_4 hydrocarbons into normal butane. 4,191,845, Cl. 585-253.000.
- Rubin, Laurence A.; and Baker, William S., to Baxter Travenol Laboratories, Inc. Cover for rotatable sample tray. 4,191,234, Cl. 150-52.00R.
- Ruegg, Robert J.; and Smith, Elliott P. Keyboard attachment system and method for keyboard training. 4,190,967, Cl. 35-6.000.
- Rule, Clinton; and Rubel, Peter A. Heat conducting filler material for motor-containing devices. 4,191,240, Cl. 165-1.000.
- Rupert, Gary F.: *See—*
  - Check, John M.; and Rupert, Gary F., 4,191,878, Cl. 219-69.00E.
- Rushforth, Harold E. Golf tee awl and pivoted sheath. 4,190,955, Cl. 30-366.000.
- Rushing, John C.; Smith, William E.; and King, Henry L. Apparatus for ultrasonically cleaning paper making felt. 4,191,611, Cl. 162-273.000.
- Russell, Steven J.: *See—*
  - Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,191,137, Cl. 123-32.0EH.
- Ryan, James W., to University of Miami. Anti-hypertensive peptide analogs. 4,191,753, Cl. 424-177.000.
- Ryder, William C.; and Hobbs, John C., to Ford Motor Company. Circuit board assembly. 4,191,441, Cl. 339-17.00F.
- Ryobi, Ltd.: *See—*
  - Morishita, Yasomatsu, 4,191,343, Cl. 242-84.21R.
- Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., to Richdel, Inc. Solar heat system. 4,191,166, Cl. 126-430.000.
- Sabins Industries, Inc.: *See—*
  - Sabins, Rolland C., 4,191,625, Cl. 204-197.000.
- Sabins, Rolland C., to Sabins Industries, Inc. Aluminum marine anode assembly with low resistance surface mountings. 4,191,625, Cl. 204-197.000.
- Sabon, Robert J., to GTE Automatic Electric Laboratories Incorporated. Loop, dial pulse and ring trip detection circuit with capacitive shunt network. 4,191,859, Cl. 179-18.0FA.
- Safonov, Anatoly V.: *See—*
  - Grigorenko, Anatoly S.; Moroz, Jury A.; Kortusov, Leonid I.; Bocharov, Jury A.; and Safonov, Anatoly V., 4,191,044, Cl. 72-354.000.
- Sageman, David R.: *See—*
  - Mitchell, David S.; and Sageman, David R., 4,191,540, Cl. 48-197.00R.
- Saigusa, Tetsuji: *See—*
  - Kadono, Mamoru; Saigusa, Tetsuji; Nakajima, Yoshiyuki; and Koga, Tomohiro, 4,191,217, Cl. 138-109.000.
- Saito, Takeo; Seki, Youichi; and Kitai, Kiyoshi, to Seiko Koki Kabushiki Kaisha. Digital camera shutter control circuit having memory read-out/shutter opening synchronization. 4,191,459, Cl. 354-23.00D.
- Saitoh, Shigeru; and Suzuki, Noboru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Furnace adapted for burning city-, industrial and the like wastes. 4,191,114, Cl. 110-248.000.
- Sakai, Hisao, to Hitachi, Ltd. Full duplex audio response device. 4,191,855, Cl. 179-2.00A.
- Sakai, Kiyoshi: *See—*
  - Ema, Hideaki; Otomura, Satoshi; Imai, Chikara; and Sakai, Kiyoshi, 4,191,568, Cl. 430-66.000.
- Sakakibara, Naoji: *See—*
  - Kawata, Shoji; and Sakakibara, Naoji, 4,191,051, Cl. 73-347.000.
- Sakakibara, Shumpei: *See—*
  - Nagatsu, Toshiharu; and Sakakibara, Shumpei, 4,191,808, Cl. 435-24.000.
  - Nagatsu, Toshiharu; and Sakakibara, Shumpei, 4,191,809, Cl. 435-24.000.
- Sakharoff, Albert. Roof flashing system. 4,190,989, Cl. 52-60.000.
- Sakumoto, Hideki: *See—*
  - Furumoto, Mitsunobu; Yano, Osahiko; Kikuya, Satoshi; Kubo, Kanji; and Sakumoto, Hideki, 4,191,978, Cl. 360-75.000.
- Sakurada, Nobuaki: *See—*
  - Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Fumio; Murakami, Hiroyashu; and Ito, Tadashi, 4,191,458, Cl. 354-23.00D.
- Salem Furnace Co.: *See—*
  - Harrell, John B.; Barraclough, William F.; and Pederson, Curtis O., 4,191,529, Cl. 432-98.000.
- Sallman, Charles M., to N L Industries, Inc. Aspiration circulation system and method. 4,191,525, Cl. 432-21.000.
- Salmon, Jean: *See—*
  - Jouquey, Alain; Raynaud, Jean-Pierre; and Salmon, Jean, 4,191,697, Cl. 260-397.500.
- Salome, Frederik; and Elliott, William T., to Berger Jenson & Nicholson Ltd.; and Berger Jenson & Nicholson Ltd. Polymer aggregates. 4,191,672, Cl. 260-29.6PM.
- Salomon, Georges P. J., to Etablissements Francois Salomon et Fils. Ski boot element. 4,191,395, Cl. 280-613.000.
- Salter, Lowell S., Jr., to Morgan Construction Company. Heavy duty axial adjustment mechanism for rolling mill rolls. 4,191,042, Cl. 72-247.000.
- Sample, Larry E. Drip irrigation system for agriculture. 4,191,330, Cl. 239-66.000.
- Samsing, Rolf A. Container having paper-board end cap and oval sleeve. 4,191,321, Cl. 229-5.500.
- Samuel Moore and Company: *See—*
  - Houk, Richard D.; and Jones, Marvin H., 4,191,064, Cl. 74-475.000.
- Samuels, Michael W.: *See—*
  - Zasio, John J.; and Samuels, Michael W., 4,191,916, Cl. 318-640.000.
- Samurin, Norman A.; and Straslicka, William A., to Carrier Corporation. Apparatus for securing a wheel to a rotatable shaft of a turbomachine. 4,191,485, Cl. 403-15.000.
- Sanchez Ramirez, Julian: *See—*
  - Rodriguez, Federico A.; Becerra Novoa, Jorge; and Sanchez Ramirez, Julian, 4,191,885, Cl. 250-302.000.
- Sanchioni, Sergio: *See—*
  - Neri, Amleto; Sanchioni, Sergio; and Nava, Carlo, 4,191,695, Cl. 260-346.760.
- Sandelman, David: *See—*
  - Isaacs, Roger H.; Sandelman, David; and Shprecher, Daniel E., 4,191,328, Cl. 236-46.00R.
- Sanders Associates, Inc.: *See—*
  - Kuppenheimer, John D., 4,191,931, Cl. 331-94.50Q.
- Sando Iron Works, Co. Ltd.: *See—*
  - Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,190,966, Cl. 34-242.000.
- Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works, Co. Ltd. Wiping and drying device for an inlet seal rolls on a high pressure steamer. 4,190,966, Cl. 34-242.000.
- Sandoz, Inc.: *See—*
  - Nadelson, Jeffrey, 4,191,827, Cl. 546-116.000.
- Sandoz Ltd.: *See—*
  - Gross, Rolf; and Fricker, Rene, 4,191,532, Cl. 8-21.00A.
- Sankyo Company Limited: *See—*
  - Brunetti, Heimo; Rody, Jean; Soma, Nobuo; and Kurumada, Tomoyuki, 4,191,683, Cl. 260-45.80N.
- Sardisco, John B.: *See—*
  - Drechsel, Erhart K.; and Sardisco, John B., 4,191,734, Cl. 423-320.000.
- Sarem, Amir M., to Union Oil Company of California. Reducing the relative water/petroleum movement in a petroleum producing reservoir. 4,191,249, Cl. 166-244.00C.
- Sasaki, Shin: *See—*
  - Tsukidate, Yoshitaka; and Sasaki, Shin, 4,191,984, Cl. 360-132.000.

Sasso, Luigi. Multi-speed gear transmission especially for use in warping machines. 4,191,069, Cl. 74-681.000.

Sato, Hideharu, to Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.). Automatic focus adjusting device. 4,191,882, Cl. 250-201.000.

Sato, Katsutoshi; Ito, Susumu; Kanaya, Tadashi; Onishi, Hiroaki; Ichiishi, Tsuneo; and Osaka, Akira, to Hitachi, Ltd. Apparatus for transporting cylindrical steel articles. 4,191,286, Cl. 193-40.000.

Sato, Kyoshi: *See—*

Nakajima, Kunihiko; Sato, Kyoshi; Iio, Toshimitsu; and Kanda, Atsushi, 4,191,866, Cl. 200-4.000.

Sato, Mituharu; and Yamazaki, Katsuo, to Toshiba Kikai Kabushiki Kaisha. Automatic tool exchanging apparatus of machine tool. 4,190,947, Cl. 29-568.000.

Sato, Shui: *See—*

Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, 4,191,574, Cl. 430-387.000.

Sato, Takami: *See—*

Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, 4,191,518, Cl. 425-326.100.

Sato, Takateru; and Shoji, Shigemasa, to TDK Electronics Company, Limited. Tape cassette. 4,191,345, Cl. 242-197.000.

Satou, Masami: *See—*

Okita, Tsutomu; Satou, Masami; Hibino, Noburo; Katoh, Kazunobu; and Sugiyama, Masatoshi, 4,191,679, Cl. 260-40.00R.

Saucy, Gabriel: *See—*

Cohen, Noal; and Saucy, Gabriel, 4,191,842, Cl. 568-662.000.

Sauer, Donald J.; and Levine, Peter A., to RCA Corporation. Low noise CCD input circuit. 4,191,896, Cl. 307-221.00D.

Sauer, Donald J.: *See—*

Levine, Peter A.; and Sauer, Donald J., 4,191,895, Cl. 307-221.00D.

Schaffer, Ezra. Metal duct drive bending tool. 4,191,043, Cl. 72-319.000.

Schara, Robert E.; Keenberg, Larry E.; and Makar, Andrew, to General Foods Corporation. Pet food flavor. 4,191,781, Cl. 426-2.000.

Scheepvaartbedrijf "Con Brio" N.V.: *See—*

van der Laan, Berend, 4,191,124, Cl. 114-123.000.

Scheicher, Hans. Corrective agent for the covering and/or filling of bone defects, method for the preparation of same and method of using the same. 4,191,747, Cl. 424-94.000.

Schelisch, Ernst F., to Marconi Company Limited, The. Satellite communication systems. 4,191,923, Cl. 325-4.000.

Schering Aktiengesellschaft: *See—*

Skuballa, Werner; Raduchel, Bernd; Schwarz, Norbert; Vorbruggen, Helmut; Muller, Bernd; Mannesmann, Gerda; Loge, Olaf; Schillinger, Ekkehardt; and Casals-Stenzel, Jorge, 4,191,694, Cl. 260-346.220.

Skuballa, Werner; Raduchel, Bernd; and Vorbrueggen, Helmut, 4,191,823, Cl. 542-426.000.

Schick, Dieter, to Ernst Leitz Wetzlar GmbH. Process and apparatus for the separate evaluation of image contents in two coordinate directions of motion. 4,191,477, Cl. 356-373.000.

Schieck, Richard A., to Xerox Corporation. Dual mode catch tray. 4,191,467, Cl. 355-75.000.

Schiedat, Heinz, to Stiebel Eltron GmbH & Co. KG. Pressure tank for hot-water heaters. 4,191,304, Cl. 220-414.000.

Schiel, Christian, to J. M. Voith GmbH. Web drying section for paper machine. 4,190,964, Cl. 34-114.000.

Schiller, August; Louis, Eckhart; Bosch, Erhard; and Braunsperger, Karl, to Wacker-Chemie GmbH. Curable compositions and elastomers prepared therefrom. 4,191,817, Cl. 528-38.000.

Schillig, Henning: *See—*

Flossdorf, Josef; Schillig, Henning; and Schindler, Klaus-Peter, 4,191,469, Cl. 356-23.000.

Schillinger, Ekkehardt: *See—*

Skuballa, Werner; Raduchel, Bernd; Schwarz, Norbert; Vorbruggen, Helmut; Muller, Bernd; Mannesmann, Gerda; Loge, Olaf; Schillinger, Ekkehardt; and Casals-Stenzel, Jorge, 4,191,694, Cl. 260-346.220.

Schindler, Klaus-Peter: *See—*

Flossdorf, Josef; Schillig, Henning; and Schindler, Klaus-Peter, 4,191,469, Cl. 356-23.000.

Schindler, Rudolf; and Hartmann, Werner, to Messerschmitt-Bolkow-Blohm GmbH. Corners of structural members. 4,190,996, Cl. 52-309.130.

Schirmer, Klaus, to Knorr-Bremse GmbH. Anti-lock device for railway vehicles. 4,191,430, Cl. 303-109.000.

Schlumberger Technology Corporation: *See—*

Bosse-Platiere, Michel J., 4,191,265, Cl. 175-4.560.

Schmelzer Corporation: *See—*

Benjamin, Benjamin C., 4,191,096, Cl. 92-143.000.

Schmidt, Pierre E.; and Das, Mukunda B., to Instituto Venezolano de Investigaciones Cientificas (IVIC). Built-in notched channel MOSFET triodes for high frequency application. 4,191,963, Cl. 357-23.000.

Schmidt, Robert D. Snow blower deflector shield. 4,190,973, Cl. 37-43.00R.

Schmidt, Robert D.: *See—*

James, Reginald S.; Grier, Thomas M.; and Schmidt, Robert D., 4,190,961, Cl. 33-180.00R.

Schnabel, Georg: *See—*

Bender, Hans; Schnabel, Georg; Duren, Gottfried; and Zabel, Wolf, 4,191,591, Cl. 134-25.00R.

Schneider, Kurt: *See—*

Meyer, Rolf-Volker; Dhein, Rolf; Schneider, Kurt; and Fahnler, Friedrich, 4,191,819, Cl. 528-315.000.

Schoeps, Knut C., to Atlas Copco Aktiebolag. Device for tightening a screw joint. 4,191,282, Cl. 192-0.034.

Schora, Frank C.: *See—*

Patel, Jitendra G.; Schora, Frank C.; and Loeding, John W., 4,191,539, Cl. 48-210.000.

Schramm, Eugene C., to Bell Telephone Laboratories, Incorporated. Electrical connector for coupling power leads to circuit boards. 4,191,440, Cl. 339-17.00C.

Schreckenberg, Manfred: *See—*

Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Schreckenberg, Manfred; Freitag, Dieter; and Konig, Klaus, 4,191,705, Cl. 260-463.000.

Schreiber, Joachim G. M.: *See—*

Schreiber, Peter J.; and Schreiber, Joachim G. M., 4,191,952, Cl. 340-611.000.

Schreiber, Peter J.; and Schreiber, Joachim G. M., to N.A.D., Inc. Low oxygen flow alarm for anesthesia systems. 4,191,952, Cl. 340-611.000.

Schreiber, William L.; Siano, James N.; Vock, Manfred H.; and Shuster, Edward J., to International Flavors & Fragrances Inc. Organoleptic uses of 1-(3,3-dimethyl-2-norbornyl)-2-propanone in cationic, anionic and nonionic detergents and soaps. 4,191,660, Cl. 252-174.110.

Schroeder, Melvin J.: *See—*

Wilcox, Brian N.; Schroeder, Melvin J.; Whittington, Billy J.; and Robinson, John W., 4,191,083, Cl. 84-1.280.

Schroter, Wolfgang: *See—*

Nickl, Josef; Muller, Erich; Narr, Berthold; Haarmann, Walter; Schroter, Wolfgang; and Kadatz, Rudolf, 4,191,776, Cl. 424-308.000.

Schubert, Heinz: *See—*

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Schulte, Klaus: *See—*

Boggum, Paul; and Schulte, Klaus, 4,191,528, Cl. 432-248.000.

Schultenkamper, Josef, to Gelenkwellenbau GmbH. Transmission shaft indexing coupling. 4,191,487, Cl. 403-337.000.

Schulz, Bernhard: *See—*

Grafen, Paul; Kroesche, Henning; Schulz, Bernhard; Paust, Joachim; and Pfohl, Sigberg, 4,191,692, Cl. 260-345.500.

Schulze, Heinz, to Veb Pentacon Dresden Kamera und Kinowerke. Blade type focal plane shutters. 4,191,464, Cl. 354-246.000.

Schulze, Martin; and Preusser, Gerhard, to Krupp-Koppers GmbH. Process for operating extraction or extractive distillation apparatus. 4,191,615, Cl. 203-3.000.

Schumacher, Frederick G.; and Yllo, Walter, to Du Pont de Nemours, E. I., and Company. Highly filled thermoplastic compositions based on ethylene interpolymers and processing oils. 4,191,798, Cl. 428-95.000.

Schuplin, Jerome T., to Fastway Fasteners, Inc. Rotatably installed suspension clip. 4,191,352, Cl. 248-317.000.

Schwarz, Hans-Helmut: *See—*

Lenthe, Manfred; and Schwarz, Hans-Helmut, 4,191,711, Cl. 260-650.00R.

Schwarz, Norbert: *See—*

Skuballa, Werner; Raduchel, Bernd; Schwarz, Norbert; Vorbruggen, Helmut; Muller, Bernd; Mannesmann, Gerda; Loge, Olaf; Schillinger, Ekkehardt; and Casals-Stenzel, Jorge, 4,191,694, Cl. 260-346.220.

Schwee, Leonard J.; Anderson, Wallace E.; Liu, Yuan-Jye; and Lee, Ronald N., to United States of America, Navy. Crosstie memory bit stretcher detector. 4,192,012, Cl. 365-87.000.

Schweizer, Eduard H. Container for interchangeable tape cassette. 4,191,292, Cl. 206-387.000.

Schwing, Friedrich, to Friedrich Wilhelm Schwing GmbH. Pump for conveying cement. 4,191,513, Cl. 417-517.000.

SCM Corporation: *See—*

Mueller, Hans W., 4,191,483, Cl. 400-369.000.

Scofield, David D.: *See—*

Hong, Byung S.; Colles, Joseph H.; Scofield, David D.; Purdy, Stephen J.; and Reinsch, Stephen J., 4,191,456, Cl. 353-31.000.

Scott, Hubert D., to Texaco Inc. Determination of water saturation in subsurface earth formations adjacent well boreholes. 4,191,884, Cl. 250-270.000.

Scripps Clinic and Research Foundation: *See—*

Katz, David H., 4,191,668, Cl. 260-6.000.

Scully, John F., to American Optical Corporation. Range finding fiberscope. 4,191,468, Cl. 356-17.000.

Securiweb Limited: *See—*

Wildi, Leo J., 4,190,934, Cl. 24-77.00R.

Seeberger, Klaus: *See—*

Poklekowski, Helmut; Seeberger, Klaus; and Harmsma, Gunther, 4,191,497, Cl. 405-296.000.

Seifried, Paul E.: *See—*

McGrath, James W., Jr.; and Seifried, Paul E., 4,191,294, Cl. 209-135.000.

Seiko Koki Kabushiki Kaisha: *See—*

Saito, Takeo; Seki, Youichi; and Kitai, Kiyoshi, 4,191,459, Cl. 354-23.00D.

Seki, Youichi: *See—*

Saito, Takeo; Seki, Youichi; and Kitai, Kiyoshi, 4,191,459, Cl. 354-23.00D.

Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., to American Home Products Corporation. Oxamic acid derivatives. 4,191,840, Cl. 562-453.000.

Semasa, Takayoshi: *See—*

Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; and Iwata, Shuzi, 4,191,974, Cl. 358-261.000.

Sener, Ingenieria y Sistemas S.A.: *See—*

Rivacoba, Jose U.; and Galdos, Alberto T., 4,191,495, Cl. 405-195.000.

Seo, Iwao, to Mitsubishi Petrochemical Co. Ltd. Catheter head-type transducer. 4,191,193, Cl. 128-675.000.

Sessa, Terenzio. Car side window lifting mechanism. 4,191,060, Cl. 74-89.220.

Seufert, Frederick B.: *See—*

Rubin, Jacob N.; and Seufert, Frederick B., 4,191,845, Cl. 585-253.000.

Shackle, Dale R.: *See—*

Lee, Yu-Sun; and Shackle, Dale R., 4,191,404, Cl. 282-27.500.

Shank, Robert J., to Park-Ohio Industries, Inc. Quenching device for inductively heated workpieces. 4,191,363, Cl. 266-129.000.

Shannon, Francis T.: *See—*

Dixon, Robert P.; and Shannon, Francis T., 4,191,925, Cl. 325-474.000.

Sharp Kabushiki Kaisha: *See—*

Tanada, Eiji, 4,191,850, Cl. 179-1.0GD.

Shaw, David L. Magneto drive adapter. 4,191,157, Cl. 123-198.00R.

Shay, Joseph L.: *See—*

Beni, Gerardo; Gottesfeld, Shimshon; McIntyre, James D. E.; and Shay, Joseph L., 4,191,453, Cl. 350-357.000.

Shell Oil Company: *See—*

Grisham, William P., Jr., 4,191,631, Cl. 208-33.000.

Kwantes, Arien; and Gautier, Pieter A., 4,191,843, Cl. 568-728.000.

Shemtov, Sami. Multicompartment condiment and spice dispenser. 4,191,312, Cl. 222-142.900.

Shen, Ming-shing: *See—*

Yang, Ralph T.; and Shen, Ming-shing, 4,191,115, Cl. 110-347.000.

Shepard, Joseph F.: *See—*

Garbarino, Paul L.; Revitz, Martin; and Shepard, Joseph F., 4,191,603, Cl. 148-187.000.

Sherman, William E. Chain saw bar guide alignment system. 4,191,074, Cl. 76-25.00R.

Sherrill, Charles F.: *See—*

Brown, Wayne R.; Jones, John E.; and Sherrill, Charles F., 4,191,917, Cl. 320-2.000.

Sheterom, Samuel G., Jr.: *See—*

Speiser, Arthur S.; and Sheterom, Samuel G., Jr., 4,191,367, Cl. 269-203.000.

Shibata Kogyo Co., Ltd: *See—*

Nakamura, Koji; Ogata, Masaru; and Nakatsuka, Takuzo, 4,191,494, Cl. 405-171.000.

Shibata, Norio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Evaporated fuel vapor control device for use in an internal combustion engine. 4,191,154, Cl. 123-136.000.

Shillingford, John T., Jr.: *See—*

Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,191,049, Cl. 73-170.00A.

Shin-Shirasuna Electric Corporation: *See—*

Nishikawa, Masao, 4,191,852, Cl. 179-1.00G.

Shinn, Robert W.: *See—*

Lyons, James E.; Shinn, Robert W.; and Suld, George, 4,191,839, Cl. 560-241.000.

Shinoda, Nobuhiko: *See—*

Kawamura, Masaharu; Sakurada, Nobuaki; Shinoda, Nobuhiko; Ito, Fumio; Murakami, Hiroyashu; and Ito, Tadashi, 4,191,458, Cl. 354-23.00D.

Shinomiya, Shigeo: *See—*

Nagashima, Tomoyuki; Tanaka, Masayuki; and Shinomiya, Shigeo, 4,191,269, Cl. 180-27.000.

Shirland, Fred A.; and Biter, William J., to Westinghouse Electric Corp. Integrated solar cell array. 4,191,794, Cl. 427-74.000.

Shiroto, Yoshimi: *See—*

Fukui, Yoshio; Shiroto, Yoshimi; Ando, Mamoru; and Homma, Yasumasa, 4,191,636, Cl. 208-110.000.

Shoji, Shigemasa: *See—*

Sato, Takateru; and Shoji, Shigemasa, 4,191,345, Cl. 242-197.000.

Shprecher, Daniel E.: *See—*

Isaacs, Roger H.; Sandelman, David; and Shprecher, Daniel E., 4,191,328, Cl. 236-46.00R.

Shuck, William D.; Lind, Frederick D.; and Cole, John W., to Tousley-Bixler Construction Co. Inc. Sludge agitating apparatus. 4,191,479, Cl. 366-101.000.

Shuster, Edward J.: *See—*

Schreiber, William L.; Siano, James N.; Vock, Manfred H.; and Shuster, Edward J., 4,191,660, Cl. 252-174.110.

Siano, James N.: *See—*

Schreiber, William L.; Siano, James N.; Vock, Manfred H.; and Shuster, Edward J.; 4,191,660, Cl. 252-174.110.

Sidorenko, Valery A.: *See—*

Morgunsky, Evgeny I.; Sidorenko, Valery A.; and Plotnikov, Vladmir A., 4,191,075, Cl. 82-36.00R.

Siemens Aktiengesellschaft: *See—*

Amtmann, Heribert; Ebersberger, Hans; Eckardt, Guenter; and Greiner, Hans-Joachim, 4,191,891, Cl. 250-402.000.

Franetzki, Manfred; Prestele, Karl; and Funke, Helmut, 4,191,181, Cl. 128-213.00R.

Kratz, Gerhard; and Kuehnel, Werner, 4,191,993, Cl. 363-135.000.

Kratz, Gerhard; and Kuehnel, Werner, 4,191,994, Cl. 363-135.000.

Mayer, Max, 4,191,847, Cl. 178-3.000.

Rampp, Egon; and Vogel, Alexander, 4,191,433, Cl. 312-183.000.

Siewert, Robert M., to General Motors Corporation. Engine with selective venting of unburned mixture from the piston crevice volume. 4,191,150, Cl. 123-119.00B.

Sih, John C.: *See—*

Johnson, Roy A.; and Sih, John C., 4,191,822, Cl. 542-416.000.

Silence, William L., to Cabot Corporation. Wear-resistant nickel-base alloy. 4,191,562, Cl. 75-122.000.

Siler, Todd L. Artists' canvas and frame assembly. 4,190,974, Cl. 38-102.900.

Simms, Donald S. Energy saving air-flow heater. 4,191,162, Cl. 126-123.000.

Simplimatic Engineering Company: *See—*

Vinoskey, Adam V., 4,191,005, Cl. 53-382.000.

Singer Company, The: *See—*

Rogers, Howard D., 4,191,122, Cl. 112-261.000.

Singer, Monroe J. Toy sleigh. 4,190.979, Cl. 46-17.000.

Sinklier, Robert W.; and Venditto, Virgil A., Jr., to National Optronics, Incorporated. Plastic lens cutter and edger. 4,191,501, Cl. 409-104.000.

Siraco, Frank J.: *See—*

Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,191,049, Cl. 73-170.00A.

Sisenca S.A.: *See—*

Ohlsson, Jarl E. S. I., 4,191,105, Cl. 101-415.100.

Sisk, Francis J.; and Veyo, Stephen E., to Electric Power Research Institute, Inc. Fuel fired supplementary heater for heat pump. 4,191,023, Cl. 62-79.000.

Sisk, Francis J., to Electric Power Research Institute, Inc. Apparatus for defrosting low temperature heat exchanger. 4,191,026, Cl. 62-140.000.

Skaadel, Johannes; and Omdal, Bjarne, to Norsk Hydro A.S. Flexible container for transportation and storage of bulk materials. 4,191,229, Cl. 150-1.000.

Skelton, John: *See—*

Clark, Richard E.; Skelton, John; and Davis, Robert B., 4,191,218, Cl. 139-383.00R.

Skoli, Sigmund P.: *See—*

Mojonnier, Harry G.; and Skoli, Sigmund P., 4,191,784, Cl. 426-475.000.

Skotheim, Terje A., to United States of America, Energy. Dye-sensitized solar cells. 4,190,950, Cl. 29-572.000.

Skuballa, Werner; Raduchel, Bernd; Schwarz, Norbert; Vorbruggen, Helmut; Muller, Bernd; Mannesmann, Gerda; Loge, Olaf; Schillinger, Ekkehardt; and Casals-Stenzel, Jorge, to Schering Aktiengesellschaft. Prostaglandin-I_2 derivatives. 4,191,694, Cl. 260-346.220.

Skuballa, Werner; Raduchel, Bernd; and Vorbrueggen, Helmut, to Schering Aktiengesellschaft. Process for the preparation of oxaprostaglandin intermediates. 4,191,823, Cl. 542-426.000.

Slater Electric Inc.: *See—*

Doyle, Richard C., 4,191,443, Cl. 339-103.00R.

Small, James R.: *See—*

Katterheinrich, Fred H.; and Small, James R., 4,191,605, Cl. 156-285.000.

Smartt, Herschel B.; and Kovacs, Bela V., to Ford Motor Company. Continuous stream treatment of ductile iron. 4,191,563, Cl. 75-130.00R.

Smith, Archie O. Apparatus for harvesting okra or the like. 4,191,008, Cl. 56-327.00R.

Smith, Clive P., to Imperial Chemical Industries Limited. Fire retardant polyester-polytetrafluoroethylene compositions. 4,191,678, Cl. 260-40.00R.

Smith, Donald F.; and Ostrelich, Michael J., to General Electric Company. Dead front plug with strain relief. 4,191,444, Cl. 339-107.000.

Smith, Edward J., to REPA Feinstanzwerk GmbH. Swiveling anchor for occupant restraint system. 4,191,400, Cl. 280-808.000.

Smith, Elliott P.: *See—*

Ruegg, Robert J.; and Smith, Elliott P., 4,190,967, Cl. 35-6.000.

Smith Kline & French Laboratories Limited: *See—*

Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,191,769, Cl. 424-263.000.

Smith, Randlow: *See—*

Chess, David D.; Helbling, Clements A., Jr.; and Smith, Randlow, 4,191,640, Cl. 208-348.000.

Smith, William E.: *See—*

Rushing, John C.; Smith, William E.; and King, Henry L., 4,191,611, Cl. 162-273.000.

Snaddon, Michael B. Raise-boring. 4,191,267, Cl. 175-53.000.

Snamprogetti, S.p.A.: *See—*

Arrigoni, Virgilio; Ercolani, Dario; and Ferrini, Francesco, 4,191,047, Cl. 73-61.400.

Snook, Edward H.: *See—*

Fox, Stephen N. W.; Snook, Edward H.; and Stimson, Norman F., deceased, 4,191,271, Cl. 180-77.0TC.

Sobierajski, Isabelle M.: *See—*

Buescher, William E.; Roberto, Frederick J.; and Sobierajski, Isabelle M., 4,191,577, Cl. 106-1.120.

Societe Anonyme dite: Etablissements Georges Olivier: *See—*

Varin, Michel A., 4,190,923, Cl. 15-383.000.

s.a. PRB: *See—*

Jourquin; Lucien; and Du Prez, Eddie, 4,191,815, Cl. 521-51.000.

s.a. Texaco Belgium n.v.: *See—*

Hermans, Johny C., 4,191,826, Cl. 544-337.000.

Societe Chimique des Charbonnages - CdF Chimie: *See—*

Gloriod, Pierre, 4,191,821, Cl. 528-501.000.

Societe Francaise Hoechst: *See—*
Soreau, Michel; and Christidis, Yani, 4,191,841, Cl. 562-475.000.
Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
Dutta, Rathindra; Rosgen, Josef; and Rosemann, Gerd, 4,191,149, Cl. 123-119.0EC.
Societe Nationale des Poudres et Explosifs: *See—*
Tillac, Jean-Francois, 4,191,344, Cl. 242-107.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.): *See—*
Teysseyre, Pierre M.; and Baudier, Claude P., 4,191,510, Cl. 416-230.000.
Solar Heat Corporation: *See—*
Hyman, Mark, 4,191,169, Cl. 126-444.000.
Solartech Systems Corporation: *See—*
Geaslin, William E., 4,191,329, Cl. 126-427.000.
Solid Photography Inc.: *See—*
DiMatteo, Paul L.; and Diaferia, Henry V., 4,190,913, Cl. 5-81.00R.
Solie, Leland P., to Sperry Corporation. High efficiency wide band surface acoustic wave coupler processors. 4,191,934, Cl. 333-155.000.
Soma, Nobuo: *See—*
Brunetti, Heimo; Rody, Jean; Soma, Nobuo; and Kurumada, Tomoyuki, 4,191,683, Cl. 260-45.80N.
Somlo, Tibor: *See—*
Riethmann, Jean; Marti, Franz; and Somlo, Tibor, 4,191,621, Cl. 204-158.0HA.
Sommer, Werner, to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG. Rocker arm construction for knitting machine needle. 4,191,033, Cl. 66-64.000.
Sonitronics, Inc.: *See—*
Feaster, Donavon L., 4,191,867, Cl. 200-16.00R.
Sony Corporation: *See—*
Matsuda, Atsushi; and Kishigami, Jun, 4,191,863, Cl. 179-115.50R.
Tsukidate, Yoshitaka; and Sasaki, Shin, 4,191,984, Cl. 360-132.000.
Sopher, Joshua E., to American Hospital Supply Corporation. Method and apparatus for measuring attack and release times of hearing aids. 4,191,864, Cl. 179-175.10A.
Soreau, Michel; and Christidis, Yani, to Societe Francaise Hoechst. Process for manufacturing 4-hydroxy-3,5-dimethoxy benzoic acid from 3,4,5-trimethoxybenzoic acid. 4,191,841, Cl. 562-475.000.
Sorenson, Richard W., to Carlingswitch, Inc. Switch case with stackable lock washer. 4,191,872, Cl. 200-296.000.
Sorlien, Charles J. Light shield for mast-mounted navigation lights. 4,191,991, Cl. 362-319.000.
Soukup, Dale F.: *See—*
Saarem, Myrl J.; Lovelace, Donald E.; Firebaugh, Dale C.; and Soukup, Dale F., 4,191,166, Cl. 126-430.000.
Sourrouille, Michel, to Commissariat a l'Energie Atomique. Process and apparatus for analyzing a sample by emission spectrography. 4,191,475, Cl. 356-318.000.
Southgate, John P.: *See—*
Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,191,137, Cl. 123-32.0EH.
Southwire Company: *See—*
Headrick, J. Charles; Peel, Robert C.; and Starnes, R. Emory, 4,191,319, Cl. 228-147.000.
Specht, Steven J., to Olin Corporation. Reinforced casing for an electrode for a diaphragm-type electrolytic cell and a method of fabrication. 4,191,627, Cl. 204-296.000.
Spector, George: *See—*
Froess, Jacob; and Spector, George, 4,191,034, Cl. 70-258.000.
Speiser, Arthur S.; and Sheterom, Samuel G., Jr. Fluid-operated vise with jaw mounting system. 4,191,367, Cl. 269-203.000.
Spencer, Joseph C.: *See—*
Miller, Wayne R.; Latham, David D.; and Spencer, Joseph C., 4,191,061, Cl. 74-108.000.
Spercel, Robert J. Tuning device. 4,191,086, Cl. 84-306.000.
Sperry Corporation: *See—*
Armstrong, James B.; and Trimmier, J. Robert, 4,191,725, Cl. 264-261.000.
Solie, Leland P., 4,191,934, Cl. 333-155.000.
Spina, Joseph; and Weibel, Michael K., to Novo Laboratories, Inc. Intralenticular cataract surgery. 4,191,176, Cl. 128-1.00R.
Spring Hill Laboratories, Inc.: *See—*
Goldberg, Jerome; and Bloch, Christopher D., 4,191,274, Cl. 180-282.000.
Springer, Joseph F.; and Kaplan, Donald H., to RCA Corporation. Switch matrix for data transfers. 4,191,941, Cl. 340-166.00R.
Sramek, Bohumir. Low cost multi-channel recorder and display system for medical and other applications. 4,191,962, Cl. 346-110.00R.
Staab, Robert A.: *See—*
Halas, Linda A.; Gilbert, Lawrence A.; Staab, Robert A.; Collins, Royal D.; and Ries, Charles R., 4,191,661, Cl. 252-103.000.
Stache, Ulrich: *See—*
Fritsch, Werner; Stache, Ulrich; and Lindner, Ernst, 4,191,765, Cl. 424-248.530.
Stackman, Robert W.; and Kuczynski, Edward J., to Celanese Corporation. Melt processable wholly aromatic polyester composition containing a phosphorus ester. 4,191,681, Cl. 260-45.70P.
Stamicarbon, B.V.: *See—*
Tels, Martinus; Lotens, Jan P.; and Kivits, Hendrikus P. M., 4,191,728, Cl. 423-24.000.
Stamm, Russell D., to General Instrument Corporation. Low profile pushbutton tuner with improved carriage moving mechanism. 4,191,058, Cl. 74-10.330.
Standard Oil Company (Indiana): *See—*
Quick, Leonard M.; and Hensley, Albert L., Jr., 4,191,635, Cl. 208-89.000.
Stanley Drug Products, Inc.: *See—*
Cook, Elton S.; and Fujii, Akira, 4,191,779, Cl. 424-319.000.
Stanton, Robert M.: *See—*
Brown, John F.; and Stanton, Robert M., 4,191,789, Cl. 427-97.000.
Stark, Virgil; Vayda, Alexandre; and Rousset, Paul, to Stark, Virgil. Solar energy conversion. 4,191,594, Cl. 136-89.0PC.
Starnes, R. Emory: *See—*
Headrick, J. Charles; Peel, Robert C.; and Starnes, R. Emory, 4,191,319, Cl. 228-147.000.
Stars Stampaggio Resine Speciali S.p.A.: *See—*
Faudarole, Ernesto, 4,191,165, Cl. 126-445.000.
State of Minnesota as represented by the Commissioner of Natural Resources: *See—*
Malterer, Thomas J., 4,191,263, Cl. 173-28.000.
Stauffer Chemical Company: *See—*
Large, George B.; and Buren, Lawrence, 4,191,552, Cl. 71-86.000.
Magee, Walter L., Jr., 4,191,582, Cl. 106-38.200.
Stave, Frederick R., to RCA Corporation. Apparatus for facilitating carriage return in video disc player. 4,191,381, Cl. 274-9.00B.
Stearns, Joseph E.: *See—*
Bollmer, Jacob A.; Stearns, Joseph E.; and Brooks, Alvin R., Jr., 4,191,076, Cl. 83-13.000.
Stegall, Jack L.: *See—*
Mattson, Frank J.; Lawler, John T.; Stegall, Jack L.; and Dawkins, Kenneth R., 4,191,209, Cl. 137-486.000.
Steiger Tractor, Inc.: *See—*
Monteith, Donald A., 4,191,270, Cl. 180-53.00D.
Steinbach, Robert L., to Chicago Lock Co. Axial split-pin tumbler-type lock mechanism and key therefor. 4,191,036, Cl. 70-363.000.
Steinhilber, Wilhelm A., to Orion Machinery & Engineering Corp. Wire cutting flying shear. 4,191,078, Cl. 83-320.000.
Stepantsov, Georgy K.; Abramov, Valentin S.; Bloschitsyn, Jury N.; and Zaripov, Raif R. Power hammer with opposed movement of ram and bolster. 4,191,045, Cl. 72-407.000.
Stephans, Earl: *See—*
Gow, John, 3rd; Hoffman, Herman S.; and Stephans, Earl, 4,191,938, Cl. 338-195.000.
Sterrett, Charles C.: *See—*
Brenner, William C.; and Sterrett, Charles C., 4,191,903, Cl. 310-213.000.
Steuernagel, Hans H.; and Hoyer, Ernst, to Hoechst Aktiengesellschaft. Process for the manufacture of sulfuric acid semi-ester compounds. 4,191,703, Cl. 260-458.00C.
Stevens, William D., to Foster Wheeler Energy Corporation. Vapor generating system utilizing integral separators and angularly arranged furnace boundary wall fluid flow tubes having rifled bores. 4,191,133, Cl. 122-235.00R.
Stewart, Norman C.: *See—*
Lebowitz, Howard E.; Wolk, Ronald H.; Alpert, Seymour B.; Stewart, Norman C.; and Rovesti, William C., 4,191,700, Cl. 260-449.00M.
Stewart, William S.; and Hobbs, James W., to Phillips Petroleum Company. Compressor control. 4,191,511, Cl. 417-18.000.
Steyr-Daimler-Puch-Aktiengesellschaft: *See—*
Zedrosser, Ulrich, 4,191,089, Cl. 89-181.000.
Stickels, Charles A.; and Janotik, Adam M., to Ford Motor Company. Method of heat treating high carbon alloy steel parts to develop surface compressive residual stresses. 4,191,599, Cl. 148-16.500.
Stickl, Helmut: *See—*
Mayr, Anton; Stickl, Helmut; and Westhues, Melchior, 4,191,745, Cl. 424-90.000.
Stiebel Eltron GmbH & Co. KG: *See—*
Schiedat, Heinz, 4,191,304, Cl. 220-414.000.
Stigter, Hendrik G.: *See—*
Hinze, Adrien G.; and Stigter, Hendrik G., 4,191,669, Cl. 260-18.00N.
Stillhard, Bruno; and Naf, Hans, to Gebrueder Buehler AG. Process and apparatus for manufacturing molded parts from granulated plastic materials. 4,191,726, Cl. 264-517.000.
Stillman, Robert A.: *See—*
Haney, Richard M.; Stillman, Robert A.; and Codrington, Robert S., 4,191,919, Cl. 324-312.000.
Stimson, Norman F., deceased: *See—*
Fox, Stephen N. W.; Snook, Edward H.; and Stimson, Norman F., deceased, 4,191,271, Cl. 180-77.0TC.
Stimson, Verity S., personal representative: *See—*
Fox, Stephen N. W.; Snook, Edward H.; and Stimson, Norman F., deceased, 4,191,271, Cl. 180-77.0TC.
Stockdale, Roy, to Napco Security System Inc. Digital transmission apparatus particularly adapted for security systems. 4,191,948, Cl. 340-539.000.
Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C. Wet oxidation engine. 4,191,012, Cl. 60-39.050.
Stohr, Gunter: *See—*
Kratel, Gunter; Stohr, Gunter; and Katzer, Hans, 4,191,587, Cl. 106-308.00Q.
Stone, Ricardo R.: *See—*
Brock, George W.; Pawlowski, Edward J.; and Stone, Ricardo R., 4,192,003, Cl. 364-487.000.
Stone & Webster Engineering Corporation: *See—*
Rubin, Jacob N.; and Seufert, Frederick B., 4,191,845, Cl. 585-253.000.

Stoneleigh Trust, Fred M. Dellorfano, Jr. & Donald P. Massa, Trustees, The: *See—*
Massa, Frank, 4,190,937, Cl. 29-25.350.
Strahl, Victor H., to Pullman Incorporated. Sealing arrangement for chimneys with an annular pressurized space. 4,191,099, Cl. 98-60.000.
Strand, Norman S., to Federal Screw Works. Self-locking threaded fastener product. 4,191,677, Cl. 260-37.0EP.
Straslicka, William A.: *See—*
Samurin, Norman A.; and Straslicka, William A., 4,191,485, Cl. 403-15.000.
Strauch, Dieter; and Werner, Rudiger, to Pluss-Staufer AG. Surface-treated mineral filler. 4,191,670, Cl. 260-23.0AR.
Streakers International Incorporated, The: *See—*
Cherry, Richard S., 4,191,436, Cl. 312-293.000.
Strem, R. C.: *See—*
Strem, Robert C.; Strem, R. C.; and Eberle, John H., 4,191,153, Cl. 123-133.000.
Strem, Robert C.; Strem, R. C.; and Eberle, John H., to Omnewtronics, Inc. Assembly and method of vaporizing liquid gasoline fuel and system. 4,191,153, Cl. 123-133.000.
Stroman, Fritz: *See—*
Kingler, Karl H.; Thiemer, Klause; and Stroman, Fritz, 4,191,777, Cl. 424-316.000.
Stroucken, Klaus; Winberg, Torbjorn; and Lindfors, Kaj, to Alfa-Laval AB. Centrifuge with sludge outlets at rotor periphery. 4,191,325, Cl. 233-20.00A.
Strow, Lawrence E.: *See—*
Fischer, Arthur H.; Strow, Lawrence E.; and Bolth, Franklin A., 4,191,641, Cl. 209-166.000.
Struck, Bernd D., to Kernforschungsanlage Julich Gesellschaft mit beschrankter. Process for conversion of materials in electrolytic solution. 4,191,619, Cl. 204-104.000.
Stutz, Herbert: *See—*
Illers, Karl H.; and Stutz, Herbert, 4,191,818, Cl. 528-44.000.
Stutzinger, Ferdinand: *See—*
Bohn, Hans; and Stutzinger, Ferdinand, 4,191,533, Cl. 23-230.00B.
Su, Kenneth S.; Templeton, Robert J.; and Wikel, James H., to Eli Lilly and Company. Separation of syn and anti oximes of 1-sulfonyl-2-aminobenzimidazoles. 4,191,832, Cl. 548-306.000.
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Keyworth, Donald A.; and Sudduth, Jerome R., 4,191,588, Cl. 134-2.000.
Suffern, Bruce C., to Illinois Tool Works Inc. Two-way container package. 4,191,290, Cl. 206-150.000.
Sugimura, Kazuhisa: *See—*
Yamamura, Yuichi; Azuma, Ichiro; Sugimura, Kazuhisa; Morimoto, Hiroshi; Imada, Isuke; and Watanabe, Masazumi, 4,191,778, Cl. 424-317.000.
Sugiyama, Masatoshi: *See—*
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Suld, George: *See—*
Lyons, James E.; Shinn, Robert W.; and Suld, George, 4,191,839, Cl. 560-241.000.
Suling, Carlhans: *See—*
Lindner, Christian; Suling, Carlhans; Bartl, Herbert; Schreckenberg, Manfred; Freitag, Dieter; and Konig, Klaus, 4,191,705, Cl. 260-463.000.
Sullivan, James W., to Brown & Williamson Tobacco Corporation. Apparatus and process for reclaiming tobacco. 4,191,199, Cl. 131-96.000.
Sumitomo Chemical Company, Limited: *See—*
Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, 4,191,518, Cl. 425-326.100.
Okabe, Hiromichi; Kishimoto, Kiyomi; and Ohi, Fumio, 4,191,708, Cl. 260-582.000.
Sumitomo Electric Industries, Ltd.: *See—*
Inagaki, Yutaka; Matsubara, Hironaga; and Ishise, Kojiro, 4,191,675, Cl. 260-29.300.
Sunde, Paul B. Seismic safety cutoff switch. 4,191,868, Cl. 200-61.500.
Sundheim, John J., to John J. Sundheim Family Estate, The. Method and apparatus for cleaning carpets and surfaces using cleaning fluid. 4,191,590, Cl. 134-21.000.
Sundstrand Corporation: *See—*
Flippo, Robert V., 4,191,094, Cl. 91-506.000.
Sunohara, Junji: *See—*
Nishio, Kanemitsu; Yoshida, Mitsutaka; Suzuki, Takashi; and Sunohara, Junji, 4,191,155, Cl. 123-148.00P.
Suntech, Inc.: *See—*
Lyons, James E.; Shinn, Robert W.; and Suld, George, 4,191,839, Cl. 560-241.000.
Suzuki, Noboru: *See—*
Saitoh, Shigeru; and Suzuki, Noboru, 4,191,114, Cl. 110-248.000.
Suzuki, Takashi: *See—*
Nishio, Kanemitsu; Yoshida, Mitsutaka; Suzuki, Takashi; and Sunohara, Junji, 4,191,155, Cl. 123-148.00P.
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Oishi, Masaaki; Ashida, Itaru; and Suzuki, Tetsuro, 4,191,067, Cl. 74-577.00M.
Svedberg, Lennart, to Forsheda Gummifabrik AB. Method and device for sealing a pipe joint. 4,191,384, Cl. 277-1.000.
Swanson, Billy L., to Phillips Petroleum Company. Compositions for acidizing subterranean formations. 4,191,657, Cl. 252-8.55C.
Sweeney, Ralph B.; and Verdouw, Albert J., to General Motors Corporation. Mount assembly for porous transition panel at annular combustor outlet. 4,191,011, Cl. 60-39.320.
Swift, Harold E.; Madgavkar, Ajay M.; and Vogel, Roger F., to Gulf Research and Development Company. Reduction of carbon monoxide in substoichiometric combustion. 4,191,733, Cl. 423-245.000.
Swiss Aluminium Ltd.: *See—*
Faris, Charles G.; and Manley, Edward H., 4,191,954, Cl. 340-679.000.
Sybron Corporation: *See—*
Cowell, David, 4,191,889, Cl. 250-402.000.
Sykes, Donald J.; and Pratt, Louis D., to Philip A. Hunt Chemical Corp. Two-step photographic processing of black and white images which enhances the images by controlled bleaching during fixing immediately following development and which produces black and white images with reduced density in low density areas. 4,191,575, Cl. 430-418.000.
Sylvester, Merton E. Agriculture light tillage implement and tool mounting mechanism therefor. 4,191,262, Cl. 172-459.000.
Symborski, Alex P., to Owens-Corning Fiberglas Corporation. Textile strand control device. 4,191,079, Cl. 83-347.000.
Symonds, John D.: *See—*
Hails, George; and Symonds, John D., 4,191,579, Cl. 106-15.00R.
Syntex (U.S.A.) Inc.: *See—*
Beard, Colin C., 4,191,764, Cl. 424-248.550.
Systems Operations, Inc.: *See—*
Goldman, Max; and Alexoff, Carl, 4,191,376, Cl. 273-139.000.
Syva Company: *See—*
Ullman, Edwin F.; and Rubenstein, Kenneth E., 4,191,613, Cl. 435-188.000.
Szabo, Bela G., to Bruce Plastics, Inc. Duplex handles of molded plastic material. 4,191,232, Cl. 150-12.000.
Szekely, Istvan; Kovacs, Gabor; Virag, Sandor; and Szentivanyi, Matyas, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Novel 17-aza-PGF$_{2\alpha}$ derivatives and pharmaceutical compositions containing the same. 4,191,774, Cl. 424-300.000.
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Szydlowski, William J., to Zenith Radio Corporation. Shielding means for television picture tube electrical feed-through receptacles. 4,191,973, Cl. 358-245.000.
ta Huang, Kwang; and Milner, Brian R., to United States of America, Navy. Power line transient suppressors. 4,191,986, Cl. 361-58.000.
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Takabe, Koichi: *See—*
Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, 4,191,574, Cl. 430-387.000.
Takahashi, Kihei, to Yoshida Kogyo K.K. Gasket installing device. 4,190,943, Cl. 29-235.000.
Takahashi, Takuya: *See—*
Kataoka, Nobuyuki; Takahashi, Takuya; Ohkawa, Fujio; and Anzai, Shiro, 4,191,671, Cl. 260-23.70M.
Takeda Chemical Industries, Ltd.: *See—*
Yamamura, Yuichi; Azuma, Ichiro; Sugimura, Kazuhisa; Morimoto, Hiroshi; Imada, Isuke; and Watanabe, Masazumi, 4,191,778, Cl. 424-317.000.
Takenaga, Senzo. Spiral staircase. 4,190,992, Cl. 52-187.000.
Takeshita, Masahiro; Kawashima, Kazumi; Ueda, Minoru; and Yamamoto, Keisuke, to Matsushita Electric Industrial Co., Ltd. Channel selection apparatus. 4,191,924, Cl. 325-465.000.
Talarico, Lawrence J. Tray loader. 4,191,003, Cl. 53-247.000.
Talwar, Gursaran P., to All India Institute of Medical Sciences. Sterilization process for mammals. 4,191,746, Cl. 424-92.000.
Tamaoka, Yutaka: *See—*
Hayasaka, Kuniyuki; and Tamaoka, Yutaka, 4,191,623, Cl. 204-180.00R.
Tams, Frederick J., III, to RCA Corporation. Processing rack. 4,191,295, Cl. 211-41.000.
Tanada, Eiji, to Sharp Kabushiki Kaisha. Interferences reduction for use in an FM radio receiver. 4,191,850, Cl. 179-1.0GD.
Tanaka, Junzo; Kusunoki, Shigeru; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Microwave oven equipped with electric heating arrangement. 4,191,877, Cl. 219-10.55B.
Tanaka, Katsufusa; and Tanakura, Isamu, to Mitsubishi Denki Kabushiki Kaisha. Vibration detector device. 4,191,869, Cl. 200-61.45R.
Tanaka, Masayuki: *See—*
Nagashima, Tomoyuki; Tanaka, Masayuki; and Shinomiya, Shigeo, 4,191,269, Cl. 180-27.000.
Tanakura, Isamu: *See—*
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Tanimoto, Yoshinori: *See—*
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Tanita Corporation: *See—*
Miyoshi, Tsutomu; Yanagita, Shuichi; and Komachi, Yushi, 4,191,268, Cl. 177-210.00C.
Taplin, Lael B., to Bendix Corporation, The. Means for optimizing fuel economy in an internal combustion engine. 4,191,146, Cl. 123-117.00R.

- Tarantino, Phillip. Hand operated tool with central opening in upper portion. 4,191,261, Cl. 172-371.000.
- Taylor, David L., to Harris Semiconductor. CMOS-bipolar EAROM. 4,192,016, Cl. 365-163.000.
- Taylor, Lynn J.; and Tobias, John W., to Owens-Illinois, Inc. Degradable article. 4,191,320, Cl. 229-3.50R.
- Taylor, Robert J.: *See—*
  - Bontrager, Kenneth L.; Bontrager, Marion R.; Taylor, Robert J.; and Card, David C., 4,191,224, Cl. 141-100.000.
- TDK Electronics Company, Limited: *See—*
  - Sato, Takateru; and Shoji, Shigemasa, 4,191,345, Cl. 242-197.000.
- Techsight Corp.: *See—*
  - Weber, Hermann P., 4,191,804, Cl. 428-409.000.
- Teglund, Lars; and Oldani, Melchiorre, to AB Gustavsberg. Plumbing apparatus including means for producing a water-plug effect in sanitation appliances. 4,190,910, Cl. 4-421.000.
- Tektronix, Inc.: *See—*
  - Nelson, Larry A., 4,191,965, Cl. 358-10.000.
- Teledyne Industries, Inc.: *See—*
  - Karpal, David L., 4,191,807, Cl. 429-176.000.
- Tels, Martinus; Lotens, Jan P.; and Kivits, Hendrikus P. M., to Stamicarbon, B.V. Process for selective extraction of metal ions from aqueous solutions and extracting agents suitable for that purpose. 4,191,728, Cl. 423-24.000.
- Templeton, Robert J.: *See—*
  - Su, Kenneth S.; Templeton, Robert J.; and Wikel, James H., 4,191,832, Cl. 548-306.000.
- Tenneco Chemicals, Inc.: *See—*
  - Keyworth, Donald A.; and Sudduth, Jerome R., 4,191,588, Cl. 134-2.000.
- Teraji, Tsutomu: *See—*
  - Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,191,762, Cl. 424-246.000.
- Teres, Leonid N.: *See—*
  - Antipov, Georgy A.; Gelfand, Mikhail L.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Tsipenjuk, Yakov I.; and Yakubovsky, Petr S., 4,191,264, Cl. 173-93.600.
- Terrier Machine Corporation: *See—*
  - Wettlaufer, Dale E., 4,191,103, Cl. 100-110.000.
- Terry, Ruel C.: *See—*
  - Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,191,012, Cl. 60-39.050.
- Texaco Development Corp.: *See—*
  - Marquis, Edward T.; and Yeakey, Ernest L., 4,191,706, Cl. 260-559.00A.
- Texaco Inc.: *See—*
  - Chess, David D.; Helbling, Clements A., Jr.; and Smith, Randlow, 4,191,640, Cl. 208-348.000.
  - Kalfoglou, George, 4,191,253, Cl. 166-275.000.
  - Scott, Hubert D., 4,191,884, Cl. 250-270.000.
- Texas Instruments Incorporated: *See—*
  - Armstrong, James J., 4,190,951, Cl. 29-628.000.
- Textron, Inc.: *See—*
  - Brent, Robert G., 4,191,202, Cl. 137-112.000.
- Teysseyre, Pierre M.; and Baudier, Claude P., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.). Axial flow compressor rotor drum. 4,191,510, Cl. 416-230.000.
- Th. Goldschmidt AG: *See—*
  - Brugger, Wilhelm, 4,191,727, Cl. 423-1.000.
- Thelander, W. Vincent, Sr.; and Lindquist, Terry K., to Borg-Warner Corporation. Wear compensator for Belleville spring clutch. 4,191,285, Cl. 192-111.00A.
- Thiemer, Klause: *See—*
  - Kingler, Karl H.; Thiemer, Klause; and Stroman, Fritz, 4,191,777, Cl. 424-316.000.
- Thomas, Michael J.: *See—*
  - Walch, Robert L., Jr.; Carey, Van P.; and Thomas, Michael J., 4,191,172, Cl. 126-421.000.
- Thomas, Philip J.; and McAllister, John A., to Circuit Assembly Corp. Insulation displacement connector adapter. 4,190,952, Cl. 29-629.000.
- Thomas, Tom A., III: *See—*
  - Marsh, Paul A., Jr.; and Thomas, Tom A., III, 4,190,994, Cl. 52-262.000.
- Thompson, Stanley R.: *See—*
  - Batha, Howard D.; Mason, John H.; and Thompson, Stanley R., 4,191,730, Cl. 423-239.000.
- Thomson-CSF: *See—*
  - Dansac, Jean; Pepin, Christian; and Cammas, Henri, 4,191,967, Cl. 358-113.000.
- Thomson, Ian M., to Cable Belt Limited. Ropes and the like. 4,191,009, Cl. 57-202.000.
- Thorn, Michael R. Fuel oil supply system having an electrically heated filter. 4,191,524, Cl. 431-208.000.
- Thorpe, Laurence J.: *See—*
  - Dischert, Robert A.; and Thorpe, Laurence J., 4,191,971, Cl. 358-210.000.
- Tillac, Jean-Francois, to Societe Nationale des Poudres et Explosifs. Device for causing rotation, having a pressurized tubular drive means. 4,191,344, Cl. 242-107.000.
- Timjoist, Inc.: *See—*
  - Henderson, Larry R., 4,191,000, Cl. 52-729.000.
- Timm, Gerald W.: *See—*
  - Bradley, William E.; Timm, Gerald W.; Klatt, William M.; and Graves, Wayne H., 4,191,196, Cl. 128-733.000.
- Tingey, Albert R.: *See—*
  - Williams, Malcolm; Tingey, Albert R.; Southgate, John P.; and Russell, Steven J., 4,191,137, Cl. 123-32.0EH.
- Titus, Wallace J.: *See—*
  - Conybear, James G.; and Titus, Wallace J., 4,191,598, Cl. 148-16.500.
- Tobias, John W.: *See—*
  - Taylor, Lynn J.; and Tobias, John W., 4,191,320, Cl. 229-3.50R.
- Tokico Ltd.: *See—*
  - Karasudani, Yasuo, 4,191,278, Cl. 188-73.300.
- Tokui, Kazuo: *See—*
  - Noda, Masahiro; and Tokui, Kazuo, 4,191,894, Cl. 307-116.000.
- Tokuyoshi, Fujiki: *See—*
  - Aomura, Kunio; Tokuyoshi, Fujiki; and Nakamae, Masahiko, 4,191,595, Cl. 148-1.500.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Ikeda, Masashi; and Kihara, Kazuo, 4,190,949, Cl. 29-571.000.
  - Nagano, Katsumi; and Taguchi, Yasuo, 4,191,856, Cl. 179-15.00A.
- Tomczak, James J.; and Wilson, Richard N., to International Business Machines Corporation. Voltage variable integrated circuit capacitor and bootstrap driver circuit. 4,191,899, Cl. 307-303.000.
- Tompkins, Vincent J. Engine with secondary pistons. 4,191,139, Cl. 123-48.00A.
- Tompsett, Alan J.: *See—*
  - Parker, David G.; and Tompsett, Alan J., 4,191,709, Cl. 260-583.00R.
- Tompsett, Michael F., to Bell Telephone Laboratories, Incorporated. Optical image sensor semiconductor apparatus. 4,192,015, Cl. 365-114.000.
- Toriumi, Shiro: *See—*
  - Watanabe, Yutaka; Yamagishi, Seiichi; and Toriumi, Shiro, 4,191,455, Cl. 353-27.00A.
- Toro Company, The: *See—*
  - Bivens, Jon A.; and Cochran, Wilson V., 4,191,331, Cl. 239-231.000.
  - Check, Joseph M.; and Reed, E. Smith, Jr., 4,191,007, Cl. 56-199.000.
  - Walto, Joseph J., 4,190,954, Cl. 30-347.000.
- Torrington, Leslie A.: *See—*
  - Allen, James A.; and Torrington, Leslie A., 4,191,380, Cl. 274-9.00B.
- Toshiba Kikai Kabushiki Kaisha: *See—*
  - Ogawa, Akira; Masuda, Toyoaki; and Miura, Osamu, 4,191,101, Cl. 99-323.300.
  - Sato, Mituharu; and Yamazaki, Katsuo, 4,190,947, Cl. 29-568.000.
- Tosi, Carlo, to Instituto Franco Tosi S.p.A. Bromhexine derivatives and process for making same. 4,191,780, Cl. 424-324.000.
- Toth, William E.: *See—*
  - Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,191,049, Cl. 73-170.00A.
- Tousley-Bixler Construction Co. Inc.: *See—*
  - Shuck, William D.; Lind, Frederick D.; and Cole, John W., 4,191,479, Cl. 366-101.000.
- Tovrog, Benjamin S.; Diamond, Steven E.; and Mares, Frank, to Allied Chemical Corporation. Oxidation process using metal nitro complex. 4,191,696, Cl. 260-348.330.
- Towae, Friedrich: *See—*
  - Merger, Franz; Towae, Friedrich; and Penzel, Erich, 4,191,838, Cl. 560-205.000.
- Toyama, Tadao; and Iwasaki, Masayuki, to Fuji Photo Film Co., Ltd. Photosensitive positive image forming process with two photo-sensitive layers. 4,191,573, Cl. 430-166.000.
- Toyo Seikan Co., Ltd.: *See—*
  - Hirata, Masuzo, 4,191,449, Cl. 350-97.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Katahira, Eturou; Yamaguchi, Shunzo; Kida, Masashi; Ishida, Yasuhiko; and Miyagi, Hideo, 4,191,013, Cl. 60-276.000.
  - Kawata, Shoji; and Sakakibara, Naoji, 4,191,051, Cl. 73-347.000.
  - Kuramoto, Akio; and Kawai, Takeo, 4,191,272, Cl. 180-84.000.
  - Nohira, Hidetaka; Ito, Sumio; and Ohki, Hisashi, 4,191,135, Cl. 123-30.00C.
  - Nohira, Hidetaka; Kobashi, Kiyoshi; and Nakano, Jiro, 4,191,144, Cl. 123-117.00R.
  - Shibata, Norio, 4,191,154, Cl. 123-136.000.
  - Yuuki, Kiyoshi, 4,191,143, Cl. 123-117.00A.
  - Yuuki, Kiyoshi, 4,191,147, Cl. 123-117.00A.
- Transco Inc.: *See—*
  - Wickenberg, Chester H., 4,191,109, Cl. 410-149.000.
- Transkrit Corporation: *See—*
  - Michlin, Irving R., 4,191,402, Cl. 282-23.00R.
- Traven, Lars J. C.: *See—*
  - Andersson, Roland J. E.; Larsson, Lars-Ake L.; and Traven, Lars J. C., 4,191,359, Cl. 251-9.000.
  - Larsson, Lars-Ake L.; and Traven, Lars J. C., 4,191,646, Cl. 210-103.000.
- Tridon-Serflex S.A.: *See—*
  - Luc, Andre R., 4,191,123, Cl. 113-116.00H.
- Triebel, Wolfgang, to Polysius AG. Suspension gas preheater. 4,191,526, Cl. 432-58.000.
- Trimmier, J. Robert: *See—*
  - Armstrong, James B.; and Trimmier, J. Robert, 4,191,725, Cl. 264-261.000.
- Tripoint, Inc.: *See—*
  - Kaye, Dianne, 4,191,219, Cl. 139-383.00R.

- Trokhan, Paul D., to Procter & Gamble Company, The. Soft absorbent imprinted paper sheet and method of manufacture thereof. 4,191,609, Cl. 162-113.000.
- Trouillard, Charles, to Bolli, Hilda. Apparatus for the dehydration of waste and vegetable matter. 4,191,527, Cl. 432-72.000.
- Tru-Spoke, Inc.: *See—*
  - Bradley, Robert A., 4,191,427, Cl. 301-108.00S.
- Trutzchler GmbH & Co. KG.: *See—*
  - Trutzschler, Hans, 4,190,932, Cl. 19-81.000.
- Trutzschler GmbH & Co. KG.: *See—*
  - Jagst, Peter, 4,190,933, Cl. 19-81.000.
- Trutzschler, Hans, to Trutzchler GmbH & Co. KG. Method and apparatus for opening textile fiber bales. 4,190,932, Cl. 19-81.000.
- TRW Inc.: *See—*
  - Harrington, Alan L., 4,191,788, Cl. 427-82.000.
- Tsipenjuk, Yakov I.: *See—*
  - Antipov, Georgy A.; Gelfand, Mikhail L.; Lavnikov, Nikolai S.; Teres, Leonid N.; Urazhdin, Ivan I.; Tsipenjuk, Yakov I.; and Yakubovsky, Petr S., 4,191,264, Cl. 173-93.600.
- Tsukidate, Yoshitaka; and Sasaki, Shin, to Sony Corporation. Tape cassette. 4,191,984, Cl. 360-132.000.
- Tsuyoshi, Makino: *See—*
  - Yoshikazu, Nakajima; Kazumasa, Suzuki; and Tsuyoshi, Makino, 4,191,810, Cl. 435-177.000.
- Tube Engineers, Inc.: *See—*
  - Holden, Edward S., 4,191,056, Cl. 73-743.000.
- Tucker, Harold A., to B.F. Goodrich Company, The. Ethylenically unsaturated blocked aromatic diisocyanates. 4,191,833, Cl. 548-378.000.
- Tucker, Harold A., to B.F. Goodrich Company, The. Ethylenically unsaturated blocked aromatic diisocyanates. 4,191,834, Cl. 548-305.000.
- Tucker, Percy A. Apparatus and method for winding and inserting sheet material into a tube. 4,190,942, Cl. 29-451.000.
- Tungum Hydraulics Limited: *See—*
  - Lawrence, Anthony J., 4,190,940, Cl. 29-156.40R.
- Turner, James E., to Entek Corporation. Extruding machine and end products. 4,191,522, Cl. 425-552.000.
- Ueda, Minoru: *See—*
  - Takeshita, Masahiro; Kawashima, Kazumi; Ueda, Minoru; and Yamamoto, Keisuke, 4,191,924, Cl. 325-465.000.
- Ueno, Yutaka: *See—*
  - Ono, Fumitaka; Semasa, Takayoshi; Ueno, Yutaka; and Iwata, Shuzi, 4,191,974, Cl. 358-261.000.
- Ullman, Edwin F.; and Rubenstein, Kenneth E., to Syva Company. Malate dehydrogenase conjugates for enzyme immunoassays. 4,191,613, Cl. 435-188.000.
- Ulmer, Richard W., to Motorola, Inc. High voltage CMOS circuit. 4,191,898, Cl. 307-264.000.
- Uni-Cardan Aktiengesellschaft: *See—*
  - Girguis, Sobhy L.; and Krude, Werner, 4,191,031, Cl. 64-21.000.
- Uni-Drive (Tractors) Limited: *See—*
  - Copperwheat, Cyril, 4,191,280, Cl. 188-300.000.
- Unicon Parking Structures, Inc.: *See—*
  - Rice, Edward K., 4,191,002, Cl. 52-747.000.
- Union Carbide Corporation: *See—*
  - Dollman, David Y.; and O'Grady, Timothy J., 4,191,596, Cl. 148-6.270.
  - Hall, Wilbur S., 4,191,676, Cl. 260-29.70R.
  - Moyer, Charles E., Jr.; Keller, George E., II; Beisner, Robert W.; and Walker, Wellington E., 4,191,701, Cl. 260-450.000.
  - Pelton, John F., 4,191,486, Cl. 403-28.000.
- Union Oil Company of California: *See—*
  - Light, Steven D.; and Ward, John W., 4,191,637, Cl. 208-139.000.
  - McArthur, Dennis P., 4,191,664, Cl. 252-466.00J.
  - Sarem, Amir M., 4,191,249, Cl. 166-244.00C.
  - Young, Donald C.; and Fleck, Raymond N., 4,191,620, Cl. 204-149.000.
- Union Siderurgique du Nord et de l'est de la France: *See—*
  - Voituriez, Henry; and Aymard, Rene, 4,191,410, Cl. 285-367.000.
- United Kingdom Atomic Energy Authority: *See—*
  - Keats, Albert B.; and Leggett, Dudley W., 4,192,013, Cl. 365-91.000.
  - Williams, John A., 4,191,022, Cl. 62-55.500.
- United States of America
  - Air Force: *See—*
    - Quinlan, Kenneth P.; and Hutta, Joseph J., 4,191,561, Cl. 75-101.00R.
  - Army: *See—*
    - Basso, Michael J.; and Brown, Henry B., 4,191,886, Cl. 250-376.000.
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    - Quinn, John E.; Wittenbrook, Lawrence S.; and Donegan, Charles E., 4,191,655, Cl. 252-60.000.
- WOCO Franz-Josef Wolf & Co.: *See—*
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- Wolf, Franz-Josef; and Roth, Dieter, to WOCO Franz-Josef Wolf & Co. Gasket ring with locking rings. 4,191,390, Cl. 277-219.000.
- Wolf, Klaus-Ullrich: *See—*
    - Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ullrich; Hell, Insa; and Hempel, Reinhard, 4,191,770, Cl. 424-266.000.
- Wolk, Ronald H.: *See—*
    - Lebowitz, Howard E.; Wolk, Ronald H.; Alpert, Seymour B.; Stewart, Norman C.; and Rovesti, William C., 4,191,700, Cl. 260-449.00M.
- Wood, William P.; and Jutila, Raymond E., to Magnetic Peripherals Inc. Magnetic transducing head with a turn in the gap. 4,191,982, Cl. 360-123.000.
- Woodard, Tony O., to Eaton Corporation. Illuminated sealed rocker switch. 4,191,873, Cl. 200-302.000.
- Woode, Alan D., to Microwave and Electronic System Limited. Intrusion sensor and aerial therefor. 4,191,953, Cl. 340-552.000.
- Woog, Heinrich; and Gruber, Werner, to Boehringer Mannheim GmbH. Instillation composition. 4,191,772, Cl. 424-273.00R.
- Wool Development International Limited: *See—*
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- Wozniak, Walter J.: *See—*
    - Kulesza, Ralph J.; Wildman, John R.; Burck, Joseph M.; Meyer, Burton C.; and Wozniak, Walter J., 4,191,374, Cl. 273-30.000.
- Wren, Fred H., Jr.; and Babcock, Frank H., III, to Pro-tect, Inc. Karate foot protector. 4,190,971, Cl. 36-106.000.
- Wright, Basil M., to National Research Development Corporation. Medical apparatus. 4,191,187, Cl. 128-218.00A.
- Wright, Peter A., to Gulf Chemical & Metallurgical Co. Method of extracting a metal from a melt containing the metal. 4,191,560, Cl. 75-85.000.
- Wu, Che-Kuang, to Corning Glass Works. Method of making photosensitive colored glasses exhibiting alterable photo-anisotropic effects. 4,191,547, Cl. 65-30.00R.
- Wu, Chester C.; and Garner, Albert Y., to Monsanto Company. Flame retarding compound. 4,191,715, Cl. 260-927.00N.
- Wyner, Aaron D.: *See—*
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- Yamaguchi, Shunzo: *See—*
  - Katahira, Eturou; Yamaguchi, Shunzo; Kida, Masashi; Ishida, Yasuhiko; and Miyagi, Hideo, 4,191,013, Cl. 60-276.000.
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  - Matsumoto, Hiromitsu; and Kurahashi, Toshio, 4,191,140, Cl. 123-52.0MB.
  - Nakajima, Kunihiko; Sato, Kyoshi; Iio, Toshimitsu; and Kanda, Atsushi, 4,191,866, Cl. 200-4.000.
  - Yamashita, Ryuichi; and Matsumoto, Hiromitsu, 4,191,716, Cl. 261-23.00A.
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  - Takeshita, Masahiro; Kawashima, Kazumi; Ueda, Minoru; and Yamamoto, Keisuke, 4,191,924, Cl. 325-465.000.
- Yamamura, Yuichi; Azuma, Ichiro; Sugimura, Kazuhisa; Morimoto, Hiroshi; Imada, Isuke; and Watanabe, Masazumi, to Takeda Chemical Industries, Ltd. Aqueous immunoregulatory agent. 4,191,778, Cl. 424-317.000.
- Yamashita, Ryuichi; and Matsumoto, Hiromitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Carburetor for internal combustion engines. 4,191,716, Cl. 261-23.00A.
- Yamazaki, Katsuo: *See—*
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- Yanagisawa, Syozo; and Ishikawa, Shigewo, to Hitachi, Ltd. Pressure responsive switch having protection from overpressure of source. 4,191,870, Cl. 200-83.00P.
- Yanagita, Shuichi: *See—*
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- Yancey, Herbert W.: *See—*
  - Guttenplan, Jack D.; and Yancey, Herbert W., 4,191,920, Cl. 324-459.000.
- Yang, Ralph T.; and Shen, Ming-shing, to United States of America, Energy. Carbonaceous fuel combustion with improved desulfurization. 4,191,115, Cl. 110-347.000.
- Yano, Douglas H.: *See—*
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- Yano, Osahiko: *See—*
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- Yarrow, Christopher J., to Lucas Industries Limited. Rotary electric machines. 4,191,902, Cl. 310-68.00D.
- Yasuda, Yuh; Kizaki, Sigeru; and Miya, Yukio, to Citizen Watch Company Limited. Sealed housings for a subminiature piezoelectric vibrator. 4,191,905, Cl. 310-344.000.
- Yates, Vincent A.: *See—*
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- Yokoyama, Akinori: *See—*
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- Yonezawa, Kazuya; Kato, Yasushi; Furkawa, Hisao; and Azuma, Masaaki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Room temperature curable composition. 4,191,713, Cl. 525-102.000.
- Yonezawa, Kazuya; Kato, Yasushi; Furukawa, Hisao; and Azuma, Masaaki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable polyester oligomer and a process for producing same. 4,191,714, Cl. 525-102.000.
- Yoshida, Hiroshi; and Akashi, Shunji, to Yoshida Kogyo K.K. Method of manufacturing slide fasteners. 4,190,944, Cl. 29-408.000.
- Yoshida, Hiroshi; and Akashi, Shunji, to Yoshida Kogyo K.K. Method of manufacturing slide fasteners. 4,190,945, Cl. 29-408.000.
- Yoshida, Hiroshi, to Yoshida Kogyo K.K. Woven fastener stringer. 4,191,220, Cl. 139-384.00B.
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  - Takahashi, Kihei, 4,190,943, Cl. 29-235.000.
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- Yoshikazu, Nakajima; Kazumasa, Suzuki; and Tsuyoshi, Makino, to Mitsui Sugar Co., Ltd. Process for the production of immobilized glucose isomerase. 4,191,810, Cl. 435-177.000.
- Yoshimura, Hirofumi: *See—*
  - Tanaka, Junzo; Kusunoki, Shigeru; and Yoshimura, Hirofumi, 4,191,877, Cl. 219-10.55B.
- Yoshino, Hironori, to Matsushita Electric Industrial Co. Ltd. Corona discharge detection apparatus which eliminates periodic noise. 4,191,921, Cl. 324-54.000.
- Young, Donald C.; and Fleck, Raymond N., to Union Oil Company of California. Electrochemical conversion of sulfur-containing anions to sulfur. 4,191,620, Cl. 204-149.000.
- Young, Rodney C.: *See—*
  - Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,191,769, Cl. 424-263.000.
- Yuuki, Kiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. EGR/Ignition timing control system for an internal combustion engine. 4,191,143, Cl. 123-117.00A.
- Yuuki, Kiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. EGR/ignition timing control system for an internal combustion engine. 4,191,147, Cl. 123-117.00A.
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- Zasio, John J.; and Samuels, Michael W., to Fujitsu Limited. Table positioning system including optical reference position measuring transducer. 4,191,916, Cl. 318-640.000.
- Zedrosser, Ulrich, to Steyr-Daimler-Puch-Aktiengesellschaft. Breech-closing mechanism for automatic rifle. 4,191,089, Cl. 89-181.000.
- Zenith Radio Corporation: *See—*
  - Dougherty, Lawrence W., 4,191,909, Cl. 313-402.000.
  - Szydlowski, William J., 4,191,973, Cl. 358-245.000.
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- Zeuner, Kenneth W.; and Jarman, Alonzo B., to Control Concepts, Inc. Feathering valve assembly. 4,191,091, Cl. 91-52.000.
- Zimmer, Elvis S.: *See—*
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- Zimmerman, Dennis M., to Eli Lilly and Company. Analgesic method using 1,3,4-trisubstituted-4-arylpiperidines. 4,191,771, Cl. 424-267.000.
- Zingher, Arthur R. Bi-directional optical apparatus for altering an optically projected member. 4,191,457, Cl. 353-44.000.
- Zippel, Herbert, to Herbert Zippel GmbH & Co., KG. Document files. 4,191,484, Cl. 402-15.000.
- Zographos, Georgios: *See—*
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- Zupancic, Franc: *See—*
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- Zupancic, Tomaz: *See—*
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- Zupancic, Viktor; Zupancic, Franc; and Zupancic, Tomaz. Mixing apparatus for concrete or other bulk material. 4,191,478, Cl. 366-39.000.
- Zwahlen, Gunther: *See—*
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LIST OF DEFENSIVE PUBLICATIONS

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DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 4TH DAY OF MARCH, 1980

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Donovan, Leonard D.; and Sitter, Matthew M. Preformed hot-melt sealant strip. T991,001, 3-4-80, Cl. 428-40.000.
- Leonard, Don R. Coating composition. T991,002, 3-4-80, Cl. 260-15.000.
- Sitter, Matthew M.: *See—*
  - Donovan, Leonard D.; and Sitter, Matthew M., T991,001, Cl. 428-40.000.

LIST OF REISSUE PATENTEES

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Horner, Raymond L.: *See—*
  - Prescott, David B.; Thumm, Herbert H.; and Horner, Raymond L., Re. 30,223, Cl. 277-37.000.
- Mechanex Corporation, The: *See—*
  - Prescott, David B.; Thumm, Herbert H.; and Horner, Raymond L., Re. 30,223, Cl. 277-37.000.
- Prescott, David B.; Thumm, Herbert H.; and Horner, Raymond L., to Mechanex Corporation, The. Lubricant seal. Re. 30,223, Cl. 277-37.000.
- Thumm, Herbert H.: *See—*
  - Prescott, David B.; Thumm, Herbert H.; and Horner, Raymond L., Re. 30,223, Cl. 277-37.000.

LIST OF PLANT PATENTEES

- Bringhurst, Royce S.; and Voth, Victor, to University of California, The Regents of the. CN7 Strawberry plant. 4,507, 3-4-80, Cl. 49.000.
- University of California, The Regents of the: *See—*
  - Bringhurst, Royce S.; and Voth, Victor, 4,507, Cl. 49.000.
- Voth, Victor: *See—*
  - Bringhurst, Royce S.; and Voth, Victor, 4,507, Cl. 49.000.
- Zaiger, Chris F. Peach tree. 4,508, 3-4-80, Cl. 43.000.

LIST OF DESIGN PATENTEES

- Aktiebolaget Electrolux: *See—*
  - Carlsson, Karl L., 254,356, Cl. D7-153.000.
- Arnsteiner, Anton, to Blizzard Gesellschaft m.b.H. Ski. 254,385, 3-4-80, Cl. D21-229.000.
- Arvin Industries, Inc.: *See—*
  - Chesnut, Amos E.; and Parrigin, Albert J., 254,388, Cl. D23-95.000.
- Babcock, Joe J. Saddle bags. 254,343, 3-4-80, Cl. D3-79.000.
- Barn and Silo Stores Inc.: *See—*
  - Cooper, Howard, 254,392, Cl. D25-14.000.
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- Boudrot, Richard L.; Hall, William R.; and Weaver, Allan E., to Digital Equipment Corporation. Data processing system console. 254,371, 3-4-80, Cl. D14-42.000.
- Bridgestone Tire Company Limited: *See—*
  - Kamiya, Tadashi, 254,367, Cl. D12-136.000.
- Brilando, Frank P., to Schwinn Bicycle Company. Unicycle frame. 254,365, 3-4-80, Cl. D12-107.000.
- Brookshire, Phillip L.: *See—*
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- Carlsson, Karl L., to Aktiebolaget Electrolux. Power unit for kitchen appliances. 254,356, 3-4-80, Cl. D7-153.000.
- Chesnut, Amos E.; and Parrigin, Albert J., to Arvin Industries, Inc. Combined grate and fireplace heat exchanger. 254,388, 3-4-80, Cl. D23-95.000.
- Chicago Tool and Engineering Company: *See—*
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- Cicero, Edward L. Golf club head or similar article. 254,384, 3-4-80, Cl. D21-219.000.
- Cone, Richard E., to Questor Corporation. Combined plant trellis and window guard. 254,393, 3-4-80, Cl. D25-53.000.
- Coons, John C.; and Brookshire, Phillip L., to Masco Corporation of Indiana. Radio. 254,375, 3-4-80, Cl. D14-71.000.
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- Dickey, Avis M., to Dickey, Inc. Font of illustration figures for children's stories and cards. 254,379, 3-4-80, Cl. D18-33.000.
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Freeland, Daryl D. Stove. 254,389, 3-4-80, Cl. D23-97.000.
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Seda, Theodore P., to L. D. Schreiber Cheese Co., Inc. Packaging container for a sliced food product or the like. 254,359, 3-4-80, Cl. D9-192.000.
Seda, Theodore P., to L. D. Schreiber Cheese Co., Inc. Packaging container for a sliced food product or the like. 254,360, 3-4-80, Cl. D9-192.000.
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Sinn, Hans J.; Weirsman, William A.; and Woods, George H., to Pitney Bowes Inc. Collating machine. 254,372, 3-4-80, Cl. D14-48.000.
Smajd, Carl F., to Uniroyal, Inc. Pneumatic tire tread and buttress. 254,368, 3-4-80, Cl. D12-141.000.
Smith, William T. Fireplace unit. 254,390, 3-4-80, Cl. D23-97.000.
Steven Manufacturing Company: *See—*
Klawitter, Ronald R., 254,395, Cl. D48-24.00R.
Storm Plastics, Inc.: *See—*
Storm, William D., 254,386, Cl. D22-28.000.
Storm, William D., to Storm Plastics, Inc. Fishing lure. 254,386, 3-4-80, Cl. D22-28.000.
Sunset, Philip C. Cold storage food drawer for a boat or the like. 254,342, 3-4-80, Cl. D3-78.000.
Suzuki, Toshio, to Tomy Kogyo Co., Inc. Toy robot hand. 254,382, 3-4-80, Cl. D21-189.000.
Tatum, Gary A.: *See—*
Fetty, Harold D.; Martin, William F.; Tatum, Gary A.; and Worley, Lyle L., 254,369, Cl. D12-142.000.
Thomas, Richard F. Toy coaster. 254,380, 3-4-80, Cl. D21-76.000.
Tomy Kogyo Co., Inc.: *See—*
Suzuki, Toshio, 254,382, Cl. D21-189.000.
Uniroyal, Inc.: *See—*
Smajd, Carl F., 254,368, Cl. D12-141.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,340, 3-4-80, Cl. D2-431.000.
Weaver, Allan E.: *See—*
Boudrot, Richard L.; Hall, William R.; and Weaver, Allan E., 254,371, Cl. D14-42.000.
Weinstein, Barnet; and Price, John F., to Weinstein, Barnet. Modular control panel. 254,370, 3-4-80, Cl. D13-12.000.
Weirsman, William A.: *See—*
Sinn, Hans J.; Weirsman, William A.; and Woods, George H., 254,372, Cl. D14-48.000.
Whitesel, John A., II. Electric guitar. 254,378, 3-4-80, Cl. D17-18.000.
Woods, George H.: *See—*
Sinn, Hans J.; Weirsman, William A.; and Woods, George H., 254,372, Cl. D14-48.000.
Worley, Lyle L.: *See—*
Fetty, Harold D.; Martin, William F.; Tatum, Gary A.; and Worley, Lyle L., 254,369, Cl. D12-142.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Ekuan, Kenji, 254,366, Cl. D12-110.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 4, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
1	4,190,905
16	4,190,902
60	4,190,903
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202	4,190,907
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1.4	4,190,909
CLASS 4	
421	4,190,910
CLASS 5	
44 R	4,190,911
81 R	4,190,913
83	4,190,912
247	4,190,914
451	4,190,916
457	4,190,917
465	4,190,918
505	4,190,915
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383	4,190,923
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65	4,190,926
96 D	4,190,927
111 R	4,190,928
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230 B	4,191,533
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77 R	4,190,934
205.16 C	4,190,935
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25.35	4,190,937
26 A	4,190,938
156.4 R	4,190,940
156.7 C	4,190,941
235	4,190,943
408	4,190,944
	4,190,945
451	4,190,939
	4,190,942
527.7	4,190,946
568	4,190,947
	4,190,948
571	4,190,949
572	4,190,950
628	4,190,951
629	4,190,952
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155	4,190,953
347	4,190,954
366	4,190,955
410	4,190,956
411	4,190,957
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1 SD	4,190,960
3 B	4,190,959
180 R	4,190,961
363 K	4,190,962
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57 A	4,190,963
114	4,190,964
196	4,190,965
242	4,190,966
CLASS 35	
6	4,190,967
29 R	4,190,968
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	4,190,970
106	4,190,971
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43 D	4,190,972
43 R	4,190,973
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102.9	4,190,974
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2 A	4,190,975
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17.5	4,190,976
21.2	4,190,977
CLASS 44	
6	4,191,534
10 R	4,191,535
63	4,191,536
71	4,191,537
CLASS 46	
12	4,190,978
17	4,190,979
93	4,190,980
161	4,190,982
CLASS 47	
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56	4,190,981
58	4,190,984
CLASS 48	
197 R	4,191,538
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210	4,191,539
CLASS 49	
16	4,190,985
CLASS 51	
295	4,190,986
CLASS 52	
1	4,190,987
16	4,190,988
60	4,190,989
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187	4,190,992
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262	4,190,994
309.13	4,190,996
309.9	4,190,995
396	4,190,997
591	4,190,998
687	4,190,999
729	4,191,000
743	4,191,001
747	4,191,002
CLASS 53	
247	4,191,003
378	4,191,004
382	4,191,005
CLASS 55	
18	4,191,541
96	4,191,542
279	4,191,543
390	4,191,544
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199	4,191,007
327 R	4,191,008
CLASS 57	
202	4,191,009
208	4,191,010
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39.05	4,191,012
39.32	4,191,011
276	4,191,013
290	4,191,014
361	4,191,015
371	4,191,016
420	4,191,017
428	4,191,018
525	4,191,019
550	4,191,020
657	4,191,021
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55.5	4,191,022
79	4,191,023
80	4,191,024
135	4,191,025
140	4,191,026
185	4,191,027
259	4,191,028
428	4,191,029
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13	4,191,030
21	4,191,031
27 B	4,191,032
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20	4,191,546
30 R	4,191,547
79	4,191,548
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298	4,191,035
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	4,191,552
92	4,191,553
95	4,191,554
	4,191,555
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132	4,191,040
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247	4,191,042
319	4,191,043
354	4,191,044
407	4,191,045
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61.4	4,191,047
104	4,191,048
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322.5	4,191,050
347	4,191,051
357	4,191,052
363.1	4,191,053
421.5 R	4,191,054
462	4,191,055
743	4,191,056
777	4,191,057
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10.33	4,191,058
25	4,191,059
89.22	4,191,060
108	4,191,061
242.11 R	4,191,062
388 R	4,191,063
475	4,191,064
489	4,191,065
527	4,191,066
577 M	4,191,067
625	4,191,068
681	4,191,069
682	4,191,070
715	4,191,071
732	4,191,072
764	4,191,073
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0.5 B	4,191,556
66	4,191,558
68 R	4,191,559
85	4,191,560
101 R	4,191,561
122	4,191,562
130 R	4,191,563
157.5	4,191,564
252	4,191,565
CLASS 76	
25 R	4,191,074
CLASS 81	
3 R	4,190,931
CLASS 82	
36 R	4,191,075
CLASS 83	
13	4,191,076
99	4,191,077
320	4,191,078
347	4,191,079
467 R	4,191,080
CLASS 84	
1.03	4,191,081
1.19	4,191,082
1.28	4,191,083
136	4,191,084
293	4,191,085
306	4,191,086
CLASS 89	
1.806	4,191,087
33 C	4,191,088
181	4,191,089
CLASS 91	
52	4,191,090
	4,191,091
189 R	4,191,092
234	4,191,093
506	4,191,094
CLASS 92	
78	4,191,095
143	4,191,096
CLASS 98	
2.12	4,191,097
40 N	4,191,098
60	4,191,099
CLASS 99	
299	4,191,100
323.3	4,191,101
580	4,191,102
CLASS 100	
110	4,191,103
CLASS 101	
93.14	4,191,104
415.1	4,191,105
	4,191,106
CLASS 105	
4 R	4,191,107
CLASS 106	
1.12	4,191,577
1.13	4,191,578
15 R	4,191,579
16	4,191,580
20	4,191,581
38.2	4,191,582
39.6	4,191,583
90	4,191,584
99	4,191,585
100	4,191,586
308 Q	4,191,587
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53.3	4,191,112
132	4,191,111
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248	4,191,114
347	4,191,115
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158 B	4,191,121
158 E	4,191,120
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261	4,191,122
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CLASS 114	
123	4,191,124
CLASS 116	
219	4,191,125
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57	4,191,127
720	4,191,128
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5	4,191,129
22	4,191,130
155	4,191,131
CLASS 122	
156	4,191,132
235 R	4,191,133
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25 J	4,191,134
30 C	4,191,135
	4,191,136
32 EH	4,191,137
48 A	4,191,139
52 MB	4,191,140
65 A	4,191,141
73 R	4,191,138
90.58	4,191,142
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	4,191,145
	4,191,147
117 R	4,191,144
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119 B	4,191,150
119 C	4,191,152
119 CD	4,191,148
119 EC	4,191,149
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CLASS 125	
21	4,191,159
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9 R	4,191,160
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123	4,191,162
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292	4,191,171
350 R	4,191,173
417	4,191,167
421	4,191,172
427	4,191,329
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213 R	4,191,181
214 F	4,191,184
214 R	4,191,182
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330	4,191,190
347	4,191,191
457	4,191,192
675	4,191,193
692	4,191,194
696	4,191,195
733	4,191,196
736	4,191,197
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CLASS 134	
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21	4,191,589
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25 R	4,191,591
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104	4,191,201
CLASS 136	
89 CA	4,191,593
89 PC	4,191,594
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	4,191,203
205	4,191,204
344	4,191,206
	4,191,207
375	4,191,205
393	4,191,208
486	4,191,209
505.13	4,191,210
512.15	4,191,211
601	4,191,212
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630.2	4,191,214
870	4,191,215
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426 R	4,191,221
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329	4,191,225
391	4,191,226
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6.27	4,191,596
12 B	4,191,597
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	4,191,599
142	4,191,600
160	4,191,601
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3	4,191,230
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52 R	4,191,233
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69	4,191,236
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245	4,191,604
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384	4,191,607
584	4,191,608

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CLASS 193

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12.5 4,191,361

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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

25 :	T991,001
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PATENT AND TRADEMARK OFFICE
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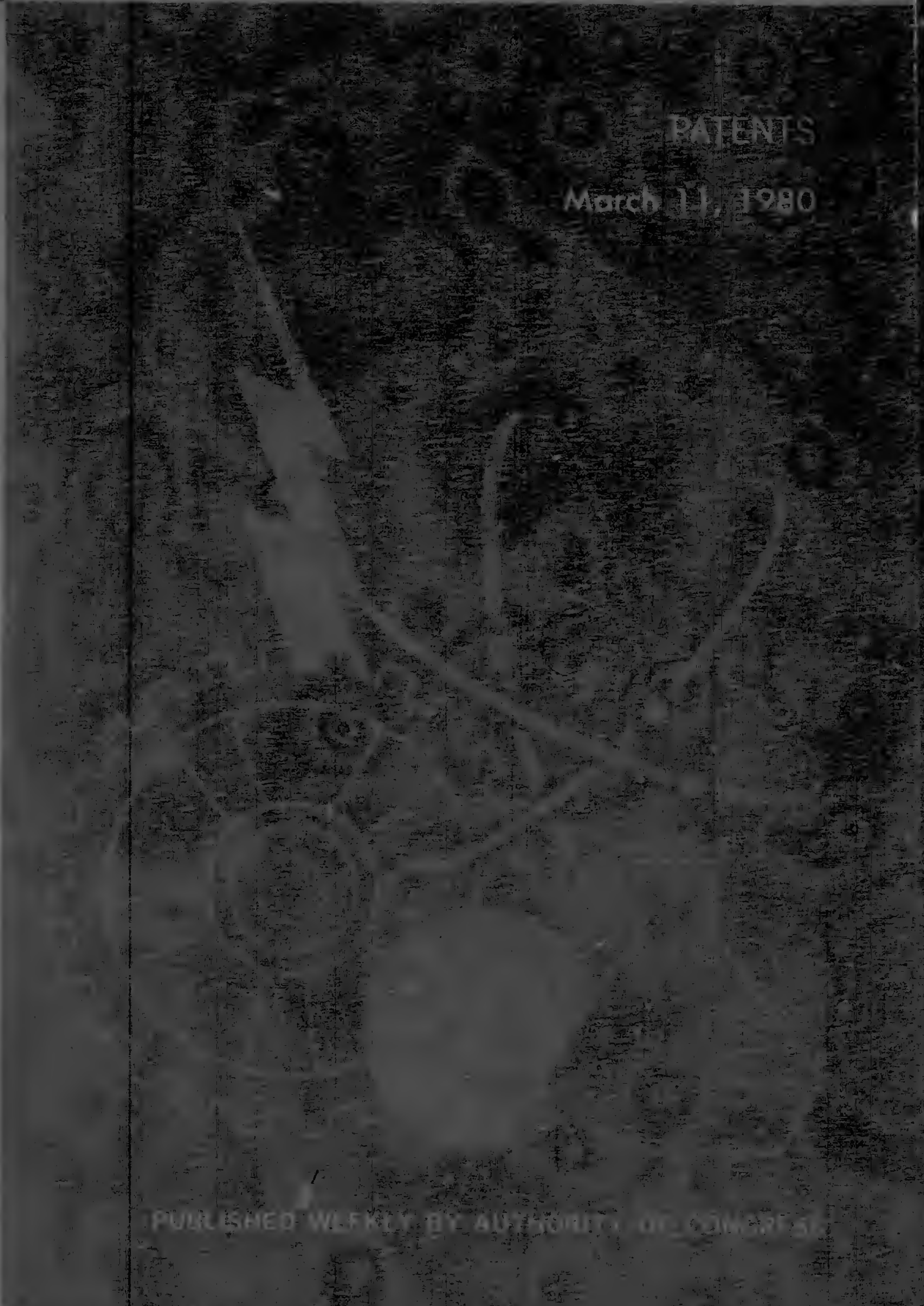

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

Jan. 28, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,590,419, Re. S.N. 103,515, Filed Dec. 13, 1979, Cl. 16/135, QUICKLY ATTACHABLE AND DETACHABLE HINGE ASSEMBLY, Carl J. Dargene, Owner of Record: *Amerock Corporation, Rockford, Ill.*, Attorney or Agent: C. Frederick Leydig, et al., Ex. Gp.: 353

3,732,131, Re. S.N. 086,976, Filed Oct. 22, 1979, Cl. 149/18, GUN PROPELLANT CONTAINING NITROPLASTICIZED NITROCELLULOSE AND TRIAMINOGUANIDINE NITRATE, Vernon E. Haury, et al., Owner of Record: *Rockwell International Corp., El Segundo, Calif.*, Attorney or Agent: L. Lee Humphries, et al., Ex. Gp.: 223

3,938,603, Re. S.N. 052,077, Filed Jun. 25, 1979, Cl. 177/211, CONSTANT MOMENT WEIGH SCALE WITH FLOATING FLEXURE BEAM, Ralph S. Shoberg, et al., Owner of Record: *GSE Inc., Farminston Hills, Minn.*, Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 211

3,968,745, Re. S.N. 104,344, Filed Dec. 17, 1979, Cl. 101/111, LABEL PRINTING AND APPLYING APPARATUS, Paul H. Hamisch, Jr., Owner of Record: *Monarch Marking Systems, Inc., Dayton, Ohio,* Attorney or Agent: Joseph J. Grass, Ex. Gp.: 337

4,043,152, Re. S.N. 094,121, Filed Nov. 14, 1979, Cl. 066/9 R, INLAY WHEEL AND METHOD, David J. J. Bryars, Owner of Record: *Austen Bryars of London Inc., Greensboro, N.C.*, Attorney or Agent: Clifton T. Hunt, Jr., Ex. Gp.: 353

4,045,233, Re. S.N. 048,277, Filed Jun. 13, 1979, Cl. 106/57, REFRACTORY COMPOSITION AND METHOD FOR PREPARATION, Everett A. Thomas, et al., Owner of Record: *Didier Taylor Refractories Corporation, Cincinnati, Ohio,* Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 113

4,056,953, Re. S.N. 092,584, Filed Nov. 8, 1979, Cl. 64/30 D, TORQUE LIMITING COUPLING, James L. Furlette, et al., Owner of Record: *Excel Corporation, Fenton, Mich.*, Attorney or Agent: Ernest I. Gifford, et al., Ex. Gp.: 345

4,063,060, Re. S.N. 101,846, Filed Dec. 10, 1979, Cl. 219/93, METHODS OF MAKING TORSIONAL VIBRATION ISOLATING MOTOR MOUNTING SYSTEMS AND ARRANGEMENTS, Ernest W. Litch, III, Owner of Record: *General Electric Company, Fort Wayne, Ind.*, Attorney or Agent: John M. Stoudt, et al., Ex. Gp.: 213

4,064,524, Re. S.N. 104,270, Filed Dec. 17, 1979, Cl. 357/24, TWO-PHASE CHARGE TRANSFER DEVICE IMAGE SENSOR, Yoshiaki Hagiwara, et al., Owner of Record: *Sony Corporation, Tokyo, Japan,* Attorney or Agent: James Van Santen, et al., Ex. Gp.: 254

4,065,185, Re. S.N. 104,099, Filed Dec. 17, 1979, Cl. 299/86, POINT-ATTACK BIT, Gerald W. Elders, Owner of Record: *Inventor,* Attorney or Agent: Frank B. Powell, et al., Ex. Gp.: 354

4,121,705, Re. S.N. 104,329, Filed Dec. 17, 1979, Cl. 192/89 B, WEAR RING FOR SPRING OF FRICTION COUPLING, Richard L. Hedgcock, Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.,* Attorney or Agent: Charles L. Rowe, Ex. Gp.: 352

4,138,876, Re. S.N. 100,440, Filed Dec. 5, 1979, Cl. 72/457, TRUCK FRAME ALIGNMENT APPARATUS, Finis L. Chisum, Owner of Record: *Inventor,* Attorney or Agent: James R. Head, et al., Ex. Gp.: 321

4,145,410, Re. S.N. 103,463, Filed Dec. 14, 1979, Cl. 424/19, METHOD OF PREPARING A CONTROLLED-RELEASE PHARMACEUTICAL PREPARATION, AND RESULTING COMPOSITION, Barry D. Sears, Owner of Record: *Inventor,* Attorney or Agent: Richard P. Crowley, et al., Ex. Gp.: 125

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Dedications

3,835,997.—*Heinrich Hartmann* and *Siegfried Stelter,* Hondelage, and *Heinz-Guenter Trelewsky,* Braunschweig, Germany. MOBILE DEVICE FOR RECEPTION, PRE-CLEANING AND PILING OF BEETS. Patent dated Sept. 17, 1974. Dedication filed Dec. 3, 1979, by the assignee, *Braunschweigische Maschinenbauanstalt.*

Hereby dedicates the entire remaining terms of said patent.

4,164,267.—*Sam W. Meineke* and *Harold Nedell,* Bellaire, Tex. EXHAUST MUFFLER. Patent dated Aug. 14, 1979. Dedication filed Jan. 14, 1980, by the assignee, *Meineke Discount Muffler Shops, Inc.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,696,876.—*Eugene G. Ott,* Dallas, Tex. SOFT FORMATION INSERT BITS. Patent dated Oct. 10, 1972. Disclaimer filed Jan. 14, 1980, by the assignee, *Dresser Industries Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,096,326.—*Albert R. Reid,* Hockessin, Del. DIHYDROXYPROPYL CELLULOSE. Patent dated June 20, 1978. Disclaimer filed Mar. 28, 1979, by the assignee, *Hercules Incorporated.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,102,155.—*Frank Robinson, Nigel Stephen Whatmough,* Breaston, England. KNITTING METHOD. Patent dated July 25, 1978. Disclaimer filed Dec. 3, 1979, by the assignee, *Courtaulds Limited.*

Hereby enters this disclaimer to claims 12 and 13 of said patent.

4,154,931.—*Reinhard H. Richter,* North Haven, *Benjamin W. Tucker,* Bethany, and *Henri Ulrich,* Northford, Conn. PROCESS FOR THE PREPARATION OF CYCLIC UREAS. Patent dated May 15, 1979. Disclaimer filed Jan. 24, 1980, by the assignee, *The Upjohn Company.*

Hereby enters this disclaimer to claims 1 through 6 inclusive of said patent.

Certain United States Semisynthetic Penicillin Patents Available for License

Beecham Group Limited and Beecham Inc. have available for license, at reasonable royalty rates, certain specified United States semisynthetic penicillin patents. The patents are those defined in and limited by a May 21, 1979 Final Judgment agreed to by Beecham and the United States Government in Civil Action No. 822–70 (United States District Court for the District of Columbia). Technical data, again as defined in and limited by the Final Judgment, is also available for license at certain costs and/or royalties in connection with ampicillin, patents licensed and certain bulk purchases of semisynthetic penicillins all as set forth in the Final Judgment. Further information may be had from Beecham Inc., 65 Industrial South, Clifton, New Jersey, Attention: Mr. Albert J. White, General Counsel.

Dated: Feb. 21, 1980.

ALBERT J. WHITE,
General Counsel.

Patents Available for Licensing or Sale

4,179,080. IMPROVED DOLLY. Henry A. Patnaude, 831 Los Moldinos Way, Sacramento, Calif. 95825.

4,000,767. LEVERAGE SCREWDRIVER. Jerome F. Geng, 94 Hillside Court, Fox Lake, Ill. 60020.

4,100,905. FUEL VAPORIZER. Joe M. Nolan, Box 1263, Longview, Tex. 75606.

4,172,501. SELF PROPELLED CAGE WHEEL TRACTOR. Roger L. Murray, 3938 Shimer Road, Marysville, Calif. 95901.

4,132,001. DIRECT READING RADIUS GAUGE. Konrad Petrik, 205 Meadowlawn Road, Cheektowaga, N.Y. 14225.

The following patent is available for licensing or sale. Correspondence to: Karl Hou, 29 East Maple St., Teaneck, N.J. 07666.

4,144,041. ADJUSTABLE THROAT VENTURI SCRUBBER.

The following patents are offered by Sargent-Welch Scientific Company, 7300 North Linder Ave., P.O. Box 1026, Skokie, Ill. 60077.

3,103,073. INSTRUCTOR SYSTEM.
3,123,920. INSTRUCTION SYSTEM.
3,274,703. TEACHING MACHINES.
3,545,100. SELECTO-MECHANISM.
3,608,208. TEACHING MACHINES.
4,043,054. TEACHING MACHINES.

General Electric Company is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patents should be addressed to: Patent Counsel Drive Systems Department, General Electric Company, 1501 Roanoke Blvd., Salem, Va. 24153.

3,207,339. CONTROL APPARATUS.
4,019,105. CONTROLLED CURRENT INDUCTION MOTOR DRIVE.

Applications for license may be addressed to: Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

4,175,615. PIPE HEADER-CYLINDRICAL TANK JOINT AND METHOD OF JOINING SAME.

Application for license should be addressed to Group Patent Counsel, Lighting Business Group, General Electric Company, Nela Park, Cleveland, Ohio 44112.

3,968,398. FUSED DECORATIVE STRING SET.
3,944,961. MECHANICALLY IMPROVED CONTACTS FOR RADIATION SWITCHES HAVING MATERIAL THAT CONVERTS FROM ELECTRICALLY NON-CONDUCTIVE TO CONDUCTIVE.
3,951,582. SWITCHING DEVICES FOR PHOTOFLASH UNIT.
3,957,694. RADIATION CURABLE INKS.
3,968,056. RADIATION CURABLE INKS.
3,969,065. SWITCHING DEVICES FOR PHOTOFLASH UNIT.

3,969,066.	SWITCHING DEVICES FOR PHOTOFLASH UNIT.
3,969,067.	PHOTOFLASH LAMP.
3,972,673.	PHOTOFLASH LAMP.
3,974,304.	METHOD OF MAKING A VOLTAGE RESPONSIVE SWITCH.
3,976,811.	VOLTAGE RESPONSIVE SWITCHES AND METHODS OF MAKING.
3,988,647.	METHOD FOR MAKING A CIRCUIT BOARD AND ARTICLE MADE THEREBY.
3,989,644.	RADIATION CURABLE INKS.
3,990,832.	SWITCHING DEVICES FOR PHOTOFLASH UNIT.
3,990,833.	SWITCHING DEVICES FOR PHOTOFLASH UNIT.
3,994,664.	PARALLEL ELECTRICAL SWITCHES.
4,013,848.	SPRING SHORTING MEANS FOR PHOTOFLASH ARRAY.
4,015,028.	METHOD FOR FORMING AN IMPROVED CONTACT FOR A RADIATION SWITCH.
4,015,093.	PHOTOFLASH ARRAY HAVING ELECTRICAL SHORTING MEANS.
4,019,043.	PHOTOFLASH LAMP ARRAY HAVING SHIELDED SWITCHING CIRCUIT.
4,028,798.	METHOD OF MAKING ELECTRICAL CONNECTIONS.
4,036,578.	PHOTOFLASH ARRAY AND METHOD OF CONSTRUCTION.
4,039,273.	PHOTOFLASH LAMP PROVDIING AFTER-FLASH SHORTING.
4,040,777.	FLASH LAMP ARRAY HAVING SHORTING LAMPS.
4,041,300.	PHOTOFLASH ARRAY WITH DISCHARGE PATH FOR ELECTROSTATIC CHARGES.
4,045,712.	VOLTAGE RESPONSIVE SWITCHES AND METHODS OF MAKING.
4,047,015.	PHOTOFLASH ARRAY CONSTRUCTION.
4,048,487.	LAST-FLASH INDICATOR SWITCH IN PHOTOFLASH ARRAY.
4,048,716.	METHOD OF MAKING ELECTRICAL CONNECTIONS.
4,049,844.	METHOD FOR MAKING A CIRCUIT BOARD AND ARTICLE MADE THEREBY.
4,051,359.	ELECTRIC MULTIPLE FLASH ARRANGEMENT.
4,053,757.	PHOTOFLASH LAMP ARRAY HAVING RADIATION SWITCHES AND FLASH INDICATORS.
4,060,721.	PHOTOFLASH LAMP ARRAY HAVING CONDUCTIVE REFLECTOR.
4,064,431.	LAST-FLASH INDICATOR FOR PHOTOFLASH ARRAY.
4,080,155.	SWITCHING DEVICES FOR PHOTOFLASH UNIT.
4,088,801.	U.V. RADIATION CURABLE ELECTRICALLY CONDUCTIVE INK AND CIRCUIT BOARDS MADE THEREWITH.
4,093,979.	MULTIPLE FLASH ARRAY.
4,097,220.	FLASH LAMP ARRAY HAVING SHORTING LAMPS.
4,101,953.	MULTIPLE FLASHLAMP ARRAY.
4,104,705.	PHOTOFLASH LAMP ARRAY HAVING SHIELDED SWITCHING CIRCUIT.
4,104,706.	PHOTOFLASH LAMP ARRAY HAVING CONDUCTIVE REFLECTOR.
4,105,480.	FLASHLAMP COMPOSITION.
4,118,758.	PHOTOFLASH LAMP ARRAY HAVING HIGH VOLTAGE SHORTING TYPE FLASH LAMPS AND RADIATION SENSITIVE SWITCHING ELEMENTS.
4,128,858.	MULTIPLE FLASHLAMP SYSTEM.
4,133,023.	FLASH LAMP ARRAY HAVING ELECTRICAL SHIELD.
4,133,631.	PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING RADIATION SENSITIVE FUSE ELEMENTS.
4,136,375.	SHIELD CONNECTION IN PHOTOFLASH ARRAY.
4,136,376.	PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING ELECTRICAL INSULATION.
4,136,378.	PHOTOFLASH LAMP ARRAY HAVING REFLECTOR AT REAR OF TRANSPARENT CIRCUIT BOARD.
4,136,379.	PHOTOFLASH LAMP ARRAY HAVING REFLECTIVE CIRCUIT BOARD.
4,146,917.	PHOTOFLASH LAMP ARRAY HAVING REFLECTIVE COATING MEANS.
4,166,287.	PHOTOFLASH LAMP ARRAY.
4,167,773.	PHOTOFLASH LAMP ARRAY HAVING CONTOURED SHEET SHIELD.

National Technical Information Service

Government-Owned Inventions

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Virginia 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

DEPARTMENT OF THE ARMY, OTJAG

Chief, Intellectual Property Division,
Room 2D444, Pentagon, Washington, D.C. 20310

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U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

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U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch
Administration Service Division, Federal Bldg.,
Science and Education Administration
Hyattsville, Md. 20782

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U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents, Room A 2–3018
Washington, D.C. 20545

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Patent 4,135,412. Backlash Compensator Mechanism. Filed Dec. 14, 1977. Patented Jan. 23, 1979. Not available NTIS.

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Patent 4,135,936. Glass-Ceramic Composition for Hermetic Seals. Filed June 16, 1978. Patented Jan. 23, 1979. Not available NTIS.

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Patent 4,138,317. Magnetic Confinement System Using Charged Ammonia Targets. Filed June 5, 1978. Patented Feb. 6, 1979. Not available NTIS.

Patent 4,138,609. Method for Forming Electrically Charged Laser Targets. Filed June 22, 1976. Patented Feb. 6, 1979. Not available NTIS.

Patent 4,140,557. High Strength and High Toughness Steel. Filed Jan. 23, 1978. Patented Feb. 20, 1979. Not available NTIS.

Patent 4,140,931. Magnetohydrodynamic Generator Electrode. Filed Aug. 8, 1977. Patented Feb. 20, 1979. Not available NTIS.

Patent 4,140,943. Plasma Generating Device With Hairpin Shaped Cathode Filaments. Filed June 1, 1977. Patented Feb. 20, 1979. Not available NTIS.

Patent 4,140,978. Method and Apparatus for Producing Laser Radiation Following Two-Photon Excitation of a Gaseous Medium. Filed Apr. 29, 1977. Patented Feb. 20, 1978. Not available NTIS.

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Room W513, 401 M St., SW., Washington, D.C. 20460

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Patent 4,084,543. Aquatic Biotal Monitor. Filed Aug. 25, 1976. Patented Apr. 18, 1978. Not available NTIS.

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

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U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., NW.
Washington, D.C. 20240

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OFFICE OF NAVAL RESEARCH

Field Support Group, Room 221, Arlington, Va. 22217

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA
Code GP–4, Washington, D.C. 20546

Patent application 6–051,275. Solar Engine. Filed June 22, 1979.

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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 26, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-2-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-3-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-14-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	5-3-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-8-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-25-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	11-16-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-16-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-29-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	3-13-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-14-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	12-14-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	1-8-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	8-22-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	8-17-78

Expiration of patents: The patents within the range of numbers indicated below expire during January 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,070,801 to 3,076,194, inclusive
Plant Patents	Numbers 2,208 to 2,223, inclusive

REISSUES

MARCH 11, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,224

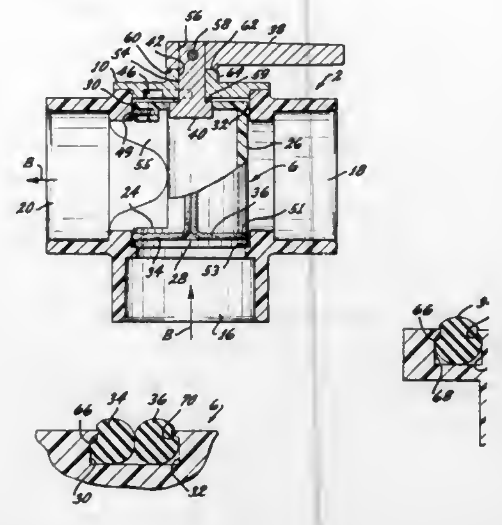
VALVE CONSTRUCTION

Robert Ortega, Fountain Valley, Calif., assignor to Purex Corporation, Lakewood, Calif.

Original No. 3,938,553, dated Feb. 17, 1976, Ser. No. 413,841, Nov. 8, 1973. Application for reissue Feb. 2, 1978, Ser. No. 874,575

Int. Cl.^{2} F16K *11/085*

U.S. Cl. 137—625.47 **16 Claims**



7. A valve comprising

(a) a valve body having a cavity, and first, second and third flow openings,

(b) a valve member rotatably positioned within said cavity, said valve member having a generally cylindrical hollow configuration with an end opening in alignment with the body first opening,

(c) the valve member having a side opening characterized in that the side opening is openly aligned with only the second body opening when the valve member is in a primary position whereby flow communication is provided between said first and second openings, and the side opening is openly aligned with only the third body opening when the valve member is rotated about 180° to a secondary position, whereby flow communication is then provided between said first and third openings,

(d) the side opening further characterized in that it becomes openly aligned with both the second and third body openings when the valve member is rotated intermediately of said primary and secondary positions,

(e) the valve member having an outer surface substantially the entirety of which is everywhere cylindrical about one axis defined as an axis of rotation of said valve member in said body, the second and third flow openings being substantially coaxial,

(f) and seal means sealing off between the body and valve member characterized in that a seal is established about the side opening and second opening in said primary position, and a seal is established about the side opening and third opening in said secondary position,

(g) the seal means located between the body and valve means and including two annular sealing surfaces extending about an axis defined by the cylindrical valve member, and two straight sealing surfaces intersecting the two annular sealing surfaces at opposite sides of said axis, said side opening in said member being cylindrically arcuate about said axis and extending into proximity to said two straight sealing surfaces.

Re. 30,225

METHOD AND APPARATUS FOR FEEDING GRANULATED MATERIAL

John H. Simmons, Lyndhurst, and Donald A. Daugherty, Euclid, both of Ohio, assignors to Precision Metalsmiths, Inc., Cleveland, Ohio

Original No. 4,016,922, dated Apr. 12, 1977, Ser. No. 672,524, Mar. 31, 1976. Application for reissue Mar. 6, 1978, Ser. No. 884,264

Int. Cl.^{2} B29F *1/06*

U.S. Cl. 164—45 **9 Claims**

1. In [an] *apparatus for* injection [apparatus] *molding thermoplastic material* having a pair of relatively movable dies, [means including] a pressurized heated tank for supplying molten *thermoplastic* injection material to the dies, [and] means for causing relative movement of the dies between open and closed positions, *and injection means for transferring molten thermoplastic material from the tank to the dies when in closed position* the improvement [of a feeder for periodically supplying charges of solid granules of injection material to said tank, said feeder] comprising:

a. [A] *a* housing having an inlet port [and] *adapted to be connected to a supply of granular thermoplastic material,* an outlet port [communicating] *adapted to be connected* with [said] *the* tank, *and a pressure port spaced from said outlet port;*

b. *transfer* means [containing a supply of granules communicating with said inlet port] *in said housing;*

c. *said* transfer means [including a metering chamber] *being* movable [in said housing] between:

(i) a first position in which said [chamber receives a quantity of granules] *transfer means can receive granular thermoplastic material* admitted through said inlet port; and

(ii) a second position in which said [chamber discharges a charge of granules] *transfer means can discharge granular thermoplastic material* through said outlet port *into the tank;*

d. means for actuating said transfer means, and

e. [means for pressurizing] *said pressure port communicating with said outlet port when said transfer means is in said first and second positions* via said [metering chamber to fluidize the granules of injection material contained therein when said transfer means is in said second position] *transfer means, whereby discharge of granular thermoplastic material from the transfer means can be assisted by pressurized gas and pressurized gas is trapped in said transfer means and* *released through said inlet port when said transfer means is moved to said first position to assist the flow of granular thermoplastic material into said transfer means and whereby the tank is pressurized with gas admitted thereto through said outlet port.*

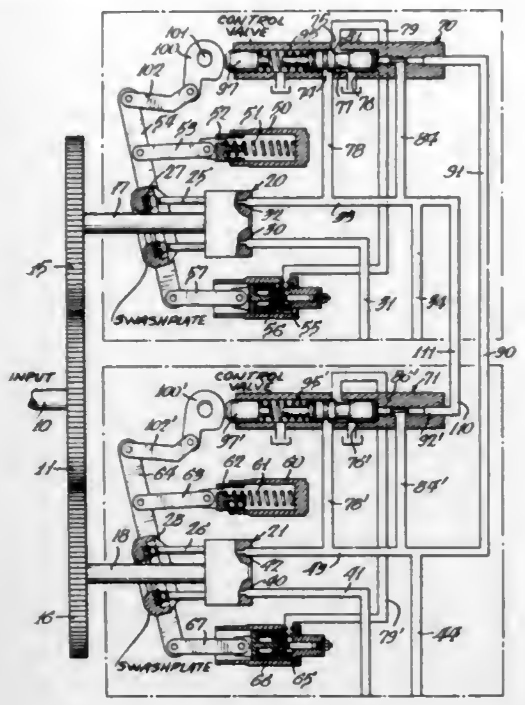
Re. 30,226
TORQUE LIMITING CONTROL

Joseph E. Louis, Ames, and Roger D. Cannell, Nevada, both of Iowa, assignors to Sundstrand Corporation, Rockford, Ill.

Original No. 3,941,514, dated Mar. 2, 1976, Ser. No. 471,573, May 20, 1974. Application for reissue Jul. 11, 1977, Ser. No. 814,798

Int. Cl.² F04B *49/00*

U.S. Cl. 417—216 **3 Claims**



8. A torque limiting control for a pair of variable displacement axial piston pumps each having a swashplate for controlling the stroke of the associated pump pistons, each of said pumps having a fluid inlet and a fluid pressure outlet for connection of said outlets to separate motors, servo means for positioning each of said swashplates including means urging said swashplates to a full stroke position and pressure-responsive means to position said swashplates at a position other than full stroke, and control means for summing the fluid pressures generated by said pumps and controlling said servo means to progressively move the swashplates from their full stroke positions as the sum of the pressures rises above a predetermined value to limit the sum of the torques delivered by said pumps including a pair of control valves *associated one with each of said pair of pumps and* with each control valve having a pressure port connected to the outlet of [an] *the* associated pump, each control valve having a housing with a bore, said pressure port, a drain port and a servo port communicating with said bore, a valve member in said bore, [urged] *spring means engaging the valve member for urging the valve member* to a position to connect said servo port with the drain port, a pair of pressure-responsive areas [associated with] *in coaxial relation with* said valve member *and said spring means* for said summing of the fluid pressures generated by both of said pumps to move the valve member *against the spring means* in a direction to close said drain port and open the servo port to said pressure port, [and] means connecting the servo port to said servo means whereby outlet pressure of a pump is applied to the servo means of the same pump for positioning the swashplate , *and a pair of feedback means associated one with each pump and control valve including a cam and cam follower with the cam positioned responsive to swashplate position and the cam follower acting in coaxial relation with the valve member and the spring means to modify the controlling action of the valve member.*

Re. 30,227
AGENT FOR BRIGHTENING AND REMOVING GREYNESS FROM TEXTILES

Richard von Rutte, Rieben, and Walter Gasser, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Original No. 4,008,172, dated Feb. 15, 1977, Ser. No. 519,890, Oct. 31, 1974. Application for reissue Apr. 7, 1978, Ser. No. 894,262

Claims priority, application Switzerland, Nov. 29, 1973, 16761/73

Int. Cl.² C09K *11/00;* **D06L** *3/12*

U.S. Cl. 252—301.22 **9 Claims**

1. Agent for the preparation of the baths for brightening the colour of and removing the greyness from white and pastel coloured textiles which are made from synthetic fibres or which are provided with an easy-care finish and are made from cotton or blends thereof with synthetic fibres, which consists essentially of an organic polymer which is soluble or emulsifiable in water and is a homopolymer of acrylic or methacrylic acid or an ester or amide thereof, a copolymer of acrylic or methacrylic acid or an ester or amide thereof with acrylic or methacrylic acid alkylpolyalkylene glycol ester, [a polyvinyl alcohol or a polyvinyl acetate, and a mixture thereof] *a mixture of polyvinyl alcohol and polyvinyl acetate* and a fluorescent brightener which is of the class of the distyrylbiphenyls, [the bis-(s-triazinylamino)-stilbene-2,2′-disulphonic acids] or of the bis-(triazolyl)-stilbenes, which at 25° C. **has a solubility of at least** 0.5 g/l water.

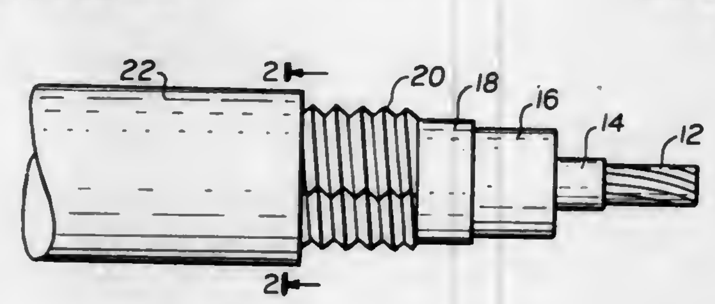
Re. 30,228
POWER CABLE WITH CORRUGATED OR SMOOTH LONGITUDINALLY FOLDED METALLIC SHIELDING TAPE

David A. Silver, Livingston, and George Bahder, Edison, both of N.J., assignors to General Cable Corporation, Greenwich, Conn.

Original No. 3,651,244, dated Mar. 21, 1972, Ser. No. 866,586, Oct. 15, 1969. Continuation of Ser. No. 640,092, Dec. 12, 1975, abandoned, which is a continuation of Ser. No. 335,259, Feb. 23, 1973, abandoned. Application for reissue Sep. 28, 1977, Ser. No. 837,187

Int. Cl.² H01B *9/02*

U.S. Cl. 174—36 **23 Claims**



1. In a high voltage electrostatically shielded power cable including a metal conductor, a semi-conducting shield around the conductor, electrical insulation around the shield, a semi-conducting insulation shielding around the outside of the insulation and a metallic electrostatic shield over the semi-conducting insulation shielding, the improvement which comprises the metallic shield being a longitudinally folded strip of metal which provides a low resistance, low reactance path, for voltage and current surges caused by lightning or switching or fault currents, lengthwise of the cables, the electrostatic shield being made of corrosive metal and having corrosion-protecting coating on both sides; the electrostatic shield having its longitudinal edge portions free to move circumferentially with respect to one another and the electrostatic shield having its inside surface in contact with the insulation shielding and free throughout its length and circumference to move circumferentially over the insulation shielding with which the electrostatic shield contacts as the diameter and circumference of the electrostatic shield change with thermal expansion and contraction of the insulation and the insulation shield as the cable changes its temperature during normal, emergency and short-circuiting operating conditions whereby the insulation and insulation shield expand without axially spaced localized distortion, and said metal of the electrostatic shield being in electrical communication with the semi-conducting insulation shielding through the coating on the inside surface of said electrostatic shield for accepting charging current from the insulation shielding.

13. In a high voltage electrostatically shielded power cable including a metal conductor, a semi-conducting shield around the conductor, electrical insulation around the shield, a semi-conducting insulation shielding around the outside of the insulation and a metallic electrostatic shield over the semi-conducting insulation shielding, the improvement which comprises the metallic shield being a longitudinally folded and corrugated strip of metal which provides a low resistance, low reactance path, for voltage and current surges caused by lightning or switching or fault currents, lengthwise of the cable, the electrostatic shield having its longitudinal edge portions free to move circumferentially with respect to one another and the electrostatic shield having its inside surface in contact with the insulation shielding and free throughout its length and circumference to move circumferentially over the insulation shield with which the electrostatic shield contacts as the diameter and circumference of the electrostatic shield change with thermal expansion and contraction of the insulation and the insulation shield as the cable changes its temperature during normal, emergency and short-circuiting operating conditions whereby the insulation and insulation shield expand without constricting and damaging the insulation at axially spaced localized distortion, and said metal of the electrostatic shield is in electrical communication with the semi-conducting insulation shielding for accepting charging current from the insulation shielding, characterized by the electrostatic shield being corrugated with the corrugations extending in a generally circumferential direction and with most of the downwardly extending humps of the corrugations having contact with the insulation shielding, and semi-conducting material filling the spaces between the insulation shielding and the upwardly extending humps of the corrugations for establishing electrical communication between the face of the electrostatic shield that confronts the insulation shielding and for preventing passage of moist air and water longitudinally of the cable between the insulation layer and the electrostatic shield.

Re. 30,229
MODULAR OPERATING CENTERS AND METHODS OF BUILDING SAME FOR USE IN ELECTRIC POWER GENERATING PLANTS AND OTHER INDUSTRIAL AND COMMERCIAL PLANTS, PROCESSES AND SYSTEMS

Paul A. Berman, Plymouth Meeting; Theodore C. Giras, Pittsburgh; Roy E. Crews, Allison Park, all of Pa., and Robert L. Ziegelman, 29228 Summerwood, Farmington, Mich. 48018, assignors to Robert L. Ziegelman, Farmington, Mich.

Original No. 3,925,679, dated Dec. 9, 1975, Ser. No. 399,582, Sep. 21, 1973. Application for reissue Sep. 22, 1977, Ser. No. 835,561

Int. Cl.² B05D *85/00*

U.S. Cl. 290—1 R **16 Claims**

37. A method of building an operating center for a plant designed to produce goods or services, the steps of said method comprising:

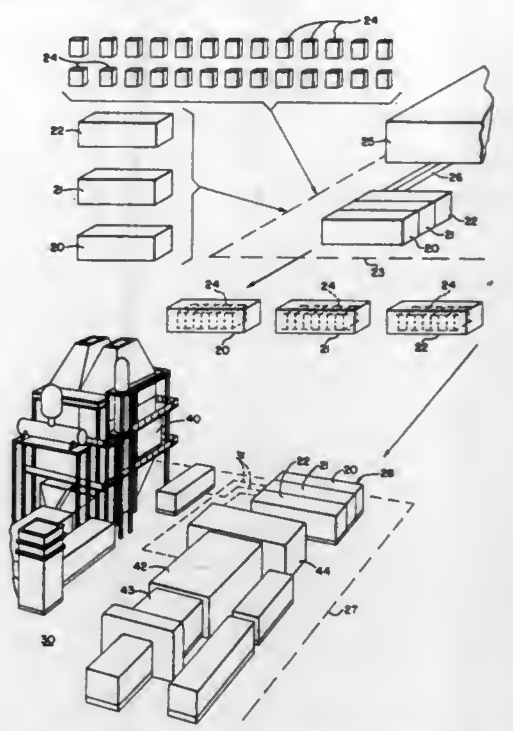
forming a plurality of building modules, each as a transportable, room-size, three-dimensional, rectangular, metal frame structure;

securing permanent closure means to and closing the roof and floor on some but not all of the sides of the frame structure, any side not so closed being one that will abut another module and forming a complete operating center building;

loading each of said modules with predetermined electrical control system equipment units at a factory site, such building modules constituting structural parts of a unitary operating center building and such control system equipment units constituting parts of a system for use in monitoring and/or controlling the operation of the production plant;

establishing at the factory site predetermined intramodule connections among the control equipment units within each building modules;

establishing at the factory site predetermined intermodule connections among the control system equipment units in different ones of the building modules;



establishing at the factory site predetermined connections to the control system equipment units for ultimate attachment from one or more of the modules to the production plant at predetermined plant points;

employing a plurality of conductors to establish the intramodule connections;

employing a plurality of cables having a plurality of conductors to establish the intermodule and plant connections through cable connection points;

testing the control system equipment at the factory site, such test including the combined testing of the control system equipment interconnected by the intermodule cable connections;

preparing the loaded building modules for transportation to the plant installation site including disconnecting the intermodule and any test connections at the cable connection points;

transporting the modules to the plant site;

and installing the modules and establishing the cable connections from the modules to the plant points and re-establishing the intermodules cable connection.

PLANT PATENTS

GRANTED MARCH 11, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,509
CHRYSANTHEMUM NAMED GETTYSBURG

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.
Filed Oct. 26, 1978, Ser. No. 955,003
Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinctive cultivar of pot chrysanthemum, substantially as herein shown and described, characterized by its single flower form having intense yellow ray florets possessing good substance and long life, its minimal production of pollen, its abundant production of blooms when grown as a spray pot plant, and its spreading pot habit with good breaking ability.

4,510
CHRYSANTHEMUM NAMED ANTHEM

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.
Filed Oct. 26, 1978, Ser. No. 955,147
Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinctive cultivar of pot chrysanthemum, substantially as herein shown and described, characterized by its single flower form with several rows of medium pink ray florets, and its abundant production of blooms having minimal pollen when grown as a spray pot plant, and by its relatively upright pot habit with strong stems and good breaking ability.

PATENTS

GRANTED MAR. 11, 1980

ERRATA

For CLASS	See PATENT NO.
433–003	4,192,068
433–021	4,192,069
433–011	4,192,070
433–093	4,192,071
368–155	4,192,130
368–157	4,192,131
368–160	4,192,132
368–073	4,192,133
368–080	4,192,134
368–062	4,192,135
368–222	4,192,136
126–286	4,192,310
188–170	4,192,405
371–020	4,192,451
126–427	4,192,454
430–059	4,192,677
430–214	4,192,678
430–214	4,192,679
430–380	4,192,680
430–373	4,192,681
430–405	4,192,682
430–536	4,192,683
430–284	4,192,684
430–283	4,192,685
430–455	4,192,764
525–243	4,192,797
548–177	4,192,804
585–409	4,192,824
585–719	4,192,825
525–123	4,192,827
525–083	4,192,828
260–597 R	4,192,942
370–053	4,192,973
375–002	4,193,030
455–038	4,193,031
178–116	4,193,032
375–088	4,193,033
375–088	4,193,034
455–203	4,193,035
455–327	4,193,036
367–094	4,193,055
367–153	4,193,057
367–071	4,193,058
371–067	4,193,061
371–043	4,193,062

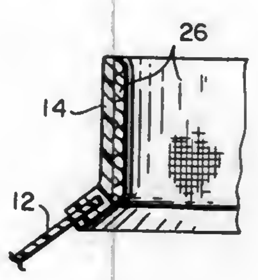
PATENTS

GRANTED MARCH 11, 1980

GENERAL AND MECHANICAL

4,192,017
VISORED HEADGEAR

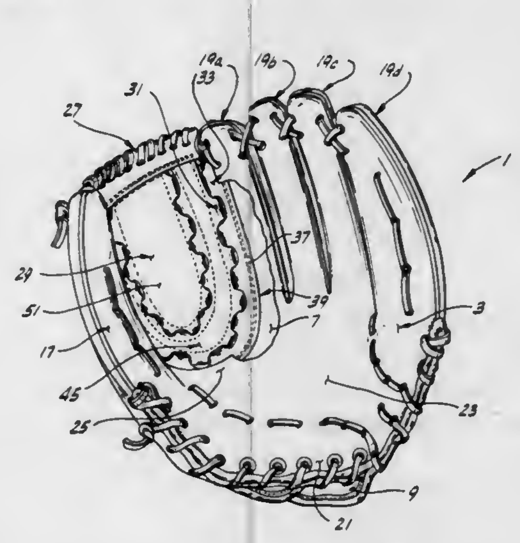
William L. Fay, Wellesley Hills, Mass., assignor to Visor-Trac, Inc., Rockville Center, N.Y.
Filed Mar. 6, 1978, Ser. No. 883,874
Int. Cl.^{2} A42B *1/00, 1/24*
U.S. Cl. 2—12 **1 Claim**



1. Headgear comprising a headband and a visor, said headband comprising an elongate, flexible strip of extruded plastic embodying a head-encircling portion and a visor-retaining portion disposed at an oblique angle to the head-encircling portion containing an integrally formed slot for receiving an edge of the visor, means at the opposite ends of the head-encircling portion for securing the band about the head comprising a part connected at one end to one end of the head-encircling portion containing a plurality of uniformly-spaced perforations and a part connected at one end to the other end of the head-encircling portion containing uniformly-spaced nubs adapted to be frictionally engaged with the perforations in the one part and said visor comprises a crescent-shaped part having a concave edge disposed in the slot and secured therein, said visor being transparent, a logo disposed in engagement with the visor so that it is visible through the visor at the top side thereof and a part secured to the visor over the logo to retain the latter in place.

4,192,018
BASEBALL GLOVE

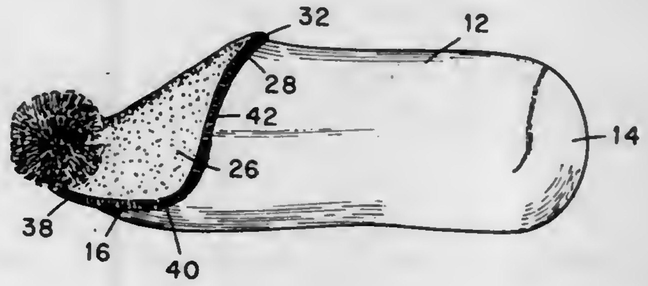
Roland N. Latina, Belleville, Ill., assignor to A-T-O Inc., Willoughby, Ohio
Filed Apr. 14, 1978, Ser. No. 896,293
Int. Cl.^{2} A41D *13/10*
U.S. Cl. 2—19 **6 Claims**



1. A baseball glove or the like having a thumb stall, a finger stall spaced from the thumb stall, a crotch portion between the thumb and finger stalls, a front ply constituting the front face of the glove, a back ply constituting the back face of the glove, the front and back plies being joined together by a seam extending along the inner margins of the thumb and finger stalls and the margin of the crotch portion, and a web secured to and extending between said thumb and finger stalls, said web having a plurality of spaced tunnels at its margins contiguous to the inner margins of the thumb and finger stalls and the margin of the crotch portion, the finger and thumb stalls and said crotch portion having a plurality of spaced glove tunnels extending toward the web from the inner margins of the thumb and said finger stalls and the margin of the crotch portion, said glove tunnels and said web tunnels alternating with one another and being generally in line with one another, the glove further comprising a lace passing through the glove and the web tunnels for securing said web thereto, a strip having a series of holes therethrough substantially centered on the central longitudinal axis of the strip and substantially equidistant from one another along the length of the strip with substantially equal portions of the strip between said holes, the strip being folded double on said longitudinal axis and having its overlapped faces secured to said front and back plies along seam joining the front and back plies so that the folded edge of the strip projects inwardly toward the web with the double-folded portions of the strip between the holes therein constituting said glove tunnels, and said web comprising an inner web member and a separate generally U-shaped peripheral member having an inner margin attached to the inner web member along the outer margin of the inner web member, and an outer margin adjacent said inner margins of said finger and thumb stalls and the margin of said crotch portion, the outer margin of the peripheral member having a first series of holes therein spaced substantially equidistantly from one another along a first generally curvilinear line with substantially equal portions of said peripheral member between each of said holes, the outer margin of the peripheral member being folded double on said first curvilinear line and having said double-folded portions secured together whereby said portions of said peripheral member between said first series of holes constitute said web tunnels.

4,192,019
MINI-SOCK

Ralph E. Lingenfelter, Friendsville, Tenn., assignor to Holston Manufacturing Company, Knoxville, Tenn.
Filed Apr. 28, 1978, Ser. No. 900,989
Int. Cl.^{2} A41B *11/00*
U.S. Cl. 2—239 **5 Claims**



1. In a sock having a body section, a closed toe section, a closed heel section, and means defining an opening for receiving the foot of a wearer, said sock covering substantially the entire foot of a wearer, the improvement comprising an ankle portion having removed therefrom a segment of said sock extending from the approximate location of the wearer's instep in a direction toward said defined opening, said ankle portion defining a continuous flap circumscribing at least a major portion of said defined opening and, when disposed on a wearer's foot, being backfolded over said heel section by a distance sufficient to cause said flap to overlie at least a major portion of said heel, said flap including a distal perimetral edge which, when the sock is in position on the foot of a wearer and a shoe is also in position on the foot of the wearer with the sock being disposed between said foot and said shoe, lies in a continuous

line extending from the approximate location of the wearer's instep in a downwardly and rearwardly direction generally parallel with and adjacent to the sole of said shoe, thence in a direction wrapping the most rearward portion of the heel of said shoe to a location on the opposite side of the shoe, thence in a direction on said opposite side of said shoe forwardly of said shoe and generally parallel with and adjacent to the sole of said shoe, thence in an upwardly and forwardly direction of the aforesaid approximate location of the wearer's instep.

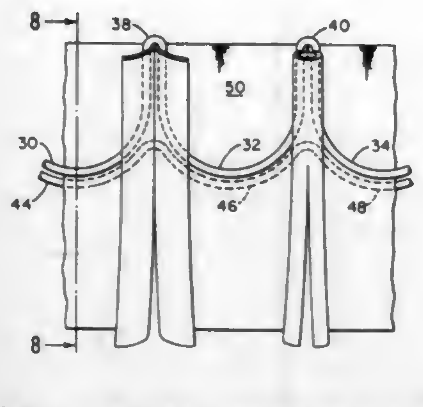
4,192,020
HEART VALVE PROSTHESIS

Robert B. Davis, Framingham; John Skelton, Sharon, both of Mass.; Richard E. Clark, and Wilbur M. Swanson, both of St. Louis, Mo., assignors to Washington University and Albany International Corporation

Continuation-in-part of Ser. No. 771,359, Feb. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 575,438, May 7, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,442

Int. Cl.^{2} A61F *1/22*

U.S. Cl. 3—1.5 **14 Claims**



8. A heart valve prosthesis comprising in combination,

a frame having three mutually equidistant, generally parallel legs each comprising a pair of rod portions connected at one end and diverging at the other end as lobes respectively connecting with rod portions of the other legs, the lobes forming an aperture therebetween,

three flexible fabric leaflets each consisting essentially of a textile of filaments having a substantial number of open interstitial spaces in the range of 20 to 40 microns evenly distributed throughout the fabric, each leaflet being inserted between the rod portions of two of said legs, sealed to said legs and the interconnecting lobe and having a free edge extending between said legs, the free edges of said leaflets being deflectable into mutual contact for sealing said aperture, and

a second frame comprising a rod substantially congruent with said interconnecting lobes, the leaflets being sealed to and between said frames.

4,192,021
BONE REPLACEMENT OR PROSTHESIS ANCHORING MATERIAL

Heinrich Deibig, Frankfurt am Main; Helmut Heide, Schwalbach; Roland Reiner, Eschborn, and Kari Koster, Lorsbach, all of Fed. Rep. of Germany, assignors to Batelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed May 12, 1977, Ser. No. 796,165

Claims priority, application Fed. Rep. of Germany, May 12, 1976, 2620890; May 12, 1976, 2620891

Int. Cl.^{2} A61F *1/24;* C08H *1/06*

U.S. Cl. 3—1.9 **15 Claims**

1. Bone replacement of prosthesis anchoring material on the basis of calcium phosphates and organic materials characterized in that said material consists of a mixture of sintered calcium phosphates composed of CaO and P_2O_5 in a quantitive ratio between 2:1 and 4:1 with at least one low-molecular-weight biodegradable or bioresistant organic material, which has a molecular weight of up to 800, or at least one high-molecular-weight biodegradable or bioresistant organic material or a mixture thereof and wherein it is implantable as a solid body or as a kneadable pasty substance, whereby the quantitive ratio of the calcium phosphate to the organic materials is between 10:1 and 1:1 for a solid body and is between 5:1 and 1:1 for a pasty substance.

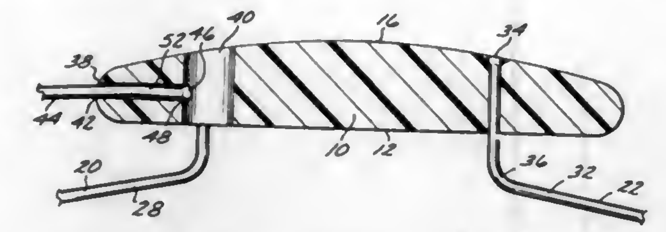
4,192,022
ARTIFICIAL INTRAOCULAR LENS WITH IMPROVED STAVE

Peter G. LaHaye, Diamond Bar, Calif., assignor to Iolab Corporation, San Dimas, Calif.

Filed Apr. 28, 1978, Ser. No. 901,127

Int. Cl.^{2} A61F *1/16, 1/24*

U.S. Cl. 3—13 **17 Claims**



1. An artificial anterior chamber intraocular lens having a longitudinal axis, the lens comprising:

an optical zone lens body for refracting light;

at least one loop fixedly mounted to the intraocular lens, a portion of the loop capable of being inserted behind an iris into a posterior chamber of an eye, and

at least one stave having two ends, a first end being fixedly mounted to the intraocular lens, within a substantially horizontally disposed first aperture in the lens body, the stave having a substantially straight portion immediately adjacent to a second end, the second end bearing an enlarged head configured to project in a direction away from the loop and to define a keeper member on one side and a substantially continuous camming surface at the other side contiguous with an intermediate portion of the stave, the stave capable of being positioned so that the keeper member on the second end of the stave enters the loop and secures it wherein the lens body includes a substantially vertically disposed second aperture, the first and second apertures being disposed to communicate with one another, the second aperture permitting the stave to be fixedly mounted to the lens body.

4,192,023
BIDETS OR LIKE APPARATUS

Barry P. McComb, 62 Court Rd., Orpington, Kent, England

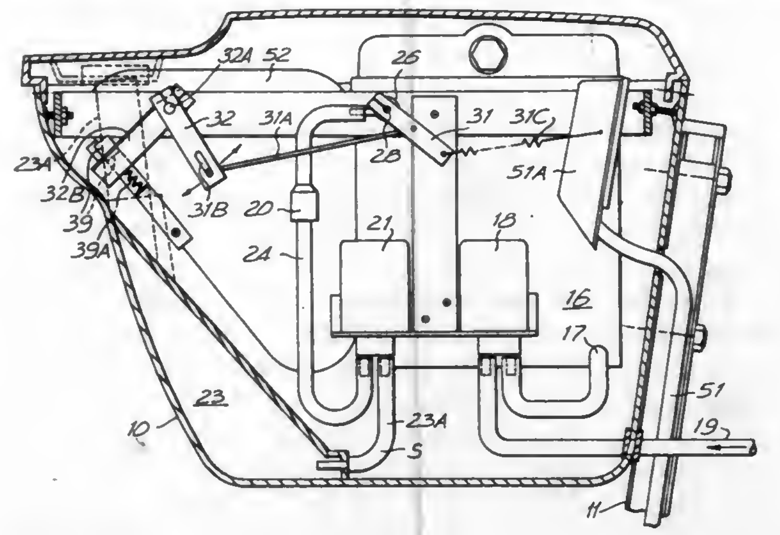
Filed Sep. 12, 1978, Ser. No. 941,710

Claims priority, application United Kingdom, Sep. 15, 1977, 38518/77

Int. Cl.^{2} A47K *3/22, 11/08*

U.S. Cl. 4—7 **6 Claims**

1. A bidet or like apparatus having a casing (10), a water container (16) in the casing, a pipe (28) having a horizontal part leading from the upper part of the container to the outside of the casing, said pipe also having a depending part (28A) at the outer end of the horizontal part, said depending part being adapted to extend downwardly into a lavatory pan, said depending part having a rearwardly extending part (28B) at its lower end, said rearwardly extending part having a nozzle, whereby in an out-of-use position the nozzle will be underneath and close to the rim of said pan whereby the nozzle is subjected to the flushing water and means for rotating said pipe about the axis of the horizontal part to bring the nozzle to a raised position about central of said pan.



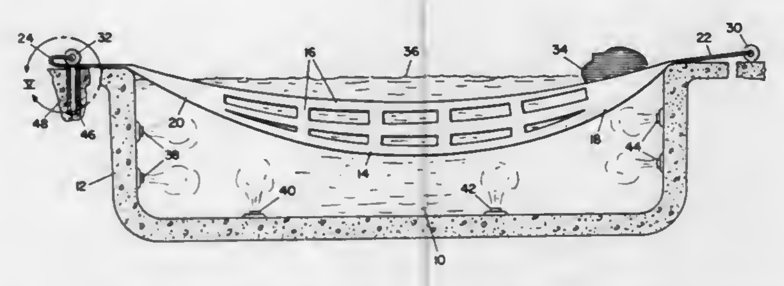
4,192,024
SPA LOUNGE

Clifford V. Zigmont, 18642 Community St., Northridge, Calif. 91324

Continuation-in-part of Ser. No. 646,149, Jan. 2, 1976, abandoned. This application Oct. 26, 1978, Ser. No. 954,994

Int. Cl.^{2} E04H *3/16, 3/18*

U.S. Cl. 4—172 **7 Claims**



1. A combination of a hot water spa and a lounge mounted therein; said spa having a deck surrounding said spa, said deck having sleeves fitted therein at opposite ends of said spa; said lounge being formed of one piece and comprising

a body support portion formed of a series of unitary, narrow longitudinal and transverse strips of water resistant material in a crossed pattern,

unitary solid head rests extending from each end of said pattern, and

unitary straps extending from said head rests; and bolts attached to said straps which are slidably received in said sleeves.

4,192,025
COVER FOR SWIMMING POOL

Cornelius A. Hinsperger, 1749 Mattawa Ave., Mississauga, Ontario, Canada (L4X 1K5)

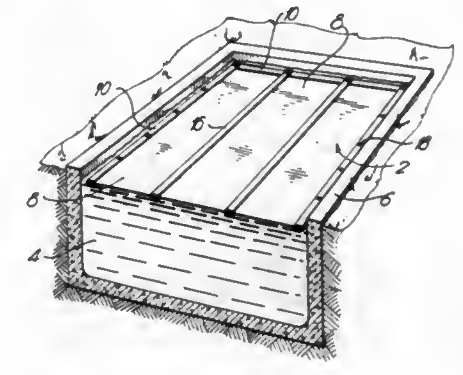
Filed Aug. 14, 1978, Ser. No. 933,679

Claims priority, application Canada, Jul. 12, 1978, 307263

Int. Cl.^{2} E04H *3/16, 3/18*

U.S. Cl. 4—172.14 **24 Claims**

10. A lightweight thermal cover for a swimming pool which is completely foldable for storage comprising panels of thin and flexible plastic sheeting secured together in edgewise relationship by thin flexible strips of plastic sheet material, said strips being provided on both sides of said panels and overlapping edges of adjacent ones of said panels with sides of said strips facing said panels having a thin and flexible layer of closed cell foam material provided thereon, and additional flexible strips of plastic sheet material being secured around peripheral edges of the cover on both sides thereof, said strips and said additional strips providing reinforcement and flotation.



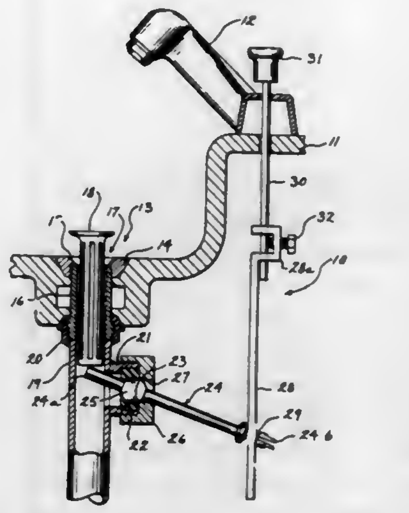
4,192,026
DRAIN VALVE BALL LEVER

Frank N. Williams, Sandwich, Ill., assignor to Bradley Corporation, Menomonee Falls, Wis.

Filed Nov. 13, 1978, Ser. No. 960,400

Int. Cl.^{2} E03C *1/22*

U.S. Cl. 4—203 **3 Claims**



1. An improved ball lever for a pop-up drain valve assembly of the type in which an inner end of the ball lever is used to raise and lower the drain plug and the outer end is connected to a plunger rod, said improved ball lever comprising:

a unitary, one-piece, plastic, elongated member;

a ball integrally formed on said member intermediate its length upon which the inner end of said member pivots to raise and lower said drain plug; and

an outer end which is adapted to extend into and through an opening in said plunger rod to form a releasable connection therewith, said outer end being provided with stop means which prevents said plunger rod from travelling along and binding on said elongated member and retaining means for releasably securing the outer end of said member in the opening in said plunger rod which is spaced from said stop means to provide a plunger rod-receiving groove, said retaining means comprising:

at least two outwardly extending, spaced apart, resilient fingers formed in the outer end of said elongated member; and

an integral protuberance on each of said fingers having a combined non-deformed diameter which is greater than the diameter of the opening in said plunger rod but which is less than the diameter of the opening in said rod when said fingers are deformed by forcing them towards each other,

each of said protuberances including an outward inclination which facilitates the insertion of the outer end of said elongated member into the opening in said plunger rod, and an inward inclination which prevents said outer end from sliding out of the opening in said plunger rod when said outer end is inserted into the opening in said rod, but which is sufficiently tapered to permit the outer end of said elongated member to be removed from said opening upon the application of sufficient force to deform said fingers to reduce the effective diameter of said protuberances to less than that of said opening.

4,192,027
TOILET

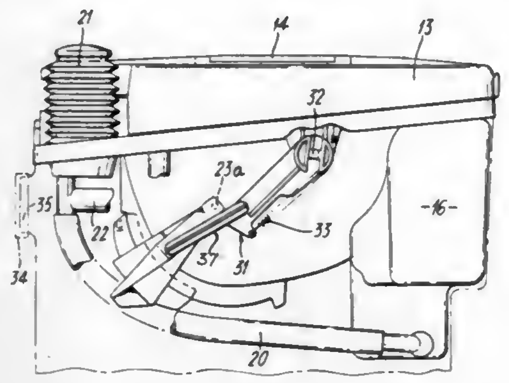
Frank T. Sargent, Ann Arbor, Mich., and Frederick A. Butler, Leamington Spa, England, assignors to Thetford Corporation, Ann Arbor, Mich.

Filed Jul. 21, 1978, Ser. No. 926,932

Claims priority, application United Kingdom, Jul. 25, 1977, 31164/77

Int. Cl.² E03D *11/10*

U.S. Cl. 4—441 **10 Claims**



1. A toilet comprising, in combination:
(a) a bowl having an outlet port;
(b) a valve member movable between a first position under said outlet port, in which it closes said outlet port, and a second position in which it uncovers the outlet port;
(c) an actuation member carrying said valve member and movable relative to said valve member and
(d) cooperating cam surfaces on said actuation member and valve member whereby relative movement between the actuation member and the valve member, when the latter is moved into its first position by the former, urges the valve member in an upward direction to seal the outlet port.

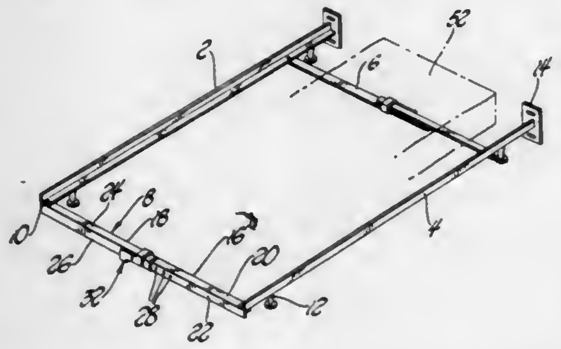
4,192,028
ADJUSTABLE BED FRAME

Silas J. Knoke, Seymour, Ind., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Aug. 17, 1978, Ser. No. 934,306

Int. Cl.² A47C *19/04*

U.S. Cl. 5—181 **6 Claims**



1. A bed frame adapted to receive bedding thereon and comprising a pair of spaced, parallel side rails and a pair of spaced end rails extending transversely to and having their ends connected to said side rails, each of said end rails including an inner rail member and an outer rail member each of which has horizontal and vertical flanges each having inner and outer surfaces, an end portion of said inner rail member being in nested relationship with an end portion of said outer rail member whereby the outer surfaces of the horizontal and vertical flanges of said end portion of the inner rail member are in abutting relationship with the inner surfaces of the horizontal and vertical flanges, respectively, of said end portion of the outer rail member, the vertical flange of said end portion of the inner rail member having a plurality of spaced openings arranged in a line longitudinally of said inner rail member, the inner surface of the vertical flange of said end portion of the outer rail member having a projection thereon sized to be received by any one of said openings and the outer surface of the vertical flange of said end portion of the outer rail member having secured thereto by a pivotal connection a lock member with a portion which includes two connected spaced surfaces whereby said lock member portion is of generally U shape, said surfaces lying in planes parallel to the vertical flanges of said rail members and the spacing between said surfaces being equal to the combined thicknesses of said vertical flanges such that when said rail members are in nested relationship and said lock member is in one rotated position, said lock member portion straddles said vertical flanges to maintain said rail members in the nested relationship.

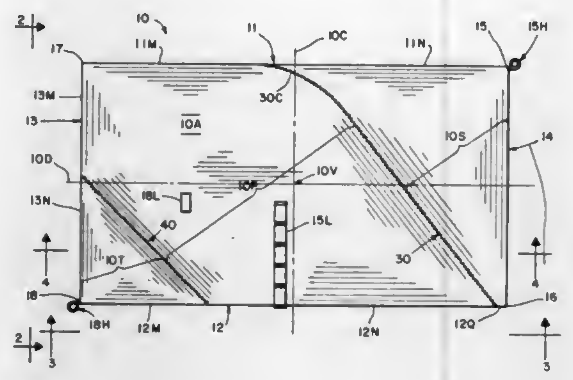
4,192,029
HEAD AND NECK SUPPORTIVE DEVICE FOR HEMISIDE RECLINING PERSONS

Helen I. Bond, 19416 NE. 122nd Ave., Battleground, Wash. 98604

Filed Oct. 16, 1978, Ser. No. 951,445

Int. Cl.² A47G *9/00*

U.S. Cl. 5—441 **13 Claims**



1. A head supportive device for hemiside reclining persons and comprising a pillow having hingedly associated independent cushiony segments, said head supportive device comprising:
A. said pillow having a pair of broad external surfaces including a first-surface and a second-surface, having a pair of longitudinally extending edges including a top-edge and a bottom-edge, and having a pair of transversely extending edges including a front-edge and a rear-edge which are shorter than the longitudinal edges; and
B. bi-directional hinged connections for the pillow segments including a first-hinge and a second-hinge, the first-hinge being substantially lengthier than the second-hinge and each hinged connection being no-parallel to: the rear-edge, the front-edge, the top-edge, and the bottom-edge, said two hinged connections delineating the pillow into a primary-segment located medially of and oppositely flanked by a secondary-segment and a tertiary-segment, said cushiony segments being described as:
i. a primary-segment defined by the first-hinge, the second-hinge, and substantial proportions of the pillow top-edge and bottom-edge thereby peripherally defining a headrest-segment that in plan view provides the major proportion of the pillow overall plan view area:
ii. a secondary-segment peripherally defined by the first-hinge, the pillow rear-edge and its tip-rear corner, and a substantial portion of the pillow top-edge, said secondary-segment at the pillow top-rear corner by virtue of said bi-directional first-hinge being locatable at arbitrarily selected positions beneath the primary-segment, whereby when the person's head is resting upon the primary-segment and anteriorly facing the second-hinge the first-hinge is inclined upwardly and rearwardly from the pillow top-edge; and
iii. a tertiary-segment peripherally defined by the second-hinge and substantial lengths of the pillow front-edge and bottom-edge, said tertiary-segment by virtue of the second-hinge being locatable beneath the primary-segment and in plan view providing substantially less than the area of the secondary-segment.

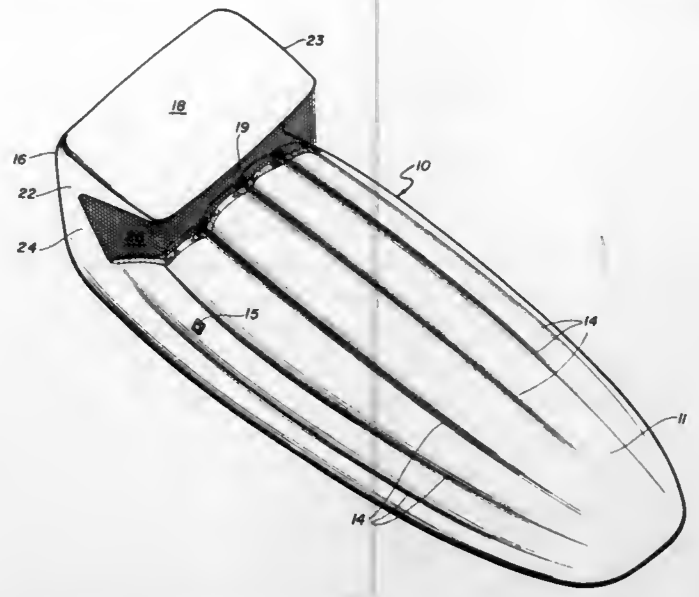
4,192,030
CAMPING ACCESSORY

Alwin E. Casson, 92 Laurel La., Lunenburg, Mass. 01462

Filed May 26, 1978, Ser. No. 909,823

Int. Cl.² A47G *9/00*

U.S. Cl. 5—420 **9 Claims**



1. Camping accessory, comprising:
(a) an elongated outer envelope formed of substantially waterproof and air impermeable sheet material with a continuous edge at one end,
(b) an elongated inner envelope formed of substantially air impermeable sheet material and lying within the outer envelope, said inner envelope having a continuous edge joined to the continuous edge of said outer envelope to form an airtight enclosure between the outer and inner envelopes, an inner space within said inner envelope and an opening to said inner space at said one end, and
(c) a valve for inflating the enclosure with air at superatmospheric pressure.

4,192,031
WATERBED MATTRESS

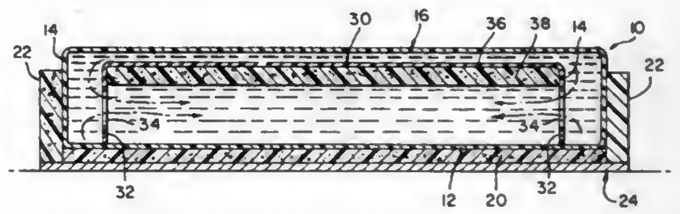
Isaac Fogel, Silver Spring, Md., assignor to Classic Corporation, Jessup, Md.

Filed Jan. 16, 1979, Ser. No. 3,820

Int. Cl.² A47B *27/08, 27/14*

U.S. Cl. 5—451 **5 Claims**

1. A waterbed mattress having dampening means for substantially eliminating water wave action comprising:
a. a top sheet, a bottom sheet, and peripheral vertical walls wherein the top sheet and the bottom sheet are joined to the peripheral vertical walls on their peripheral edges to form a sealed envelope; and
b. dampening means in the waterbed mattress, the dampening means being affixed to the interior surface of the bottom sheet and having flotation means for extending the dampening means vertically, the dampening means being positioned in the waterbed mattress to prevent continuous water wave action;
c. the dampening means comprising:
(1) a box, open on the bottom, of flexible, water-impervious, sheet-like material, the open box having the approximate shape of the waterbed mattress;



(2) a plurality of openings located in two opposite vertical sides of the open box; and
(3) flotation means attached to the underside of the top of the open box.

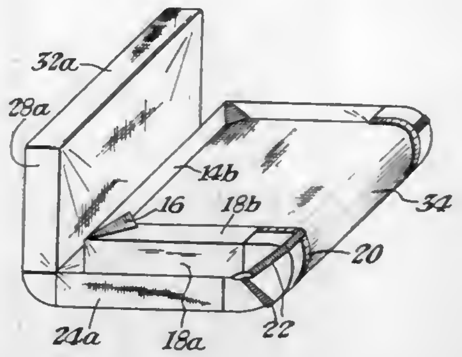
4,192,032
CONTOUR SHEET FOR A CONVERTIBLE SOFA BED

Fred Geraci, 4300 NW. 8th St., Plantation, Fla. 32504

Filed Mar. 20, 1978, Ser. No. 890,600

Int. Cl.² A47G *9/02*

U.S. Cl. 5—497 **1 Claim**



1. A bedding sheet cover for a mattress employed in a sofa bed in which the mattress includes folded portions to insure that the mattress cover remains stretched to prevent entanglement with frame members of the sofa bed comprising:
a fabric sheet having a portion sized to cover the top of the mattress, said fabric sheet including first and second end panels which overlap the mattress at each end, said first and second end panels including a bottom overlapped portion for overlapping the bottom of the mattress at each end, and
a plurality of side panels, said side panels being spaced apart sufficiently to accommodate for a particular fold of the mattress in the stowed position, said side panels joined by elasticized bands.

4,192,033
SHOE UPPER CONFORMING MACHINES

David C. Reedman, Skillington; Joseph A. Shutt, Rearsby, and Alan M. Peck, Leicester, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Apr. 13, 1978, Ser. No. 895,741

Claims priority, application United Kingdom, Apr. 16, 1977, 15876/77

Int. Cl.² A43D *21/00*

U.S. Cl. 12—10.1 **13 Claims**

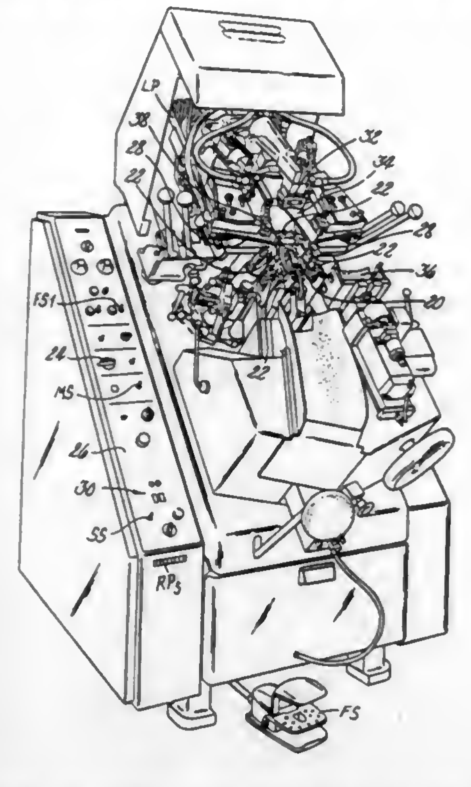
1. A shoe upper conforming machine comprising:
a support by which a form, on which a shoe upper is to be conformed, can be supported with an insole held against the bottom thereof;
gripper means including a plurality of grippers each operable to grip a marginal portion of a shoe upper carried on a form supported by said support;
means for effecting relative movement between said support

and the gripper means whereby, when the machine is in use and marginal portions of a shoe upper are being gripped as aforesaid, such upper can be caused to be tensioned over the form;

wiper means movable from a retractable position into an operative position in which, when the machine is in use, an upper tensioned as afforesaid can be held between the wiper means and an insole held against the bottom of the form;

actuating means for causing the wiper means to move between said positions as aforesaid;

gripper actuating means for operating each gripper to close to grip a marginal portion of a shoe upper as aforesaid; and



control means for controlling operation of both the actuating means for the wiper means and also the gripper actuating means, whereby the wiper means is caused to move from its retracted to its operative position and, when the machine is in use and with marginal portions of a shoe upper gripped and the upper tensioned as aforesaid, the grippers are caused to release such upper in timed relation with such movement of the wiper means, said control means comprising a computer control which supplies control signals sequentially, according to a programmed instruction, to the actuating means for the wiper means and to the gripper actuating means.

4,192,034

BOWLING BALL CLEANER WITH PNEUMATIC CONTROL OF BALL LIFT, BRUSHES AND CLEANING COMPOUND

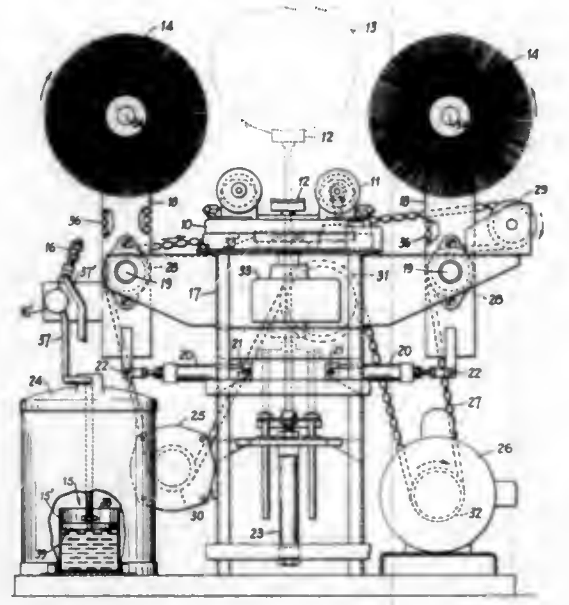
William H. Knepper, Jr., Mansfield, Ohio, assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 24, 1978, Ser. No. 936,531

Int. Cl.^{2} A63B *47/04*

U.S. Cl. 15—21 A **6 Claims**

1. In a bowling ball cleaner having means for rotating the ball and a rotary brush engageable with the ball to clean the same, said cleaner including a spray nozzle adjacent to said brush, a container of cleaning compound slurry, and hose means connecting said container to said nozzle for depositing a spray of said slurry on said brush, a compressed air tank, said container of slurry comprising a replaceable open can of said slurry in said tank, a float disc in said can resting on top of said slurry, and said hose means extending to an aperture formed in said disc.



4,192,035

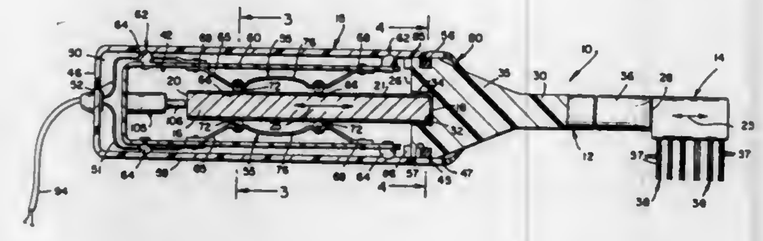
ULTRASONIC TOOTHBRUSH

Arthur Kuris, Riverdale, N.Y., assignor to Ultrasonic Plaque Control Laboratories, Inc., New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,663

Int. Cl.^{2} A46B *13/02*

U.S. Cl. 15—22 R **28 Claims**



1. Apparatus for use in personal dental hygiene care comprising:

A. an elongated member formed at least in part of a piezoelectric member with a pair of contacting surfaces intermediate the respective ends thereof,

B. a brush member adapted to be received within the human mouth and moved across tooth and gingival surfaces and extending from one end of said elongated member,

C. a casing adapted to be held in the hand and of a length at least equal to said piezoelectric member and having an elongated bore adapted to receive said piezoelectric member of said elongated member,

D. sealing means in said bore to engage said elongated member in readily releasable and in a fluid-tight fashion,

E. electrical contact means contained in said casing for releasable engagement with said contacting surfaces of said piezoelectric member of said elongated member, so as to obtain electrical contact upon the insertion of said elongated member within said bore and disengagement of said electrical contact means upon removal from said bore of said elongated member, and

F. generating means to supply alternating electrical signals to said contact means to establish an alternating field for transmission from said contact means to said piezoelectric member, whereby mechanical vibrations at the frequency of said alternating signals are induced in said elongated member and said brush member.

4,192,036

APPARATUS FOR PROCESSING THE SURFACE OF BODIES HAVING IRREGULAR CONTOURS

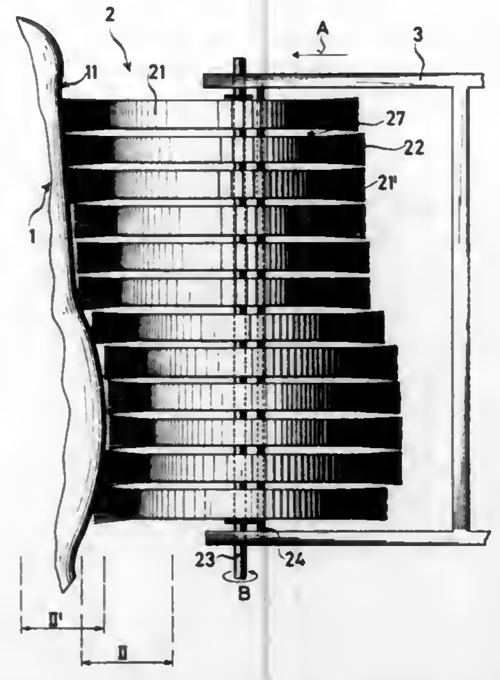
Friedhelm Heymann, Thranestrasse 90, D-4600 Dortmund 12, Fed. Rep. of Germany

Filed Jul. 19, 1978, Ser. No. 926,159

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733091

Int. Cl.^{2} B60S *3/06*

U.S. Cl. 15—53 AB **16 Claims**



1. Apparatus for processing the surface of bodies of irregular contours, comprising: a rotatable body; a drive shaft mounted in said rotatable body for driving said body, said body being held against a surface to be processed; said rotating body comprising a plurality of sections held against said surface, said sections carrying processing means for said surface, said sections of said rotating body being eccentrically penetrated by said drive shaft; drive wheels arranged on said drive shaft and acting from the inside on each of said sections; guide means pivotal relative to said drive shaft and relative to said sections for positioning said sections on said shaft.

4,192,037

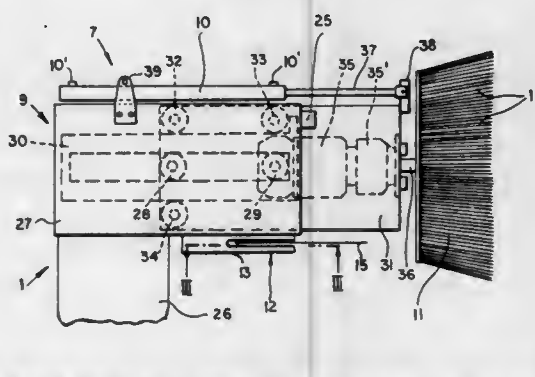
WHEEL-SCRUBBING MECHANISM FOR VEHICLE-WASHING APPARATUS

Uberto Capra, Alte Ceccato, Italy

Filed Aug. 15, 1978, Ser. No. 933,981

Int. Cl.^{2} B60S *3/06*

U.S. Cl. 15—53 B **8 Claims**



1. In an apparatus for washing a wheeled vehicle, including a support movable relatively to a vehicle to be washed and provided with body-scrubbing means,

the combination therewith of at least one wheel-cleaning unit on said support comprising:

rotary wheel-scrubbing means normally laterally retracted from the path of relative vehicle motion;

reciprocable transport means linking said wheel-scrubbing means with said support;

normally withdrawn feeler means extendible across the course of a vehicle wheel to be scrubbed;

actuating means programmed to extend said feeler means upon the approach of said vehicle wheel during relative displacement of said support and said vehicle; and

switch means triggerable by said feeler means in an extended position thereof, upon contact with said vehicle wheel, for activating said wheel-scrubbing means and commanding said transport means to advance said wheel-scrubbing means into operative engagement with said vehicle wheel.

4,192,038

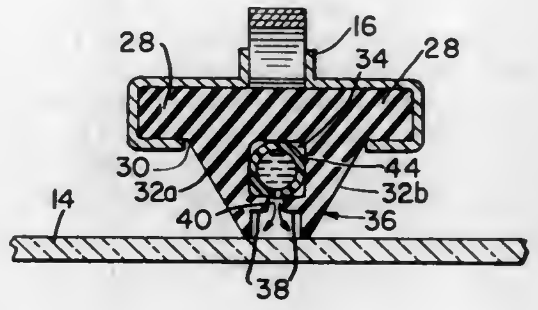
APPARATUS FOR CLEANING AND/OR COATING

Bernard J. Klein, 140 Peach Dr., Rosyln, N.Y. 11576, and Samuel D. Verga, 75 W. 238th St., Bronx, N.Y. 10463

Continuation of Ser. No. 692,543, Jun. 3, 1976, abandoned. This application Dec. 22, 1978, Ser. No. 972,455

Int. Cl.^{2} B60S *1/46*

U.S. Cl. 15—250.06 **5 Claims**



1. Apparatus for cleaning and/or coating generally smooth surfaces and the like comprising a generally elongated unitary member including a pair of spaced apart and generally parallel blade projections extending from and along one side thereof and being adapted to contact the surface such that whenever said unitary member is positioned against the surface and is moved in a first direction, a first projection serves as a leading blade for removing surface dirt from the surface, and the second projection serves as a trailing blade which functions to evenly wipe the surface, and when said unitary member is moved in the opposite direction said second projection serves as a leading blade which removes the dirt from the surface and said first projection serves as a trailing blade for evenly wiping the surface, conduit means positioned between said projections such that it is spaced from the surface, said conduit means having a plurality of spaced passages for dispensing a plurality of streams of an appropriate fluid directly onto the surface between said blade projections for cleaning and/or coating the surface, at least one flexible lip member formed integrally with each of said projections, said lip members being generally perpendicular to their associated projection and extending toward each other and in combination, over a major portion of the space between said projections so as to retain said conduit means in position therebetween, the free end portions of said lip members being separated by a space which permits the passage of the streams of fluid from said conduit means and said lip members being movable generally apart from each other for permitting removal and/or replacement of said conduit means between said projections.

4,192,039

DOOR GUIDANCE, ESPECIALLY FOR THE TAIL DOOR OF A STATION WAGON

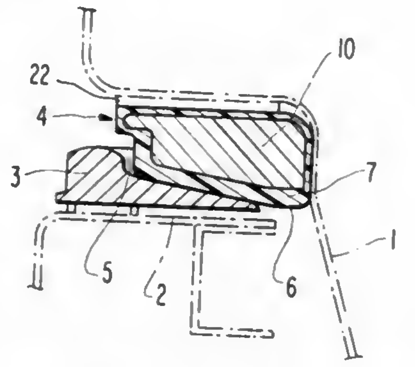
Fritz Häberle, and Hermann W. Kurth, both of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,834

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745120

Int. Cl.^{2} E05F *5/00*

U.S. Cl. 16—86 B **5 Claims**



1. A guide for doors which includes a first member having at least one wedge-shaped recess therein, a second member having at least one projection adapted to be insertable into the at least one wedge-shaped recess during a closing of the door, and a buffer means of an abrasion-resistant elastic material provided on the at least one projection, characterized in that at least two spaced projections are provided on said second member, said spaced projections define therebetween a further recess, at least two opposed recesses provided in each of the projections along run-in zones thereof, and a projecting bead of elastic material provided on each of the projections and extending over lateral contact surfaces of the respective projections, and in that the projecting bead of elastic material is disposed forwardly of the further recess so that the projecting bead is at least partly forced into the further recess during a closing of the door.

4,192,040

APPARATUS FOR CUTTING OPEN AND CLEANING THE STOMACHS OF SMALL ANIMALS, FOR EXAMPLE POULTRY

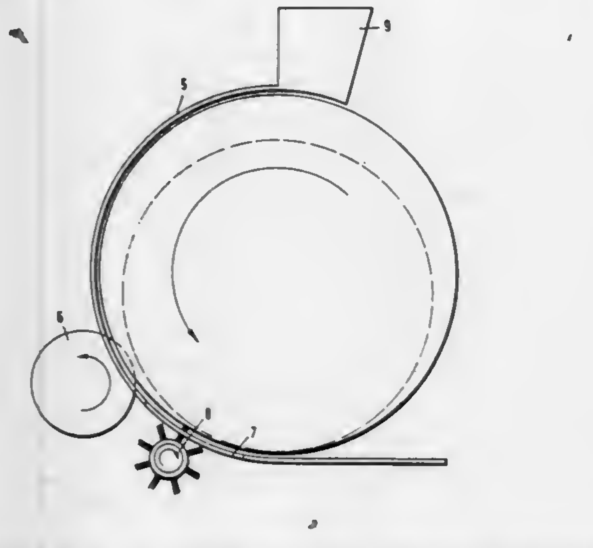
Harry Gielnik, Bremen, Fed. Rep. of Germany, assignor to Münchmeyer & Co., Hamburg, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,558

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744456

Int. Cl.^{2} A22C *21/06*

U.S. Cl. 17—11 **7 Claims**



1. In apparatus for cutting open and cleaning the stomachs of small animals, said apparatus comprising a conveying wheel, means for driving said conveying wheel, means defining a plurality of chambers for holding said stomachs around the periphery of said conveying wheel, means for feeding said stomachs to said chambers, a knife, means supporting said knife in a position in which said knife extends into the path of movement of said chambers, whereby said knife cuts open stomachs in said chambers, and a device for cleaning said stomachs after they have been cut open by said knife, the improvement wherein said wheel includes means for decreasing and increasing the sizes of said chambers as said wheel rotates, and wherein divider means is provided for prizing open said stomachs and removing hard skin from within said stomachs, said divider means including means mounting said divider means on the side of said knife remote from said feeding means considered in the direction of movement of said chambers.

4,192,041

METHOD AND APPARATUS FOR FORMING A SLIVER

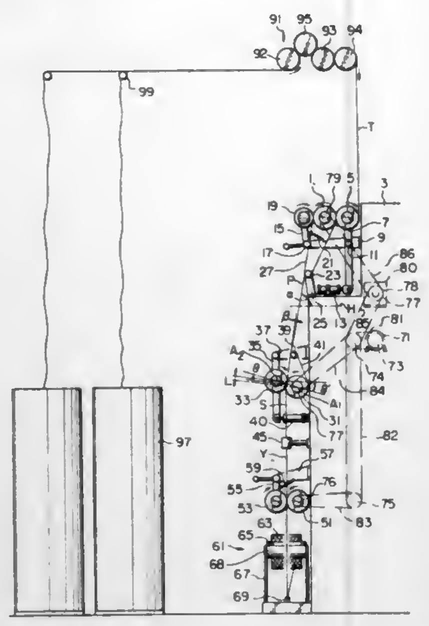
Yoshiyuki Sasaki, Takatsuki, and Kiyoshi Harada, Ibaraki, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 23, 1977, Ser. No. 854,331

Claims priority, application Japan, Dec. 3, 1976, 51-144619

Int. Cl.^{2} D01G *1/08;* **D01H** *5/86*

U.S. Cl. 19—0.35 **6 Claims**



1. An apparatus for converting a multifilament bundle into a sliver comprising a feed roller means for supplying said bundle and a draft roller means comprising upper and lower opposed draft rollers having a peripheral speed higher than that of said feed roller means, said peripheral speed being at least 200 meters/min., for stretch breaking said multifilaments in said bundle between said feed roller means and said draft roller means, the broken multifilaments having U-shaped ends, the rotational axis of said lower draft roller being displaced a predetermined distance toward said feed roller means relative to the rotational axis of said upper draft roller, said draft roller means including a movable apron belt in non-sliding contact with said draft rollers at the region of closest proximity thereof, said belt having a portion positioned below the yarn path, said belt partially wrapping around said lower draft roller downstream of the region of closest proximity between said fraft rollers, whereby said apron belt acts as a smoothing means for holding and smoothing the U-shaped broken ends of said multifilaments, the other ends of said multifilaments being supplied from said feed roller means, and for positioning said broken ends parallel to the feeding direction of said bundle before each of said multifilaments is subjected to a stretch breaking operation between said feed roller means and said draft roller means, said apron belt being positioned to maintain said multifilaments adjacent the periphery of said upper draft roller through a circumferential angle in the range of 3 to 45 degrees, the ratio of the peripheral speed of said draft roller means to that of said feed roller means being in the range of 15 to 200.

4,192,042

APPARATUS FOR BREAKING TEXTILE FIBER BALES

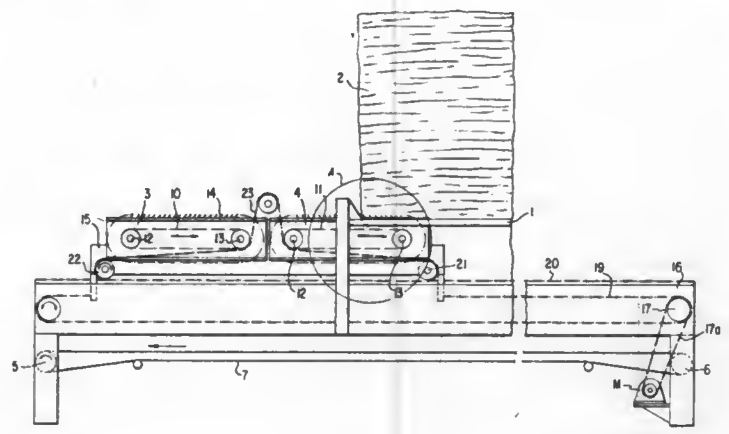
Peter Jagst, Monchengladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 885,896

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732729

Int. Cl.^{2} D01G *7/04*

U.S. Cl. 19—81 **17 Claims**



1. In an apparatus for breaking textile fiber bales, including at least two spiked breaker members rotated in the working direction for opening the bales at their underside; the improvement comprising

(a) a stationary support rack for receiving thereon a plurality of bales juxtapositioned in the working direction; said support rack having a plurality of parallel-spaced support rods extending in the working direction above said breaker members;

(b) means for moving said breaker members as a unit back and forth in the working direction underneath said support rack for opening the underside of the bales juxtapositioned on said support rack; and

(c) means providing for a displaceability of said support rack in a horizontal direction transversely to said working direction out of the operational range of said breaker members.

4,192,043

CLOSURE SEAL AND APPARATUS FOR APPLYING THE SAME

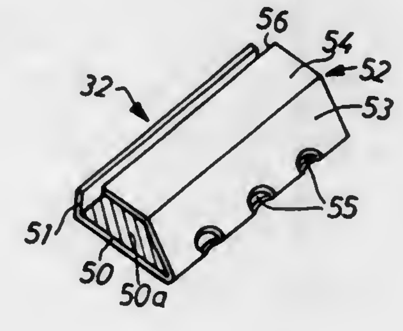
Albert Konrad, Rigistrasse 516, CH-5634 Merenschwand, Switzerland

Continuation of Ser. No. 833,206, Sep. 14, 1977, which is a division of Ser. No. 676,497, Apr. 13, 1976, Pat. No. 4,056,128. This application Jan. 16, 1979, Ser. No. 3,804

Claims priority, application Switzerland, Apr. 30, 1975, 5556/75

Int. Cl.^{2} B65D *63/06*

U.S. Cl. 24—21 **3 Claims**



1. A closure seal for use with strapping apparatus for interconnecting overlapping band sections of a plastic strap, the closure seal comprising

a floor portion having a pair of oppositely situated lengthwise extending sides,

a flange extending vertically upward from one lengthwise extending side of the floor portion,

a flap extending from the oppositely situated lengthwise extending side of the floor portion,

said flap including first and second portions, the first portion being a flap portion connected to the side of the floor portion and positioned at an inclination relative thereto, the second portion being a flap portion extending from the first portion substantially parallel to the floor portion,

said flap being bendable against the band sections to secure the band sections, and said flange being adapted to being folded over for overlapping an adjacent part of said flap, and

said flap and said floor portion having a plurality of openings, each opening extending in the connection between the flap and the floor portion and into both the floor portion and the first portion of the flap for receiving band material out of the openings to insure holding of overlapping band portions.

4,192,044

CONNECTOR AND CAPTIVE BALL INCORPORATING SAME

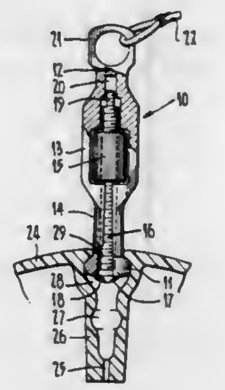
Alberto Ballerini, 207 Lennox St., Richmond, Australia

Filed Aug. 22, 1978, Ser. No. 935,798

Claims priority, application Australia, Aug. 23, 1977, 1344/77; Jun. 15, 1978, 4741/78

Int. Cl.^{2} A44B *17/00*

U.S. Cl. 24—211 R **10 Claims**



1. A connector having a generally elongated body portion which is split in a longitudinal direction from one end to a position part the way along its length so as to form two side members which are joined at said position and which may be resiliently separated at said one end, said connector having a part at or adjacent said one end which is of greater cross-sectional dimension than the cross-sectional dimension of the connector at least adjacent said part and in a direction towards said position, manually operable screw means on said connector and operable to force said two members away from each other causing said part to expand in a direction transverse to said longitudinal direction, said connector being held, by said part, in detachable connection with an article having a cavity therein accessible via a restricted neck portion in a manner wherein said connector is rotatable about the longitudinal axis thereof and at least partly pivotal in any direction relative to said article, and said connector having means adjacent the other end thereof for retaining a cord, chain, or the like.

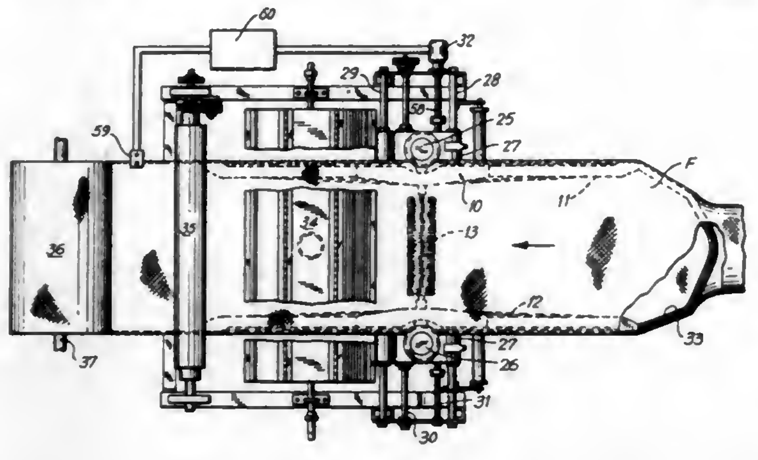
4,192,045
ADJUSTABLE SPREADER FOR TUBULAR KNITTED FABRIC

Robert Frezza, Carle Place, N.Y., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Filed Mar. 20, 1978, Ser. No. 888,135

Int. Cl.^{2} D06C *5/00*

U.S. Cl. 26—75 **7 Claims**



1. A variable width spreader apparatus for processing tubular knitted fabric, which comprises

(a) a pair of width adjustable edge drive carriages,
(b) means for moving at least one of said carriages toward and away from the other to effect width adjustment,
(c) edge drive rolls mounted on said carriages and movable therewith,
(d) opposed longitudinally extending spreader frame elements for reception internally of the tubular knitted fabric,
(e) each of said spreader frame elements having intermediate its ends a pair of support rollers engageable through a fabric wall with an edge drive roll, in straddling relation therewith,
(f) said edge drive rolls and said support rollers having generally complementary contours, whereby said spreader frame elements are supported and positioned by said edge drive rolls,
(g) spacer means extending between and engaging said spreader frame elements,
(h) said spacer means comprising telescopically associated guide members accommodating movement of the spreader frame elements toward and away from each other,
(i) said spacer means further comprising a gas spring element engaging said guide members and constantly urging said guide members in an extending direction,
(j) said telescopically associated guide members comprising interfitting tubular members,
(k) said gas spring being mounted within and housed by said tubular members,
(1) said spreader frame members being movable toward and away from each other by in-process adjustment of the spacing of said edge drive rolls,
(m) said spacer means having a quick-detachable association with said spreader frame elements, whereby to facilitate interchangeability of spacer means of different length,
(n) said gas spring element comprising a piston within a sealed gas cylinder precharged with a positive gas pressure.

4. Apparatus for processing tubular knitted fabric, which comprises

(a) a pair of edge drive rolls,
(b) carriage means for separating said edge drive rolls,
(c) at least one of said carriages being movable toward and away from the other,
(d) controllable drive means for moving said carriage toward and away from the other as an in-process adjustment,
(e) a resiliently width-compressible spreader frame supported by and between said edge drive rolls, and
(f) a self-contained, pre-pressurized gas system including an actuator constantly engaging said spreader frame in a width-expanding direction,
(g) means for continuously sensing the edge location of the processed fabric at a location downstream of the spreader frame, and
(h) control means responsive to said sensing means for effecting in-process adjustment of the spacing of said edge drive rolls in response to wandering of said edge location beyond predetermined limits.

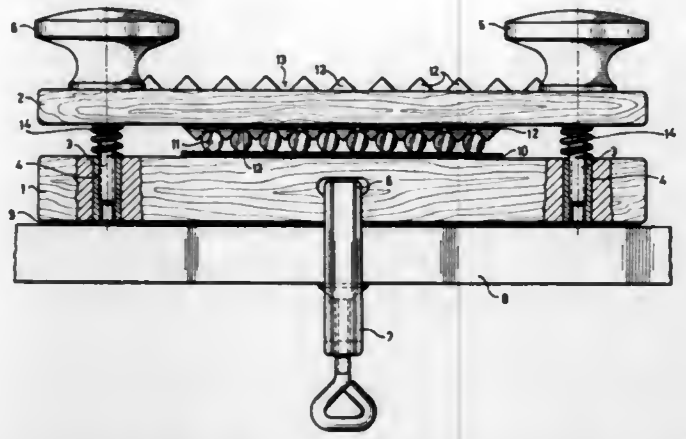
4,192,046
LOCKING APPARATUS FOR BAR-SHAPED ELEMENTS AS USED IN WEAVING

Henriette M. J. van den Bosch-Meevis, 97 Nieuwe Steeg, Leersum, and Martinus H. J. Meevis, 51, de Wever, Veldhoven, both of Netherlands

Filed Mar. 13, 1978, Ser. No. 885,666

Int. Cl.^{2} D03D *29/00*

U.S. Cl. 28—151 **11 Claims**



1. A locking apparatus for bar-shaped elements as used in weaving, comprising at least one lower block, at least one upper block, at least one releasable gripping element for fixing the blocks at a desired distance mutually with respect to each other, and bar-centering elements arranged on at least one surface of one of the blocks for holding the bar-shaped elements parallel to each other, spring means engaged between the upper block and the lower block, the spring means having sufficient compressive force when the gripping elements fix the blocks at the desired distance, as to be capable of moving the upper block upwardly and away from the lower block when the gripping means are released.

4,192,047
METHOD OF TREATING MULTIFILAMENT SYNTHETIC YARN

Peter W. Foster; Thomas Berry, both of Tiverton, England, and Karel Murenbeeld, Geneva, Switzerland, assignors to John Heathcoat & Company Limited, Tiverton, England

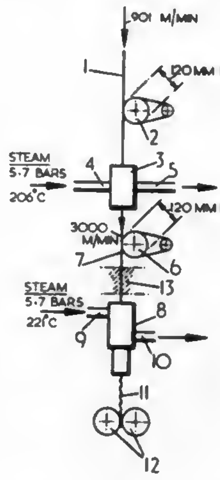
Filed Jan. 23, 1978, Ser. No. 871,334

Claims priority, application United Kingdom, Jan. 27, 1977, 3298/77

Int. Cl.^{2} D02G *1/16;* **D02J** *1/22*

U.S. Cl. 28—220 **1 Claim**

1. A method of forming commercially usable textured synthetic multifilament yarn from commercially produced undrawn multifilament synthetic yarn of a type which when undrawn has normally a limited operational life and which has exceeded that normal operational life comprising the steps, performed successively without pause and as a continuous operation, of plasticizing the yarn by treatment with hot fluid and drawing the yarn to a chosen ratio of extension while it is plasticized, cooling said plasticized and drawn yarn, then plasticizing the yarn a second time and jet texturing the yarn while it is plasticized for the second time.



4,192,048
TEXTURIZING A TEXTILE PRODUCT

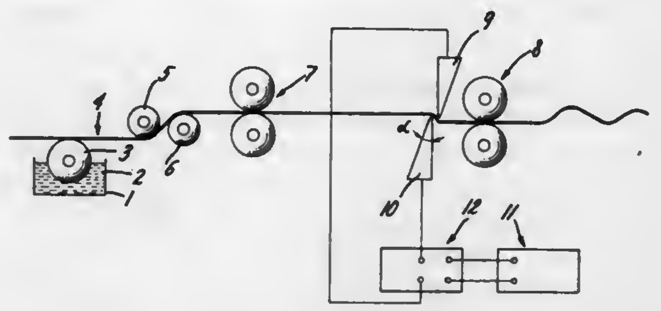
Jean J. Robillard, Voltaire, France, assignor to Pierre Wahl, Geneva, Switzerland

Filed Dec. 2, 1977, Ser. No. 857,179

Claims priority, application France, Dec. 2, 1976, 76 36320

Int. Cl.^{2} D02G *1/00;* **D02J** *1/22*

U.S. Cl. 28—246 **11 Claims**



6. Apparatus for texturizing thermoplastic yarn comprising, a pair of electrodes electrically energized having surfaces over which a moistured thermoplastic yarn is advanced while the electrodes are energized, said electrodes having surfaces over which said yarn is advanced longitudinally and spaced relatively to effect a change of direction of travel of said yarn to thereby heat said yarn and crimp it, and means for advancing said yarn longitudinally subject to application of a tensile force thereto while advancing it.

4,192,049
METHOD OF MANUFACTURING BATTERY PLATES

David B. Parkinson, Cleveland Heights, and Truman D. Parkinson, Chardon, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 840,372, Oct. 7, 1977, Pat. No. 4,121,023. This application Jun. 29, 1978, Ser. No. 920,620

Int. Cl.^{2} H01M *10/04*

U.S. Cl. 29—2 **5 Claims**

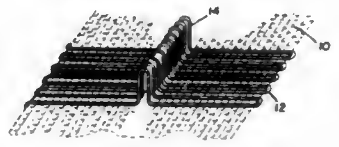
1. A method of manufacturing battery plates comprising the steps of:

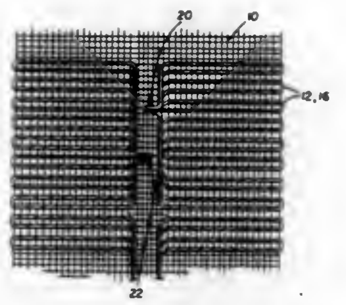
weaving a web of material with discrete weft elements and with discrete warp elements, having spaced conductive material wires included as at least a portion of the discrete weft elements extending at least part way across the web, said web having a sufficient length and width to accommodate a plurality of plates at longitudinally and laterally spaced locations thereon;

providing intermediate loops in said wires between said laterally spaced locations;

severing said intermediate loops;

gathering said severed wires where they extend between said spaced locations, to form terminals for said plates;





applying active material to said web at said spaced locations so that said material penetrates said web and intimately contacts spaced portions of said wires whereby forming a plurality of spaced plates on said web; and

cutting said web as necessary to separate said plates therefrom.

4,192,050
METHOD OF MAKING A HELICALLY GROOVED ROLLER

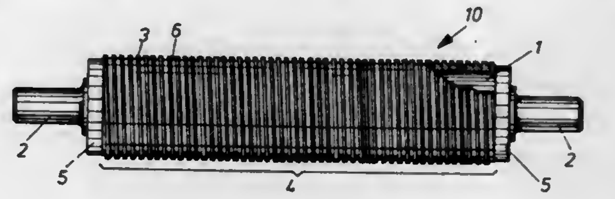
Valentin Appenzeller, Kempen, Fed. Rep. of Germany, assignor to Eduard Kusters, Krefeld, Fed. Rep. of Germany

Filed Feb. 2, 1978, Ser. No. 874,559

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704157

Int. Cl.^{2} B21B *31/08*

U.S. Cl. 29—148.4 D **4 Claims**



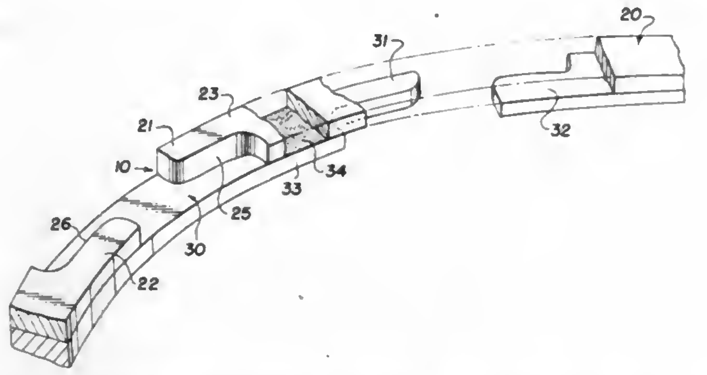
1. A method of constructing a grooved drum comprising:

(a) winding a ribbon, which is pre-profiled to have a substantially trapezoidal cross section including a base, two sloping sides extending therefrom and an outside surface opposite said base and containing a rectangular cutout on a cylindrical inner drum;
(b) stretching said ribbon during said winding because of the outside of said ribbon having a larger circumference than the inside;
(c) selecting the dimensions of said trapezoid so that, after winding, said stretching will cause a rectangular cross section to be produced; and
(d) connecting the sides of adjacent turns of the ribbons facing each other in the axial direction, to each other, in a form locking manner whereby the outside surface of said ribbon, after being wound, because of said cutout, will form a working surface with axially spaced circumferential grooves.

4,192,051

METHOD FOR MANUFACTURING FULLY SEALED PISTON RING

Alfred Bergeron, 1288 N. Bagley, Lot #6, Dallas, Tex. 75211
Continuation-in-part of Ser. No. 674,887, Apr. 8, 1976, abandoned. This application Nov. 28, 1977, Ser. No. 855,206
Int. Cl.^{2} B23P *15/08*
U.S. Cl. 29—156.6 **2 Claims**



1. A method for fabricating a unitary, fully sealed piston ring including the steps of:

(a) forming first and second split ring members with each having parallel planar side faces and generally concentric outer and inner edge faces, with said outer edge face being cylindrical when a split ring member is compressed to its intended final diameter, and each of said split ring members being formed from an annular blank whose initial circumference is greater than the intended final circumference of the piston ring by a length identifiable as the insert length, and each of said ring members being split in a generally radial direction to form first and second ends;

(b) forming circumferentially overlapping, radially contiguous fingers at the ends of said split ring members, including a radially outer finger whose exterior face constitutes a circumferential extension of the outer edge face of a split ring member, and including a radially inner finger whose interior face constitutes a circumferential extension of the radially inner face of a split ring member, with said fingers having a length less than the insert length of said blank;

(c) finishing said finger faces and said outer and inner edge faces of the ring members for sealing relation with their respective co-acting surfaces;

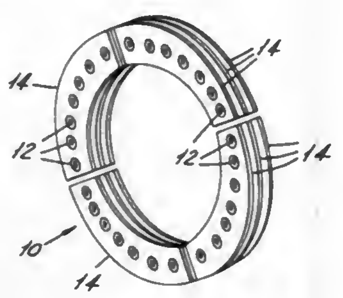
(d) positioning said first and second split ring members in overlying, side-by-side and contiguous relation, with the respective first ends of each of said split ring members circumferentially overlapping a body portion of the other ring member, whereby a joint is made up between the first and second ends of each split ring member when the ring member is compressed to its final diameter, and said made-up joint for each ring member overlies a body portion of the adjacent ring member, and the first and second ring members being oriented in a generally horizontal position so as to form an angle of no more than fifteen degrees with respect to horizontal at the time that joining is accomplished; and

(e) permanently joining said two ring members into a unitary assembly by means of only a single and localized silver solder joint between confronting side faces of the two ring members, each confronting side face having a flat surface with the entire surface extending only in a single plane and said solder being disposed between the flat surfaces, with the two ring members being positioned so that the silver solder joint is in close proximity to each of the two radially outer fingers, and the joining step being accomplished after the recited finishing step, and the amount of joining material being sufficiently small as to obviate any further finishing after the joining step, whereby the ring is ready for use immediately after the joining step.

4,192,052

METHOD FOR BONDING A HEAT EXCHANGER FIN TO A TUBE

Robert D. MacDonald, Grand Blanc, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 660,076, Feb. 23, 1976, abandoned. This application Jul. 22, 1977, Ser. No. 817,948
Int. Cl.^{2} B23P *15/26*
U.S. Cl. 29—157.3 A **2 Claims**



1. A method for forming a rotating viscous drag air-pumping heat exchanger having a fluid-carrying metal tube passing through a plurality of external sheet metal fins at closely spaced intervals along the length thereof, said tube and fins being formed and assembled by the process which comprises:

(a) forming each fin with (1) a tube-receiving hole so shaped and dimensioned that the radial gap between the outer circumference of the tube and the edge of the hole is minimal and consistent with free insertion of the tube into said hole, and (2) a series of integral narrow formations circumferentially spaced around the periphery of said hole, each formation being dimensioned to locally increase the thickness of the fin as measured along the length of the tube, said thickness being selected and controlled to establish the desired longitudinal spacing between adjacent fins when the formations of one fin abut the adjacent fin, said formations being so configured to prevent them from nesting into formations on an adjacent fin, thereby to assure the desired longitudinal spacing, the number and circumferential width of the formations associated with each hole being selected to provide a combined formation circumference which is a very small proportion of the total hole circumference, the periphery of the hole between the formations being free of any formation which increases the thickness of the fin, so that the major portion of the periphery of the hole presents a sharp edge perpendicular to and in close proximity to the tube;

(b) inserting a tube through the aligned holes of a stack of fins formed in accordance with step (a) above, each fin being pre-spaced from each adjacent fin by the narrow formations thereon, at least one of the opposed surfaces of the fins and tube outer surface being clad with a brazing composition having a melting point below the melting point of both the fin and tube base materials;

(c) brazing the fins and tube into an integral assembly by placing them into a furnace at a temperature above the melting point of said cladding but below the melting point of said base materials, thereby to form a bond between said sharp edge of the fin hole and the tube along substantially the full length of said major portion of the hole periphery.

4,192,053

METHOD FOR RETUBING A STEAM GENERATOR

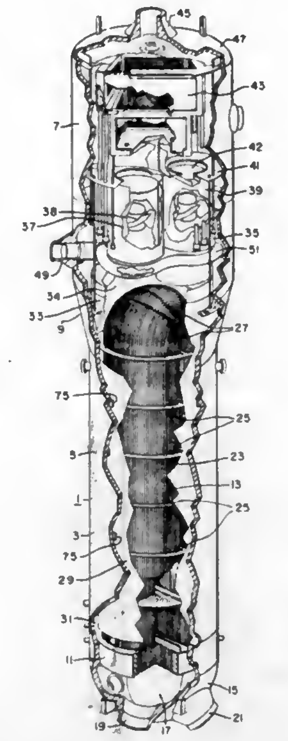
Rodney A. Blanco, and Anthony A. Massaro, Jr., both of Export, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 19, 1977, Ser. No. 834,855
Int. Cl.^{2} B23P *15/26, 7/00*
U.S. Cl. 29—157.4 **10 Claims**

1. A method of retubing a shell and tube heat exchanger

having a tube sheet with a plurality of holes disposed therein and having a plurality of tubes extending from one side of the tube sheet to form a tube bundle, said method comprising the steps of:

providing a large opening in the shell adjacent the tube sheet to facilitate access to the tube bundle;

cutting a short segment from the tubes adjacent the tube sheet;



freeing the tube bundle from the tube sheet as a unit and leaving a stub tube in the tube sheet;

separating the shell and removing a portion thereof;

removing the freed tube bundle from the shell;

removing the stub tubes from the tube sheet;

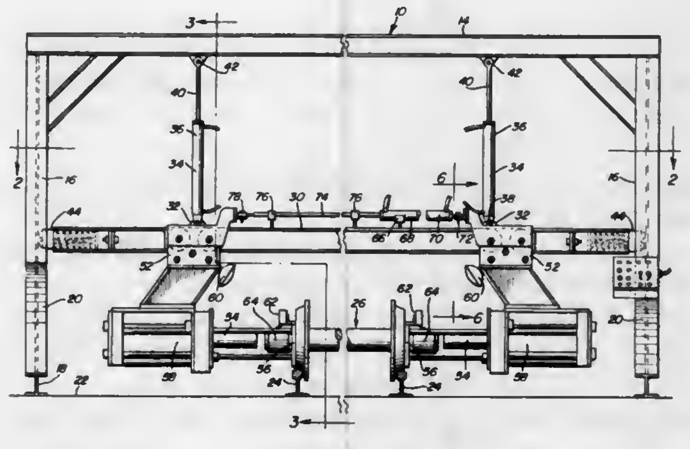
installing new tubes in the holes in the tube sheet to form a new tube bundle; and

reassembling the shell.

4,192,054

RAILROAD ROLLER BEARING PULLER

Jack E. Webb, 3530 Hawthorne Rd., Pocatello, Id. 83201
Filed Oct. 17, 1978, Ser. No. 953,893
Int. Cl.^{2} B23P *19/02*
U.S. Cl. 29—252 **12 Claims**

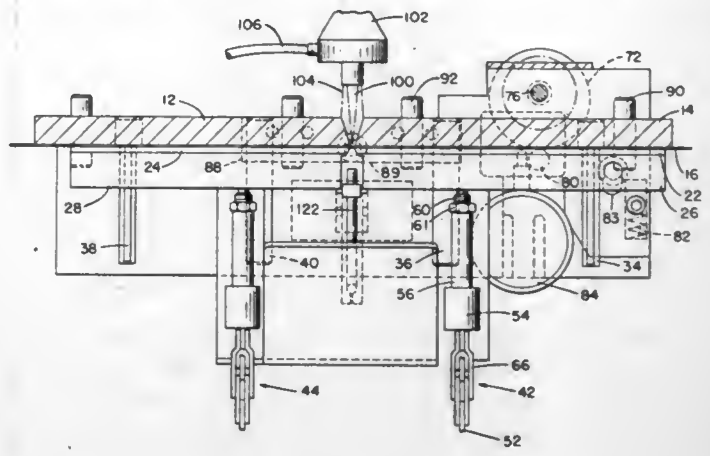


1. A railroad wheel bearing puller for pulling the bearings from both ends of an axle/wheel assembly of the type including a pair of opposite end stub axle portions upon which the bearings to be pulled are mounted and which project outwardly from the remote sides of the wheels of said assembly, said puller including an overhead mount for disposition over a section of track along which axle/wheel assemblies may be rolled, an elongated horizontal support structure for disposition transverse to said track section, suspension means adjustably suspending opposite end portions of said support structure from said mount, a pair of followers mounted on said support structure for guided movement therealong, first motor means adjustably varying the spacing between said followers, a pair of opposing wheel bearing engaging and pulling fixtures dependingly supported from said followers and axle end engaging abutments supported from said followers for shifting relative thereto toward and away from each other, and second motor means operatively connected between each follower and the corresponding abutment for controllably inversely shifting said abutments toward and away from each other relative to said fixtures.

4,192,055

BAND WELDING FIXTURE

Donn F. Moore, Utica, Mich., assignor to Computer Peripherals, Inc., Minneapolis, Minn.
Division of Ser. No. 835,112, Sep. 21, 1977, Pat. No. 4,139,145. This application Aug. 28, 1978, Ser. No. 937,349
Int. Cl.^{2} B25B *11/02*
U.S. Cl. 29—281.4 **16 Claims**



1. A band end welding fixture comprising, a

pair of adjacent support members, one being tiltable in relation to the other for providing end alignment of the band,

means carried by said support members for providing edge alignment of the band,

means for clamping said band on said support members when positioned in edge alignment and having its ends abutting one another,

means for tilting said one support member to align the ends of said band prior to welding thereof, and

circuit means coupled with said alignment means for indicating edge alignment of the band during welding of the aligned ends thereof.

8. A welding fixture for connecting the ends of a print band to form an endless loop, said fixture comprising a pair of plate members positioned adjacent one another to provide a gap therebetween, a

plurality of print band alignment members carried by said plate members to align the edge of said print band,

means for holding said print band in the edge aligned position against said plate members wherein the ends of said print band are engageably disposed at said gap, and

means for tilting one of said plate members in relation to the other to align the ends of said print band prior to welding thereof, said means for tilting one of said plate members including a shaft and camming means operable upon rotation thereof to move one plate member at an obtuse angle from the other plate member.

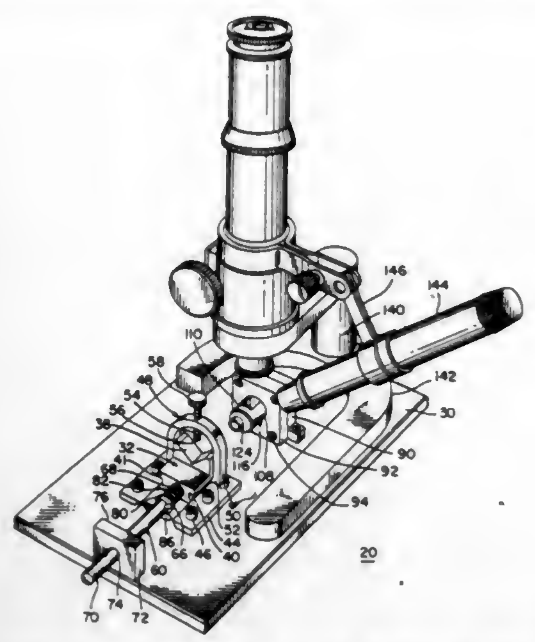
4,192,056

ASSEMBLY TOOL

Maurus C. Logan, Elizabeth, N.J.; John M. Cole, New Hope, Pa., and Peter Garner, Chatham, N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.
Filed Dec. 14, 1977, Ser. No. 860,576
Int. Cl.^{2} G02B *5/14;* B23Q *3/00*
U.S. Cl. 29—468 **4 Claims**

1. A tool for positioning an optical fiber within a connector,

comprising; gauge means having an index thereon to indicate the desired position of an optical fiber within a connector; connector support means for engaging and retaining a connector having an optical fiber therein and means for moving said connector support means towards and away from said gauge means; a base member; stationary coupling means to couple said gauge means to said base member; movable coupling means to movably couple said connector support means so that said connector support means can be moved towards and away from said gauge means, a first recess adjacent said connector support means; a second recess remote from said connector support means; said means for moving said connector support means is a rotatable rod coupled to said connector support means which can be moved by an operator grasping said rod; and a stop pin coupled to said rod for engagement with either of said first or second recess upon rotation of said rod to fix the position of said connector support means at a first or a second position.



4,192,057

PROCESS AND APPARATUS FOR THE PRODUCTION OF CORROSION PROTECTION FOR CABLES MADE OF PARALLEL WIRE STRANDS

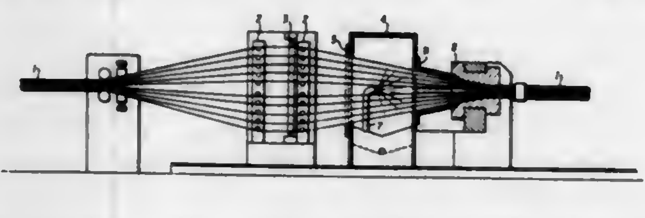
Wolfgang Borelly, Schwanenstrasse 2c, 6800 Mannheim 51, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 631,322, Nov. 12, 1975, Pat. No. 4,117,582, which is a division of Ser. No. 439,742, Feb. 5, 1974, Pat. No. 3,919,762, which is a continuation-in-part of Ser. No. 385,683, Aug. 6, 1973, abandoned. This application Nov. 3, 1976, Ser. No. 738,545

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1975, 2549299

Int. Cl.² B23P *3/00*

U.S. Cl. 29—458 **16 Claims**



1. A process for producing a parallel wire tension member protected from corrosion and for use in cable stayed bridges comprising:

(a) supplying a prefabricated parallel wire bundle from a supply source;

(b) conveying the wire bundle through a spreader and reforming die means to spread the wire strands of the bundle apart without disassembling the bundle and reforming the strands in a parallel wire bundle by collecting them together at the reforming die;

(c) injecting from within the spread strands a tacky synthetic resinous material with an anti-corrosion ingredient to coat all the strands while they are converging towards the reforming die, the resinous material being contained by an injection housing during injection and being sufficient in quantity to completely fill the interstices between the strands after the reforming strip;

(d) applying a close-fitting sheet metal casing to the composite reformed wire bundle and resinous material while the latter is still in tacky condition to thereby enclose same and to bond the casing to at least a portion of the length of the wire bundle, the quantity of the resinous material being sufficient to substantially fill the area between the wires strands and the casing, and the metal casing being longitudinally rigid to the extent that the encased wire bundle cannot be bent beyond a predetermined large radius of curvature without deforming the metal casing;

(e) curing and hardening the resinous material while the encased wire bundle is maintained in substantially straight condition, i.e., with a radius of curvature not smaller than said predetermined radius of curvature.

4,192,058

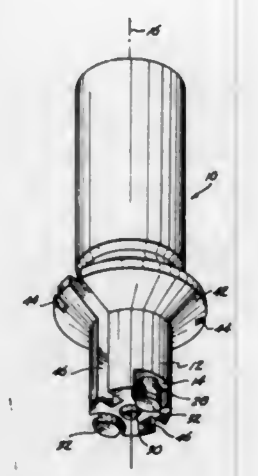
HIGH FATIGUE SLUG SQUEEZE RIVETING PROCESS USING FIXED UPPER CLAMP AND APPARATUS THEREFOR

Joseph G. Falcioni, Tacoma, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 11, 1977, Ser. No. 840,847

Int. Cl.² B23P *19/00*

U.S. Cl. 29—526 A **13 Claims**



1. A high fatigue, slug squeeze riveting process comprising the steps of:

clamping together the items to be riveted between a pair of clamps, one of which clamps remains in a fixed position relative to the riveting machine during the rivet forming process;

forming a hole in said items to be riveted together adjacent said pair of clamps;

inserting a nonheaded rivet slug into said hole from one side of said items to be riveted together;

moving spring loaded pogo feet against the side of said items facing said fixed position clamp so as to move said items away from said fixed position clamp;

pressing said rivet slug in the same direction as movement of said items to be riveted together until the rivet slug reaches a position such that a portion of said rivet slug extends outwardly from both ends of said hole;

applying a force to said rivet slug opposite said pressing direction so as to partially form a first head on the end of said rivet slug opposite said fixed position clamp;

increasing said force opposite said pressing direction after said first head has been partially formed but prior to the completion thereof, until the amount of force transmitted to the pogo feet through said rivet and said items to be riveted together overcomes said spring loading of said pogo feet and moves said items to be riveted together toward said fixed position clamp, said increased force opposite to said pressing direction simultaneously: (i) forming a second head on the end of said rivet slug adjacent said fixed position clamp; and, (ii) completing the forming of said first head.

4,192,059

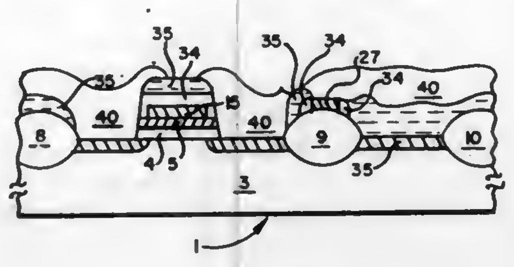
PROCESS FOR AND STRUCTURE OF HIGH DENSITY VLSI CIRCUITS, HAVING INHERENTLY SELF-ALIGNED GATES AND CONTACTS FOR FET DEVICES AND CONDUCTING LINES

Mahboob Khan, Placentia; Gordon C. Godejahn Jr., Santa Ana; Gary L. Heimbigner, and Noubar A. Aghishian, both of Anaheim, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 6, 1978, Ser. No. 913,257

Int. Cl.² B01J *17/00*

U.S. Cl. 29—571 **22 Claims**



1. A process for forming very large scale integrated circuits on a monocrystalline silicon semiconductor substrate having field oxide regions surrounding and isolating at least a first selected area in which a field effect semiconductor device is to be formed and at least a second selected area in which a diffused conducting line is to be formed and having polysilicon line conductors disposed on said field oxide and for providing self-aligned contacts to at least selected ones of said conductors comprising the steps of:

thermally growing a first silicon dioxide layer on each of said first and second selected areas,

forming a silicon nitride layer on said first silicon dioxide layer,

forming a silicon oxynitride layer on said first silicon nitride layer,

forming a polysilicon layer on said silicon oxynitride layer extending over said selected areas and said field oxide region,

forming a protective button on said polysilicon layer, juxtaposed over the location of a corresponding said polysilicon line conductor to be formed, and of greater width than said line,

defining a polysilicon gate electrode extending transversely and centrally of said selected area for said active device, and a polysilicon line conductor, extending at least in part over said field region, of lesser width dimension than said button and intersecting same in an intersection region, to be formed from said polysilicon layer,

removing portions of said button to conform the width of said button to that of said intersection region with said defined polysilicon line conductor,

delineating said polysilicon layer to form said line conductor with said conformed button juxtaposed thereon and to form said gate electrode,

protecting the portions of said first silicon oxynitride and nitride layers on said source and drain regions and on a selected contact area of said diffused conducting line and removing all unprotected portions of said first silicon oxynitride and silicon nitride layers,

removing the silicon dioxide layer portions exposed by removal of said first silicon nitride layer portions,

forming a thermal oxide on exposed surfaces of said gate polysilicon layer, of said polysilicon line conductor, and of said diffused line, and

removing said first silicon oxynitride and nitride layers from said source and drain regions and said diffused conducting line and removing said button, thereby to expose said contact surfaces of said source and drain regions, of said diffused conducting line and of said polysilicon line conductor.

4,192,060

METHOD OF CONSTRUCTING LIQUID CRYSTAL DISPLAY

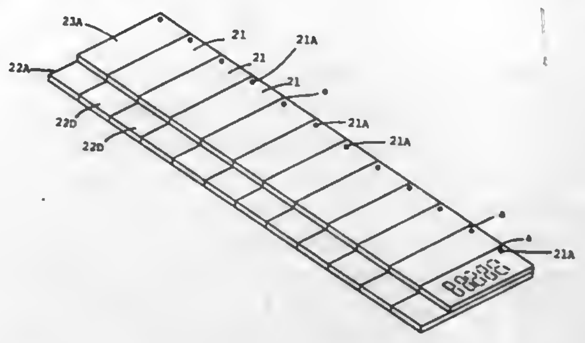
Isamu Washizuka, Soraku; Shintaro Hashimoto, Shiki; Masaru Kakumae, Yamatokoriyama; Yuuichi Sato, Nara; Isao Fujisawa, Yamatokoriyama; Yukihiro Inoue, Kashihara, and Sadakatsu Hashimoto, Yamatokoriyama, al of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 725,928, Sep. 23, 1976, Pat. No. 4,104,727. This application Dec. 21, 1977, Ser. No. 862,963

Claims priority, application Japan, Sep. 23, 1975, 50-115190; Sep. 23, 1975, 50-115191; Sep. 23, 1975, 50-115192; Sep. 23, 1975, 50-115193

Int. Cl.² G02F *1/13*

U.S. Cl. 29—592 R **4 Claims**



1. A method of fabricating one of a plurality of multi-digit liquid crystal display cells from at least two transparent sheets each of said at least two transparent sheets being approximately rectangular in shape, each of said sheets having a pair of substantially longitudinal ends and a pair of substantially transverse ends, each of said liquid crystal display cells having a liquid crystal composition interposed therein, comprising the steps of:

providing an alignment means for forming a plurality of grooves on a surface of said sheets;

forming a plurality of grooves on a first surface of each of said at least two transparent sheets, said formation of said grooves being performed by utilizing said alignment means, said formation of said grooves commencing along at least one of said ends of said first surface of each of said transparent sheets, said formation of said grooves continuing in substantially said one direction along said first surface of each of said transparent sheets until at least one opposite end is reached;

placing said first surface of one of said at least two transparent sheets in contact with said first surface of another of said at least two transparent sheets such that said longitudinal and transverse ends of said one transparent sheet are in alignment with said longitudinal and transverse ends of said another transparent sheet, the direction of said grooves on said first surface of said one transparent sheet being approximately orthogonal to the direction of said grooves on said first surface of said another transparent sheet thereby yielding a liquid crystal structure;

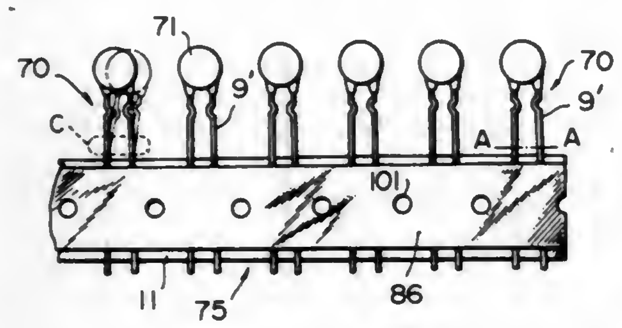
injecting a layer of said liquid crystal composition between said transparent sheets; and

dividing said liquid crystal structure into a plurality of liquid crystal display cells, said structure being divided by providing a plurality if cuts along the longitudinal axis of said structure, each of said cuts extending along the transverse axis of said structure and extending in a direction approximately parallel to each of said transverse ends, whereby said grooves on said first surface of each of said transparent sheets are unidirectional with respect to other grooves on the same sheet.

4,192,061
PROCESS AND APPARATUS FOR MANUFACTURE OF PARALLEL LEAD ELECTRONIC COMPONENTS

Sho Masuzima, and Hisashi Fujita, both of Tokyo, Japan, assignors to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1977, Ser. No. 832,303
Claims priority, application Japan, Sep. 11, 1976, 51-108989
Int. Cl.^{2} H01R *43/00*
U.S. Cl. 29—854 **18 Claims**

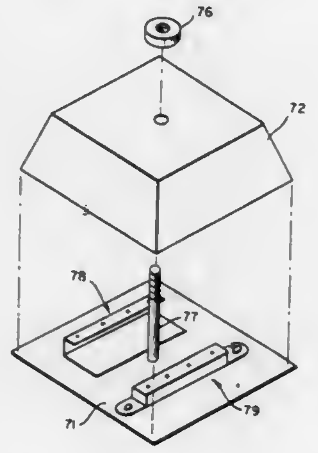


1. A process for the preparation of a continuous web of parallel lead electronic components comprising:
continuously feeding a continuous length of a support band;
forming a wire into a U-shaped lead wire having a portion of parallel leads;
positioning said U-shaped lead wire transversely onto said support band with said parallel leads projecting from both edges of said support band and controlling the spacing between the parallel leads in at least one portion of said parallel leads projecting from said support band;
securing said U-shaped lead wire to said support band by an adhesive tape at the same time the spacing between said parallel leads is being controlled in said at least one portion; and
connecting an electronic component element to one end of said U-shaped lead wire.

4,192,062
TERMINATING FLAT FLEXIBLE CABLES

John W. Balde, Flemington, N.J.; Robert A. Spencer, Indianapolis, and Richard K. Thompson, Jr., Carmel, both of Ind., assignors to Western Electric Company, Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 8, 1978, Ser. No. 913,765
Int. Cl.^{2} H01R *43/00*
U.S. Cl. 29—857 **16 Claims**



1. Apparatus for terminating a plurality of flat flexible cables along a substantially flat surface, the apparatus comprising:
a plate having a substantially flat, first face suitable for attachment to said surface, said plate also having a second face;
means, disposed on said second face of said plate, for receiving a plurality of flat flexible cables extending to said receiving means from three different directions, said receiving means including a pair of spaced, elongated members for each receiving a different portion of each of a plurality of connectors bridging the space between said elongated members, each said connector being associated with a different one of said plurality of flat flexible cables, with one of the elongated members being mounted for pivotal movement away from a normal position thereof parallel to the other of said members so as to permit the receipt of at least one flat flexible cable from one of said three different directions, and with said pivotally-mounted, elongated member including a first flange so disposed, when the pivotally-mounted, elongated member is in said normal position thereof, as to stretch across, in close proximity to, and thereby to protect, a substantial length of said at least one flat flexible cable extending to said receiving means from said first direction;
a first cover section having a second flange so disposed, when said first cover section is mounted in a protective position thereof, as to stretch across, in close proximity to, and thereby to protect, a substantial length of at least one flat flexible cable extending to said receiving means from a second one of said three different directions;
a second cover section having a third flange so disposed, when said second cover section is mounted in a protective position thereof, as to stretch across, in close proximity to, and thereby to protect, at least one flat flexible cable extending to said receiving means from a third one of said three different directions; and
means for mounting said first and second cover sections in said protective positions thereof.

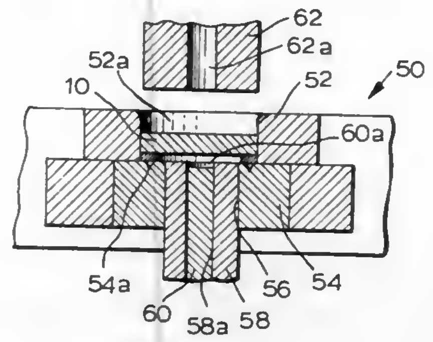
10. A method of terminating a plurality of flat flexible cables having respective connectors attached thereto at receiving means disposed on a face of a plate, the receiving means including first and second spaced connector mounting members, at least one of said members being movable, the method comprising the steps of:
(a) moving the movable member away from a normal position of the movable member wherein said movable member is parallel to the other of said members, to a cable-laying position of the movable member;
(b) extending the plurality of flat flexible cables to the receiving means with at least one of the plurality of flat flexible cables lying under said normal position of the movable member of the receiving means;
(c) moving the movable member of the receiving means from said cable-laying position of the movable member, across said at least one of the plurality of flat flexible cables, and into said normal position of the movable member; and
(d) terminating the plurality of flat flexible cables at the receiving means by attaching the connectors to the first and second members.

4,192,063
METHOD FOR MANUFACTURING A BASE OF A SEMI-CONDUCTOR DEVICE

Yoshio Sato, 23-15, 3-chome, Zenpukuji, Suginami-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 744,038, Nov. 22, 1976, abandoned. This application Jan. 24, 1978, Ser. No. 871,982
Claims priority, application Japan, Dec. 10, 1975, 50-146348
Int. Cl.^{2} H01R *9/04, 43/00*
U.S. Cl. 29—591 **2 Claims**

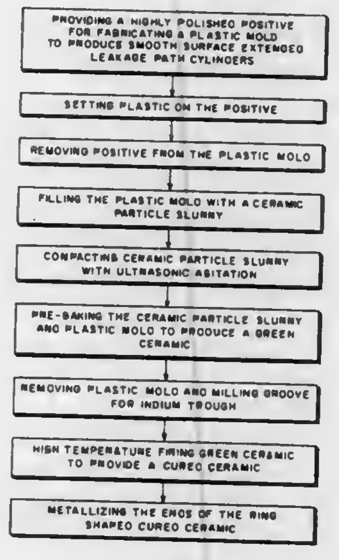
1. A method of manufacturing a base of semiconductor device, comprising the steps of; silver soldering a metal ring composed of a copper-nickel alloy which is extrudable as well as weldable on a metal blank of thermally and electrically conductive material to thereby form a base body and at the same time form the silver of the solder and the copper-nickel alloy into a solid solution of silver and cupro-nickel for improving the bonding strength between the solder and the metal ring; providing an extrusion die having a lower extrusion die portion with a knock-out hole having an axial length therein and a surface around said knockout hole with an annular recess therein concentric with said knockout hole and with said surface extending laterally outwardly away from said annular recess, a knockout member slidable in said knockout hole with said knockout member being in contact with the entire length of the knockout hole, an upper die portion having a blank receiving cavity therethrough and positioned on said surface around said knockout hole concentric therewith, and a punch slidable in said blank receiving cavity and having a central bore therein and an unrecessed surface on the end of said punch within said blank receiving cavity around said central bore, placing said metal blank in said receiving cavity with the metal ring against said lower die portion over the annular recess; and then striking the side of the base body opposite the side with the metal ring for forcing the material of the metal ring into said annular recess to form a raised annular portion on the upper surface of said base body and at the same time forming a stud on the lower surface of said base body which is to be threaded later, whereby cracks which would tend to occur in the punch if the annular recess were formed in the punch are avoided.



4,192,064
HIGH STRENGTH EXTENDED LEAKAGE PATH CERAMIC TUBE WALL FOR IMAGE INTENSIFIER AND METHOD OF MANUFACTURE

Andrew J. Kennedy, Lorton, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 5, 1978, Ser. No. 922,016
Int. Cl.^{2} H01B *19/00*
U.S. Cl. 29—631 **7 Claims**

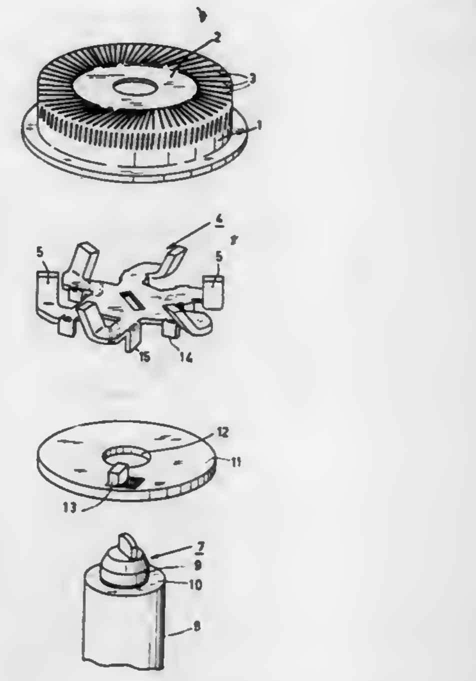

PROVIDING A HIGHLY POLISHED POSITIVE FOR FABRICATING A PLASTIC MOLD TO PRODUCE SMOOTH SURFACE EXTENDED LEAKAGE PATH CYLINDERS
SETTING PLASTIC ON THE POSITIVE
REMOVING POSITIVE FROM THE PLASTIC MOLD
FILLING THE PLASTIC MOLD WITH A CERAMIC PARTICLE SLURRY
COMPACTING CERAMIC PARTICLE SLURRY WITH ULTRASONIC AGITATION
PRE-BAKING THE CERAMIC PARTICLE SLURRY AND PLASTIC MOLD TO PRODUCE A GREEN CERAMIC
REMOVING PLASTIC MOLD AND MILLING GROOVE FOR INDIUM TROUGH
HIGH TEMPERATURE FIRING GREEN CERAMIC TO PROVIDE A CURED CERAMIC
METALLIZING THE ENDS OF THE RING SHAPED CURED CERAMIC

1. A method of producing a smooth surfaced extended leakage path ceramic tube wall for a high voltage tube device, the steps comprising:
providing a highly polished preshaped positive for fabricating an ultrasmooth walled plastic mold having alternating convex and concave circular radius of curvatures of from ¼ to ½ millimeter radii along the wall thereof
setting plastic on said preshaped positive to form an ultrasmooth walled plastic mold for making a smooth surfaced extended leakage path for said ceramic tube wall;
removing said preshaped positive from said plastic mold;
filling said plastic mold with a ceramic particle slurry of a vacuum tube envelope quality alumina of 95% to 98% in a granular glass binder;
compacting said ceramic particle slurry against the ultrasmooth plastic mold with ultrasonic agitation;
prebaking the combined said ceramic particle slurry and said ultrasmooth walled plastic mold to produce a ring-shaped green ceramic tube wall;
removing said plastic mold from said ring-shaped green ceramic tube wall;
making a trough in at least one end of said ring-shaped green ceramic tube wall;
high temperature firing said green ceramic tube wall to provide a cured ceramic tube wall; and
metallizing each end and said trough in at least one end of said ring-shaped cured ceramic tube wall for electrical connection to said high voltage tube device.

4,192,065
SHAVING APPARATUS

Eduard W. Tietjens, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

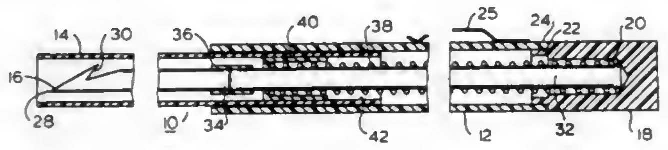
Continuation of Ser. No. 794,565, May 6, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,536
Claims priority, application Netherlands, May 14, 1976, 7605150
Int. Cl.^{2} B26B *19/14*
U.S. Cl. 30—43.6 **6 Claims**



1. A shaving apparatus which comprises a shear plate formed with openings, a cutting member having a flat portion, spring means to press the cutting member against the shear plate, means including a drive shaft for driving the cutting member for rotation relative to the shear plate, said cutting member fitting over the drive shaft and engaging the same, a pair of opposed tabs bent outwardly from the flat portion of the cutting member, a disc member disposed opposite to and spaced from the flat portion of the cutting member, said disc member being freely rotatively positioned on said drive shaft, and means associated with the disc member for location between and cooperation with the pair of opposed tabs in order to couple the cutting member and the disc member, the cutting member and the disc member being thereby movable relative to each other in the direction of driving the cutting member and also being thereby movable relative to each other in a direction transverse to the direction of driving the cutting member.

4,192,066
ANTI-RAPE DEVICE

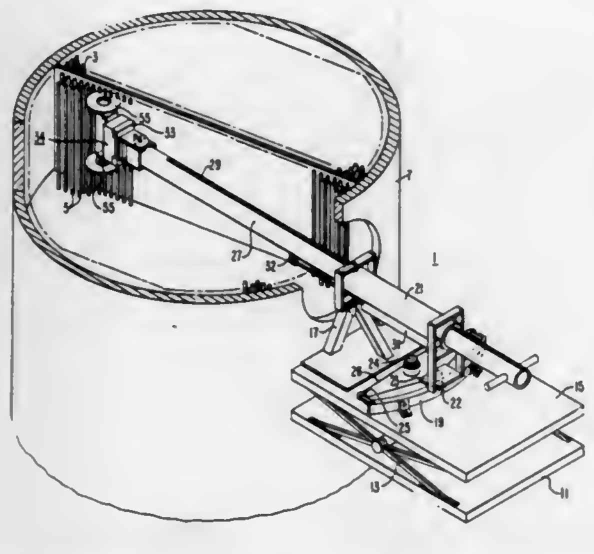
Willkie Y. Tucker, 3513 S. Crochan, Los Angeles, Calif. 90016
Filed Mar. 31, 1978, Ser. No. 892,117
Int. Cl.^{2} B26B *5/00*
U.S. Cl. 30—162 8 Claims



1. Personal defensive device for warding off potential rapists and other potential assailants, said device comprising a shank having a lateral offset defining a barbed point, a hand grippable barrel coaxially mounting said shank separably in point forward thrusting relation, and coaxial hood means covering said point against unintentional use and displaceably responsive to barrel thrusting of the device against an assailant to lodge the shank point in said assailant.

4,192,067
APPARATUS FOR CUTTING THROUGH A TUBE BUNDLE

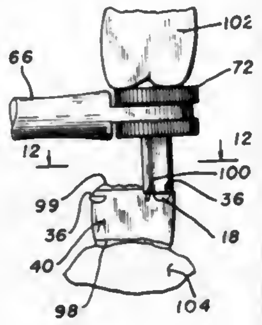
Gregory L. Calhoun, Monroeville, Pa.; Arthur W. Kramer, Doctors Inlet, Fla.; Frank I. Bauer, Perry Township, Landinburg County, and William A. Bencloski, Swickley, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 23, 1978, Ser. No. 954,041
Int. Cl.^{2} B23D *19/06, 21/00;* B27B *7/04*
U.S. Cl. 30—379 17 Claims



1. Apparatus for cutting through a tube bundle formed from closely packed tubes while the tube bundle is disposed within a vessel, said apparatus comprising:
- a base,
- a boom pivotally mounted with respect to said base to generally move in a plane transverse to the longitudinal axis of said tube bundle,
- a pair of cutting discs rotatably disposed on one end of said boom,
- said discs being disposed in planes generally parallel to said transverse plane,
- means for rotating said discs, and
- means for moving said discs toward and away from each other,
- whereby short segments of tubes can be cut from said tube bundle to cut through the tube bundle and free it.

4,192,068
ORTHODONTIC BAND AND SEATING TOOL THEREFOR

Joseph Wolfson, Trenton, N.J., assignor to Charles Desenberg, Sarasota, Fla.
Filed Jan. 3, 1977, Ser. No. 756,058
Int. Cl.^{2} A61C *7/00*
U.S. Cl. 433—3 14 Claims



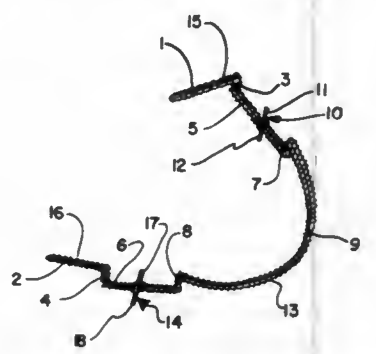
1. An orthodontic band for affixment about a tooth comprising a continuous open-ended band dimensioned to closely encircle said tooth, said open ends of said band terminating at an incisal edge and a gingival edge, said band having an inner surface for contacting said tooth and an outer surface, said inner and outer surfaces being interposed between said incisal and said gingival edges, said outer surface being provided with a plurality of integrally formed protrusions spaced about said band, said integrally formed protrusions having a rigid substantially planar engagement surface adapted to cooperate with a band seating tool, said integrally formed protrusions each being disposed a preselected distance from said incisal and gingival edges, said rigid substantially planar engagement surface being solid and continuous and tapering from said outer surface.

9. A band seating tool for seating orthodontic bands about a tooth comprising:
- an elongated handle;
- a seating element having a surface for cooperating with a portion of said orthodondic band; and
- means for rotatably affixing said seating element to one end of said handle, the longitudinal axis of said seating element being fixed at a location transverse to the longitudinal axis of said elongated handle, said seating element being rotatable about the longitudinal axis thereof, said rotatable affixing means comprising an extensive flange provided by said one end of said elongated handle, said flange having an aperture therethrough, a rotatable element including a pair of spaced apart disks, said seating element being fixedly secured to one of said disks, and a shaft having a first and a second end, said first end fixedly secured to one of said disks, said second end fixedly secured to the other of said disks, said shaft being journaled in said aperture, said pair of disks thereby sandwiching said flange.

4,192,069
UTILITY ARCH

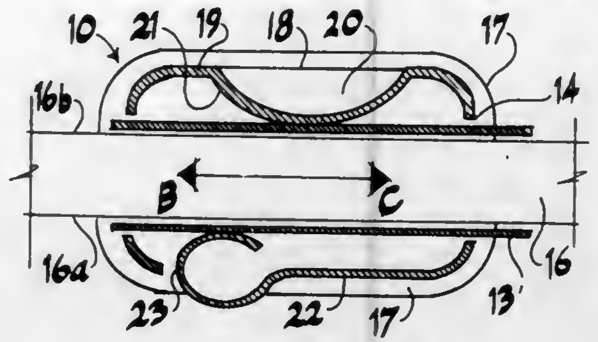
James R. McAndrew, 3233 S. Sherwood Forest Blvd., Baton Rouge, La. 70816
Filed May 23, 1978, Ser. No. 908,724
Int. Cl.^{2} A61C *7/00*
U.S. Cl. 433—21 9 Claims

1. A utility arch used in straightening teeth constructed from bendable wire and having first and second molar sections, first and second buccal sections and an anterior section, the improvement of which comprises a first post means fixedly attached to said buccal section, second post means fixedly attached to said second buccal section, said first and second post means having ends extending above and below, respectively, said first and second buccal bridge section, and a first coil spring wound around said wire between said first and second post means.



4,192,070
ORTHODONTIC DEVICES

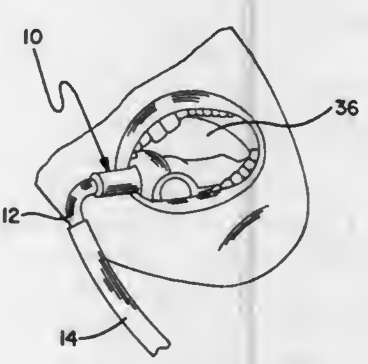
Marc S. Lemchen, 219 E. 81st St., New York, N.Y. 10028; Ian M. Chong, 17 Monroe Pl. #1A, Brooklyn Heights, N.Y. 11201, and Carlton Klein, 69-05C 186 La., Fresh Meadows, N.Y. 11365
Filed Jan. 16, 1978, Ser. No. 869,420
Int. Cl.^{2} A61C *7/00*
U.S. Cl. 433—11 8 Claims



1. An orthodontic locking device for use with an arch wire having uniform surfaces, said device comprising means defining a passage for the insertion of the arch wire and means defining a tension spring for bearing against the arch wire the tension spring being oriented relative to the arch wire at an angle of less than 90°, the tension spring having a free end portion for bearing against the arch wire and being fixed at its other end, the free end portion of the tension spring always being in engagement with the arch wire so that movement of the arch wire toward said free end portion causes said free end portion to hield and movement of said arch wire away from said free end portion causes the free end portion to lock the arch wire.

4,192,071
DENTAL APPLIANCE

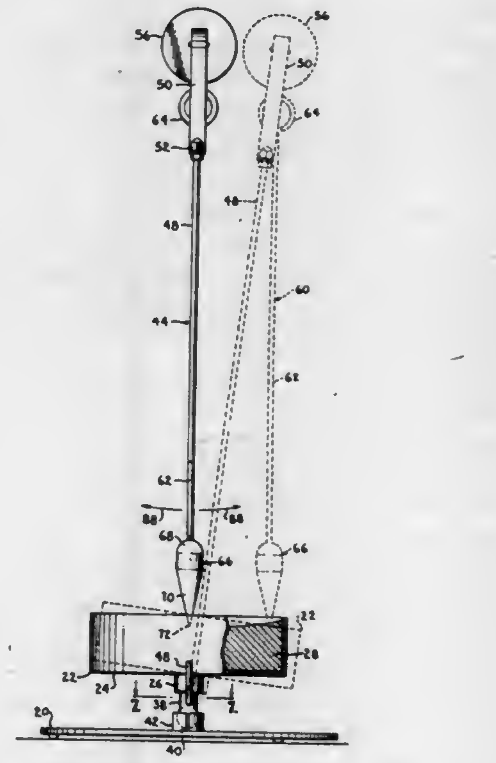
Norman Erickson, 1215 Felicita La., Escondido, Calif. 92025
Filed Jan. 30, 1978, Ser. No. 873,430
Int. Cl.^{2} A61C *17/04*
U.S. Cl. 433—93 11 Claims



1. A collector member having a semi-rigid bite block deforming upon the initial bite of the patient so as to form a mold thereof for secure placement within the patient's mouth and which bite block portion resists further deformation permitting the patient to exert substantial pressure on said bite block portion:
- a combination tongue guard and collector membrane holder connected to said bite block portion which is captured within the patient's mouth, said combination tongue guard collector membrane holder having a top surface and a bottom surface, said combination tongue guard and collector membrane holder also having an uninterrupted slot formed therein that passes substantially vertically therethrough from said top surface to said bottom surface thereby forming a first and a second foot member on the opposite sides of said slot;
- a resilient collector membrane having a thickness substantially as wide as said slot formed in said combination tongue guard and collector membrane holder so that said resilient collector membrane is frictionally removably held within said slot between said first and second foot members, said membrane when placed into its functional position within the patient's mouth is essentially folded in a concave fashion across its length to form a top of the mouth portion and a bottom of the mouth portion, the peripheral contour of the bottom of the mouth portion forms a sealing contact with the soft tissues overlying the mylohoid line of the mandible, the bottom portion of the mandible forms a dam or reservoir for the collection of fluids and saliva generated, the lateral edges of the collector membrane where it is folded upwardly lies in sealing contact with tissue covering the internal walls of the ascending ramus of the mandible, and the top of the mouth portion of the collector membrane extends forwardly from the folded area over the palate where it conforms to and lies on the maxillary and palatal tissue thereby functioning to separate the mouth into a forward compartment that is being worked on and a rear compartment.

4,192,072
PENDULUM DEVICE

Thomas E. Truitt, P.O. Box 251, Polo, Mo. 64671
Filed Feb. 23, 1978, Ser. No. 880,583
Int. Cl.^{2} B43L *11/00*
U.S. Cl. 33—27 L 16 Claims



1. A kinetic sculpture apparatus comprising:
- a receiver containing a fine, particulate material presenting a bed thereof;

a pendulum having an upper end and a lower end, the latter presenting a scribe;

means above said receiver suspending said pendulum thereover with said scribe contacting said material at a predetermined point in the bed when the pendulum is at rest, and establishing a primary, generally horizontally disposed axis of swinging movement of the pendulum,

said upper end of the pendulum being provided with a secondary coupling connecting the pendulum to said suspension means;

standard means secured to said receiver and extending upwardly to said suspension means to support the same;

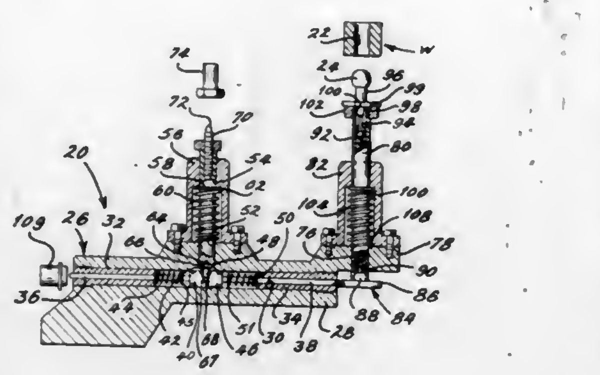
a base; and

means mounting said receiver on said base spaced thereabove for tilting movement of the receiver, and hence the standard means, to any of a number of positions in which the receiver and standard means are tilted relative to the base and said primary axis is horizontally displaced, whereby said predetermined point of contact of the scribe may be moved to center the point in the bed or locate said point away from the center so that subpatterns may be sculptured.

4,192,073
PROCESS GAGING APPARATUS

Frank E. Vanderwal, Jr., St. Louis County, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Jan. 26, 1978, Ser. No. 872,557
Int. Cl.^{2} G01B *5/08, 7/12*
U.S. Cl. 33—178 B **6 Claims**



2. Apparatus for terminating a machine operation on a workpiece having a surface thereon to be machined when a predetermined condition of a workpiece surface is reached comprising working means engageable with said workpiece surface during machining thereof, means for producing relative reciprocal motion between the workpiece and the working means during a machine operation, gaging means positioned adjacent to the workpiece surface being machined in spaced opposed relation to the working means and on the opposite side of the workpiece therefrom for determining when the surface is machined to a desired condition, said gaging means including a support structure mounted on the machine in fixed spaced relation to the working means, a gaging member mounted on the support structure in position to engage the workpiece adjacent to the workpiece surface during part of each cycle of relative reciprocal motion, said gaging member having a work engaging portion of predetermined dimensional characteristics capable of entering the workpiece surface only after the workpiece surface has been machined to some predetermined size, means operatively connected to the support structure biasing said work engaging portion of the gaging member toward the workpiece, said workpiece moving against said work engaging portion during each cycle of reciprocating movement of the workpiece relative to the working means and relative to the support structure, and other means on the support structure responsive to the position of the gaging member thereon, said other means including a second member mounted on the support structure in spaced relation to the work engaging portion of the gaging member, said second member being engageable during a portion of each cycle of relative reciprocal motion by means fixedly attached with respect to the meand for supporting the workpiece, means forming an operable connection between the work engaging portion and the second member, and means on the gaging member movable to disable the connection means whenever the work engaging portion engages the workpiece but is not able to enter the work surface.

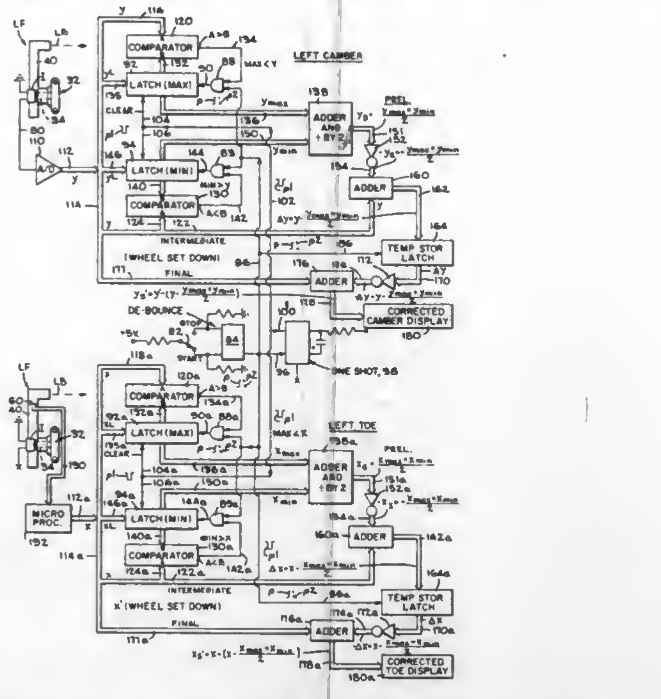
3. Apparatus to sense when a cylindrical surface in a workpiece that is being enlarged has reached a predetermined diameter, the cylindrical surface having a diameter initially less than the predetermined diameter, and working means operatively engageable with said cylindrical surface for enlarging the surface, said working means being positioned to enter the cylindrical surface from one end thereof, means for producing relative reciprocal movement between the working means and the cylindrical surface, the improvement comprising means movable into engagement with the workpiece adjacent to the opposite end of said cylindrical workpiece surface from the end where the working means enters including a gaging assembly having a support structure that is fixed relative to the working means, a gaging head on said support structure characterized by being able to enter the cylindrical surface only after the diameter of the cylindrical surface has been enlarged to said predetermined diameter, said gaging head being positioned on the gaging assembly in position to move against the workpiece adjacent to said cylindrical surface during a portion of each cycle of said relative reciprocal movement, means biasing the gaging head on the support structure toward the workpiece and toward the working member, and means for distinguishing between the movements of the gaging head on the support structure in opposition to the biasing means during succeeding cycles of relative reciprocal movement when the gaging head moves against the workpiece and is able to enter the cylindrical surface and when the gaging head moves against the workpiece and is not able to enter the cylindrical surface, said means for distinguishing including means for establishing an energy zone adjacent to the gaging assembly and on the side of the workpiece surface opposite from the end where the working means enter, and means connected to the gaging head movable into the energy zone during a portion of each cycle of relative reciprocal movement thereby producing an output signal every time the gaging head is engaged with the workpiece but is unable to enter the cylindrical workpiece surface, said means connected to the gaging head not moving into the energy zone during the first cycle of relative reciprocal movement when the gaging head is able to enter the cylindrical workpiece surface so as not to produce an output signal.

4,192,074
ON THE FLY RUN-OUT CORRECTION FOR VEHICLE ALIGNMENT

Andrew K. Chang, Malibu, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 22, 1977, Ser. No. 863,196
Int. Cl.^{2} G01B *19/295, 19/575*
U.S. Cl. 33—228 **14 Claims**

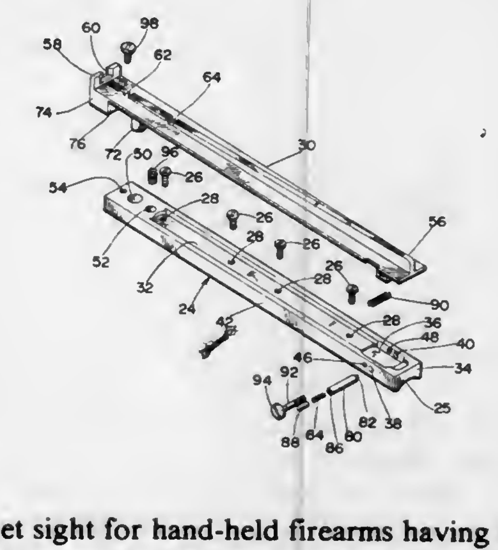
13. The method of correcting for test instrument run-out error of vehicle wheels wherein a test instrument is installed on the wheel under test, said test instrument comprising a fixture that is detachably mounted on said wheel, sensor means on said fixture for detecting the angular inclination of said fixture during rotation of said wheel, signal means responsive to said sensor means for providing signals proportional to the angular inclination of said fixture in a selected alignment plane, and circuit means coupled to receive said signals and including maximum and minimum storage devices; the improvement comprising the steps of rotating said wheel at least 360° from any random starting position and thereafter stopping wheel rotation, continuously providing fixture inclination signals from said signal means during said wheel rotation, continuously comparing, during said wheel rotation, the present inclination signal with the previous inclination signals from said maximum and minimum signal storage devices, admitting the present inclination signal to said maximum signal storage device only when the present inclination signal is greater than that previously stored in said maximum signal storage device, and admitting the present inclination signal to said minimum signal storage device only when the present inclination signal is less than that previously stored in said minimum signal storage, thereby obtaining from said continuously provided inclination signals the maximum and minimum angular fixture inclination signals in said alignment plane relative to a selected reference plane, taking half the sum of said maximum and minimum angular fixture inclination signals to provide an inclination signal proportional to the actual angular inclination of said wheel in said selected alignment plane stopping the wheel at any random rotational position and sensing the stopped wheel fixture inclination, and combining the actual angular inclination signal with the stopped wheel fixture inclination to provide a run-out error signal indicative of the portion of maximum angular fixture run-out existing at the random stopped position.



4,192,075
PLATFORM RAMP SIGHT FOR FIREARMS

Travis R. Strahan, Rte. 7, Townsend Cir., Ringgold, Ga. 30736

Filed Dec. 28, 1978, Ser. No. 974,053
Int. Cl.^{2} F41G *1/02*
U.S. Cl. 33—257 **11 Claims**

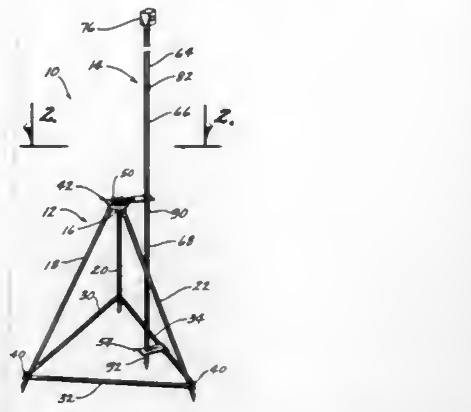


1. A target sight for hand-held firearms having a gun barrel and a frame to which the barrel is secured, said target sight comprising a base member adapted to be secured to said barrel, a platform on said base member, a rear sight upstanding rib member on said platform having a notch formed therein positioned above the frame of the gun rearwardly of the barrel, and a front sight member on said platform, said front sight member comprising an elongated ramp laterally aligned with said notch positioned above the barrel at the front thereof and extending rearwardly to a rear terminus disposed rearwardly of the barrel adjacent said rear sight, said ramp being tapered from a maximum elevation adjacent the front above the barrel to a minimum elevation below the notch at the rear.

4,192,076
DEVICE FOR HOLDING A SURVEYOR'S INSTRUMENT

George W. Hall, 3200 Viking Dr., Sioux City, Iowa 51104

Filed Oct. 23, 1978, Ser. No. 953,704
Int. Cl.^{2} G01C *15/08*
U.S. Cl. 33—296 **10 Claims**



1. A device for holding a surveyor's stake comprising:

a tripod having a platform member and three legs hingedly connected at their upper ends to said platform member;

three connecting members interconnecting said lower ends of said legs, each of said connecting members having one of its ends detachably secured adjacent the lower end of one of said legs and the other of its ends detachably secured adjacent the lower end of another of said legs, whereby said connecting members when so secured to said legs hold said legs against pivotal movement of said legs about their hinged connections to said platform member; and

stake holding means on said tripod for holding said stake against movement with respect to said tripod,

said stake holding means comprising an upper bracket and a lower bracket, said upper bracket being operatively mounted to said platform and said lower bracket being operatively connected to one of said connecting members.

4,192,077
SURVEY APPARATUS AND METHOD EMPLOYING RATE-OF-TURN AND FREE GYROSCOPES

Donald H. Van Steenwyk, San Marino; John R. Cash, and Paul W. Ott, both of Pasadena, all of Calif., assignors to Applied Technologies Associates, San Marino, Calif.

Filed Jul. 17, 1978, Ser. No. 925,307
Int. Cl.^{2} E21B *47/024;* **G01C** *19/00*
U.S. Cl. 33—313 **18 Claims**

1. In apparatus for determining azimuth, the combination that comprises

(a) a rate-of-turn gyroscope including a first rotor having a spin axis,

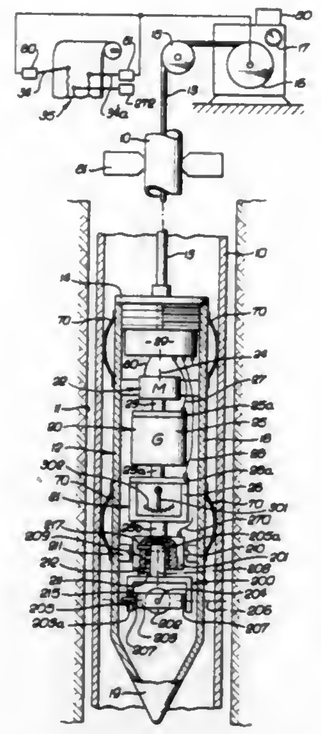
(b) support means to support the gyroscope for lengthwise travel along another axis generally normal to said spin axis, and to rotate about said other axis,

(c) said gyroscope having first means for producing an output which varies as a function of azimuth orientation of the gyroscope relative to the earth's spin axis, and

(d) a free gyroscope operatively carried for movement along said other axis with said rate-of-turn gyroscope, said free gyroscope including a second rotor having a spin axis subject to alignment,

(e) said free gyroscope also having means for producing an output which varies as a function of azimuth orientation of the free gyroscope,

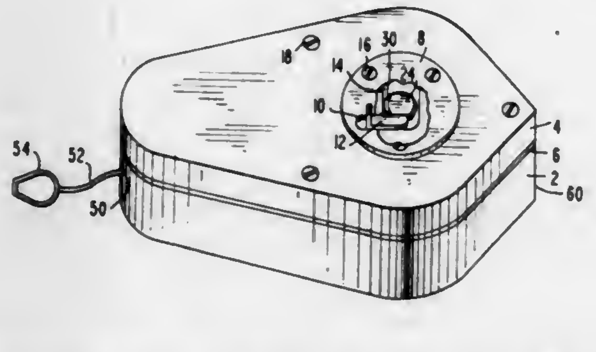
(f) other means responsive to the output of the rate-of-turn gyroscope to effect said alignment of the free gyroscope spin axis, and



(g) control means connected with said other means to periodically cause said other means to effect said alignment, while said travel is effectively interrupted.

4,192,078
AUTOMATICALLY RETRACTABLE CHALK AND PLUMB LINE ASSEMBLY

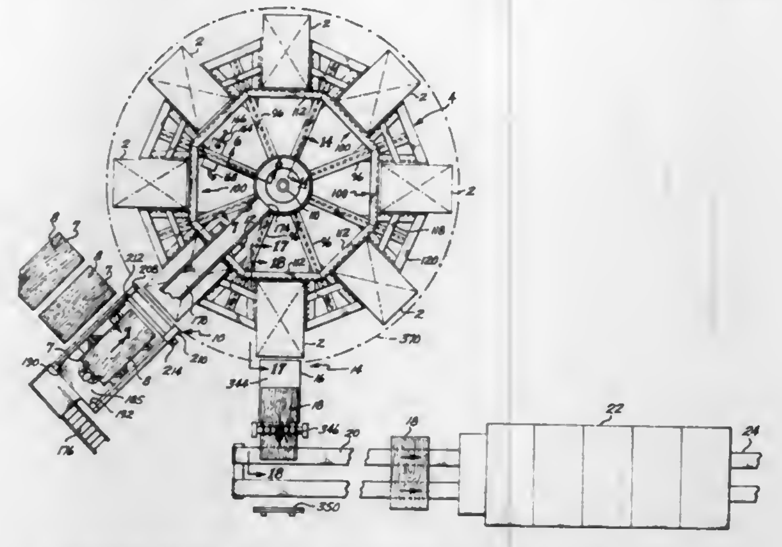
Nicola Lore, 35 Burkhardt Ave., Bethpage, N.Y. 11714, and Corrado Lore, 65 Benedict Ave., Valley Stream, N.Y. 11580
Continuation of Ser. No. 865,717, Dec. 29, 1977, abandoned.
This application Apr. 27, 1979, Ser. No. 34,123
Int. Cl.^{2} B44D *3/38*
U.S. Cl. 33—414 **3 Claims**



1. Automatically retractable chalk and plumb line assembly, comprising a housing in the form of a plumb bob having tapered lower and upper ends and being divided into two compartments, said housing being formed with a first and a second opening into one of said compartments, said second opening being located in an upper end of said one compartment, a reel disposed in said one compartment with a plumb line wound thereon and being unwindable so as to extend out of said housing through said second opening, said one compartment being fillable through said first opening with powdered chalk freely engageable with said reel and plumb line disposed within said one compartment, the other of said compartments being sealed against penetration by chalk from said one compartment and having a helical spring disposed therein for rewinding said plumb line on said reel, and including a wall disposed between said compartments, and a rotatable shaft disposed in said other compartment and extending therefrom into said one compartment, said helical spring being secured at one end thereof to said rotatable shaft in said other compartment and at the other end thereof to another location within said other compartment, said reel being mounted on said shaft in said one compartment, said other compartment being formed with an opening through which an end of said rotatable shaft extends, and including an L-shaped tongue having a rounded end and being engageable with said end of said rotatable shaft for inhibiting rotation thereof, said tongue being slidable in a groove formed in said housing and located adjacent said opening formed in said other compartment, and including means for locking said tongue against said end of said rotatable shaft, said end of said shaft being formed with at least one flat portion at the periphery thereof and including means for locking said tongue, in a fully extended position thereof, against one of said flat portions of said shaft, said tongue, in another position being disposed so that said rounded end thereof is alternately engageable with said flat portions and rounded peripheral portions of said shaft for gradually slowing down rotation of said shaft.

4,192,079
VENEER DRYING AND HANDLING

Byron B. Brookhyser, Milton, and Darrell E. Pierson, Federal Way, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.
Filed Mar. 20, 1978, Ser. No. 888,451
Int. Cl.^{2} F26B *7/00*
U.S. Cl. 34—13.8 **23 Claims**

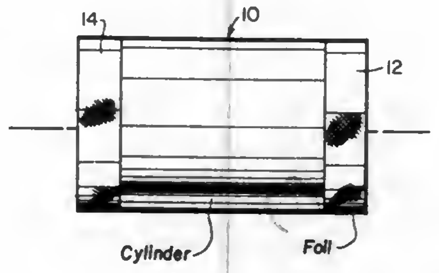


1. An apparatus for drying veneer, comprising:
a plurality of modular hot presses mounted adjacent one another with each press having at least two metal plates to form an opening for the insertion therebetween of wet veneer sheets,
means for loading each press with wet veneer sheets,
means for unloading each press after the sheets of veneer are dry,
means for providing relative movement between the hot presses and at least the loading means, and
means on each press for exerting a predetermined contact pressure on the wet veneer at a predetermined temperature and for a predetermined time.

4,192,080
METHOD OF OBTAINING AN EVEN MOISTURE PROFILE IN A CYLINDER DRIER AND A MEANS FOR CARRYING OUT THE METHOD

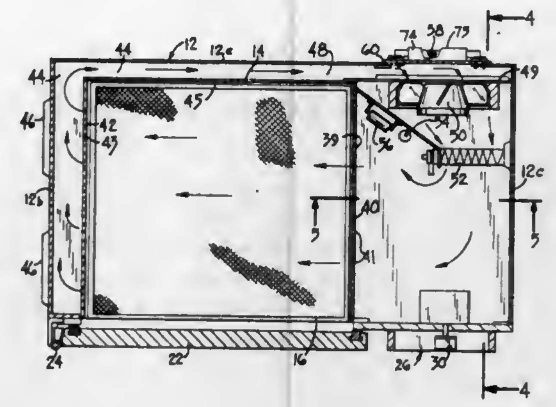
Eero A. Irpola, Tuureporinkatu 13 E, SF-20100 Turku 10, Finland
Filed Jan. 12, 1978, Ser. No. 868,753
Claims priority, application Finland, Feb. 4, 1977, 770385
Int. Cl.^{2} F26B *3/24*
U.S. Cl. 34—41 **5 Claims**

1. Method to improve the drying characteristics of the cylinder drying section of a paper or cardboard machine so that an essentially even transverse moisture profile of the dried paper or cardboard web is achieved by this dryer, the improvement comprising coating of the rim areas of the outer jacket surface of at least some of the drying cylinders with a heat insulating foil.



4,192,081
FOOD DEHYDRATING MACHINE

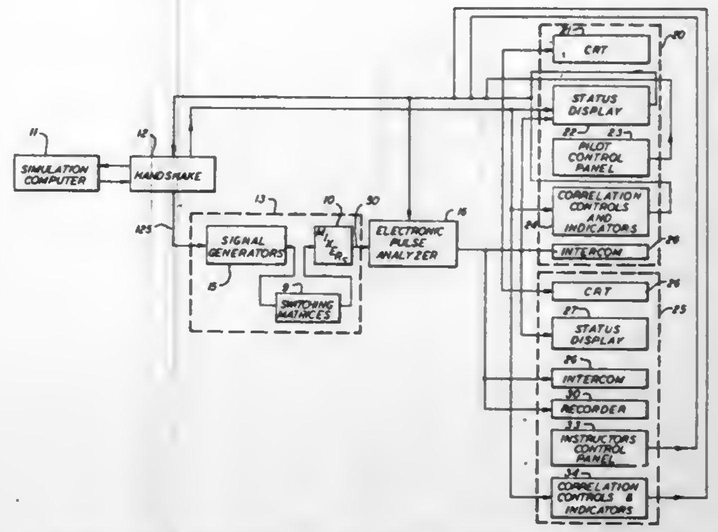
Chad S. Erickson, and David A. Dornbush, both of Minneapolis, Minn., assignors to Alternative Pioneering Systems, Inc., Bloomington, Minn.
Filed Jun. 15, 1977, Ser. No. 806,774
Int. Cl.^{2} A47G *23/04*
U.S. Cl. 34—225 **3 Claims**



1. Apparatus for removing the moisture content of foodstuffs in a controlled manner comprising in combination:
(a) an outer shell having at least three side walls, a top and a bottom, said shell defining an opening;
(b) a door member hingedly mounted and adapted to seal said opening when said door is in its closed position;
(c) an inner shell and a plurality of trays, said inner shell having two sides, a back, a top and a bottom disposed within said outer shell, the open front of said inner shell being juxtaposed to said opening in said outer shell, said two sides each having defined therein a plurality of horizontal rows of apertures spaced apart from one another by uniform predetermined distances, said apertures allowing the passage of air therethrough, said trays each including a rectangular frame with a lattice frame-work floor comprising intersecting ribs and a flexible screen removably supported within said frame;
(d) means on said two sides of said inner shell for supporting a plurality of trays in parallel, horizontal, spaced apart relationships, said trays being disposed intermediate said rows of apertures;
(e) means for supplying pressurized air to a zone defined by said outer shell and one of said two sides of said inner shell such that said air flows through the apertures in said one of said two sides, across said plurality of trays and through the apertures in the other of said two sides, said air supply means and the apertures of said one side being balanced so that air supply means provides sufficient pressure to assure uniform air flows through all of the apertures in said one side whereby each tray receives essentially the same volume of air across its upper and lower surfaces;
(f) means for recirculating at least a part of the air passing through said other of said two sides back to said means for supplying air under pressure; and
(g) vent means for controlling the amount of air entering from outside said outer shell, said entering air being subsequently mixed with said recirculated air.

4,192,082
ELECTRONIC WARFARE SIMULATOR

Ion V. Deaton, New Carrollton, and Frederick H. Horman, College Park, both of Md., assignors to The Singer Company, Binghamton, N.Y.
Filed Dec. 18, 1978, Ser. No. 970,291
Int. Cl.^{2} G09B *9/00*
U.S. Cl. 35—10.4 **6 Claims**



1. A radar warning simulation system that receives information regarding radar emitter characteristics from a digital computer said system comprising:
(a) a plurality of means for generating signals coupled to the output of said computer, each of said generating means being coupled to information that pertains to a different radar emitter so that each of said generating means will produce a train of video pulses at its output having a signal strength, antenna position, pulse width and pulse recurrence frequency equal to the corresponding radar emitter information characteristics; and
(b) a purality of switching matrices whose inputs are coupled to the outputs of said generators, each one of said switching matrixes being coupled to a different signal generator to permit each of said switching matrixes to select the antenna position and frequency band of said generators signals so that each one of said switching matrixes may select and output their output signals according to the antenna position and frequency of the input signals; and
(c) a plurality of means for mixing whose inputs are coupled to the outputs of said switching matrices, wherein said mixing means add like input signals and arrange the signals at their outputs according to the frequency and antenna position of the input signal, whereby the outputs of said mixing means activate an electronic pulse analyzer which stimulates electronic warfare equipment permitting a student to learn how to operate electronic warfare equipment.

4,192,083
THREE-DIMENSIONAL LAND-USE PLANNING MODEL

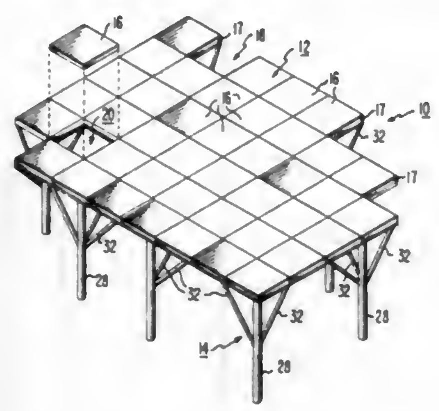
William G. Rebbeck, 4 Munn Ave., Cherry Hill, N.J. 08034
Filed Nov. 14, 1977, Ser. No. 851,501
Int. Cl.^{2} G09B *29/02*
U.S. Cl. 35—16 **6 Claims**

1. A three-dimensional land-use display model and support comprising:
a plurality of rectangular modules having various three-dimensional surfaces representative of a contoured land surface;
a framework for supporting said modules, said framework

including means for removably and individually connecting said modules in assembled relation with aligned and contiguous corners and edges,

said framework comprising a plurality of modular structural units each providing a horizontal planar surface to support one of said modules incorporated into said display model, said module connecting means including means for connecting each of said units to contiguous units whereby said framework is incrementally expandible;

each of said modules including a horizontal planar undersurface, and said structural units including coextensive planar surfaces for supporting said module horizontal surfaces in a common plane; the vertical edges of each of said modules being planar and coextensive with said supporting structural unit so that contiguous positioning of said modules and associated support structural units provides a continuous similated contoured land surface without interstitial gaps, and individual modules are attached and removed without dislocation of adjacent modules;



each of said modular structural units comprising an open rectangular frame supporting the associated one of said rectangular modules at the outer edges thereof;

whereby a continuous land-use display model is formed by the assembled modules.

4,192,084

ATOMIC MODEL

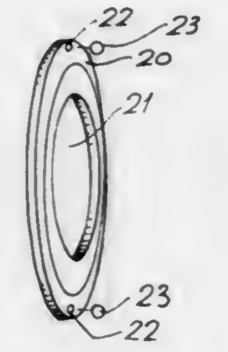
Seán S. O'Riordán, Long La., Dublin Hill, Cork, Ireland

Filed Sep. 11, 1975, Ser. No. 612,581

Claims priority, application Ireland, Sep. 17, 1974, 1923/74

Int. Cl.² G09B ***23/26***

U.S. Cl. 35—18 A **2 Claims**



1. A teaching aid comprising:
a display board;
a circular disc having a symbol printed thereon;
means for attaching said disc to said board;
said display board and said disc being comprised of magnetic material, said circular disc being held to said display board by magnetic means, said disc having a chemical symbol printed thereon; at least one ring held on said disc and surrounding said disc, said ring having a cut-out embracing said circular disc, said ring having a concentric circle printed thereon and having holes, pins inserted into said holes for denoting electrons in orbit, said disc comprising a magnet and cooperating with said ring for displaying possible chemical structures of compounds, said ring displaying electrons in orbit about said disc, said disc corresponding to the nucleus of an atom.

4,192,085

TEACHING AID DEVICE FOR TEACHING THE BASIC PRINCIPLES OF ARITHMETIC

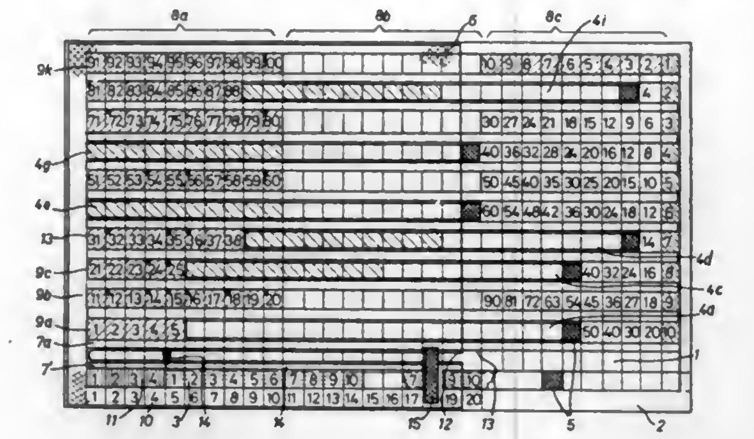
Simon Bonorand, Zuoz, Switzerland, assignor to Guido Caviezel, Chur, Switzerland

Filed Feb. 21, 1978, Ser. No. 879,245

Claims priority, application Switzerland, Feb. 25, 1977, 2436/77

Int. Cl.² G09B ***19/02***

U.S. Cl. 35—31 E **11 Claims**



1. A device for teaching the basic concepts of arithmetic, comprising:
a tablet having two faces;
a plurality of adjoining regions defined on one of said faces;
a plurality of fields defined within each of two edge regions located most remotely on opposite sides of said one face;
a plurality of regular rows composed of said fields defined within each of said edge regions;
a first set of consecutive numbers displayed in said rows of one of said edge regions, said first set of numbers being arranged to permit selective demonstration of addition and subtraction and the sequential position thereof;
a second set of numbers displayed in said rows in the other of said edge regions, said second set of numbers being arranged to indicate a product of one number selected from a first array of numbers and of another number selected from a second array of numbers;
a plurality of guide members, each of said guide members being disposed between adjacent ones of said rows;
a plurality of slides, each of said slides being associated with one of said rows, each of said slides being loosely guided on said face between two of said guide members disposed on either side of an associated row, and each of said slides being slidable along an associated row between a first section thereof in said one of said edge regions and a second section thereof disposed at the same level as said first section in said other of said edge regions, at least a portion of one or the other of said first section or said second section being covered by an associated one of said slides to expose at a corresponding end of said associated one of said slides a result of an arithmetic operation carried out in one or the other of said edge regions.

4,192,086

DEODORIZING INSOLE

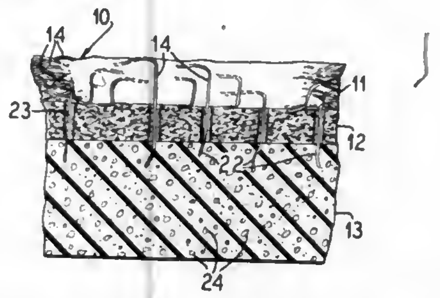
Stephen Sichak, Dolton, Ill., assignor to Scholl, Inc., Chicago, Ill.

Filed Sep. 29, 1978, Ser. No. 947,156

Int. Cl.² A43B ***13/38, 7/06***

U.S. Cl. 36—44 **14 Claims**

1. An insole which comprises a porous top layer of non-woven non-absorbing plastics material fibers, an intermediate layer of moisture absorbing non-woven material impregnated with an odor absorbing chemical, and a bottom open-cell resilient plastics material foam layer, said top layer having fibers thereof penetrating the paper stitch bonding together the top and intermediate layers and having ends surrounded by and integrally bonded in the foam layer, and said insole having a myriad of holes therethrough exposing the chemical of the intermediate layer to air flow through the insole as the foam layer is flattened and expanded by application and release of foot load on the insole.



4,192,087

SKI BOOT WITH FOOT-RETENTION DEVICE

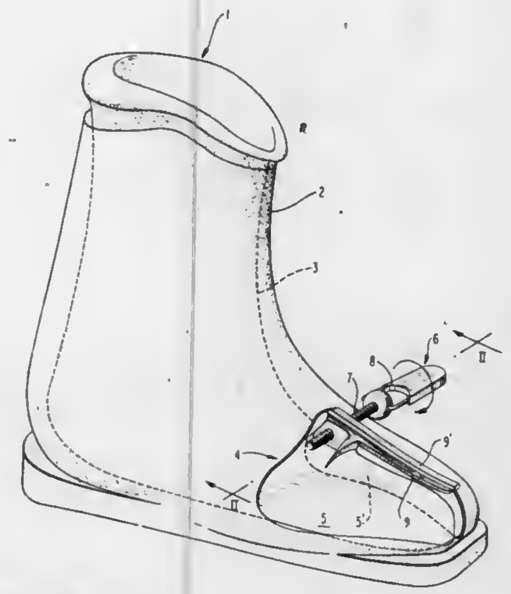
Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France

Filed Feb. 22, 1978, Ser. No. 879,997

Claims priority, application France, Feb. 23, 1977, 77 05264

Int. Cl.² A43B ***5/04***

U.S. Cl. 36—119 **16 Claims**



1. A boot comprising
(a) a rigid shell;
(b) a foot retention system mounted on the interior of the shell in the area of the forefoot, said foot retention system comprising
  (i) a support means, independent of the sole of the boot and having a generally V-shape, comprising two side plates extending laterally and upon the upper part of the forefoot, having a shape corresponding substantially to the anatomy of said forefoot at its widest point; and
  (ii) an adjustable means for clamping said support means against a foot within said boot, comprising means for simultaneously moving said two side plates and pressing them against said foot while adapting them to the anatomy of the upper part of the forefoot, said clamping means being supported on said shell in such manner that said foot is clamped against the inner sole of said boot and is laterally maintained by said support means.

4,192,088

LUMP PEAT MACHINE

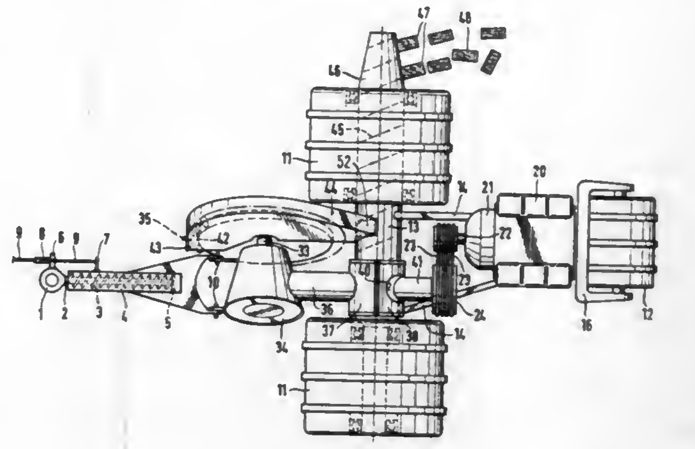
Tapio Saalasti, Helsinki, Finland, assignor to Kemi Oy, Kemi, Finland

Filed Mar. 2, 1978, Ser. No. 882,590

Claims priority, application Finland, Mar. 3, 1977, 770679

Int. Cl.² E21C ***49/00***

U.S. Cl. 37—3 **21 Claims**



1. In a lump peat machine which mills peat from peatland by a rotating milling cutter which delivers milled peat to a tube having a screw conveyor disposed therein to express the peat through a nozzle to the surface, the improvement comprising means for raising and lowering the milling cutter comprising a hollow arm supporting said milling cutter at one end and affixed to a bearing at the other end, said bearing encircling said tube and being adapted to permit raising or lowering of said milling cutter between working and transport positions and means within said hollow arm to transmit power to said milling cutter.

4,192,089

RETAINER FOR RELEASABLY SECURING A TOOTH TIP OF A DIGGER TOOTH

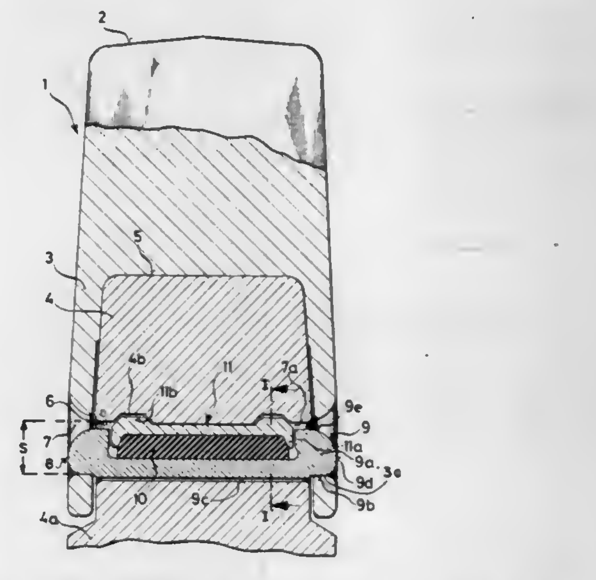
Dieter Schwappach, Dortmund, Fed. Rep. of Germany, assignor to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,241

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713227

Int. Cl.² E02F ***9/28***

U.S. Cl. 37—142 A **7 Claims**



1. A retainer for the releaseable securing of a tooth tip of a digger tooth on a holder, the tooth tip having a sleeve, and the holder engaging in the sleeve and being rigidly connected with the digging edge of a shovel bucket, holder being formed with a holder opening extending parallel to the cutter edge of the tooth tip and in the longitudinal center line of the tooth, the tooth tip having tooth surfaces defining tooth tip openings

substantially aligned with said holder opening, said tooth surfaces including first surfaces facing toward said cutter edge, said holder being formed with recess surfaces defining a recess in the holder, said recess surfaces facing away from the cutter edge, said retainer being inserted in said tooth tip and holder openings and comprising two metal formed parts and a rubber element arranged between said two metal formed parts, said rubber element being stressed on compression, said retainer in the inserted position on one side contacting said first surfaces of the tooth tip, and on the other side adapted to be urged toward contact with said recess surfaces of said recess in the holder, comprising in said openings

the retainer including a first metal formed part facing toward the cutter edge, a second metal formed part, and a rubber element connecting and secured between said first and second metal formed parts,

said second metal formed part is U-shaped defining legs and being open on elongated sides and facing the digging edge of the shovel bucket,

said first metal formed part is formed open an elongated sides thereof and has projections on end face sides thereof, the rubber element being disposed therebetween,

said first metal formed part being disposed floating between said legs of the U-shaped said second metal formed part,

the tooth tip openings constituting sleeve openings in the sleeve of the tooth tip and the tooth surfaces further defining an inner wall of the sleeve openings,

said legs of said second metal formed part have face surfaces facing said cutter edge,

said face surfaces of said second metal formed part being spaced from said inner wall of said sleeve defining a gap therebetween,

the size of said gap between the face surfaces of said legs of said second metal formed part and said inner wall at the sleeve openings is smaller than the permissible amount of additional compression of said rubber element beyond that existing in the inserted position of the retainer in the tooth tip and holder openings for maintaining the endurance of said rubber element, whereby said rubber element connecting said two metal formed parts is protected against stress exceeding its fatigue strength,

said first metal formed part having an outer surface forming cam means for securing the retainer against falling out from the tooth tip and holder openings in the inserted position during stressing of the tooth tip.

4,192,090

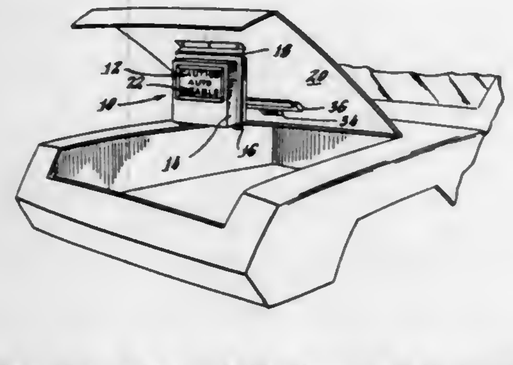
VEHICLE SAFETY LIGHT

Marion Seth, 902 E. 17th St., Wilmington, Del. 19802

Continuation-in-part of Ser. No. 804,325, Jun. 7, 1977, abandoned. This application May 30, 1978, Ser. No. 910,613

Int. Cl.^{2} G09F *21/04*

U.S. Cl. 40—591 **3 Claims**



1. A safety light for a disabled automobile vehicle comprising a translucent sign positioned within a frame, a light and suitable power supply for illuminating said sign bracket, means to removably secure said frame to the interior surface of the trunk lid of said vehicle and means for removing said frame from said vehicle, means for securing said frame to an exterior surface of the vehicle when said frame is removed from said bracket, said translucent sign having a warning legend thereon in letters at least two (2) inches high and at least one-half (½) inch in thickness, whereby when said safety light is placed near said disabled vehicle and illuminated, the warning legend is visible from a distance of at least 65 feet.

4,192,091

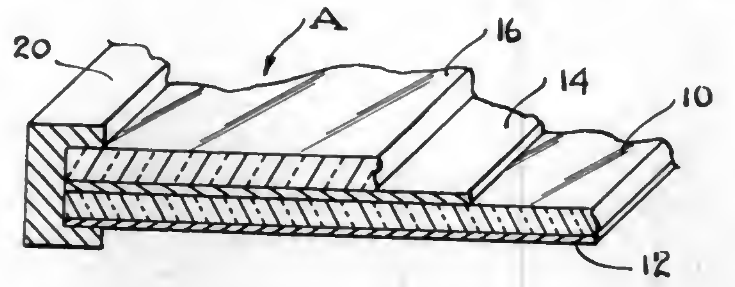
PHOTOGRAPHIC DISPLAY APPARATUS AND METHOD

Michael Hawes, P.O. Box 1282, Topanga Canyon, Calif. 90290

Filed Aug. 4, 1978, Ser. No. 931,197

Int. Cl.^{2} G09F *19/16*

U.S. Cl. 40—615 **13 Claims**



1. A photographic display apparatus presenting an effect similar to etched glass, said display apparatus comprising:
(a) a substrate having a mirrored surface thereon,
(b) an orthochromatic high contrast graphic arts copy film sheet of the type used in making line reproductions in lithographic processes, said film sheet having a visual image thereon incidental to a surface of said substrate,
(c) a transparent sheet incidental to said ortho film sheet such that the film sheet is disposed between said substrate and transparent sheet so that one may view the image on said film sheet through said transparent sheet against said mirrored surface, and
(d) means to hold said substrate and transparent sheet in incidental relationship to said film sheet.

7. A method of making a photographic display apparatus presenting an effect similar to etched glass, said method comprising:
(a) generating a film containing a desired image to be displayed,
(b) generating a print of said image on an orthochromatic high contrast graphic arts copy film and where a portion of said film is at least somewhat transparent, said film being of the type used in making line reproductions in lithographic processes, and
(c) enclosing said film between a transparent sheet and a mirrored substrate so that one may view the image on the film through the transparent sheet against the mirrored substrate.

4,192,092

TOY EATING ANIMAL UTILIZING CONVEYOR

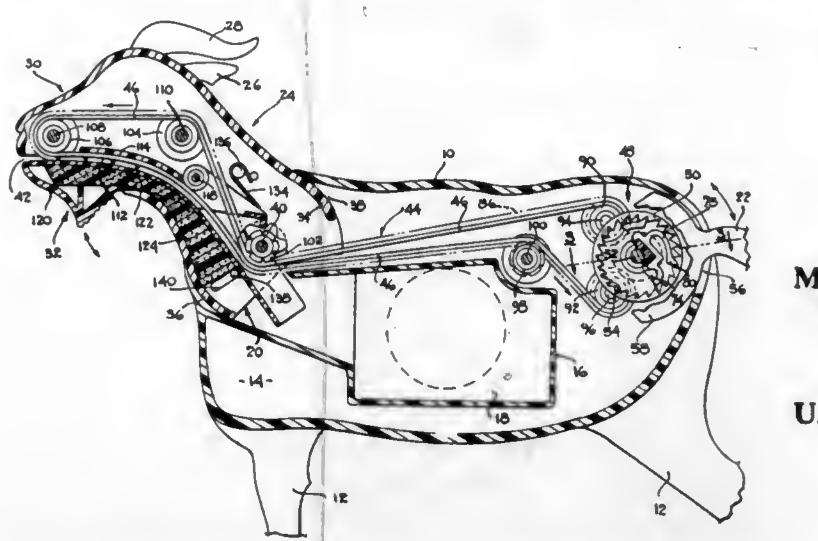
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356; Erwin Benkoe, deceased, late of Encino, Calif.; by Elisabeth Benkoe, Executrix, 17965 Medley Dr., Encino, Calif. 91316, and Elonne Dantzer, Redondo Beach, Calif., assignors to Adolph E. Goldfarb and Elisabeth Benkoe, Executrix for Estate of Erwin Benkoe, both of Northridge, Calif.

Filed Feb. 10, 1978, Ser. No. 876,657

Int. Cl.^{2} A63H *13/02*

U.S. Cl. 46—123 **5 Claims**

1. A toy animal figure apparatus capable of taking in simulated food articles in a manner simulating the eating of such articles, said apparatus comprising:
(a) a body section,
(b) a head portion on said body section and an opening representative of a mouth on said head portion,
(c) endless movable conveyor means adapted for continuous movement in one direction in a continuous path during operation for mechanically conveying solid or relatively solid toy food articles of various sizes and shapes which are introduced at said mouth and through the head section, thereby simulating the eating of the articles by said animal figure apparatus, and
(d) manually operable actuating means on said animal figure apparatus to cause movement of said conveying means and the conveying of the articles from said mouth and through said head section, said head portion being pivotally mounted on a forward end of said body section and being capable of shifting between an upper position and a lower position so that a portion of that path of movement of the articles may be upward or partially upward, and where said head can be stationarily maintained in the upper position or the lower position or maintained in at least one selected stationary position between the upper and lower positions during the conveying of the food articles, said apparatus also including a jaw portion pivotally mounted on said head portion, and means operatively connected to said conveyor means and said jaw portion to cause a shiftable movement of said jaw portion to simulate a chewing action.



4,192,093

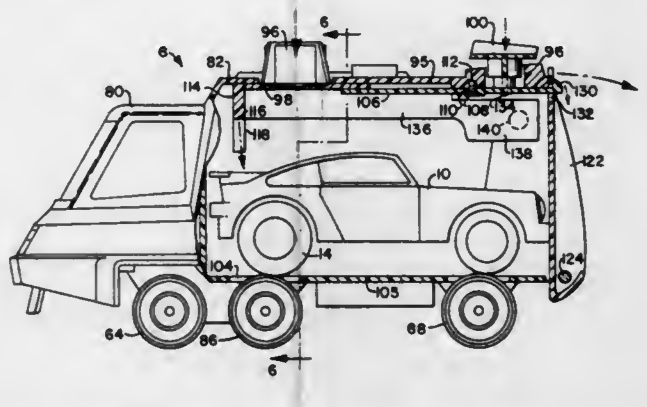
TOY CARRIER VEHICLE

Nobuo Hamano, Toyko, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 962,020

Int. Cl.^{2} A63H *11/10*

U.S. Cl. 46—204 **7 Claims**



1. An unpowered toy carrier vehicle for use with a powered toy vehicle, said powered toy vehicle being of the type which can be energized by exerting force on the top of the vehicle and rotating the drive wheels thereof, comprising:

a toy vehicle having a cargo portion sufficiently large to accommodate said powered toy vehicle, said cargo portion having a floor with two openings therein and a top with a first opening therein;

two drive wheels, each of said drive wheels being mounted for rotation beneath the openings in the floor of said cargo portion;

means for allowing said powered toy vehicle to be inserted into said cargo portion and positioned with its drive wheels communicating with said drive wheels mounted beneath the openings in the floor of said cargo portion; and

means for exerting force on the top of said powered vehicle when it is within said cargo portion, said means for exerting force on the top of said powered toy vehicle comprising an elongated resilient member mounted within said cargo portion on the top thereof, at least one cargo depression member fixedly attached to said elongated resilient member and extending through the first opening in said top of said cargo portion, and an end member fixedly mounted to said resilient member, said end member having a contact surface configured to engage the top of said powered toy vehicle when said powered toy vehicle is within said cargo portion.

4,192,094

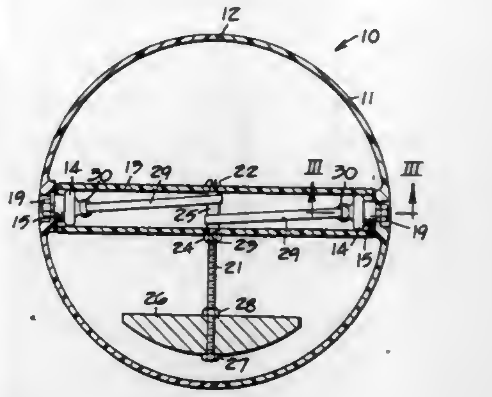
SELF-PROPELLING TOY

Michael K. Johnson, 5314 Franklin Ave. - #7, Los Angeles, Calif. 90027

Filed Jun. 19, 1978, Ser. No. 916,798

Int. Cl.^{2} A63H *17/00, 29/08*

U.S. Cl. 46—207 **15 Claims**



1. A self-propelling toy comprising

a housing,

a tubular support member rotatably mounted within said housing,

roller means for rotatably mounting each end of said support member on said housing and disposed within said support member,

weight means secured to said support member and spaced therefrom at a predetermined distance, and

drive means interconnected between said housing and said support member for storing-up energy therein when said support member and said weight means are rotated in one direction relative to said housing and for releasing such energy to rotate said housing in a second direction opposite to said first direction and relative to said support member and said weight means upon release of said toy on the ground.

4,192,095

SEED TREATING SUSPENSION AND METHOD OF SEED TREATMENT

Lester H. Haslam, Box 1121, Twin Falls, Id. 83301; Jay Woods, and Verle W. Woods, both of P.O. 1016, Yakima, Wash. 98901

Filed Jul. 31, 1978, Ser. No. 929,819

Int. Cl.^{2} A01C *1/06*

U.S. Cl. 47—58 **10 Claims**

1. A method for treating crop seeds to produce coated seeds having increased weight, comprising the following steps:

forming an oleaginous suspension of an inert, solid water insoluble inorganic particulate material having a density of at least 2.7 grams per cubic centimeter in a discontinuous oil phase dispersed in a continuous water phase, the weight of the inorganic particulate material constituting

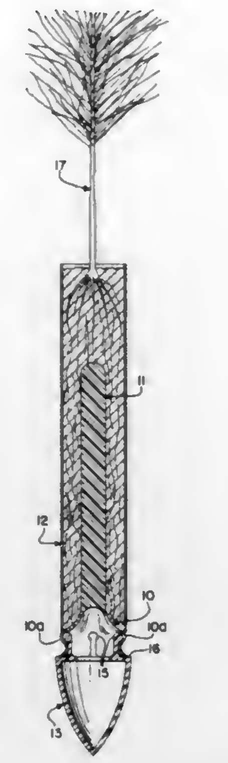
75% to 90% of the total weight of the oil phase, including the inorganic particulate material and the weight of the oil phase including the inorganic particulate material constituting 20% to 30% of the total suspension by weight.

mixing the suspension and seeds so as to apply the suspension onto the surfaces of the seeds;

and permitting the coated seeds to cure during absorption of the suspension components, whereby the suspension remaining on the seed surfaces inverts.

4,192,096
PLANT CONTAINER FOR GROWING PLANTS WHICH ARE TO BE TRANSPLANTED

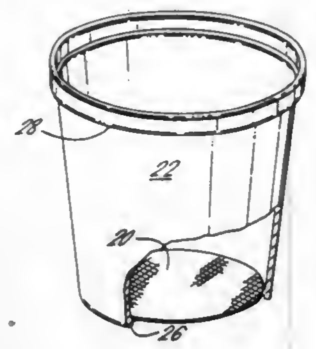
John R. Platt, Wheaton, and William N. Weaver, Northbrook, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 779,446, Mar. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 741,631, Nov. 15, 1976, abandoned. This application Mar. 1, 1978, Ser. No. 882,490
Int. Cl.^{2} A01C *11/02*
U.S. Cl. 47—73 **12 Claims**



1. A plant container for growing a plant to a stage suitable for transplanting, said container comprising a base forming the bottom wall of said container and a circumferentially unsupported, discrete sleeve forming the sidewall of said container, said base having a substantially circular periphery and an upper surface being upwardly domed within said periphery which is devoid of any openings capable of passing water therethrough, a rib means for retaining growing medium and root mass thereabout when the sleeve is removed, said rib means located on said upper surface of said base and upstanding therefrom at the apex of the domed surface thereof, said sleeve formed of a thin flexible plastics material in the shape of a tube substantially open at both ends thereof and having an axial extent greater than the axial extent of the rib means, said sleeve disposed concentrically about said rib means with the lower edge of said sleeve cooperating with the base, said base including abutment means adjacent the outer periphery thereof and cooperating with the lower edge of the sleeve to form spaces between the base and the sleeve to permit water to drain from between said periphery and the lower edge of said sleeve, whereby said base absent said sleeve with the growing medium and root mass of a plant grown in said container and about said rib is capable of being transplanted as a unit.

4,192,097
HORTICULTURAL IMPROVEMENTS

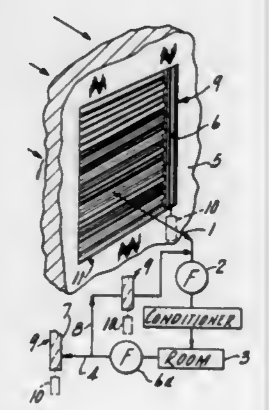
Walton J. Smith, P.O. Box 461, Wilton, Conn. 06897
Continuation of Ser. No. 811,315, Jun. 29, 1977, abandoned, which is a continuation of Ser. No. 715,503, Aug. 18, 1976, abandoned, which is a continuation of Ser. No. 571,866, Apr. 25, 1975, abandoned. This application Jun. 7, 1978, Ser. No. 913,445
The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.
Int. Cl.^{2} A01G *31/00*
U.S. Cl. 47—59 **1 Claim**



1. A flower pot for house plants comprising a portable pot having sides and a bottom and adapted for receipt in a lower vessel containing water for the plant such that the lower vessel is effectively closed to prevent loss of water vapor, the bottom of said pot including support means comprising crossing reinforcing ribs supporting a section of a removable aluminum window screen, said bottom being at least 34% open and holding fine particulate plant-supporting material, the particles of which are finer than the screen openings at least directly on said screen and accomodating a substantial root system, said screen having openings at least 1/36" and smaller than about ⅛" in the largest dimensions.

4,192,098
AIR DAMPER APPARATUS PARTICULARLY FOR HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS

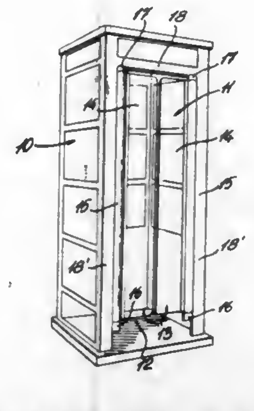
Donald E. Brzezinski, Brookfield, Wis., assignor to Johnson Controls Inc., Milwaukee, Wis.
Filed Jun. 12, 1978, Ser. No. 914,961
Int. Cl.^{2} E06B *7/086*
U.S. Cl. 49—91 **20 Claims**



1. An air damper apparatus, comprising a frame structure having spaced support means, a plurality of substantially parallel closure blade means pivotally mounted to said spaced support means, said blade means having planar end edges, a plurality of individual end seal units located in end-to-end relationship to conjointly define an essentially continuous sealing surface including said individual end seal units aligned one each with each of said blade means, and mounting means for each seal unit locating each of the seal units between the support means and at least one end of said blades and including means to individually urge the seal units outwardly into sliding sealing engagement with the planar edge of each of the aligned blade means and sealing the edge against the flow thereby.

4,192,099
SWINGING DOOR STRUCTURES FOR EXTERIOR TELEPHONE BOOTHS

Paul Simko, Montreal, and Albert Strasser, Coteau du Lac, both of Canada, assignors to Brass & Bronze Mfg. Co. Ltd., St. Laurent, Canada
Filed Jul. 24, 1978, Ser. No. 927,510
Int. Cl.^{2} E05C *7/04;* **E05F** *1/10*
U.S. Cl. 49—366 **9 Claims**



1. A swinging door assembly particularly, but not exclusively, for securement in a door opening of an exterior telephone booth, comprising:

(i) a lintel member having a pair of top pivot housings and securable to a top horizontal frame of said door opening, each said top pivot housing lying at a respective end of said top horizontal frame,

(ii) a pivot clamp bracket securable to a respective lower portion of opposed vertical frames of said door opening,

(iii) a pair of swinging doors each having a door column in a longitudinal vertical edge thereof;

(iv) each door column having a torsion bar therein, said torsion bar being fixed at a lower end in a bearing bushing housing and having an upper securable extension portion protruding above a top end of said column,

(v) each upper securable extension portion of said torsion bars being immovably secured in a respective one of said pivot housings,

(vi) said pivot clamp bracket having a pivot pin receivable in a pivot hole in a lower end of said bearing bushing housing of a respective swinging door, and

(vii) a friction bearing assembly supported about said pivot pin and in frictional engagement with a peripheral lower marginal edge of said pivot hole of said bearing bushing housing to frictionally retain a respective swinging door in a desired plane determined by the fixation of said extension portion of said torsion bar of said respective swinging door.

4,192,100
SLIDING DOOR APPARATUS

Kenneth G. Klema, 2209 - 4½ Mile Rd., Racine, Wis. 53402
Filed Nov. 21, 1977, Ser. No. 853,552
Int. Cl.^{2} E05D *15/26, 15/06*
U.S. Cl. 49—404 **12 Claims**

1. Sliding door apparatus for closing an opening in a building structure, comprising:

a frame on said structure defining said opening;

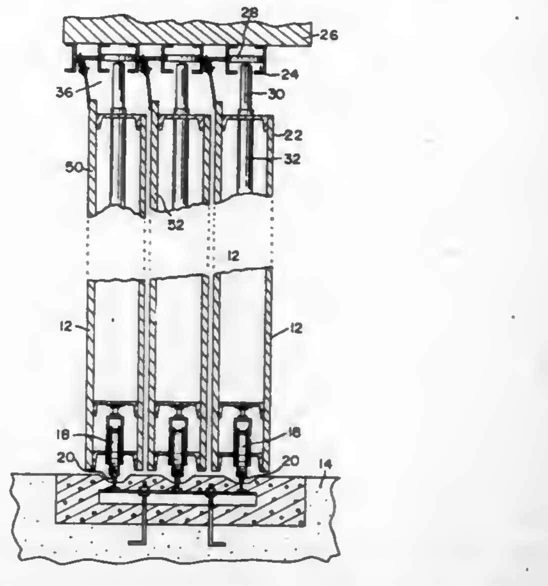
at least one sliding door engaged with said structure and having an edge aligned substantially parallel to a portion of said frame, said edge and said frame portion constituting relatively moveable, adjacent members defining a gap therebetween;

rods extending from one of said adjacent members, spanning said gap, and terminating in distal ends engaged in guides on the other of said adjacent members, said rods being axially slidable with respect to at least one of said adjacent members to accommodate changing gap dimensions while engaging said guides;

a magnetically receptive surface on one of said adjacent members and extending along said gap;

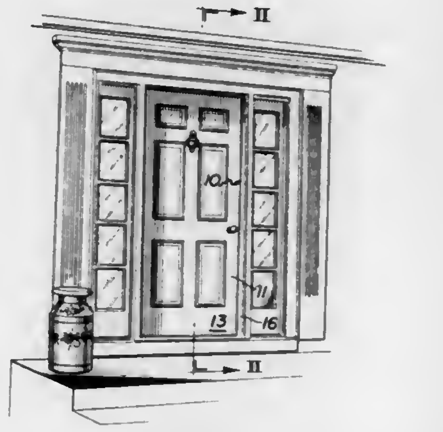
a flexible sealing strip attached to the other of said adjacent members along said gap and spanning said gap and having magnetic means therewith to magnetically engage said strip with said receptive surface when said door is closed;

means causing convergence of said receptive surface and said strip at one set of their adjacent ends when said door is substantially closed thereby to initiate a magnetic wave action to close said gap in substantially weather-tight fashion.



4,192,101
DOOR SEALING APPARATUS

William G. White, 12 Winthrop La., Holden, Mass. 01520
Filed Jun. 23, 1978, Ser. No. 918,383
Int. Cl.^{2} E06B *7/16*
U.S. Cl. 49—478 **4 Claims**



1. Apparatus for sealing a door against leakage comprising:

(a) a first thin metal strip extending around the periphery of the door on the face surface,

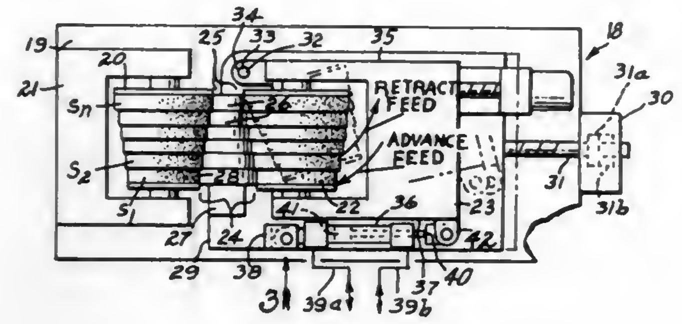
(b) a first sealing strip mounted around the frame, including a base portion attached to the frame, a resilient collapsible portion extending from the base portion, and a magnetic portion extending from the collapsible portion,

(c) a second metal strip mounted on the threshold including an inclined surface that faces in the direction of the opening of the door, and

(d) a second sealing strip having a base portion attached to the face of the door adjacent the bottom edge, a resilient collapsible portion extending from the base portion, and a magnetic portion extending from the collapsible portion, said magnetic portion having a contact surface that is generally parallel to the inclined surface of the second metal strip.

4,192,102
CENTERLESS PLUNGE GRINDING MACHINE WITH PROGRESSIVE ANGLE DEVELOPMENT

Wilbur F. Jessup, The Hague, Netherlands, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Continuation-in-part of Ser. No. 803,569, Jun. 6, 1977, Pat. No. 4,107,881. This application Jul. 14, 1978, Ser. No. 924,846
Int. Cl.^{2} B24B *5/32*
U.S. Cl. 51—103 R **3 Claims**



1. An improved centerless grinder having a base, a grinding wheel and regulating wheel rotatably journalled in respective grinding and regulating wheelheads carried by said base, said wheels disposed to one another so as to form an inlet end and outlet end between said wheels, and a work support located between said wheels for supporting a workpiece of revolution, wherein the improvement comprises:

(a) a plurality of work stations defined along the faces of said wheels comprising a like plurality of frusto-conical wheel segments on each wheel with bases disposed toward said outlet end and the included angle of the wheel segments progressively decreases from the segment proximal the inlet end to the segment proximal the outlet end on each of said wheels, respectively; and

(b) means for effectuating relative movement between said regulating wheel and said grinding wheel about said outlet end during the grinding process between a first beginning position and a second, finished position thereby establishing a work cone profile at each of said beginning and finished positions wherein the finished work cone profile of a given work station is equal to the beginning work cone profile of the next successive work station.

4,192,103
CUTTING REEL GRINDER WITH AUTOMATIC CONTROL

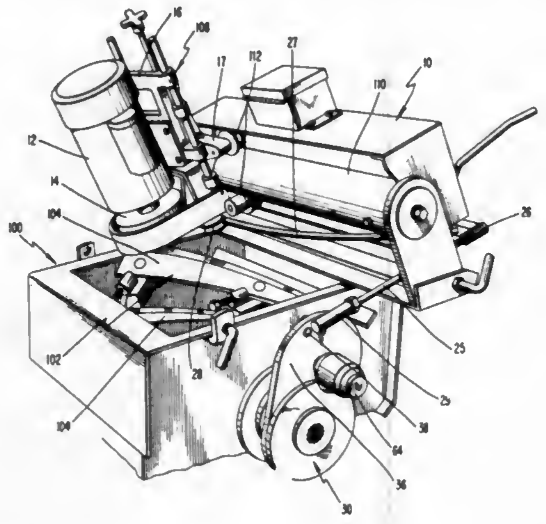
Eugene A. Sousek, Appleton, Wis., assignor to Koehring Company, Brookfield, Wis.
Filed Aug. 22, 1978, Ser. No. 935,984
Int. Cl.^{2} B24B *19/00*
U.S. Cl. 51—249 **18 Claims**

1. An automatic sharpening unit for a cutting reel of the type having a plurality of helical knives, comprising:

grinding means operable to grind the edge of a helical knife and having a translatable carriage and a first electrical actuator to move the carriage;

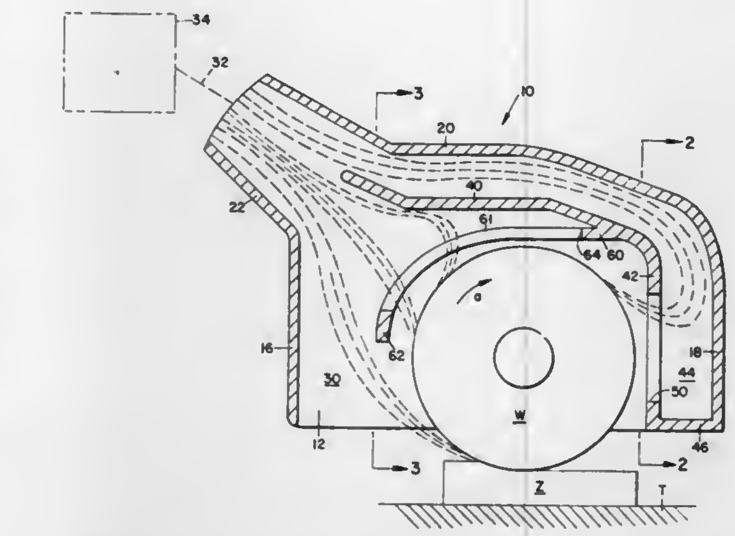
indexing means for connection to a cutting reel, having a second electrical actuator operable to rotate a cutting reel through a predetermined angle that is integrally divisible into 360°; and

electrical control means connected with the first and second actuators for regulating the grinding means and the indexing means, operable to drive the indexing means through the predetermined angle and to subsequently cause the translatable carriage to traverse and sharpen a helical knife.



4,192,104
DUST SHROUD

James K. Patenaude, Easthampton, Mass., assignor to Wilderness Mold, Inc., Northampton, Mass.
Filed Oct. 10, 1978, Ser. No. 949,883
Int. Cl.^{2} B24B *55/06*
U.S. Cl. 51—273 **1 Claim**



1. In an exhaust system for a rotating abrading component of an abrading machine, the combination of:

a vacuum source, a shroud connected to the vacuum source and mounted on the abrading machine circumadjacent the major portion of the abrading component and having an opening in the bottom thereof through which the minor portion of the abrading component extends for operation on a workpiece,

a secondary wall within the shroud for separating the shroud interior into a primary vacuum channel adjacent the ascending portion of the abrading component and a secondary vacuum channel adjacent the descending portion of the abrading component,

an entrance opening in the secondary wall in line with the descending portion of the abrading component and communicating with the secondary vacuum channel,

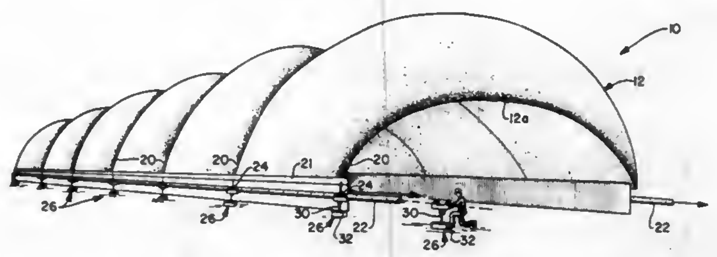
the entrance opening in the secondary wall being slightly narrower than the width of the abrading component,

a tertiary wall within the shroud and spaced from and conforming to the curvature of the abrading component and having an entrance opening in line with the ascending portion of the abrading component and communicating with the primary vacuum channel,

the entrance opening in the tertiary wall being of a width much more narrow than the width of the abrading component and than the width of the entrance opening in the secondary wall.

4,192,105
INFLATABLE BUILDING AND ANCHOR MEANS FOR PIPELINE CONSTRUCTION

Burton D. Morgan, Hudson, Ohio, assignor to Concept Development Institute, Inc., Hudson, Ohio
Filed May 8, 1978, Ser. No. 903,459
Int. Cl.^{2} E04B *1/34*
U.S. Cl. 52—2 **8 Claims**



1. A portable inflatable shelter and attaching means therefor comprising

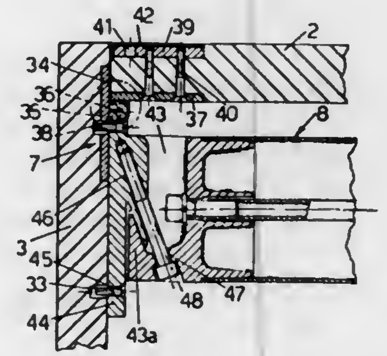
an inflatable flexible structure of elongate shape and having open ends, and being of arcuate shape in vertical section,

track means at each side of said structure and extending substantially the length thereof and being operatively secured to said structure, and

a plurality of movable anchor means each including pivotal devices to engage said track means at spaced portions thereof and hold said structure against vertical upward movement but permitting relative movement between said devices and said track whereby said structure can be operatively positioned by said anchor means but be movable in relation thereto.

4,192,106
MODULAR ELEMENTS FOR COMPOSING DISASSEMBLABLE WALLS, CABINETS, WRITING-DESKS OR OTHER PIECES OF FURNITURE

Hans Hell, Kassel, Fed. Rep. of Germany, assignor to Anonima Castelli S.p.A., Italy
Filed May 4, 1978, Ser. No. 902,987
Claims priority, application Italy, Jun. 24, 1977, 49978 A/77
Int. Cl.^{2} A47G *29/02;* **A47H** *5/00*
U.S. Cl. 52—36 **5 Claims**



1. Modular elements for composing walls, cabinets, writing tables and other pieces of furniture of a disassemblable type characterized by the fact that they comprise:

a kit including the following components;

panels of various standard sizes;

box-like metal sections designed to be applied to at least a pair of the opposite edges of said panels and provided on each of three surfaces thereof with a single longitudinal groove having a longitudinal slot access thereto of a width smaller than that of each of the grooves, while from the remaining fourth surface and designed to come into contact with the panel side anchoring means extend outwardly from the section so said anchoring means can connect the said section to the panel;

column devices to form a joining and pivoting connection for the panels, each having, at its ends, pieces adapted to be received inside the central longitudinal grooves of said sections, entering through the open end orifices thereof and cooperating with means locking said pieces in their engaged position, said solumn devices being covered by an elastically deformable material and housing in the inside a hollow tubular member into which passes a threaded rod having a upper control head and which at its lower end rests on an adjustable ground engaging foot;

cylindrical rods for the connection of wall panels, end by end in coplanar relationship, and provided with end pieces adapted to be received inside pairs of the central grooves of adjacent sections;

expansion locking screws to be inserted into the front grooves of the sections for carrying hooks, beams and the like;

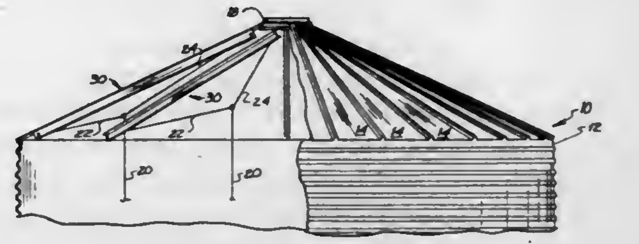
hinge devices for the connection of adjacent wall panels at right angles and to allow said panels to be folded one on the other;

through rods passing through the vertical panels from the top to the bottom within the thickness thereof and provided with an upper control head and with a lower adjustable ground engaging foot; and

bars having shaped end portions, acting as spacers between two parallel panels, said end portions being so shaped as to be received in seats arranged in shaped plates fixedly connected to the inner surfaces of said opposite wall panels and provided with through holes to receive safety locking screws.

4,192,107
CONICAL ROOF STRUCTURE

Lawrence L. Wickstrom, and Jock C. Garden, both of Hutchinson, Kans., assignors to Farmland Industries, Inc., Kansas City, Mo.
Filed May 30, 1978, Ser. No. 910,873
Int. Cl.^{2} E04B *7/00*
U.S. Cl. 52—82 **11 Claims**



1. A conical roof assembly structure for grain bins required to support randomly positioned cable loads including:

a primary support in the form of a circular wall;

a secondary support in vertically spaced concentric relation to the primary support;

a plurality of tapered roof panels radially arranged, the longitudinal side edges of each roof panel being shaped in an inverted u-shaped rib, the u-shaped rib of each adjacent roof panel overlapping the rib of the adjacent panel, the upper ends of the roof panels being secured to the secondary support while the lower ends are secured to the primary support forming a conical structure;

a plurality of longitudinal stiffener members each having a web with an upper and lower flange extending from the opposite ends of the web, said stiffener members being radially spaced under the rib of one or more roof panels, the web of each stiffener member being vertically positioned and having a greater dimension than both upper and lower flanges;

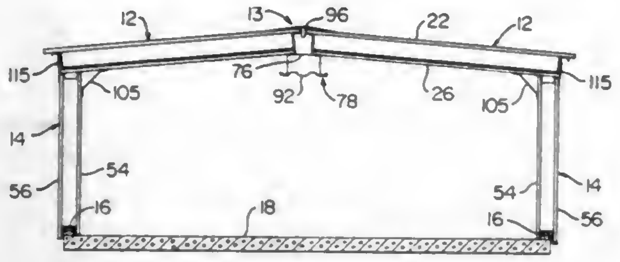
fastening means along the ribs of the roof panels passing through the overlapping ribs of the adjacent roof panels and the upper flange of the stiffener member forming a rigid structure for support of bending and compression loads;

wherein the improvement comprises:

cable suspension means attached approximate each end of each stiffener member to a common load mounting point therebetween for supporting vertical cable loads whereby the tensile loads on the cable suspension means cause its associated stiffener member to act in compression.

4,192,108
FRAMELESS METAL BUILDING

Colin F. Lowe, P.O. Box 128, Hutsonville, Ill. 62433
Continuation-in-part of Ser. No. 831,781, Sep. 9, 1977, Pat. No. 4,106,245. This application Jun. 1, 1978, Ser. No. 911,378
Int. Cl.^{2} E04B *7/02*
U.S. Cl. 52—90 **24 Claims**

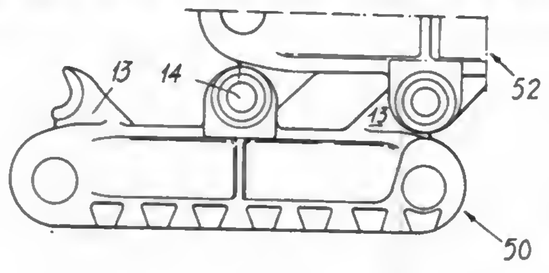


1. A frameless building comprising a plurality of generally rectangular roof panels, each of said roof panels including an inner sheet metal skin portion and an outer sheet metal skin portion, each said skin portion having a corrugated cross-sectional configuration, a series of spacers rigidly connected to said skin portions of each said roof panel, means forming spaced opposite side walls for said building, said roof panels being secured together in adjacent relation to form a roof assembly extending between said opposite side walls, said spacers within each said roof panel including tapering longitudinal spacers positioning said inner skin portion substantially horizontally to provide said roof assembly with a substantially flat inner ceiling, said outer skin portions being inclined upwardly from said side walls at an angle less than twelve degrees and defining a peaked ridge portion extending parallel between said side walls, means rigidly connecting said inner skin portions of said roof panels along said ridge portion and being effective to transfer tension forces laterally across the lower part of said ridge portion, means rigidly connecting said outer skin portions of said roof panels along said ridge portion and effective to transfer compressive forces laterally across the upper part of said ridge portion, and means for rigidly connecting said roof panels to said side walls for transferring loads from said roof panels through said side walls to a base supporting said side walls.

4,192,109
COMPONENTS OF RETRACTABLE BEAMS, AND ASSEMBLIES THEREOF

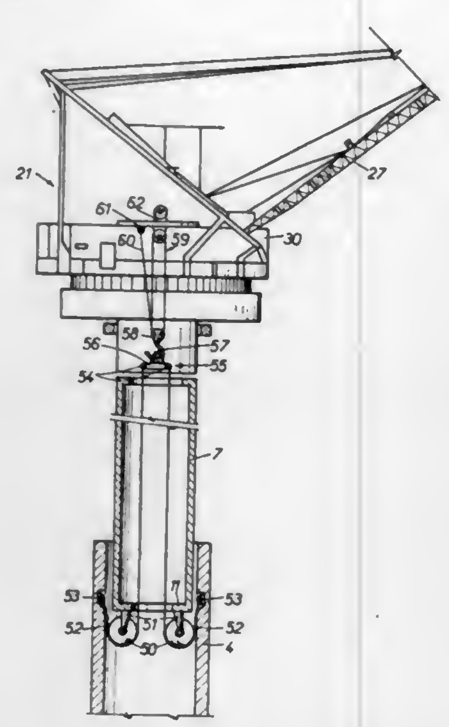
Angelo Caffa; Letizia Caffa, and Carla Caffa, all of Corso Francia 30, Turin, Italy
Filed Jan. 19, 1978, Ser. No. 870,831
Claims priority, application Italy, Jan. 26, 1977, 19642 A/77
Int. Cl.^{2} E04B *1/346*
U.S. Cl. 52—108 **3 Claims**

1. A retractable beam comprising a pair of beam chains each including a plurality of component elements pivotally mounted to each other, each component element including interlocking joint means extending therefrom, said pair of beam chains being juxtaposable with each other causing said interlocking joint means of said component elements of said pair of beam chains to interlock with each other forming a rigid beam structure, said interlocking joint means comprising at least one jaw extending from at least one of said component element on one of said beam chains, said jaw being slightly elastically and resiliently movable with respect to said one component element, and a pin connected to at least one of said component elements on said other of said beam chains engageable with said jaw to form a substantially rigid connection between said component elements of said one and said other beam chains, said jaw being abutable against said pin to elastically deform said jaw and permit engagement between said jaw and said pin.



4,192,110
ASSEMBLY POSITIONING A CRANE ON A PLATFORM INSTALLED IN THE SEA

Dominique Michel, and Alain G. N. Noblanc, both of Paris, France, assignors to Compagnie Generale pour les Developpements, Operationnels des Richesses Sous-Marines, "C. G. Doris," Paris, France
Filed Oct. 12, 1977, Ser. No. 841,372
Claims priority, application France, Oct. 12, 1976, 76 30587
Int. Cl.^{2} E04H *12/34*
U.S. Cl. 52—111 **2 Claims**

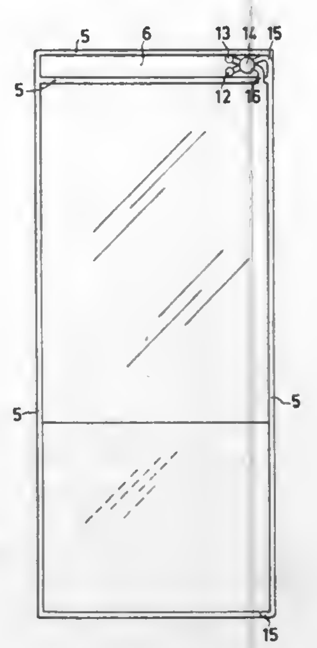


2. An assembly for positioning a crane mounted on a crane support having a lower face, said crane intended to overhang the platform of a platform structure having a base which rests on the bed of a body of water, said assembly comprising:

(a) a central shaft for carrying said platform,
(b) a column offset with respect to the central shaft,
(c) a mobile shaft element contained in the upper part of said offset column and having a base means effective to emerge as far as the upper level of the offset column,
(d) a downwardly extending shaft element fixed on the lower face of the crane support,
(e) said shaft element having the same diameter as the mobile shaft element,
(f) the two shaft elements being substantially coaxial when the platform is carried on the central shaft,
(g) a block and tackle having a cable and being suspended to the crane support,
(h) one of the ends of the block and tackle cable being fixed to the crane support,
(i) pulleys disposed on the base means of said mobile shaft element, and
(j) a cable passing over each said pulley and having one end thereof attached to the wall of the offset column, near to its upper edge, and the other end thereof attached to a central ring including means for connection to the block and tackle.

4,192,111
WINDOWS

Lars A. Ekstrom, Djursholm, Sweden, assignor to Raywall Kommanditbolag, Marsta, Sweden
Filed May 23, 1978, Ser. No. 908,648
Claims priority, application Sweden, May 23, 1977, 7705999
Int. Cl.^{2} E06B *7/12*
U.S. Cl. 52—171 **5 Claims**

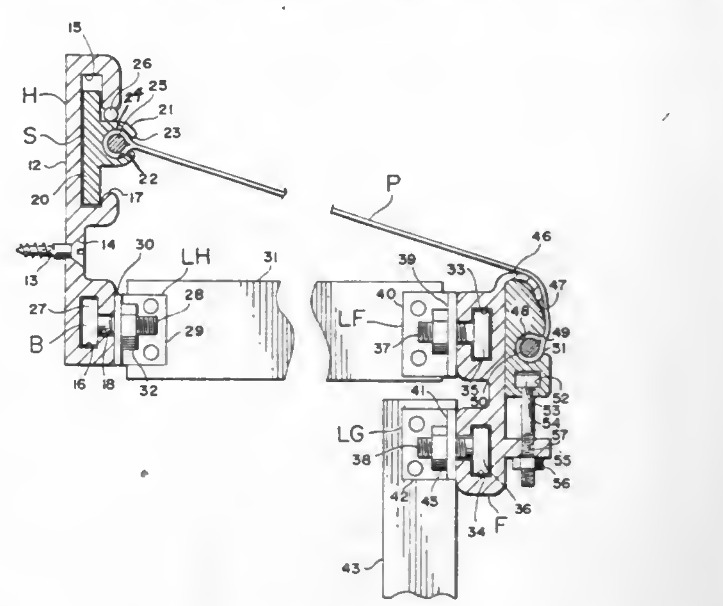


1. A window comprising a frame, at least two transparent panes supported by and mounted within said frame in parallel relationship, said panes being separated from one another and defining a space between them, a slab of heat insulation material located in said space and having a width corresponding substantially to the width of the panes and a length less than the length of the panes, said slab being movable along the length of the panes, and control means located at each end of the length of the panes in said frame for supplying and receiving air to the space between the panes in a controlled manner whereby the slab can be selectively moved a distance along the length of panes by a current of air.

4,192,112
PLIABLE AWNING SYSTEM

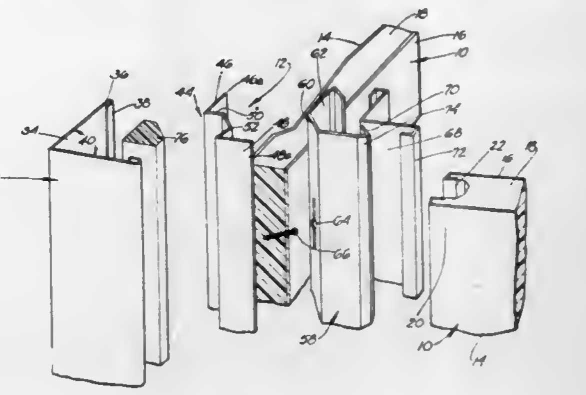
Robert M. Reilly, Sr., 810 Barry St., Miami Beach, Fla. 33140
Filed Sep. 28, 1978, Ser. No. 946,764
Int. Cl.^{2} E04B *1/12*
U.S. Cl. 52—222 **9 Claims**

1. An awning system comprising head bar means adapted to be secured to a building, front bar means adapted to be supported in space relation to said head bar means, a pliable awning extending between said head bar means and said front bar means, adjustable means mounted on said front bar means maintaining said pliable awning in a taut condition, said head bar means comprising a longitudinally disposed slotted portion having an opening, and awning securing member slidably mounted in said slotted portion and extending through said opening, pliable securing means mounted in said opening and engaging said awning securing member whereby upon removal of said pliable securing means, said awning securing member may be removed from said slotted portion through said opening.



4,192,113
CORNER ASSEMBLY FOR WALL PANELS

Mulford Martin, Jr., Middletown, Ohio, assignor to Armco Inc., Middletown, Ohio
Continuation-in-part of Ser. No. 810,310, Jun. 27, 1977, abandoned. This application Mar. 23, 1978, Ser. No. 889,351
Int. Cl.^{2} E04B *2/58*
U.S. Cl. 52—282 **31 Claims**



1. In a corner and sealing assembly for the corner of a building of the type having a pair of panels angularly disposed in edge-to-edge relationship, each panel comprising an outer metal skin and an inner metal skin separated by and joined to an intermediate insulating body substantially filling the space between said skins, an exterior trim piece of V-shaped cross section having two panel type legs, the free vertical edges of which are turned back upon themselves to form a return bent portion; a supporting member for said exterior trim piece, said supporting member comprising first and second portions each of which is adapted to lie adjacent said legs of said exterior trim piece with the free vertical edges thereof received within the groove formed by said return bent portions of said exterior trim piece, said first and second portions being joined by a third portion at least a part of which is planar and lies in a plane which intersects said legs of said exterior trim piece in equal angles, said planar part of said third portion being provided with at least one opening; retaining means positioned in said opening of said planar part of said third portion of said supporting member; a clamping member having a central planar portion which lies in parallel relationship to said planar part of said third portion of said supporting member, said clamping member having panel type legs extending from either side of said central planar portion adapted to lie respectively in parallel spaced relationship to said panel type legs of said exterior trim piece and to said first and second portions of said supporting

member, said central planar portion of said clamping member being provided with at least one opening which corresponds to said opening in said planar part of said third portion of said supporting member; the inner metal skin of one panel and the inner metal skin of the other panel defining a first included angle between said panels, said first and second portions of said supporting member defining a second included angle therebetween, said second included angle being less than said first included angle, and said panel type legs of said clamping member defining a third included angle therebetween, said third included angle being greater than said first included angle; and fastening means extending through said opening in said clamping member and said opening in said supporting member into said retaining means, whereby the tightening of said fastening means effects a structural tie between said pair of panels by squeezing action of said first and second portions of said supporting member and said legs of said clamping members upon said outer and inner metal skins of said panels, respectively, at the points of contact between said skins and said supporting and clamping members, with the force of said squeezing action being substantially equal to or exceeding the frictional forces between said supporting and clamping members and said outer and inner metal skins respectively, when intimate contact results therebetween.

4,192,114
ARRANGEMENT FOR INTERCONNECTING BUNDLES OF PRESTRESSING TENDONS FOR PRESTRESSED CONCRETE

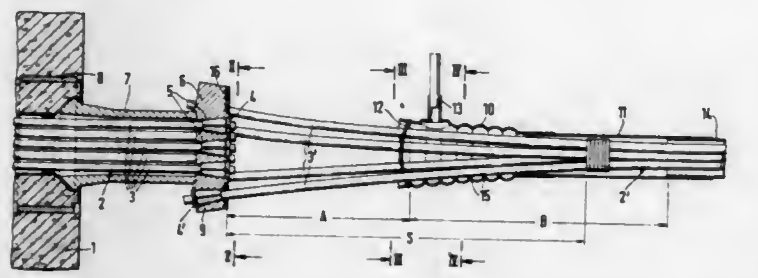
Dieter Jungwirth, Munich; Josef Renoth, Landshut-Altdorf, and Johann Wlodkowski, Munich, all of Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 14, 1977, Ser. No. 860,385

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657202

Int. Cl.^{2} E04C *3/10*

U.S. Cl. 52—230 **8 Claims**



1. An arrangement forming an intermediate anchorage between an axially extending first bundle and an axially extending second bundle of longitudinal prestressing tendons for a prestressed concrete structure with said first and second bundle disposed in serial and general axial alignment, said first bundle arranged to be located within a first poured concrete section of the structure and said second bundle arranged to be located within a second poured concrete section which is contiguous to and is poured after the first section, means for enclosing said second bundle throughout a portion of the axial length for maintaining said tendons out of contact with the concrete poured in said second section, said means including an axially elongated tubular sheathing member for said bundle, said tubular sheathing member enclosing said second bundle for a part of its axial length and the tendons of said second bundle within said tubular sheathing member being in substantially parallel relation and having a normally close spacing about the longitudinal axis of said tubular sheathing member, said tendons being capable of post-tensioning and being longitudinally movable within said means for enclosing said second bundle, a disk-shaped anchorage member having a central part and a radially outer part extending circumferentially around said central part, said central part having the axis thereof in general axial alignment with the axes of said first and second bundles, said anchorage member located in said second concrete section between the end of said first concrete section adjacent to said second concrete section and the adjacent end of said means for enclosing said second bundle, said anchorage member disposed in axially spaced relation from the adjacent end of said means enclosing said second bundle, the tendons of said first bundle being anchored in said central part, the tendons of said second bundle being anchored in said radially outer part radially outwardly from the tendons of said first bundle and being spaced apart a greater distance radially outwardly from the longitudinal axis of said bundle than in the normally close spacing within said tubular sheathing member, the tendons of said second bundle converging inwardly relative to one another from the spacing in said anchorage member as then extend longitudinally from said anchorage member into the normally close spacing within said tubular sheathing member, and the adjacent end of said tubular sheathing member for said second bundle located closer to said anchorage member is spaced in the longitudinal direction of said tendons from said anchorage member so that when concrete is poured in the second section at least a longitudinally extending part of the tendons in said second bundle extending between said anchorage member and the point at which the tendons are in normally close spacing within said tubular sheating member is not covered by said means for enclosing said second bundle and is directly encased in the poured concrete of said second poured concrete section.

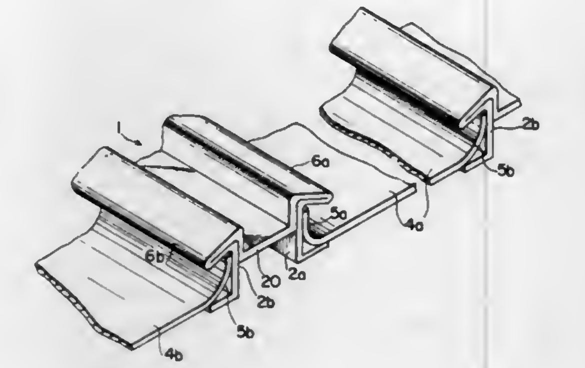
4,192,115
ELONGATED SHINGLE ASSEMBLY

Ryohei Yamamoto, No. 9 Shinonomecho-5, Chitose, Hokkaido, Japan

Continuation-in-part of Ser. No. 767,119, Feb. 9, 1977, abandoned, which is a continuation-in-part of Ser. No. 603,949, Aug. 12, 1975, abandoned. This application Feb. 23, 1978, Ser. No. 880,564

Int. Cl.^{2} E04C *1/34;* E04D *1/36*

U.S. Cl. 52—468 **7 Claims**



1. An elongated shingle assembly including,

(a) a flange member comprising a base portion, and a pair of vertical walls extending from said base portion, said walls being spaced apart and parallel to each other and having inner surfaces facing each other and outer surfaces facing away from each other,

(b) a pair of flat shingle member each having an upwardly extending brim portion in an assembled position,

(c) a shelter member means joining said shingle members to said flange member and protecting the shingle members comprising, a horizontal member extending between said pair of vertical walls, a pair of in situ deformable flap members each extending adjacent to one of said vertical walls, and means for interconnecting said pair of flap members with said horizontal member, whereby said shingle members are joined to said flange member by forcibly curling the brim portions of said shingle members upwardly against outer surfaces of said vertical walls and adjacent said deformable flap members, and said flap members being deformed in situ so as to cover and grip the brim portions, said flange member and said shelter member means being integrally formed from a unitary piece of material.

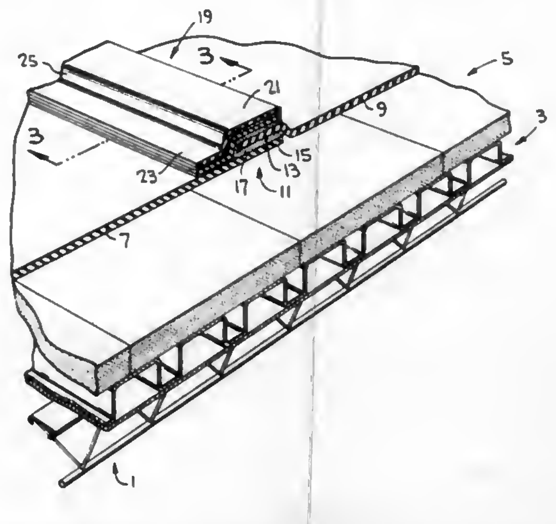
4,192,116
TAPED AND DOUBLE GLUED RUBBER JOINT

Thomas L. Kelly, 50 Randolph Ave., Waterbury, Conn. 06710

Filed Nov. 24, 1978, Ser. No. 963,193

Int. Cl.^{2} B32B *3/00;* E04D *1/36*

U.S. Cl. 52—469 **2 Claims**



1. A joint for sealing together end portions of adjacent cured rubber membranes adapted for use in a roof construction, and the like, the end portions of said adjacent cured rubber membranes being lapped and sealed together by adhesive means, and a flexible composite tape element comprising a cured rubber portion overlaying an uncured gum rubber portion, the two portions being adhesively sealed together, said composite tape elements being applied linearly over the joint between the end portions of the cured rubber membranes and being caused to adhere to the end portions of said cured rubber membranes by an adhesive means, and upon application of said composite tape to and over said lapped joint said composite tape assumes the shape of said lapped joint providing with said sealed lapped joint a double seal for the joint between adjacent rubber membranes.

4,192,117
SPRING ACTION PANEL INTERLOCK

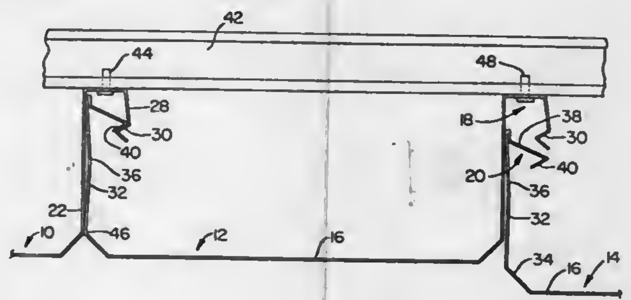
William C. Heirich, 2912 Wauhilah Dr., Muskogee, Okla. 74401

Continuation of Ser. No. 798,104, May 18, 1977, Pat. No. 4,091,588. This application May 18, 1978, Ser. No. 907,196

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.^{2} E04B *5/52*

U.S. Cl. 52—478 **4 Claims**



1. In a paneling system having a supporting member defining a plane and a plurality of flexible panels connected to each other and to said supporting member, the improvement comprising a first of said plurality of panels having a main section, a first section extending from one end of said main section along a plane that is substantially perpendicular to said plane of said supporting member, a second section extending from said first section and resting against said supporting member, a fastener attaching said second section to said supporting member, a third section extending from said second section away from said supporting member and defining a channel in conjunction with said first and second sections, a lip formed at the end of said third section having a first leg extending from said third section toward said first section along a plane that intersects the plane of said first section and a second leg extending from the end of said first leg away from said first section along a plane that intersects the plane of said first section, and a second of said plurality of panels adjacent and locked to said first of said plurality of panels having a main section, a first section extending from one end of said main section to said supporting member and abutting said first section of said first panel, a second section extending from said first section along a plane that intersects the planes of said first section and said third section of said first panel, a lip formed at the end of said second section of said second panel including a leg that extends toward said first section of said second panel along a plane that corresponds to said plane of said first leg of said lip of said first panel.

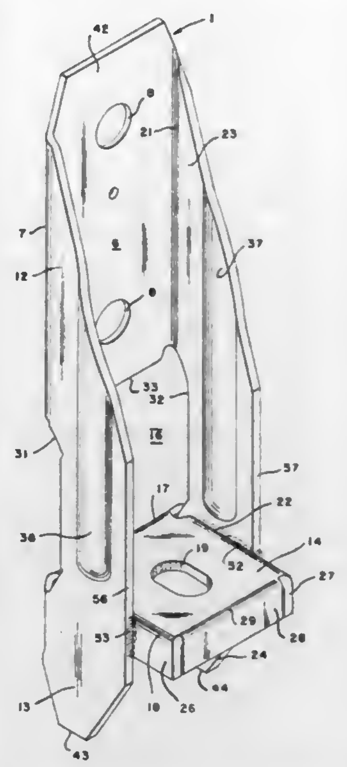
4,192,118
HOLDOWN FOR ATTACHING WOOD FRAMING MEMBERS TO CONCRETE FOUNDATIONS

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.

Filed Dec. 13, 1978, Ser. No. 969,222

Int. Cl.^{2} E04B *1/38*

U.S. Cl. 52—714 **9 Claims**



1. A holdown for connecting wood frame members to concrete foundations comprising:

a. an elongated back member having a first side edge and a second edge spaced from said first edge and substantially parallel thereto and said back member is formed with a plurality of longitudinally spaced openings adapted for engagement with a face of said wood frame member and adapted for attachment thereto by means of fasteners inserted through said openings;

b. a first side member integrally formed with said back member along said first side edge and positioned substantially at a right angle thereto;

c. a first leg member connected to said side member and extending downwardly therefrom and adapted for resting upon said foundation;

d. a seat member formed from material removed from said back member and having a back edge connected to said back member and a first side edge connected to said side member, and formed with a fastener opening for insertion of a fastener therethrough adapted for attachment to said concrete foundation;

e. said seat member is formed with a second side edge spaced from said first side edge and substantially parallel thereto;

f. a second side member integrally connected to said back member along said second edge;

g. said second side edge of said seat member is connected to said second side member; and

h. a second leg member connected to said side member and extending downwardly therefrom and adapted for resting upon said foundation.

4,192,119

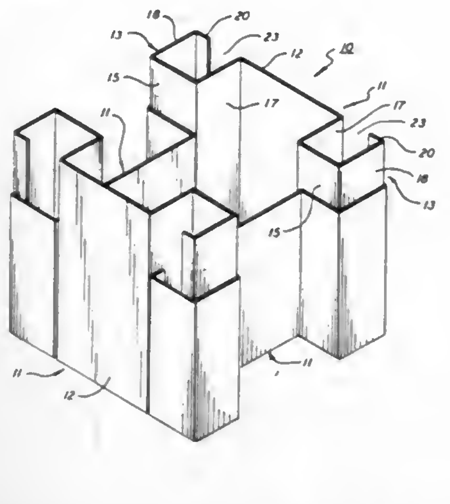
STRUCTURAL MEMBER

Wesley T. Murphy, Auburn, N.Y., assignor to E.T.I. Corporation, Auburn, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,825

Int. Cl.^{2} E04C *1/30*

U.S. Cl. 52—588 **3 Claims**



1. A flanged structural member that is adapted to interlock with a second flanged member of similar construction to form a right angle corner section, the structural member including an elongated planar web having a rectangular, open-sided, flange depending outwardly from each longitudinal edge thereof, each flange containing parallel side walls of substantially equal depth that are positioned normal to the plane of the web, the proximal edges of the two side walls being cojoined by a flat base wall and the distal edge of the inner side wall being joined to one longitudinal edge of the web to project the flange laterally to one side of the web with the open side of the flange facing the opposite side of the web whereby the distal edge of the outer side wall of the flange is situated in the plane of the web, a lip lying in the plane of the web that depends inwardly toward the web from the distal edge of the outer side wall to restrict the opening in the flange, the outside depth of the flange as measured over the lip and the base wall being equal to or slightly less than the inside width of the flange as measured between the inside surface of the two side walls whereby the lip of a flange on one member may be inserted into the opening of a flange on a second member and the members rotated to bring the webs into perpendicular alignment wherein one flange is securely seated in wall to wall contact within the other flange.

4,192,120

METHOD OF CONSTRUCTING REINFORCED CONCRETE BRIDGES

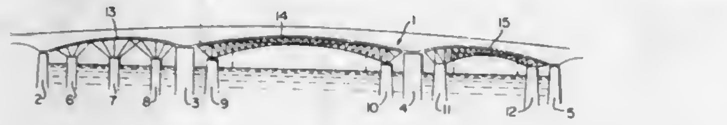
André J. Richard, Liege; Philippe M. Delmotte, Ramillies-Offus, and Pierre A. Parthoens, Bassenge, all of Belgium, assignors to Entreprises de Travaux Publics et Privés J. Richard Société Anonyme, Loncin-Liége, Belgium

Filed Dec. 12, 1977, Ser. No. 859,529

Claims priority, application Belgium, Dec. 17, 1976, 45795

Int. Cl.^{2} E04G *21/02;* **E04B** *1/32*

U.S. Cl. 52—741 **7 Claims**



1. A method of constructing bridges of reinforced concrete, including the steps of providing a supporting arch having a reinforcing part intended to be embedded into the concrete and an exterior part intended to be taken down after the concrete has set, the supporting arch having a cocked center, erecting the supporting arch on a pair of horizontally spaced supports, placing shuttering in position on the arch, and embodying at least the reinforcing part of the arch in concrete to constitute the deck of the bridge which is formed by a ribbed slab, by girders connected by a slab or by at least one box, said part of the arch embodied in the concrete providing supporting reinforcement in the final bridge structure.

4,192,121

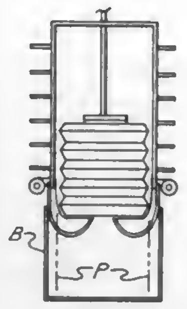
CASE PACKING APPARATUS

Otis M. Caudle, Richfield, N.C., assignor to Eggineers, Inc., Charlotte, N.C.

Division of Ser. No. 762,644, Jan. 26, 1977, Pat. No. 4,086,745. This application Feb. 21, 1978, Ser. No. 879,377

Int. Cl.^{2} B65B *5/06*

U.S. Cl. 53—248 **10 Claims**



1. Apparatus for releasing objects into a space comprising object engaging means having a flexible extent disposed for releasably restraining objects in a path of delivery to the space, said flexible extent having an end disposed adjacent the path of delivery and an other end positionable in the path of delivery, said extent being flexible between its ends for object restraining deflection partially about objects in the path upon engagement therewith, and movable means supporting said other end of said flexible extent in the path of delivery and being operable to position the other end progressively downstream and outwardly with respect to the path of delivery to a position out of the path for advance of the deflecting object engagement progressively downstream and ultimately out of engagement with objects, thereby providing progressive delivery and ultimate release of objects into the space.

4,192,122

AUTOMATIC BAG SUPPLYING MACHINE FOR BREAD BAGGERS

Augusto Florindez, 13029 Ocaso Ave., La Mirada, Calif. 90638

Filed Sep. 29, 1978, Ser. No. 947,133

Int. Cl.^{2} B65B *43/36*

U.S. Cl. 53—572 **9 Claims**

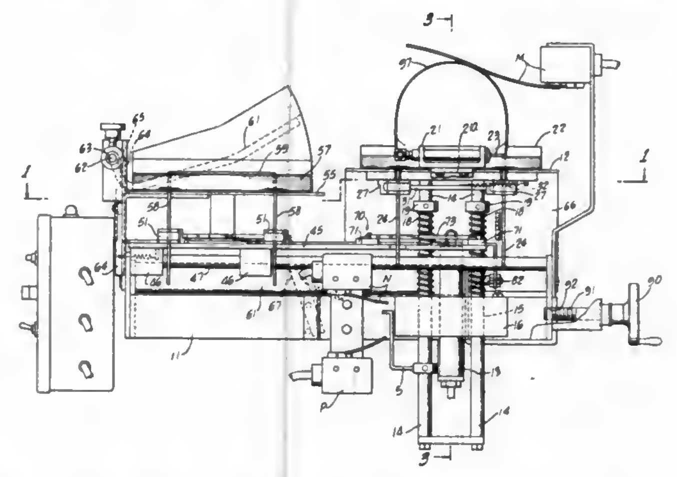
1. An article bagging device of the class described comprising:

a. a support means, carrying a stack of bags held in stack form by a wicket having downwardly projecting rods and into which individual bags, the article to be bagged is inserted;

b. clamping means on said support means engageable with said downwardly extending rods to hold said stack of bags in place;

c. holding means for holding a stack of replacement bags which are to be used to replace the bags on said support means when they become exhausted, said holding means having clamper elements for clamping the vertical rods of said replacement stack of bags; and

d. means for moving said remnants of said stack of bags on said support from said support means and replacing said stack by a fresh stack of bags, and having means for removing said rods from the clamping means of said first stack of bags and moving said replacement stack of bags into operating position whereby they are held in place by said clamper means.



4,192,123

AGRICULTURAL MOWER

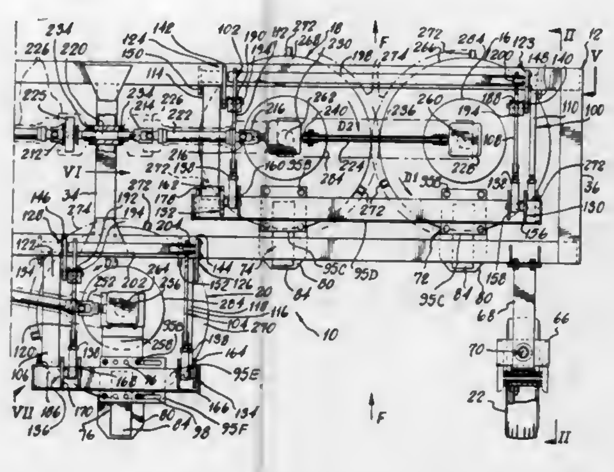
Robert Allely, Coventry, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Dec. 23, 1977, Ser. No. 863,641

Claims priority, application United Kingdom, Jan. 6, 1977, 00309/77

Int. Cl.^{2} A01D *55/26*

U.S. Cl. 56—13.6 **2 Claims**



1. An agricultural mower comprising a frame; first, second and third crop cutting rotors, each crop cutting rotor including a rotor support, a blade carrier plate rotatably journaled on the rotor support for rotation about a generally vertical axis of rotation, a plurality of blades secured to the blade carrier plate and extending outwardly therefrom so that the outer free ends of the blades trace a cutting circle during rotation, and an upwardly extending crop-feeding member mounted on the upper surface of the blade carrier plate; mounting means mounting the first and second crop cutting rotors on the frame with generally vertical axes of rotation in a common generally transverse vertical plane and with their cutting circles overlapping; mounting means mounting the third crop cutting rotor on the frame to the rear and to one side of the first and second crop cutting rotors and spaced from the second crop cutting rotor a distance of at least one eighth of the diameter of the cutting circle of said third crop cutting rotor; drive means mounted on the frame and connected to and contra-rotating the first and second crop cutting rotors so that adjacent portions of the first and second crop cutting rotors move rearwardly and crop material cut by the first and second crop cutting rotors passes between their upwardly extending crop feeding members; and drive means mounted on the frame and connected to the third crop cutting rotor to drive said third crop cutting rotor in the same direction as the second crop cutting rotor so that crop material cut by the third crop cutting rotor passes between the second and third crop cutting rotors.

4,192,124

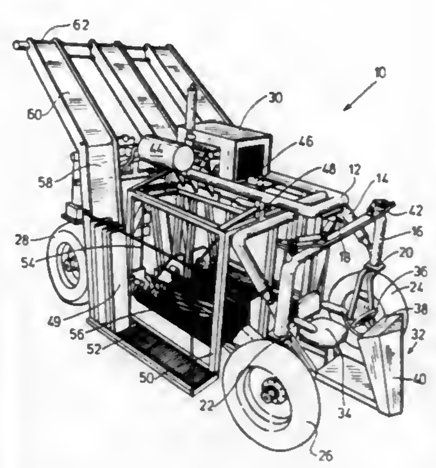
TOBACCO HARVESTER

Gary E. Balthes, Tillsonburg, Canada, assignor to Balthes Farm Equipment Manufacturing, Tillsonburg, Canada

Filed Jun. 5, 1978, Ser. No. 912,428

Int. Cl.^{2} A01D *45/16*

U.S. Cl. 56—27.5 **8 Claims**



1. A tobacco leaf picking device for attachment to a tobacco leaf harvester comprising a pair of support frames, a pair of defoliators, each rotatively mounted on a respective support frame, a hydraulic drive means for rotating said pair of defoliators in counter-rotating manner, a pair of conveyors each mounted on a respective support frame located beneath one of said defoliators, independent hydraulic drive means for moving said conveyors in opposite directions to convey picked leaves outwardly from under said defoliators, a pair of endless belts each mounted on a respective support frame by pulley means to oppose one another along the length of opposing sides of said pair of conveyors, independent hydraulic drive means for driving said belts in opposite directions where said belt mounting in combination with attachment of support frames to a harvester permits opposing belt portions to engage and support tobacco plant stalks as the plants pass through the leaf picking device, a separate control means for each of said independent hydraulic drive means, the speeds at which said defoliators, conveyors and belts are driven being independently adjustable of one another by each of said separate control means.

4,192,125

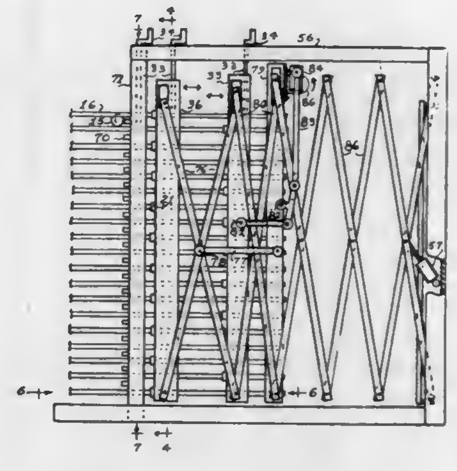
RECIPROCATING FRUIT HARVESTER

Robert H. Reynolds, and Elmo M. Reynolds, both of 202 Bedford St., C66, Sun City Center, Fla. 33570

Filed Dec. 9, 1974, Ser. No. 530,845

Int. Cl.^{2} A01D *46/00*

U.S. Cl. 56—328 R **5 Claims**

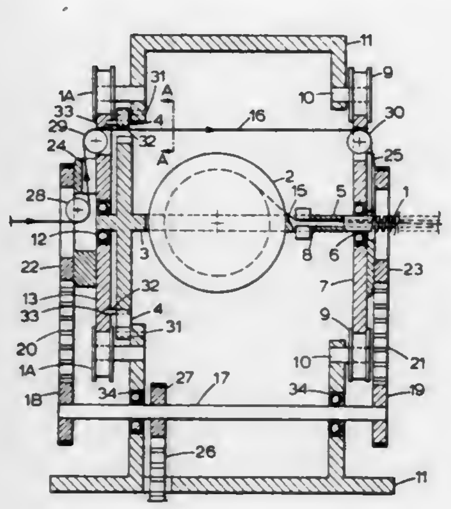


1. A fruit harvesting unit comprising a main frame, a movable support frame mounted on said main frame, a first and second movable tube support bodies mounted on said movable support frame, a first scissor linkage mounted on said first tube

support body and connected to said second tube support body, a second scissor linkage mounted on said movable support frame and connected to said second tube support body so as to reciprocate said two movable support bodies in opposite directions, at least two elongated tubes having one end mounted on one body of said two movable tube support bodies, at least one elongated tube disposed adjacent said first mentioned tubes and having one end mounted on the other said movable tube support body and free end disposed behind free ends of said first mentioned tubes and defining with first mentioned tubes an area for receiving individual pieces of fruit for harvesting such that upon the disposal of a piece within said area and axially movement of first said mentioned movable tubes relative to the opposite axially directed movement of said other mentioned movable tube, said piece of fruit is drawn within the grasp of said tubes, rotated and in the process is separated from its stem and said fruit is held after separation from stem within the grasp of said tubes during the outwardly withdrawal period of tubes from tree.

4,192,126
COILING MACHINE

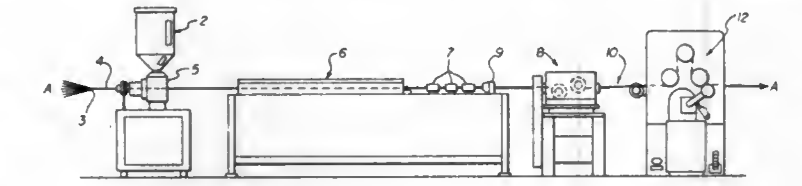
John P. S. Nolan, Northwood, England, assignor to Skemmill Limited, London, England
Filed Jul. 24, 1978, Ser. No. 927,148
Int. Cl.^{2} B65H *81/08*
U.S. Cl. 57—3 **11 Claims**



1. A machine for coiling wire about a core filament comprising a main frame, two coiling elements spaced from each other and mounted in the frame for rotation about substantially the same axis, a hollow mandrel on which the wire is to be coiled, the longitudinal axis of the mandrel substantially coinciding with said axis, a wire guide on each of the coiling elements spaced from the said axis whereby a loop of wire may be formed with its ends substantially on the said axis and the remainder thereof spaced from the said axis, means for rotating the two coiling elements in a substantially synchronous fashion so that wire guided about the elements is coiled on to the mandrel, means for preventing the mandrel from rotating relative to the frame, and means for feeding a core filament through the hollow mandrel, wherein the mandrel carries a plurality of pins around which coils of wire are formed, the mandrel having a tapering portion up which a coil in the process of being formed rides and thereby pushes off from the pins a previously formed coil.

4,192,127
METHOD AND APPARATUS FOR MAKING MONOFILAMENT TWINES

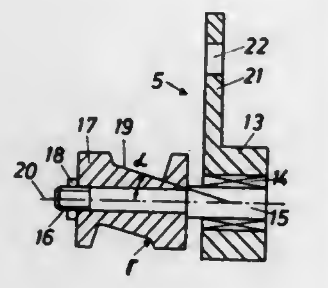
John B. O'Neil, Summerville, S.C., and William Dewhirst, Philadelphia, Pa., assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Sep. 28, 1978, Ser. No. 946,889
Int. Cl.^{2} D02G *3/38, 3/40*
U.S. Cl. 57—7 **11 Claims**



1. A method of making twine comprising continuously drawing a bundle of substantially parallel synthetic monofilaments along a path at a rate in the range of 200 to 2000 feet per minute, imparting a false twist to said bundle of monofilaments at a rate of about 3 to 30 turns per linear foot and directing a stream of molten synthetic material onto the outer surface of said moving, twisted monofilament bundle to form a spiral band therearound, the molten material being directed onto the surface of said bundle at a temperature and pressure sufficient to cause the band which is formed to fuse to the contacted monofilaments without materially affecting the strength of the fused monofilaments.

4,192,128
THREAD DEFLECTING ELEMENT FOR A DRAW-TEXTURING MACHINE

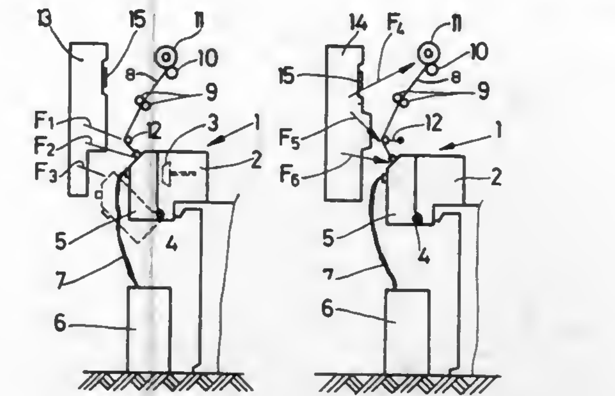
Walter Vetterli, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Jul. 19, 1978, Ser. No. 926,130
Claims priority, application Switzerland, Jul. 23, 1977, 9118/77
Int. Cl.^{2} D01H *13/04*
U.S. Cl. 57—290 **12 Claims**



1. In a draw-texturing machine, the combination comprising
a first pair of rolls for supplying a continuous thread therebetween;
a main heater for heating a supplied thread;
a false twist device downstream of said heater relative to the path of the thread for imparting a false twist in the thread;
a second pair of rolls downstream of said false twist device relative to the path of the thread for drawing the thread relative to said first pair of rolls; and
a deflecting means adjacent said heater for deflecting the thread to pass said heater in two passes, said means including a cantilevered rotatably mounted shaft and a deflecting element secured to said shaft for rotation therewith, said element including a cylindrical surface disposed about a first axis;
a pair of flanges having said cylindrical surface disposed therebetween, said flanges being of larger diameter than said surface; and
a bore extending through said element on a second axis angularly disposed to said first axis at an angle of from 5 degrees to 20 degrees.

4,192,129
MOVABLE SERVICING DEVICE FOR A SPINNING MACHINE, ESPECIALLY AN OPEN END SPINNING MACHINE

Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Fed. Rep. of Germany
Filed Oct. 15, 1976, Ser. No. 732,880
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1975, 2546436; Jul. 15, 1976, 2631791
Int. Cl.^{2} D01H *15/00, 11/00, 13/14, 1/12*
U.S. Cl. 57—301 **35 Claims**

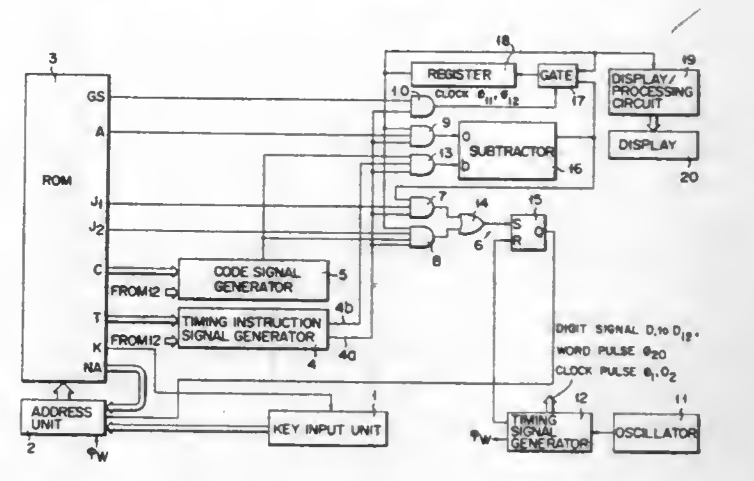


1. Servicing apparatus for at least one spinning machine comprising:
servicing means for servicing spinning assemblies of a spinning machine,
moving means for moving said servicing means to respective servicing positions adjacent the respective spinning assembly to be serviced,
disturbance responsive control means for controlling said moving means to move said servicing means to a servicing position adjacent a spinning assembly in response to detection of an operational disturbance at said spinning assembly, whereby those spinning assemblies exhibiting an operational disturbance can be serviced,
step-by-step control means for controlling said moving means to move said servicing means to respective servicing positions adjacent respective spinning assemblies in a predetermined sequence, where preventive maintenance servicing operations can be carried out by said servicing means,
and switchover means for switching control of said moving means between said disturbance responsive control means and said step-by-step control means.

4,192,130
TIME COUNTING CONTROL SYSTEM

Eiichi Takeuchi, Iruma, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 28, 1977, Ser. No. 855,211
Claims priority, application Japan, Dec. 1, 1976, 51/144544
Int. Cl.^{2} G04C *3/00*
U.S. Cl. 368—155 **7 Claims**

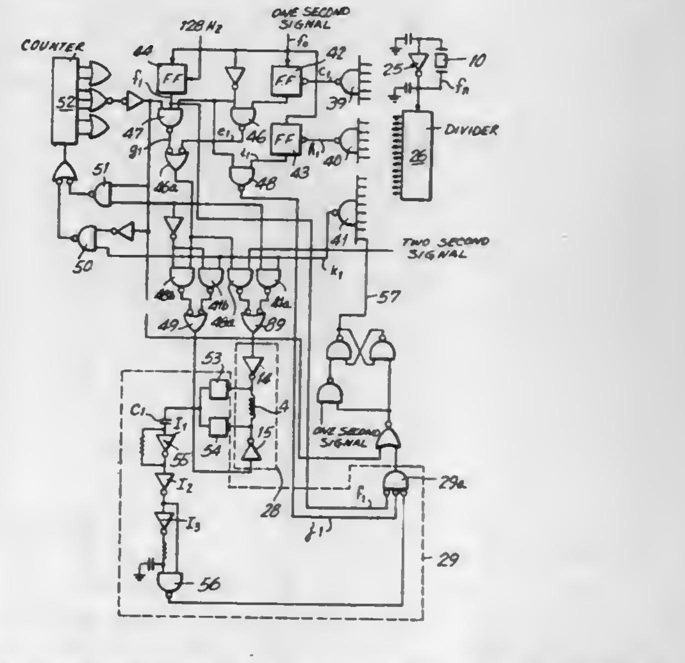
1. A time counting control system comprising:
a reference oscillator for generating reference clock signals having a reference frequency;
timing signal generating means coupled to said reference oscillator for generating at least a read-in clock signal on the basis of a reference clock signal delivered from said reference oscillator;
microprogrammed control means including:
an address register coupled to said timing signal generating means and whose read-in operation is controlled by said read-in clock signals received from said timing signal generating means;
an address section coupled to said address register; and
a microprogram storing section coupled to said address section for storing microprogrammed micro-instructions and delivering a micro-instruction from an address which has been designated by said address section, said microinstructions being successively executed to achieve at least a time-counting operation; and
a count/operation means including:



an arithmetic operation unit coupled to said microprogrammed control means for carrying out an arithmetic operation every time said microprogrammed control means delivers a predetermined number of microinstructions; and a register coupled to said arithmetic operation unit for storing time-counting information and which is controlled by said delivered micro-instructions.

4,192,131
STEP MOTOR CONTROL MECHANISM FOR ELECTRONIC TIMEPIECE

Minoru Hosokawa; Hiroshi Ishii; Yoshikazu Kawamura, and Sakiho Okazaki, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Jan. 19, 1978, Ser. No. 870,957
Claims priority, application Japan, Jan. 19, 1977, 52-4728; Jan. 28, 1977, 52-8465
Int. Cl.^{2} G04C *3/00*
U.S. Cl. 368—157 **9 Claims**



1. An electronic timepiece comprising in combination oscillator means for producing a high frequency time standard signal, divider circuit means for producing low frequency time signals in response to said high frequency time standard signal; a step motor including a drive coil for receiving a drive signal and being stepped in response thereto; a gear train driven by said step motor and adapted to place the step motor in one of a first normally loaded condition and a second more heavily loaded condition; load detection means including C-MOS

differentiator circuit means for detecting current peaks in the current signal induced in the drive coil of the step motor after each application of a drive signal thereto for producing a load detection signal representative of the load condition placed upon the step motor, said differentiator circuit means including at least two C-MOS inverter stages, each of said C-MOS inverter stages being fabricated in a substrate and having substantially the same dimensional characteristics and equivalent electrical characteristics so that each said C-MOS inverter stage admits of the same biasing level; driving and control means intermediate said divider circuit means and said step motor for receiving the low frequency signal from the dividing circuit means and said load detection signal, said driving and control means being adapted to apply a drive signal having a predetermined pulse width of said step motor in response to a first normally loaded condition being detected, said driving and control circuit means in response to said more heavily loaded condition being detected applying to said step motor a second drive signal having a pulse width of duration longer than said first pulse width.

4,192,132
QUARTZ CONTROLLED ANALOG WATCH

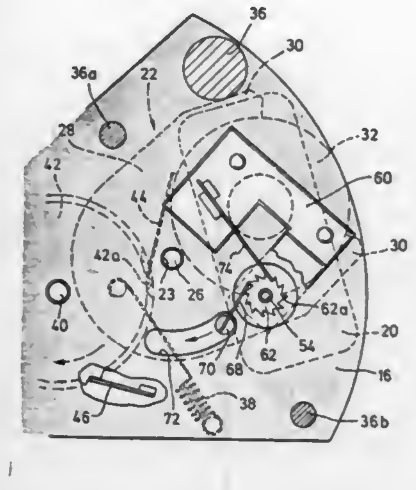
Adolf Sedlak, Wurmberg-Neubaerental, and Horst Friedrich, Pforzheim, both of Fed. Rep. of Germany, assignors to Timex Corporation, Waterbury, Conn.

Filed May 21, 1979, Ser. No. 40,623

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827790

Int. Cl.² G04C *3/04*

U.S. Cl. 368—160 5 Claims



1. In a quartz controlled analog watch having a quartz controlled pulse generator for delivering minute pulses and an indexing means mounted for rotation about an axis and for directly driving a minute wheel through the intermediary of an indexing device, the indexing means being adapted to be deflected from a position of rest by means of a coil to which output pulses from said pulse generator have been applied, and a permanent magnet, one of said coil or said magnet being stationarily mounted and the other mounted on the indexing means, and having a return spring, the improvement comprising:

circuit means in said pulse generator adapted to deliver minute pulses (i_m) and other time pulses (i_s) weaker in energy than said minute pulses, the pulse series frequency of said other time pulses being 1/n Hz where n is an integer less than 60.

means coupling said minute pulses and said other pulses to said coil, whereby the indexing means is deflected by said other time pulses (i_s) from its position of rest to a first indexing position and beyond that by the minute pulses (i_m); to a second indexing position,

a second wheel having a second hand and adapted to be driven by the indexing means to index the second wheel at the first indexing position, and,

said indexing means being arranged only to index the minute wheel when it is deflected to the second indexing position by the minute pulse i_m.

4,192,133
ELECTRONIC WATCH WITH MEANS FOR PRODUCING PULSE SOUND AT SELECTED INTERVALS

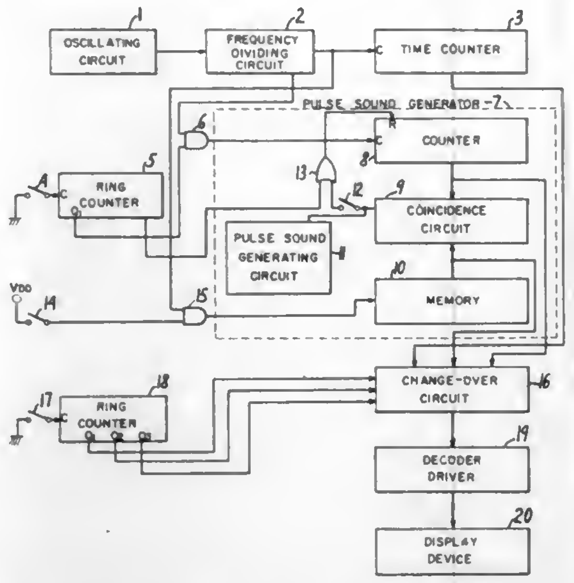
Shojiro Komaki, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Aug. 12, 1977, Ser. No. 824,315

Claims priority, application Japan, Aug. 13, 1976, 51/96826

Int. Cl.² G04C *21/16*

U.S. Cl. 368—73 4 Claims



1. An electronic watch having chronographic performance comprising an oscillating circuit to provide a standard signal, frequency dividing circuit means for dividing said standard signal to provide a 1 Hz signal and also a higher frequency signal, first counter circuit means receiving said 1 Hz signal and providing a count of seconds, minutes and hours, and pulse sound generating circuit means for generating pulse sounds at different selected intervals of more than one second, said pulse sound generating means comprising a pulse sound generator, memory circuit means for memorizing a selected time interval at which said pulse sounds are to be emitted, manually operable means for setting the time interval memorized by said memory circuit means, second counter circuit means receiving and counting said higher frequency signal from said frequency dividing circuit means, and coincidence circuit means having inputs connected respectively with said memory circuit means and said second counter circuit means and an output connected with said pulse sound generating means and to a reset terminal of said second counter circuit means to activate said pulse sound generating circuit means and to reset said second counter circuit means upon coincidence of the output of said second counter means with the interval memorized by said memory circuit means.

4,192,134
ELECTRONIC TIMEPIECE CORRECTION DEVICE

Makoto Yoshida, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Japan

Filed Oct. 26, 1977, Ser. No. 845,559

Claims priority, application Japan, Oct. 28, 1976, 51-129921

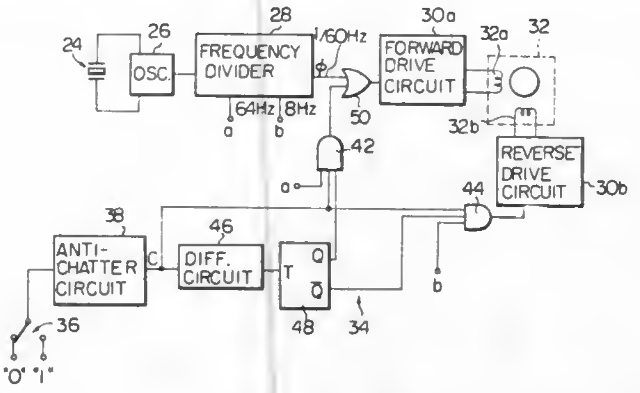
Int. Cl.² G04B *27/00;* **G04C** *3/00*

U.S. Cl. 368—80 6 Claims

1. A time correction system for an electronic timepiece having a frequency standard, a frequency divider providing a low frequency time unit signal, a first train of output pulses and a second train of output pulses, the frequencies of said first and second trains of output pulses being higher than the frequency of said time unit signal and different from one another, and a display device providing a display of time information in response to the time unit signal, said time correction system comprising:

a single push-button type correction switch responsive to actuation for producing a correction signal;

circuit means having a toggle effect and including first and second outputs at which first and second output signals alternately appear in response to each occurrence of said correction signal; and



means for correcting time information displayed by said display device in an advancing direction in response to said first train of output pulses and said first output signal, and for correcting the time information in a retarding direction in response to said second train of output pulses and said second output signal.

4,192,135
PORTABLE ELECTRONIC DEVICE

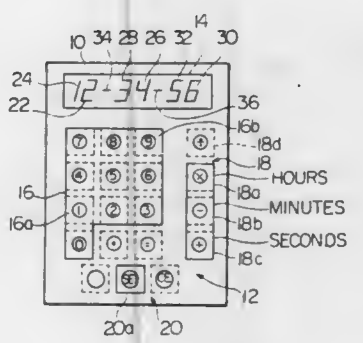
Heihachiro Ebihara; Fukuo Sekiya, both of Tokorozawa, and Takashi Yamada, Sayama, all of Japan, assignors to Citizen Watch Company Limited, Japan

Filed Dec. 22, 1977, Ser. No. 863,469

Claims priority, application Japan, Dec. 27, 1976, 51/157792; Feb. 9, 1977, 52/13338; Feb. 10, 1977, 52/15548[U]

Int. Cl.² G04C *9/00*

U.S. Cl. 368—62 6 Claims



1. In a portable electronic device having timepiece circuitry including a frequency standard providing a relatively high frequency signal, a timing signal generator responsive to the relatively high frequency signal, to provide a time unit signal, a timekeeping circuit responsive to the time unit to provide time data, a driver circuit responsive to the time data to provide drive signals and a display device responsive to the drive signal to provide a display of time by means of a plurality of groups of digits with each of said groups of digits comprising a units digit and a tens digit, the improvement comprising:

a plurality of numeric keys, each of said numeric keys providing a numeric signal when actuated;

a plurality of switch means, each of said switch means providing a digit selection signal corresponding to one of said groups of digits when actuated;

correction gate means provided in said timekeeping circuit;

detection and counter means responsive to said numeric signal for detecting at least two successive actuations of said numeric keys and for producing output signals indicative thereof; and

control circuit means responsive to said digit selection signal for generating an output signal indicative of one only of the units digit and tens digit of a group of digits selected for correction, and including means for applying said numeric signal to said correction gate means to correct said selected digit to a value corresponding to said numeric signal, and further responsive to an output signal from said detection and counter means for automatically shifting to select the as yet uncorrected one of said units digit and tens digit, whereby a numeric signal produced by a subsequent actuation of said numeric keys is applied to said correction gate means to correct said as yet uncorrected digit.

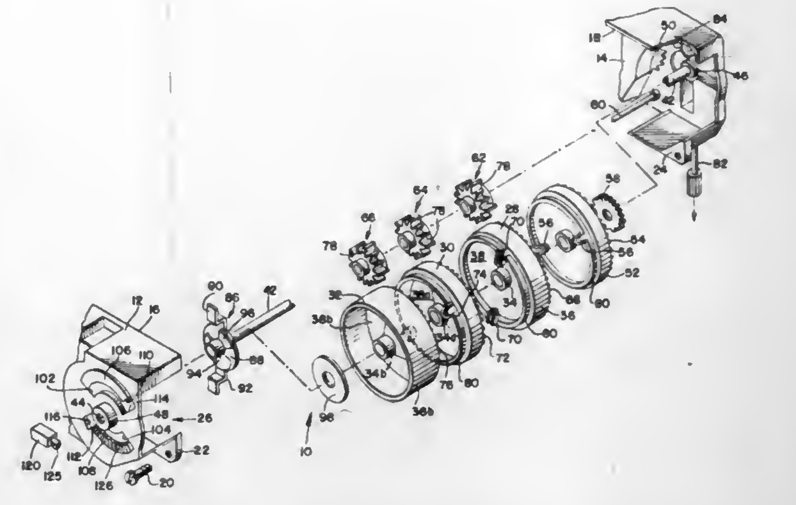
4,192,136
ADJUSTMENT OF READOUT MEMBERS IN A DIGITAL CLOCK

Ralph C. Robinson, Charlotte, N.C., assignor to General Time Corporation, Thomaston, Conn.

Filed Mar. 24, 1977, Ser. No. 780,842

Int. Cl.² G04B *19/02*

U.S. Cl. 368—222 12 Claims



1. A digital readout apparatus including, in combination, a plurality of members carrying indicia representative of units-of-minutes, tens-of-minutes, and hours, respectively, arranged in ordered sequence, a shaft, housing means supporting said shaft and said shaft, in turn, supporting said members for rotation whereby a readout of time may be viewed at a window in said housing means, means limiting axial receipt of said member of lowest order toward one end of said shaft, means for indexing said member of lowest order, second and third means cooperating, respectively, between pairs of members including said member of lowest order for indexing a member of higher order by a member of lower order whereby the indicia presentation located to said window will be indicative of time, and means acting between said housing means and said hour member which is capable of selective adjustment to any one of a plurality of positions whereby through adjustment said hour member and the member of next lower order may be located within limits of adjustment on said shaft to vary the clearance between all members.

4,192,137
TURBOSHAFT ENGINE

Marcus S. Chappell, Ottawa, and Douglas A. J. Millar, Winchester, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

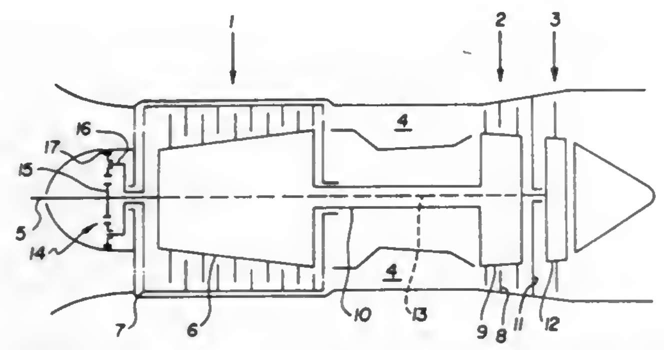
Continuation-in-part of Ser. No. 774,280, Mar. 4, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 935,118

Int. Cl.² F02C *3/10*

U.S. Cl. 60—39.16 R 1 Claim

1. A turboshaft engine comprising a compressor having a rotor and stator casing, a gas generator turbine having a rotor and a fixed stator, a power turbine having a rotor and a fixed stator, and an output shaft connected with the power turbine; said compressor rotor being connected with the gas generator turbine rotor; and said compressor stator casing being rotat-

ably mounted and coaxial with the compressor rotor and interconnected with the output shaft for allowing rotation of the compressor casing in the direction of the compressor rotor at a speed less than that of the compressor rotor and in proportion to the output shaft speed.



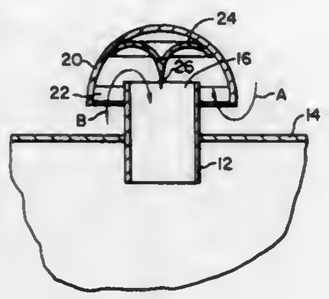
4,192,138
GAS TURBINE COMBUSTOR AIR INLET

Li-Chieh Szema, Nether Providence, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 29, 1977, Ser. No. 828,465

Int. Cl.^{2} F02C *7/00*

U.S. Cl. 60—759 **9 Claims**



1. In a combustion chamber for a gas turbine engine wherein said chamber comprises an axially extending shell member generally closed at the upstream end and having an array of openings through said shell at a predetermined axial location along said member for admitting air into said chamber, a generally radially extending tube member disposed within each of said openings to impart an inward direction to said air for penetration thereof into said chamber, said tube members extending both inwardly and outwardly of said shell to define an exterior air inlet and interior air outlet and wherein the improvement comprises:

a symmetrical cap member disposed to enclose said inlet in a spaced relation, with the innermost terminal periphery of said cap member radially inwardly of said inlet and having an inner diameter greater than the outer diameter of said tube member;

whereby all air entering said tube members must first flow generally outwardly into the space between said cap member and said inlet prior to entering said tube member, thereby providing a generally uniform flow into any one of said tube members irrespective of the generally random air flow exteriorly of said shell and also providing substantially equal flow through all of said tube members at said predetermined axial location on said shell.

4,192,139
COMBUSTION CHAMBER FOR GAS TURBINES

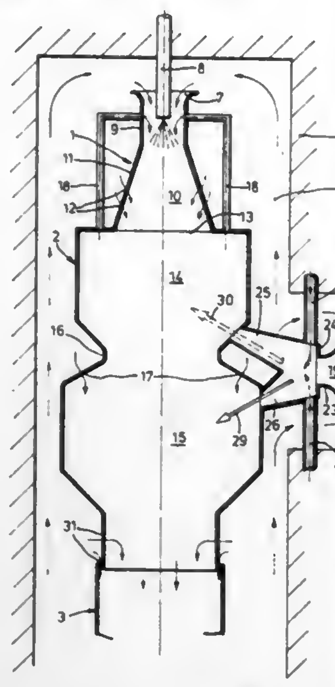
Rolf Buchheim, Brunswick, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 1, 1977, Ser. No. 812,386

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629761

Int. Cl.^{2} F02C *7/22*

U.S. Cl. 60—739 **8 Claims**



1. A combustion chamber for a gas turbine comprising a flame tube connected with an exhaust passage at its outlet end, and connected with a prechamber at its inlet end, said flame tube having first and second flame chambers and a narrow cross-section passage connecting said first and second flame chambers, wherein there are provided air inlet openings in the periphery of said flame tube on the downstream side of said narrow cross-sectional passage, said prechamber having a fuel delivery device and a ring-shaped air inlet opening at the end away from said flame tube, and having uncontrolled air inlet openings between said fuel delivery device and said flame tube, said prechamber having cross-sectional dimensions which are a selected amount smaller than the cross-section of said flame tube to cause a stable lean flame in said flame tube at fuel-air ratios below a selected value, and to cause flame flash-back and a stable rich flame in said prechamber at higher fuel-air ratios, associated with higher turbine loads, an auxiliary combustion chamber for producing an auxiliary flame, wherein said auxiliary combustion chamber is provided with a quantity of fuel for maintaining a rich auxiliary flame, first and second passages connecting said auxiliary combustion chamber with said first and second flame chambers, and wherein there are provided means for alternately directing said auxiliary flame through one of said passages into said first flame chamber or said second flame chamber in accordance with the load condition of said gas turbine.

4,192,140
APPARATUS AND METHOD RELATING TO INTERNAL COMBUSTION ENGINES UTILIZING AN EXHAUST GAS REACTOR

Ryuichi Yamashita, and Hiromitsu Matsumoto, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

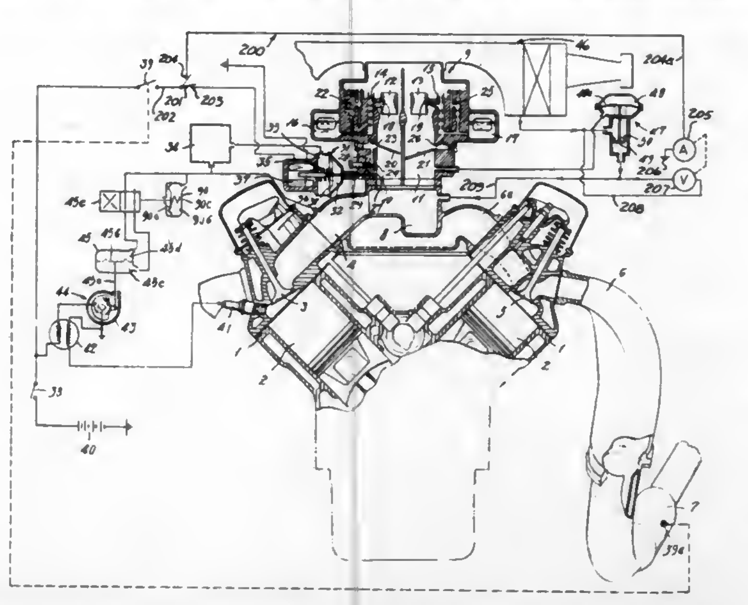
Filed Sep. 3, 1974, Ser. No. 501,856

Claims priority, application Japan, Jul. 16, 1974, 49-81553

Int. Cl.^{2} F01N *3/14*

U.S. Cl. 60—277 **13 Claims**

1. In a four-stroke, spark ignition, internal combustion engine adapted to utilize for operating conditions other than deceleration an air/fuel charge which is not richer than stoichiometric derived from a fuel supply means which delivers a fuel/air mixture that is not richer than stoichiometric, said engine being of the type which includes a combustion chamber, induction means for receiving said mixture and introducing said charge to the combustion chamber, an exhaust conduit for removing spent charge from the combustion chamber, an exhaust gas reactor in the exhaust conduit, and a throttle valve controlling flow of air into the induction means, the improvement comprising: means for enriching the charge in the induction means; means to lean the charge in the induction means; control means responsive to pressure in the induction means characteristic of the closure of the throttle valve at deceleration conditions, said control means operatively effective on the means for leaning the charge by adjusting the amount of air or fuel in the induction means for a predetermined and limited time after said closure; and control means responsive to said pressure operatively effective on said means to enrich said charge in the induction means by adjusting the amount of air or fuel in the induction means after a delay from said closure so long as the said pressure persists.



4,192,141
EXHAUST GAS PURIFYING SYSTEM FOR ENGINES

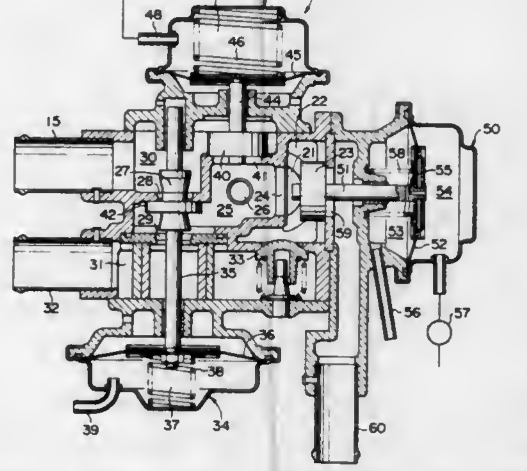
Takao Nonoyama, Toyota, and Takeru Yasuda, Nagoya, both of Japan, assignors to Toyota Jidosha Kegko Kabushiki Kaisha, Toyota, Japan

Filed Jul. 26, 1977, Ser. No. 819,158

Claims priority, application Japan, May 2, 1977, 52-50941; May 2, 1977, 52-50943

Int. Cl.^{2} F01N *3/15*

U.S. Cl. 60—290 **10 Claims**



1. An air control valve comprising a body, first, second, third, fourth and fifth valve chambers formed in said body and having individual port means opened towards the outside of said body, a first valve structure of a diaphragm type operable between a first shift position of communicating said first chamber to said second chamber while isolating said first chamber from said fifth chamber and a second shift position of isolating said first chamber from said second chamber while communicating said first chamber to said fifth chamber, a second valve structure of a diaphragm type having a single valve element and controlling communication and isolation of said second chamber to and from said third chamber as well as communication and isolation of said second chamber to and from said fourth chamber in a mutually related manner, a third valve structure of a diaphragm type for selectively communicating said second chamber to said third chamber, and a fourth valve structure of a springload type for selectively communicating said second chamber to said fourth chamber, wherein said first, second, third and fourth valve structures are incorporated in said body so as to provide an integral valve assembly.

4,192,142
EXHAUST PIPE AND MOUNTING THEREFOR

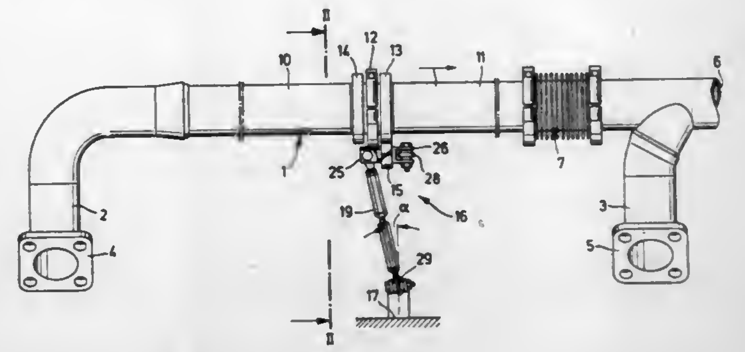
Gerd Häegele, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 15, 1977, Ser. No. 860,964

Claims priority, application Switzerland, Dec. 30, 1976, 16460/76

Int. Cl.^{2} F01N *7/00*

U.S. Cl. 60—322 **11 Claims**



1. In combination
- an exhaust pipe having an elongated part, a bent part extending from said elongated part and an axial compensator in said elongated part to compensate for changes in axial length of said elongated part;
- a pair of fixed support points; and
- a pair of props disposed in different planes relative to each other between said support points and one of said parts, each said prop being articulated at one end to a respective support point and at an opposite end to said one part and being inclined relative to said elongated part in a direction opposite to the direction of thermal expansion of said elongated part.

4,192,143
EXHAUST PIPE

Gerd Häegele, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 15, 1977, Ser. No. 860,965

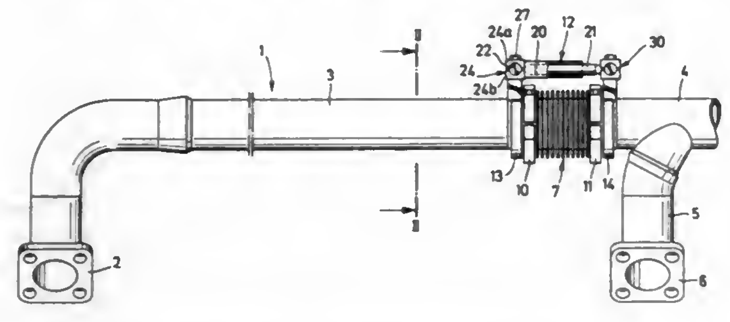
Claims priority, application Switzerland, Dec. 30, 1976, 016459/76

Int. Cl.^{2} F01N *7/00*

U.S. Cl. 60—322 **10 Claims**

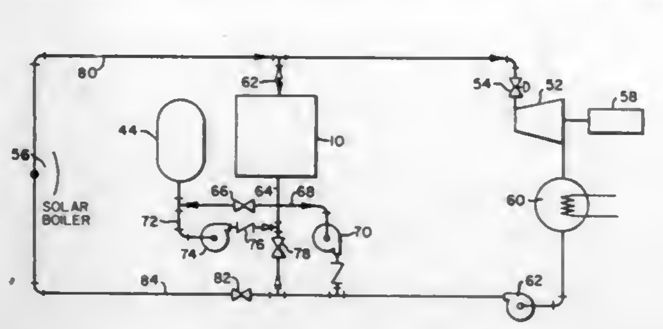
1. In combination,
- an exhaust pipe for a reciprocating internal combustion engine, said pipe having at least two coaxially disposed parts;
- an axial compensator connected to and between said parts to permit relative axial expansion between said parts; and

strengthening means for preventing sag in said axial compensator, said means including at least one sleeve secured to one of said parts and a mandrel secured to the other of said parts and slidably mounted in a respective sleeve.



4,192,144
DIRECT CONTACT HEAT EXCHANGER WITH PHASE CHANGE OF WORKING FLUID

Bill L. Pierce, Whitehall, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 761,048, Jan. 21, 1977, abandoned. This application Aug. 3, 1978, Ser. No. 930,767
Int. Cl.^{2} F03G *7/02*
U.S. Cl. 60—641 **6 Claims**



1. A direct contact storage heat exchanger system comprising:

a. a conduit for conducting a working fluid in a vapor phase from a solar boiler to a prime mover;
b. a pressure vessel having lower means for passing said working fluid solely in the liquid phase into and out of said vessel and upper means for passing said working fluid in the vapor phase from and to said conduit into and out of said vessel said lower means including a storage tank, piping connecting the bottom of said pressure vessel and said storage tank, and structure for selectively transporting said fluid in a liquid phase between said storage tank and pressure vessel;
c. means for thermally insulating said vessel;
d. a plurality of pebbles packed within and substantially filling said vessel, said pebbles comprised of a material having a relatively high capacity for storing heat energy; and
e. means for maintaining a liquid level of said working fluid within said vessel and for adjusting said liquid level so as to selectively effect a liquid-vapor phase change of said working fluid within said vessel and to receive and discharge vapor from said vessel in a manner so as to maintain a substantially constant pressure in said conduit.

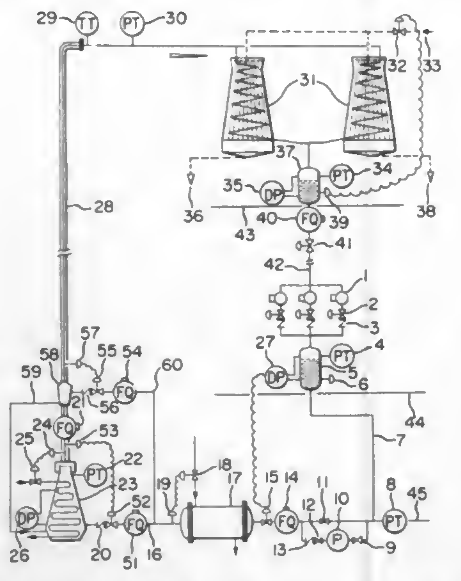
4,192,145
PROCESS FOR UTILIZING ENERGY PRODUCED BY THE PHASE CHANGE OF LIQUID

Seiyo Tanaka, Tokyo, Japan, assignor to Nihon Sekiyu Hanbai Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 25, 1977, Ser. No. 844,737
Int. Cl.^{2} F01K *7/00*
U.S. Cl. 60—675 **1 Claim**

1. Process for utilizing energy produced by the phase change of a liquid comprising the working fluid characterized in that

a step of ascending the vapor of the liquid from a low place to a high place utilizing the difference of the vapor pressure of the liquid between the vapor pressure generated when said liquid is vaporized by heating it at the low place and that generated when the said ascending vapor of the liquid is cooled to liquify it at the high place;

a step of cooling said ascending vapor at the high place to liquify it and preferably to utilize the heat energy of the ascending vapor when said vapor is liquified;

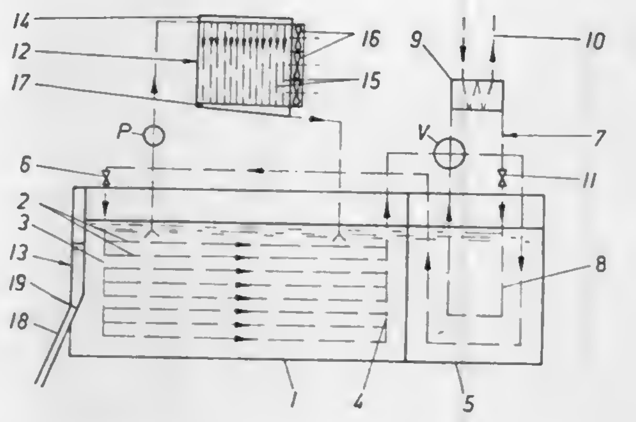


a step of utilizing the potential energy of the descending liquid by letting the liquid fall which has been liquified at the high place;

astep of vaporizing the liquid descended by repeatedly heating the liquid; and characterized in that the liquid is uniformly mixed with the saturated or the super-heated ascending vapor and the resulting vapor containing the mist of the said liquid is transferred from the low place to the high place.

4,192,146
PROCESS FOR THE RECOVERY OF ENERGY AND IN PARTICULAR FOR THE RECOVERY OF HEAT ON THE HEAT PUMP PRINCIPLE

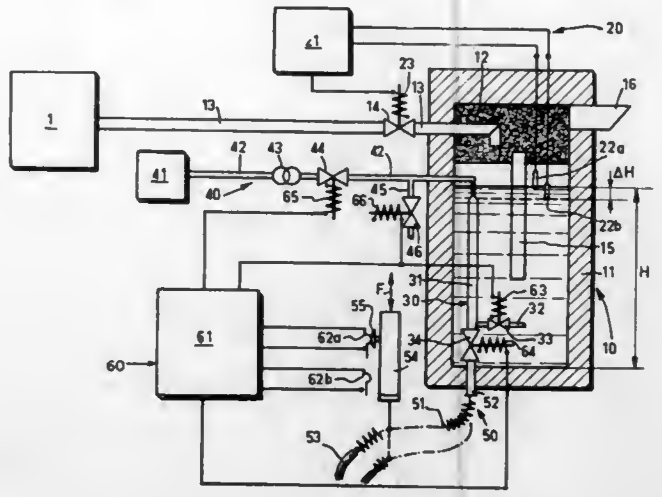
Helfried Credé, Fuchsbichl 9b, D-8021 Icking, Fed. Rep. of Germany
Filed Aug. 1, 1977, Ser. No. 820,435
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1976, 2634233; Apr. 4, 1977, 2715075
Int. Cl.^{2} F25B *27/00;* F25D *3/00;* F24H *7/00*
U.S. Cl. 62—2 **11 Claims**



1. A process for the recovery of thermal energy from generally available ambient sources of thermal energy, particularly from ambient air, whose temperature is above but may drop near 0° Centigrade, comprising the steps of exposing a confined body pf still water to heat exchange with at least one such source of thermal energy to transfer heat energy into the body of water and raise the temperature of the same; circulating a refrigerating medium through the body of water to withdraw heat energy from the same according to the heat-pump principle with the formation of ice therein when the temperature of said one source drops near 0° C.; continuing to effect withdrawal of heat energy from said body of water to withdraw the latent heat of fusion liberated during the formation of ice, so as to bridge those periods of time wherein said one source drops near or below 0° C. and until the temperature of said one source rises again; and thereupon re-melting the thus formed ice by heat exchange with said one ambient source of thermal energy.

4,192,147
ARRANGEMENTS FOR THE CONTROLLED INJECTION OF CRYOGENIC FLUID

Ghislain Gilbert, Bures-sur-Yvette; Gerard Bentz, Elancourt-Trappes, and Jean Galey, Voisins Bretonneux, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Filed Jun. 30, 1978, Ser. No. 920,678
Claims priority, application France, Jul. 5, 1977, 77 20553
Int. Cl.^{2} F17C *7/02*
U.S. Cl. 62—49 **14 Claims**



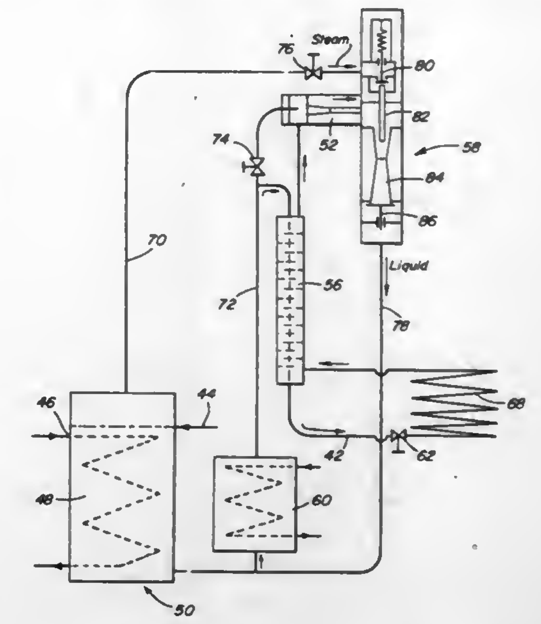
1. An arrangement for injecting a predetermined quantity of the liquid phase of a cryogenic fluid stored in a storage tank, said arrangement comprising in combination: a container to hold the liquid phase, means including a supply valve connected to said container for supplying cryogenic fluid thereto from said tank, a system connected to the supply valve for controlling said supply valve, which system is sensitive to the level of liquid in said container, at least one metering member having a discharge valve, means including a filling valve communicating with the holding container for feeding liquid from said holding container to said metering member, said member being arranged to receive said predetermined quantity of said liquid, liquid distributing means connected to said discharge valve, and control means for selectively opening and closing said filling valve and said discharge valve to thereby control the filling and emptying of said metering member.

4,192,148
DEVICE TO CREATE COOLING THROUGH USE OF WASTE HEAT

Emil H. Spreter von Kreudenstein, 3 Am Kreuzweg, 8026 Ebenhausen, Fed. Rep. of Germany
Filed Jun. 13, 1978, Ser. No. 915,297
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754783
Int. Cl.^{2} F25B *1/00, 1/06*
U.S. Cl. 62—116 **7 Claims**

5. A method of operating apparatus for cooling an input liquid by waste heat comprising heat exchange means for receiving said waste heat and vaporizing a refrigerant, valve means comprising a steam valve, a Venturi tube a liquid jet pump, and a check valve, and cooling means for removing heat from an input liquid, said valve means interruptedly circulating said refrigerant from the valve means through a return line to said cooling means and thence back to said valve means, said refrigerant being vaporized in said heat exchange means, interruptedly condensed in said valve means and intermittently discharged into said return line, a portion of said refrigerant in said return line being returned to said heat exchange means, said steam valve being spring loaded for introducing pressurized vaporized refrigerant from said heat exchange means into said Venturi tube, said liquid jet pump being connected to said return line for introducing into said Venturi tube refrigerant returned from said cooling means to said valve means, said check valve connecting said Venturi tube with said return line and permitting said refrigerant to flow only in the direction from said Venturi tube to said return line, said valve being located at a height above said heat exchange means, wherein heat removal means is provided for removing heat from a second input liquid, said heat removal means comprising an evaporator and an associated throttle valve, said throttle valve being adapted to receive refrigerant between said cooler and said valve means through an evaporator inlet line, said evaporator being adapted to discharge refrigerant to said valve means through an evaporator outlet line, the method comprising the steps of:

(a) introducing an input fluid containing waste heat into said heat exchange means, said input fluid having a temperature sufficiently high to vaporize and pressurize said refrigerant;
(b) withdrawing said input fluid from said heat exchanger;
(c) introducing a cooling fluid in heat exchange relationship with refrigerant in said cooler;
(d) withdrawing said cooling fluid;
(e) introducing an evaporator fluid in heat exchange relationship with refrigerant in said evaporator; and
(f) withdrawing said evaporator fluid.



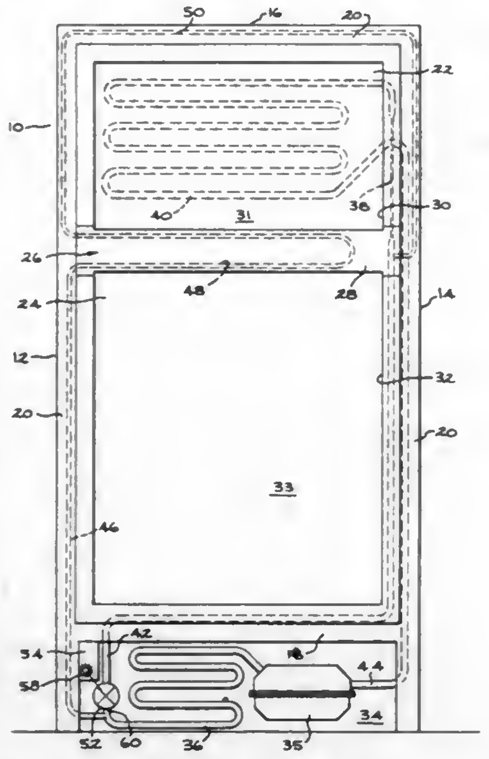
4,192,149
POST CONDENSER LOOP CASE HEATER CONTROLLED BY AMBIENT HUMIDITY

William M. Webb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Sep. 18, 1978, Ser. No. 943,607
Int. Cl.^{2} F25D *21/06*
U.S. Cl. 62—151 **9 Claims**

4. A multi-compartment refrigerator cabinet with a front opening including an outer sheet metal shell having top and sidewalls provided with an integral inturned flange at the front turned in substantially at a right angle to the top and sidewalls;

a mullion construction extending between said sidewall flanges with said mullion, said top wall flange and the portions of said sidewall flanges above said mullion defining a freezer front door opening, and said mullion and the portions of said sidewall flanges below said mullion defining a fresh food front door opening;

- a refrigeration system for said cabinet including a compressor, a condenser, an expansion device and an evaporator arranged in series relation with the condenser being connected to the expansion device by a liquid refrigerant flow line;
- valve means in said liquid flow line arranged intermediate said condenser and said expansion device;
- an auxiliary liquid line connected in bypass relation to the said valve means in said liquid refrigerant flow line, said auxiliary liquid line being connected into the liquid flow line in bypass relation with said valve, between the condenser and expansion device, said auxiliary liquid line having a first portion arranged in said mullion and a second portion arranged in said top and sidewall flanges defining said freezer front door opening;
- a control means including relative humidity sensing means for causing said valve to close when the relative humidity exceeds a predetermined level so that relatively warm liquid refrigerant will flow through said auxiliary liquid line to transfer heat to said flanges defining said freezer compartment front door opening.

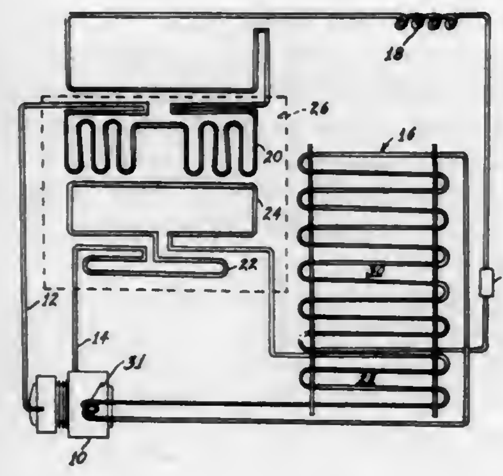


4,192,150
DEFROSTING ARRANGEMENT FOR A REFRIGERATOR
John P. Langan, 599 Springfield Ave., Newark, N.J. 07103, and Michael A. DeCicco, S. Bend, Ind., assignors to John P. Langan, Orange, N.J.

Filed Jun. 24, 1976, Ser. No. 699,340

Int. Cl.² F25B *47/00, 41/00*

U.S. Cl. 62—277 **6 Claims**



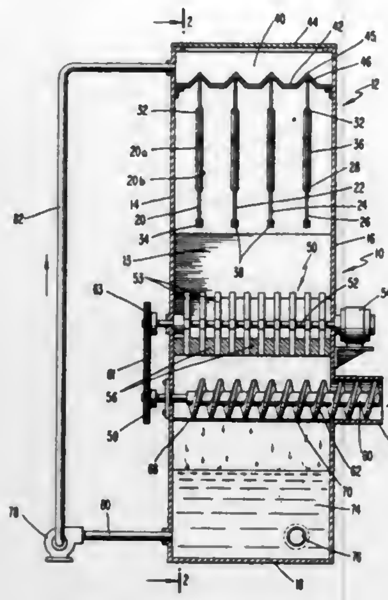
1. In a refrigeration system including a compressor; a compressor discharge line; a compressor suction line; a condenser; a refrigerant expanding device; and an evaporator; the evaporator being located in a refrigerator compartment, and the condenser, the expanding device and the evaporator being connected in series between said discharge and suction lines in positions wherein the expanding device is upstream with respect to the flow of refrigerant from the evaporator and the condenser is upstream from the expanding device; a heat transfer loop connected between and in series with said discharge line and the condenser to continuously receive hot liquid refrigerant from the compressor during the operation thereof, the loop being disposed in said compartment in contact with evaporator tubing to minimize the accumulation of frost at the evaporator.

4,192,151
ICE MAKING APPARATUS
C. Donald Carpenter, St. Louis, Mo., assignor to Vivian Manufacturing Company, St. Louis, Mo.

Filed Sep. 7, 1977, Ser. No. 831,296

Int. Cl.² F25C *5/02, 5/10*

U.S. Cl. 62—320 **9 Claims**



1. Apparatus for making clear ice, comprising:

plate means for forming ice sheets including,
- a pair of vertically oriented outer surfaces, the outer surfaces being generally planar and having an embossed pattern thereon, and
- a passageway including an inlet and an outlet, the passageway extending between the outer surfaces of the plate means in a generally tortuous path;

water distribution means for distributing water to the plate means including,
- chamber means for holding water, having a bottom member with an inverted "V" shaped portion being positioned above the plate means in close proximity thereto, the inverted "V" shaped portion having a plurality of orifices disposed throughout to provide a generally uniform flow rate of water from the chamber onto the outer surfaces of the plate means while avoiding entrainment of air into the water,
- tank means provided below the plate means for collecting excess water from the outer surfaces of the plate means, and
- a pump having an inlet in communication with the tank means and an outlet in communication with the chamber means;

sizing means provided between the plate means and the tank means for breaking ice sheets formed on the outer surfaces of the plate means into ice pieces having a predetermined maximum size;

conveying means provided between the sizing means and the tank means for removing the ice pieces from the apparatus; and

refrigerating and defrosting means for supplying a refrigerant fluid for icemaking and defrosting to the passageway of the plate means to loosen ice therefrom, including
- a compressor for pressurizing and raising the pressure and temperature of refrigerant fluid, having an inlet and an outlet,
- a condenser for lowering the temperature of compressed refrigerant fluid, having an inlet and an outlet, the condenser inlet being in fluid communication with the compressor outlet, and

conduit means for connecting the plate means outlet with the compressor inlet, selectively operable for connecting the condenser outlet with the plate means inlet during water freezing, and for connecting the compressor outlet with the plate means inlet during ice loosening,

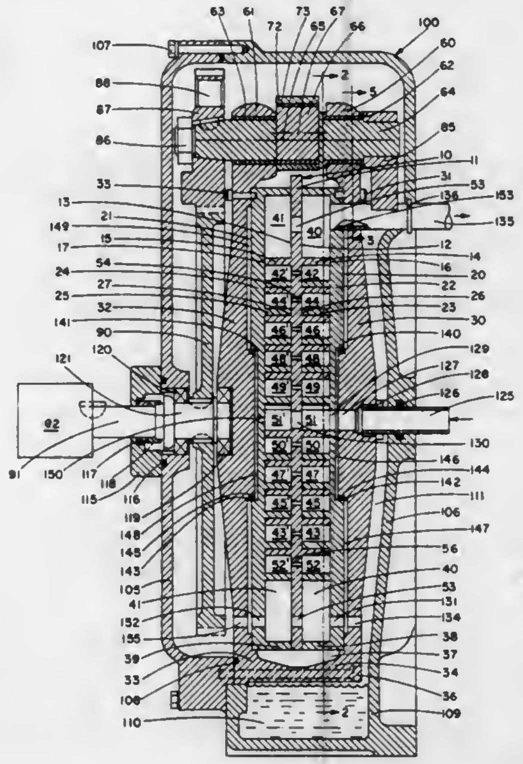
the refrigerating and defrosting means further including a valve provided in the conduit means between the plate means outlet and the compressor, immediately downstream of the plate means outlet and operable between open and closed positions, the open position permitting a flow of refrigerant fluid through the passageway of the plate means and the closed position preventing a flow of refrigerant fluid to increase pressure of the refrigerant fluid within the ice plate means, the pressure acting on the surfaces of the plate means to defrost the ice from the outer surfaces.

4,192,152
SCROLL-TYPE FLUID DISPLACEMENT APPARATUS WITH PERIPHERAL DRIVE
Allen E. Armstrong, Lexington, and John E. McCullough, Carlisle, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Apr. 14, 1978, Ser. No. 896,161

Int. Cl.² F01C *1/02, 11/00, 21/00;* F25D *17/00*

U.S. Cl. 62—402 **34 Claims**



1. A positive fluid displacement apparatus, comprising in combination
- (a) an orbiting scroll member comprising a plate having mirror-imaged involute wraps affixed to opposite surfaces of said plate and three, equally-spaced peripheral extensions;
- (b) first and second oppositely disposed stationary scroll members, each comprising an end plate having an involute wrap affixed thereto engageable with an involute wrap of said orbiting scroll member, whereby when said orbiting scroll member is orbited with respect to said stationary scroll members the flanks of said engaging wraps along with said plate of said orbiting scroll member and the internal facing surfaces of said end plates of said stationary scroll members define mirror-imaged moving pockets of variable volume and zones of high and low fluid pressures;
- (c) first and second oppositely disposed stationary scroll support members affixed to said first and second stationary scroll members, respectively, only around their peripheries, each of said support members having three, equally-spaced peripheral projections axially aligned with the peripheral projections of the opposed scroll support member;
- (d) three equally spaced crankshafts, each having affixed thereto a satellite gear and each being supported in said axially aligned projections of said opposed scroll support members and rotatable with respect to said stationary scroll members;
- (e) an orbiting scroll eccentric affixed to each of said crankshafts and interposed between said peripheral projections;
- (f) radially compliant linking means mechanically connecting said orbiting scroll member through said peripheral extension to said eccentrics whereby there is provided a three-link connection around said orbiting scroll member;
- (g) fluid passage means in fluid communication with said zones of high and low fluid pressures;
- (h) a central gear engageable with said satellite gears and mounted on a rotatable shaft; and
- (i) energy converting means connected to said rotatable shaft arranged to either drive said shaft or absorb energy from its rotation.

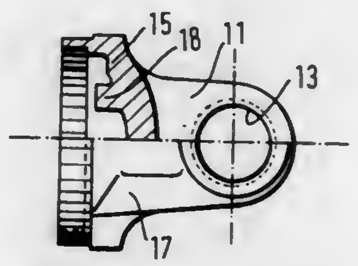
4,192,153
HOOKES JOINT YOKE
Leslie G. Fisher, Birmingham, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed Feb. 8, 1979, Ser. No. 10,385

Claims priority, application United Kingdom, Feb. 23, 1978, 7204/78

Int. Cl.² F16D *3/26*

U.S. Cl. 64—17 R **3 Claims**



1. A yoke for a hookes joint, comprising a base and two limbs extending from the base generally parallel to and spaced from the rotational axis thereof and defining apertures for receiving bearings to mount a cruciform member of the joint, wherein the yoke is formed of a lightweight metal and the limbs have generally axially extending edge regions which are provided with reinforcing flanges at least adjacent the base of the yoke, and the dimension of the base of the yoke measured parallel to said axis, at least in the region between adjacent base parts of the opposite limbs, is at least as great as the thickness of the portions of the limbs provided with said reinforcing flanges.

4,192,154
CONSTANT VELOCITY UNIVERSAL JOINT
Yozo Nakamura, and Morio Ohshina, both of Shimoinayoshi, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Japan

Filed Oct. 20, 1977, Ser. No. 844,122

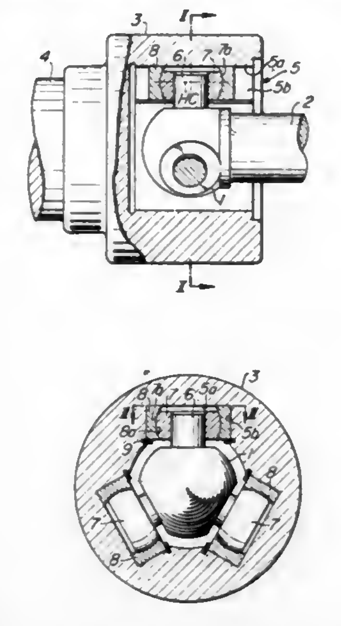
Claims priority, application Japan, Oct. 27, 1976, 51-128381

Int. Cl.² F16D *3/30*

U.S. Cl. 64—21 **10 Claims**

1. A three-roller type constant velocity universal joint, comprising a first drive member connected to a first shaft, a second

drive member connected to a second shaft, three radial yoke pins secured to said first drive member offset with respect to each other at equal angles, three inner movable members secured to said yoke pins and axial guide grooves in said second drive member, characterized in that said inner movable members are annular rollers, axially movable on said yoke pins, that three outer movable members are disposed on said inner movable members to rotate and tilt with outer peripheries of the outer movable members guided in the guide grooves in parallel with the rotational axis of said second drive member, and that an outside peripheral surface of said annular roller and an inside peripheral surface of said outer movable member mate and are both of segmental spherical contours and accommodate the tilting of the rotational axis of said inner movable member.



4,192,155
FLOATING CUSHION SUB

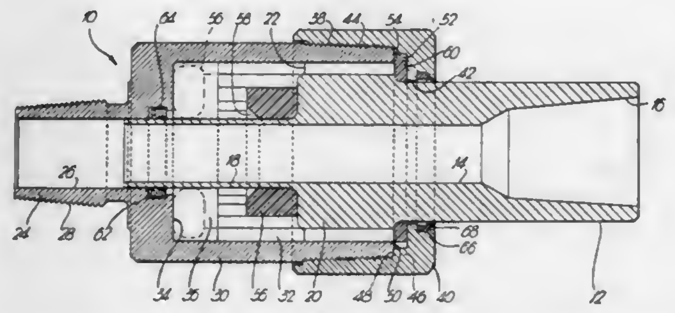
Gary D. Gray, Calgary, Canada, assignor to Bralorne Resources Limited, Calgary, Canada

Filed Jun. 5, 1978, Ser. No. 912,799

Claims priority, application Canada, Jul. 21, 1977, 283305

Int. Cl.^{2} F16D *3/06;* **E21B** *17/00*

U.S. Cl. 64—23 **1 Claim**



1. An axially floating cushion sub for a drill string comprising:

(a) a mandrel having an axially extending through bore, a box end for connection to a pin end of a drill string member, a radially enlarged central portion adjacent said box end, a plurality of circumferentially spaced, axially extending external splines on said central portion, and an axial extension extending from said central portion at the end opposite said box end;

(b) an outer housing having a pin end for connection to a power head of a drill rig, an axially extending through bore in said pin end for receiving said mandrel axial extension therein, a radially enlarged annular portion adjacent the pin end, and a plurality of circumferentially spaced, axially extending internal splines in said annular portion engageable with the external splines of said mandrel central portion;

(c) a cup-shaped cap member having an end wall with a through bore for reception of said mandrel box end, said cap member bring threadably engageable with said outer housing annular portion for retaining said mandrel within said outer housing and for limiting relative axial movement between said mandrel and said outer housing, said cap member having an internal step adjacent said end wall for abutting engagement with an end face of said outer housing annular portion;

(d) a first annular urethane cushion fitting tightly over said mandrel extension and being positioned within an annular cavity formed radially between said mandrel extension and said outer housing annular portion, and axially between said mandrel central portion and said outer housing pin end;

(e) a second annular urethane cushion fitting tightly over said mandrel box end and positioned within a cavity formed radially between said cap member internal step and said mandrel box end;

(f) a wiper ring positioned in an annular recess of said cap member bore for sealing engagement with said mandrel box; and

(g) a rod seal positioned in an annular recess of said pin end through bore for sealing engagement with said mandrel extension.

4,192,156
KNITTING METHOD AND APPARATUS

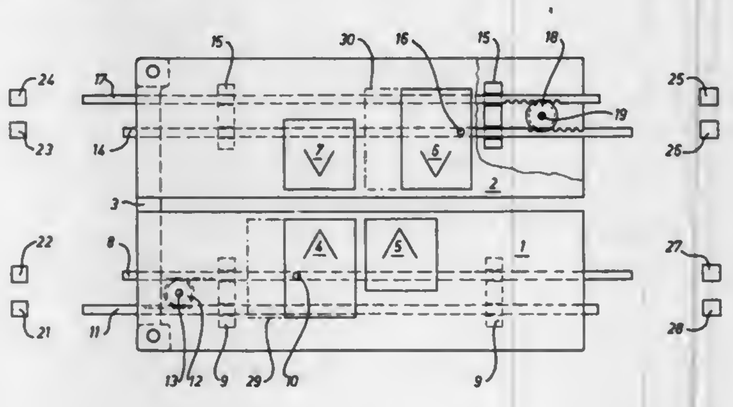
Fritz Kohler, Couvet, Switzerland, assignor to Edouard Dubied & Cie (Société Anonyme), Couvet, Switzerland

Filed Jul. 7, 1978, Ser. No. 922,642

Claims priority, application Switzerland, Jul. 25, 1977, 9173/77

Int. Cl.^{2} D04B *7/04*

U.S. Cl. 66—64 **9 Claims**



1. The method of obtaining a knit on a knitting machine having at least two needle beds in which needles can slide and at least one knitting carriage including a pair of cam plates each of which has a knitting system mounted thereon comprising the steps of reciprocating said carriage to form rows of stitches and selectively varying the relative position of one knitting system on one cam plate with respect to the knitting system on the other cam plate during displacement of the knitting carriage thereby to change the stitch pattern produced by the machine.

4,192,157
KNITTING WIDTH INDICATION SYSTEM FOR KNITTING MACHINES

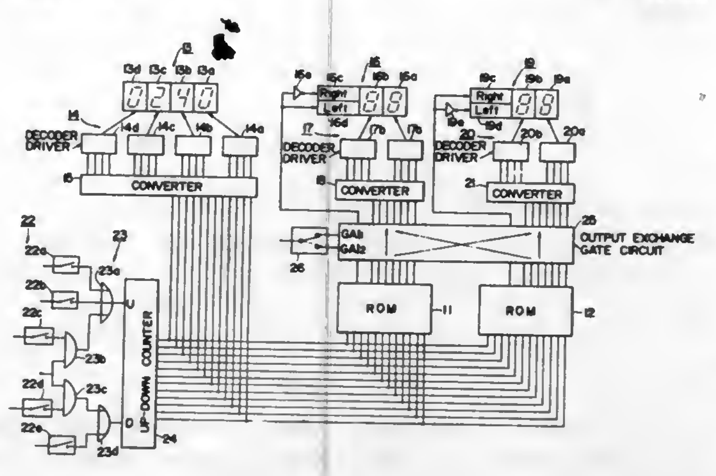
Takashi Hida, Toyota; Tsutomu Mitsui, Chiryu; Tadaaki Hashiride, and Kazutaka Kuwana, both of Toyota, all of Japan, assignors to Aisin Seiki Co., Ltd., Japan

Filed Feb. 23, 1978, Ser. No. 880,563

Claims priority, application Japan, Mar. 2, 1977, 52-22927; Mar. 11, 1977, 52-27258; Mar. 15, 1977, 52-28279

Int. Cl.^{2} D04B *7/10*

U.S. Cl. 66—76 **11 Claims**



1. A knitting width indication system for knitting machines, comprising:

electronic memory device means for storing a plurality of fabric piece outline data;

pattern width indication display device means for displaying knitting information;

electronic control circuit means for addressing the electronic memory device means, said electronic control circuit means including at least a manually operated switch circuit to set the read out address for the electronic memory device means and a read out address increment circuit which is energized in synchronism with the traversing movement of the carriage of the knitting machine; and

manually operated change over circuit means, responsive to the electronic control circuit means, for selectively supplying the pattern width indication display device means with fabric piece outline data or data representing the stitch difference between successive steps of a fabric piece outline.

4,192,158
WEFT THREAD TENSIONING DEVICE FOR WARP KNITTING MACHINES

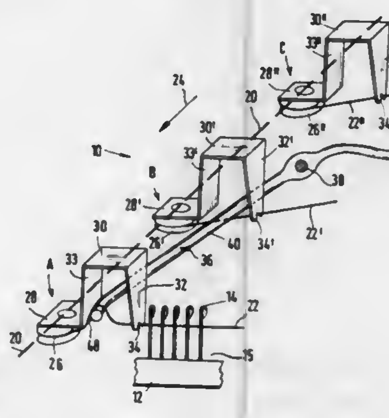
Karl Kohl, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Aug. 7, 1978, Ser. No. 931,778

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2736976

Int. Cl.^{2} D04B *15/44*

U.S. Cl. 66—146 **7 Claims**



1. A weft thread tensioning device for a warp knitting machine having a needle bar with a plurality of needles affixed thereon forming a needle bed, at least two guide bars with a plurality of guides affixed thereon and a magazine insertion device for inserting weft threads by presenting said threads to said needle bed, comprising:

(a) means of testing the tension of said weft threads, prior to presentment to said needle bed; and

(b) means for tensioning said weft threads just prior to presentment to said needle bed to a predetermined amount when said threads are below said predetermined tension amount.

4,192,159
APPARATUS FOR THE PRODUCTION OF LOOP PILE WARE ON WARP KNITTING MACHINE

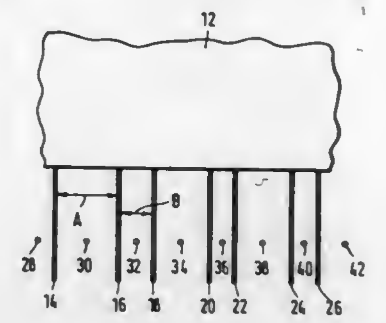
Karl Kohl, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed May 8, 1978, Ser. No. 903,690

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722253; Jul. 21, 1977, 2732968

Int. Cl.^{2} D04B *23/00, 27/00*

U.S. Cl. 66—203 **4 Claims**



1. In a warp knitting machine utilizing a plurality of threads for the production of loop pile ware, said threads being at least pile loop threads, pillar loop threads and weft threads, and having a sinker bar with a plurality of sinkers affixed thereon, said sinkers being unequally spaced on said sinker bar, a larger space passing therethrough a plurality of threads and a smaller space passing therethrough a single thread during stitch formation.

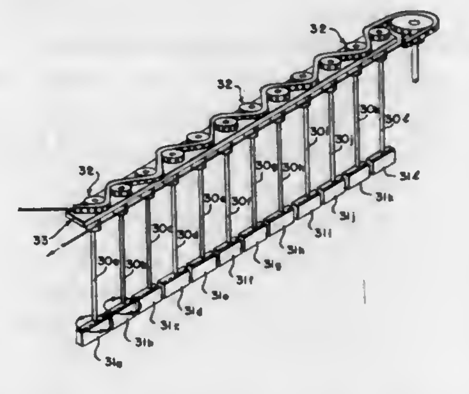
4,192,160
FABRIC AND APPARATUS AND METHOD FOR MAKING SAME

Daniel Duhl, New York, N.Y., and Denton B. Wall, Tarboro, N.C., assignors to Polylok Corporation, New York, N.Y.

Division of Ser. No. 810,874, Jun. 28, 1977, Pat. No. 4,144,727. This application Sep. 11, 1978, Ser. No. 941,258

Int. Cl.^{2} D04B *23/00, 27/00*

U.S. Cl. 66—207 **25 Claims**



1. An apparatus for guiding a plurality of warp yarn design elements onto a flexible substrate in a twisted and aesthetically pelasing configuration at spaced intervals along the warp di-

rection in a stitch-through type machine such as a Malimo machine, comprising:

- a shaft rotatable about its longitudinal axis and linearly movable in the direction of said axis; and
- a guide bar having a plurality of spaced-apart warp yarn design element guides joined to the shaft at an angle and rotatable with the shaft about the axis,

said apparatus being adapted to be mounted on the machine and rotatably disposed with respect to the longitudinal axis of the shaft.

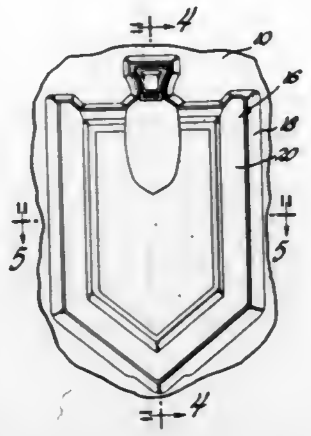
4,192,161
ESCUTCHEON AND COVER ASSEMBLY FOR A LOCK CYLINDER

Hans J. Borlinghaus, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 18, 1978, Ser. No. 943,450

Int. Cl.² E05B *17/18*

U.S. Cl. 70—455 **3 Claims**



1. An escutcheon and cover assembly for a lock cylinder mounted in a vehicle body trunk lid, said assembly comprising an escutcheon having a plurality of attaching locations to which access must be had to secure the escutcheon to the vehicle body trunk lid, said escutcheon having a face with an opening therethrough for providing access to the lock cylinder, a cover, means mounting the cover on the escutcheon for pivotal movement across said face and lateral movement to a limited extent away from said face, said cover and escutcheon having first cooperating stop means for normally engaging and stopping said cover in a closed position covering both said opening and said attaching locations when said cover is pivoted in one direction while being retained in juxtaposed relationship with said face but disengaging and permitting said cover to continue pivoting in said one direction to an escutcheon attaching position uncovering all of said attaching locations when said cover is moved away from said face a limited extent, said cover and escutcheon having second cooperating stop means for engaging and stopping said cover in said escutcheon attaching position when pivoted in said one direction from said covering position, and resilient return-detent means operatively connected between said escutcheon and said cover for biasing said cover in said one direction and also against said face of said escutcheon to normally retain said cover in its closed position and yieldingly permit pivotal movement of said cover in the opposite direction to an open position in response to a pivotal force applied to said cover in said opposite direction to provide normal access to said lock cylinder and also yieldingly permit lateral movement of said cover away from said face to disengage said first cooperating stop means in response to a lateral force applied to said cover and then force pivotal movement of said cover in said one direction to said escutcheon attaching position to provide access to said attaching locations.

4,192,162
METHOD AND APPARATUS FOR THE EXTRUSION OF TUBES OF EASILY OXIDIZED MATERIALS

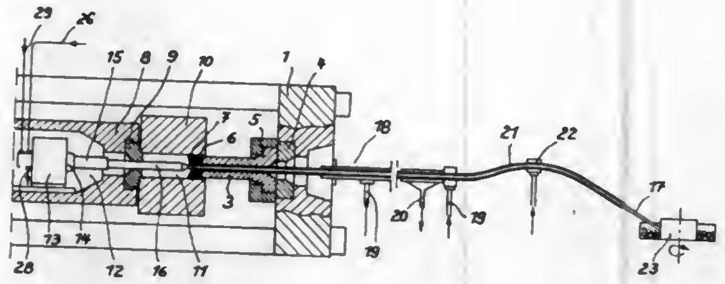
Franz-Josef Zilges, Monchen-Gladbach, and Heinrich Kutz, Neuss, both of Fed. Rep. of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,773

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739800

Int. Cl.² B21B *45/02*

U.S. Cl. 72—45 **3 Claims**



1. A method of extruding tubes of easily oxidised material from heated billets with central axial bores through an annular gap formed by an extrusion die and the tip of a hollow mandrel positioned in the die aperture, the method comprising the following steps:

- placing the billet in a billet container of an extrusion press;
- pressing the mandrel into the billet along the bore thereof, the mandrel having a diameter greater than the diameter of the bore so that the bore is widened as the mandrel is pressed in;
- terminating the preceeding step once the leading end of the mandrel has entered the die aperture;
- extruding the billet;
- blowing protective gas into the interior of the extruded hollow tube through the mandrel; and
- cooling the extruded tube in a cooling section arranged immediately downstream of the die around the outside of the tube, with the protective gas remaining inside the tube up to the end of the cooling section distal from the die.

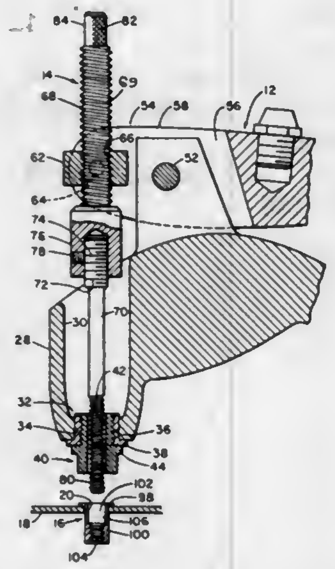
4,192,163
TOOL FOR SETTING BLIND FASTENERS

Alan Martin, 44 Lantern La., Sharon, Mass. 02067

Filed Nov. 20, 1978, Ser. No. 961,869

Int. Cl.² B21J *15/34*

U.S. Cl. 72—114 **4 Claims**



1. A blind threaded fastener setting tool comprising:

- a frame having a head at one end and a grip at the other end,
- an opening extending through the head generally perpendicular to the grip,
- a pivot post on the frame adjacent the opening,

- a lever pivotally mounted on the pivot post and having a grip extending generally is the same direction with respect to the pivot post as the frame grip,
- a cradle pivotally carried by the lever on the side of the pivot post corresponding to that of the head,
- a shaft threaded through the cradle and extending through the opening in the head, said shaft being pulled in one direction out of the opening when the grips are squeezed together and being moved in the opposite direction when the grips are spread apart,
- said shaft having a threaded end portion extending through the opening in the head for screwing into a blind threaded fastener, the threads on the threaded end being opposite to the threads of the shaft threaded into the cradle,
- said shaft moving axially through the cradle when the shaft is rotated about its axis to screw into an internally threaded fastener,
- and means on the shaft at its end opposite the threaded end for rotating the shaft in the cradle to screw into the fastener and to cause the shaft to move axially in the head opening so as to vary the amount the threaded end extends out of said opening.

4,192,164
ROLLING MILLS

Hans Brauer, Leichlingen, Fed. Rep. of Germany, assignor to Friedrich Kocks GmbH & Company, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,731

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1977, 2732496

Int. Cl.² B21B *1/18*

U.S. Cl. 72—234 **14 Claims**

1. A rolling mill for the single-strand rolling of bar sections which rolling mill has successively one behind the other in a straight rolling line at least one multi-stand roughing block for the purpose of main deformation and a finishing block for after-sizing, the cross section of the work-material beyond the last roughing stand being substantially the same as its finished cross section, in which the rolls of at least the two last stands before the entry end of the finishing block are adjustable radially of the run-through axis of the work-material, and the rolls of the finishing block are not adjustable, the latter being provided with driving means for driving the rolls at speeds which do not change during a given run but which may be changed upon a change of dimensions between runs, and in which the entire reduction in the cross section in the finishing block does not fluctuate between more than approximately 2 and 12%, only ⅔ to ¾ of this reduction being applicable to the nominal reduction of the cross section, and the remaining available reduction serving to compensate for cross-sectional irregularities, and the rolling sizing passes of the finishing block are interchanged upon each change of shape and/or dimension between runs whereas the rolling sizing passes of the roughing stands or roughing blocks only having to be changed upon a change of area exceeding approximately 8% to 15% between runs.

4,192,165
ROLL MILL STAND

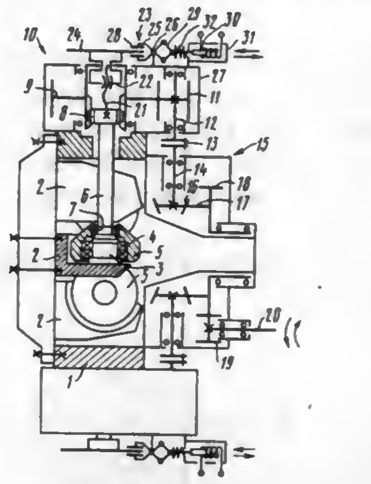
Vladimir N. Vydrin, ulitsa Timiryazeva, 28, kv. 27; Leonid A. Barkov, ulitsa K. Tsetkin, 30a, kv. 13; Valery V. Pastukhov, ulitsa Stalevarov, 28a, kv. 79; Sergei I. Dolgov, ulitsa Lenina, 68, kv. 20, and Vladimir S. Sysoev, ulitsa Artilleriiskaya, 65b, kv. 6, all of Chelyabinsk, U.S.S.R.

Filed Jan. 2, 1979, Ser. No. 94

Int. Cl.² B21B *31/08, 35/14*

U.S. Cl. 72—238 **3 Claims**

1. A roll mill stand comprising: a housing; chocks mounted on said housing; journals fixed in said chocks; work rolls forming a pass supported by said journals; a drive means for rotating at least one of said work rolls; a spindle connected by one of its ends to one of said work rolls; a pinion connected by a splined joint to the other end of said spindle and geared to said drive means; a device for axial displacement of said spindle intended to disconnect said spindle from one of said work rolls and comprising: a motion screw mounted in-line with said spindle and connected to its other end, a nut of said motion screw mounted on the hub of said pinion for rotation with respect to said nut, a disk fixed to an end face of said nut, a braking mechanism mounted on the fixed part of said roll mill stand and cooperating with said disk of said nut as said nut is being braked to disengage said spindle from one of said work rolls.



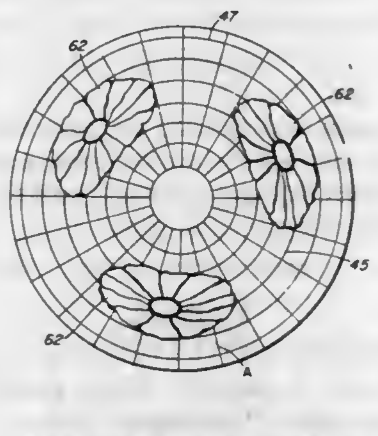
4,192,166
DECORATED METAL OBJECTS DRAWN FROM DECORATED BLANKS

Robert M. Johnson, Providence, R.I., assignor to Reed and Barton Corporation, Taunton, Mass.

Filed Dec. 19, 1977, Ser. No. 861,612

Int. Cl.² B21D *22/00*

U.S. Cl. 72—347 **7 Claims**



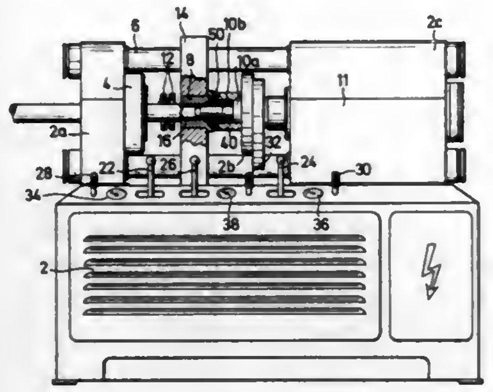
1. The method of making a shaped metal object drawn from a sheet metal blank of a base metal having thereover a design in one or more decorative metals, said method comprising:

- (a) providing a flat metal blank of a size suitable for forming said object,
- (b) forming on said blank an undistorted grid of intersecting lines,
- (c) drawing said blank into the shape of said object to distort the grid lines according to the deformation of the metal in forming the object,
- (d) preparing a flat representation of at least that portion of the distorted grid on the portion of the object surface to be decorated,
- (e) applying at least the outline of each color of the desired design to said flat representation,
- (f) transferring the design from said representation to said undistorted grid by locating portions of the design intersecting the distorted grid line intersections at the corresponding grid line intersections on the undistorted grid, thereby forming a distorted design,

(g) reproducing said distorted design in decorative metal on a flat blank of said base metal, and
(h) drawing said decorated blank to form said object.

4,192,167
PROCESS AND APPARATUS FOR UPSETTING PIPE ENDS

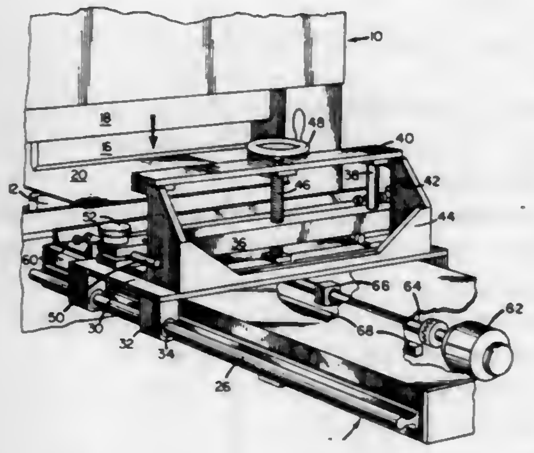
Bernhard Huebner, Trier, and Dietfried Tresser, Gusterath, both of Fed. Rep. of Germany, assignors to Laeis-Werke Aktiengesellschaft, Trier, Fed. Rep. of Germany
Filed Aug. 15, 1978, Ser. No. 933,920
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812803
Int. Cl.² B21D *22/00*
U.S. Cl. 72—356 **8 Claims**



1. A process for upsetting pipe ends, in particular ends of drill pipes forming tool joints comprising the steps of
fixedly positioning a pipe end of a drill pipe having a predetermined internal diameter into fixed first die means, said pipe end and first die means defining a free annular space therebetween;
in a first process step axially moving a mandrel toward said pipe end fixedly positioned in said first die means to thereby deform said pipe end by upsetting it and at least partially fill said annular space so that a cylindrical pipe section and a conical transfer zone are formed in said pipe end when positioned by said first die means and said predetermined internal diameter in said pipe and pipe end are maintained; and
in a second process step moving said pipe end out of said first die means, fixing said moved out pipe end in position and at least partially inwardly swaging said moved out pipe end by means of a swaging tool.

4,192,168
GAGING SYSTEM WITH PIVOTABLE GAGE BAR

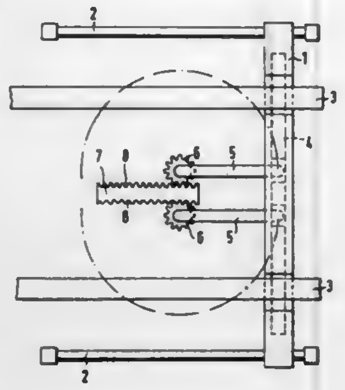
James J. Di Ciaccio, Somerville, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.
Filed Jan. 4, 1979, Ser. No. 903
Int. Cl.² B21D *11/22*
U.S. Cl. 72—389 **11 Claims**



1. For use in a gaging system employed with a sheet forming machine and having a table movable along a travel path, a gage bar assembly mounted on the table, said assembly comprising:
an elongated gage bar attached to the table and having a gaging surface against which a sheet can be positioned, and a longitudinal axis about which the bar is symmetrically disposed;
support arms each attached at one end to the table and each pivotally attached at the opposite end to the gage bar;
means for pivotally attaching the gage bar to the confronting support arm ends at a pivot axis disposed at the longitudinal axis thereof; and
a biasing mechanism coupling the pivotal end of each support arm and the gage bar and operative to urge the bar to a rest position in the absence of an upward force applied to the gaging surface of the bar.

4,192,169
APPARATUS FOR DRIVING A PAIR OF GRIPPER BARS IN A LONGITUDINAL DIRECTION

Werner Münch, and Gerald Mikusch, both of Göppingen, Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany
Filed Sep. 6, 1978, Ser. No. 940,092
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1977, 2740211
Int. Cl.² B21D *43/05;* **B65G** *25/04*
U.S. Cl. 72—405 **5 Claims**

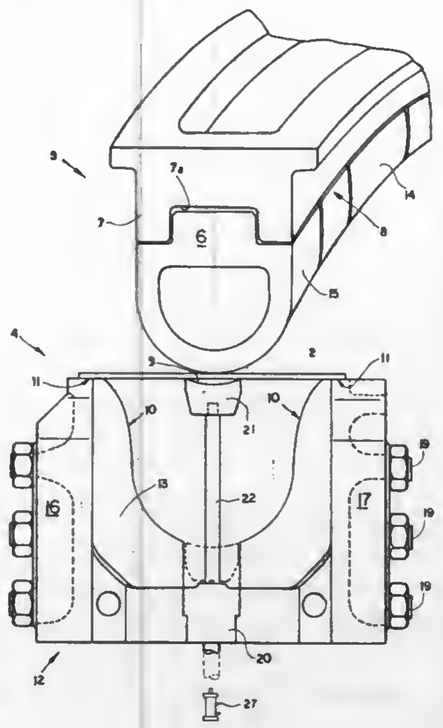


1. An apparatus for driving a pair of gripper bars of a multistage press in a longitudinal direction of the press, the apparatus including a pair of driven levers disposed symmetrically to a longitudinal center plane of the press and being rotatable in unison over a turning path of 180°, a slide guide means extending at right angles to the longitudinal direction of the press, the pair of driven levers being operatively connected to the slide guide means, characterized in that at least one feed cross member is operatively connected to a pair of gripper bars and to the slide guide means, two toothings are provided and disposed symmetrically with respect to the longitudinal center plane of the press, the two toothings are mounted so as to be conjointly reciprocatorily driven between two end positions, a rotatably mounted pinion is provided for engaging each of the two toothings, each of the pinions have a rotational path of 180° between the two end positions of the toothings, and in that each of the pinions is rotatably mounted at one end of the pair of driven levers.

4,192,170
DRAWING DIE FOR MAKING A PIPE ELBOW

Josef Ferwagner, Hofleite 8, 4630 Bochum, Fed. Rep. of Germany
Filed Dec. 12, 1978, Ser. No. 968,865
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757658
Int. Cl.² B21D *11/20*
U.S. Cl. 72—414 **10 Claims**

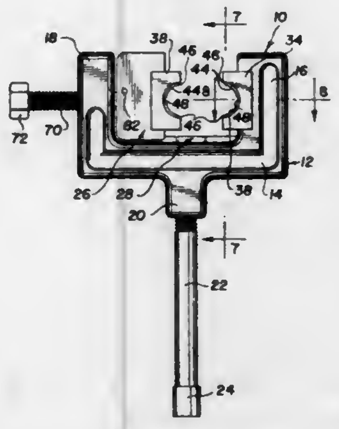
1. A die assembly for making a tubing elbow, said assembly comprising:
an upper die half including
an upper arcuate relatively long holder,
a plurality of relatively short and arcuate upper die sections secured in an upper row to said upper holder and having arcuate and downwardly convex lower faces together forming an elongated and substantially continuous downwardly convex arcuate lower surface, and
an upper end section at each end of said upper row and each having a generally semicylindrical downwardly convex face forming a continuation of said lower surface; and a lower die half comprising



a lower arcuate relatively long U-section holder,
a plurality of relatively short and arcuate lower die sections secured in a lower row to said lower holder and having arcuate and upwardly concave upper surfaces together forming an elongated and substantially continuous upwardly concave arcuate upper surface, and
a lower end section at each end of said lower row and each having a generally semicylindrical upwardly concave face forming a continuation of said upper surface, said upper sections being receivable within said lower sections.

4,192,171
HAND HELD CRIMPING TOOL

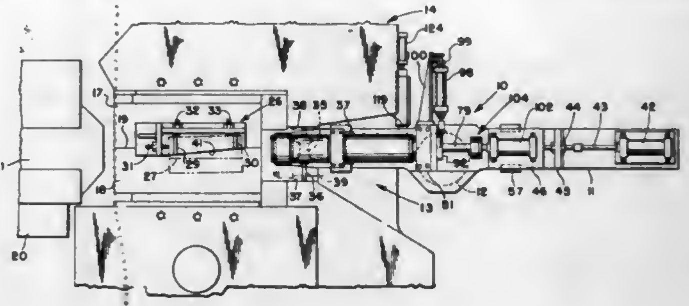
Jerry W. Hamilton, Desoto, Tex., assignor to Automatic Tool Company, Inc., Ferris, Tex.
Filed Mar. 23, 1978, Ser. No. 889,317
Int. Cl.² B21D *7/00, 37/10*
U.S. Cl. 72—416 **4 Claims**



1. A device for crimping a rigid, tubular ferrule for securing a coupling to a flexible hose comprising: support means a central web on said support means; a guide track extending longitudinally of said web; a first jaw on said support means, said first jaw extending outwardly from said web; a flange on said support means, said flange extending outwardly from said web in spaced relation from said first jaw; a second jaw; means moveably securing said second jaw to said guide track; means secured between said flange and said second jaw for moving said second jaw along said guide track; a saddle formed in each of said first and second jaws, each of said saddles having a pair of spaced shoulders adjacent ends thereof; a pair of crimping dies, each of said crimping dies having a groove formed therein so as to provide spaced projections extending along edges of each of said dies, said saddles and said grooves being complimentary such that opposite ends of said dies engage said shoulders to limit movement of said dies in a first direction and such that said projections engage said jaws adjacent opposite sides of said saddles to limit movement in a second direction; and locking means detachably securing said crimping dies in said saddles.

4,192,172
FORGING MACHINE TRANSFER FOR HEAVY WORKPIECES

Leo D. Mersek, Richmond Heights, and Peter P. Rettig, Willoughby, both of Ohio, assignors to The Ajax Manufacturing Company, Cleveland, Ohio
Continuation of Ser. No. 622,080, Oct. 14, 1975, abandoned. This application Apr. 13, 1978, Ser. No. 896,005
Int. Cl.² B21D *43/05, 43/06, 43/10, 45/06*
U.S. Cl. 72—420 **20 Claims**



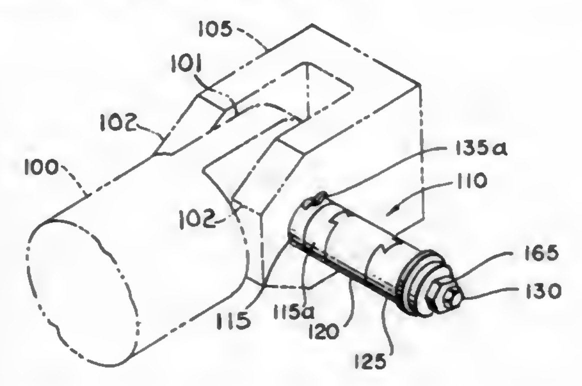
1. A transfer mechanism for moving relatively large workpieces through the die stations of a horizontal forging machine having a stationary and movable die and forging dies, comprising: collet means for gripping a workpiece, a platform for supporting said collet means, means to index longitudinally along an axis thereof said platform while said collet means grips the workpiece to transfer the workpiece in one direction from a loading station through successive forging die stations, said platform being pivotal about such axis, and means to swing said platform about such axis for removal of the workpiece from within the confines of the stationary die, and the longitudinal axis of said collet means not intersecting the axisof said means to index.

4,192,173
ECCENTRIC PIN MOUNTING SYSTEM

Leo E. Ay, San Juan Capistrano, and Ramon E. Arriaza, Fountain Valley, both of Calif., assignors to Pacific Scientific Company, Anaheim, Calif.
Filed Jul. 26, 1978, Ser. No. 928,194
Int. Cl.² G01M *19/00*
U.S. Cl. 73—11 **26 Claims**

1. A mounting device supporting a motion snubber useful for inducing motion in said snubber to permit testing of the snubber in place comprising:
pin means supporting said snubber including a main portion to be disposed within pin supporting structure where said snubber is mounted;
a movable portion disposed axially adjacent said main portion and within a mounting element on said snubber, movable between a concentric position and an eccentric position with respect to said main portion while supporting said snubber;
means formed in said pin means for guiding the movement of

said movable portion between said concentric position and said eccentric position; and

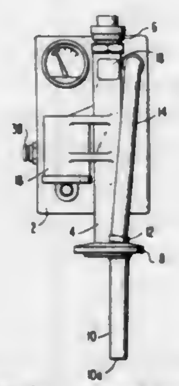


means for affixing the position of said movable portion in said eccentric position or in said concentric position.

4,192,174
TRANSFORMER PROTECTIVE DEVICE

Claude Lobermann, Chaville, and Jean-Claude Croitoriu, Viroslay, both of France, assignors to Automation 2000 S.A., Chaville, France

Filed Oct. 6, 1977, Ser. No. 839,888
Int. Cl.^{2} H02H *7/04*
U.S. Cl. 73—19 9 Claims

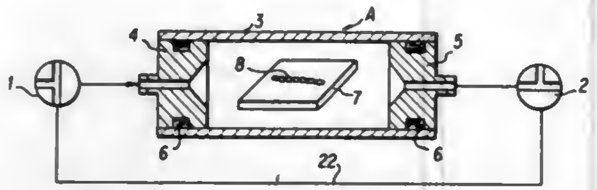


1. Apparatus for measuring conditions in a liquid dielectric filled transformer, comprising: a housing;
generally elongated cylindrical means fixed to said housing and having one closed end and a second end which is adapted to be in open communication with dielectric liquid in the interior of the transformer casing;
a member fixed to said housing and having one end adapted to extend into the transformer casing;
first indicating means contained in said generally cylindrical means for measuring gas emission levels in the transformer casing and for providing an indication of said gas emission levels;
first detecting means coupled with said generally cylindrical means for detecting predetermined variations in the internal pressure of said transformer casing;
second detecting means coupled with said member extending into the transformer casing for detecting changes in the temperature of the dielectric in said transformer casing; and
second indicating means fixed to said housing and coupled with said second detecting means for providing a visual indication of said temperature changes.

4,192,175
PROCESS AND APPARATUS FOR MEASUREMENT OF DIFFUSIBLE HYDROGEN

Tomokazu Godai; Tohru Sugiyama, both of Kamakura; Morihiko Sugino; Masaru Kondo, both of Fujisawa, and Tsuneshi Ogawa, Kamakura, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Mar. 3, 1978, Ser. No. 883,235
Int. Cl.^{2} G01N *7/14*
U.S. Cl. 73—19 4 Claims

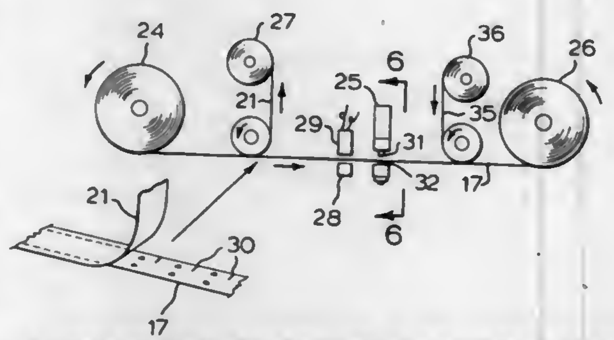


1. A process for measurement of diffusible hydrogen within a solid metal, which comprises the steps of:
placing a metal sample piece within an enclosed gas collecting means for a predetermined time at a predetermined temperature so that diffusible hydrogen may be effused from said metal sample piece while in the solid state; and then
feeding the total effused gas within said gas collecting means to a gas chromatograph equipped with a separation column having an inner diameter of 1.6–7 mm containing packing wherein less than 30% of said packing is finer than 35 mesh and less than 5% of said packing is finer than 150 mesh, and measuring said diffusible hydrogen.

4,192,176
DETECTION OF CONCEALED METALLIFEROUS DEPOSITS, HYDROCARBONS AND EXPLOSIVES

Anthony R. Barringer, Golden, Colo., assignor to Barringer Research Limited, Rexdale, Canada

Continuation-in-part of Ser. No. 679,622, Apr. 23, 1976, Pat. No. 4,056,969. This application Nov. 3, 1977, Ser. No. 848,054
The portion of the term of this patent subsequent to Nov. 8, 1994, has been disclaimed.
Int. Cl.^{2} G01N *15/00*
U.S. Cl. 73—28 22 Claims

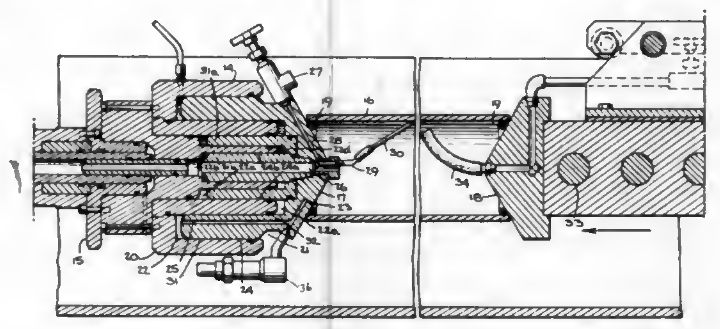


1. In a method of collection of geochemical samples wherein samples of surficial particulates of sizes of above about 50 microns are collected and stored and are subsequently analyzed for content of predetermined elements or compounds, said particulates being deposited at predetermined locations in a thin layer on a storage medium, the improvement wherein prior to the analysis of the particulates, the particulates are crushed while on said storage medium to thereby fracture the particulates into fine fragments to facilitate subsequent analysis and to render said samples more homogeneous.

4,192,177
APPARATUS AND METHOD FOR PRESSURE TESTING OF TUBULAR BODIES

James L. Crickard, Huntington, W. Va., and Harold L. Sheets, Chesapeake, Ohio, assignors to Huntington Alloys, Inc., Huntington, W. Va.

Filed Jan. 9, 1978, Ser. No. 867,820
Int. Cl.^{2} G01M *3/28*
U.S. Cl. 73—49.5 10 Claims

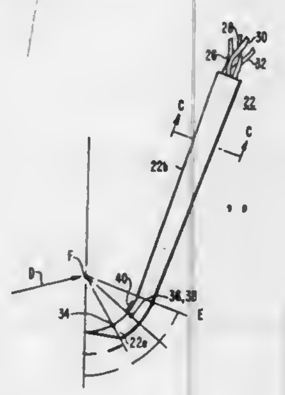


1. Apparatus for fluid pressure testing of tubular bodies having a range of diameters comprising a headstock, a tailstock, with each of said headstock and said tailstock having convex faces projecting toward each other along a common axis, and a plurality of O-ring seals having diameters corresponding to the inside diameters of the tubular bodies to be tested, said convex faces each being larger in base diameter than the internal diameter of any tubular body to be pressure tested and being adapted, in combination, to hold a tubular body therebetween and to form a pressure-tight seal therewith at the ends thereof by means of said resilient O-ring seals placed within said tubular body at each junction of said convex faces and the ends of said tubular body, said headstock comprising telescoping rearward and forward elements with said rearward element being fixably mounted and with said forward element bearing said convex face, said headstock convex face having at least one sensing hole communicating from a location within the internal diameter of a tubular body to be tested in place thereon through said forward telescoping element to the junction between said telescoping elements whereby fluid pressure communicating from said sensing hole to said junction acts hydraulically to urge said forward telescoping element away from said rearward telescoping element and against the end of said tubular element in contact with said convex face of said forward telescoping element during test to hold said O-ring seals closed against the opposing action of testing fluid within said tubular body.

4,192,178
APPARATUS FOR DETERMINING STAGNATION PRESSURE, STATIC PRESSURE, PITCH ANGLE, AND YAW ANGLE OF ELASTIC FLUID

John S. Wyler, Andover, Mass., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1978, Ser. No. 920,580
Int. Cl.^{2} G01M *15/00*
U.S. Cl. 73—116 3 Claims

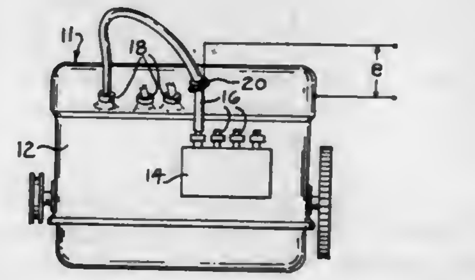


1. An apparatus for measuring the stagnation pressure and yaw angle and providing indications of static pressure and pitch angle at any point in an elastic fluid stream, said apparatus comprising:
probe means for gradually deflecting, when inserted in an elastic fluid stream, a portion of the elastic fluid from its normal flow direction through an angular displacement causing compression and deceleration of the deflected fluid while restraining formation of interfering shock waves therein, said fluid deflection terminating in a region of fluid stagnation, said probe means being insertable into said fluid stream for selected distance so as to be exposable to any point within the fluid stream;
first pressure measuring means in fluid communication with the fluid stagnation region for measuring the stagnation pressure of the elastic fluid stream;
second pressure measuring means in fluid communication with the deflected fluid portion upstream from the stagnation region for measuring a single pressure which is indicative of the static pressure and pitch angle of the elastic, undeflected fluid stream; and
third and fourth pressure measuring means in fluid communication with selected areas of said probe means for measuring the pressures in those areas and providing indications of said probe means' yaw position which is related to and provides a measurement of the undeflected fluid stream's yaw angle.

4,192,179
PIEZOELECTRIC TRANSDUCER FOR FUEL INJECTION ENGINE

Edward Yelke, 945 S. Kensington, La Grange, Ill. 60525

Filed Oct. 6, 1978, Ser. No. 949,061
Int. Cl.^{2} G01M *15/00*
U.S. Cl. 73—119 A 3 Claims



1. A pressure transducer for sensing the injection of fluid through a tubular line comprising in combination; a clamp formed essentially as a flexible collar of low mass for mounting around the line, discrete sections of piezoelectric material positioned on the inner surface of the collar; said piezoelectric material sections being contoured to bear against the line at areas around the circumference of said line, and said piezoelectric material sections each generating an electrical signal dependent on the pressure exerted on the line by the fluid passing through said line, and an electric connector connecting said piezoelectric material sections to associated electronic circuitry.

4,192,180
TESTING APPARATUS FOR AN ANTI-LOCK CONTROL SYSTEM

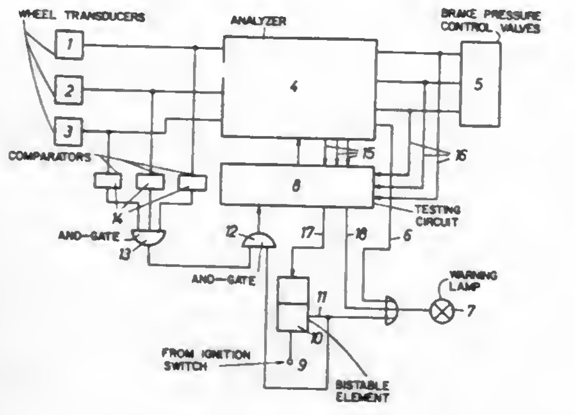
Jürgen Gerstenmeier, Waldhilsbach; Hermann Klotz, Schwetzingen, and Heinz Leiber, Leimen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 773,253, Mar. 1, 1977, abandoned. This application Jun. 28, 1978, Ser. No. 920,308

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612471

Int. Cl.² G01L *5/28*

U.S. Cl. 73—121 **7 Claims**



1. A testing apparatus for an anti-lock control system for vehicle brakes, for testing the correct functioning of the control system, the control system including at least one vehicle related speed sensor, which senses an increasing vehicle speed, and means for analyzing the output signal from the speed sensor, the testing apparatus comprising the following switching devices:

(a) test signal producing means connected to the means for analyzing, for producing a test signal which is delivered to the means for analyzing to initiate a test procedure, said test signal producing means including means for receiving the output of the means for analyzing to determine the correctness of said output; and

(b) first triggering signal producing means connected to the speed sensor and to the test signal producing means, for producing a triggering signal in response to the output of the speed sensor, when a predetermined speed as sensed by the speed sensor is exceeded, and delivering the triggering signal to the test signal producing means for triggering, said first triggering signal producing means including switch means responsive to actuation of the vehicle ignition switch and responsive to the test signal producing means, thereby ensuring that the test procedure is performed only at the first exceeding of the predetermined speed after the vehicle is initially set into operation.

4,192,181
CASING ASSEMBLY PROBES

Franklin D. Patton, West Vancouver, and James D. McFarlane, Vancouver, both of Canada, assignors to Westbay Instruments Ltd., West Vancouver, Canada

Filed Nov. 13, 1978, Ser. No. 959,915

Int. Cl.² E21B *49/00*

U.S. Cl. 73—155 **13 Claims**

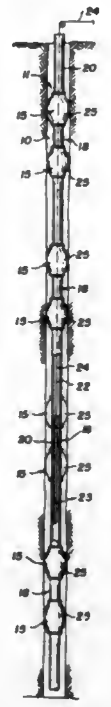
1. A probe for use in casing assemblies having ports therein at different levels through which samples and/or measurements can be taken from the environment around the casing at said ports, said probe comprising

an elongate body having an upper end to be connected to suspension means through which fluids and data and operating power can flow to and from the body,

a port in the body,

stop means on the body to co-operate with stop means on the casing assembly in which the probe operates at each level to stop the probe with the body port in registry with the casing assembly port at said each level,

sealing means at the body port to isolate said body port from the interior of the casing assembly when the body port is in registry with a casing port, and



pressure means selectively operable to press said sealing means into engagement with the casing when said ports are in registry,

whereby samples and/or measurements can be selectively taken from outside the casing assembly and through the registering ports within contamination or interference by conditions at any other of said casing assembly ports.

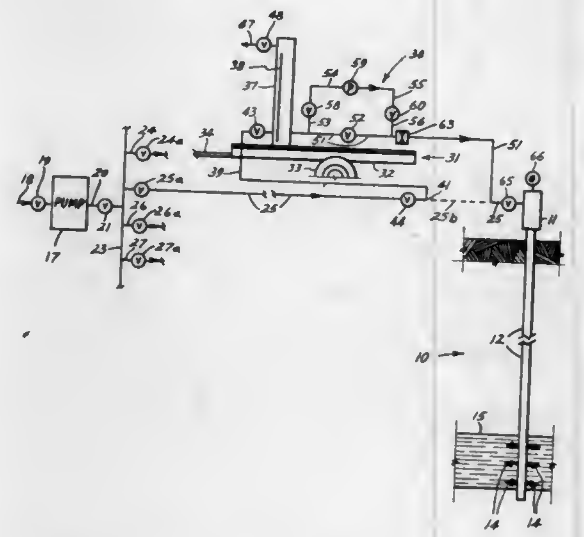
4,192,182
METHOD FOR PERFORMING STEP RATE TESTS ON INJECTION WELLS

G. Clay Sylvester, 4101 Skyline, Midland, Tex. 79703

Filed Nov. 16, 1978, Ser. No. 961,055

Int. Cl.² E21B *47/06*

U.S. Cl. 73—155 **9 Claims**



1. Method for performing step rate tests on injection wells of the type into which water is injected by an injection pump to drive petroleum materials through a subterranean formation toward a production well, there being plural conduit means each leading from a manifold at said injection pump to an injection well, comprising breaking one of said conduit means leading from said injection pump to a single injection well, connecting a portable pumping unit across said break in series with said one conduit, controlling the pressure of water delivered by said injection pump through said one conduit means to the inlet of said portable pumping unit, operating said portable

pumping unit to increase the pressure of said water delivered thereto from said controlled pressure to an injection pressure, delivering said water at said injection pressure through said single injection well into said formation while monitoring at least one of the flow rate and injection pressure thereof until the flow rate and injection pressure become at least substantially constant, repeating the described injection procedure at different flow rates and injection pressures below and above the fracture pressure of said single injection well and determining constant flow rates and injection pressures at plural levels, and determining the fracture pressure of the formation from the difference in flow rates at different injection pressures.

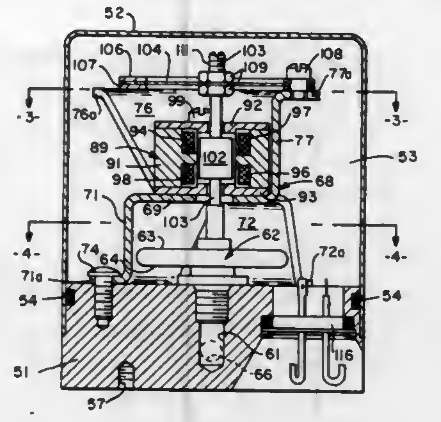
4,192,183
PRESSURE RATIO TRANSDUCER SYSTEM

Cosmo L. Avellis, Northridge; Carlo Pavone, Los Angeles, and Albertus Wolfkamp, Canoga Park, all of Calif., assignors to Edcliff Instruments, Monrovia, Calif.

Filed Feb. 17, 1978, Ser. No. 878,676

Int. Cl.² G01C *21/10;* G01L *9/10*

U.S. Cl. 73—182 **15 Claims**



15. In an aircraft pressure transducer system for providing an output signal corresponding to $(P_t-P_S)/P_S$, where P_t is the total pressure in the pitot system and P_S is the static air pressure at the altitude of the aircraft: first and second transducers each comprising a base, a pressure responsive movable member mounted on the base and forming one wall of a chamber to which input pressure is applied, a rigid frame having a generally planar central portion parallel to the base with first and second groups of generally planar legs extending from the central portion toward and away from the base, means securing the free ends of the first group of legs to the base, an output coil mounted on the central portion of the frame in axial alignment with the movable member, a core for varying the inductance of the coil, an axially movable rod carrying the core and connected to the movable member for varying the position of the core in accordance with the pressure applied to the movable member, and a resilient member secured to the outer ends of the second group of legs and connected to the core for yieldably urging the core toward a predetermined rest position; an oscillator connected to the transducer coils for energizing said coils with an electrical signal of predetermined frequency; means for applying the total pressure and the static pressure to the first transducer to produce an output signal in the coil therein corresponding to P_t-P_S; means for applying the static pressure to the second transducer to produce an output signal in the coil therein corresponding to P_S, and electronic signal processing means having no moving parts responsive to the transducer output signals for delivering an output signal corresponding to $(P_t-P_S)/P_S$.

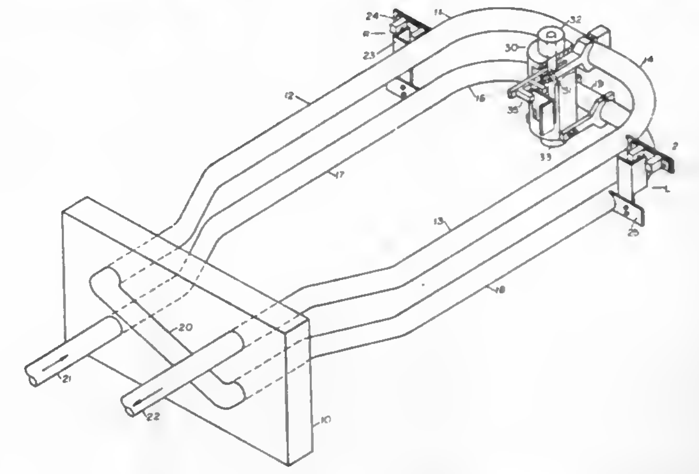
4,192,184
MASS FLOWMETER

Bruce M. Cox, Duncan, Okla., and Morris D. Ho, Walnut Creek, Calif., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 13, 1978, Ser. No. 960,518

Int. Cl.² G01F *1/84*

U.S. Cl. 73—194 B **20 Claims**



1. In a mass flow rate meter of the coriolis force type having a support, a U-shaped tube including two side legs joined by a cross member with the free ends of the side legs attached to said support and forming an inlet and an outlet for flowable material flowing through said U-shaped tube, and a means for vibrating the bight end of said U-shaped tube perpendicular to the plane of the U-shaped tube, the improvement comprising:

sensor means on each of the side legs of said U-shaped tube for sensing the time difference between one of the legs crossing a predetermined point in the path of the oscillation caused by said vibrating means and the other of the legs crossing said predetermined point of oscillation for giving an indication of the mass flow of the material flowing through said U-shaped tube;

indicating means in said sensor means for indicating the first side leg to cross said predetermined point of oscillation; and

selecting means responsive to said indicating means for selecting one of giving a time representation equal to the sum of the time difference between crossing of said predetermined point of oscillation of said legs during the previous half cycle of oscillation and the time difference for crossing said predetermined point during the present half cycle, and giving a time representation equal to the absolute value of the subtraction of the time difference between crossing of said predetermined point of oscillation of said legs during the previous half cycle of oscillation from the time difference during the present half cycle depending on said side leg which crosses said predetermined point of oscillation first, thereby giving an indication of the mass flow of the material flowing through said U-shaped tube.

4,192,185
FLOWMETER FOR LIQUIDS

Friedrich Keilholz, Ennepetal, Fed. Rep. of Germany, assignor to Ludwig Peithmann KG, Bunde, Fed. Rep. of Germany

Filed Mar. 1, 1978, Ser. No. 882,419

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2708955

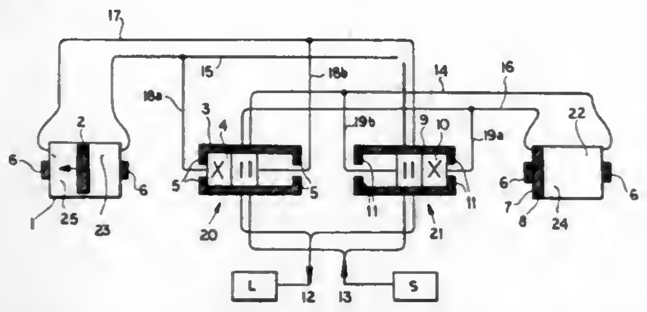
Int. Cl.² G01F *3/14*

U.S. Cl. 73—243 **9 Claims**

1. A flowmeter for measuring the throughput of a liquid from a source to a load, said flowmeter comprising:

at least a first and a second measuring cylinders, each provided with a respective free floating piston subdividing same into two chambers;

at least a first and a second two-position reversing means for controlling the movement of said pistons, said first reversing means being connected to said second cylinder for supplying one of the chambers thereof with liquid from said source in one position of said first reversing means and for supplying the other of the chambers of said second cylinder with liquid from said source in the other position of said first reversing means, said second reversing means being connected to said first cylinder for supplying one of the chambers thereof with liquid from said source in one position of said second reversing means and for supplying the other chamber of said first cylinder with liquid from said source in the other position of said second reversing means, whereby said chambers are alternately connected to said source and said load so that each stroke of each piston is a measure of a predetermined quantity of displaced liquid;



means associated with each of said reversing means for temporarily retaining each of said reversing means in each of its positions; and

counting means associated with both of said cylinders, responsive to the strokes of each piston for signaling the quantity of displaced liquid, the first and second reversing means being constituted respectively as a first control cylinder receiving a first control piston and a second control cylinder receiving a second control piston, said first control cylinder being formed as part of said second measuring cylinder and said first control piston being formed as part of said second flating piston, the first measuring cylinder being formed with said second control cylinder and the first floating piston being formed with said second control piston.

4,192,186

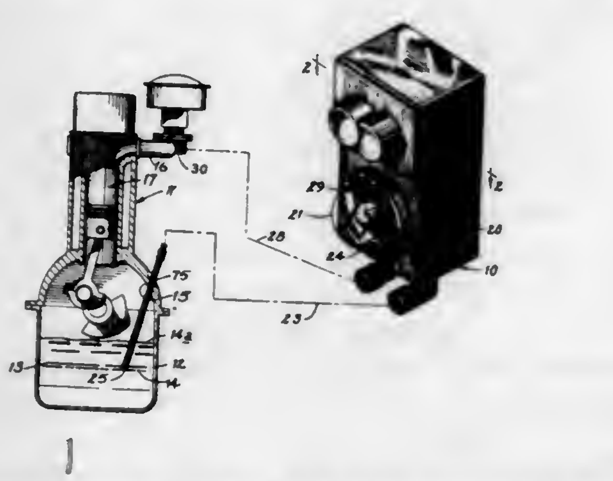
FLUID LEVEL AND VISUAL INSPECTION DEVICE

James R. Quinn, 2723 W. Kalamath, Kennewick, Wash. 99336

Filed Sep. 28, 1978, Ser. No. 946,507

Int. Cl.² G01F *23/00*

U.S. Cl. 73—303 **17 Claims**



1. A fluid level and visual inspection device for internal combustion engines having a fluid sump and a vacuum system whereby air is drawn into the engine, said device comprising:

a housing;

a fluid viewing chamber within the housing;

a fluid conduit having one end in open communication with the fluid viewing chamber and a remaining open end adapted to be submerged within a fluid held within a sump of an engine;

a vacuum air conduit having one end in open communication with the fluid viewing chamber and a remaining open end adapted to be connected to the vacuum system of an associated engine;

valve means operatively connected to the vacuum air conduit for selectively opening and closing the vacuum air conduit so that when the vacuum air conduit is opened, vacuum pressure may be applied within the viewing chamber, thereby causing fluid to be drawn into the viewing chamber; and

means for selectively illuminating the fluid viewing chamber; and

a siphon tube extending along the fluid conduit to an open lower end above the open end of the fluid conduit and having an upper end in open communication with the fluid viewing chamber.

4,192,187

FLOAT CONTROLLED VOLUMETRIC GAUGE

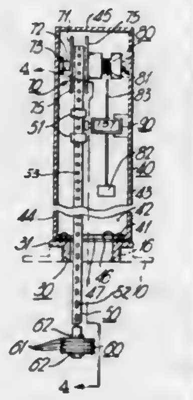
Russell J. Kennedy, 2 Grenville Rd., Kingston, Ontario, Canada (K7M 2C5); Samuel S. Lazier, 239 Albert St., Kingston, Ontario, Canada (K7L 3V4), and Joe Zorzi, 1601 Peel St., City of Two Mountains, Quebec, Canada

Filed Dec. 6, 1978, Ser. No. 966,982

Claims priority, application Canada, Dec. 6, 1977, 292519

Int. Cl.² G01F *23/08*

U.S. Cl. 73—321 **9 Claims**



1. Apparatus for measuring changes in the volumetric content of a storage tank wherein such storage tank has a predetermined relationship between changes in liquid level and the change in volumetric content, said apparatus comprising a housing having means to mount the same on the top side of the tank over an opening in such tank, a rotatable tape storage means in said housing, a tape having one end thereof wound onto said rotatable tape storage means and the other end thereof attached to a float located in said tank, said tape being withdrawable from and retractable into said storage means in response to movement of the float caused by a change in liquid level in the tank, guide means in said housing through which said tape passes during lineal movement of the tape, tension exerting means acting on said tape applying a selected tension thereto counteracting the weight of the float and tape depending from the tape storage means, a digital counter in said housing driven by the tape at a position adjacent said guide means during lineal movement of the tape by means located at spaced intervals on said tape, driving of said counter by said tape being a positive drive with a controlled amount of slip corresponding to a predetermined relationship existing between the float movement and volume change providing a direct reading of changes in volumetric content of the storage tank throughout the entire extent of travel of the tape.

4,192,188

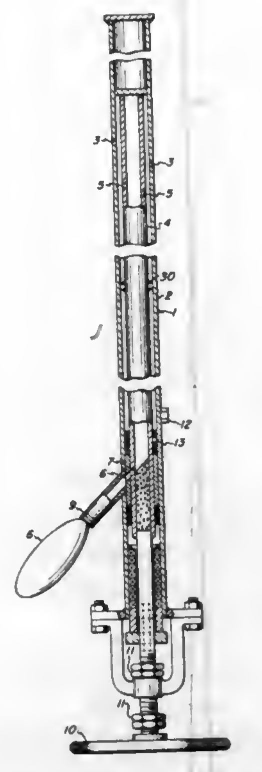
CATALYST SAMPLER DEVICE

Arthur C. Worley, Mt. Tabor, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 1, 1978, Ser. No. 901,440

Int. Cl.² G01N *1/10*

U.S. Cl. 73—424 **5 Claims**



1. An apparatus for retrieving particulate matter from one level of a fixed bed reactor containing particulate beds spaced apart in an elongated vessel, such apparatus comprising:

(a) an elongated inner tube slidably disposed within an outer tube which extends upwardly through said vessel and passes through said fixed beds of particulate matter, the top of said outer tube terminating in an empty space between said particulate beds to permit venting of said tubes through the top and also avoid thermal and bed weight distortion of said outer tube, said inner and outer tubes each having inlet and outlet means for transmitting particulate matter therethrough, said outer tube secured to said vessel and forming a pressure-tight connection therewith;

(b) a shaft of a handwheel having adjustable spaced stops which are specifically measured whereby when said handwheel has been rotated to one of said stops said inner tube inlet means is in communication with said outer tube inlet means and said inner tube outlet means is out of engagement with said outer tube outlet means, and whereby when said handwheel is rotated to another of said stops said outer tube outlet means is in communication with said inner tube outlet means and said inner tube inlet means is out of engagement with said outer tube inlet means; and

(c) means for collecting said particulate matter, said means being connected in pressure sealed engagement with said outer tube outlet means.

4,192,189

RATE SENSOR

Rex W. Presley, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1978, Ser. No. 947,387

Int. Cl.² G01P *15/00*

U.S. Cl. 73—505 **13 Claims**

1. A rate sensor comprising:

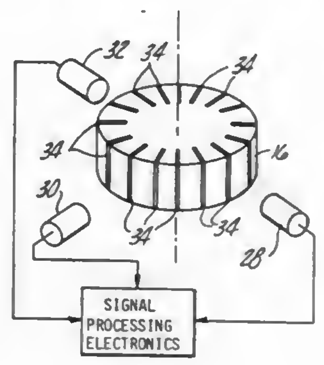
a nonmagnetic sensor housing having an internal cavity formed therein;

a sensor rotor having an axis of rotation disposed in said cavity and occupying less than the full volume of said cavity;

a volume of magnetic fluid filling the space in said cavity between said rate sensor rotor and said housing;

means for applying a magnetic field to said volume of magnetic fluid to levitate said sensor rotor in said cavity;

sensor means for generating signals corresponding to the angle of relative rotation between said sensor housing and said sensor rotor about the axis of said rate sensor rotor;



means responsive to said signals for generating a signal corresponding to the rate of angular rotation of said sensor housing;

whereby the rate of angular movement of said sensor housing may be determined.

4,192,190

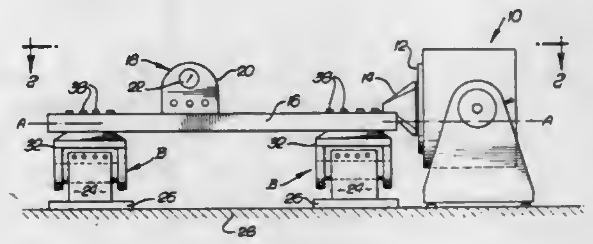
UNIDIRECTIONAL BEARING STRUCTURE HAVING TEMPERATURE CYCLING TOLERANCE

David V. Kimball, Claremont, Calif., assignor to Kimball Industries, Inc., Monrovia, Calif.

Filed Oct. 31, 1978, Ser. No. 956,184

Int. Cl.² G01M *7/00*

U.S. Cl. 73—665 **23 Claims**

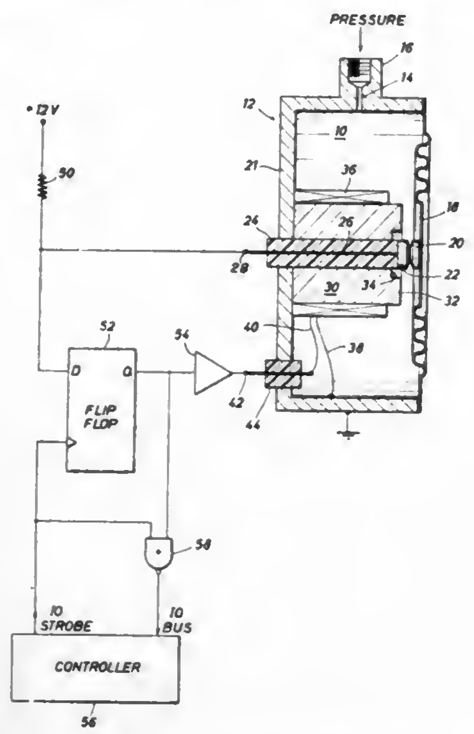


22. Hydrostatic bearing apparatus adapted to mount a shaker-coupled, dimensionally temperature dependent test piece for vibratory oscillation along a predetermined test axis, said apparatus comprising a support block having support walls and depending therefrom a displaceable compliant section defining a bore, said walls and section being locally laterally spaced opposite said bore to define a section displacement clearance, a shaft reciprocally axially journaled in said section bore in centrally supported relation and defining with said bore a bearing locus paraxial with said test axis, and bracket means securing said test piece to said shaft at opposite ends thereof beyond said support block section bore, said bracket means each comprising a saddle having depending ears defining split ring clamps circumferentially clamping said saddle to said shaft, and a base portion between said ears for rigidly fastening said bracket to said test piece, for bearing-guided test axis oscillation, said bearing locus being subject to shaft-transmitted sideways thrust upon temperature change induced dimensional changes in said test piece, said compliant section bearing locus being test axis paraxially bodily displaceable upon and to the extent of displacement of said compliant section into said clearance responsive to sideways thrusting of said shaft in test piece dimensional change accommodating relation.

4,192,191
PRESSURE SENSOR

Robert L. Nelson, Austin, Tex., assignor to Tracor, Inc., Austin, Tex.

Filed Nov. 9, 1978, Ser. No. 959,314
Int. Cl.² G01L *7/00*
U.S. Cl. 73—701 12 Claims



5. Apparatus for sensing a fluid pressure and producing a digital logic signal, the duty cycle of which is a measure of the pressure sensed, comprising

- a chamber having an input opening through which the fluid pressure to be sensed is applied, said chamber having a flexible wall diaphragm including an electrical contact,
- a coil having a stationary contact against which said diaphragm contact moves when said diaphragm is at rest and when said coil is energized, chamber pressure causing displacement of said contacts,
- logic means connected to said stationary contact and to the winding of said coil, and
- lock means connected to said logic means for causing said logic means to sample the existence of contact between said diaphragm and stationary contact at regular intervals, the presence of electrical contact between said diaphragm and stationary contacts producing a first logic signal output from said logic means, a displacement of said contacts resulting from internal chamber pressure producing a second logic signal output from said logic means for energizing said coil winding and causing closing of said contacts, the ratio of first logic signal output to total output resulting in a variable duty cycle measurement of sensed pressure.

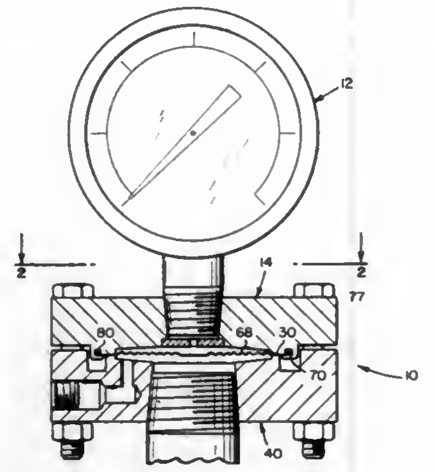
4,192,192
DIAPHRAGM SEAL ASSEMBLY

Werner J. Schnell, Niles, Ill., assignor to General Signal Corporation, Stamford, Conn.

Filed Nov. 2, 1978, Ser. No. 957,372
Int. Cl.² G01L *7/08*
U.S. Cl. 73—715 10 Claims

1. A diaphragm seal assembly for use with a fluid pressure responsive instrument including:

- an upper housing member having a first inner side, said first inner side having a recessed surface defining a cavity and having a pasageway extending through said upper member for connection with said fluid pressure responsive instrument,
- a lower housing member having a second inner side and a passageway extending through said lower housing member,
- a diaphragm received in said cavity and clamped between said upper and lower housing member,
- clamping means for securing said upper and lower housing members together, the improvement comprising;

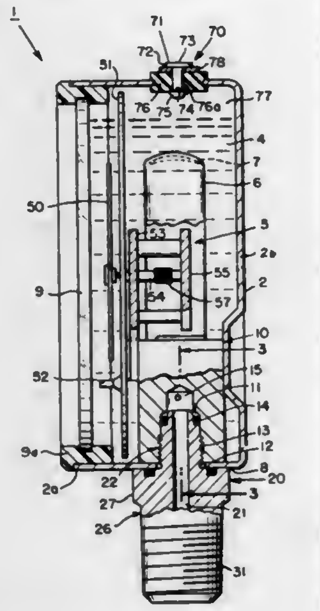


- deformable lip means extending from said first inner side for bending over the periphery of said diaphragm to sealingly secure said diaphragm to said upper housing member, independent of the clamping means for securing the upper and lower members together.

4,192,193
LIQUID FILLED PRESSURE GAUGE

Werner J. Schnell, Niles, Ill., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 16, 1979, Ser. No. 12,681
Int. Cl.² G01L *7/04*
U.S. Cl. 73—739 12 Claims



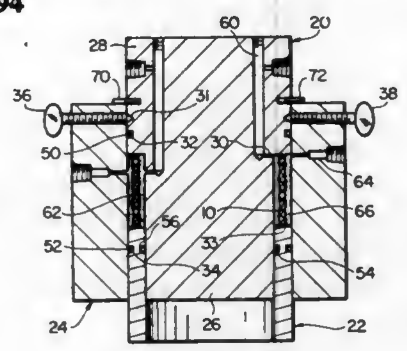
1. A pressure gauge comprising:

- a case body having a cup-shaped housing with a first aperture therein, said housing including an outward protrusion with a flat wall zone surrounding the aperture, a support member having a first bore therein arranged within the case body, said support member including an end surface adapted to rest on said flat wall zone wherein said end surface has an outer contour adapted to the contour of said wall zone, an outer connection member having a second bore there through includes a first section extending through said aperture and sealingly received within the first bore, said outer connection member sealingly engages said flat wall zone of said case body, a fluid pressure measuring spring tube having a free end and an end secured to said support member, said tube includes an inner space connected to the bore of the outer connection member through the bore in the support member, and means arranged within said case supported by the support member and operatively connected to the free end of said spring tube for indicating the measured fluid pressure acting in the tube.

4,192,194
METHOD AND MEANS FOR BIAXIALLY TESTING MATERIAL

Neil L. Holt, Foster City, Calif., assignor to Anamet Laboratories, Inc., San Carlos, Calif.

Filed Aug. 11, 1978, Ser. No. 932,951
Int. Cl.² G01N *3/10*
U.S. Cl. 73—794 15 Claims



1. Biaxial test apparatus for cylindrical material samples comprising

- a first platen having an outer surface, an inner cylindrical surface, and a sample receiving surface at one end of said first platen,
- a second platen having a cylindrical first portion for insertion into said first platen, a second portion, and a sample receiving surface on said second portion extending outwardly from said first portion, and
- means for applying pressure to a cylindrical surface of a sample when mounted between said first platen and said second platen.

10. The method of biaxially stress testing a test sample having internal and external cylindrical surfaces comprising the steps of

- (a) providing a lubricant at each end of said sample to compensate for surface irregularities and equalize loading of said sample ends,
- (b) loading said sample and said lubricants between first and second platens,
- (c) applying axial stress to said sample through said first and second platens, and,
- (d) concurrently applying pressure to a cylindrical surface of said sample.

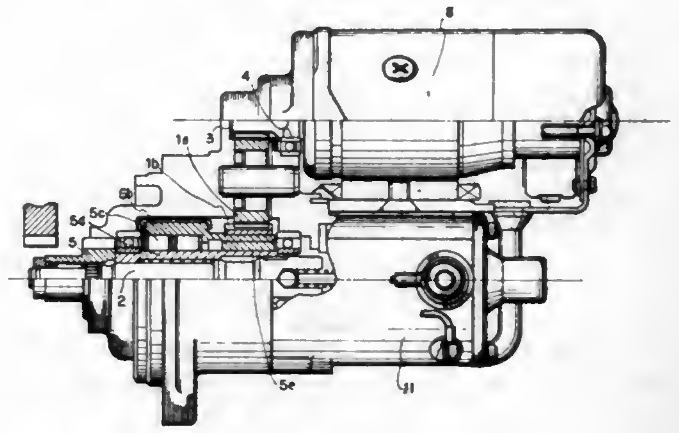
4,192,195
STARTER WITH A SHOCK ABSORBING ARRANGEMENT

Sadayosi Kazino, and Tatsuo Doi, both of Nagoya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 746,745, Dec. 2, 1976, abandoned. This application Jun. 26, 1978, Ser. No. 919,319
Claims priority, application Japan, Dec. 3, 1975, 50/163765[U]
Int. Cl.² F02N *11/00;* F16D *7/02*
U.S. Cl. 74—7 A 6 Claims

1. A starter for a vehicle comprising:

- an electric motor having an armature shaft,
- a speed reduction gear mechanism having a drive gear connected to said armature shaft and a driven gear associated with said drive gear and having a bore, said driven gear being the largest in diameter in said speed reduction gear mechanism,
- a one way clutch having an axially extending cylindrical member the outer periphery of which is shrink-fitted to

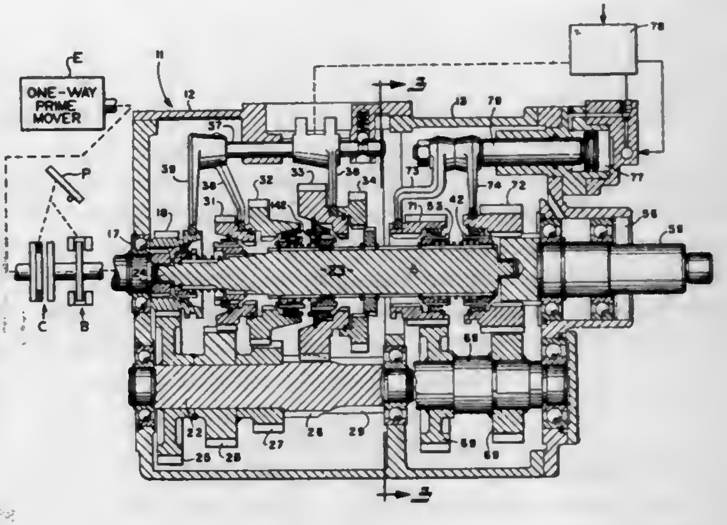


  the bore of said driven gear through a thin coating of solid lubricating material, and
- a pinion connected to said one way clutch.

4,192,196
BLOCKED CHANGE GEAR TRANSMISSION AND IMPROVED BLOCKER AND JAW CLUTCH ASSEMBLY THEREFOR

Edward J. Bogema, Vickburg; John R. Vandervoort, Richland, both of Mich., and John R. Bevins, Bluefield, W. Va., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 31, 1978, Ser. No. 929,377
Int. Cl.² F16H *3/38;* F16D *11/00*
U.S. Cl. 74—339 28 Claims



1. An improved blocker and jaw clutch assembly of the type comprising a substantially non-deformable blocker ring carried by a first of two axially engageable positive clutch members for rotation therewith with a predetermined relative rotation therebetween, said blocker ring axially movable relative to said first clutch member in at least one axial direction, said blocker ring operable to tend to rotate with said second clutch member at initiation of a clutch engaging operation, said blocker ring and first clutch member each having first projections extending therefrom defining a first array of interacting projections, said first array of interacting projections effective to block relative axial movement of said first clutch member toward said second clutch member if not aligned, said blocker ring having at least one rotational position relative to said first clutch member wherein said first array of projections are aligned and at least one rotational position relative to said first clutch member wherein said first array of projections are not aligned, said blocker ring effective to sense non-synchronous rotation of said clutch members corresponding to blocker ring rotation relative to said first clutch member sufficient to cause a non-alignment of said first array of projections to block axial engagement of said clutch members, the improvement comprising:

means associated with said blocker ring and said first clutch member effective to automatically cause alignment of said first array of projections, said means comprising:

a pair of oppositely inclined ramps extending from one of said blocker ring and said first clutch member and at least one second projection extending from the other of said blocker ring and first clutch member, said ramps effective to cause rotation of said blocker ring relative to said first clutch member sufficient to align said first array of projections when axially biased into contact with said second projection, and means biasing said ramps into contact with said second projection.

4,192,197
DISENGAGEABLE TRANSMISSION DEVICE

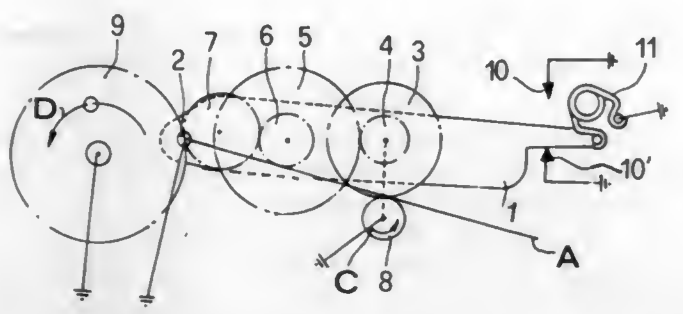
Rodolfo Cicatelli, Lugano, Switzerland, assignor to Autovox, S.p.A., Rome, Italy

Filed May 26, 1978, Ser. No. 910,055

Claims priority, application Italy, May 30, 1977, 49612 A/77

Int. Cl.² F16H *35/00*

U.S. Cl. 74—380 **13 Claims**



1. A disengageable transmission device, in which a train of wheels is supported on a lever pivoted on a frame and movable between a drive engaging position, in which a first wheel of the train meshes with a driving element, and a drive disengaging position, in which said first wheel is withdrawn from meshing engagement with the driving element, a last wheel of the train remaining engaged with a driven element in both the drive engaging and disengaging positions, the improvement of the transmission device comprising the fact, that the fulcrum of the lever coincides with the tangential point of the pitch line of the last wheel of the train and the pitch line of the driven element.

4,192,198
TWO GEAR TRAIN REDUCTION MECHANISM

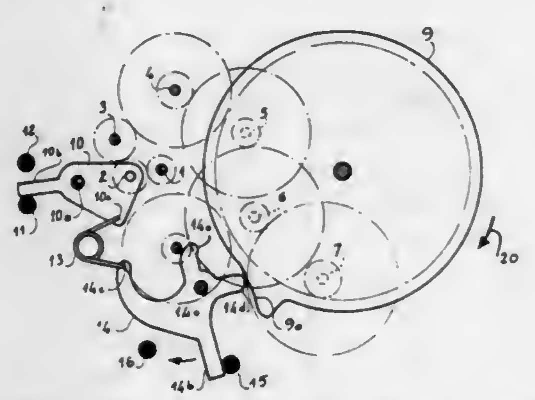
Edouard Jouret, Bresso-Milano, Italy, assignor to Crouzet, Paris, France

Filed Nov. 15, 1977, Ser. No. 851,625

Claims priority, application France, Nov. 25, 1976, 76 35634

Int. Cl.² F16H *35/00*

U.S. Cl. 74—384 **1 Claim**



1. A reduction mechanism comprising a first gear train having an input gear and an output gear, a second gear train having an input gear and the same output gear as said first gear train, said first and second gear trains being of different speed reductions, a cam engaged by said output gear, a motor, a driving pinion rotated by said motor, a first lever provided with an arm and pivotally mounted on a first axis, a step-up gear supported on said first lever and engaged by said driving pinion, a first fixed stop pin and a second fixed stop pin, a spring for suddenly pivoting said first lever from a first stable limiting position, in which said arm presses against said first stop pin and said step-up gear rotates the input gear of said first gear train, to a second stable limiting position, in which said arm presses against said second stop pin and said step-up gear rotates the input gear of said second gear train, a second lever provided with an arm and two followers and pivotally mounted on second axis, each of said two levers being linked to a respective end of said spring, a third fixed stop pin and a forth fixed stop pin, said cam being arranged for engaging either of said two followers and thus for pivoting said second lever from a first stable limiting position, in which the arm of said second lever presses against said third stop pin, to a second stable limiting position, in which the arm of said second lever presses against said fourth stop pin, whereby when the link between said spring and said second lever, as said second lever is pivoted by said cam, gets across the stability line extending from said first axis to the link between said spring and said first lever, said second lever suddenly pivots said first lever supporting said step-up gear.

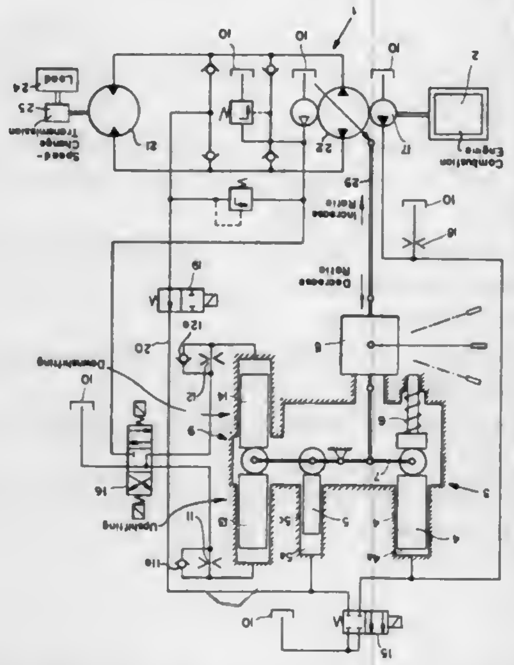
4,192,199
CONTROL SYSTEM FOR HYDROSTATIC TRANSMISSION

Karlmann Hamma, and Anton Ott, both of Tettnang, Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 10, 1977, Ser. No. 850,387

Int. Cl.² F16H *47/04;* F16D *31/02*

U.S. Cl. 74—687 **10 Claims**



1. A control system for regulating a hydrostatic transmission having an input hydraulic machine constituted as a pump having an input drivable at an input speed by a prime mover, an output hydraulic machine constituted as a motor having an output displaceable at an output speed and connectable through a speed-change transmission to a load, and a pressurizable hydraulic network interconnecting said machines and transferring force therebetween, one of said machines having a control element displaceable to vary the input-speed/output-speed transmission ratio, a said system comprising:

means including a pressurizable control cylinder for exerting on said control element in one direction a force related to said input speed;

means including a pressurizable regulating cylinder connected to said network for exerting on said control element in the opposite direction a force related to load; and

valve means connected to said cylinders for isolating said regulating cylinder from said network and depressurizing both of said cylinders during speed change of said transmission.

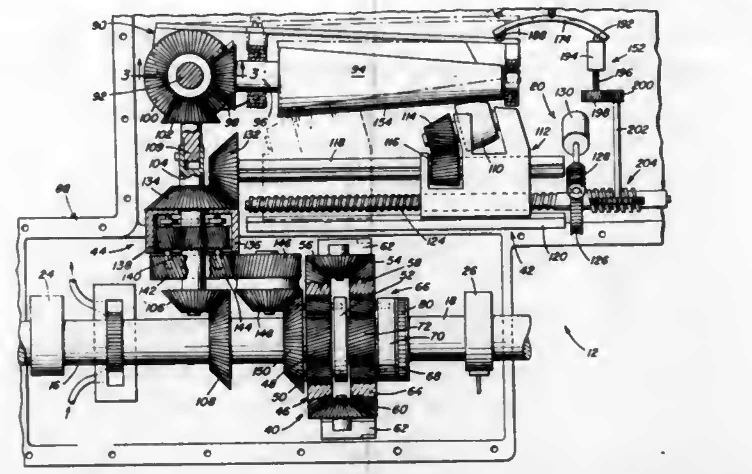
4,192,200
VARIABLE RATIO GEAR TRANSMISSION

Dan K. McCoin, El Paso, Tex., assignor to Bales-McCoin Research, Inc., El Paso, Tex.

Filed Aug. 20, 1976, Ser. No. 716,341

Int. Cl.² F16N *15/16*

U.S. Cl. 74—690 **10 Claims**



9. In a variable speed transmission having an input element and a driven element, a pair of conical traction members having drive engaging surfaces of generally equal pitch, gear means drivingly connecting one of the members to the input element,, means drivingly connecting the other of the members to the driven element, means connected to said other of the members for movement thereof relative to said one of the members to vary the drive ratio between the input and driven elements, means mounting said one of the traction members for pivotal displacement about a pivotal axis in response to movement of said other of the traction members, said input element being rotatable about a drive axis intersecting said pivotal axis, and adjustable coupling means connecting the input element to the gear means for adjusting the position of the pivotal axis.

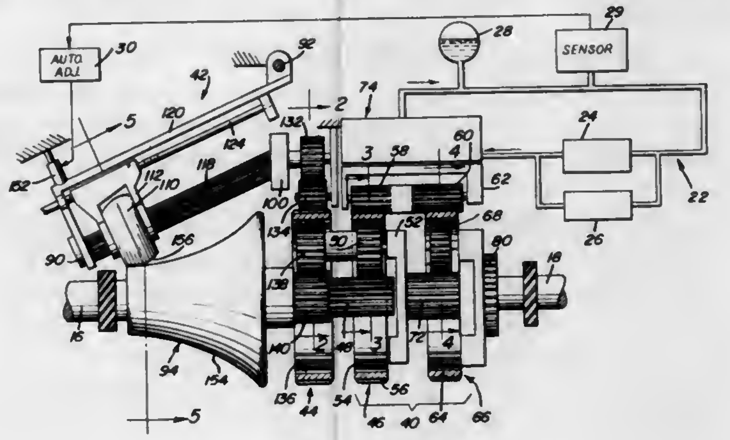
4,192,201
TRACTION CONTROLLED IN-LINE TRANSMISSION

Dan K. McCoin, El Paso, Tex., assignor to Bales-McCoin Research, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 716,341, Aug. 20, 1976. This application Apr. 14, 1977, Ser. No. 787,372

Int. Cl.² F16H *37/06*

U.S. Cl. 74—690 **10 Claims**



1. A change speed transmission comprising input and output members, power transmitting gear means directly interconnecting said input and output members for transmission of power in a relatively high torque range, traction drive means driven by the input member for selecting a variable drive ratio between said input and output members, and torque biasing means interconnected between the traction drive means and the power transmitting gear means for limiting transmission through the traction drive means to a relatively low torque range to establish said variable drive ratio.

4,192,202
APPARATUS FOR CONTROLLING THE CLOSING LIMIT OF A CARBURETOR THROTTLE VALVE

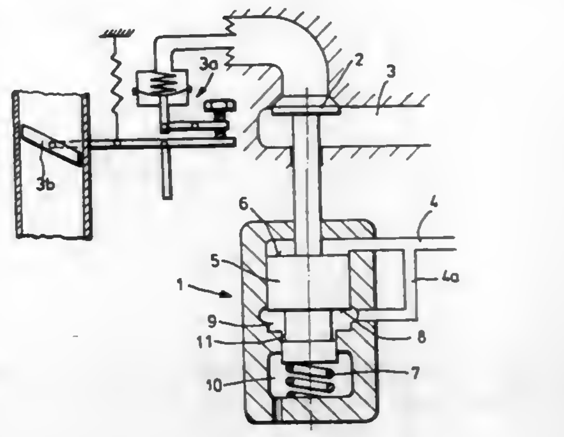
Reinhard Gospodar, and Paulus Heidemeyer, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Oct. 19, 1977, Ser. No. 843,568

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649473

Int. Cl.² B60K *41/18;* F02D *11/08*

U.S. Cl. 74—859 **5 Claims**



1. In a motor vehicle having an internal combustion engine and an automatic transmission, said engine including an intake manifold and a carburetor with a throttle valve for supplying a fuel-air intake mixture to said intake manifold, said transmission including hydraulic control means for shifting said transmission and having at least one governor producing a first, speed-dependent hydraulic fluid pressure, apparatus for controlling the closing limit of said carburetor throttle valve comprising:

(a) vacuum pressure actuated means for varying the closing limit of said throttle valve in dependence upon a second vacuum pressure applied thereto;

(b) a vacuum line connecting said vacuum actuated means with a source of said second vacuum pressure downstream of said throttle valve;

(c) valve means arranged in said vacuum line for controlling said second vacuum pressure transmitted by said line; and

(d) means, coupled to said governor, for controll-said valve means in dependence upon said first speed-dependent fluid pressure said means including a control element movable by said first fluid pressure against a spring.

4,192,203
VARIABLE GEAR RATIO TRANSMISSION

Alvin Dailey, 4527 New Hampshire Ave., NW., Washington, D.C. 20011

Filed Feb. 1, 1978, Ser. No. 874,243

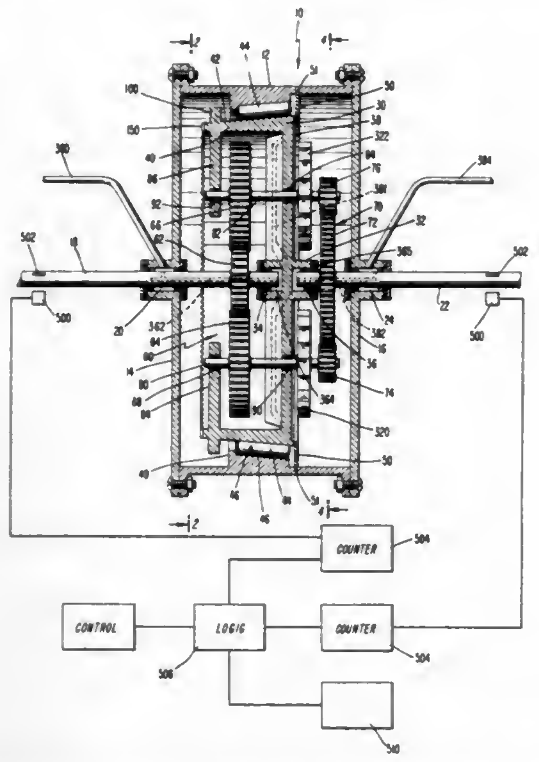
Int. Cl.² B60K *41/18;* F16H *5/06, 3/74*

U.S. Cl. 74—863 **11 Claims**

1. A constant meshed, variable gear ratio transmission comprising:

- a gear box including;
  - a housing,
  - input and output shafts journaled in said housing;
- a plurality of planetary gear sets in said housing coupling said shafts together and including,
  - a pinion gear on each of said shafts;
  - a plurality of planetary gears meshing with each said pinion gear;
- planetary gear shafts fixed to the corresponding planetary gears of each pinion;
- a cage rotatably supported in said housing and rotatably supporting said planetary gear shafts;

first hydraulic circuit means for controlling the rotation of said cage; and,



second independent hydraulic circuit means for controlling the rotation of said planetary gear shafts.

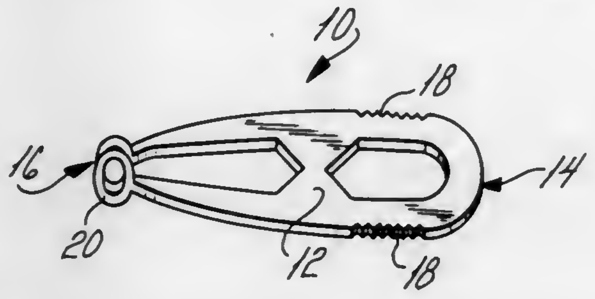
4,192,204
SOFT CONTACT LENS APPARATUS

Michael A. Feldman, 864 Glenridge Ave., North Woodmere, N.Y. 11581

Filed Aug. 3, 1978, Ser. No. 930,806

Int. Cl.² B25B *9/02*

U.S. Cl. 81—43 **11 Claims**



1. A soft contact lens apparatus comprising a clamp having a control portion, an intermediate portion, and clamp fingers, said intermediate portion comprising a fulcrum with said control portion being defined rearwardly of said fulcrum and said clamp fingers being defined forwardly of said fulcrum, said control portion opening said fingers when said control portion is squeezed together, said fingers being opened to no greater than substantially the diameter of a soft contact lens, said clamp fingers terminating forwardly in outwardly flared engaging resilient contoured surfaces with respect to a longitudinal axis of said apparatus, said flared contoured surfaces holding said contact lens, said surfaces moving together pinching said contact lens together as the control portion is released to remove the lens from the eye, said contoured surfaces holding said contact lens.

4,192,205
STUD EXTRACTOR

Michael Dorosh, Box 65, Boyle, Alberta, Canada

Filed May 18, 1978, Ser. No. 907,407

Claims priority, application Canada, Apr. 24, 1978, 301832

Int. Cl.² B25B *13/54*

U.S. Cl. 81—53.2 **2 Claims**

1. A torque transmitting device for insertion into a bore in a workpiece, comprising

a shaft formed with a plurality of slots spaced around the periphery of said shaft and extending parallel to the longitudinal axis of said shaft;

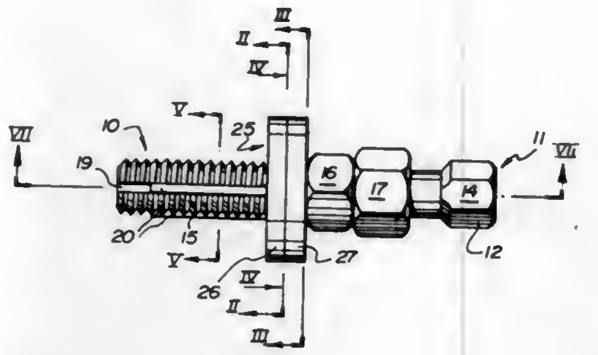
each of said slots having a bottom surface which is inclined towards the periphery of said shaft in a direction extending towards one end of said shaft;

a workpiece-engaging blade in each of said slots;

each of said workpiece-engaging blades being formed with an outer cutting edge for biting engagement with the wall of the bore and having, at its end remote from said one end of said shaft, a radially outwardly extending projection;

annular blade retaining means extending around said blades and said shaft;

said annular blade retaining means being formed with at least one recess in its inner periphery intermediate opposite axial ends of its inner periphery for receiving and engaging said projections;



said annular blade retaining means comprising two separate annular portions and means for releasably securing said two annular portions together;

said two annular portions defining said recess therebetween; and

said annular blade retaining means being displaceable along said shaft; and

a nut in threaded engagement with said shaft at the side of said annular blade retaining means remote from said one end of said shaft for longitudinally displacing said annular blade retaining means and therewith said blades on rotation of said nut relative to said shaft.

4,192,206
APPARATUS FOR ROTATING A TUBULAR MEMBER

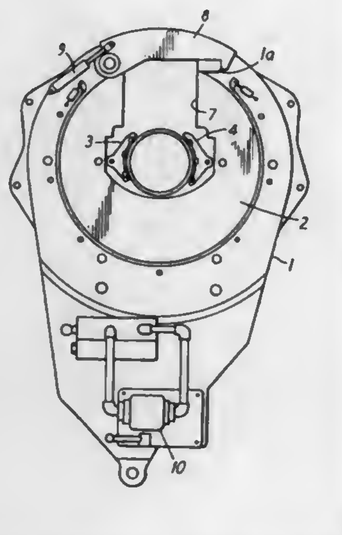
Jörg Schulze-Beckinghausen, Garbsen, Fed. Rep. of Germany, assignor to Weatherford Lamb, Inc., Houston, Tex.

Filed Jun. 6, 1978, Ser. No. 913,256

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726472

Int. Cl.² B25B *17/00*

U.S. Cl. 81—57.18 **8 Claims**



1. An apparatus for rotating a tubular member, comprising,

(a) a housing having a radially recessed opening for receiving the tubular member, said housing having a top member and a bottom member,

(b) a latch for closing off the radially recessed opening during operation of the apparatus, said latch being pivotally secured to the housing on one side of the radially recessed opening,

(c) a latch power means for actuating the latch connected to the latch,

(d) a guide disc mounted within the housing, said guide disc having a radially recessed opening for receiving the tubular member corresponding to the radially recessed opening of the housing,

(e) a plurality of gear rim rollers rotatably secured to the guide disc and to the housing,

(f) a gear rim mounted so as to be movable on the gear rim rollers, said gear rim having an interior wall and a radially recessed opening for receiving the tubular member corresponding to the radially recessed openings of the housing and of the guide disc,

(g) a gearing mechanism composed of a plurality of gears for transmitting power to the gear rim, said gearing mechanism being secured within the housing so as to intermesh with the gear rim,

(h) a power drive means for driving the gearing mechanism and the gear rim, said power drive means being secured to the exterior of the housing,

(i) a first and a second multifaceted cam mounted within the gear rim in axially staggered relation,

(j) a substantially crescent-shaped carrier member mounted within the gear rim, and having a first end and a second end, said carrier member being rotatable within the gear rim and along the cams,

(k) a first lever arm pivotally secured to the first end of the carrier member,

(l) a second lever arm pivotally secured to the second end of the carrier member,

(m) a first gripping jaw for gripping the tubular member, said jaw pivotally secured to the first lever arm,

(n) a second gripping jaw for gripping the tubular member, said jaw pivotally secured to the second lever arm,

(o) a first guide roller rotatably mounted to the first lever arm so that it moves on the faces of the first multi-faceted cam for actuating the first gripping jaw and mounted so that it cannot move on the faces of the second multi-faceted cam,

(p) and a second guide roller rotatably mounted to the second lever arm so that it moves on the faces of the second multi-faceted cam for actuating the second gripping jaw and mounted so that it cannot move on the faces of the first multi-faceted cam.

4,192,207
METHOD FOR FEEDING A PLURALITY OF WIRES

David E. Bickford, Harrisburg, Pa.; Robert K. Southard, Largo, Fla.; Matthew M. Sucheski, Harrisburg, and Earl W. Wagner, Annville, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 760,214, Jan. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 660,565, Feb. 23, 1976, abandoned. This application Apr. 18, 1978, Ser. No. 897,307

Int. Cl.² B26D *5/20;* **B65H** *17/22*

U.S. Cl. 83—42 **4 Claims**

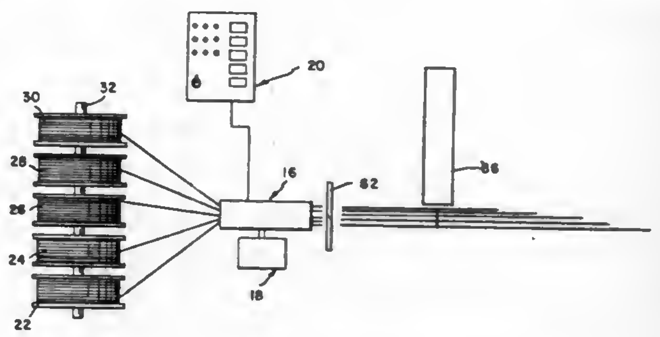
1. A method of incrementally feeding "n" wires of differential lengths from substantially endless sources of wire according to a program, said method comprising the steps of:

a. Guiding and locating each of said "n" wires in parallel on a feed roll with each wire disposed between said feed roll and one of "n" separate pressure rolls which are spaced from said feed roll in a non-feeding position,

b. calculating in a calculating means the increment for selected wires among said "n" wires as specified by said program,

c. moving in response to said calculating means selected pressure rolls among said "n" pressure rolls to a feeding position,

d. activating in response to said calculating means said feed roll to advance the increment as calculated in said calculating means,



e. repeating the steps of b, c, and d until said calculating means calculates a zero increment as specified by said program.

4,192,208
TRANSVERSE DIVIDING SHEAR FOR ROLLING-MILL PRODUCTS, ESPECIALLY HEAVY PLATE

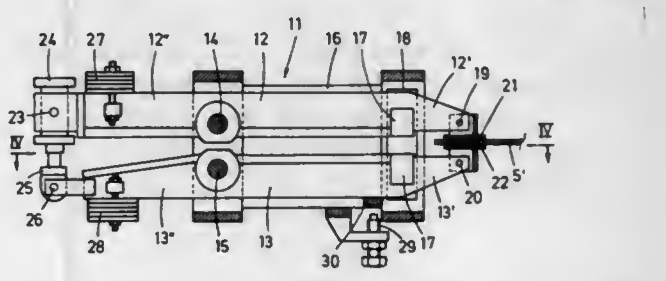
Erich Münker, Kreuztal; Alfred Klein, Hildenbach, and Gerhard Heitze, Netphen, all of Fed. Rep. of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 12, 1978, Ser. No. 914,903

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728202

Int. Cl.² B26D *7/02*

U.S. Cl. 83—438 **10 Claims**



1. A transverse shear for rolled mill products comprising:

a support provided with a fixed lower blade and a movable upper blade for severing rolled plate between said blades and simultaneously applying a transverse force component to said plate in a direction of progress cutting across the plate;

a holddown clamp upstream of said blade and substantially adjacent same for retaining said plate against said lower blade;

lateral-support elements disposed along and engaging the longitudinal edge of said plate at the side thereof toward which the cut progresses; and

at least one pair of clamping tongs downstream of said blades in the direction of advance of said plate between said blades adapted to grip the plate section downstream of the cut and retaining same in a predetermined orientation relative to said elements, thereby preventing the formation of a wedge-shaped cutting gap converging toward said side as a result of a first component in the plane of said plate section.

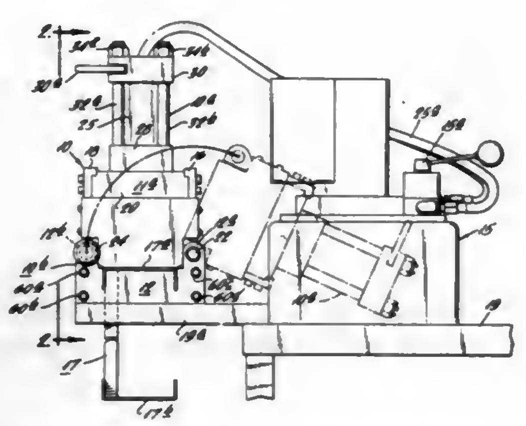
4,192,209
HYDRAULICALLY ACTUATED CUTTING AND PUNCHING ASSEMBLY

Edward F. Urbanski, Abington, Pa., assignor to P-W Industries, Inc., Cornwells Heights, Pa.

Filed Sep. 15, 1978, Ser. No. 942,614

Int. Cl.² B26D *5/08*

U.S. Cl. 83—564 **5 Claims**



1. A hydraulically actuated assembly for cutting and punching channels comprising
- a base section,
- an upper hydraulically operated section pivotally secured to said base section having a first and a second member spaced from each other and defining the front and rear walls respectively of a cutting and punching chamber, said first and second members having upper recesses facing each other,
- a mounting member forming an upper wall of said chamber and rigidly secured within said recesses of said first and second members to form a rigid support structure,
- hydraulic cylinder means secured to said mounting member and extending into said chamber, and
- cutting and punching means secured to said hydraulic cylinder means for providing said cutting and punching of said channel within said chamber.

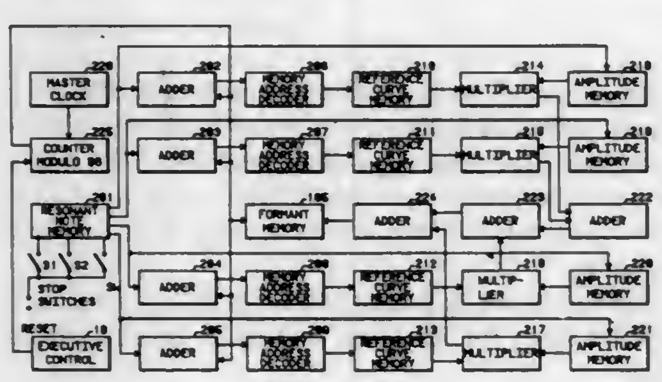
4,192,210
FORMANT FILTER SYNTHESIZER FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

Filed Jun. 22, 1978, Ser. No. 917,921

Int. Cl.² G10H *1/02*

U.S. Cl. 84—1.01 **6 Claims**



1. In a tone generator in which the relative amplitudes of a succession of points defining the waveform of an audio signal are generated digitally by adding the amplitudes for each of said points of a number of Fourier harmonic components of the waveform, the relative amplitudes of the points for each component being determined by multiplying a set of orthogonal function values by a harmonic coefficient value, and in which the relative amplitude values for each harmonic are scaled by a different scale factor from a stored list of scale factors corresponding to a fixed formant filter characteristic, apparatus for generating said list of scale factors comprising: an addressable memory means storing a group of words corresponding to the relative amplitudes of points defining a resonance curve, addressing means including a counter and a source of data designating a group of notes corresponding in frequency to the center frequencies of resonant peaks of the fixed formant filter for addressing said addressable memory means, said addressing means including means for modifying the counter output by an amount determined by each of the group of notes from said source of data to generate a corresponding group of addresses for addressing said memory with each setting of the counter, means for adding the resulting group of words read out from said addressable memory means for each setting of the counter, and means storing the sum of each of said group of words to form said scale factor list, whereby said last-named storing means stores a set of words corresponding in number to the modulo of the counter, the value of the words corresponding to the relative amplitudes of points defining the composite of a group of resonance curves.

4,192,211
ELECTRONIC MUSICAL INSTRUMENT

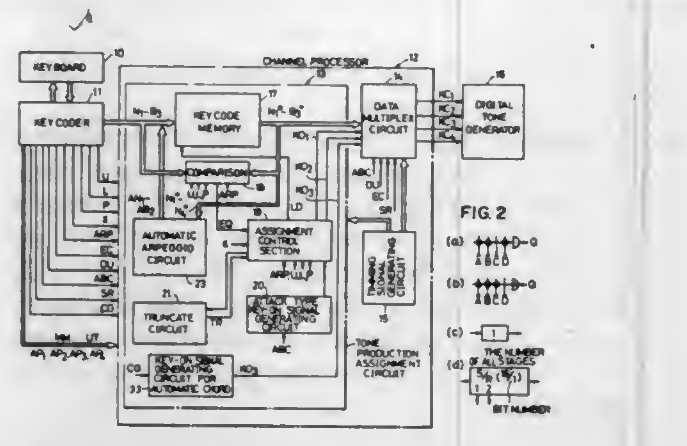
Eiichi Yamaga; Akira Nakada; Takatoshi Okumura; Eiichiro Aoki; Akiyoshi Oya, and Yasuji Uchiyama, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 28, 1978, Ser. No. 929,007

Claims priority, application Japan, Aug. 5, 1977, 52-93992; Aug. 23, 1977, 52-100966

Int. Cl.² G10H *1/00, 5/00*

U.S. Cl. 84—1.01 **6 Claims**



1. A keyboard electronic musical instrument having a specified number of tone production channels connected by a number of output lines, comprising:
- a tone production assignment circuit for assigning production of a tone selected by depression of a key to one of said channels and generating key information representing the note name of the assigned tone and key-on information representing depression or release of the key with respect to each channel to which tone production has been assigned, said key information and said key-on information for each channel together having a certain total number of bits;
- data dividing means, connected to said assignment circuit and having parallel output lines of a number which is smaller than said certain total number of bits of the key information and the key-on information for each channel, for dividing the key information and the key-on information of the tone assigned to the particular channel into groups of data, each group having a number of bits matching the number of said output lines;
- data multiplexing means, cooperatively connected to said data dividing means, for time division multiplexing said groups of divided data by delivering each group of data on said output lines in parallel data format, said groups being delivered sequentially in time division multiplexed order; and
- a tone generator for generating the tone assigned to each channel in accordance with the multiplexed data.

4,192,212
ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC PERFORMANCE DEVICE

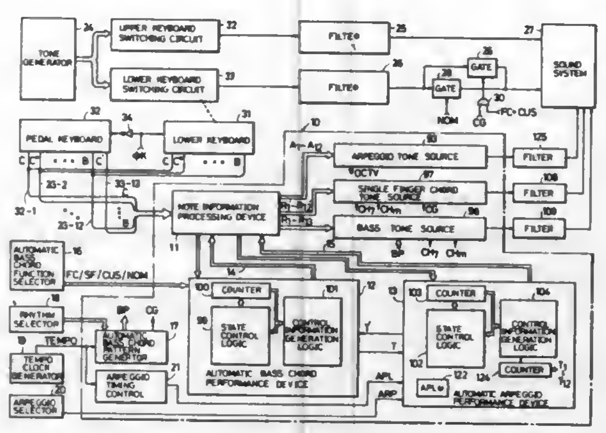
Eiichi Yamaga; Eiichiro Aoki, and Akio Imamura, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 22, 1978, Ser. No. 880,184

Claims priority, application Japan, Feb. 24, 1977, 52-19507; Feb. 24, 1977, 52-20077; Feb. 25, 1977, 52-20079

Int. Cl.² G10H *1/02, 5/00*

U.S. Cl. 84—1.03 **16 Claims**


TONE GENERATOR
UPPER KEYBOARD SWITCHING CIRCUIT
LOWER KEYBOARD SWITCHING CIRCUIT
FILTER
GATE
SOUND SYSTEM
PEDAL KEYBOARD
LOWER KEYBOARD
ARPEGGIO TONE SOURCE
BASS TONE SOURCE
NOTE INFORMATION PROCESSING DEVICE
RHYTHM SELECTOR
TEMPO
TEMPO CLOCK GENERATOR
ARPEGGIO SELECTOR
ARPEGGIO TIMING CONTROL
AUTOMATIC BASS CHORD PATTERN GENERATOR
STATE CONTROL LOGIC
CONTROL INFORMATION GENERATION LOGIC
AUTOMATIC BASS CHORD PERFORMANCE DEVICE
COUNTER
AUTOMATIC ARPEGGIO PERFORMANCE DEVICE

1. An electronic musical instrument comprising:
- keys;
- note information generation means for generating upon depression of the keys a plurality of note information representative of notes to be sounded in relation to the key depression;
- selection means for selecting a note information representative of a note to be sounded from among said plurality of information from the note information generation means in accordance with a predetermined priority order;
- output means for storing and delivering out the note information selected by said selection means; and
- a tone producing means for producing each tone designated by the note information delivered out from said output means,
- said selection means operating repetitively to select successive notes to be sounded and including masking type priority selection logic interconnected to said output means for selecting from said plurality of information the note information which is next in said predetermined priority order with respect to the note information which was stored in and delivered out from said output means at the preceding repetitive operation of said selection means.

6. An electronic musical instrument comprising:
- keys;
- processing means for carrying out one or more processes selected from the group including chord detection, root tone detection and single-tone selection according to note information specified by depression of said keys, and in response to control information; and
- control means for supplying to said processing means control information required for carrying out a plurality of automatic performances such as an automatic bass chord performance and an automatic arpeggio performance, in a time division manner, with respect to each function of said automatic performances,
- processing for said plurality of automatic performances being thereby effected in a time division manner in said processing means.

7. In an electronic musical instrument, an arpeggio production system comprising:
- a data register having a separate storage position corresponding to each note name,
- chord data entry means for entering into said data register subtone degree data indicative of the prime and intervals of a chord, the prime-indicative datum being entered in the storage position corresponding to the note name of the chord root,
- an "arpeggio" register also having a separate storage position corresponding to each note name and storing a single signal in the storage position corresponding to the note name of the last produced arpeggio tone, and
- masking type priority selection means, cooperating with said data register and said "arpeggio" register, for comparing the contents of said data register and said "arpeggio" register and for selecting the interval indicative datum in said data register which is next in preselected order with respect to the note name of said last produced arpeggio tone, said selected datum being usable to control production of the next arpeggio tone.

14. In an electronic musical instrument in which notes are represented by signals on a set of note-name corresponding lines,
- a first priority selection circuit means, having a data input to which an input set of note-name corresponding lines is connected, having an output to which an output set of note-name corresponding lines is connected, and having a priority position control input to which a priority position defining control signal is applied, for gating to said output only those signals present on lines of said input set having an order in a specified relationship with respect to the priority position defined by said control signal, and
- control means for providing to said control input a programmatically changing control signal which at different times defines different priority positions.

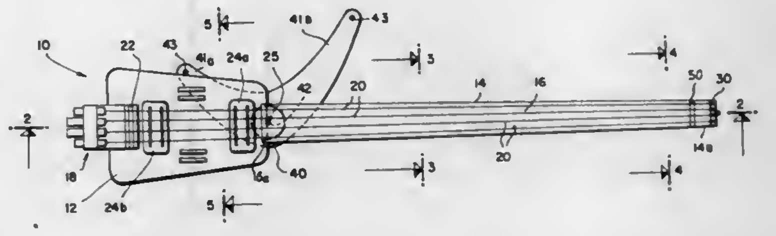
4,192,213
STRINGED MUSICAL INSTRUMENTS

Ned Steinberger, 444 12th St., Brooklyn, N.Y. 11215

Filed Sep. 18, 1978, Ser. No. 942,937

Int. Cl.² G10D *1/08;* **G10G** *5/00*

U.S. Cl. 84—293 **12 Claims**



1. A stringed musical instrument comprising a body, a neck portion extending from said body, said neck including a nut and a fingerboard, tuning machines, said tuning machines extending from said body portion opposite said neck portion, support means for supporting said instrument, said support means pivotally engaging said instrument, said support means pivoting at the center of gravity of said instrument, and said neck of said instrument weighing approximately no less than 2.5 pounds, said neck having an average cross section without a fingerboard of approximately 1.25 inches, and said neck deflecting no more than 0.09 inches when said instrument is supported to its center of gravity and with a five-pound weight depending from said nut of said neck.

4,192,214
SUPPORT DEVICE FOR MUSICAL INSTRUMENTS

James L. Mixon, Jr., 5129 Irene Dr., Harrisburg, Pa. 17112, and Mark L. Sherman, 3613 Walnut St., Harrisburg, Pa. 17109

Filed Sep. 18, 1978, Ser. No. 943,240

Int. Cl.² G10G *5/00*

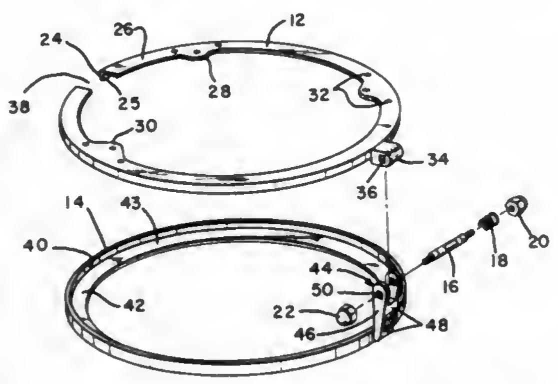
U.S. Cl. 84—327 **6 Claims**

1. A support device for stringed musical instruments comprising:
- a. a first member adapted to be removably attached on an instrument at a distance spaced inwardly from the instruments' back side;

b. a second member adapted to fit against the instruments' back side; and

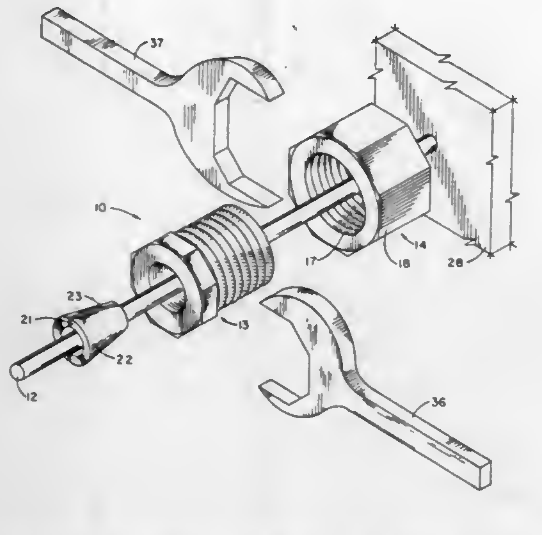
c. hinge means comprising a pin receiving housing on one member, a bracket on another member with side rails extending to either side of the pin receiving housing, and a pin passing through the side rails and housing

so that the second member may be rotated away from the instrument to a position for supporting the instrument.



4,192,215
TENSIONING APPARATUS AND METHOD OF APPLYING TENSION TO A TENDON

Nelson J. Hymans, 5116 S. 81st St., Ralston, Nebr. 68127
Continuation of Ser. No. 577,691, May 5, 1975, abandoned. This application Aug. 28, 1978, Ser. No. 937,377
Int. Cl.^{2} E04C *3/26;* **E21B** *19/00;* **F16B** *17/00*
U.S. Cl. 85—36 **4 Claims**



1. A tensioning apparatus adapted for employment with two torque wrenches coacting with only a plane surface of a body to induce torsion-free axial tensile stress in a linear member which extends from the body generally perpendicularly to the plane surface, the apparatus comprising:

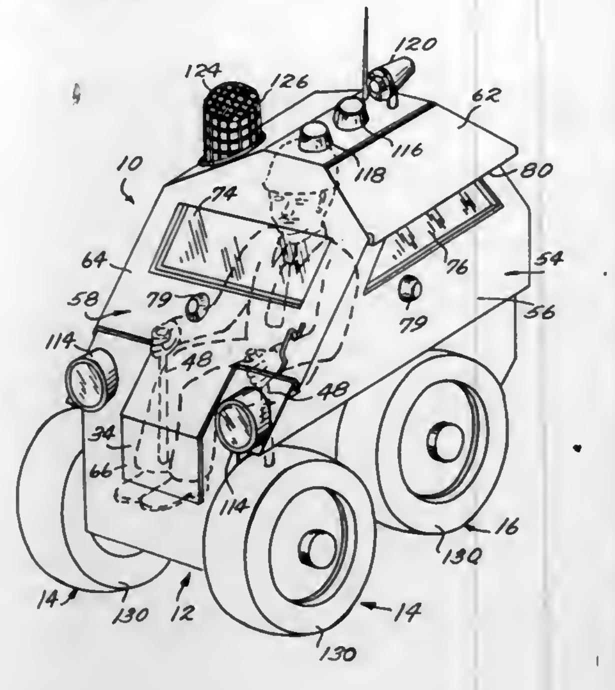
wedge gripper means having an opening formed axially therethrough for generally concentric mounting on the linear member, an inner surface for gripping engagement of the linear member, and a tapered outer surface;

a sleeve member having an opening formed axially therethrough for generally concentric mounting on said wedge gripper means, a tapered inner surface for mateable contact and interaction with wedge gripper means tapered outer surfaces, and an outer surface with screw threads formed on a reduced diameter portion thereof and a separate and distinct integrally formed enlarged wrench engageable surface formed on another portion thereof for positive mateable mechanical engagement by one of the two wrenches, the enlarged wrench engagable surface having an outer dimension greater than the maximum thread diameter; and

a nut having an opening formed axially therethrough from end to end thus providing an inner surface with the inner surface having screw threads formed thereon for threadable contact with said sleeve member's threaded surface, an integral, enlarged wrench engageable surface formed on the outer surface thereof for positive mateable mechanical engagement by the other of the two wrenches, and a plane surface formed on one end thereof for mateable contact with the plane surface of the body, wherein said enlarged wrench engageable surfaces on said sleeve member and said nut cooperate to limit the travel of the threaded portion of the nut on the threaded portion of the sleeve in one direction only.

4,192,216
ONE-MAN ARMORED VEHICLE

Henry J. Wait, Nicholasville, Ky., assignor to Mason & Hanger-Silas Mason Co., Inc., Lexington, Ky.
Filed Feb. 10, 1978, Ser. No. 876,567
Int. Cl.^{2} F41H *7/02*
U.S. Cl. 89—40 B **9 Claims**



1. A one-man armored vehicle comprising:

a self-propelled chassis having at least a pair of front and a pair of rear wheels provided with rubber-like bullet-resistant tires, an internal combustion engine for driving said wheels, transmission means between said engine and said wheels, and manually-operable means for selectively controlling the transmission and reversing of power from said engine to said wheels on the opposite sides of said vehicle;

an operator's seat on and adjacent the front portion of said chassis, said manually-operable means including a pair of hand levers one on each side of said seat;

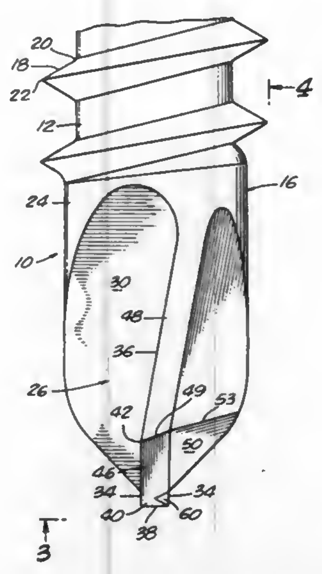
armored housing means substantially enclosing said chassis, except for said wheels, and extending thereabove to define in part an operator's compartment, said housing means including an armored front access door provided with a transparent bullet-resistant window and a gun port therebelow, side and rear transparent bullet-resistant windows, and side gun ports below said side windows, said windows substantially providing 360° visibility for an operator and said gun ports being only large enough to accommodate the muzzle of a firearm to minimize the possibility of bullets entering said compartment;

means defining an opening in the lower rear portion of said housing means for ingress of air to and egress of air and exhaust from said engine; and

armored louver means covering said opening and substantially obstructing line of sight therethrough.

4,192,217
SELF-DRILLING SCREW

Irwin J. Schwartzman, Northridge, Calif., assignor to J. Schwartzman Manufacturing & Supply Co., North Hollywood, Calif.
Filed Jul. 17, 1978, Ser. No. 925,345
Int. Cl.^{2} F16B *25/00*
U.S. Cl. 85—41 **4 Claims**



1. In a self-drilling screw having an elongated threaded shank with a driving head at its outer end and a drilling portion at its inner end, the improvement in which:

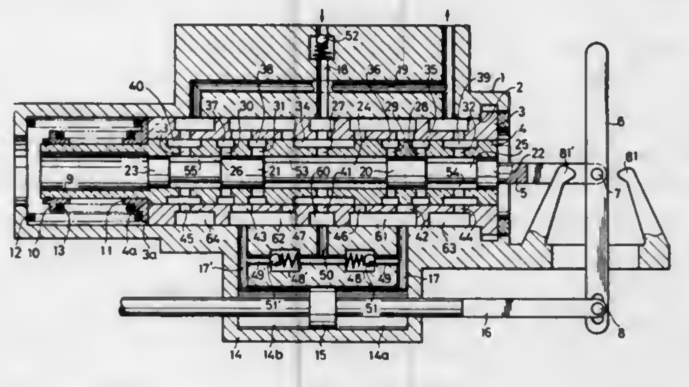
(a) the drilling portion comprises a body having longitudinally extending flutes located substantially on opposite sides of said body;

(b) a pair of back relief surface areas extending along and being further inclined with reference to the relief surfaces paralleling each of said tip-cutting edges and said side-cutting edges, said back relief surface areas having contiguous surface areas joined along a common edge extending rearwardly from the joined ends of the relief surfaces; and

(c) means forming salient cutting edges at the opposite ends of the cutting edge formed on said tip web, said salient cutting edges being conformed to provide a clawing cutting action in each case.

4,192,218
FAIL-SAFE FLUID CONTROL VALVE

Toru Yamamoto, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka, Japan
Continuation-in-part of Ser. No. 722,757, Sep. 13, 1976, abandoned. This application Jan. 30, 1978, Ser. No. 873,500
Claims priority, application Japan, Oct. 28, 1975, 50-129655
Int. Cl.^{2} F01B *15/00;* **F15B** *9/10*
U.S. Cl. 91—216 A **5 Claims**



1. A fail-safe fluid control valve comprising:

a housing formed with a hollow cavity therein, a first sleeve securely accommodated in said hollow cavity of said housing, a second sleeve slidably accommodated in said first sleeve, a valve spool slidably accommodated in said second sleeve, resilient means provided in said housing for resiliently retaining said second sleeve at a predetermined position and for resiliently returning said second sleeve to said predetermined position when said second sleeve is moved away from said predetermined position, a cylinder disposed in the vicinity of said hollow cavity of said housing and having a piston with a piston rod therein, an inlet conduit communicated with said hollow cavity and having a first check valve to permit oil under pressure to be admitted into said hollow cavity through said check valve, a bifurcated outlet conduit communicated with said hollow cavity to permit the oil to be discharged from said hollow cavity, a pair of cylinder conduits each connecting one side of said cylinder to said hollow cavity to permit the oil to be admitted into said cylinder from said hollow cavity and to be discharged from said cylinder to said hollow cavity whereby relative movement between said piston and piston rod and said cylinder will be effected, the improvement comprising:

said valve spool including first, second, third and fourth large diameter portions located at predetermined intervals along its axial length so as to define a first small diameter portion between said first and second large diameter portions, a second small diameter portion between said first and third large diameter portions, and a third small diameter portion between said second and fourth large diameter portions,

said second sleeve including a first port group located in opposing relation with said first small diameter portion of said valve spool and having at least one radial bore formed in said second sleeve, second and third port groups located in close proximity with each other and each having at least one radial bore formed in said second sleeve, the radially inner openings of said radial bores of said second and third port groups being closable by the outer peripheral surface of said first large diameter portion of said valve spool, fourth and fifth port groups located in close proximity with each other and each having at least one radial bore formed in said second sleeve, said fourth and fifth port groups being in spaced relation with said second and third port groups and the radially inner openings of said radial bores of said fourth and fifth port groups being closable by the outer peripheral surface of said second large diameter portion of said valve spool and being so closed when the radially inner openings of said radial bores of said second and third port groups are closed by the outer peripheral surface of said first large diameter portion of said valve spool, a sixth port group located in opposing relation with said second small diameter portion of said valve spool and having at least one radial bore formed in said second sleeve, a seventh port group located in opposing relation with said third small diameter portion of said valve spool and having at least one radial bore formed in said second sleeve, a first annular groove formed in the outer peripheral wall of said second sleeve to be in fluid communication with the radially outer opening of said radial bore of said first port group, a second annular groove formed in the outer peripheral wall of said second sleeve to be in fluid communication with the radially outer opening of said radial bore of said second port group, a third annular groove formed in the outer peripheral wall of said second sleeve to be in fluid communication with the radially outer opening of said radial bore of said third port group, a fourth annular groove formed in the outer peripheral wall of said second sleeve to be in fluid communication with the radially outer opening of said radial bore of said fourth port group, a fifth annular groove formed in the outer peripheral wall of said second sleeve to be in fluid communication with the radially outer opening of said radial bore of said fifth port group, a sixth annular groove formed in the outer peripheral wall of said second sleeve to be in fluid communication with the radially outer opening of said radial bore of said sixth port group, a seventh annular groove formed in the outer peripheral wall of said second sleeve to be in fluid communication with the radially outer opening of said radial bore of said seventh port group,

said first sleeve including an eighth port group having at least one radial bore formed in said first sleeve with its radially inner opening in fluid communication with said first annular groove, a ninth port group having at least one radial bore formed in said first sleeve with its radially inner opening in fluid communication with said second and third annular grooves upon said second sleeve being retained at the predetermined position by said resilient means, a tenth port group having at least one radial bore formed in said first sleeve with its radially inner opening in fluid communication with said fourth and fifth annular grooves upon said second sleeve being retained at the predetermined position by said resilient means, an eleventh port group having at least one radial bore formed in said first sleeve with its radially inner opening in fluid communication with said sixth annular groove, a twelfth port group having at least one radial bore formed in said first sleeve with its radially inner opening in fluid communication with said seventh annular groove, a thirteenth port group having at least one radial bore formed in said first sleeve with its radially inner opening closed by the outer peripheral wall of said second sleeve and said radial bore of said thirteenth port group having an inner side, said inner side being closely adjacent said eighth port group, said first annular groove having an inner face substantially radially aligned with said inner side upon the second sleeve being retained at the predetermined position by said resilient means, a fourteenth port group having at least one radial bore formed in said first sleeve with its radially inner opening closed by the outer peripheral wall of said second sleeve and said radial bore of said fourteenth port group having an inner side, said inner side of said radial bore of said fourteenth port group being closely adjacent to said eighth port group, said first annular groove having another inner face substantially radially aligned with said inner side of said radial bore of said fourteenth port group upon the second sleeve being retained at the predetermined position by said resilient means, an eighth annular groove formed in the outer peripheral wall of said first sleeve to be in fluid communication with the radially outer opening of said radial bore of said eighth port group, a ninth annular groove formed in the outer peripheral wall of said first sleeve to be in fluid communication with the radially outer openings of said radial bores of said ninth and thirteenth port groups and one of said cylindrical conduits, a tenth annular groove formed in the outer wall of said first sleeve to be in fluid communication with the radially outer openings of said radial bores of said tenth and fourteenth port groups and said remaining cylinder conduit, an eleventh annular groove formed in the outer peripheral wall of said first sleeve to be in fluid communication with the radially outer opening of said radial bore of said eleventh port group and said outlet conduit, and a twelfth annular groove formed in the outer peripheral wall of said first sleeve to be in fluid communication with the radially outer opening of said radial bore of said twelfth port group and said outlet conduit,

a by-pass conduit connected with said cylinder conduits and accommodating therein a pair of second check valves, said by-pass conduit being in fluid communication at its longitudinal position between said check valves with said eighth annular groove of said first sleeve.

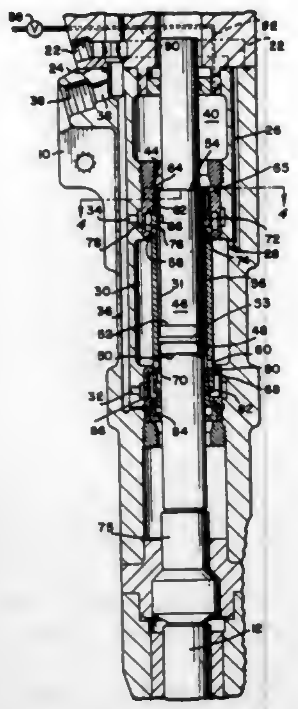
4,192,219
HYDRAULIC ACTUATOR

Eugene L. Krasnoff, Princeton, and Herman Lindeboom, Pennington, both of N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 890,382, Mar. 27, 1978, Pat. No. 4,142,447, which is a continuation of Ser. No. 699,493, Jun. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 533,969, Dec. 18, 1974, abandoned. This application Jan. 10, 1979, Ser. No. 2,445

Int. Cl.² F01L *17/00*

U.S. Cl. 91—276 **3 Claims**



1. A hydraulic actuator comprising: a liquid source for supplying an operating pressure to a housing, the housing having a pressurized cushion chamber; a piston chamber formed by a slidable sleeve, a piston mounted within said housing and coxial with the slidable sleeve, said piston extending through the sleeve and into the pressurized cushion chamber, said piston having a first liquid pressure surface in the piston chamber and a second liquid pressure surface in the piston chamber, said piston also having a cushion chamber liquid pressure surface which alternately, continuously increases the pressure of the liquid in the cushion chamber during movement of the piston in one direction and continuously reduces the pressure of the liquid in the cushion chamber during movement of the piston in the other direction as the piston reciprocates; and piston reciprocating means comprising valve means including a valve member and said slidable sleeve, said slidable sleeve having axially spaced sets of ports, the ports supplying operating pressure to the piston chamber; the piston reciprocating means further comprising hydraulic flow conduits controlled by said valve member; said sleeve being biased in a first direction by having a first portion thereof continuously directly subjected to the cushion chamber pressure, said valve member and said hydraulic flow conduits being constructed so that during the entire cycle the operating pressure acts in a direction opposite said first direction on a second portion of the sleeve to oppose the bias resulting from the pressure on the sleeve first portion, the operating and cushion pressures and the dimensions of the piston cushion chamber liquid pressure surface and sleeve first and second portions being chosen such that said sleeve begins moving to a first position when the pressure in the cushion chamber relative to said operating pressure reaches a first predetermined level to permit the application of operating pressure to said first liquid pressure surface, said sleeve beginning to move to a second position when the pressure in the cushion chamber reaches a second predetermined level relative to said operating pressure to permit the application of operating pressure to said second piston liquid pressure surface.

4,192,220
VACUUM BOOSTER

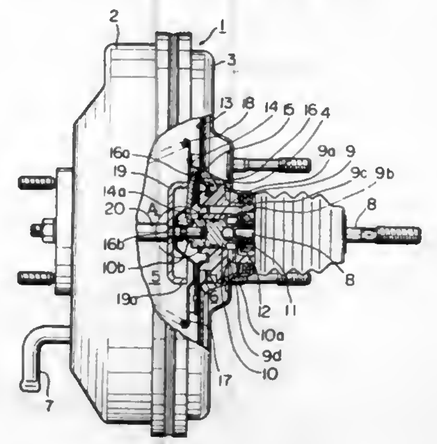
Kiyoshi Tateoka, Fujisawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Apr. 14, 1977, Ser. No. 787,457

Claims priority, application Japan, Apr. 20, 1976, 51-49614[U]

Int. Cl.² F15B *9/10;* F01B *9/00*

U.S. Cl. 91—376 R **1 Claim**



1. A vacuum booster comprising a casing, a resilient diaphragm in said casing and having the outer periphery secured to the casing and dividing the interior thereof into two chambers, means connecting one of said chambers permanently to a source of vacuum, a power piston secured to said diaphragm, a valve mechanism incorporated in said power piston for selectively connecting the other chamber with said one chamber or a source of pressure higher than the vacuum pressure, an input rod connected to the valve mechanism for actuating the valve mechanism for generating differential pressure between said two chambers, an output rod member for receiving the force corresponding to the differential pressure from the power piston, said valve mechanism having a member on an end toward said output rod member, a pin-and-socket connection connecting the output rod member to said member of said valve mechanism, said pin-and-socket connection having a pin on one of said members and a socket on the other of said members snugly receiving the pin, said pin having an annular groove therein and a generally U-shaped resilient wire rod with two parallel arm portions engaged in said groove with an axial clearance sufficient for allowing free relative axial movement between the pin and socket corresponding to the dimension of said groove along said pin in a normal operating condition of the vacuum booster, said socket having two diametrically opposite grooves each extending along a chord of the socket and completely through the thickness of the wall of the socket in which the parallel arm portions are received for projecting into the annular groove in said pin, whereby said resilient wire rod prevents escape of said pin from said socket during assembly or repair of said vacuum booster.

4,192,221
RADIAL PISTON ENGINE

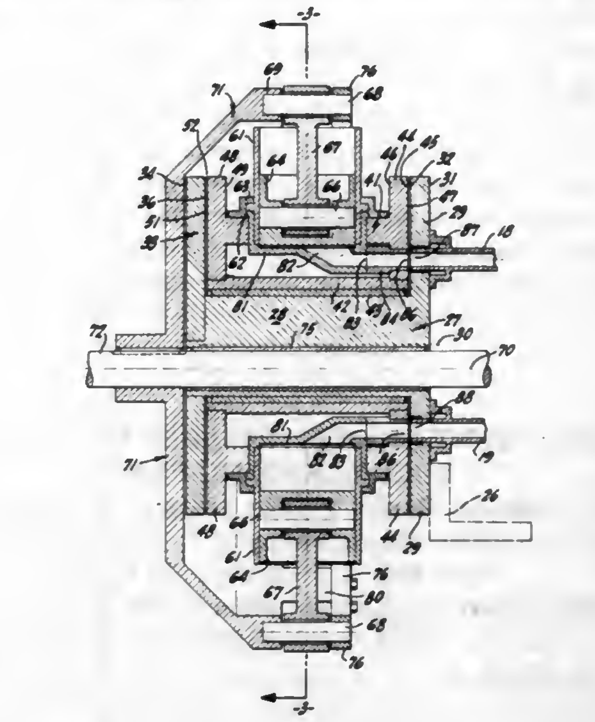
Thomas C. Robinson, 100 Hill Rd., Berkeley, Calif. 94708

Filed Dec. 29, 1978, Ser. No. 974,567

Int. Cl.² F01B *1/06*

U.S. Cl. 91—487 **18 Claims**

1. An engine comprising a base, a spool mounted on said base and including a first hub symmetrical about a first axis and including a pair of side plates normal to and having inside faces spaced apart along said first axis, means defining plate ports in said inside faces, a cylinder rotor including a second hub rotatable on said first hub about said first axis and including a pair of side discs normal to and having outside faces spaced apart along said first axis between said side plates to establish first and second axial clearances each between one of said side plates and the adjacent side disc, cylinders mounted radially on said rotor, means establishing ducts in said cylinders extending to disc ports in said outside faces generally axially opposite said plate ports, a driven shaft eccentrically journalled with respect to said hub, a rotor fast on said driven shaft, pistons in said cylinders, and means for operably connecting said pistons to said rotor.



4,192,222
POWER PISTON APPARATUS

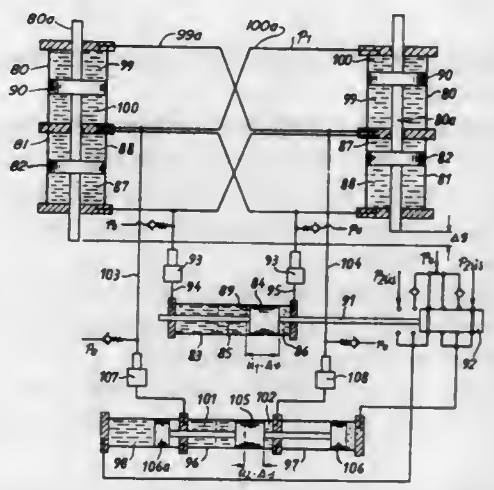
Herbert R. Dits, Schmelz, Fed. Rep. of Germany, assignor to Transform Verstarkungsmaschinen Aktiengesellschaft, Bous, Fed. Rep. of Germany

Filed Jul. 12, 1977, Ser. No. 815,015

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1976, 2631479

Int. Cl.² F01B *25/04;* F15B *11/22;* F01B *7/00*

U.S. Cl. 91—517 **7 Claims**



1. A power piston apparatus comprising, in combination:

a plurality of hydraulic piston drive means, each of the drive means having an enclosed cylinder and a double acting piston within the cylinder to divide the same into a pair of fluid spaces;

means for connecting the hydraulic piston drive means in operative relationship with each other, the connecting means including means for hydraulically connecting a fluid space of one of the enclosed cylinders to a fluid space of the other enclosed cylinder;

a plurality of metering means, one for each of the drive means, each of the metering means having an enclosed metering cylinder and a metering piston within the metering cylinder and connected to the corresponding drive means piston;

control means for detecting movement of at least one of the drive means pistons to an incorrect position, the control means having a control cylinder, a control piston within the control cylinder, and means for hydraulically connecting the control cylinder to at least one of said enclosed cylinders;

means operable in response to the control means for correcting the position of said one drive means piston, the correcting means having a power cylinder, a double acting power piston within the power cylinder, and a hydraulic connection between the power cylinder and the cylinder for said one drive means piston; and

means connected to the control piston for operating the correcting means to restore said one drive means piston to its correct position.

4,192,223

ADJUSTMENT DEVICE, NOTABLY FOR METERING RECIPROCATING PUMPS

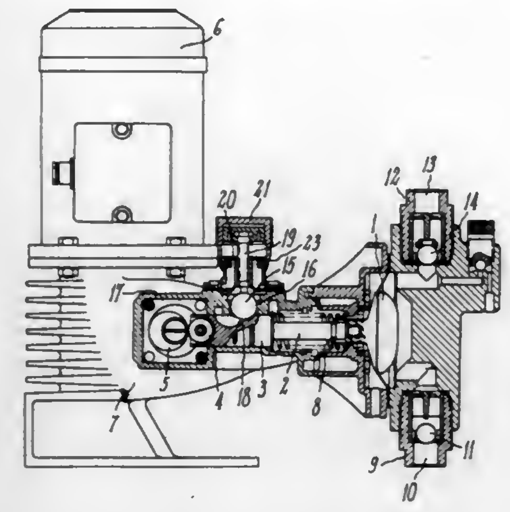
Didier Lombard, Rouen, France, assignor to Dosapro Milton Roy, Pont-Saint-Pierre, France

Filed Feb. 2, 1978, Ser. No. 874,683

Claims priority, application France, Feb. 10, 1977, 77 03749

Int. Cl.² F01B *31/12;* F15B *15/24;* F16J *1/10*

U.S. Cl. 92—5 R 11 Claims



1. A reciprocating diaphragm pump comprising:

a pump casing;

a diaphragm pumping member positioned within said casing;

a slide block having a first end connected to said diaphragm pumping member and a second end, said slide block being mounted within said casing for axial reciprocal sliding movement therein;

means, operatively associated with said slide block adjacent said second end thereof, for intermittently moving said slide block in a first axial direction;

spring means for constantly urging said slide block in an opposite second axial direction toward said moving means;

said slide block having in a side surface thereof a groove at least partially defined by a surface which is inclined with respect to the direction of axial movement of said slide block;

a bore extending through said casing in a direction substantially transverse to said direction of axial movement of said slide block, said bore communicating with said groove in said slide block;

a ball supported within said bore and having a portion extending into said groove, such that said inclined surface of said groove abuts with said ball during movement of said slide block in said second axial direction, thereby limiting the extent of movement of said slide block in said second axial direction; and

adjustment means, axially adjustably extending into said bore in a direction transverse to said direction of axial movement of said slide block and having an inner end abutting said ball, for adjusting the extent of said portion of said ball which extends into said groove, for thereby adjusting the relative position of said ball with respect to said inclined surface, and for thereby adjusting the extent of movement of said slide block in said second axial direction.

4,192,224

ROTARY MASTER CYLINDER MEANS

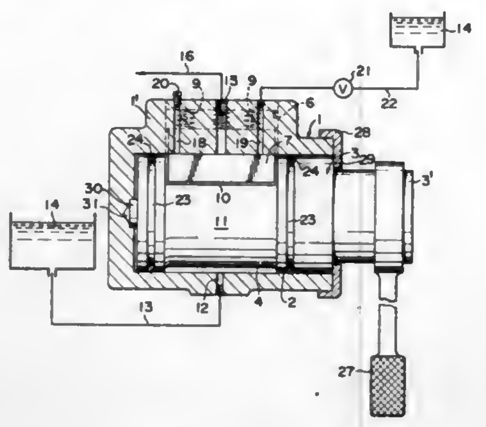
Hiromasa Okamura, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 8, 1977, Ser. No. 858,792

Claims priority, application Japan, Dec. 17, 1976, 51-152168

Int. Cl.² F15B *7/00, 7/08*

U.S. Cl. 92—125 5 Claims



1. A rotary master cylinder means having a non-linear pressure output in response to a linear input comprising a housing having a cylindrical bore, a rotary piston rotatably mounted in said cylindrical bore and having at least one peripheral recess, at least one dam means slidably supported by said housing and radially inserted into said recess so as to define a pressure chamber between the wall of the cylindrical bore, the dam means and the peripheral recess; port means incorporated in said housing to communicate with said pressure chamber, said recess having radial depth which varies at a regular rate of change in accordance with its angular position so that the rate of change of volume of said pressure chamber relative to rotation of said rotary piston varies in accordance with the rotational angle of said rotary piston.

4,192,225

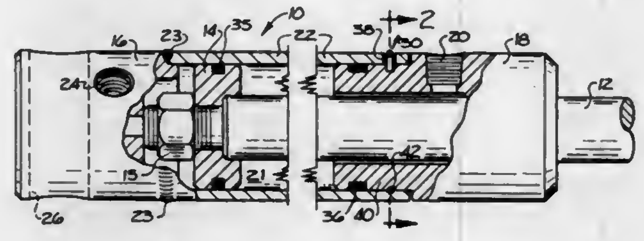
CYLINDER LOCKING RING

Laurence Moyer, Partridge, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Feb. 10, 1978, Ser. No. 876,777

Int. Cl.² F16J *11/02*

U.S. Cl. 92—169 10 Claims



1. A mechanical closure for the end of a linear hydraulic cylinder including a cylinder barrel having an open end with:

a closure member closing the open end of the cylinder barrel and defining a fluid tight chamber;

a pair of matching annular grooves concentrically spaced and longitudinally aligned with each other, one groove located in the cylinder barrel and the other in the closure member;

a radially extending slot extending from the exterior into the outer annular groove; and

a locking wire ring which is removably inserted in said pair of annular grooves through the slot, locking the closure member to the cylinder barrel; and locking means in the cylinder for holding the inner end of the wire ring to the closure member;

in which the improvement comprises:

a pair of substantially prallel end walls on the radially extending slot; and

a u-shaped outer end on the locking wire ring, having sides parallel to each other and substantially normally spaced with respect to the circumference of the ring in side-by-side contact with the end walls of the slot so as to lock the closure member to the barrel against rotational movement.

4,192,226

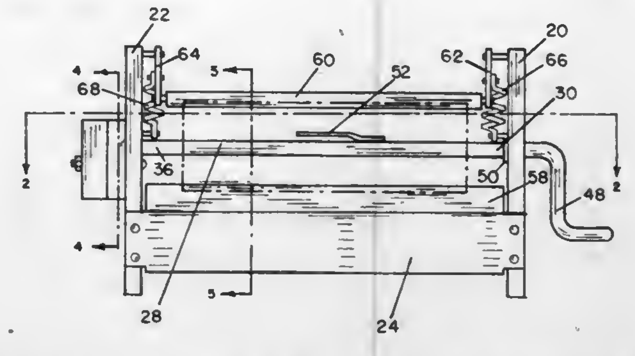
PAPER LOG ROLLER

Agostino Agostinelli, P.O. Box 244, Westbrook, Conn. 06498

Filed Jun. 2, 1978, Ser. No. 912,008

Int. Cl.² B31C *1/00*

U.S. Cl. 93—1 C 6 Claims



1. An improved method forforming discontinuous flexible sheet into a roll with an apparatus wherein a first sheet has been partially formed into the roll about a shaft adapted to be rotated and wherein said sheet has a trailing edge, which comprises,

providing a cantilevered table in a position which contacts the roll and which supports the trailing edge of the first sheet; placing the leading edge of a second sheet on the trailing edge of the first sheet so that the leading edge intercepts the intersection of the first sheet and the circumferential surface of the roll being formed;

frictionally engaging the second sheet by rotation of the shaft;

tensioning and pressing on the first and second sheet formed about the shaft with the cantilevered table to tension and compact the roll; and

continuing to position second sheets upon the preceeding sheets in like manner until a roll of the desired size is accumulated.

4. Apparatus adapted to form discontinuous flexible sheets into a roll, said apparatus having a first end frame provided with a receptacle for receiving the first end of a shaft, rigidly interconnected with a second end frame having a receptacle for receiving the second end of a shaft, a shaft rotatably and removeably mounted between the first and second end frame, said shaft being adapted for receiving and engaging a sheet, and a means for rotating the shaft, the improvement comprising an elastically deflectable cantilevered table mounted between the end frames, the table having a free and unattached end adapted to press against the roll formed about the shaft and a fixed end adapted to receive and allow the passage of sheets toward the free end, the table further being adapted to support the trailing edges of a first sheet while the leading edge of a second sheet is placed thereon.

4,192,227

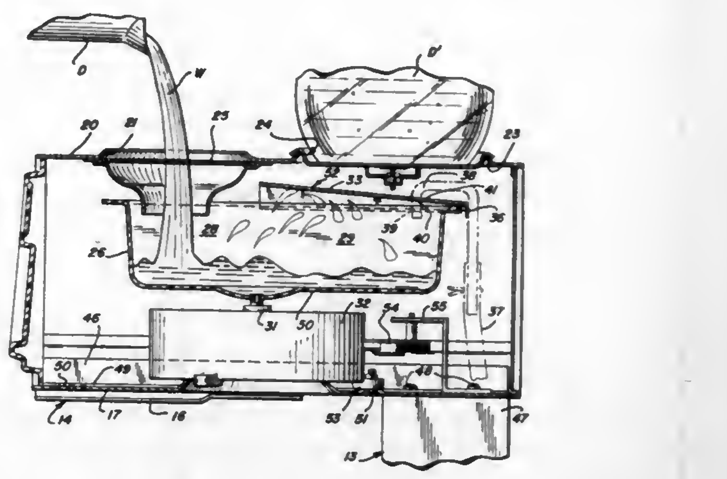
BEVERAGE BREWER

Stanton H. Petry, Arlington Heights, Ill., assignor to Cory Food Services, Inc., Chicago, Ill.

Filed Dec. 19, 1978, Ser. No. 971,054

Int. Cl.² A47J *31/54*

U.S. Cl. 99—279 22 Claims



1. In a beverage brewer structure including a water heating device, an upwardly open basin for receiving poured brewing water, said basin being connected to the water heating device for delivering the poured water to the water heating device to be heated therein, a housing having an upper wall overlying a first portion of the basin and provided with a pour-in opening for passing poured water downwardly therethrough into the basin and a warmer station opening overlying a second portion of the basin, and a warmer station mounted to said upper wall to extend across said warmer station opening, the improvement comprising

wall means disposed subjacent said warmer station opening for preventing liquid which may inadvertently pass downwardly through said warmer station opening from falling into said basin, said wall means being warmed as an incident of operation of the beverage brewer structure whereby evaporation of at least a portion of said liquid may be effected.

4,192,228

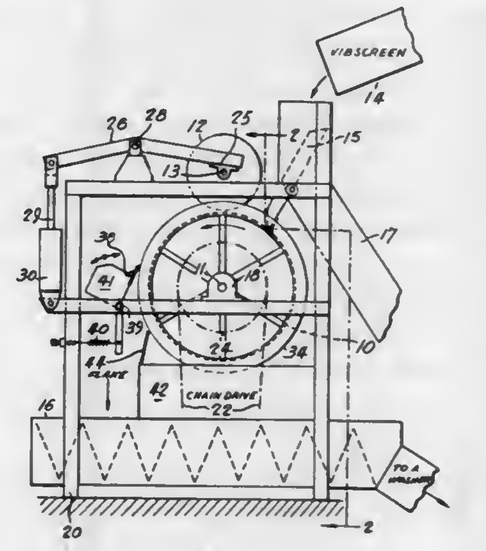
METHOD TO EXPRESS LIQUID FROM WET FIBROUS MATERIAL

Andrew V. Antoniuk; Lawrence V. Hankinson; David M. Boulter, and William R. McMillan, all of Edmonton, Canada, assignors to Celanese Canada Limited, Montreal, Canada

Division of Ser. No. 235,739, Mar. 17, 1972, abandoned. This application May 2, 1974, Ser. No. 466,349

Int. Cl.² B30B *9/20*

U.S. Cl. 100—37 3 Claims



1. In the acetylation of wood, a method to further reduce the acidity of the resulting product consisting of a body of wet

loosely bound cellulose acetate fibrous material without substantially breaking the fibers of the fibrous material and thereby minimizing loss of the fibrous material, comprising:

1. depositing said fibrous material containing acid over a smooth perforated cylindrical surface having from about 4 to 50% of the total area perforated;
2. rotating said cylindrical surface to bring said fibrous material into contact with a smaller freely rotatable roller mounted above said cylindrical surface;
3. gradually compressing said body of wet fibrous material against said cylindrical surface to a pressure of about 30 lbs. per square inch to about 100 lbs. per square inch, by rotating said cylindrical surface past the nip formed by said cylindrical surface and said freely rotatable roller;
4. removing said fibrous material in a drier state.

4,192,229

FIXING APPARATUS

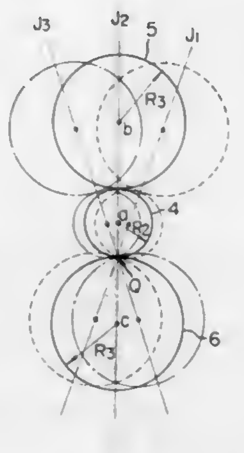
Haruo Tsunoi, Kawasaki; Teruo Morikawa, Sagamihara; Katsuhiko Yamada, Yokohama; Kenji Ohkawara, Koshigaya, and Atsushi Kubota, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1978, Ser. No. 946,756

Claims priority, application Japan, Oct. 7, 1977, 52-120738; Dec. 5, 1977, 52-145932

Int. Cl.² B30B *3/04*

U.S. Cl. 100—158 R **20 Claims**



1. A pressure fixing apparatus wherein a toner image is fixed on a toner image supporting member by pressure, said apparatus comprising:

first and second rollers for pressing and conveying therebetween the toner supporting member; and

a third roller press-contacted to said first roller;

said first, second and third rollers being inclined with respect to the direction of conveyance of the supporting member at different angles to make those parts of said first and second rollers which are in contact with the supporting member when the supporting member is pressed therebetween substantially rectilinear substantially in the direction of the axes of the rollers.

12. A pressure fixing apparatus wherein a toner image is fixed on a toner image supporting member by pressure, said apparatus comprising:

first and second rollers for pressing and conveying therebetween the toner supporting member, said first roller having a diameter smaller than that of said second roller; and

a third roller press-contacted to said first roller and having a diameter which gradually reduces toward its longitudinal ends away from its middle portion.

4,192,230

PRINTER, PROVIDED WITH AN IMPACT DEVICE COMPRISING A TRANSDUCER

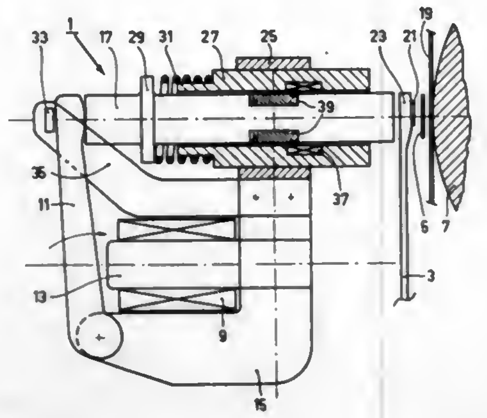
Nico Blom, and Jan T. Wor, both of Rijswijk, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,169

Claims priority, application Netherlands, Nov. 3, 1977, 7712160

Int. Cl.² B41J *7/92*

U.S. Cl. 101—93.03 **20 Claims**



1. A printer comprising an impact device including an impact member displaceable from a rest position in the direction of a record carrier by means of an electro-mechanical drive, the impact device further comprising a transducer which, during a displacement performed by the impact member, supplies a signal indicative of the speed of the impact member, means connecting a signal output of said transducer to a first signal input of a comparator which includes a second signal input and a signal output terminal for deriving a stop signal, means connecting a reference signal device to said second signal input of the comparator, means connecting said comparator signal output terminal to a signal input terminal of an electrical actuation device coupled to said electromechanical drive of the impact member, means responsive to a start signal for actuating said electromechanical drive via said actuation device, the actuation of the electromechanical drive being terminated only after the appearance of the stop signal at the signal output terminal of the comparator, and calculating means coupled to the transducer output for deriving a control signal determined by the speed and position of the impact member, and means coupling an output terminal of the calculating means to a control input of the actuation device so that said control signal controls the amplitude of an actuation current supplied to the electromechanical drive of the impact device.

4,192,231

WASHING APPARATUS FOR INK ROLLERS OF PRINTING MACHINE

Yoshito Kawakami, Koshigaya, Japan, assignor to Toppan Printing Co., Ltd. and Nikka Kabushiki Kaisha, both of Tokyo, Japan

Filed Jul. 7, 1978, Ser. No. 922,663

Claims priority, application Japan, Jul. 9, 1977, 52-82166

Int. Cl.² B41F *35/04;* B41L *41/04*

U.S. Cl. 101—425 **10 Claims**

1. A washing apparatus for an inking arrangement which contains ink rollers and a vibrating roller, comprising:

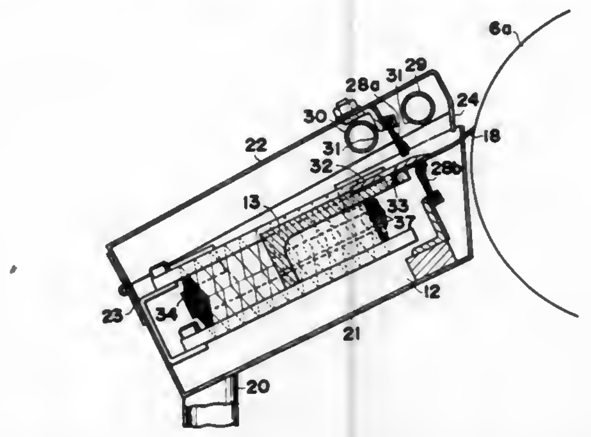
(a) a washing vessel having a tub and a cover; said cover being pivotally connected with said tub so that the cover may be opened, said washing vessel containing therein a doctor blade and brush means, said brush means being fixed to said washing vessel,

(b) means for supporting said washing vessel in parallel with an axis of said vibrating roller;

(c) means for moving said doctor blade toward and from a rolling surface of said vibrating roller; said means for moving the doctor blade reciprocating said doctor blade

within said washing vessel after said cover is closed such that said doctor blade is scraped by said brush means,

(d) means for opening said cover of the washing vessel when said doctor blade is advanced to the rotating surface of said vibrating roller and closing said cover when same is retracted within said washing vessel; and



(e) pipe means having a plurality of nozzles for spraying washing liquid principally to said brush means, whereby when said doctor blade contacts the rolling surface of the vibrating roller and then retracted within said washing vessel, said cover is closed and said doctor blade is scraped by said brush means while said doctor blade is reciprocated.

4,192,232

ELECTROSTATIC IMAGE RECORDING METHOD AND APPARATUS THEREFOR

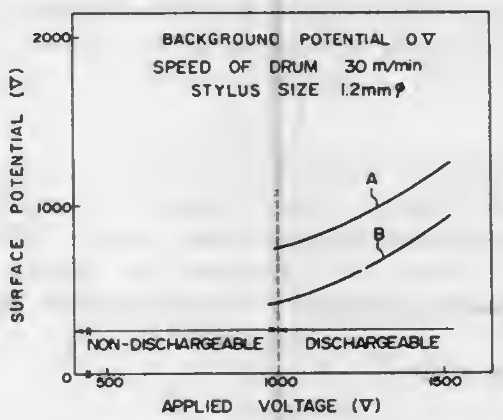
Hisashi Kato; Masakazu Iwasa, and Yoshio Kudo, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 14, 1978, Ser. No. 886,448

Claims priority, application Japan, Mar. 14, 1977, 52/27756; Mar. 14, 1977, 52/27757

Int. Cl.² B41M *1/42*

U.S. Cl. 101—426 **12 Claims**



1. An electrostatic latent image recording method in an electrostatic image recording apparatus in which an electrostatic latent image is formed on an electrostatic latent image recording surface by use of a plurality of recording styluses having a diameter of 0.3 mm to 3 mm wherein the improvement comprises a step of causing an over-discharge to occur between the recording styluses and said latent image recording surface while maintaining a spacing of 30μ to 150μ therebetween.

4,192,233

SHELL FOR SPORTING CARTRIDGE OF PLASTIC MATERIAL

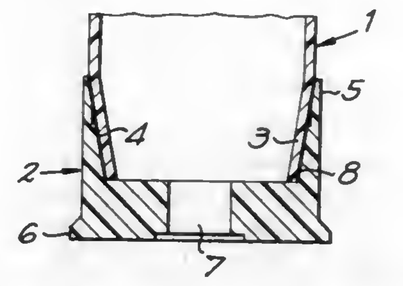
Thierry M. Dumortier, Liege, Belgium, assignor to Fabriqe Nationale Herstal, en abrege FN, Herstal, Belgium

Filed Mar. 14, 1978, Ser. No. 886,474

Claims priority, application Belgium, Sep. 27, 1977, 56275

Int. Cl.² F42B *9/30*

U.S. Cl. 102—43 P **4 Claims**



1. In a shell for a sporting cartridge of plastic material comprising two parts, an extruded cylindrical case and a molded cap containing base, assembled by welding, said case being provided with a conical end, the base being provided with a corresponding conical seat for the purpose of recieving said conical end of the case, the conical surfaces being in contact with each other and made integral by an area of continuous welding, said welding being performed by rotating said case and said base with respect to each other, with sufficient velocity to ensure the welding of the surfaces in contact.

4,192,234

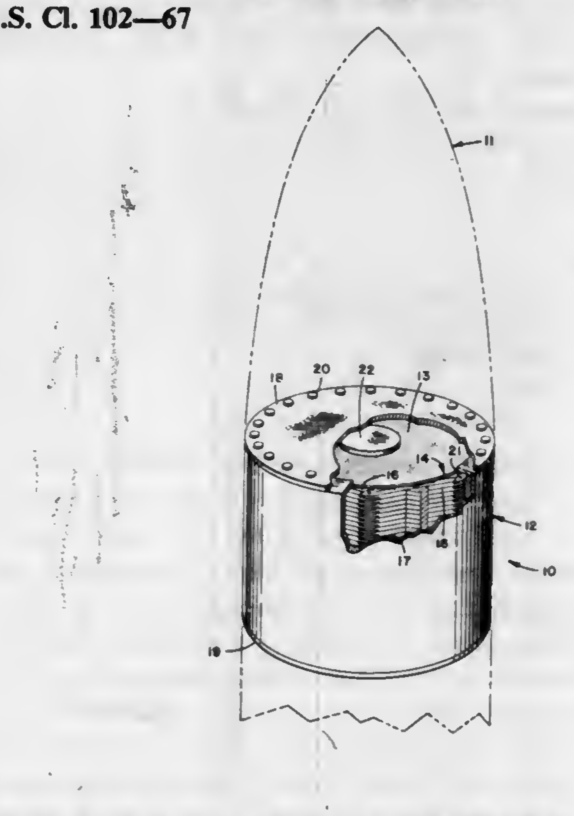
FRAGMENTATION EXPLOSIVE STRUCTURE HAVING ELONGATED FRAGMENTS

John McCracken, Dallas, Tex., assignor to Vought Corporation, Dallas, Tex.

Filed Apr. 16, 1975, Ser. No. 568,646

Int. Cl.² F42B *13/48*

U.S. Cl. 102—67 **17 Claims**



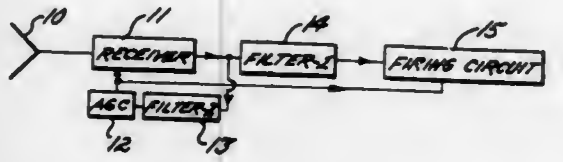
1. An explosive structure of the fragmentation type, comprising:

an explosive charge;

a housing containing the explosive charge and having a cylindrical wall portion extending peripherally of the explosive charge and comprising a plurality of articulated structures each having a first elongated member having first and second end portions and a second elongated member having first and second end portions, articulatory means interconnecting the respective first end portions of the first and second elongated members for permitting rotation of the elongated members from a diverged configuration, in which their respective end portions are mutually spaced, to an aligned configuration, in which their respective second end portions are mutually adjacent and in which the first and second elongated members are substantially parallel, and means for separably constraining the articulated structures in their diverged configuration and in an array in which their first and second elongated members extend along planes substantially perpendicular to the housing axis, each elongated member having a respective force receiving surface extending longitudinally of the member and facing toward the explosive charge, and an oppositely facing, outer surface; and

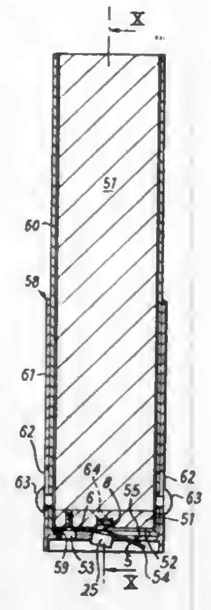
means for detonating the explosive charge, whereby the resultant forces react against the force receiving surfaces of the elongated members to propel the articulated structures radially outwardly from the explosive charge, the articulated structures having means, including the outer surfaces of the elongated members, responsive to adjacent airflow during any such outwardly propelled flight for rotating the elongated members of the respective articulated members into their aligned position for permitting axial flight of the articulated structures.

4,192,235
RADIANT-ENERGY CONTROLLED PROXIMITY FUZE
Omar J. Jacomini, Severna Park, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jul. 8, 1964, Ser. No. 381,272
Int. Cl.^{2} F42C *13/04*
U.S. Cl. 102—214 **1 Claim**



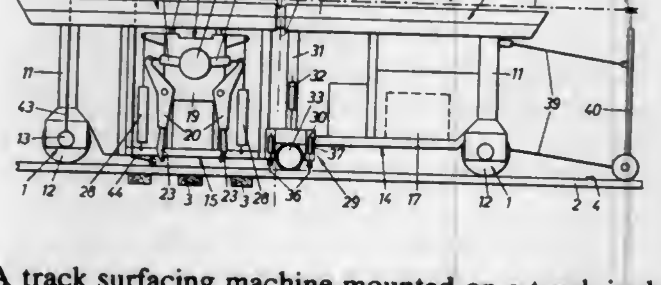
1. A receiver for the transmitter-receiver combination utilized with a proximity fuze comprising a receiver arranged to be gain controlled, said receiver being fed the radiant energy reflected by a target, first and second filters, each having predetermined characteristics, said first filter having a predetermined characteristic being essentially a smoothed value of a predetermined voltage over a preselected time, said second filter having a characteristic being essentially a smoothed value of said predetermined voltage over said preselected time minus a time seconds earlier, and each directly receiving the output signal from said receiver, an automatic gain control circuit interconnecting said second filter with said receiver, said automatic gain control operating so that the output signal from said first filter is the ratio between said value of said predetermined voltage over said preselected time, and said value of said predetermined voltage over said preselected time minus said time seconds earlier, and a firing circuit for said proximity fuze, said circuit being interconnected to said receiver by way of said first filter and also receiving an output signal from said automatic gain control circuit for addition to the output signal from said first filter.

4,192,236
FIRING MECHANISM FOR PERCUSSION CAPS
Andrew M. Scott, Wiltshire, England, assignor to Wallop Industries Limited, Stockbridge, England
Continuation-in-part of Ser. No. 773,116, Feb. 28, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 897,158
Claims priority, application United Kingdom, Mar. 4, 1976, 8791/76
Int. Cl.^{2} F42C *7/00;* F42B *3/10;* F42C *15/06*
U.S. Cl. 102—261 **22 Claims**



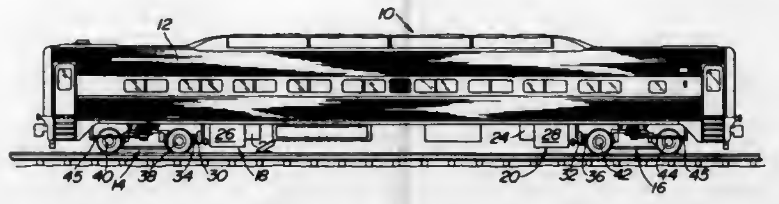
1. A firing mechanism for firing a percussion cap, said mechanism comprising:
- a percussion cap;
- a percussion cap support having a position in which said percussion cap is located;
- a leaf spring fixed at one end thereof to said support and extending across said percussion cap position;
- a firing pin protruding from one side of said leaf spring towards said percussion cap;
- a mass disposed on said leaf spring to back up said firing pin;
- an engagement device engaged under said leaf spring, on the firing pin side of said leaf spring and at the end thereof opposite from said fixed end, for preventing access of said firing pin to said percussion cap when in the rest position prior to firing; and
- means for withdrawing said engagement device to fire said percussion cap, said withdrawal means being manually actuable to move said engagement device, thereby flexing said spring, to a certain position wherein said engaged end clears said engagement device and there is sufficient energy stored in said spring by flexure that on release of said spring it drives said firing pin into and fires said cap.

4,192,237
MOBILE TRACK SURFACING MACHINE
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
Filed Mar. 2, 1978, Ser. No. 882,666
Claims priority, application Austria, Mar. 17, 1977, 1862/77
Int. Cl.^{2} E01B *27/17*
U.S. Cl. 104—7 B **11 Claims**



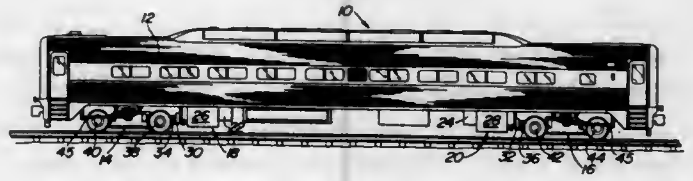
1. A track surfacing machine mounted on a track including two rails supported on a plurality of ties for mobility in a working direction, which comprises a macine frame unit comprising
- (a) two machine frame parts linked together to form the unit, each of the machine frame parts having two ends, respective ones of the machine frame part ends facing each other,
- (b) coupling means linking the facing machine frame part ends and arranged to permit the machine frame parts to pivot in relation to each other in a plane substantially parallel to the track,
- (c) a single undercarriage supporting each one of the machine frame parts for mobility on the track, the undercarriage of each machine frame part supporting the machine frame part in the region of the machine frame part end opposite the one end, and
- (d) the tamping tool means mounted only on the rear machine frame part, as seen in the working direction.

4,192,238
RAILWAY CAR DRIVE SYSTEM
James M. Herring, Jr., Merion Station, and Harry M. Russell-French, Ambler, both of Pa., assignors to The Budd Company, Troy, Mich.
Filed Jan. 3, 1978, Ser. No. 866,484
Int. Cl.^{2} B61C *9/52;* B61F *3/04, 5/06, 5/10*
U.S. Cl. 105—133 **8 Claims**



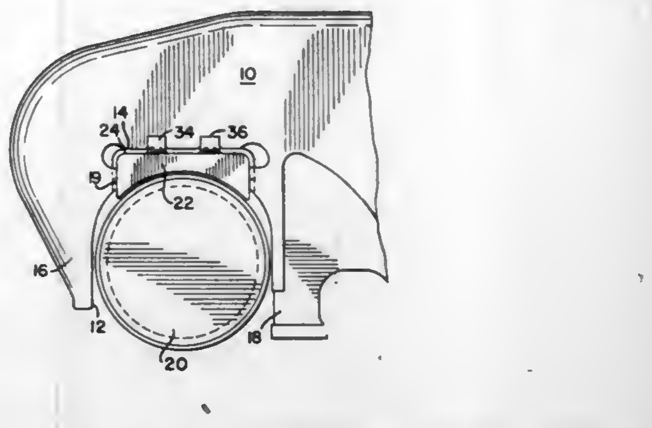
1. A system for driving a rail car comprising:
- (a) a truck for supporting the car body of said rail car,
- (b) said truck including side frames with structural arm members extending inboard therefrom,
- (c) first and second axles secured to said truck,
- (d) first and second gear mechanisms mounted to said first and second axles, respectively,
- (e) a speed control gear mechanism supported directly by said first axle and connected intermediate said first and second axles,
- (f) driving means including a prime mover, torque converter and a transmission gear assembly connected to said car body,
- (g) a shaft connecting said transmission gear assembly to said speed control gear mechanism,
- (h) means for connecting said speed control gear mechanism to said first gear mechanism to drive said first axle, and
- (i) a drive shaft extending from said speed control gear below said structural arm members to said second gear mechanism to drive said second axle.

4,192,239
SERIES PNEUMATIC AND COIL SPRING RAILWAY CAR SUSPENSION
John M. Paul, Holland, Pa., assignor to The Budd Company, Troy, Mich.
Filed Jan. 3, 1978, Ser. No. 866,483
Int. Cl.^{2} B61F *3/04, 5/06, 5/10, 5/52*
U.S. Cl. 105—199 R **7 Claims**



1. A system for supporting a car body comprising:
- (a) a truck assembly including a pair of longitudinally disposed parallel side frames,
- (b) an elongated bolster disposed transversely and supported by said side frames,
- (c) a pair of vertical mechanical springs disposed and spaced longitudinally with respect each side frame between said car body and said bolster towards each end of said bolster,
- (d) a pneumatic spring serially connected to each pair of said vertical mechanical springs, and
- (e) shock absorber means connected horizontally between said car body and said bolster and disposed along the longitudinal axis of said bolster.

4,192,240
PEDESTAL ROOF WEAR LINER
Frank J. Korpics, Streamwood, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed Apr. 12, 1978, Ser. No. 895,781
Int. Cl.^{2} B61F *5/32, 5/38, 5/50, 15/20*
U.S. Cl. 105—225 **4 Claims**

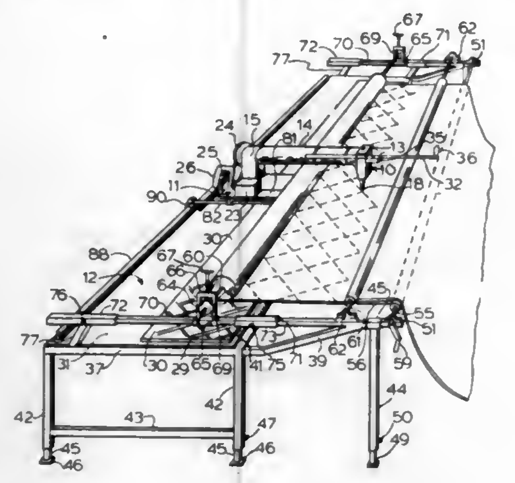


1. In a pedestal type side frame with an integrally formed downwardly open jaw which includes a roof and depending legs, said legs having substantially opposed stop lugs with recessed portion, a bearing assembly received in said jaw, a bearing adapter overlying said bearing assembly, and a wear liner disposed between said roof and said adapter; the improvement wherein said wear liner includes on each side laterally spaced substantially mutually opposing projections extending upwardly from the lateral edges of said wear liner, said projections being positioned so as to engage at least a portion of the lateral edges of said pedestal roof and thereby inhibit movement of said wear liner relative to said pedestal roof, said wear liner further including at least two substantially mutually opposing downwardly depending legs having tab portions which extend downward beyond said legs, said tab portions being positioned to engage cooperating recessed portions of said stop lugs to inhibit movement of said wear liner relative to said pedestal roof.

4,192,241
APPARATUS FOR QUILTING LAYERED FABRICS
Donald K. Reed, and Shere R. Reed, both of 1713 32nd St., Lubbock, Tex. 79411
Filed Sep. 15, 1978, Ser. No. 942,669
Int. Cl.^{2} D05B *11/00*
U.S. Cl. 112—117 **14 Claims**

1. An apparatus for quilting layered fabrics, comprising:
- a table,
- a winding shaft on said table extending for the length thereof,
- a fabric shaft spaced from said winding shaft a distance at least as great as a section of the pattern to be quilted,
- a liner shaft spaced from said fabric shaft and rotatably mounted on said table,
- clamping means on said winding shaft for clamping at least the fabric and liner thereto,
- means rotatably supporting said winding shaft for rotation in

a winding direction, and selectively operable to hold said winding shaft from rotation in an unwinding direction,
means mounting said fabric and liner shafts for rotation and selectively operable to hold said shafts from rotation in a direction to release tension on the fabric and liner,
means for turning said fabric and liner shafts individually of each other for taking up tension on said fabric and liner and providing a taut section between said fabric shaft and winding shaft free from wrinkles,
a sewing machine,



a carriage for said sewing machine, supporting said sewing machine on said table for free movement longitudinally and transversely of said table,
said sewing machine having a reciprocating needle bar and pressure foot pressed into engagement with the fabric,
a motor for driving said sewing machine,
control means for said motor,
and means accommodating manual movement of said sewing machine longitudinally and transversely of said table to sew a selected pattern in said fabric and liner, comprising an extensible and retractable control arm accessible from one side of the table.

4,192,242
HOSIERY TOE CLOSERS

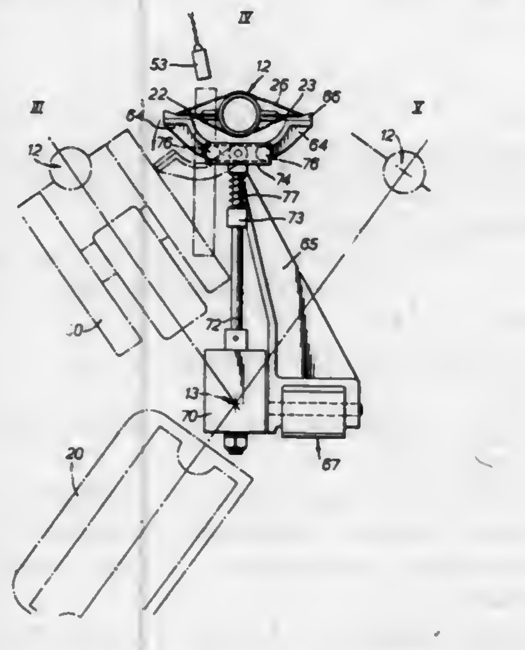
Bob Haselgrove, and John D. Nichol, both of High Wycombe, England, assignors to Detexomat Machinery Limited, United Kingdom

Filed Mar. 30, 1978, Ser. No. 891,689

Claims priority, application United Kingdom, Apr. 2, 1977, 14005/77

Int. Cl.^{2} D05B *1/00, 97/00*

U.S. Cl. 112—262.2 **28 Claims**



1. An automatic method of setting a generally tubular garment to a predetermined position on a garment carrier comprising the steps of:
(a) drawing the garment onto the carrier;
(b) moving means into frictional engagement with the garment and moving said means and at least a portion of said garment towards said predetermined position;
(c) detecting an identifiable feature of said garment at said predetermined position and generating a control signal for said means upon detection;
(d) releasing said frictional engagement means from contact with said garment upon receipt of said control signal, whereby movement of said garment ceases.

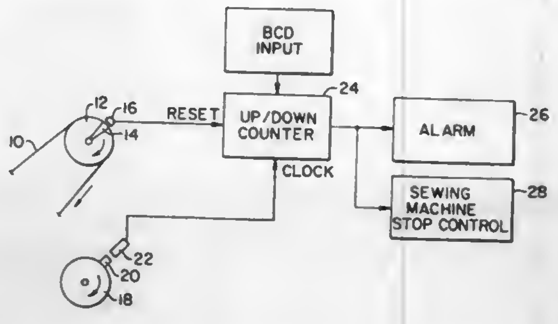
4,192,243
SEWING MACHINE THREAD MONITOR

Hubert Blessing, Dallas, and Gaylord D. Allison, Plano, both of Tex., assignors to Levi Strauss & Co., San Francisco, Calif.

Filed Oct. 2, 1978, Ser. No. 947,451

Int. Cl.^{2} G06M *3/02;* **D05B** *69/36*

U.S. Cl. 112—273 **6 Claims**



1. Sewing machine apparatus for monitoring the number of sewing stitches made per measured length of thread consumed in making the stitches, the apparatus comprising
stitch sensor means connected to the sewing machine for generating a predetermined number of electrical pulses ("stitch pulses") for each stitch made by the sewing machine,
thread sensor means for measuring the consumption of thread and for generating a pulse ("thread length pulse") for each predetermined length of thread consumed,
a counter containing a preloaded count and having a reset input, a clock input, and an output, the clock input being connected to the stitch sensor means to receive the stitch pulses, the reset input being connected to the thread sensor means for receiving the thread length pulses and wherein the counter generates an output signal whenever the number of stitch pulses counted exceeds the preloaded count by a predetermined amount before the counter is reset to the preloaded count upon the receipt of a thread length pulse.

4,192,244
METHOD OF MAKING CAN CLOSURES

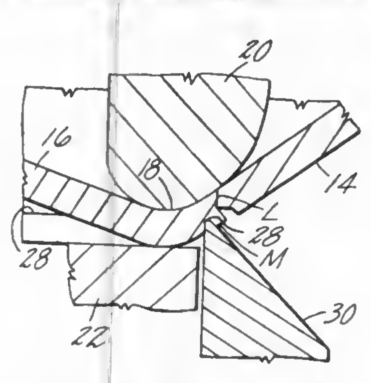
John S. Kelley, Wenham, Mass., and Richard P. Moldas, Weirton, W. Va., assignors to USM Corporation, Farmington, Conn.

Filed May 23, 1978, Ser. No. 908,733

Int. Cl.^{2} B21D *51/44*

U.S. Cl. 113—121 C **4 Claims**

1. The method of making a manually disruptable closure in a sheet metal can comprising forming a generally planar section thereof with wall portions meeting at the base of a channel to define the closure, longitudinally scoring at least one of the walls to provide a line of weakening therein, penetrating said one wall to provide a generally V-shaped line spaced radially inwardly of said weakening line to thereby form a defined strip of swageable metal commensurate with the depth of said scoring and integral with said one wall, and then swaging said strip



to cause its metal to flow into intimate sealing relation with the weakening line.

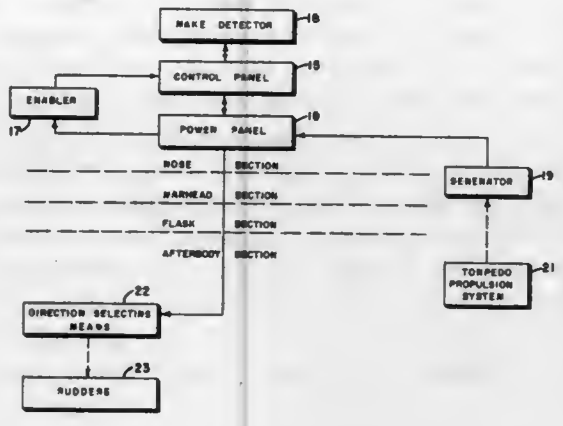
4,192,245
GUIDING MEANS FOR SELF-PROPELLED TORPEDOES

Paul M. Kendig; James M. Lawther, both of State College, Pa., and Robert G. James, Milwaukee, Wis., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1958, Ser. No. 735,915

Int. Cl.^{2} F42B *19/01*

U.S. Cl. 114—23 **10 Claims**



1. In a torpedo control system the combination comprising: a tuned transducer element for projecting compressional waves of a substantially fixed frequency and having an amplitude-modulated output signal; first means for receiving said amplitude-modulated output signal and having an output signal proportional to fluctuations of transducer impedance; and second means controlled by said first means for guiding the torpedo in a predetermined manner.

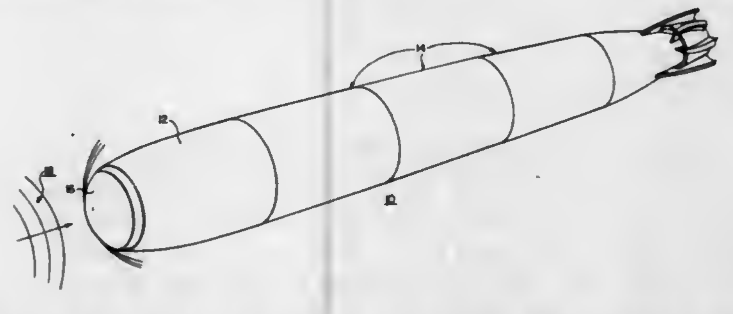
4,192,246
LAMINAR FLOW QUIET TORPEDO NOSE

Frank P. Hodges, Baltimore; Harold W. Fowler, Severna Park, and Phillip R. Anderson, Ellicott City, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 3, 1978, Ser. No. 874,977

Int. Cl.^{2} F42B *19/00*

U.S. Cl. 114—23 **4 Claims**



1. In a torpedo having a nose section and acoustic sensor means in said nose section, said torpedo having a boundary layer transition point which is a function of torpedo speed, shape and surface roughness, the improvement comprising:
(A) an acoustic window positioned in front of said sensor means;
(B) said acoustic window having a skirt portion which surrounds and extends along said nose section to a location aft of said boundary layer transition point location at the minimum running speed of said torpedo.

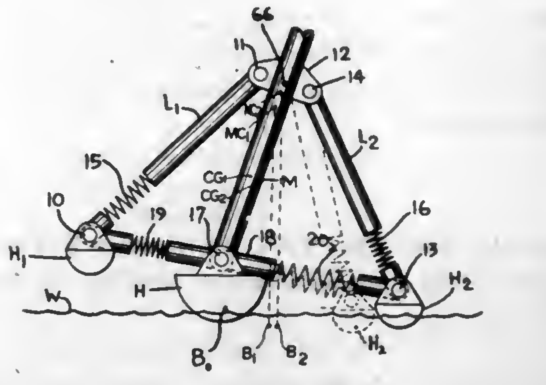
4,192,247
SAILING VESSEL

John Riordan, 7855-Blvd. East, 11B, N. Bergen, N.J. 07047

Continuation-in-part of Ser. No. 807,670, Jun. 17, 1977, abandoned. This application Jul. 5, 1978, Ser. No. 921,984

Int. Cl.^{2} B63B *35/00*

U.S. Cl. 114—39 **7 Claims**



1. A sailing vessel, having an effective center of gravity and an effective metacenter, said center of gravity and said metacenter being spaced from one another at a predetermined distance comprising:
a longitudinal center hull and two outrigger hulls flanking said center hull at opposite lateral sides of the same,
a mast mounted on said center hull;
a first pivot mounting a lower end of said mast to said center hull for pivotal movement about a first axis extending lengthwise of said center hull;
a first elongated member including a transverse brace mounted on said center hull for pivotal movement about said first axis;
second pivots mounting lateral ends of said transverse brace to said outrigger hulls respectively, for pivotal movement about respective second axes extending substantially parallel to said first axis; and
second elongated members, each including a rigid link having a lower end portion pivoted to a respective outrigger hull for movement about the respective second axis, and each having an upper end pivoted to said mast and upwardly spaced from said center hull for pivotal movement about a respective third pivot axis substantially parallel to said first and second axes, said upper ends being located at opposite sides of said mast.

4,192,248
SCOOPED BOAT HULL HAVING TRI-KEEL SURFACES

Richard D. Moyer, 45 Ardmore Ave., Hermosa Beach, Calif. 90254

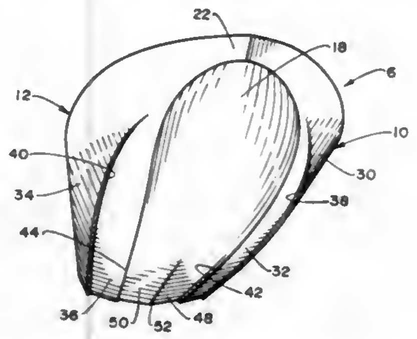
Filed Jan. 23, 1978, Ser. No. 871,533

Int. Cl.^{2} B63B *1/06*

U.S. Cl. 114—56 **10 Claims**

1. A boat hull of relatively small draft, having low frictional drag characteristics for high speed, stable performance, said hull comprising a pair of spaced-apart side walls, and interconnected transom and bottom walls forming a bow and stern, said side and bottom walls defining an open-scoop portion and a primary keel portion, said open-scoop portion being of nonplanar surface and of concave, curvilinear configuration commencing at said bow and extending rearwardly to a merging surface rearward of the mid-point of said hull, said open-scoop

portion being deepest at said bow and diminishing rearwardly in concave height to said merging surface and said primary keel portion, said primary keel portion being V-shaped in configuration and defining a primary keel extending from said merging surface to said stern, said open-scoop portion and said primary keel portion defining rearward of the opening of said scoop portion, a pair of spaced, secondary keels extending the length of said hull from said bow to said stern; and chine means spaced from each of said secondary keels extending about the length thereof.



4,192,249
VESSEL HAVING TWO TUBULAR FLOAT ELEMENTS

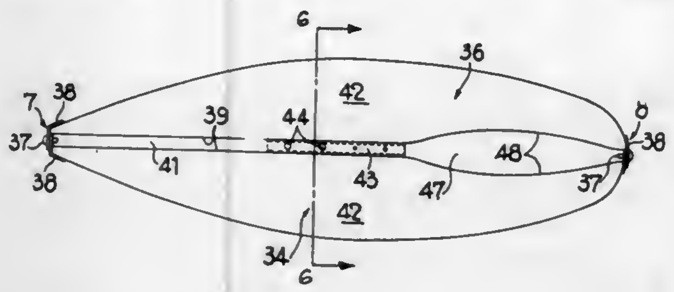
Henri Vidal, 8 bis, Boulevard Maillot, 92 Neuilly sur Seine, France

Filed Nov. 4, 1977, Ser. No. 848,768

Claims priority, application France, Nov. 9, 1976, 76 33707

Int. Cl.^{2} B63B *1/12*

U.S. Cl. 114—61 **2 Claims**



1. A floating vessel comprising a rigid support structure which is elongate and has a prow and a stern and constitutes the means whereby the vessel floats, said support structure comprising means defining two rigid fluidtight hollow elongate tubular float parts which extend from the prow to the stern of the support structure and define an opening of the support structure, each of said float parts having relative to a vertical axial plane of the vessel an outer convex contour in plan, the outer contours of the two float parts in plan tapering toward and substantially meeting at the prow and stern of the support structure and thereby imparting to the support structure substantially a shape in plan of a conventional single-hull boat which tapers at both ends, the two float parts having in side elevation an upwardly concave curvilinear shape on an upper side and a downwardly convex curvilinear shape on a lower side of the float parts, first assembling means above the water line interconnecting the float parts at the prow and stern of the support structure and second assembling means intermediate and spaced from said first assembling means for rigidly interconnecting the two float parts, said opening extending throughout the height of the vessel between said first assembling means at said prow and stern and said second assembling means, and said opening having a width transversely of the vessel which is a minor part of the overall width of the support structure substantially throughout the length of the support structure, the tubular float parts each having a varying cross-sectional shape and widening in plan in the region of said second assembling means and a transversely substantially rectilinear upper contour whereby upper surfaces of the float parts substantially define a deck.

4,192,250
VALVE-CENTRIFUGE

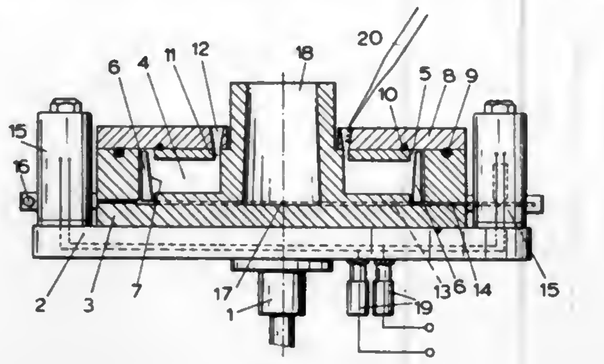
Pieter van Duijn, Rhijngeesterstraatweg 110, Oegstgeest, Netherlands

Filed Dec. 1, 1977, Ser. No. 856,406

Claims priority, application Netherlands, Dec. 9, 1976, 7613690

Int. Cl.^{2} B04B *5/12;* B05C *11/08;* G01N *33/16*

U.S. Cl. 118—52 **5 Claims**



1. Centrifuge apparatus to sediment cells or similar particles from a suspension onto glass plates for cytological or cytochemical examination of such cells or particles, said apparatus comprising a rotor member for rotation about an axis having a plurality of radially extending sedimentation chambers, each of said chambers provided near the side most distant from the rotor axis with means to support a removeable glass plate in an essentially tangential position, each of said sedimentation chambers provided at the side nearest to the rotor axis with a fluid access aperture, characterized in that each sedimentation chamber comprises drainage channel means leading radially outward from the side of said sedimentation chamber most distant from the rotor axis, said drainage channel means including drainage aperture means situated at a further distance from the rotor axis and valve means disposed between said drainage channel means and said drainage aperture, said valve means adapted for operation during the rotation of said rotor member.

4,192,251
DEVICE FOR TREATING A SHEET OF MATERIAL PARTIALLY ENCLOSING A BACKING ROLL OR A COOLING CYLINDER

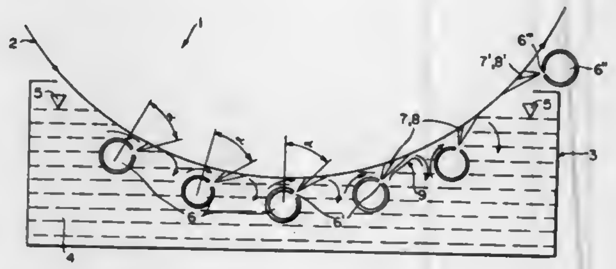
Fritz Gageur, Lindau-Bodolz, and Gerhard Trötscher, Lindau, both of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 904,985

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733335

Int. Cl.^{2} B05C *3/12, 11/06*

U.S. Cl. 118—63 **4 Claims**



1. In a device for treating a sheet of material, for example a sheet of foil and the like, which partially encloses a backing roller or a cooling cylinder, said device including a plurality of outer tubes each having a slot nozzle thereon, an inner tube in each of said outer tubes and having an aperture therein positioned opposite the slot nozzle of the outer tube, said outer tubes being positioned at intervals with respect to each other and above and below a liquid level, the improvement that said outer tubes have an eccentric interior, means supporting said inner tubes in an eccentrically pivotal manner, means whereby both of said tubes are jointly pivotal about a common axis, and means whereby the inner tubes are radially displaceable with respect to the outer tubes.

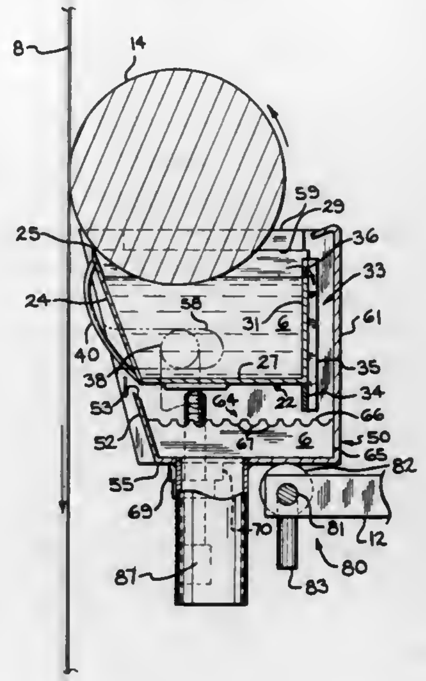
4,192,252
APPARATUS FOR APPLYING LIQUID TO CONTINUOUSLY ADVANCING FILAMENTS

Francis R. Paul, Aiken, S.C., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 23, 1979, Ser. No. 5,752

Int. Cl.^{2} C03B *37/02*

U.S. Cl. 118—258 **5 Claims**



1. Apparatus for applying liquid to filaments comprising:

a rotatable surface adapted to supply said liquid to said filaments;

a first container adapted to supply said liquid to said applicator surface, said container comprising a bottom wall, a front wall having an upper edge extending along the length of said surface, a rear wall having a vertically oriented flow control means, the lower edge of said control means extending below said bottom wall, and the upper edge of said control means being lower than the upper edge of said front wall; and

a second container adapted to accommodate said first container to receive excess liquid on the exterior of said first container, said second container having a forwardly angled front portion, a rear portion, side portions, and baffle means intermediate said sidewalls, said baffle means having at least one recess therein to permit said liquid to pass therethrough while retaining sinkable foreign matter within a settling zone formed between said baffle means and one of said sidewalls and while retaining floatable foreign matter within said zone, said flow control means being positioned to direct excess liquid moving therethrough into said settling zone.

4,192,253
VACUUM COATING APPARATUS

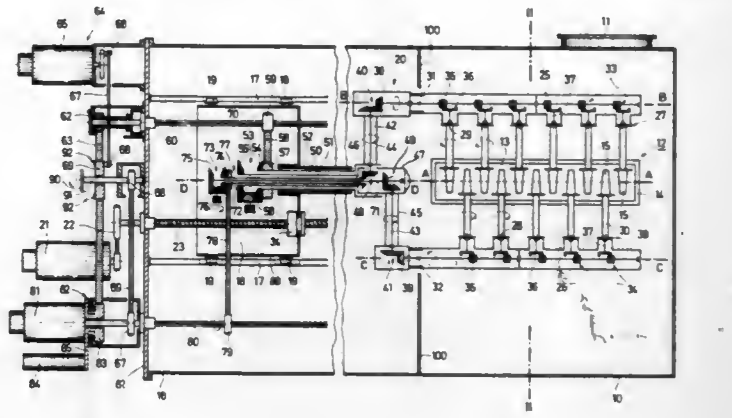
Hans Aichert, Hanau am Main; Friedrich Stark, Langenselbold; Herbert Stephan, Bruchköbel, and Otto-Horst Hoffmann, Rodenbach, all of Fed. Rep. of Germany, assignors to Leybold-Hereaus GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 21, 1978, Ser. No. 962,835

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813180

Int. Cl.^{2} C23C *13/08*

U.S. Cl. 118—712 **15 Claims**



1. Vacuum coating apparatus for coating all sides of substrates by rotation in a material stream comprising vacuum chamber means with an elongated material source having a longitudinal axis and a transverse axis, substrate rack means with a plurality of fastening points for the planar arrangement of a plurality of substrates above the material source in a substantially uniform distribution over its surface, drive means associated with the substrate rack means for rotating the substrates, the substrate rack means having two parallel substrate bearer means disposed fork-wise, whose longitudinal axes B—B and C—C are disposed in mirror-image symmetry with a plane of symmetry passing through the longitudinal axis A—A of the material source, coupling means for the substrates being disposed on the confronting inner sides of the substrate bearer means, the axes of rotation of the couplings being aligned perpendicular to the plane of symmetry, the substrate bearer means being connected by angle drive means to the coupling means and to a motor means via drive shaft means.

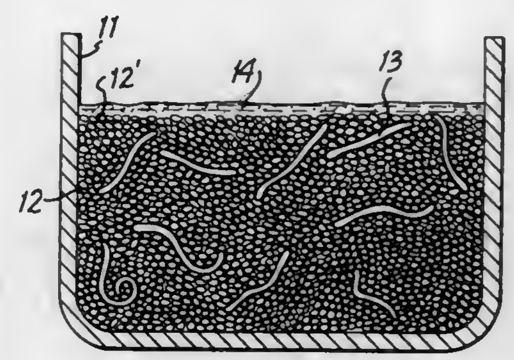
4,192,254
FLOATABLE BEDDING

Richard L. Apel, 1924 Myrtlewood Dr., Ceres, Calif. 95307

Continuation of Ser. No. 758,931, Jan. 13, 1977, abandoned. This application May 2, 1978, Ser. No. 902,176

Int. Cl.^{2} A01K *67/00*

U.S. Cl. 119—1 **5 Claims**



1. A life-cycle habitat for cultivating animal life such as worms and the like comprising a particulate material having a specific gravity of less than 1.0 and having a size and surface smoothness so as to inhibit the animal life such as worms and the like from burrowing into or clinging to said particulate material, and in admixture therewith, food matter for the support of said animal life whereby the animal life such as worms

and the like being cultivated in said habitat can be readily separated from the components of said habitat by transferring the habitat containing said animal life to a container of water which will cause separation of said animal life from said particulate material.

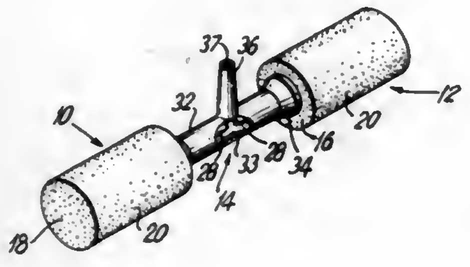
4,192,255
AQUARIUM AIRSTONE DEVICE

Allan H. Willinger, New York, N.Y., assignor to Willinger Bros., Inc., New York, N.Y.

Filed Sep. 7, 1978, Ser. No. 940,259

Int. Cl.² A01K *63/00*

U.S. Cl. 119—5 **15 Claims**



1. An aquarium device for use in an aquarium tank, said device comprising two airstones each having a nozzle extending therefrom, a connector having a tubular central portion for receiving said nozzles therein through respective outer ends thereof, and a tubular stem portion extending from said central portion for coupling to an air hose, said central and stem portions being connected to provide a T-shaped connector, whereby air entering said tubular stem portion is directed to both airstones.

4,192,256
COMBINED FEEDING AND WATERING DEVICE FOR PETS, HAVING INTEGRAL MEANS FOR CARRYING WATER

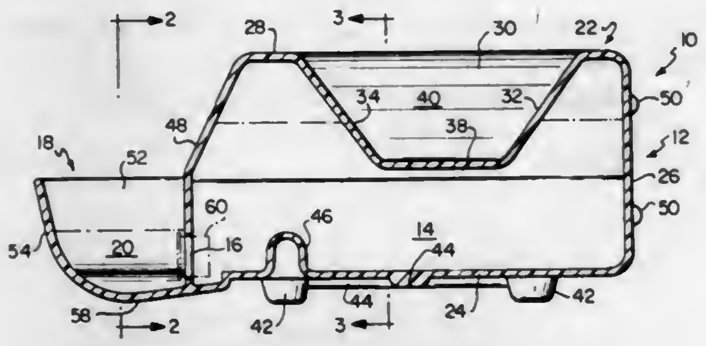
George D. Clugston, R.R. #3, Box 203, Pittsburg, Kans. 66762

Filed Oct. 30, 1978, Ser. No. 955,917

The portion of the term of this patent subsequent to Nov. 30, 1997, has been disclaimed.

Int. Cl.² A01K *5/01, 7/00*

U.S. Cl. 119—51.5 **5 Claims**



1. A pet dish, comprising:

structure having top, bottom and sidewalls defining a water-holding compartment, and a water-flow aperture through one of said sidewalls, said top wall including inwardly extending wall sections cooperatively presenting a recessed, foodreceiving cavity;

a cuplike, open-top, recessed member secured to the exterior of said apertured sidewall,

said water flow aperture and member being cooperatively located for communicating said compartment and the recess of said member such that water will flow from said compartment to said recess of said member; and

partition means located within said compartment proximal to said aperture and cooperable, with said wall sections, for dampening vibration-induced movement of water within the compartment.

4,192,257
SUSPENSION-TYPE POULTRY DRINKING APPARATUS

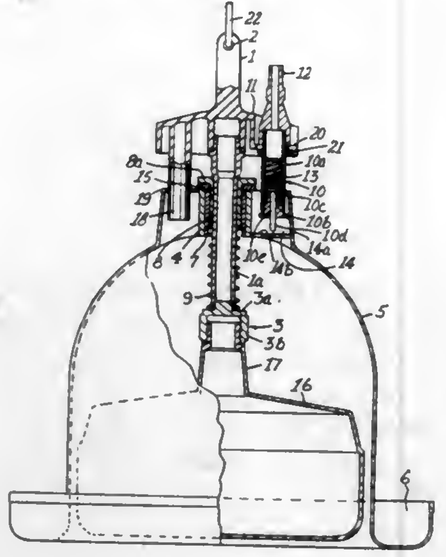
Santi T. Urzi, Johannesburg, South Africa, assignor to Custom Moulders (Proprietary) Limited, Johannesburg, South Africa

Filed Jan. 13, 1978, Ser. No. 869,127

Claims priority, application South Africa, Jan. 13, 1977, 77/0168

Int. Cl.² A01K *7/00*

U.S. Cl. 119—81 **13 Claims**



1. Suspension-type poultry drinking apparatus comprising a rigid, elongated hanger adapted to be suspended in freely swinging manner in upright position above ground level; a drinking vessel; mounting means movable longitudinally along the hanger and operative resiliently to mount the drinking vessel in suspension on the hanger to permit the vessel to move up and down relative to the hanger according to the weight of water in the vessel; and an inlet valve for controlling a supply of water to the drinking vessel, the valve including a closure member movable longitudinally relative to the hanger, the closure member being resiliently biassed towards a closed position and being adapted to be opened when the drinking vessel rises with a decrease in the supply of water therein, characterised by valve mounting means on the hanger which is adapted to mount the inlet valve on the hanger in a position off-set laterally from the axis of the hanger.

4,192,258
COOLING BOXES FOR BLAST-FURNACES

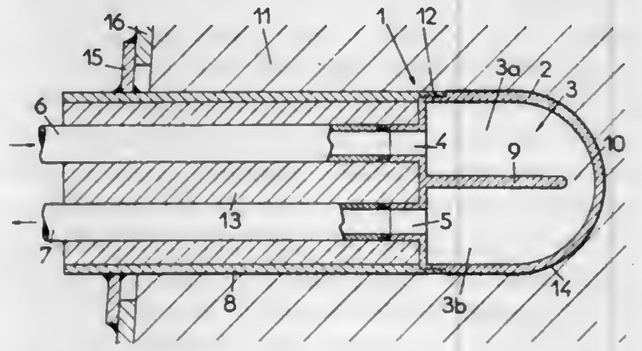
Francois M. J. Touze, Château de Logne, 57310 Guenange, France

Filed Apr. 18, 1978, Ser. No. 897,504

Claims priority, application France, Apr. 27, 1977, 77 12854

Int. Cl.² F22B *37/00*

U.S. Cl. 122—6.5 **12 Claims**



1. A water cooling box for a blast furnace comprising: a nose-shaped front element having walls which emborder a water cooling chamber, said front element being provided with

at least one water inlet and at least one water outlet, the walls of said front element being made from copper substantially; water delivery and discharge tubes; tube connecting means for connecting the said delivery and discharge tubes with the said at least one inlet and at least one outlet of the front element, respectively; a tubular body element surrounding said delivery and discharge tubes, said tubular body element being made from steel; and coupling means for sealing coupling of said front element and tubular body element with each other.

4,192,259
STEEL HEATING BOILER FOR LIQUID OR GASEOUS FUELS

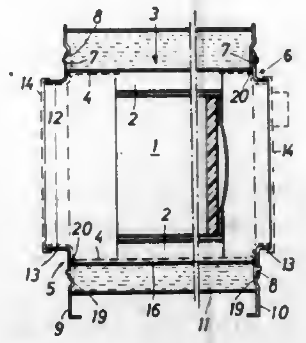
Hans Viessmann, Im Hain, 3559 Battenberg, Eder, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,505

Claims priority, application Fed. Rep. of Germany, May 14, 1978, 2721895

Int. Cl.² F22B *31/00*

U.S. Cl. 122—136 R **7 Claims**



1. A steel heating boiler for liquid or gaseous fuels, said boiler comprising a water-bearing housing including front and rear walls having openings surrounded by opening edges, a cylindrical installation unit including combustion chamber and fuel-gas flues being arranged in a liquid-tight way between said front and rear walls, the installation unit including a corrosion-resistant lining for said combustion chamber and fuel-gas flues, said unit further including end closure members covered at least in part by the lining, the end closure members having an outside diameter larger than the outside diameter of the installation unit and having outer peripheral edges connected in liquid-tight relation to the opening edges of the front and rear walls, the inside diameter of at least one said closure member being smaller than the inside diameter of the installation unit.

4,192,260
AIR PREHEATING MEANS AT A VERTICAL STEAM OR HOT WATER BOILER

Nils Östbo, Volrat Thamsgatan 4, Götenburg, Sweden (41278)

Continuation-in-part of Ser. No. 845,972, Oct. 27, 1977. This application Mar. 8, 1978, Ser. No. 884,563

Int. Cl.² F22B *7/12*

U.S. Cl. 122—182 R **3 Claims**

1. In a vertical boiler comprising a convection part and a final combustion chamber aligned therewith;

a cylindrical drum having upper and lower plane end walls;

a flame tube located centrally within said drum, and extending between the end plates thereof, said flame tube having burner means at its end at said upper end plate, and communicating with said final combustion chamber at its opposite end;

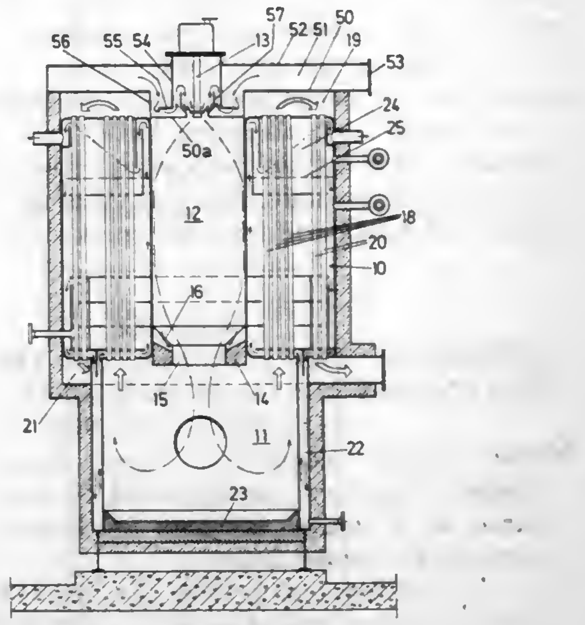
at least two groups of smoke tubes arranged concentrically, one outside the other, around said flame tube, extending between said end plates, an inward group of said at least two groups communicating at its lower end with said final combustion chamber;

a turning chamber located outside said upper end plate for communicating said at least two groups of smoke tubes and being outwardly defined by a wall parallel to and above said upper end plate;

a smoke gas outlet communicating with an outward group of said at least two groups of smoke tubes and the lower end thereof;

the improvement comprising an air chamber adjacent to and above said turning chamber, covering a substantial extent of the wall outwardly defining said chamber, and having at least one air inlet at its periphery, said air chamber comprising:

a tubular wall member forming an upwardly extending extension of said flame tube for defining a centrally location portion of said air chamber from said upper gas turning chamber, an end wall member extending inwardly



from said flame tube thereby defining said centrally located portion from said flame tube, and having an opening accomodating the head of said burner,

an annular baffle plate extending downwardly from said wall outwardly defining said air chamber, reaching almost to said last mentioned end wall member,

a guide plate attached to the lower end of said baffle plate in a substantially parallel relationship to said end wall member and directed outwardly from said baffle plate, and a collar projecting upwardly from said last mentioned end wall member around the opening therein accomodating said burner head and inside of said baffle plate.

4,192,261
MULTI-CYLINDER RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

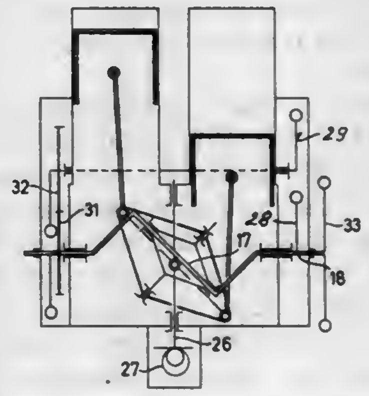
Josef Berg, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Aug. 29, 1977, Ser. No. 828,319

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1976, 2639260

Int. Cl.² F02B *75/26*

U.S. Cl. 123—58 B **13 Claims**



1. A multi-cylinder reciprocable piston internal combustion engine with the cylinders thereof arranged in series in a plural-

ity of rows, which comprises in combination: a housing having bearings, a crank shaft with Z-shaped lift pin journaled rigidly in said housing, a universal joint having adjustable trunnions journaled in said housing bearings, said universal joint comprising an outer part arranged within said housing and provided with journal pins, said universal joint also comprising an inner part journaled in said outer part by means of said journal pins, said inner part of said universal joint including a hollow shaft having its longitudinal axis extending perpendicular to the axes of said journal pins and being journaled on said Z-shaped lift pin, a double arm rocker journaled in the housing transverse to cylinder axes and having said outer part integrally non-rotatably connected thereto, pistons, connecting rods pivotally connected to said pistons and connecting the latter to said double arm rocker, said outer part extending around said lift pin and being located diametrically with regard to said crank shaft, all piston forces and mass forces being transmitted directly into the housing by way of the double arm rocker so that the universal joint takes up only the resulting torque forces taken off from the crank shaft.

4,192,262

CONTROL SYSTEM FOR VARYING THE AMOUNT OF SCAVENGING AIR TO BE ADMITTED TO INTERNAL COMBUSTION ENGINE

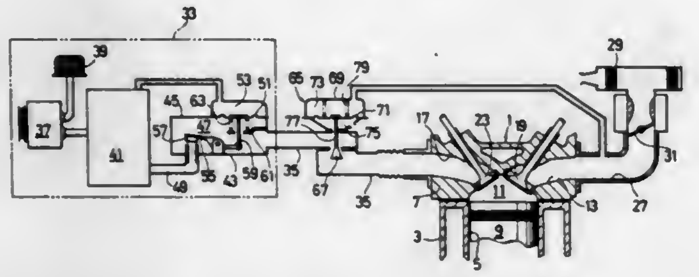
Michio Onoda, Yokohama; Yasuo Nakajima, Yokosuka; Kunihiko Sugihara, and Shin-Ichi Nagumo, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 6, 1978, Ser. No. 867,599

Claims priority, application Japan, Jan. 8, 1977, 52-965

Int. Cl.² F02D *39/02;* F02M *7/00*

U.S. Cl. 123—75 B **5 Claims**



1. An engine system comprising:

an internal combustion engine having a combustion chamber, a first intake port passage opening to said combustion chamber, a second intake port passage opening to said combustion chamber, an exhaust port passage opening to said combustion chamber, a first intake valve closing said first intake port passage and adapted to open to perform an intake cycle, an exhaust valve closing said exhaust port passage and adapted to open to perform an exhaust cycle and a second intake valve closing said second intake port passage and adapted to open during a portion of said exhaust cycle and a portion of the subsequent intake cycle;

a source of compressed air having a pressure which increases with increases in the engine speed;

an induction passage connecting with said first intake port passage;

an injection passageway interconnecting said source of compressed air and said second intake port passage; and

flow controller means for controlling compressed air flow through said injection passageway in accordance with changes in intake manifold vacuum, said flow controller means including a variable geometry flow path therethrough scheduled to open so as to increase, under conditions in which the engine speed is constant, air flow through said injection passageway in accordance with increases in engine load in such a way as to increase the ratio of compressed air flow through said injection passageway with respect to intake air flow through said induction passage under light engine load.

4,192,263

VALVE DRIVE DEVICE FOR AN INTERNAL COMBUSTION ENGINE

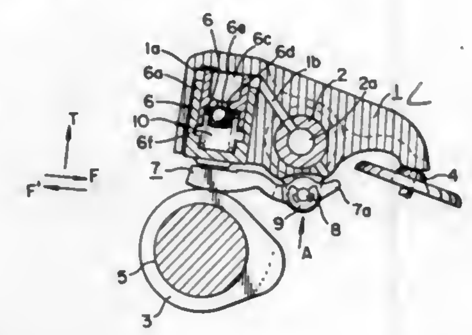
Katsutoshi Kitagawa, Seto, and Hiroki Yamauchi, Kariya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 26, 1977, Ser. No. 818,748

Claims priority, application Japan, Jul. 27, 1976, 51-89551

Int. Cl.² F01L *1/18*

U.S. Cl. 123—90.39 **1 Claim**



1. A valve device for an internal combustion engine comprising:

a cam;

a valve stem;

a pivotable mounted rocker arm, one end of said rocker arm having a part contacting said cam and the other end having a part contacting said valve stem;

an oil pressure tappet built into one of said contacting parts to automatically absorb a gap created between one of said contacting parts and said cam or said valve stem;

a movable plate inserted between said oil pressure tappet and one of said cam or said valve stem, being in contact with said oil pressure tappet;

a projection provided on said movable plate at a position opposed to the contacting part of said oil pressure tappet across the pivotal port thereof, which serves to prevent said oil pressure tappet from dropping out of said rocker arm before said rocker arm is set in an internal combustion engine, and hits said rocker arm when said movable plate revolves around said pivotal point, thereby regulating the revolving angle to a specified range;

a curve means formed at the contacting part between said oil pressure tappet and said movable plate; and

means for lubricating the contacting part between said oil pressure tappet and said movable plate.

4,192,264

APPARATUS FOR THE RECIRCULATION OF THE EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Henry Arnaud, La Ferte Alais, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 30, 1978, Ser. No. 873,591

Claims priority, application France, Jan. 28, 1977, 77 02386

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **9 Claims**

1. An apparatus for recirculation of the exhaust gases of internal combustion engines including a carburetor, intake manifold and exhaust manifold, for antipollution control, which comprises:

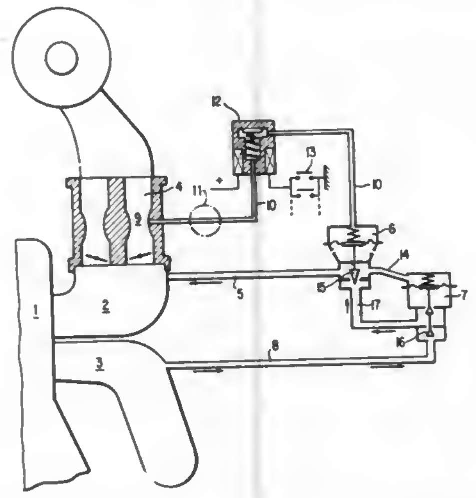
a recirculation conduit interconnecting said exhaust manifold and said intake manifold;

a main valve disposed in said recirculation conduit including a moveable member and a resilient member for biasing said moveable member in a closed position;

a regulation valve connected to said recirculation conduit upstream of said main valve; and,

means for controlling the opening of said main valve as a function of air supply to said engine and means for controlling the operation of said regulation valve as a function of the pressure differential between pressure upstream and

downstream of said main valve moveable member such that supply of recycled gas from said exhaust manifold to said intake manifold is accomplished as a function of engine load.



4,192,265

COMBUSTION PROMOTING DEVICE OF A MULTI-CYLINDER ENGINE

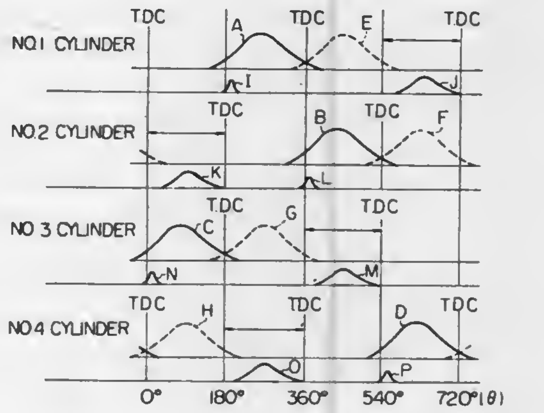
Masuo Amano, Okazaki, and Toshio Tanahashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 27, 1978, Ser. No. 900,595

Claims priority, application Japan, Dec. 2, 1977, 52-144679

Int. Cl.² F02B *33/00, 3/00;* F02D *39/02*

U.S. Cl. 123—119 A **8 Claims**



1. An internal combustion engine having a plurality of cylinders, each cylinder having an intake valve and an exhaust valve, said engine comprising:

an accumulation chamber.

a plurality of mixture feed branches, each branch interconnecting a respective cylinder with said accumulation chamber;

a plurality of auxiliary valves, each of which is located in a respective mixture feed branch, and;

means for actuating said auxiliary valves to open at a time of the compression stroke and at a time of the exhaust stroke of the corresponding cylinder, wherein each auxiliary valve opens over almost the entire period of the compression stroke, and the opening duration of each auxiliary valve is longer during the compression stroke than during the exhaust stroke.

4,192,266

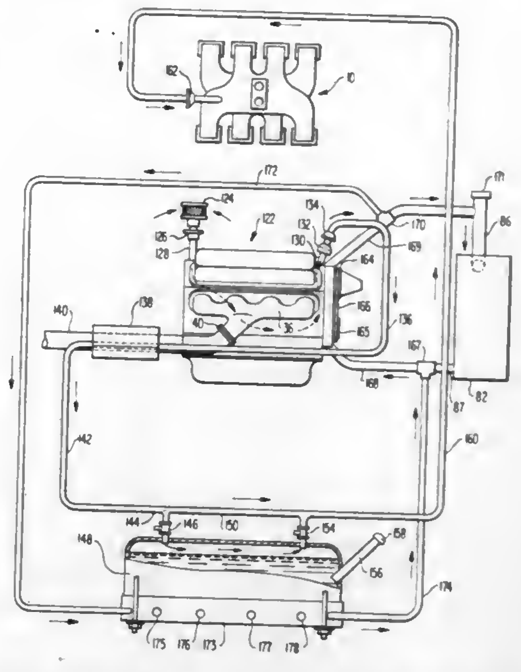
COOLING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Charles E. Duckworth, 1421 SE. 10th St., Deerfield Beach, Fla. 33441

Filed Jun. 30, 1978, Ser. No. 920,925

Int. Cl.² F02M *31/00*

U.S. Cl. 123—119 A **6 Claims**



1. A cooling system for a multi-cylinder internal combustion engine having designated exhaust cylinders which burn the exhaust gases which are expelled from fuel burning cylinders, a separate intake manifold being provided for said exhaust burning cylinders, said engine having a liquid coolant pump for circulating liquid coolant through the engine block, said cooling system including a primary heat exchanger comprising a closed tank defining a reservoir for the liquid coolant, said tank being connected to supply liquid coolant to said liquid coolant pump and to receive liquid coolant from said engine block after circulation therethrough, and at least one set of coiled tubing positioned within said closed tank and immersed in liquid coolant contained therein, said coiled tubing having first and second ends, said first end communicating with ambient air, and said second end being connected to said separate intake manifold for said exhaust burning cylinders whereby the vacuum created in said separate intake manifold when said engine is running produces a suction, causing air to constantly flow through said coiled tubing, thereby cooling the liquid coolant within said closed tank.

4,192,267

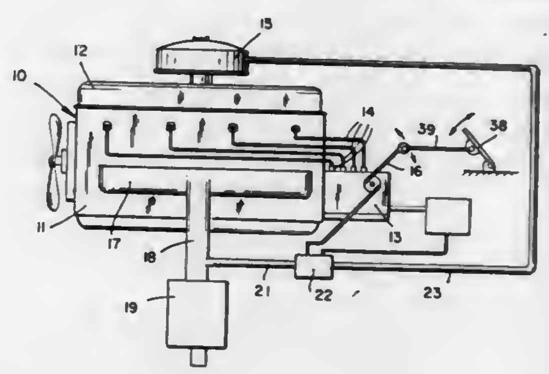
EXHAUST GAS RECYCLING IN AN INTERNAL COMBUSTION ENGINE

John M. Cobb, Cold Spring, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,942

Int. Cl.² F07N *25/06*

U.S. Cl. 123—119 A **7 Claims**



1. In an internal combustion engine **10** of the fuel injection

type wherein a substantially constant volume of air is charged to the engine's respective combustion chambers from an air intake manifold **12**, and an amount of fuel is injected from a fuel injector pump **13** into said combustion chambers to form a combustible mixture, which, upon ignition, forms an exhaust gas which is introduced to an exhaust gas conduit **18**,

an exhaust gas recycle circuit having a gas passage **21, 23** which communicates said exhaust gas conduit **18** with said air intake manifold **12**,

first valve means **22** disposed in said gas passage **21, 23** having a first valve means actuator **24** operably engaged therewith,

a vacuum source **29** communicated with said first valve means actuator **24** to impose a vacuum atmosphere thereon whereby to controllably position the first valve means **22** and thereby regulate exhaust gas flow through said gas passage **21, 23**,

second valve means **34** communicating said first valve means actuator **24** with a source of bleed gas,

a second valve means actuator **36** operably connected to said second valve means **34** to regulate the flow of bleed gas to said first valve means actuator **24**,

said fuel injection pump **13** having an indicator element **16** which is displaceable to a degree proportional to the fuel flow being delivered from said pump to the respective combustion chambers, and an engine speed indicator element **42** which is operable to provide a variable signal proportional to engine speed,

said fuel pump indicator element **16**, and said engine speed indicator **44**, being respectively communicated with said second valve actuator whereby to adjust the flow of gas bleed into said first valve actuator **24**.

4,192,268
AIR FLOW AMOUNT ADJUSTING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Tadashi Hattori, Okazaki; Akira Takata; Tamotsu Fukuda, both of Toyota, and Takamichi Nakase, Gamagori, all of Japan, assignors to Nippon Soken, Inc., Aichi and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 798,948, May 20, 1977, abandoned. This application Apr. 17, 1979, Ser. No. 30,953

Claims priority, application Japan, May 28, 1976, 51-62542; May 31, 1976, 51-63325

Int. Cl.² F02D ***1/04***

U.S. Cl. 123—119 EC **1 Claim**

1. In an additional air supply system for an internal combustion engine comprising:

a combustion chamber for producing combustion therein;

an intake system operatively communicated with said combustion chamber for supplying thereto an air-fuel mixture;

an exhaust system operatively communicated with said combustion chamber for conveying an exhaust gas from said combustion chamber to the atmosphere;

an additional air supply pipe communicated with at least one of said intake and exhaust systems for supplying additional air thereto, thereby controlling the air-fuel ratio of said air-fuel mixture at a desired value;

air-fuel ratio detecting means disposed in said exhaust system for detecting the air-fuel ratio of the air-fuel mixture supplied with said additional air;

control means operatively disposed in said additional air supply pipe for controlling the amount of the additional air to be supplied;

a timing pulse generating circuit for generating time pulses in a timed relationship with the running speed of said engine;

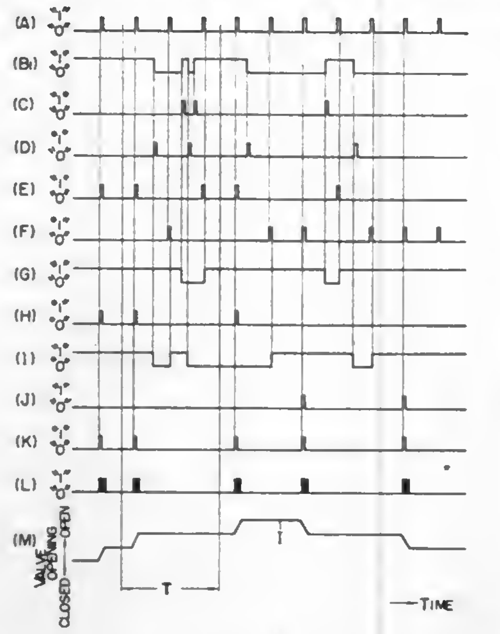
drive means operatively connected with said control means for driving the same; and

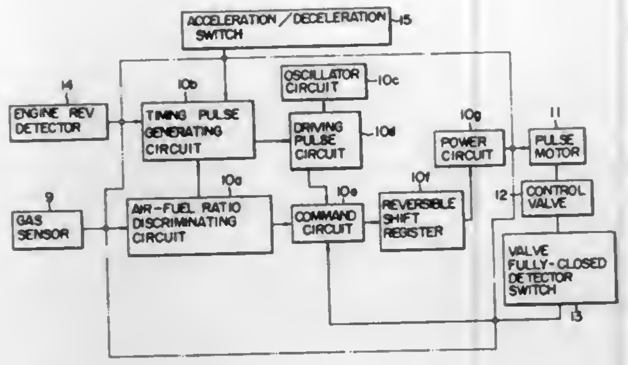
a control circuit electrically connected with said air-fuel ratio detecting means and said drive means for intermittently actuating said drive means in response to said timing pulses and the detected air-fuel ratio;

the improved control circuit comprising:

an air-fuel ratio discriminating circuit connected with said air-fuel ratio detecting means for comparing the output from said detecting means with a preset level and for generating a high level or a low level signal based on the comparison;

means for stopping the actuation of said drive means in response to change of said signal from one level to the other for a period including at least the first timing pulse following a level change, to prevent an erroneous operation of said control means, including first means for producing a transition signal when said level signal changes from one level to the other level, latch means connected to said first means and to said pulse generating circuit for shifting to a block condition upon receipt of said transition signal and to an unblock condition upon receipt thereafter of a succeeding timing pulse, and logic means connected to said latch means and connecting said discriminating circuit to said drive means while said latch means is in said block condition.




ACCELERATION / DECELERATION SWITCH
15
14
ENGINE REV DETECTOR
10b
TIMING PULSE GENERATING CIRCUIT
OSCILLATOR CIRCUIT
10c
DRIVING PULSE CIRCUIT
10d
10g
POWER CIRCUIT
11
PULSE MOTOR
9
GAS SENSOR
10a
AIR-FUEL RATIO DISCRIMINATING CIRCUIT
10e
COMMAND CIRCUIT
10f
REVERSIBLE SHIFT REGISTER
12
CONTROL VALVE
VALVE FULLY-CLOSED DETECTOR SWITCH
13

4,192,269
DEVICE FOR VAPORIZING LIQUID HYDROCARBON FUEL

Dudley D. Levy, 590 Laconia Cir., Lake Worth, Fla. 33463

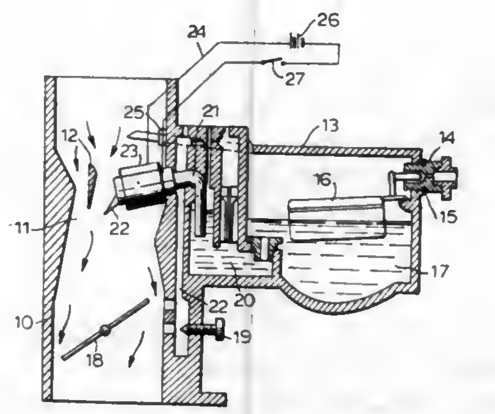
Continuation-in-part of Ser. No. 671,696, Mar. 29, 1976, abandoned. This application Mar. 24, 1978, Ser. No. 890,706

Int. Cl.² F02M ***31/00***

U.S. Cl. 123—122 F **2 Claims**

1. A device for vaporizing liquid hydrocarbon fuel as it enters a downwardly flowing stream of flowing oxygen-containing gas, comprising a reservoir for a vaporizable liquid hydrocarbon fuel, a liquid hydrocarbon fuel feed tube extending upwardly out of said reservoir and then laterally said tube has a lip means integrally formed on the end thereof and extending at an acute angle to the direction of the flow of the stream of gas past the end of said tube, means for conducting a stream of oxygen-containing gas downwardly past the end of said feed tube at less than atmospheric pressure for drawing fuel through said fuel feed tube, and an electric resistance heater operatively associated with the end of said feed tube and said lip means where it projects into the stream of gas and

having a heating capacity for heating the amount of liquid hydrocarbon fuel flowing through said fuel feed tube to a temperature which lies between a first temperature about halfway between the temperature of vaporization and the temperature at which the vaporized hydrocarbon fuel becomes explosive in the oxygen-containing gas and a second temperature which is the temperature at which the vaporized hydrocarbon fuel becomes explosive in the oxygen-containing gas, whereby the fuel is instantaneously and completely vaporized as it flows out through said heated tube and over said heated lip means.



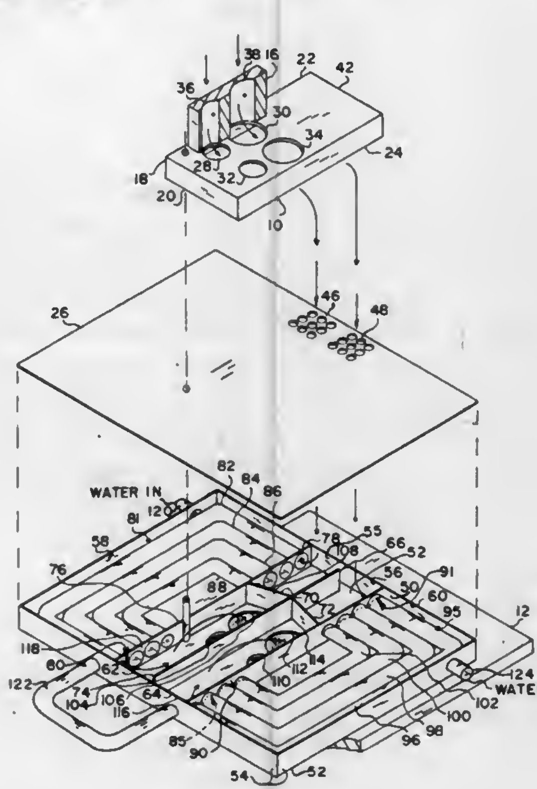
4,192,270
FUEL SYSTEM

Christopher P. Beckman, 996 Kelley Springs Rd., Harvest, Ala. 35749

Filed Jan. 8, 1979, Ser. No. 1,960

Int. Cl.² F02B ***31/00***

U.S. Cl. 123—122 A **3 Claims**



1. A combination comprising:

an internal combustion engine having an intake manifold with a horizontally positioned surface having therein at least one inlet orifice (a) positioned to receive an air-gasoline mixture entering in a vertical direction;

a carburetor adapted to provide at at least one output orifice (b) an air-gasoline mixture;

a fuel vaporizer having an inlet orifice (c) adapted to mate with said outlet orifice (b) of said carburetor, and having an outlet orifice (d) adapted to mate with said inlet orifice (a) of said intake manifold, comprising:

an elongated, horizontal, generally closed intake chamber having in its top one end region said orifice (c) and in its bottom at an opposite end region an outlet orifice (e),

a first manifold chamber positioned below and connecting with said orifice (c) and having a side wall having at least one set of a plurality of vertically positioned tubular openings (f) arranged generally horizontally in a vertical plate (g) of said side wall, which plane is generally parallel to the longitudinal dimension of said elongated chamber, and

a second elongated manifold chamber adjacent to and generally at the same level as said first manifold chamber, and at least partially under said elongated intake chamber, and having a side wall having a plurality of vertically positioned tubular openings (h) arranged generally horizontally along said vertical plane (g) and in said last-named side wall and in a first end region of said second manifold chamber, and having in its bottom at an opposite end region an orifice (i) adapted to mate with said orifice (a) of said intake manifold of said engine;

at least one set of a plurality of tubes connected between said openings of said first and second manifold chambers, said set of tubes generally lying horizontal in a common plane, and each tube being generally configured to form a "U"; and

a liquid holding chamber surrounding said set of tubes and being adapted to be connected to a cooling system of the engine, whereby liquid heated by the engine would flow in said liquid holding chamber and heat said tubes.

4,192,271
REGULATING APPARATUS FOR A FUEL SUPPLY SYSTEM FOR A MIXTURE-COMPRESSING, EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINE

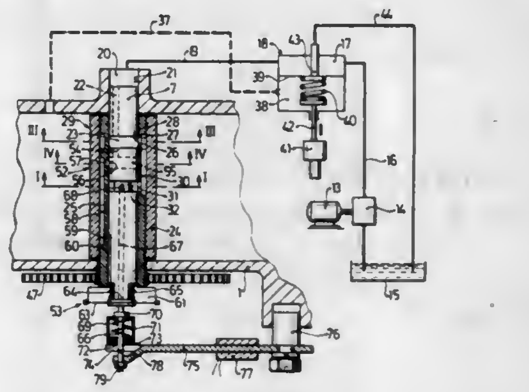
Klaus-Jürgen Peters, Affalterbach; Michael Wissmann, Gerlingen, and Peter Schelhas, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 905,302

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721864

Int. Cl.² F02M ***39/00***

U.S. Cl. 123—139 AW **5 Claims**



1. A regulating apparatus for a fuel supply system for a mixture-compressing externally ignited internal combustion engine with a pressure-regulating valve, whose movable valve member is influenced from one direction by fuel pressure and a pressure spring and from the other by a temperature-dependent element which effects a temperature-dependent alteration of pressure, further wherein said temperature-dependent element and said movable valve member cooperate with a relay pin, a regulating spring means arranged to encompass said relay pin, means supporting said regulating spring means, said last-named means being associated with said temperature-dependent element and wherein said temperature-dependent element is connected with said movable valve member below a predetermined temperature indirectly by means of said regulating spring means and above said predetermined temperature also directly by means of said relay pin.

4,192,272
CONTROL DEVICE FOR FUEL-INJECTED INTERNAL COMBUSTION ENGINES

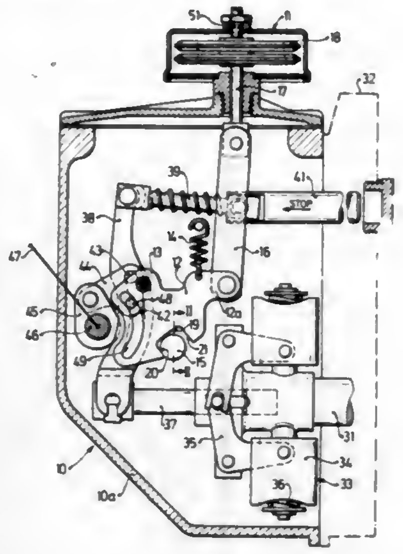
Thomas Lang, Schwäbisch Hall, and Karl-Heinz Zoske, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,612

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1977, 7717931

Int. Cl.² F02D *1/04;* **F02B** *77/00*

U.S. Cl. 123—140 MC **7 Claims**



1. A control device for the fuel supply system of a fuel-injected internal combustion engine including a fuel metering device having a movable fuel quantity adjusting member, a housing, a stop supported on said housing, a correcting device which changes the adjusting path and/or the full-load position of said fuel quantity adjusting member of said fuel metering device in dependence on operation values, said fuel quantity adjusting member being arranged to be moved into abutting engagement with said stop, an electrical circuit including a signal indicator, means for connecting said stop and said adjusting member to said electrical circuit upon said abutting engagement of said adjusting member with said stop, said stop being provided with insulative means to prevent the grounding of said stop to said housing, said stop being capable of conducting current through said electrical circuit upon said abutting engagement of said stop by said adjusting member to energize said signal indicator.

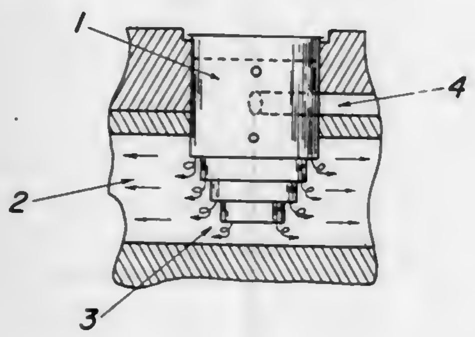
4,192,273
COMBUSTION MIXTURE MIXING DEVICE

Stan Gray, P.O. Box 259, Carson City, Nev. 89701

Filed Jul. 17, 1974, Ser. No. 489,078

Int. Cl.² F02M *29/00*

U.S. Cl. 123—141 **2 Claims**



1. In combination with an internal combustion engine having an intake manifold, a device located upstream of the intake manifold for conveying combustibles into said manifold, said device comprising:

a plurality of tubular members having imperforate walls arranged concentrically about a common axis; and means mounting said tubular members so that one end of each tubular member extends through a side wall of the manifold, the lengths of each tubular member being such that said one end of each tubular member extends into the manifold a different distance with the outermost of said tubular members extending into the manifold the smallest distance, the innermost of said tubular members extending into the manifold the largest distance and any intermediate tubular members extending into the manifold by intermediate distances, said device being arranged so that the combustibles flow through the innermost tubular member and the spaces between the walls of the adjacent ones of said tubular members and then transverse to said one end of said tubular members upon entering the manifold.

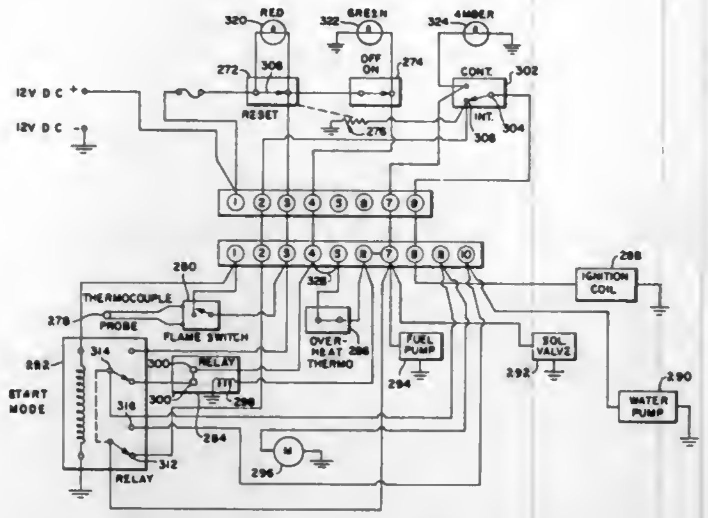
4,192,274
DIESEL FUELED ENGINE COOLANT HEATER

Ralph S. Damon, 3892 W. 36th St., Cleveland, Ohio 44109

Division of Ser. No. 584,948, Jun. 9, 1975, Pat. No. 4,099,488. This application Mar. 8, 1978, Ser. No. 884,633

Int. Cl.² F02N *17/02*

U.S. Cl. 123—142.5 R **7 Claims**



1. A control system for a vehicle coolant fluid heater including accessories therefor, said heater including a combustion chamber, a fuel-primary air nozzle for admitting a fuel-primary air mixture into said combustion chamber, spark ignition means, means for admitting secondary and tertiary air into said combustion chamber, and means to circulate coolant fluid through said heater, said accessories including an ignition apparatus to energize the heater spark ignition means, a compressor-blower to supply primary, secondary and tertiary air to said heater, a fuel pump, a coolant fluid pump and a fuel shutoff solenoid valve; said control system comprising:

(a) a source of DC power;

(b) on-off switching means;

(c) circuit interrupting means;

(d) a two-position relay having a start mode and a run mode;

(e) said ignition apparatus, said fuel pump, said solenoid shutoff valve and said compressor-blower being activated upon the closing of said switching means to an "on" position and with said relay in the start mode;

(f) electrical timer means energized by said relay in the start mode, said timer means functioning to trip said circuit interrupting means after a predetermined timed interval if ignition in said combustion chamber has not been proven;

(g) a flame switch responsive to flame in said combustion chamber, the closing of said flame switch after the establishment of flame in said combustion chamber acting to switch said relay from the start mode to the run mode thereby deactivating said electrical timer means;

(h) said ignition apparatus, said compressor-blower, said fuel pump and said fuel shutoff solenoid valve being activated by said relay in the run position and with said switching means in an "on" position;

(i) a high temperature limit thermostat disposed in said coolant fluid and adapted to interrupt the electrical circuit to said fuel pump and said solenoid shutoff valve, the opening of said thermostat upon achieving a preset temperature in said coolant fluid serving to interrupt the flow of fuel to said heater.

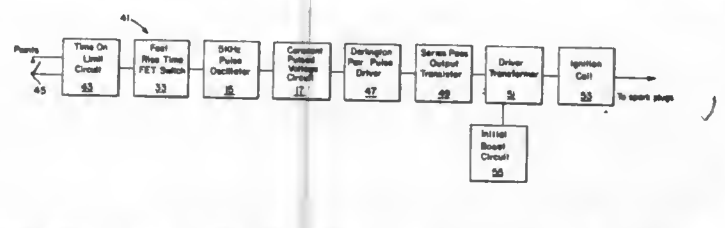
4,192,275
ELECTRONIC IGNITION SYSTEM

Donald C. Weydemuller, 21418 Bloomfield Ave., #15, Lakewood, Calif. 90715

Filed Nov. 3, 1976, Ser. No. 738,283

Int. Cl.² F02P *3/04*

U.S. Cl. 123—148 E **4 Claims**



1. An electronic ignition system for use with an internal combustion engine ignition system and a relatively low direct current potential source, said internal combustion engine ignition system providing ignition timing signals, comprising:

triggered oscillator means including a relatively high frequency non-inductive free running energy generator for providing pulses of oscillator energy in response to relatively low frequency ignition timing signals;

a switch circuit including input terminals coupled between the input of said triggered oscillator means and said ignition timing signals;

a time-on limit circuit means coupled between the input of said triggered oscillator means and said ignition timing signals for limiting the on time of said switch circuit, said timing signals being produced by a set of ignition points in series with said potential source, said time-on limit circuit means including a collector/emitter junction of an input switching transistor connected to the input terminals of said switch circuit, said input switching transistor including a base coupled to said timing signals through a series coupling capacitor and having a timing/coupling capacitor discharge resistor for limiting the conducting time of said input switching transistor to a predetermined value greater than the slowest normal operating period of said system;

constant-current pulse circuit means responsive to the level of said direct current potential source and coupled to said oscillator means for providing constant current pulses of energy in response to said pulses of oscillator energy over potential levels of said direct current potential source above and below a nominal level; and

output circuit means coupled to said constant current pulsed circuit means for providing relatively high-potential, high-frequency, constant-current combustion initiating pulses of output energy in direct relationship to and over the entire frequency range of said ignition timing signals.

4. An electronic ignition system for use with an internal combustion engine ignition system and a relatively low direct current potential source, said internal combustion engine ignition system providing ignition timing signals, comprising:

trigger oscillator means including a relatively high frequency non-inductive free running energy generator for providing pulses of oscillator energy in response to relatively low frequency ignition timing signals;

constant-current pulse circuit means responsive to the level of said direct current potential source and coupled to said oscillator means for providing constant-current pulses of energy in response to said pulses of oscillator energy over potential levels of said direct current potential source above and below a nominal level;

output circuit means coupled to said constant-current pulsed circuit means for providing relatively high-potential, high-frequency, constant-current combustion-initiating pulses of output energy in direct relationship to and over the entire frequency range of said ignition timing signals; and

initial boost circuit means coupled to said output circuit means for storing potential energy prior to introducing a heavy load on said potential source, and supplying energy to said output circuit means at times when the potential of said potential source is reduced under heavy load conditions.

4,192,276
SAFETY ARRANGEMENT IN KICKSTART APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

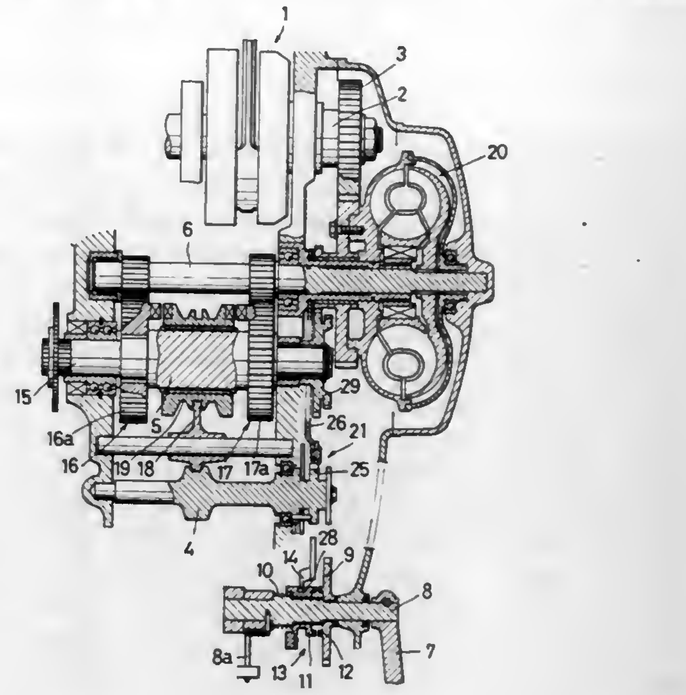
Takeo Ishihara, and Seishi Miura, both of Asaka, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1978, Ser. No. 878,379

Claims priority, application Japan, Feb. 25, 1977, 52-21331[U]

Int. Cl.² F02N *17/00;* **B60K** *41/08*

U.S. Cl. 123—179 K **4 Claims**



1. An improved safety arrangement in a kickstart apparatus for an internal combustion engine having a driving gear connected to a driving shaft at an input side of a power transmission, a shift drum being provided to shift the transmission between high speed, low speed and neutral stages by rotation of the shift drum, a starting gear connected to said driving gear in parallel with the driving shaft, a starting shaft loosely supporting the starting gear, a kick pedal on said starting shaft and clutch means interconnecting the starting gear and starting shaft comprising a movable half portion, a stationary half portion and spring means for engaging the clutch half portions upon rotation of the starting shaft, the improvement comprising: engaging claw means engageable with the movable half portion to arrest the same, and detecting means for detecting the positions of the shift drum corresponding to the stages of the transmission for selectively moving the claw means into engagement and disengagement with the movable half portion of the clutch means, said detecting means comprising, a pivotal lever movable by the shift drum, said claw means being integral with the lever; cam means coupled in rotation with the shift drum for moving the pivotal lever between a first position in which the claw means is disengaged from the movable half portion of the clutch means and a second position in which the claw means is engaged with the movable half portion of the clutch means; and a roller on said pivotal lever engaged with said cam means.

4,192,277

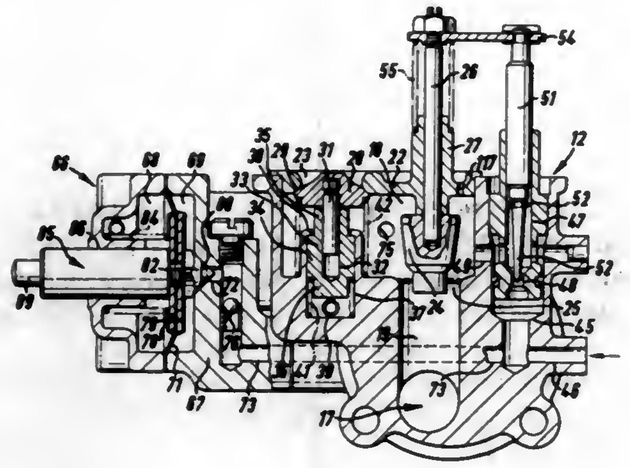
AIR/FUEL RATIO METERING APPARATUS FOR USE WITH AN INTERNAL COMBUSTION ENGINE

Gray E. D. Ross, Tring, England, assignor to Zenith Carburetter Company Limited, Stanmore, England

Filed Nov. 2, 1978, Ser. No. 957,020

Int. Cl.² F02M *7/16;* F02N *17/00*

U.S. Cl. 123—179 G **9 Claims**



1. The combination of a cold start fuel/air mixture supply device and a fuel pump for incorporation in an internal combustion engine fuel induction system which includes a carburetter having a driver-operable throttle valve as well, the cold start fuel/air mixture supply device comprising an air supply passage which has one end for connection to the inlet manifold of the internal combustion engine so that air can be drawn through that passage by engine suction when the device is fitted to the engine, an automatically operable throttle valve in the air supply passage, the automatically operable throttle valve being adapted to co-operate with an orifice which is formed within the air supply passage in order to throttle fluid flow through that orifice and being arranged to be urged to reduce the effective area of the orifice by engine suction when the device is fitted to the engine and the engine is running under its own power, a fuel passage which terminates in a fuel discharge nozzle which is formed in the air supply passage upstream of the orifice, the fuel passage including fuel metering means for metering flow of fuel drawn through the fuel passage from a source of liquid fuel by a depression which is established within part of the air supply passage upstream of the orifice, and thermostatically-controlled means which are adapted to be responsive to the temperature of the engine to which the cold start fuel/air mixture device is fitted when used and which are operable to limit movement of the automatically operable throttle valve to reduce the effective area of the orifice as the temperature of the engine to which the device is fitted in use increases so that when the device is fitted to the engine and the engine has started to run under its own power, both the air flow in the air supply passage and the flow of fuel into the air supply passage through the fuel passage are decreased progressively with increase in engine temperature; and the fuel pump being adapted to draw liquid fuel from a source of liquid fuel and to pump that liquid fuel into the air/fuel induction system when the driver-operable throttle valve is opened so that the depression in the induction system downstream of the driver operable throttle valve decreases, the thermostatically-controlled means also being operable to modulate the performance of the fuel pump so that the amount of fuel that can be pumped into the induction system by the fuel pump when the combination is in use when the engine has started to run under its own power and when the driver-operable throttle valve is opened is reduced progressively with increase in engine temperature.

4,192,278

INTERNAL COMBUSTION ENGINE FOR MOTOR VEHICLE

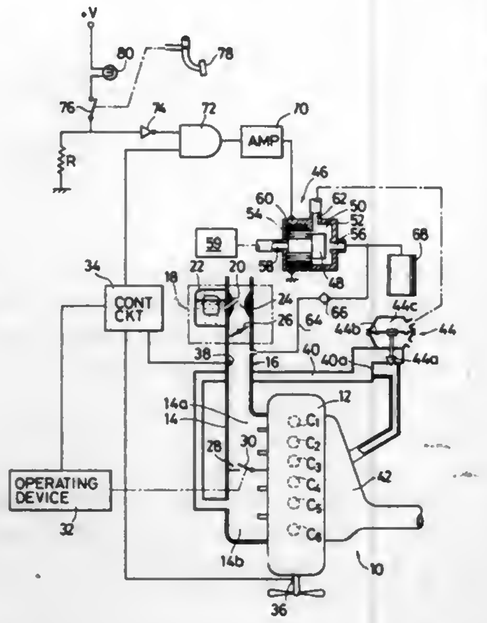
Haruhiko Iizuka, Yokosuka; Fukashi Sugasawa, Yokohama; Junichiro Matsumoto, Yokosuka, and Yukihiro Etoh, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 4, 1978, Ser. No. 965,994

Claims priority, application Japan, Dec. 18, 1977, 52-170813[U]

Int. Cl.² F02D *17/02*

U.S. Cl. 123—198 F **15 Claims**



1. An internal combustion engine for a motor vehicle, having first and second groups of engine cylinders, comprising:
- blocking means for blocking a supply of fuel and air into the second group of engine cylinders during a predetermined engine operation, when operated;
- gas supply means for supplying a gas into the second group of cylinders during the operation of said blocking means, when operated; and
- stopping means for stopping the operation of said gas supply means when said blocking means is operated and a brake pedal is depressed to slow down the speed of the motor vehicle.

4,192,279

METHOD AND APPARATUS FOR AUTOMATIC ENGINE SHUT-OFF AND RESTART

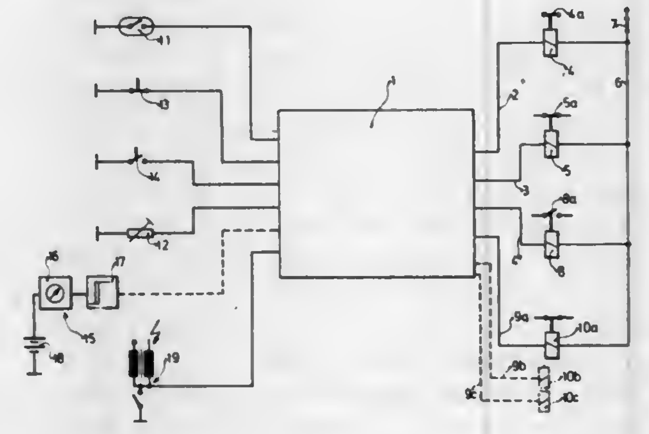
Wolfgang Maisch, Schwieberdingen, Fed. Rep. of Germany, and Rainer Burkel, Le Chesnay, France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,236

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803145

Int. Cl.² F02B *75/12*

U.S. Cl. 123—198 F **19 Claims**



1. A method for automatic control of the motor of a motor vehicle, comprising the steps of arresting the motor when each condition in a first set of conditions is determined to have been met, said first set of conditions including:
- (A) the road speed of the vehicle falls below a minimum speed which is substantially equal to the lowest speed which the vehicle can have without stalling the motor when the drive line is engaged and being approximately 3 km/hour;
- (B) the accelerator pedal is not depressed;
- (C) the clutch pedal is not depressed; and
- (D) a time period of selectable length T1 has elapsed since the previous passage of the vehicle speed through said minimum speed.

7. An apparatus for the automatic arrest and starting of the motor in a motor vehicle, comprising:
- a control circuit for generating at least one output signal which engages said motor resulting in its arrest, said control circuit having a plurality of control input contacts and logical combinatory circuits which produce said output signal only if all of said control input contacts exhibit predetermined states;
- a plurality of condition sensors, one of said condition sensors detecting the vehicle speed of said motor vehicle and including a threshold switch comprising a monostable multivibrator, said threshold switch generating an input signal for said control circuit when the vehicle speed falls below a selectable minimum speed of approximately 3 km/hour.

4,192,280

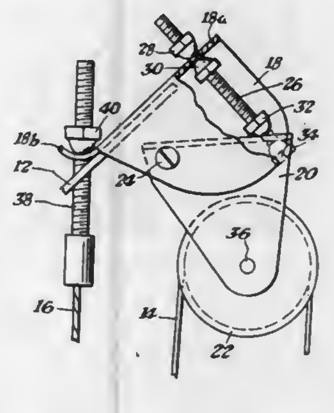
COMBINATION OF AN ARCHERY BOW AND ADJUSTABLE PULLEY ASSEMBLY

Lawrence C. Rickard, 580 Mentone Rd., Lantana, Fla. 33462

Filed Sep. 11, 1978, Ser. No. 941,266

Int. Cl.² F41B *5/00*

U.S. Cl. 124—23 R **1 Claim**



1. A combination of an archery bow with bow limbs and bow string, said combination further comprising a pulley assembly including
- a first U-shaped housing connected to one of said bow limbs;
- a second U-shaped housing pivotally mounted to said first housing, said second housing including a rotatably coupled pulley wheel for receiving said bowstring; and
- a manual means for variably positioning said second pulley housing relative to said first housing.

4,192,281

CROSSBOW WITH TRIGGER LOCKING DEVICE

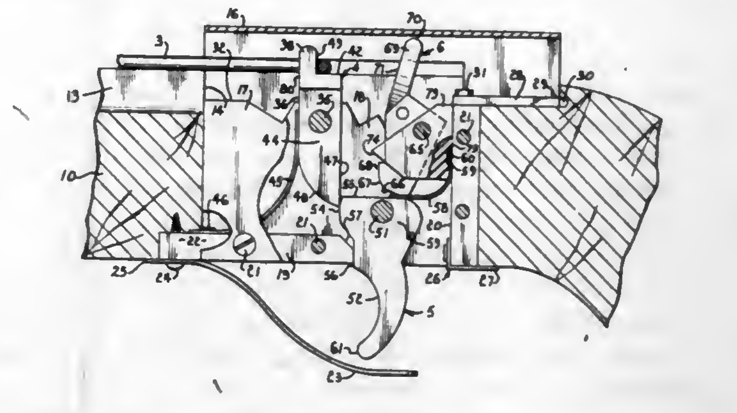
Fred V. King, 1605 S. Independence, Harrisonville, Mo. 64701

Continuation of Ser. No. 805,301, Jun. 10, 1977, abandoned. This application May 3, 1978, Ser. No. 902,297

Int. Cl.² F41B *5/00*

U.S. Cl. 124—25 **9 Claims**

1. A trigger device for holding and releasing a crossbow string, comprising:
- (a) housing means housing said trigger device and adapted for connection with a crossbow;
- (b) holding means for a crossbow string, being rotatably mounted in said housing means and pivotable between first and second positions for holding and releasing said string respectively;
- (c) trigger means mounted in said housing means and engaging a portion of said holding means and retaining said holding means in said first position when said trigger means is in a first trigger position; said trigger means being pivotable to a second trigger position wherein said trigger means is out of engagement with said portion and permits said holding means to pivot to its second position thereby releasing a crossbow string; and
- (d) locking means mounted in a crossbow housing means and pivotable between a lock position and an unlock position; in said lock position, said locking means engaging said trigger means and preventing rotation thereof from said first trigger position, thereby preventing a crossbow string release; in said unlock position, said locking means permitting rotation of said trigger means from the first to the second trigger position, thereby permitting a crossbow string release; said locking means releasably engaging said holding means during a portion of a crossbow string cocking operation, whereby rotation of said holding means by action of a crossbow bowstring, from the second to the first position of the holding means, automatically causes the holding means to engage and contemporaneously pivot said locking means from the unlocked position toward the locked position..



4,192,282

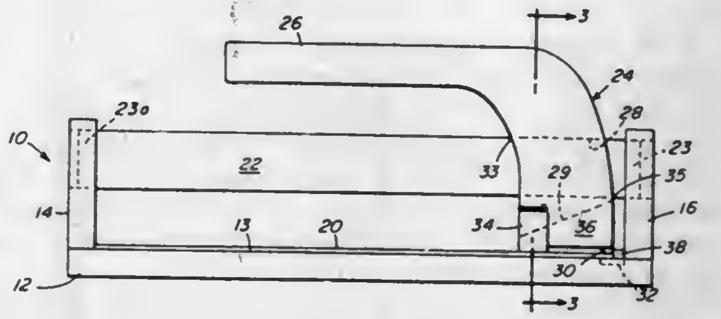
TILE CUTTER

John P. Fischer, 1064 Goffle Rd., Hawthorne, N.J. 07506

Continuation-in-part of Ser. No. 815,471, Jul. 14, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,536

Int. Cl.² B28P *1/32*

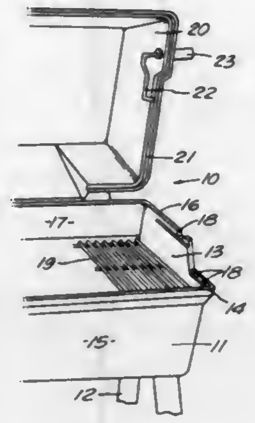
U.S. Cl. 125—23 T **1 Claim**



1. An improved tile cutter for scoring and fracturing ceramic tiles and the like, comprising:
- a rectangular base member;
- two resilient symmetrical, rectangular work surface pads positioned on the upper surface of said base;
- a scoring blade channel along the longitudinal axis of said base member, separating said resilient work surface pads;
- a recessed depression at the forward end of said scoring channel;
- a pair of vertical support members positioned extending upwards from said base member;

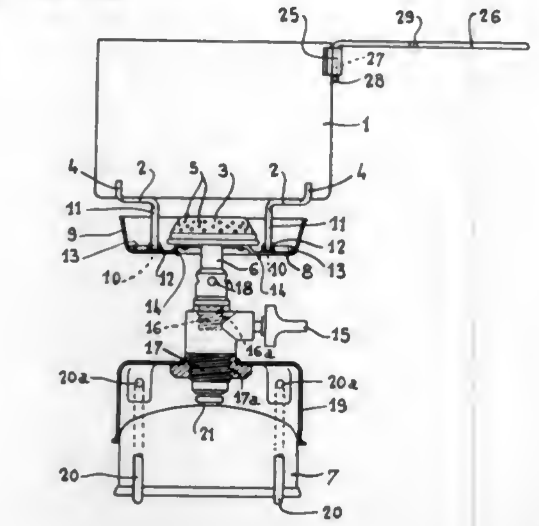
an elongated rectangular guide rod secured at each end in grooves in said vertical support members, said guide rod positioned above and parallel to said scoring blade channel;
a tile scoring and fracturing means slidably mounted on said guide rod, comprising:
an L-shaped member having a horizontally oriented elongated handle portion, a downward sloping arcuate portion and a downward vertically oriented base portion;
said downward sloping arcuate portion having a guide channel with a downward and rearward sloping base to receive said guide rod and to permit said scoring and fracturing means to slide along said guide rod and to pivot arcuately;
a circular scoring blade rotatable secured to the forward most and lowest point of the base portion of said scoring and fracturing means;
two symmetrical, generally triangular fracturing arm fins, each extending outwardly and downwardly from opposed lower rear side surfaces of said scoring and fracturing means base portion; said fins having widely separated pressure points on their extreme ends;
a transversely adjustable L-shaped guage bar means having a notch therein positioned across and overhanging said base at its forward end to position a tile on said base, said guage bar having an angular trailing edge on its shorter leg.

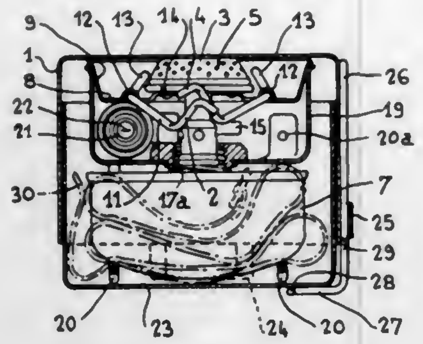
4,192,283
BARBECUE GRILL COVER POSITIONING MEANS
Edward L. Kridler, Lincolnshire; Marvin W. Eisenhauer, Antioch, and Loyal A. Huson, Round Lake Park, all of Ill., assignors to Beatrice Foods Co., Chicago, Ill.
Filed Feb. 27, 1978, Ser. No. 881,144
Int. Cl. F24b *3/00*
U.S. Cl. 126—25 AA **3 Claims**



1. In a barbecue grill having an open-top fire bed having enclosing side walls terminating in a continuous upper edge and shell-like cover with enclosing front, back and side walls terminating in a continuous edge having a plurality of slots therein, the cover being hingedly connected to the fire bed, enabling closing of the cover onto the fire bed, bringing the wall edges of each into substantially sealing relation, the improvements comprising:
a generally L-shaped metal rod, one arm of which has a thread thereon and extends through an opening in a side wall of the cover to extend outwardly of said cover and the arm of which is within the cover;
a bushing located within the cover side wall opening and receiving the threaded arm for rotation therein;
a tube of a heat insulator material received onto the threaded arm extending outwardly of the cover;
a generally cylindrical handle having a longitudinally extending bore, said bore being received onto the tube of a heat insulator material; and
a bushing secured within the handle bore for unitary movement therewith, said bushing having a slotted opening which is received onto a similarly shaped end portion of the L-shaped metal rod one arm such that rotation of the handle about the bore axis rotates the rod other arm for selective location in any one of the fire bed edge slots.

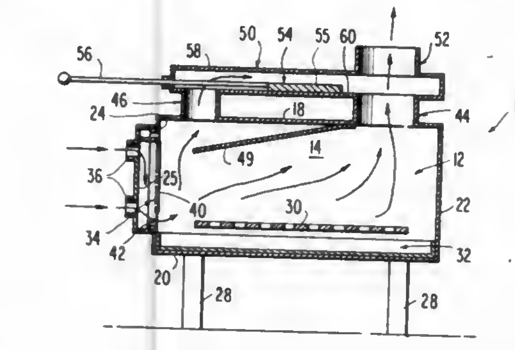
4,192,284
PORTABLE STOVES
Marcel Vache, Sainte-Foy-les-Lyon, France, assignor to Application des Gaz, Paris, France
Continuation-in-part of Ser. No. 722,901, Sep. 13, 1976, Pat. No. 4,105,013. This application May 22, 1978, Ser. No. 908,424
The portion of the term of this patent subsequent to Aug. 8, 1995, has been disclaimed.
Int. Cl.^{2} F24C *5/20;* F24B *3/00;* F23D *13/04*
U.S. Cl. 126—38 **3 Claims**





1. A portable cooking apparatus fueled from a replaceable and pierceable combustible gas cartridge, comprising:
a dismountable stove for attachment to said cartridge, comprising:
 a cover member shaped to receive said gas cartridge and means for securing said cartridge to said cover member,
 a burner head,
 an intermediate connecting element incorporating a cock, securable to said burner head and on said cover member, and having an element for connecting said burner head to said cartridge,
 support arms for holding a sauce-pan above the burner head;
two pans respectively supportable above the burner head and serving as saucepans when the stove is in use, and within which the stove when not in use is storable, said pans being capable of telescoping one within the other with one facing the other, and the pans being shaped so that they comprise storage means telescopable from a relatively lower height inactive position wherein the cover member, burner head and connecting element are dismantled from one another and nested one within another and in the two pans, and telescopable to a relatively higher height active position wherein the cover member, burner head and connecting element are fitted to one another and to a cartridge, and nested in the two pans.

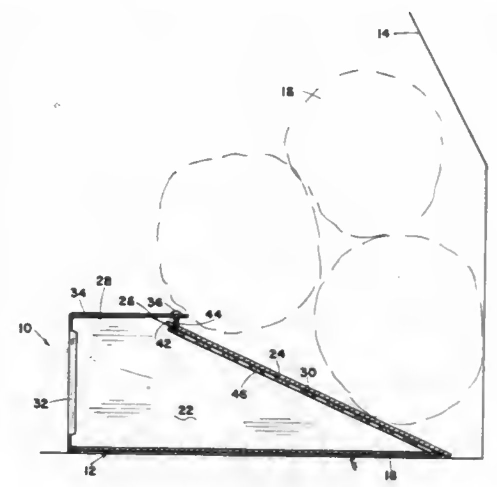
4,192,285
AIR TIGHT FUEL BURNING STOVE
Val J. Nietupski, Michigan City, Ind., assignor to Valco Corporation, Michigan City, Ind.
Filed Nov. 21, 1977, Ser. No. 853,529
Int. Cl.^{2} F24C *15/28, 1/08*
U.S. Cl. 126—83 **7 Claims**



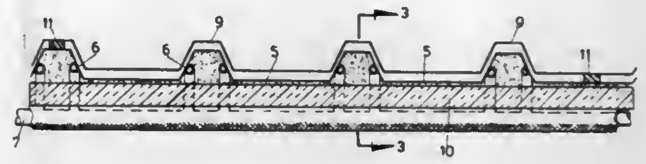
1. A stove for holding and burning fuel to heat the surrounding atmosphere in a room, said stove comprising:
a housing having a fire box for supporting the fuel to be burned, the fire box having front, rear, upper and lower portions;
air inlet means located in the front portion of the fire box communicating between the fire box and the surrounding atmosphere for providing a flow path for air into the fire box from the atmosphere for combination with the fuel;
heating means cooperating with said air inlet for heating said air entering said fire box;
baffle means secured within said housing and located relative to the rear portion of the fire box for directing at least a portion of the volatile gases given off by burning fuel toward said heating means from the rear portion to the front portion of the fire box to mix with incoming air and achieve secondary combustion, said baffle means including a baffle extending downwardly from the upper portion between said front portion and rear portion toward said front portion to direct volatile gases formed during burning of a fuel toward said front portion; and outlet means disposed in the upper portion of said fire box for cooperating with said baffle means and directing said volatile gases toward the front portion, said outlet means including a rear outlet duct and at least one forward outlet duct, a damper means for movement between an open position and a closed position, said damper means in said closed position substantially impeding flow out of said rear outlet duct, whereby in said closed position said volatile gases will be directed by said baffle toward said front portion and in said open position at least a portion of said volatile gases will pass directly out of said rear outlet duct.

4,192,286
HEAT EXCHANGER
Garold L. Wormington, 600 S. Scenic, Springfield, Mo. 65802
Filed Dec. 27, 1977, Ser. No. 864,599
Int. Cl.^{2} F24B *7/00*
U.S. Cl. 126—121 **6 Claims**

1. A method of producing heat from a fireplace which comprises providing an air chamber beneath a heat exchanger plate, supporting a source of fuel substantially immediately above the air chamber, directing a relatively thin stream of air to the proximity of the bottom of the fuel source during a burning operation, circulating air through the air chamber whereby relatively cool air is drawn into the air chamber and hot air is discharged therefrom into the area surrounding the fireplace, directing a relatively thin elongated stream of air into the fire area, and reducing the temperature of the heat exchanger plate during a burning operation.



4,192,287
SOLAR WATER HEATERS
George S. James, 5-13th Ave., Parktown North, Johannesburg, Transvaal, South Africa
Filed Dec. 6, 1977, Ser. No. 858,067
Claims priority, application South Africa, Dec. 15, 1976, 76/7471
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—449 **5 Claims**



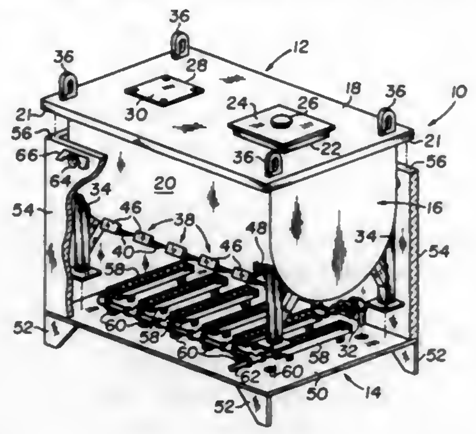
4. A solar heat collecting panel comprising a sheet of metal formed as a roofing panel with inverted box ribs, conduits secured to the inside of the flanks of box ribs in heat conducting relationship, a solar radiation transmitting cover spaced from and continuous over the metal sheet and also formed to inverted box rib shape and so positioned that surfaces on the metal sheet are parallel to surfaces on the cover, insulating means sandwiched between the cover and the metal sheet around the area underlain by the conduits, and manifolds for feeding fluid to and leading fluid from the conduits.

4,192,288
MATERIAL HEATING APPARATUS
Anton H. Heller, Levittown, N.Y., assignor to Poweray Infrared Corp., Amityville, N.Y.
Filed Jul. 7, 1978, Ser. No. 922,779
Int. Cl.^{2} E01C *19/45*
U.S. Cl. 126—343.5 A **17 Claims**

1. In an apparatus for heating and maintaining an asphalt material in a molten state at temperatures within a preselected range below the decomposition temperature of the asphalt material,
a container for holding an amount of the asphalt material in its molten state,
infrared heating means for emitting infrared radiation at a first temperature above the asphalt material decomposition temperature, said heating means being spaced from a portion of the wall of the container such that the emitted infrared radiation is directed at said container wall portion,
and heat absorbing means relatively spaced from said infrared heating means and said container wall portion and

interposed therebetween to receive infrared radiation emitted by the heating means to prevent the emitted radiation from impinging directly upon the container wall, said heat absorbing means being heated to a second temperature less than said first temperature and greater than the preselected temperature range by absorption of the infrared radiation impinging thereon and emitting secondary radiation at said second temperature onto said container wall portion,

the relative spacings between said heating means and absorbing means and said absorbing means and container wall portion being so selected as to cause the secondary radiation to impinge upon said container wall portion at a third temperature less than said second temperature and within the preselected range so as to maintain the temperature of the asphalt material in contact with the container wall portion within the preselected range below the decomposition temperature of the asphalt material, said heat absorbing means being inperforate and being between said heating means and container wall so as to intercept the infrared radiation emitted by said heating means to prevent the same from impinging directly upon said container wall and to convert the heat of sad infrared radiation to a lower heat intensity by absorbing certain of said heat of said heating means and to serve as a selective regulating control of the heat acting upon said container wall.



4,192,289

SOLAR HEAT COLLECTION SYSTEM

David J. Clark, 118 Nobscot Rd., Sudbury, Mass. 01776
Filed Jun. 8, 1978, Ser. No. 913,873
Int. Cl.² F24J *3/02*
U.S. Cl. 126—425 **22 Claims**

1. Solar energy collection apparatus comprising:

a reflector means comprising a frame and a plurality of discrete reflector segments with light reflecting surfaces and supported by said frame means in an array having a substantially paraboloidal shape;

drive means for producing rotational movement of said frame about first and second axes;

control means for energizing said drive means so as to produce sun tracking movement of said array, said control means comprising a sensor means responsive to the orientation of received sunlight;

a stationary collector means with a light collecting surface positioned to receive reflected energy from each of said reflector segments, said light collection surface being spaced from said light reflecting surfaces in a substantially southern direction; and

sensor drive means responsive to said control means for maintaining said sensor means in alignment with the sun.

21. Solar energy collection apparatus comprising:

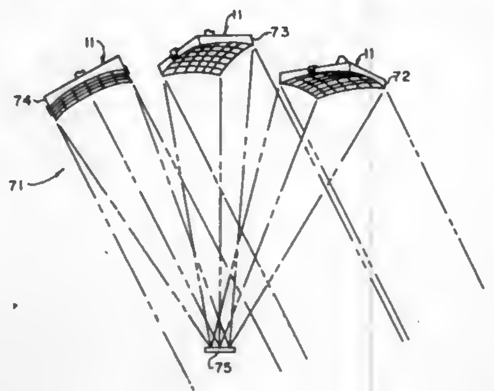
receiver means for receiving energy from the sun;

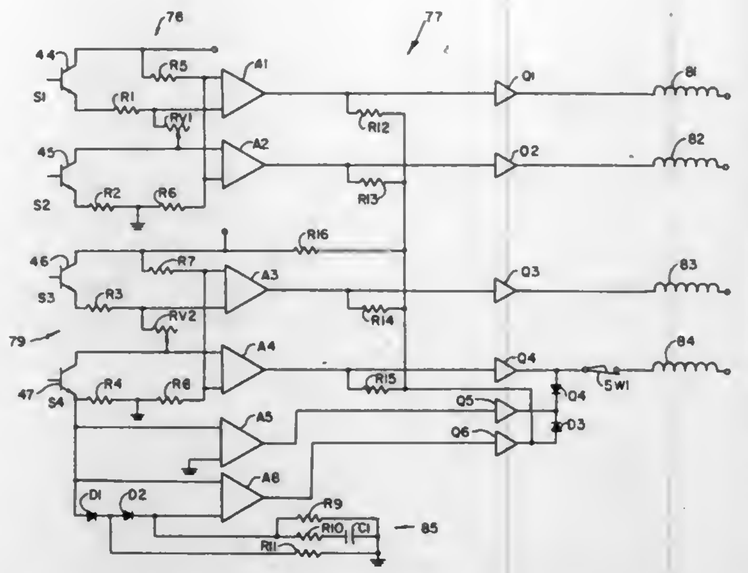
a frame means supporting said receiver means;

drive means for producing movement of said frame means;

control means for energizing said drive means so as to produce sun-tracking movement of said frame means, said control means comprising a sensor means responsive to received solar radiation said control means comprising a balanced bridge circuit including a plurality of sensors responsive to solar radiation, and a plurality of output circuits for providing energizing signals to said drive means; and

de-activation means for de-activating said control meams in response to a predetermined decrease in the level of solar radiation received by said sensor means, said de-activation means comprising a delay means for re-activating said control means after a time delay and inhibit amplifier means for inhibiting said output circuits to prevent the generation of said energizing signals thereby in response to said predetermined decrease in the level of radiation received by said sensor means, said inhibit amplifier means having one input responsive to said level of solar radiation, a second input responsive to a signal level provided by said delay means and an output connected to said plurality of output circuits, and said de-activation means further comprising a capacitor means connected to said second input and charged in response to increases in the level of solar radiation received by said sensor means, and resistor means for discharging said capacitor means in response to decreases in the level of said receiving radiation.





4,192,290

COMBINED SOLAR COLLECTOR AND ENERGY STORAGE SYSTEM

Ronald N. Jensen, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Apr. 28, 1978, Ser. No. 900,843
Int. Cl.² F24J *3/02*
U.S. Cl. 126—437 **6 Claims**

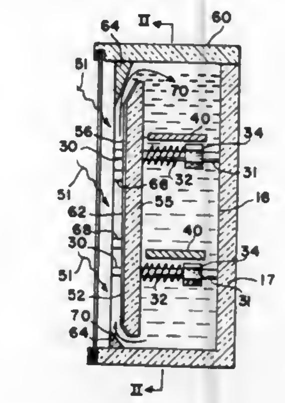
1. A combined solar energy collector, fluid chiller, and energy storage system comprising:

(a) a tank for containing a liquid;

(b) a solar energy collector surface forming a wall of said tank;

(c) a thermal insulation means for thermally insulating said liquid contained in said tank from the exterior environment of said tank, said thermal insulation means including a thermal insulation panel located inside said tank, the major surface of said panel being parallel with the collector wall;

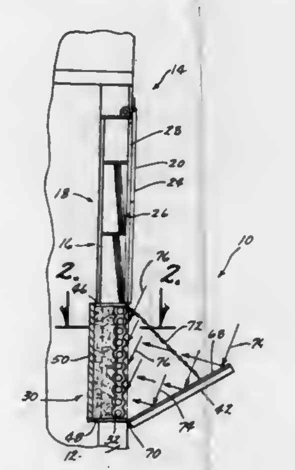
(d) thermally responsive panel moving means positioned to move the insulating panel to or from a first position in which the panel is displaced from said collector surface to allow the liquid to move into contact with the collector surface, to a second position where the panel affronts the collecting wall; whereby heat transfer between said liquid and said collector wall is controlled by the movement of said thermal insulation panel between said first and second positions while maintaining the parallel relationship between said collector wall and said thermal insulation panel said panel in said second position forms with the other surfaces of said tank an insulating enclosure for said liquid.



4,192,291

SOLAR WATER HEATER

Asa S. Arent, 700-15th St., Humboldt, Iowa 50548
Filed Jul. 21, 1978, Ser. No. 926,749
Int. Cl.² F24J *3/02*
U.S. Cl. 126—439 **1 Claim**



1. A solar water heater comprising,

a frame means having upper and lower ends, spaced apart sides, and forward and rearward ends, said rearward end being adapted to be inwardly disposed of a building wall,

a conduit means having horizontal portions and inlet and outlet ends, said conduit means being securely mounted within said frame means in a sinuous planar configuration, said inlet end being adapted for connection to a supply of water and said outlet end being adapted for connection to a hot water storage tank, said conduit means having an outer surface adapted to absorb solar energy,

a first reflector means mounted within said frame means rearward of said conduit means and having a forwardly disposed non-planar reflector surface, said non-planar reflector surface of said first reflector means being corrugated transversely with the ridges being parabolic shaped in cross section and inwardly disposed,

a transparent non-planar first panel member having transversely extending corrugated ridges of a parabolic shape in cross section and being outwardly disposed, and positioned opposite to the inwardly disposed corrugations of said first reflector means, to allow passage of solar energy to said conduit means, said panel member being mounted within said frame means forward of said conduit means,

the horizontal portions of said conduit means dwelling in spaced relation to and between the oppositely positioned inwardly and outwardly corrugations of said first reflector means and said first panel member, respectively,

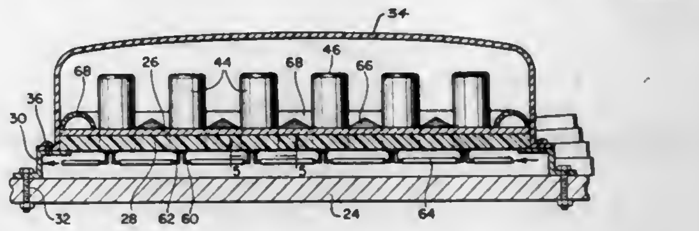
a second panel member hingedly secured to said frame means and being rotatable from a closed position enclosing said forward end of said frame means to an open position exposing said forward end, said second panel member having an inner surface with a second reflector means thereon,

connection means for adjustably positioning said second panel member in various positions relative to said forward end of said frame means so that the rays of the sun striking said second reflector means may be reflected through said first panel member to said conduit means.

4,192,292

SOLAR HEATING SYSTEM

Edward J. Root, P.O. Box 169, Old Saybrook, Conn. 06475
Filed Mar. 27, 1978, Ser. No. 890,206
Int. Cl.² F24J *3/02*
U.S. Cl. 126—448 **8 Claims**



1. A solar collector matrix assembly comprising:

a support member of generally flat sheet material having a substantially checkerboard design on its surface, alternating polygons thereof having circular holes formed therein whose outer circumferences are generally tangential to the perimeters of their associated polygons;

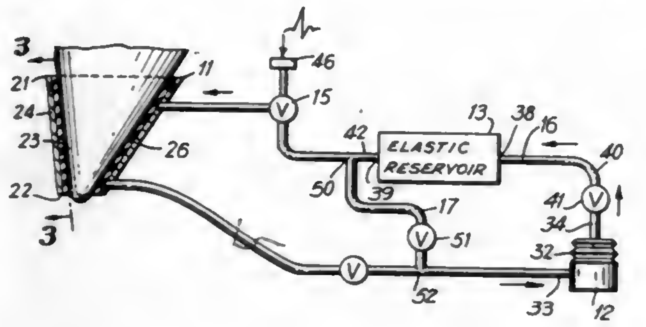
a matrix of collector elements arranged on said support member in a series relationship including a plurality of cylindrical beverage containers of the convenient opening variety, each including a first end which is sealed and a second end having a continuous edge defining an opening therein, each of said containers being received within an associated hole and mounted on said support member, a longitudinal axis of each of said containers being transverse to a plane of said support member, and each of said containers having a coating of a heat and light conductive substance;

a resilient plug having a pair of spaced apertures mounted in the opening of each second end and a groove extending along its perimeter for positive engagement with said continuous edge thereby effectively sealing the opening;

first and second collector tubes fittingly received respectively through the apertures in said plug and extending from outer ends positioned at locations outside of said container to inner ends positioned at locations within said container, the inner end of said first collector tube terminating nearer to the first end of said container than the inner end of said second collector tube; and

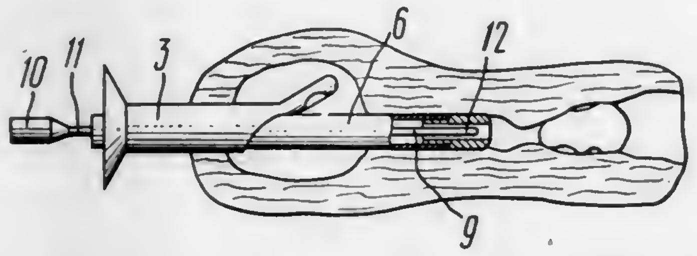
a conduit connecting said second tube of one of said containers to said first tube of an adjacent one of said containers such that all of said containers in said matrix are thereby connected in a series relationship.

4,192,293
CARDIAC ASSIST DEVICE
Manfred Asrican, Baldwin Farms South, Greenwich, Conn. 06830
Filed Sep. 5, 1978, Ser. No. 939,343
Int. Cl.² A61H *29/00*
U.S. Cl. 128—1 D **6 Claims**



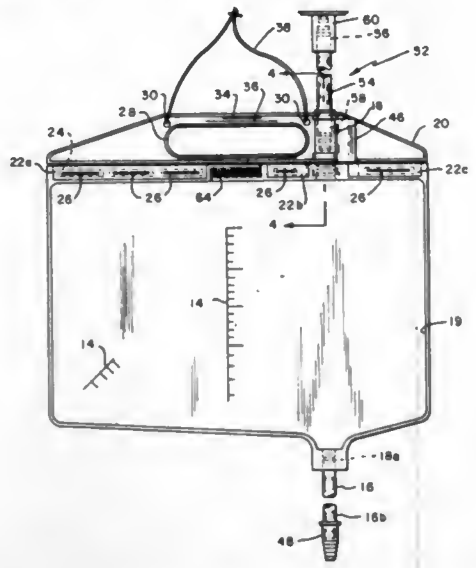
1. An improved cardiac assist device comprising: a hollow rigid sheath of generally frusto-conical configuration adapted to be surgically implanted to surround the myocardium of a patient; an inflatable bladder mounted upon the inner surface of said sheath, and having means for input and return flow of a pressurized fluid from an external source; a reciprocating pump adapted to be worn by said patient, and driven by respitation movement of the diaphragm of said patient; an elastic reservoir connected in series with said pump, a valve in series with said reservoir and communicating with said bladder; means sensing the heartbeat of said patient and providing a signal controlling said valve in synchronism therewith; and conduit means for returning fluid from said bladder to said pump.

4,192,294
METHOD OF REMOVING CONCRETIONS FROM THE URETER
Petr N. Vasilevsky, bulvar Druzhby Narodov, 8, kv. 27; Boris S. Gekhman, ulitsa Parizhskoi kommuny, 22-b, kv. 24; Ivan V. Parfinenko, ulitsa Kochubeevskaya, 12a, kv. 1; Alfred M. Podgursky, pereulok Elektrotekhnichesky, 3, kv. 10, and Avram S. Lazaretnik, Rusanovsky bulvar, 12, kv. 69, all of Kiev, U.S.S.R.
Filed Oct. 11, 1977, Ser. No. 840,763
Int. Cl.² A61B *19/00, 17/00*
U.S. Cl. 128—1 R **10 Claims**



1. Method of removing a concretion from a ureter containing a concretion, which comprises
- placing a vibratory means in the ureter cystoscopically through the urethra and the bladder,
- advancing said vibratory means through the ureter to the flexure thereof below and not in contact with the concretion,
- supplying power to said vibratory means inducing vibrations which act upon the inner surface of the ureteral walls and stimulate peristaltic contractions of the ureter, and
- withdrawing said vibratory means from the ureter, said stimulated peristaltic contractions being sufficient to cause said contained concretion to move through and out of the ureter, after said vibratory means has been withdrawn, without the concretion having been physically contacted by any instrument.

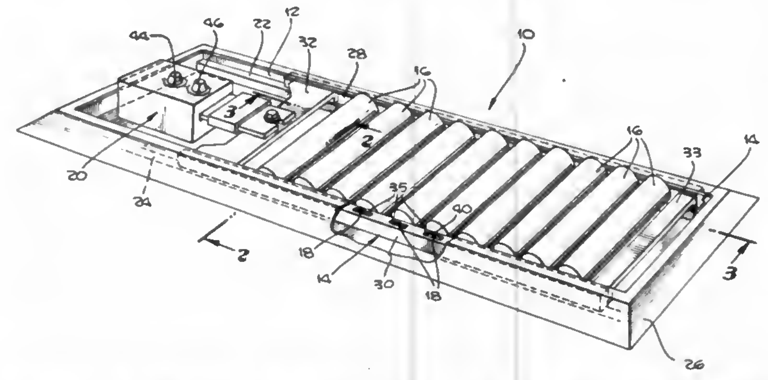
4,192,295
BEDSIDE DRAINAGE BAG
Hugh P. Sherlock, Palo Alto, Calif., assignor to M.U. Engineering & Mfg. Co., Mountain View, Calif.
Filed May 2, 1977, Ser. No. 792,971
Int. Cl.² A61F *5/46*
U.S. Cl. 128—295 **9 Claims**



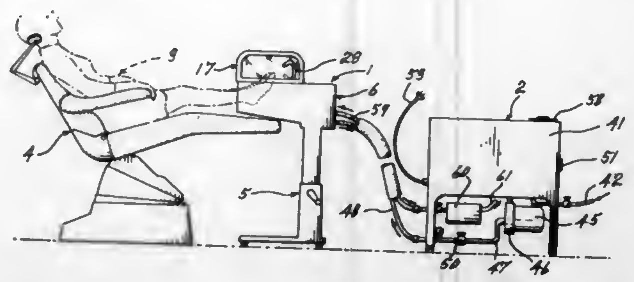
1. In a urinary drainage bag, first and second sheets of flexible material having upper, side and lower margins, and being disposed to form adjacent side walls of the bag, an inlet tube having a portion disposed between said upper margins of said first and second sheets, said inlet tube portion being offset from the center of said upper margins and adjacent one of said side margins of said first and second sheets, an outlet tube having one end portion thereof disposed between the lower margins and adjacent said one of said side margins of said first and second sheets and in alignment with said inlet tube portion, a peripheral seal bonding said sheets together along substantially their entire peripheries and also bonding said sheets about said inlet tube portion and said outlet tube portion to form a closed bag within said peripheral seal, said bag having openings for the passage of liquid only by way of said inlet tube and said outlet tube said bag having formed in the upper margin of the first and second sheets a labyrinth passageway which establishes a passage for the entrance of air into the bag while inhibiting the passage of bacteria, said labyrinth passageway being generally centrally disposed from the side margins of the first and second sheets, and a handle member formed of substantially rigid material having depending portions which extend between the upper margins of said first and second sheets outside said peripheral seal, said handle member being attached to said bag by portions of said sheets bonded to each other in a pattern which interlocks with said depending portions of said handle, said handle member having an opening therein disposed substantially equidistant from said side margins of said sheets to permit insertion of a hand to facilitate carrying of the bag.

4,192,296
MASSAGE MACHINE
Ronald J. St. Mary, P.O. Box 25574 Hawaii Kai, Honolulu, Hi. 96825
Filed Apr. 12, 1978, Ser. No. 895,540
Int. Cl.² A61H *7/00*
U.S. Cl. 128—52 **6 Claims**

1. In a lightweight, portable massaging platform: a rectangular frame member including track members extending longitudinally of said frame member, a moveable carriage member, a plurality of free rotating roller elements retained in transverse parallel arrangement by said carriage member and moveable therewith, means for reciprocating said carriage member in said frame member, the remote ends of said roller elements being journalled in self-contained bearings, said bearings being movably supported on said track members independently of the rotation of said roller elements, said carriage member being supported by said bearings for reciprocal motion in said frame member along said track members whereby said carriage member moves independently of the rotation of said roller elements.

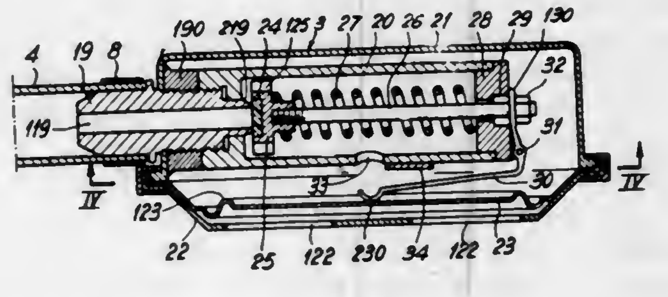


4,192,297
THERAPEUTIC FEET BATHING DEVICE
Léopold Labrecque, 1458 des Pins, C.P. 425, Riviére du Moulin, Chicoutimi, Quebec, Canada (G7H 1C8)
Filed May 17, 1978, Ser. No. 906,911
Int. Cl.² A61H *9/00*
U.S. Cl. 128—66 **14 Claims**



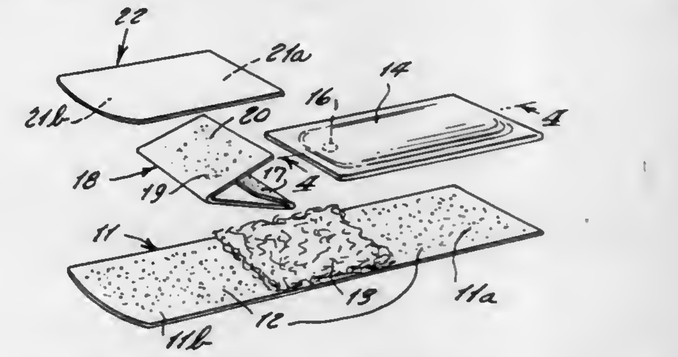
1. A therapeutic feet bathing device comprising a feet enclosure including a tub portion, a hood portion, a pair of apertures in one side of the feet enclosure for insertion of one's legs therein with the feet overhanging inside the feet enclosure, seal means extending around said apertures and sealingly engaging the legs therein, a liquid jet device mounted in said feet enclosure and operatively producing liquid jets impinging against the one's feet in the enclosure upon supplying liquid under pressure thereto, and an adjustable stand including a base section, and a support section carrying said feet enclosure and vertically adjustable relative to said base section.

4,192,298
BREATHING APPARATUS WITH IMPROVED REGULATOR PARTICULARLY FOR UNDER WATER USE
Lugi Ferraro; Gianni Beltrani, both of Genes, Italy; Jacques Gass, Villeneuve-Loubet, and Bernard Trochon, Carros-le-Neuf, both of France, assignors to La Spirotechnique Industrielle et Commerciale, France; Technisub S.p.A., Genoa, Italy
Filed Oct. 11, 1977, Ser. No. 842,330
Claims priority, application Italy, Oct. 13, 1976, 12838 A/76
Int. Cl.² A62B *7/04;* B63C *11/16; 11/22*
U.S. Cl. 128—205.24 **1 Claim**



1. In a diving breathing apparatus of the two-stage pressure reducing type comprising first stage valve means adapted to be connected to a diving cylinder containing a respiratory gas under high pressure for the reduction of said gas from high pressure to medium pressure, second stage valve means connected to said first stage for the reduction of said gas from medium pressure to breathable pressure, a mouth-piece associated directly to said second stage means, means responsive to each inhalatory lifting suction from the user which exceeds a minimum threshold to open said second stage means to supply respiratory gas to said mouthpiece under breathable pressure, and means to oppose a force to said lifting suction thereby to establish said threshold; the improvement in which the said first stage valve means comprises a valve body having an admission duct receiving said gas under high pressure, throttling valve means in said valve body, spring means biasing said valve means to its open position, a chamber in said valve body, and manually operated control means for adjusting the setting of said spring means, whereby said medium pressure may be adjusted by the user in order to adjust said threshold, said throttling valve means comprising a seating member inserted in said valve body and a piston slidably mounted in said chamber and dividing said chamber into first and second compartments, said spring means being positioned in said first compartment, - said piston having fixed thereon a tubular rod having a bore extending through said rod and said piston and provided at one of its extremities with a nozzle adapted to come into sealed abutment with said seating member, said admission duct communicating with said seating member and the outer side of said nozzle when said nozzle is seated on said seating member, said admission duct communicating with said second compartment through said tubular rod when said nozzle is spaced from said seating member, said control means comprising a knob screwed on a threaded plug secured on said valve body, said plug holding said seating member in place between said plug and said valve body, a disc slidably mounted on said rod and located in said first compartment and a plurality of pins slidably mounted in said body between said knob and said disc and in abutment against them, the aforesaid loading spring means being inserted between said piston and said disc whereby the setting of said spring means and consequently the adjustment of said threshold is obtained by screwing and unscrewing said knob.

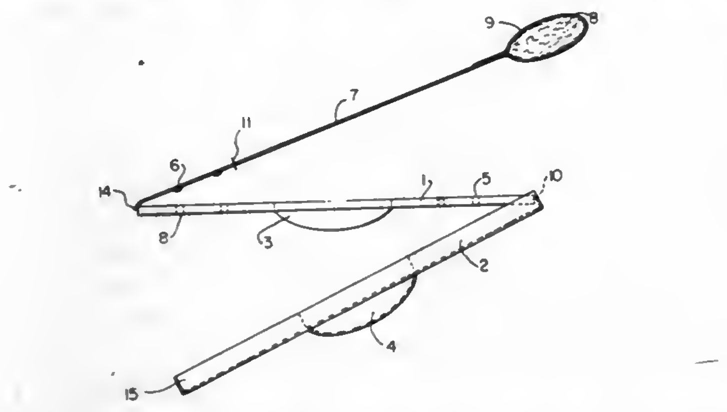
4,192,299
BANDAGE THAT CONTAINS ANTISEPTIC
Frank Sabatano, 1726 Colden Ave., Bronx, N.Y. 10462
Filed Aug. 25, 1978, Ser. No. 936,716
Int. Cl.² A61F *13/00, 7/02*
U.S. Cl. 128—155 **2 Claims**



1. A bandage, comprising in combination an elongated first tape having adhesive upon one side thereof, a gauze pad adhered upon a center thereof, an envelop containing antiseptic medication being adhered upon a first end of said tape, said envelop overlapping upon said pad and having a dispensing outlet in an underside thereof for discharging said medication upon said pad wherein an auxillary, second tape is adhered at one end on an underside of said envelop to seal said outlet, an opposite end of said second tape being adhered to a first end of a cover which at its opposite end is adhered upon a second end of the first said tape.

4,192,300
BANDAGE WITH INTEGRATED APPLICATOR

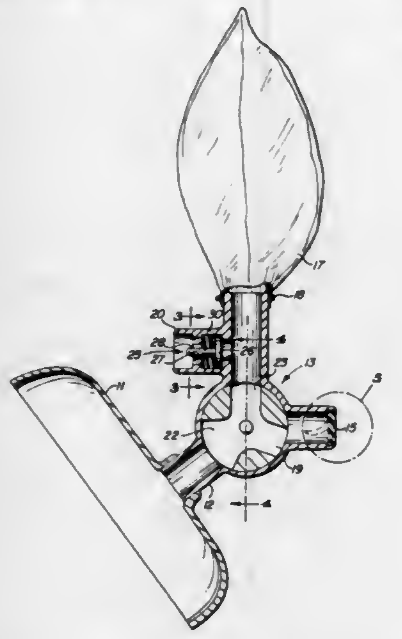
John C. Devers, 7004 Armat Dr., Bethesda, Md. 20034
Filed Jun. 6, 1978, Ser. No. 913,121
Int. Cl.^{2} A61L *15/00*
U.S. Cl. 128—155 **14 Claims**



1. A unitary bandage comprising a flexible or semi-rigid backing having adhesive material applied to one side and an absorbent pad centrally disposed on said backing, applicator means for applying said bandage removably attached to said backing and disposed to extend vertically from the top surface thereof whereby to permit pressure to be applied downward against said backing, and bottom cover means removably attached to said backing for covering the adhesive side of the backing and the lower surface of said pad.

4,192,301
RE-BREATHING APPARATUS

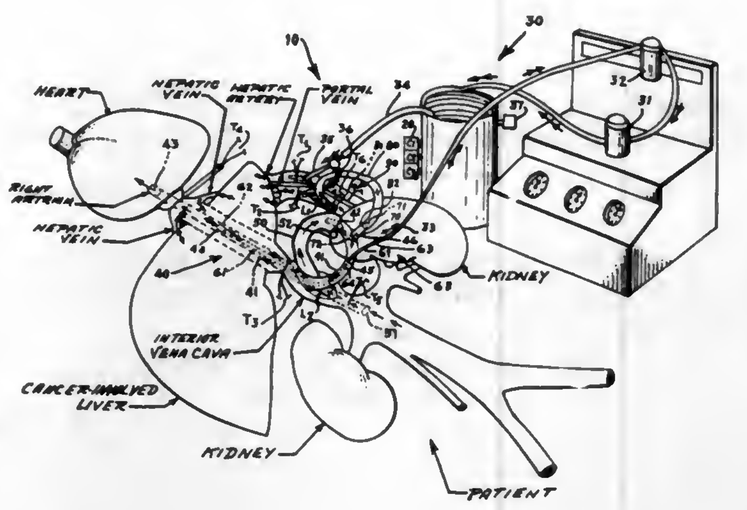
Charles W. Hardwick, 712 W. 25th St., Sanford, Fla. 32771
Filed Nov. 6, 1978, Ser. No. 957,872
Int. Cl.^{2} A61M *16/00*
U.S. Cl. 128—205.17 **10 Claims**



1. A disposable re-breathing apparatus comprising in combination:
disposable mask for a patient to breath into;
disposable, flexible re-breathing bag operatively coupled to said mask;
air control valve means connected between said mask and said bag and providing a bi-directional flow path therebetween and having a fresh air inlet connecting said air control valve means to the open atmosphere;
a check valve operatively attached to said fresh air inlet to prevent the exhaling of air from said fresh air inlet; and
said air control valve means having valving means for varying the ratio of air breathed by a patient from said mask between re-breathed air from said bag and fresh air from said fresh air inlet, thereby providing a greater control of re-breathing by patients.

4,192,302
HEPATIC ISOLATION AND PERFUSION CIRCUIT ASSEMBLY

Arthur W. Boddie, 110 Chimney Rock, San Antonio, Tex. 78231
Filed Sep. 12, 1978, Ser. No. 941,715
Int. Cl.^{2} E03D *9/04*
U.S. Cl. 128—214 R **5 Claims**



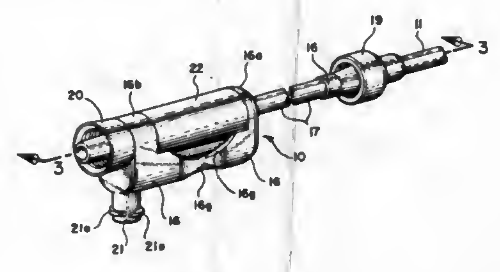
1. A hepatic isolation and perfusion circuit assembly, for use in treating a patient having a body with a lower part, a heart with a right atrium, a portal vein, a hepatic artery, intestines, kidneys, a liver involved with cancer, blood in a blood general circulatory system, with a portion of said blood circulating in and through said cancer-involved liver, wherein said blood circulating in said liver includes a hepatic venous outflow, comprising:

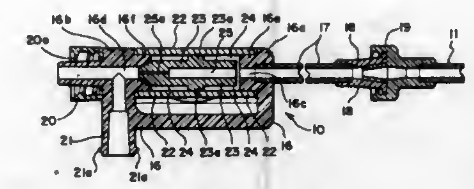
a. a source of a plurality of cancericidal chemotherapy agents for perfusing said cancer-involved liver;
b. a heart-lung machine, operatively connected to said source of said cancericidal chemotherapy agents, wherein said machine includes an inlet, an outlet that is bifurcated into a first branch catheter and a second branch catheter, and a source of oxygen, and wherein said first branch catheter of said bifurcated outlet is removably inserted into, is conformably engaged with, and is releasably secured to said hepatic artery of said patient, and also wherein said second branch catheter of said bifurcated outlet is removably inserted into, is conformably engaged with, and is releasably secured to a preselected location at and in said portal vein of said patient;
c. and, means for selectively isolating said patient's cancer-involved liver, and said blood that is circulating therein, from said general blood circulatory system of said patient, with this said means releasably connected to said heart-lung machine;

whereby said blood circulating in and through said cancer-involved liver can be oxygenated in and by said heart-lung machine, and whereby each of said plurality of cancericidal chemotherapy agents can be introduced from said source selectively into and added to said oxygenated blood, thereby permitting and causing said cancer-involved liver of said patient to be perfused with any of said cancericidal chemotherapy agents, and whereby, simultaneously, said blood circulating from said lower part of said patient's body and from said intestines of said patient is allowed to continue to flow and to circulate unimpeded to said patient's heart.

4,192,303
FLOW REGULATING DEVICE FOR ARTERIAL CATHETER SYSTEMS

James E. Young, 2080 E. 4675 South, Salt Lake City, Utah 84117, and Ralph S. Walker, 9767 N. 6530 West, Highland, Utah 84003
Filed Jun. 29, 1978, Ser. No. 920,500
Int. Cl.^{2} A61M *5/00;* F16K *51/00*
U.S. Cl. 128—214 R **10 Claims**

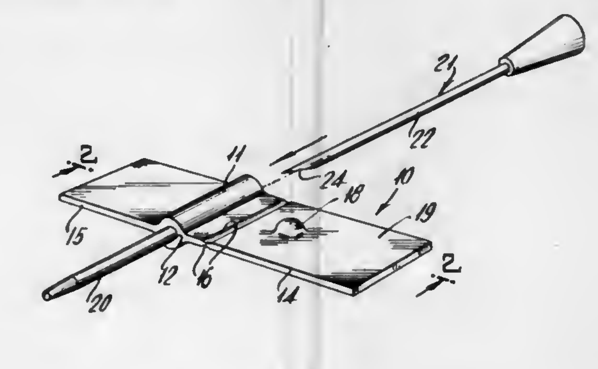




1. A flow regulating device which provides a continuous regulated flow of a medical fluid to an intravenous catheter system used in monitoring arterial functions and in the infusion of medical fluids to an artery or vein, and which also provides for an intermittent, manually controlled, larger flushing flow of fluid to the catheter system, said device comprising a control member having an inlet means adapted to be connected to a source of a medical fluid and an outlet means adapted to be connected to an intravenous catheter; a first passage connecting said inlet and outlet means for fluid flow communication therebetween, said first passage at least in part comprising a section of flexible conduit having valve means positioned therein, said valve means being adapted to open and permit said larger, flushing flow of fluid to pass through said first passage when the conduit is deformed by applying an external force thereto and to close when the external force on the conduit is released; and a second passage by-passing said valve means and connecting said inlet and outlet means, said second passage containing flow restriction means which limits the flow of fluid therethrough, under a given pressure to a desired amount.

4,192,304
INTRAVENOUS CATHETER ASSEMBLY WITH FLUID FLOW RESTRICTION CAPABILITY

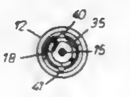
Marcus J. Millet, New York, N.Y., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Mar. 14, 1978, Ser. No. 886,498
Int. Cl.^{2} A61M *5/00*
U.S. Cl. 128—214.4 **10 Claims**

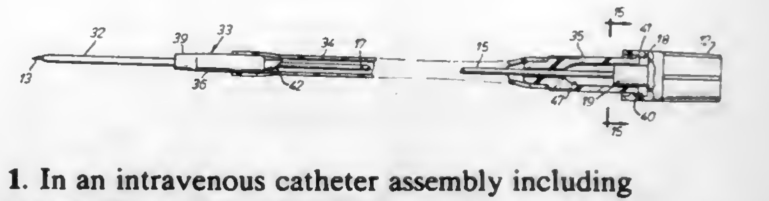


1. An intravenous catheter assembly comprising: a compressible hub having a bore therethrough; a hollow catheter having one end connected to said bore whereby fluid is adapted to flow through said bore and said catheter; a pair of generally oppositely extending wing sections connected to said hub, at least one of said wings being hingedly connected to said hub to allow said wing to fold over said hub, said hingedly connected wing including pinching means thereon for contact with said hub when said wing is folded thereover whereby, in use, said folded wing urges said pinching means against said compressible hub causing it to collapse and occlude said bore and thereby restrict fluid from passing therethrough.

4,192,305
CATHETER PLACEMENT ASSEMBLY HAVING AXIAL AND ROTATIONAL ALIGNMENT MEANS

Charles H. Seberg, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Aug. 21, 1978, Ser. No. 935,441
Int. Cl.^{2} A61M *5/00*
U.S. Cl. 128—214.4 **14 Claims**





1. In an intravenous catheter assembly including
(1) a catheter unit comprising:
  (a) a flexible plastic catheter having a distally tapered distal end,
  (b) a winged catheter insertion means having a lumen therethrough, the proximal end of said catheter in communication with said lumen of said catheter insertion means via its distal end,
  (c) a flexible tubing having its distal end in communication with said lumen of said catheter insertion means via its proximal end,
  (d) a tube hub having a lumen therethrough, the proximal end of said flexible tubing in communication with said lumen of said tube hub via its distal end, and
(2) a needle inserted through said catheter, winged catheter insertion means, flexible tubing and tube hub, said needle having a sharpened distal end extending beyond said distal end of said catheter and a proximal end attached to a needle hub; the improvement which comprises:
complementary means associated with said lumen of said winged catheter insertion means and said needle mechanically interlocked to provide axial and rotational alignment of said needle relative to said catheter unit at all times.

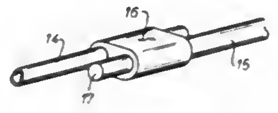
4,192,306
CATHETER PLACEMENT ASSEMBLY HAVING AXIAL AND ROTATIONAL ALIGNMENT MEANS

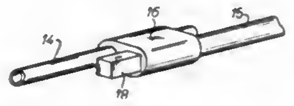
Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Aug. 21, 1978, Ser. No. 935,442
Int. Cl.^{2} A61M *5/00*
U.S. Cl. 128—214.4 **12 Claims**

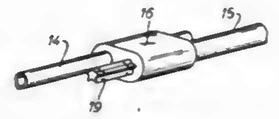
1. In an intraveneous catheter assembly including
(1) a catheter unit comprising:
  (a) a flexible plastic catheter having a distally tapered distal end,
  (b) a winged catheter insertion means having a lumen therethrough, the proximal end of said catheter in communication with said lumen of said catheter insertion means via its distal end,
  (c) a flexible tubing having its distal end in communication with said lumen of said catheter insertion means via its proximal end,
  (d) a tube hub having a lumen therethrough, the proximal

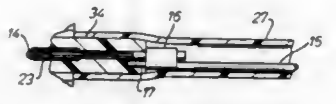
end of said flexible tubing in communication with said lumen of said tube hub via its distal end, and

(2) a needle inserted through said catheter, winged catheter insertion means, flexible tubing and tube hub, said needle having a sharpened distal end extending beyond said distal end of said catheter and a proximal end attached to a needle hub; the improvement which comprises:



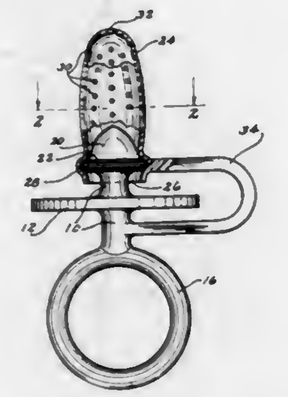






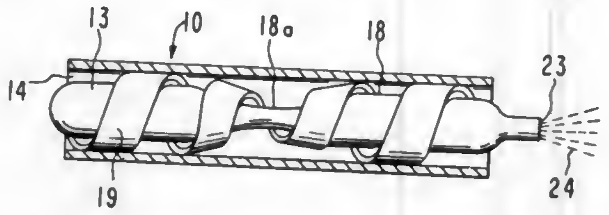
complementary means associated with said lumen of said winged catheter insertion means and said needle mechanically interlocked to provide axial and rotational alignment of said needle relative to said catheter unit at all times, wherein said needle comprises a first portion extending a predetermined distance from said distal end toward said proximal end and spliced to a second portion in juxtaposition to said first portion, which second portion extends to said proximal end of said needle.

4,192,307
PACIFIER WITH SWEETS-DISPENSING NIPPLE
Alan R. Baer, 14926 Plank Rd., Union Grove, Wis. 53182
Filed May 31, 1978, Ser. No. 911,275
Int. Cl.² A61J *11/00, 17/00*
U.S. Cl. 128—252 **3 Claims**



1. A pacifier of pliable molded material and strictly of one piece unitary construction, and having an axial body, comprising a guard integral with said body and lying in a plane normal thereto, a nipple having a chamber, and provided with a plurality of perforations peripherally-positioned on the surface thereof, said chamber terminating in an axial opening, a sealing plug integral with said body and axially co-operating to seal said opening, and a strap intimately integral with said nipple as one piece with said body.

4,192,308
DEVICE USING PRESTRETCHED POLYMER FOR DISPENSING MEDICATION
Alan S. Michaels, San Francisco, Calif., assignor to Alza Corporation, Palo Alto, Calif.
Division of Ser. No. 844,968, Oct. 25, 1977. This application Dec. 26, 1978, Ser. No. 972,776
Int. Cl.² A61M *31/00*
U.S. Cl. 128—260 **8 Claims**



1. A drug dispensing device comprising:

(a) a drug;

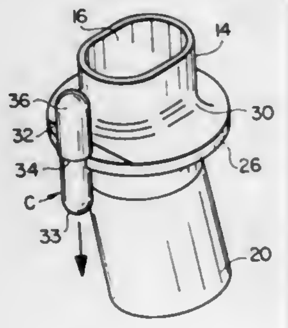
(b) a housing made of a shape-retaining wall forming material surrounding and defining an internal space, said wall having at least one opening connecting the space with the exterior of the device,

(c) a container in the housing storing the drug, the container formed of a prestretched, shrinkable polymer prepared by inducing molecular orientation by uni-axially and bi-axially stretching the polymer into an expanded high energy state, said stretched, shrinkable polymer having reserve elastic recovery to an unstretched polymer, and which container has a passageway formed in the polymer that projects through the opening for dispensing drug from the container to the exterior of the device;

(d) a laminate in the housing surrounding the exterior of the container, said laminate comprising a lamina of an absorbent material and a lamina of a swellable hydrophilic polymer; and,

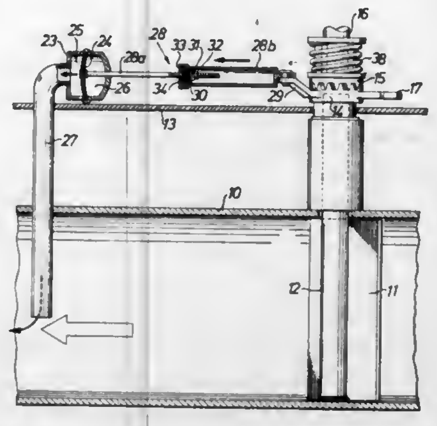
(e) wherein, in operation when the device is present in an environment containing a biological fluid, the laminate imbibes fluid into the housing urging the laminate to swell and exert pressure on the stretched polymer thereby causing said polymer to recover to an unstretched polymer and concurrently therewith decrease in volume of the container, thereby pumping drug through the passageway from the device at a controlled rate over a prolonged period of time.

4,192,309
INHALATION DEVICE WITH CAPSULE OPENER
Boyd J. Poulsen, Palo Alto, Calif., assignor to Syntex Puerto Rico, Inc., Humacao, P.R.
Filed Sep. 5, 1978, Ser. No. 939,614
Int. Cl.² A61M *15/06, 15/08*
U.S. Cl. 128—203.15 **1 Claim**



1. A breath-actuated inhalation device for dispensing a powdered medicament from a powdered medicament-holding container, which device comprises an elongate housing having a passageway for the movement of air therethrough, one end of said housing being an output end adapted for insertion into the mouth or nasal passage of a user thereof, the passageway having an inlet end terminating in an emptying chamber at the output end of said housing, the cross-sectional area of the passageway being less than the cross-sectional area of the emptying chamber, means associated with said housing for receiving a powdered medicament-holding container, a collar which surrounds at least a portion of the periphery of said housing adjacent the emptying chamber, said collar having at least one substantially flat surface thereon, and a notch within said flat surface of said collar, the notch being of such a size to allow a first, smaller part of a two-part medicament-holding container to fit therein but which is too small to allow the second, larger part of the medicament-holding container to fit therein, whereby when the smaller, first part is placed within the notch with the leading edge of the larger, second part of the container contacting said flat surface of said collar, and the first part is pulled away from the second part, the medicament-holding container is opened by virtue of the second larger part being retained by said flat surface.

4,192,310
DEVICE IN FLUE GAS DAMPERS
Eric Brodin, Monte Carlo, Monaco, assignor to Etablissements Unicor, Vaduz, Liechtenstein
Filed Jan. 31, 1978, Ser. No. 873,947
Claims priority, application Sweden, Feb. 4, 1977, 7712359
Int. Cl.² F23L *3/00*
U.S. Cl. 126—286 **10 Claims**



1. A device in flue gas dampers intended for flue gas passages, of the type comprising a pivotable damper plate (11) which is connected to a regulating means for automatic adjustment of the damper plate betwen a closed position and an open economical operation position in response to the operating condition of an installation connected to the flue gas passage, for adjusting the economical operating position to prevailing outside wind conditions, characterized in that the regulating means comprises a means (23), sensitive to gas pressure, and arranged to be actuated by the gas pressure in the flue gas passage (10) downstream of the damper plate (11) and which is connected to the damper plate in such a way that the degree of opening of the damper plate in the economical operation position is decreased for decreasing gas pressure in the flue gas passage.

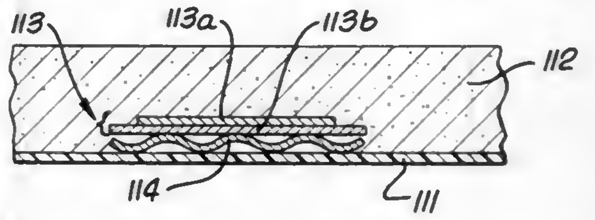
4,192,311
DISPOSABLE DIAPER WITH WETNESS INDICATOR
James J. Felfoldi, 1919 Frankfort St., San Diego, Calif. 92110
Filed Dec. 5, 1977, Ser. No. 857,672
Int. Cl.² A61F *13/16, 13/00*
U.S. Cl. 128—287 **7 Claims**

1. In a disposable article comprising a translucent sheet of substantially water impervious material and a moisture absorbent pad closely associated with the sheet, the combination comprising

(a) a visual indicator proximate said sheet, and

(b) a mask between said indicator and said sheet, said mask characterized when dry as masking the visibility of said indicator through the sheet, and further characterized when wet as unmasking said visibility by becoming translucent,

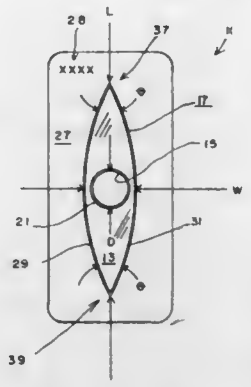
(c) said indicator comprising a coloring agent together with material which becomes stained by the agent when wet, the agent located between the mask and said material, the mask periphery extending a substantial distance into the pad free of the indicator to wick moisture into the mask and thereby expose the indicator,



(d) the mask being corrugated to define moisture receiving open space between the sheet and indicator,

(e) said corrugations retain the indicator spaced from the translucent sheet until the corrugations collapse when wet.

4,192,312
SURGICAL INCISION GUIDE MEANS
Donald L. Wilson, 5 Bon Air Rd., Sohner Plz. #127, Larkspur, Calif. 94939
Filed Sep. 1, 1978, Ser. No. 938,804
Int. Cl.² A61B *19/00*
U.S. Cl. 128—303 R **12 Claims**



1. Surgical incision guide means for aiding a physician in making an optimum size and shape incision with respect to skin tumors and like ailments, said guide means comprising patch-like means for placement upon and contiguously engaging the skin of the patient, said patch-like means being provided with an opening centrally disposed thereof for aiding in placing said patch-like means in an optimum location with respect to the tumor, and said guide means including delineation means extending in a substantially elliptical shape for readily providing a substantially elliptical pattern which prescribes an optimum size and shape for the particular incision and for defining the boundary of an area of the patient's skin to be excised.

4,192,313
FORCEPS DESIGNED TO FACILITATE INSERTION OF A LAMINARIA TENT INTO THE UTERINE CERVIX
Noboru Ogami, 34 Gartley Pl., Honolulu, Hi. 96817
Filed Feb. 10, 1977, Ser. No. 767,546
Int. Cl.² A61B *17/28*
U.S. Cl. 128—321 **2 Claims**

1. A forceps for the insertion of a Laminaria tent into the uterine cervix comprising:

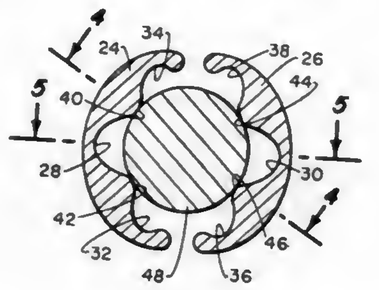
a first member;

a second member, said first and second members being pivotally connected together forming a scissors assembly, said first and second members being substantially of the same length, each said member having a fore end and an aft end, manual grasping means formed on the said aft end of said members, said fore end of said members including first means for clamping onto a Laminaria tent, said first means comprising:

said fore end of said first member being recessed into a first recess assembly;

said fore end of said second member being recessed into a second recess assembly, said first and second recess assemblies cooperating to clamp onto a Laminaria tent, the cross-sectional configuration of said first recess assembly being a mirror image of said second recess assembly, each said recess assembly including a plurality of side-by-side elongated grooves separated by elongated upstanding walls, the longitudinal dimensions of each said groove being substantially along the longitudinal dimension of its respective said first or second member, whereby the forceps may be universally used to clamp onto different diameters of Laminaria tents and thereby facilitate insertion of the Laminaria tent into the desired position within the uterine cervix; and

each said recess assembly including a single enlarged elongated groove centered in accordance with the width dimension of its respective said fore end, each said recess assembly further including a single elongated side groove located on each side of said enlarged groove, said enlarged groove being of a larger size than said side grooves, said upstanding side walls of said enlarged elongated groove to be in physical contact with the smaller diametered Laminaria tent.



4,192,314
SURGICAL INSTRUMENTS

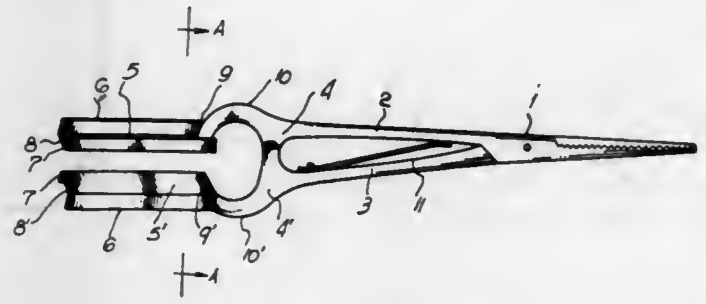
Pedro D. Curutchet, Sarmiento 156, Loberia, Provincia de Buenos Aires, Argentina

Filed Oct. 26, 1977, Ser. No. 845,768

Claims priority, application Argentina, Oct. 27, 1976, 265253

Int. Cl.^{2} A61B *17/28*

U.S. Cl. 128—322 **8 Claims**



1. A surgical instrument, comprising two elongate members which are pivoted together intermediate their ends in crossing relationship, so as to define a major plane of the instrument extending substantially perpendicular to the axis of pivotal movement of the members and in which the members move during relative pivotal movement thereof, each member having at one end an operating portion which cooperates with the operating portion of the other member when the two operating portions are brought together by relative pivotal movement of the two members, and each member having at its opposite end an actuating key which can be urged towards the actuating key of the other member for bringing the operating portions into cooperating disposition, each actuating key comprising a plate which extends transversely to the major plane of the instrument whereby force can be applied to urge the actuating keys together, and each of said plates including a major portion of substantially rectangular form, having two opposite edges which extend substantially parallel to said major plane and two wing portions extending along said opposite edges respectively defining the length of the wing portions and directed away from the other plate defining the width of the wing portions, and wherein that wing portion of one plate which is on one side of the major plane is greater in width than the wing portion of said one plate that is the other side of the major plane, and that wing portion of the other plate which is on said other side of the major plane is greater in width than the wing portion of said other plate that is on said one side of the major plane.

4,192,315
CLIP FOR SURGICAL PURPOSES

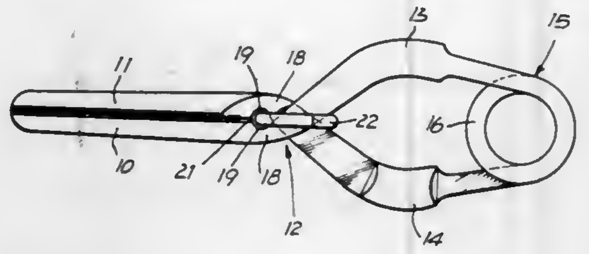
Fritz Hilzinger, Emmingen, and Theodor Schwarz, Tuttlingen, both of Fed. Rep. of Germany, assignors to Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer, Tullingen, Fed. Rep. of Germany

Filed Dec. 16, 1977, Ser. No. 861,347

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658478

Int. Cl.^{2} A61B *17/12*

U.S. Cl. 128—346 **1 Claim**



1. A vascular clip having open and closed positions comprising:

two jaws having pinching surfaces;

a coil spring for pressing said pinching surfaces together when the clip is in its closed position;

said coil spring including two legs and at least one coil loop resiliently connecting said legs;

said legs crossing over each other at a crossing point and having end portions immediately adjoining said crossing point;

said jaws being formed by said end portions;

recess means, notched on the inside of each of said end portions, for forming an intermediate space which separates said pinching surfaces from said crossing point in the closed position of said clip; and

a ring slidable along and encircling said legs at said crossing point which extends through said intermediate space.

4,192,316
PROGRAMMABLE ATRIO-VENTRICULAR PACER

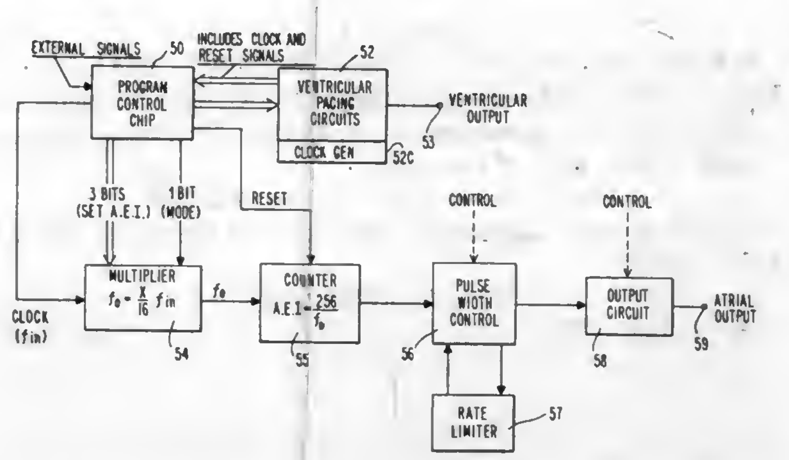
Robert A. Walters, Murrysville; William L. Johnson, Kittanning, and Gary W. Bivins, Pittsburgh, all of Pa., assignors to ARCO Medical Products Company, Leechburg, Pa.

Filed May 22, 1978, Ser. No. 908,296

Int. Cl.^{2} A61N *1/36*

U.S. Cl. 128—419 PG **3 Claims**

1. Programmable digital pacer apparatus for providing and delivering synchronized atrial and ventricular stimulus pulses to a patient's heart, said apparatus comprising a ventricular pacing circuit comprising demand generator means for producing ventricular stimulus pulses in the absence of natural heartbeats, and an atrial pacing circuit for generating and delivering atrial stimulus pulses in the absence of natural heartbeats, said ventricular pacing circuit and atrial pacing circuit being synchronized in their timing, said pacer being characterized by having digital programming means for receiving external parameter control signals and generating a plural bit binary word therefrom, ventricular control means for deriving ventricular control signals from a predetermined number of the bits of said word and controlling predetermined parameters of said ventricular pacing means therewith, and atrial control means for deriving atrial control signals from a second predetermined portion of said binary word and controlling predetermined operating parameters of said atrial pacing means therewith, said pacer further comprising a clock generator connected to deliver clock signals to said ventricular pacing circuit and to said atrial pacing circuit, said ventricular pacing circuit having means for determining the rate of said ventricular stimulus pulses as a function of both said clock signals and said ventricular control signals and said atrial pacing circuit having means for determining the rate of said atrial stimulus pulses as a function of both said clock pulses and said atrial control signals, said atrial pacing circuit further comprising atrial escape interval means adapted to provide a timing signal for timing the generation of said atrial stimulus pulses, and means for resetting said atrial escape interval means in synchronization with the operation of said ventricular pacing circuit, said atrial escape interval means being characterized by having circuitry which disables its operation following delivery of an atrial stimulus pulse until it is reset by a synchronizing signal from said ventircular pacing circuit.



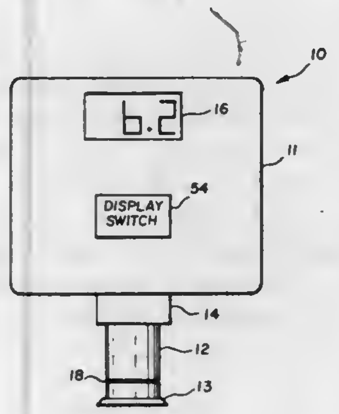
4,192,317
INDENTATION TONOMETER

Charles R. Munnerlyn, Sunnyvale, and Terrance N. Clapham, San Jose, both of Calif., assignors to Ical, Incorporated, Sunnyvale, Calif.

Filed Jun. 30, 1978, Ser. No. 920,806

Int. Cl.^{2} A61B *3/16*

U.S. Cl. 128—646 **12 Claims**



1. An indentation tonometer having a foot plate and a plunger movable relative to said foot plate, said tonometer comprising:

a. a housing that is hand holdable and manipulatable;

b. means in said housing for supporting said foot plate to extend below said housing;

c. an optical encoder disposed within said housing and having a ruled scale that is fixed relative to said foot plate and an adjacent ruled scale that is movable relative to said fixed scale;

d. an upper surface of said plunger engaging said movable scale for elevating said movable scale relative to said fixed scale to correspond to the position of said plunger relative to said foot plate as the intraocular pressure of an eye is measured; and

e. components for said optical encoder including electric power supply, electric circuitry, and digital readout all being arranged in said housing for digitally indicating a measure of said intraocular pressure derived from the position of said movable scale relative to said fixed scale.

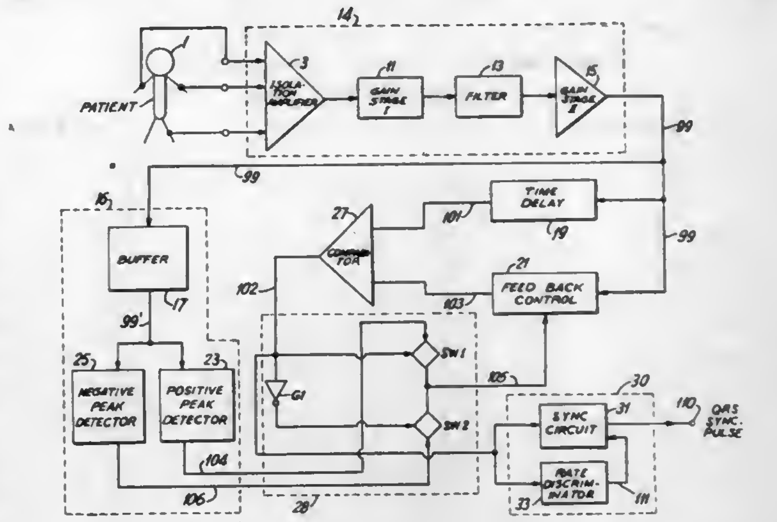
4,192,318
METHOD AND APPARATUS FOR LOCATING THE QRS PORTION OF AN ELECTROCARDIOGRAPHIC SIGNAL

Naim G. Dam, Bayside, and Monroe A. Landau, Kew Gardens, both of N.Y., assignors to Bios Inc., Valhalla, N.Y.

Filed Sep. 13, 1978, Ser. No. 942,063

Int. Cl.^{2} A61B *5/04*

U.S. Cl. 128—708 **28 Claims**



5. Apparatus for automatically detecting the QRS portion of an electrocardiographic signal comprising:

(a) means for adapting a terminal to receive said electrocardiographic signal;

(b) means for providing a time delayed replica of said electrocardiographic signal;

(c) means for biasing a first one of said electrocardiographic signal and said time delayed electrocardiographic signal; and

(d) means for comparing said biased electrocardiographic signal and the second one of said electrocardiographic signal and said time delayed electrocardiographic signal to provide a synchronization signal at the crossover point of said signals being compared.

4,192,319
WICK CATHETER PRESSURE SENSING PROBE AND METHOD OF USE

Alan R. Hargens, and Scott J. Mubarak, both of San Diego, Calif., assignors to Regents of University of California, Berkeley, Calif.

Filed Sep. 30, 1977, Ser. No. 838,187

Int. Cl.^{2} A61B *5/02;* A61M *5/00*

U.S. Cl. 128—748 **7 Claims**

5. A catheter unit for placement and measuring of interstitial pressures comprising:

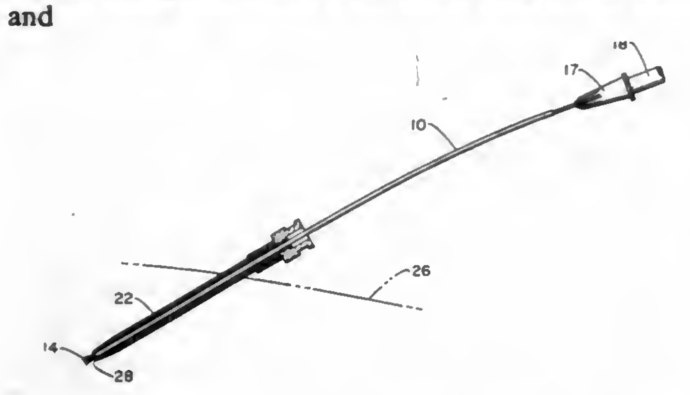
a catheter tube;

an adapter on one end of said tube;

a wick partially drawn into the other end of said tube;

a monofilament tether having one end fixedly secured to said wick, said tether extending through said tube with the other end of said tether adjacent to said one end of said tube;

said tube being filled with a sterilized heparinized solution; and

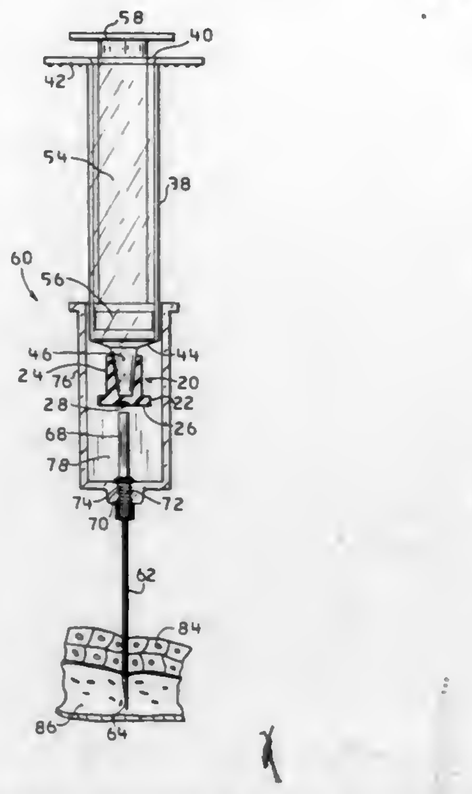


pressure-sensing and indicating means connected to said adapter whereby interstitial pressure may be measured after insertion of the catheter tube and wick to the desired placement within the body tissue.

4,192,320
ADAPTER FOR SYRINGE

Shenoda S. Megahed, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Jul. 28, 1977, Ser. No. 819,667
Int. Cl.² A61B *5/14*
U.S. Cl. 128—764 **8 Claims**

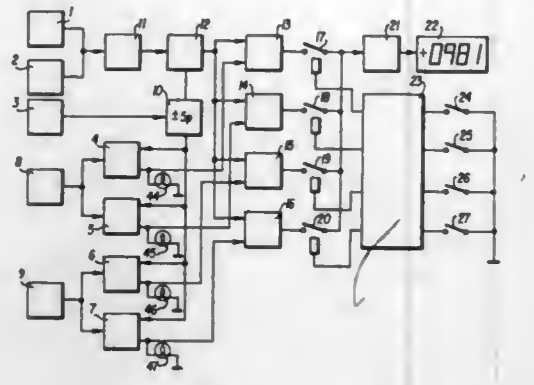


1. A syringe assembly comprising: a syringe with a reduced diameter open-ended tip for use with a blood collecting needle so as to facilitate coupling of the syringe and needle and collecting of a sample of blood through the needle into the syringe, an adapter including an elastomeric, pierceable, self-sealing member having a head portion and a body portion extending from one side of the head portion, a recess in the body portion conforming with the shape of the reduced tip of the syringe and adapted to be removably mounted on the tip and close the open end thereof, the recess having a slightly smaller diameter in relaxed condition than the reduced tip of the syringe along their conforming interengaging surfaces thereby facilitating frictional interengagement therebetween and mounting of the adapter on the syringe and to provide for removal of the adapter to permit subsampling from the syringe to be carried out, guide means on the head portion to assist in guiding the needle into alignment with the open end of the tip so that when the needle pierces the head portion it will extend through the open end of the tip into communication with the interior of the syringe to permit collection of a blood sample therein, the self-sealing head portion adapted to reseal and remain mounted on the syringe and close the open end of the reduced tip after the needle is removed therefrom, the needle being in the form of a double ended hollow cannula with one end adapted for venipuncture and the other end adapted for puncturing the adapter and communicating with the interior of the syringe, a hub mounted intermediate the ends of the double ended cannula and having means thereon for mounting the hub to one end of a hollow holder with the end of the cannula to be introduced to the syringe extending into the holder and the end for venipuncture extending out of the holder, and the hollow holder being open at the end opposite to the end where the cannula is mounted to permit reciprocal introduction and removal of the syringe therein with the adapter mounted thereon for interengagement and removal from the cannula.

4,192,321
TOOTH DISPLACEMENT MEASURING APPARATUS

Elmar Körber, Adolf-Bechlerstrasse 15, D-7501 Malsch, and Heinz Dehnert, Grunstrasse 1 a, D-7801 Hugstetten-March, both of Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 923,866
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733081
Int. Cl.² A61B *5/10*
U.S. Cl. 128—776 **8 Claims**



1. In a tooth displacement measuring apparatus of a type wherein a force transmitting member applies force to a test tooth and at least one displacement member abuts a reference surface to define a zero force reference position to measure the relative displacement of said displacement member from said force transmitting member in response to said force, the improvement comprising:

force measuring means for generating an applied force signal corresponding to the force applied by said force transmitting member to said test tooth;

displacement measuring means for generating a displacement signal corresponding to the relative displacement between said force transmitting member and at least one displacement member;

reference force selector means for generating reference signals corresponding to selected values of force;

at least one comparator for comparing said applied force to at least one reference signal and generating an associated hold signal when the reference signal is equal to the applied force signal; and

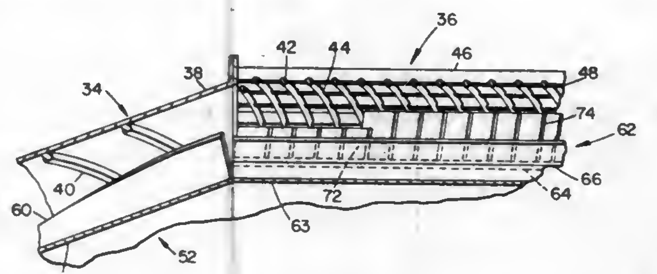
at least one sample and hold circuit, operatively connected to a corresponding comparator and responsive to the hold signal of the comparator to store a displacement signal.

4,192,322
AXIAL FLOW SEPARATOR WITH STEPPED THRESHING BAR ROTOR

John E. Wilson, Colona, Ill., assignor to Deere & Company, Moline, Ill.

Filed May 1, 1978, Ser. No. 901,326
Int. Cl.² A01F *12/18*
U.S. Cl. 130—27 T **12 Claims**

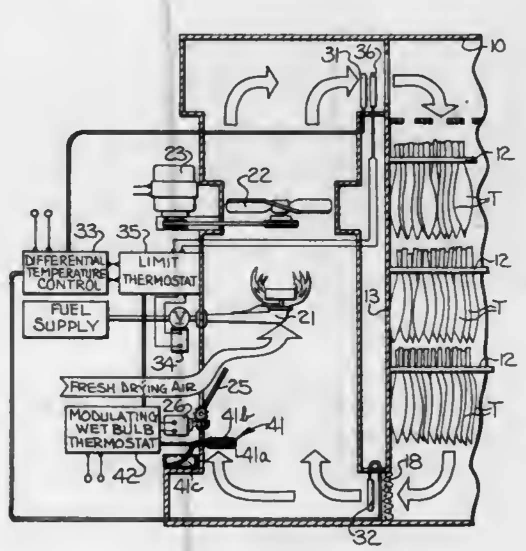
1. In a combine having an axial flow rotary separator for processing crop material and means for delivering crop material from a field to the separator, the separator including a generally cylindrical threshing housing having an upstream inlet and a threshing grate and including a threshing rotor having a frame and supported for rotation within the housing, the separator also including material control means for propelling crop material received from the field downstream through the threshing housing inlet and within the threshing housing as the rotor rotates, the rotor including at least two circumferentially spaced generally longitudinally extending elongated threshing bars carried by the frame, each bar having an upstream portion adjacent the threshing housing inlet and a downstream portion, each portion being spaced radially inwards from the grate and, as the rotor rotates, defining a surface of revolution and moving in a threshing relationship with the grate to thresh crop material propelled downstream by the material control means, each threshing bar being characterized in that the relative dispositions of the respective portions is such that as the rotor rotates, the surface of revolution defined by the upstream portion is substantially cylindrical and of smaller diameter than that defined by the downstream portion, the relatively greater clearance between rotor and grate adjacent the inlet facilitating propulsion of material into the threshing housing.



4,192,323
APPARATUS AND METHOD FOR AUTOMATICALLY CONTROLLING CURING CONDITIONS IN A TOBACCO CURING BARN

William P. Horne, Charlotte, N.C., assignor to Gas-Fired Products, Inc., Charlotte, N.C.

Filed Sep. 21, 1977, Ser. No. 835,232
Int. Cl.² A24B *3/04, 3/12*
U.S. Cl. 131—135 **14 Claims**

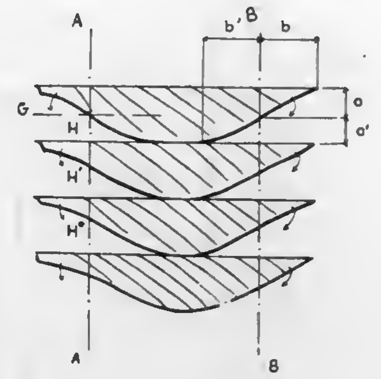


1. An apparatus for bulk curing tobacco comprising a curing barn, means in said curing barn defining a tobacco curing chamber adapted for receiving tobacco leaves for curing and including an inlet and outlet for the flow of air in and out of the curing chamber, means defining an air passageway communicating with the inlet and outlet of the curing chamber for directing air in a recirculating flow into and through the curing chamber, a fan cooperating with said air passageway for inducing a forced flow of air therealong and through the curing chamber and into contact with the tobacco leaves disposed in the curing chamber, a heater cooperating with said air passageway for heating the air flowing along the air passageway and through the curing chamber, first and second dry bulb temperature sensing means located in the path of air flow respectively adjacent the inlet and outlet of the curing chamber for sensing the differential in temperature of the air upon entering and leaving the curing chamber, which temperature differential is a function of the rate of drying of the tobacco within the curing chamber, and differential temperature control means operably associated with said heater and responsive to said first and second temperature sensing means for controlling the rate of drying of the tobacco by controlling the operation of the heater to vary the temperature of the air entering the curing chamber so as to maintain a predetermined differential in dry bulb temperature between the first and second temperature sensing means and thus provide an optimum rate of drying for tobacco of varying drying characteristics.

4,192,324
PROCESS FOR CONSTITUTING A LARGE SURFACE OF NATURAL TOBACCO, IN PARTICULAR FOR MAKING CIGAR WRAPPERS

Jacques Paret, Fleury-les-Aubrais, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Aug. 17, 1977, Ser. No. 825,383
Claims priority, application France, Aug. 18, 1976, 76 25029
Int. Cl.² A24B *3/00*
U.S. Cl. 131—149 **13 Claims**



1. A process for constituting a large surface of natural tobacco, in particular for making cigar wrappers comprising the steps of:

(a) stripping the biggest rib of natural tobacco leaves;
(b) dividing each leaf into two half-leaves;
(c) arranging the half-leaves in a plane in succession along a continuous row in such a manner that the rectilineal side of each half-leaf corresponding to the removed rib is orientated in a fixed direction, transverse to the longitudinal of the formed continuous row, that said half-leaves are adjoining each other, that the remaining ribs are in relief on the same side of the plane and have the same orientation;
(d) covering with tobacco fragments the areas between the half-leaves where the tobacco is missing;
(e) maintaining all the leaf fragments in their respective arrangement.

4,192,325
HAIR STYLING APPLIANCE INCLUDING IMPROVED BAYONET FASTENERS FOR ASSEMBLING SAME

Ronald R. Liedtke, Addison, Ill., assignor to Schick Incorporated, Lancaster, Pa.

Filed Jan. 10, 1978, Ser. No. 868,403
Int. Cl.² A45D *20/00*
U.S. Cl. 132—9 **12 Claims**

1. In a hair styling appliance for applying a hot air stream to hair, said appliance being of the type including a housing having a generally annular air outlet port and a styling attachment including a generally annular air inlet port adapted for releasible mounting on said outlet port;

the improvement comprising:

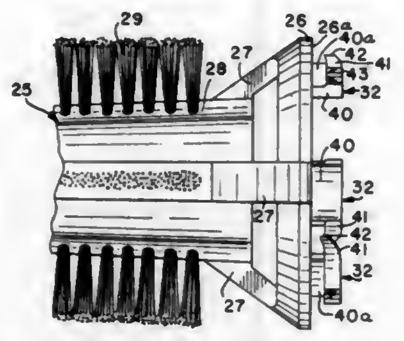
a plurality of first bayonet mounting members positioned in substantially equally spaced angular relation around one of said annular ports, and

a like number of second bayonet mounting members which are matingly engageable with said first members and positioned in substantially equally spaced angular relation around the other of said annular ports;

each of said first bayonet mounting members including

an elongate first detent extending radially inwardly of an inner circumference of said one annular port along an arcuate segment thereof, said detent defining a substantially flat elongate first retaining surface positioned in a plane perpendicular to the axis of said port and the distance between the plane of said first retaining surface and the plane of said one port defining the operative thickness of said detent;

each of said second bayonet mounting members including



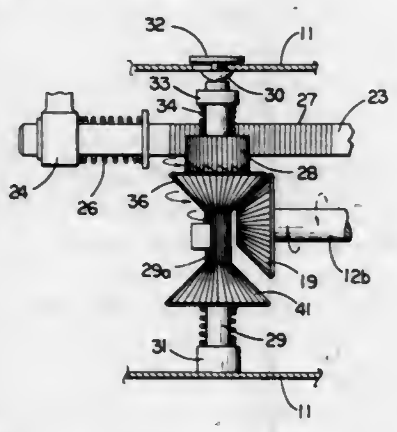
a base portion extending axially outwardly of the plane of the other of said annular ports, a block portion extending radially outwardly from said base portion and defining a second retaining surface generally parallel to the plane of said other port positioned a distance therefrom substantially equal to the thickness of said elongate detent;

said block portion including a resilient arm extending arcuately outwardly thereof, an extension of said second retaining surface on said arm being curved outwardly of the plane of said second retaining surface toward the plane of said other annular port; and

the engagement of said first and second bayonet members by rotatingly inserting said elongate detent on said one annular port between said other annular port and said second retaining surface on said block portion biasing said resilient arm against said elongate first detent first retaining surface, whereby a secure rattle-free engagement is accomplished between said housing and said styling attachment.

4,192,326
HAIR STYLING IMPLEMENT

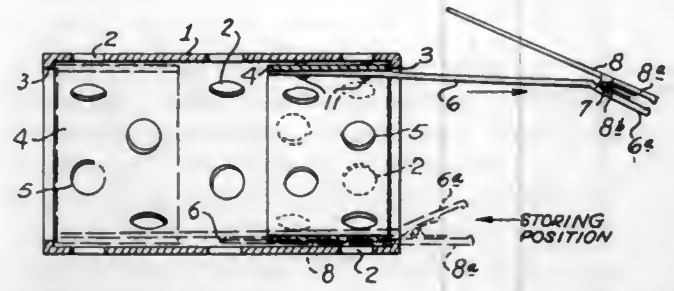
Gerald E. Klinge, 5637 Dunk Dr., Indianapolis, Ind. 46224
Filed Jun. 28, 1978, Ser. No. 920,132
Int. Cl.^{2} A45D *2/12*
U.S. Cl. 132—34 R **7 Claims**



1. A hair styling implement comprising a tubular housing forming a handle and an elongated member extending coaxially from the housing adapted to removably accomodate a styling attachment, said elongated member having a portion extending into said housing and being supported therein for rotation about its longitudinal axis with relation to the housing, a rectilinearly moveable abutment extending from a longitudinal slot in said housing and adapted for finger induced motion within the slot by an operator grasping said handle, motion transmission means within said housing operatively connecting said abutment and the portion of the elongated member within the housing for transforming the rectilinear motion of said abutment into rotary motion of said elongated member.

4,192,327
HAIR ROLLER WITH CLIP, AND METHOD OF USE

Anthony E. Vasiliou, 241 Cardinal St., Wheeling, W. Va. 26003
Filed Jul. 14, 1976, Ser. No. 705,127
Int. Cl.^{2} A45D *2/26*
U.S. Cl. 132—41 A **7 Claims**



1. A hair rolling and holding device, for use in curling the hair, comprising in combination:

(i) a hollow cylindrical roller having air aperatures therethrough and open at both ends, capable of receiving strands of hair wound externally about it,

(ii) a clip to engage with and retain strands of hair wound about said roller, said clip including:

(a) a tubular slider having aperatures therethrough, slideably mounted on the interior wall of said roller for movement axially of said roller between a first end position of movement and a second end position of movement,

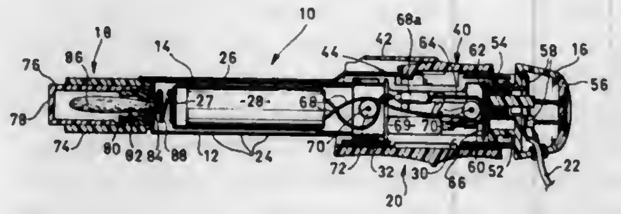
(b) an elongated leg extending axially from said slider,

(c) an arm being pivotally mounted on said elongated leg remote from said slider and extending axially towards said slider, and

(d) resilient means tending to pivot said arm towards said elongated leg, the extent of axial movement of said slider and the positioning and length of said arm being such that in said first end position said arm is withdrawn axially from the region of the hair-receiving surface of said roller, and in said second end position of movement said arm overlies said hair-receiving surface to engage with strands of hair wound thereon.

4,192,328
CLAMPING ARM MECHANISM FOR CURLING IRON

George Barradas, 15 Riverview Ct., Glenville, Conn. 06830, and Michael W. Hetherington, 29 Pringle Ave., Markham, Ontario, Canada
Filed Jun. 1, 1978, Ser. No. 911,521
Int. Cl.^{2} A45D *2/24*
U.S. Cl. 132—37 R **8 Claims**



1. A curling iron having a generally cylindrical barrel, an electrical heating element within said barrel, and an electrical supply cord therefor, and wherein the improvement comprises:

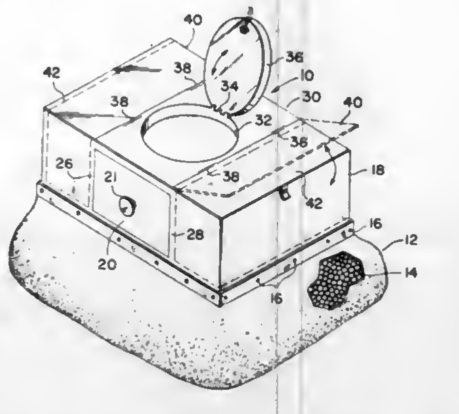
a hair-clamping arm pivotally mounted on said barrel for movement between an elevated position in which it projects angularly and forwardly relative to said barrel and a lowered position in which it is disposed alongside said barrel in close proximity thereto;

a spring means acting on said hair-clamping arm and urging that arm into said lowered position thereof; and

a manually operable arm-lifting sleeve extending around said barrel and movable relative thereto to move said hair-clamping arm toward said elevated position thereof against the action of said spring means.

4,192,329
PORTABLE DRESSING TABLE OR VANITY

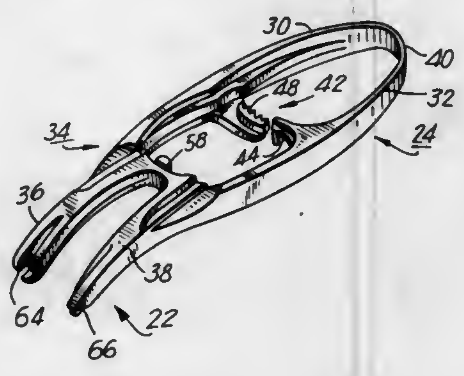
Gloria K. Swearingen, 1805 B Stanford, Columbia, Mo. 65201
Filed Dec. 29, 1977, Ser. No. 865,519
Int. Cl.^{2} A45D *40/00*
U.S. Cl. 132—79 R **4 Claims**



1. A portable, organizational dressing table or vanity comprising an inelastic deformable base member, said member being adapted for support on the lap, knees or on a table surface and able to conform to the contour of said surface; a small article holder secured on said base; said holder including a central compartment flanked by storage bins, said compartment having a top provided with a cavity; a mirror hinged adjacent said cavity and adapted to be received therein; a drawer slidable in said compartment; and lids hinged on said top for closing said bins.

4,192,330
HOLDER FOR DENTAL FLOSS

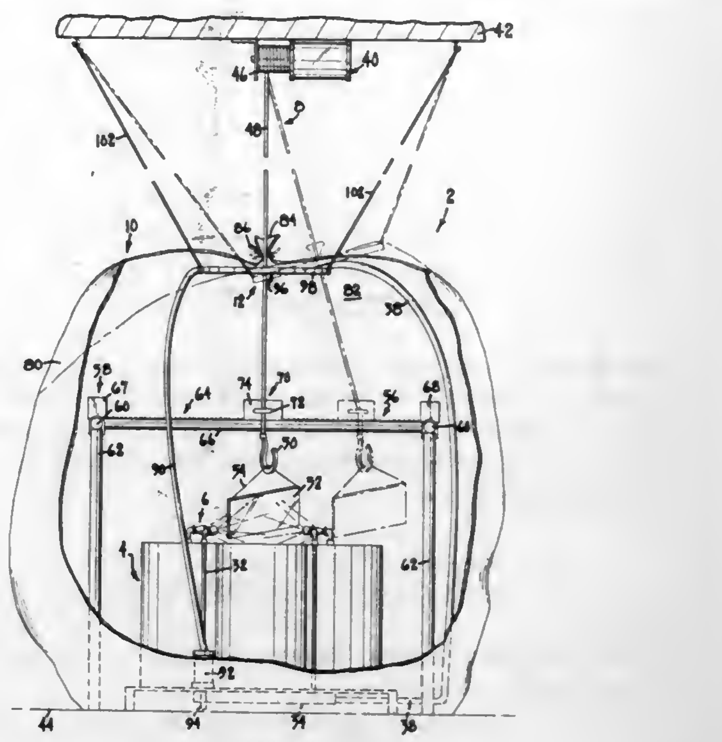
Gary D. Johnson, 2 E. 82nd St., New York, N.Y. 10028
Filed Jan. 13, 1978, Ser. No. 869,176
Int. Cl.^{2} A61C *15/00*
U.S. Cl. 132—91 **7 Claims**



1. A holder for dental floss comprising an oblong handle, said handle having two spaced apart resilient substantially parallel legs, said legs depending from a junction at one end of said handle, said one end of said handle having a bifurcated extension beyond said junction, adjustable means to engage portions of said two legs with each other said adjustable means including at least one pair of opposed tongues, each of said tongues extending inwards towards each other from a leg of the handle and each being substantially perpendicular to its respective leg, at least one of said tongues being provided with serrations, so that said tongues engagingly cooperate with each other to hold the legs toward each other, and thereby to spread apart the arms when the legs are moved towards each other and means mountable on said bifurcated one end of said handle, said mountable means including a length of dental floss.

4,192,331
ELECTROPLATING APPARATUS

Dale, J. Koering, 1697 Laurel Ave., Saint Paul, Minn. 55104
Filed Aug. 28, 1978, Ser. No. 937,060
Int. Cl.^{2} B08B *3/02*
U.S. Cl. 134—77 **20 Claims**



18. An improved apparatus for electroplating a plurality of articles, which comprises:

(a) an array of treating tanks at least one of which is a rinse tank;

(b) means for heating at least some of the treating tanks;

(c) means for shower rinsing articles contained in the rinse tank with a cleaning fluid;

(d) means for moving the articles between the treating tanks; and

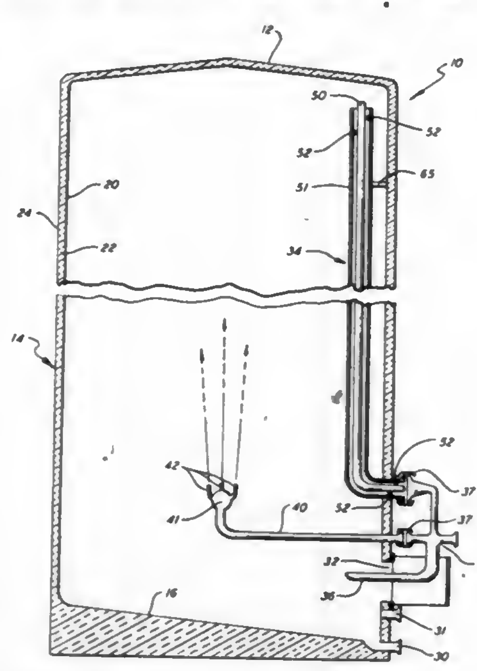
(e) means for conserving waste heat given off by the heating tanks during an electroplating operation, the conserving means being located in a heat exchange relationship with a cleaning fluid supply line for the rinsing means, whereby the cleaning fluid sprayed thereby will be heated.

4,192,332
VERTICAL LIQUID STORAGE TANK AND APPARATUS FOR CLEANING

Robert H. Feldmeier, 7632 Hunt La., Fayetteville, N.Y. 13066
Continuation-in-part of Ser. No. 908,397, May 22, 1978, abandoned, and a continuation-in-part of Ser. No. 957,322, Nov. 2, 1978, and a continuation-in-part of Ser. No. 949,373, Oct. 6, 1978, and a continuation-in-part of Ser. No. 916,887, Jun. 19, 1978. This application Feb. 22, 1979, Ser. No. 14,231
Int. Cl.^{2} B08B *3/02, 9/08*
U.S. Cl. 134—167 R **6 Claims**

1. A vertical tank of the silo-type for storage of liquids including a top, cylindrical sidewall, drainable bottom, and means for filling and draining said tank and also including cleaning means, vent means, and overfill prevention means; said cleaning means comprising an adjustable, upwardly directed spray nozzle for directing a spray of liquid onto the top of the tank, said nozzle positioned centrally with respect to the sidewall near the bottom of the tank on a conduit extending

through said wall in communication with said nozzle; said overfill prevention means comprising a conduit extending upwardly from the lower portion of the sidewall to a predetermined point above which the tank can not be filled and communicating with the interior of the tank through an orifice in the sidewall; said vent means comprising a conduit extending upwardly from the lower portion of the sidewall to a point above the level of the overfill prevention conduit and communicating with the interior of the tank through an orifice in the sidewall thereof.



4,192,333

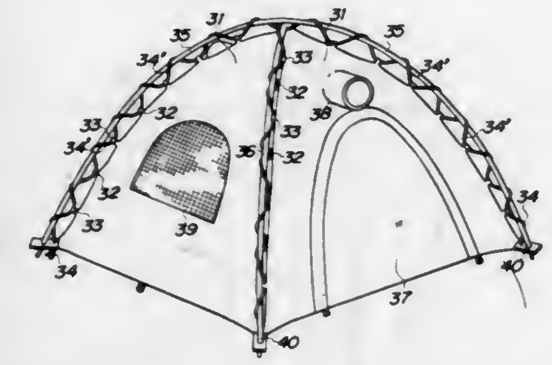
TENT

Tomoyoshi Sato, Tokyo, Japan, assignor to Nihon-Yohin Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1978, Ser. No. 955,794

Int. Cl.² A45F *1/12*

U.S. Cl. 135—3 E **8 Claims**



1. A structure of an outer type tent wherein a cord, tape or the like is mounted at intervals along a ridgeline of an outer pole type tent proper, or the like, loops are formed of the cord lying between the mounting portions, engaging portions such as hooks are disposed between said mounting portions, and said loops are engaged with said engaging portions astride the tent pole.

4,192,334

COLLAPSIBLE DOME FRAME

Lee F. Daws, Kingston, Canada, assignor to Her Majesty the Queen in right of Canada, Ottawa, Canada

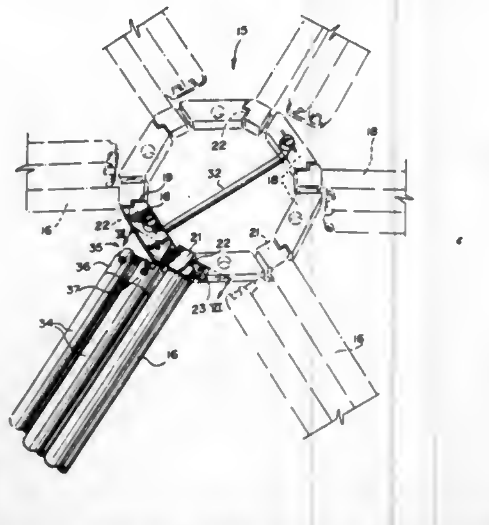
Filed May 30, 1978, Ser. No. 910,853

Claims priority, application Canada, Jun. 30, 1977, 281802

Int. Cl.² A45F *1/16*

U.S. Cl. 135—4 R **9 Claims**

1. A collapsible dome-shaped frame for a tent or similar structure comprising a top ring having a plurality of pairs of sections, each pair of sections including a fixed section and a pivotal section rotatable relative to the fixed section; said top ring including shaft means extending between adjacent fixed sections to permit rotation of the pivotal sections intermediate said adjacent fixed sections, said pivotal sections being longitudinally movable on said shaft means between a first position where said pivotal sections are locked open, and a second position where the pivotal sections can be rotated relative to the fixed sections; and further including locking means on one end of each pivotal section and an adjacent end of a fixed section for locking the pivotal section in the open position; a pole fixedly connected to each pivotal section of the ring; the poles defining a dome-shaped frame with the ring when in the open position, each pole including a plurality of segments in end-to-end relationship; and hinge means between each adjacent pair of segments of each pole permitting movement of the segments between a folded position in which the poles define a generally barrel-shaped cage and the open position in which the outer surfaces of said top ring and hinge means are substantially continuous with the outer surface of said pole segments, whereby the frame is smooth and substantially free of projections.



4,192,335

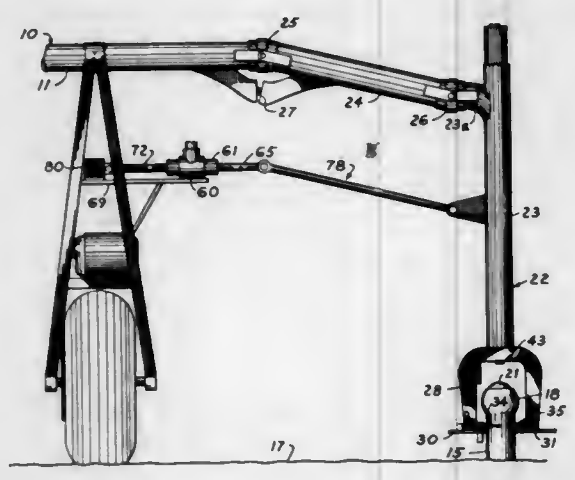
GUIDANCE SYSTEM FOR IRRIGATION SPRINKLING APPARATUS

Norman S. Standal, Star Route, Bliss, Id. 83314

Filed Apr. 18, 1978, Ser. No. 897,637

Int. Cl.² B05B *3/18*

U.S. Cl. 137—1 **18 Claims**



14. A method of guiding a steerable mobile sprinkling apparatus along a path in a direction parallel to a plurality of spaced references, comprising the following steps:

transversely indexing the mobile sprinkling apparatus relative to each reference encountered along the path;

sensing the transverse distance between each encountered reference and a selected location on the mobile sprinkling apparatus when the mobile sprinkling apparatus is transversely indexed relative to it;

and steering the mobile sprinkling apparatus by a preset correction proportional to the sensed transverse distance to direct it toward or away from a path defined by the spaced references during subsequent movement of the mobile sprinkling apparatus between each encountered reference and the succeeding reference.

4,192,336

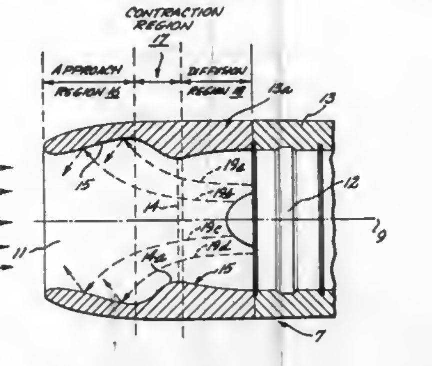
NOISE SUPPRESSION REFRACTING INLET FOR JET ENGINES

Bannister W. Farquhar, and Denis Sloan, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 29, 1975, Ser. No. 644,893

Int. Cl.² F01N *11/00*

U.S. Cl. 137—15.1 **15 Claims**



1. In an air inlet duct suitable for directing airflow to the inlet of a jet engine wherein said air inlet duct includes an entrance opening and a flow passage extending from said entrance opening for directing said airflow to said jet engine inlet, the improvement comprising means for establishing a velocity gradient in said airflow relative to the direction substantially transverse to the direction of aid airflow, said means for establishing said velocity gradient being located along a predetermined portion of said flow passage at a position downstream of said entrance opening, said velocity gradient being characterized in that sound waves traveling through said flow passage of said duct in a direction opposed to the direction of said airflow are refracted by an amount sufficient to impinge said sound waves on said means for establishing said velocity gradient.

4,192,337

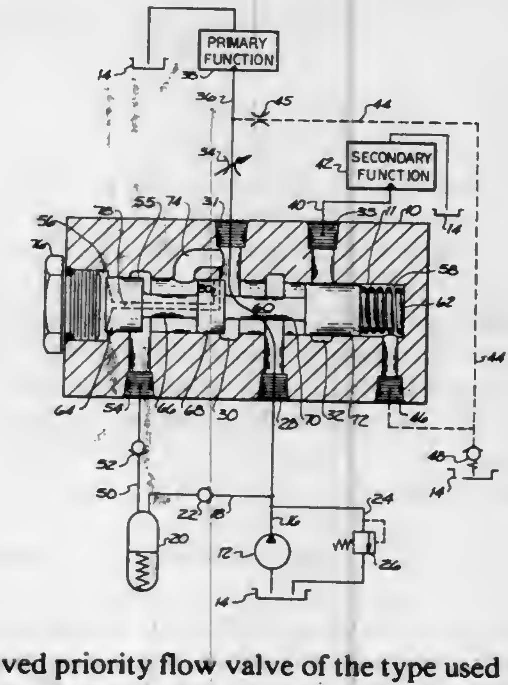
PRIORITY FLOW VALVE

Loren L. Alderson, Nickerson, Kans., and Delbert E. Truesdell, Conover, Ohio, assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed Aug. 7, 1978, Ser. No. 931,701

Int. Cl.² G05D *11/02*

U.S. Cl. 137—101 **5 Claims**



1. An improved priority flow valve of the type used between a fluid power source and functions operated by the source, one of the functions being a priority function connected to the valve through a restriction and at least one other function being a secondary function connected to the valve; the valve having a bore, an inlet chamber connected to the fluid power source, a priority outlet chamber connected to the priority function, a secondary outlet chamber connected to the secondary function; the bore passing through these inlet, priority outlet, and secondary outlet chambers; valve spool means, slidably positioned in the bore by a control servo with opposing chambers, for sensing pressures upstream and downstream from the restriction, a land near each end of the valve spool means, an annular groove located between the two lands and conditionally connecting the inlet chamber with the priority and secondary outlet chambers, and spring means for urging the valve spool means in one direction; wherein the improvement comprises:

an accumulator chamber adjacent to the bore in the priority flow valve;

an accumulator connected to the fluid power source and to the accumulator chamber;

an additional land on the valve spool means;

an accumulator annular groove on the valve spool means, formed by the additional land, conditionally connecting the priority outlet chamber with the accumulator chamber when the valve spool means is in an extreme priority demand position.

4,192,338

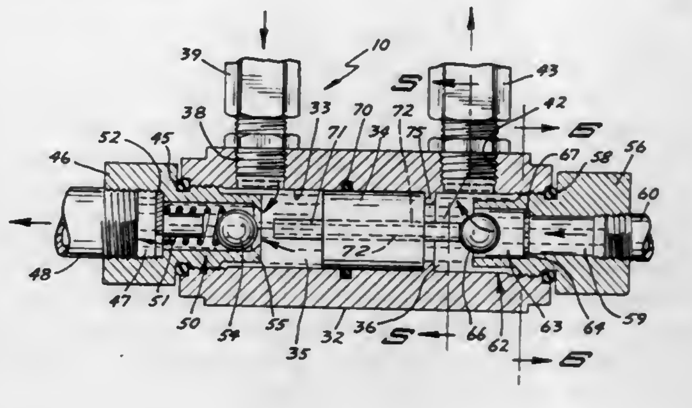
HYDRAULIC LOCK-OUT DEVICE

Benedict R. Gerulis, 3420 48th Ave. North, Minneapolis, Minn. 55429

Filed May 15, 1978, Ser. No. 906,008

Int. Cl.² F15B *13/042;* G05D *7/00*

U.S. Cl. 137—106 **3 Claims**



1. A lock-out device for use with a hydraulic motor of the type having a hydraulic cylinder and a piston and rod assembly reciprocally movable in the hydraulic cylinder from a first end of the hydraulic cylinder toward a second end of the hydraulic cylinder during a working stroke, and from the second end of the hydraulic cylinder toward the first end of the hydraulic cylinder during the return stroke, said device including:

a housing having a first chamber and a second chamber;

a first fluid port open to the first chamber for ingress and egress of fluid from a fluid supply;

a first fluid conduit connected to the first chamber;

a check valve located in the first chamber oriented with respect to the first fluid conduit to permit passage of fluid under pressure from the first chamber through the first conduit and means for maintaining the check valve normally biased in a closed configuration to prohibit movement of fluid through the first fluid conduit back to the first chamber;

a second fluid port open to the second chamber for ingress and egress of fluid to the second chamber from a fluid supply;

a second fluid conduit connected to the second chamber;

a second valve located in the second chamber positioned with respect to the second fluid conduit movable to a first position to permit free flow of fluid through the second fluid conduit into the second chamber and a second position to permit restricted flow of fluid through the second chamber and through the second conduit, said second valve including a valve stop associated with the passageway of the second fluid conduit into the second chamber, a second valve ball located in the second chamber movable to a position away from the valve stop to permit free fluid flow, and movable into position of seated relationship with the valve stop, said second valve stop shaped to permit restricted fluid flow past the second ball from the second chamber to the second fluid conduit when the second valve ball is seated therein; and

means responsive to pressure in the second chamber operable to open the check valve in the first chamber when fluid pressure is applied through the second port, through the second chamber, and through the second conduit to the second end of the cylinder, said means to open the check valve including an actuator plunger disposed in the housing between the first and second chambers movable in one direction toward the first chamber responsive to fluid pressure in the second chamber, and movable in the opposite direction toward the second chamber responsive to fluid pressure in the first chamber, and means on said actuator plunger to contact the check valve to open the check valve as the actuator plunger is moved toward the first chamber; and the means on the actuator plunger to contact the check valve including an actuator stem having one end extending toward the first chamber and another end extending toward the second chamber, the end extending toward the first chamber adapted to contact said check valve to open the check valve upon movement of the actuator plunger toward the first chamber responsive to pressure in the second chamber, said end of the actuator stem extending toward the second chamber adapted to contact the second valve ball in the second chamber when the actuator plunger moves toward the second chamber responsive to fluid pressure in the first chamber and responsive to fluid flow through the first fluid port, through the first chamber, and through the first conduit and responsive to fluid flow through the second fluid conduit into the second chamber and out of the second port, said actuator stem having a fluid passage for fluid communication between the first and second chambers, said fluid passage being closed on contact with the stem and the check valve and being closed upon contact between the stem and the second valve ball, and means in the second chamber limiting the amount of movement of the actuator plunger toward the second chamber.

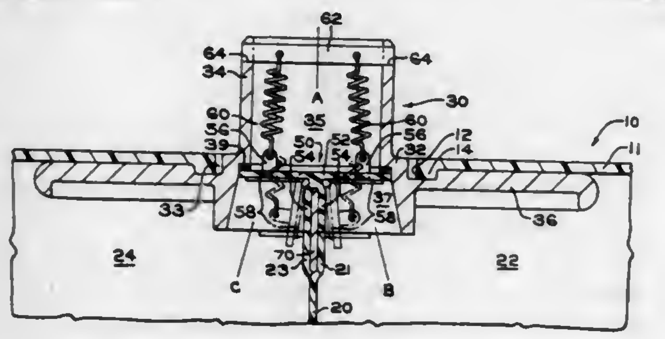
4,192,339
VALVE ASSEMBLY

John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 11, 1978, Ser. No. 941,838

Int. Cl.^{2} F16K *15/03*

U.S. Cl. 137—223 **7 Claims**



1. A valve assembly at the inlet to a fluid chamber which chamber comprises a pair of fluidly independent subchambers separated by a flexible impervious wall member, said assembly comprising:

(A) a valve housing including

(1) an upstream fluid conduit portion having a valve seat adjacent its downstream end, and (2) a downstream annular flange portion having a central opening coaxial with said conduit portion and means to secure said housing at said inlet; and

(B) a valve member disposed within said housing between said conduit portion and said flange portion, said valve member comprising a pair of movable portions pivotable about a common axis each of said movable portions communicating said conduit portion with one of said subchambers.

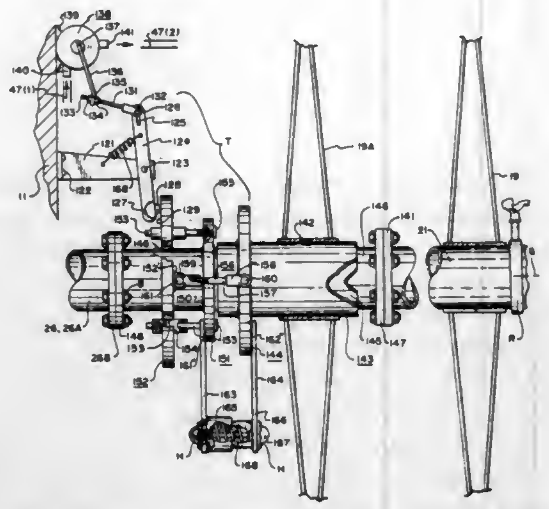
4,192,340
AGRICULTURAL IRRIGATION SYSTEM AND COMPONENTS THEREFOR

Burr Courtright, La Grande, Oreg., assignor to CH_2O, Inc., La Grande, Oreg.

Division of Ser. No. 738,044, Nov. 2, 1976, Pat. No. 4,151,858. This application Dec. 28, 1978, Ser. No. 973,893

Int. Cl.^{2} B05B *3/18*

U.S. Cl. 137—344 **14 Claims**



1. An agricultural irrigation structure having a rotating member and power control means, and in combination therewith, a ground contacting wheel carried by said structure and having a central axis of revolvement, and means revolvable about said central axis, coupled to and between said rotating member and said wheel, and responsive to divergence of relative rotational movement between said rotating member and said wheel for automatically adjusting said control means.

4,192,341
DRAIN TRAP VALVE MECHANISM

Milton Hilmer, Quakertown, Pa., assignor to Sarco Company, Inc., Quakertown, Pa.

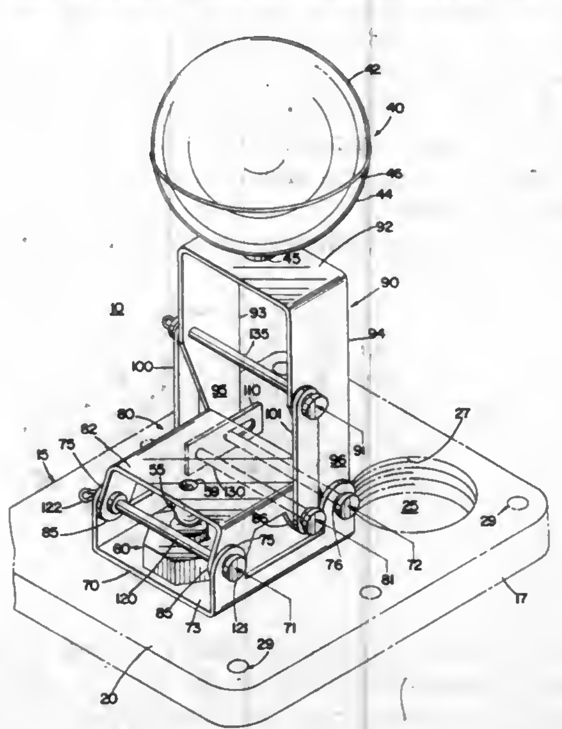
Filed May 18, 1978, Ser. No. 906,930

Int. Cl.^{2} F16K *31/26*

U.S. Cl. 137—445 **5 Claims**

1. A float actuated valve mechanism for controlling the level of liquid in a sump area comprising:
- a fluid conduit communicating with said sump area;
- a valve seat means fixed to one end of said fluid conduit;
- a valve plug movable against said valve seat to close and open said one end of said fluid conduit;
- a linkage base fixed relative to said conduit and providing two linkage base pin joints;
- a float arm having one end attached to one of said linkage base pin joints, said float arm being pivotal about said linkage base pin joint to which said float arm is attached;
- a float within said sump area connected to the other end of said float arm;
- a valve plug arm having one end attached to the other of said linkage base pin joints, said valve plug arm being pivoted about said linkage base pin joints to which said valve plug arm is attached, said valve plug being mounted on said valve plug arm;
- a float arm pin joint provided by said float arm;

- a valve plug arm pin joint provided by said valve plug arm; and
- a connecting arm means extending between and pivotal about said float arm pin joint and said valve plug arm pin joint, said linkage base and said arms constituting a four-bar linkage providing a non-linearly varying mechanical advantage between said float and said valve plug, said arms, said float and said valve plug being movable in a generally common plane.



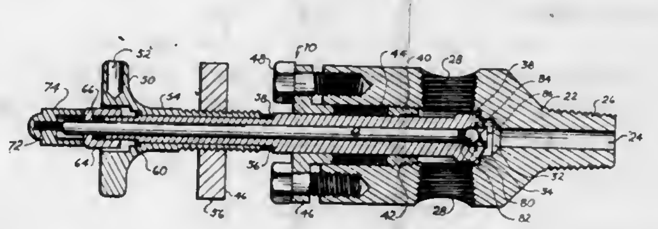
4,192,342
ROD OUT VALVE

Donald L. Adams, P.O. Box T, Tulia, Tex. 79088

Filed Feb. 16, 1978, Ser. No. 878,617

Int. Cl.^{2} G01F *15/12;* **B08B** *9/02;* **F16K** *31/46*

U.S. Cl. 137—245.5 **1 Claim**



1. In a station for testing fluid in a conduit including
- a. a duct extending into the conduit,
- b. a valve fluidly connected to the duct having
  - (i) a valve body with
  - (ii) a fluid chamber,
  - (iii) a valve stem in the body,
  - (iv) a bonnet seal between said stem and body,
  - (v) a valve member on the end of the stem in the chamber, and
  - (vi) a valve seat on the body between the chamber and the duct;

the improved structure for cleaning debris from the duct comprising in combination with the above:
- c. said valve stem being hollow,
- d. a cleaning rod telescoped within said valve stem and valve member,
- e. a stem seal between said cleaning rod and said valve stem,
- f. extension means on the rod for forcing said cleaning rod into and said duct thereby pushing any debris within the duct out of the duct,
- g. a valve seat on the valve stem,
- h. a stem valve on the rod adapted to engage said stem valve seat, whereby the rod is sealed to the stem when the rod is fully telescoped within the stem,
- j. a retaining ring on the valve stem which contacts the stem valve to hold the rod fully telescoped,
- k. a bonnet seat around the valve stem threaded into the body with tapered threads between the chamber and the bonnet seal, whereby said valve member may be seated on said bonnet valve seat and the bonnet seal removed without leakage of fluid from the chamber,
- l. a valve handle journalled around the valve stem and having a circular periphery threaded to said valve body,
- m. radial holes through the outer periphery of the handle, whereby a pin may be inserted in one of said radial holes to obtain leverage in turning the handle,
- n. diametrically opposed threaded outlet ports in valve body from the chamber,
- o. a plug in one outlet port, and
- p. a fluid conduit in the other port.

4,192,343
FULL-FLOW RELIEF VALVE

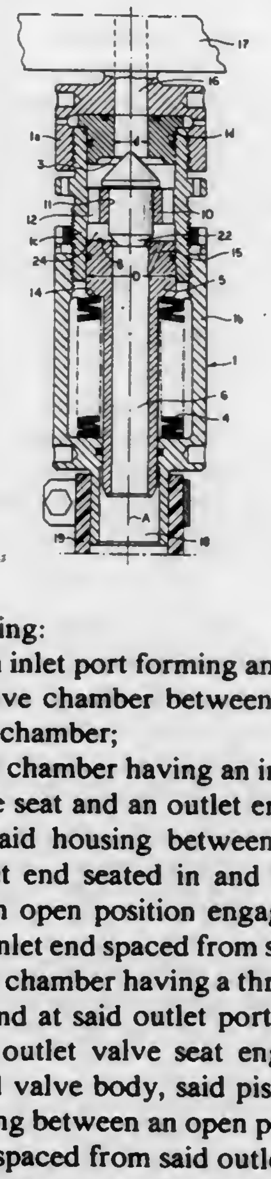
Mirko Grahač, Kamp-Lintfort, Fed. Rep. of Germany, assignor to WOMA-Apparatebau Wolfgang Maasberg & Co., GmbH, Duisburg, Fed. Rep. of Germany

Filed Nov. 6, 1978, Ser. No. 957,846

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1977, 2749812

Int. Cl.^{2} F16K *17/20*

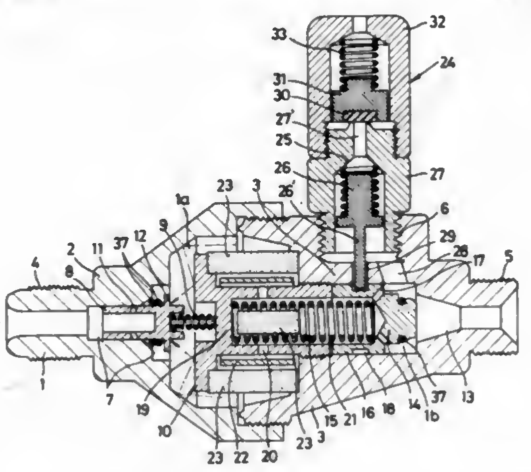
U.S. Cl. 137—474 **10 Claims**



1. A valve comprising:
- a housing having an inlet port forming an inlet valve seat, an outlet port, a valve chamber between said ports, and an abutment in said chamber;
- a valve body in said chamber having an inlet end engageable in said inlet valve seat and an outlet end, said body being displaceable in said housing between a closed position with its said inlet end seated in and blocking said inlet valve seat and an open position engaging said abutment and with its said inlet end spaced from said inlet valve seat;
- a pilot piston in said chamber having a throughgoing passage opening at one end at said outlet port and forming at its opposite end an outlet valve seat engageable with said outlet end of said valve body, said piston being displaceable in said housing between an open position with its said outlet valve seat spaced from said outlet end of said valve body in either position thereof and a closed position with its said outlet valve seat engaging and blocked by said outlet end; and
- biasing means in said housing urging said piston into said closed position.

4,192,344
AUTOMATIC EMERGENCY STOP APPARATUS AGAINST COUNTER FLOW AND COUNTER FIRE OF GAS BODIES

Yoshiaki Masuya, and Terumasa Masuya, both of 2-8, Takaida Higashi, Higashi Osaka City, Osaka, Japan
Filed Oct. 31, 1978, Ser. No. 956,337
Claims priority, application Japan, Nov. 5, 1977, 52-133246
Int. Cl.^{2} F16K ***31/12***
U.S. Cl. 137—489.3 **6 Claims**



1. An automatic emergency stop apparatus for protecting against the dangers of counter flow and counter fire of gas comprising:

a hollow valve body including a gas flow inlet and gas flow outlet;

a check valve means positioned adjacent said gas flow inlet said check valve means including a spring biasing said check valve toward a closed position;

a cut-off valve means positioned adjacent said gas flow outlet said cut-off valve means including a spring biasing said cut-off valve towards a closed position;

a filter means positioned between said check and cut off valve means;

a safety apparatus communicating with the interior of said valve body, said safety apparatus including a plunger means adapted for engagement with said cut-off valve means;

wherein in an operative normal gas flow state, said plunger means engages with said cut-off valve means and maintains said cut-off valve means in an open position, and in an emergency stop state said plunger means is moved out of contact with said cut-off valve means permitting said cut-off valve means to close under the force of said cut-off valve biasing spring to stop the flow of gas.

4,192,345
SEALED TYPE HYDRAULIC RESERVOIR

Takashi Fujii, Toyota; Atsushi Ohmi, Anjo; Tomoyuki Nogami, Toyota, and Takaaki Ohta, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan
Filed Nov. 10, 1977, Ser. No. 850,484
Claims priority, application Japan, Nov. 11, 1976, 51-135647
Int. Cl.^{2} F15B ***7/10***
U.S. Cl. 137—572 **6 Claims**

1. A sealed type hydraulic reservoir comprising:

a casing having an upper open end for storing brake fluid therein to be supplied to a hydraulic brake master cylinder;

a cap member detachably mounted on the open upper end of said casing;

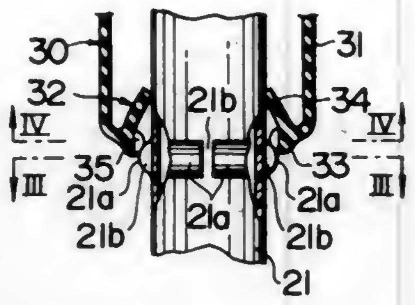
an elastic seal member, the outer peripheral portion thereof being secured to said cap member for sealing the brake fluid stored in said casing, said seal member being movable between upper and lower predetermined positions;

a first chamber within said reservoir and defined between the under side of said cap member and the upper side of said seal member, said first chamber being in communication with the atmosphere through a vent hole provided in said cap member;

a second chamber within said reservoir and defined between the under side of said seal member and the liquid surface of the brake fluid in said casing, said second chamber being normally sealed by said seal member to maintain the pressure therein at the atmospheric level;

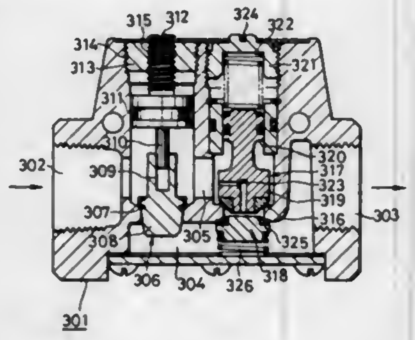
an annular projection provided on said cap member at the central portion thereof and extending downwardly within said casing; and

check valve means including an annular lip formed at the central portion of said seal member, said lip being normally in sealed contact with the outer periphery of said annular projection, said lip interacting with the outer periphery of said projection for allowing air flow from said lower chamber to said upper chamber when the pressure in said lower chamber rises above the atmospheric level and said seal member moves to said upper predetermined position, and means on the outer periphery of said projection for interacting with said lip for allowing air flow from said upper chamber to said lower chamber when the pressure in said lower chamber drops below the atmospheric level and said seal member moves to said lower predetermined position.



4,192,346
CONTROL VALVE

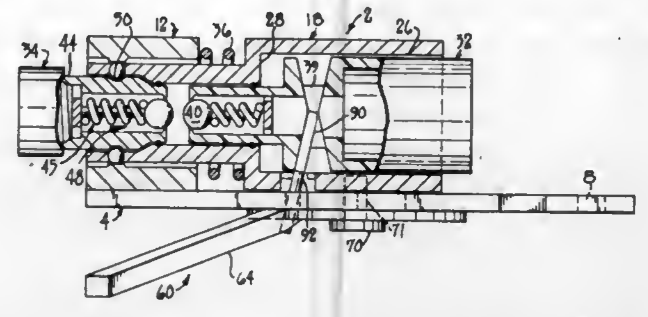
Tomomitsu Iizumi, Tokyo, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 19, 1977, Ser. No. 826,251
Claims priority, application Japan, Aug. 25, 1976, 113601[U]; Sep. 10, 1976, 121042[U]; Oct. 8, 1976, 134892[U]; Oct. 27, 1976, 144311[U]; Oct. 27, 1976, 144312[U]; Jul. 5, 1977, 881687[U]
Int. Cl.^{2} F15B ***11/02***
U.S. Cl. 137—599 **5 Claims**



1. A control valve particularly adapted for use together with a direction-changeover valve and with an actuator cylinder, said control valve comprising: a casing defining a first port adapted to be placed in fluid flow relationship with said direction-changeover valve and a second port adapted to be placed in fluid flow relationship with said actuator cylinder; fluid passage means provided in said casing for interconnecting in flow relationship said first and said second ports; pressure adjusting valve means operable between an open and a closed position provided in said fluid passage means; spring means biasing said pressure adjusting valve means so as to be opened when pressure in said second port exceeds a given pressure level; and throttling means operatively associated with said pressure adjusting valve means defining a throttled fluid flow passage between said first port and said second port to permit throttled fluid flow therebetween past said pressure adjusting valve means when said pressure adjusting valve means is in the closed position; said fluid passage means defining a first fluid flow passage and a second fluid flow passage each extending between said first port and said second port, said pressure adjusting valve means being located to control fluid flow through said first fluid flow passage from said first port to said second port, said control valve further including throttling valve means defining a throttling fluid flow opening through which fluid may flow through said second fluid flow passage from said second port to said first port.

4,192,347
HYDRAULIC COUPLER ASSEMBLY

Leroy J. Richard, 4567 Buena Vista Estates, Fargo, N. Dak. 58102
Filed Feb. 24, 1978, Ser. No. 881,002
Int. Cl.^{2} F16L ***37/22***
U.S. Cl. 137—614.06 **7 Claims**



1. An improved hydraulic coupler assembly of the type having a base plate; a fixed block and a movable block carried on the base plate for longitudinal movement relative to one another, the movable block having opposed male and female ends with the male end thereof being received inside the fixed block; means for biasing the fixed and movable blocks away from one another; first and second nipple members received respectively inside the male and female ends of the movable block, the first and second nipple members being connected respectively to first and second hydraulic lines; the movable block having locking means cooperable with a locking surface on the fixed block for locking the first nipple member in a fixed position in the male end of the movable block; and wherein the improvement comprises:

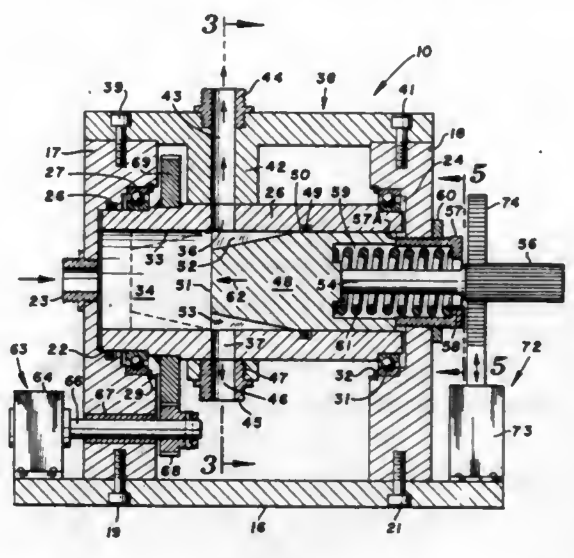
(a) an elongated slot located in the base plate; and

(b) a lever pivotably connected to the movable block by a pivot pin on which the lever is rotatably journaled, the lever including a cam carried therewith which cam is operatively located in the base plate slot, the cam being configured such that rotation of the lever about the pivot pin causes the cam to act inside the base plate slot to move the movable block through the pivot pin toward and away from the fixed block to respectively unlock and lock the locking means for the first nipple member, a support plate carried on the lever, wherein the support plate mounts the cam and covers that portion of the base plate slot in which the cam is operative to protect the cam fron contamination by foreign materials, whereby the first nipple member may be easily disconnected from or connected to the male end of the movable block.

4,192,348
FLUID CONTROL UNIT

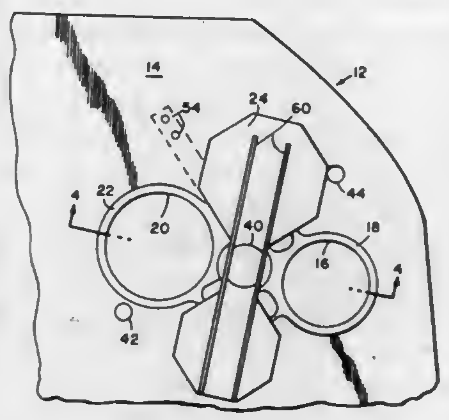
Craig N. Hansen, St. Paul, Minn., assignor to Hansen Engine Corporation, Minneapolis, Minn.
Filed Apr. 10, 1978, Ser. No. 894,752
Int. Cl.^{2} F16K ***31/04***
U.S. Cl. 137—624.15 **43 Claims**

1. A control unit operable to intermittently discharge a fluid comprising: a support, first means having a chamber mounted for rotation on the support, said first means having at least one fluid discharge opening, said support having means for allowing fluid under pressure to flow into the chamber, a piston located in the chamber and movable in said chamber from a first position to a second position, said piston having at least one groove alignable with the discharge opening when the piston is moved from the first position toward the second position, thereby allowing fluid to flow through the discharge opening, biasing means acting on the piston to move the piston to the first position, said piston being moved from the first position toward the second position by the pressure of the fluid in the chamber, and second means operable to provide relative rotation between the first means and piston, whereby the discharge opening in the first means is sequentially aligned with the groove in the piston so that the fluid is intermittently discharged through the discharge opening from the control unit.



4,192,349
AIR CONDITIONING VALVE

Robert W. Schroeder, Malibu, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 7, 1978, Ser. No. 931,794
Int. Cl.^{2} F16K ***3/02, 11/02, 35/02***
U.S. Cl. 137—878 **5 Claims**

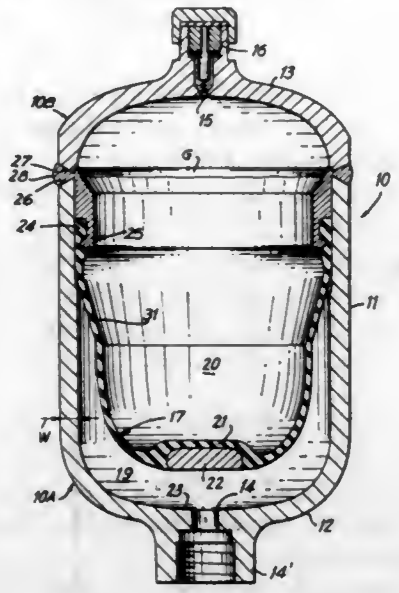


1. An air conditioning valve comprising: a relatively flat base with parallel inlet and outlet openings therethrough, and having valve seats therearound on one side; a rotary flapper valve cover pivotably mounted relative to said base and having means for covering and sealing said openings when in a closed position, said means for covering and sealing said openings being on opposite sides of and interconnected by structure which provides the pivotal mounting of said rotary flapper valve cover relative to said base, and said rotary flapper valve cover being rotatable to a position in which said inlet and outlet openings are each uncovered by said rotary flapper valve cover to allow fluid passage therethrough, said rotary flapper valve cover being pivotably mounted by a bolt means keyed to said valve cover and passing through an opening in said base, and biasing means connected between said base and

said bolt means, said biasing means biasing said valve cover onto said valve seats and said valve cover in a closing direction.

4,192,350
PRESSURE VESSEL

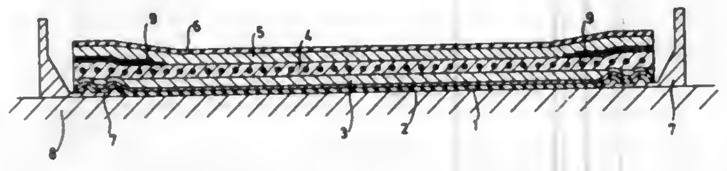
Jacques H. Mercier, Paris, France, assignor to Normand Trust, New York, N.Y.
Filed Nov. 27, 1978, Ser. No. 963,678
Claims priority, application France, Dec. 22, 1977, 77 38738
Int. Cl.² F16L ***55/04***
U.S. Cl. 138—30 **17 Claims**



1. In a pressure vessel comprising a casing of rigid metallic material having a body with two closed ends, each said closed end having a port, said ports being in axial alignment, a deformable separator in said casing interposed between said ports to define two fluid chambers of variable volumes, said deformable separator comprising a bladder having a closed end and a mouth forming a flange, an annular metallic retainer member secured to the inside of the casing, said mouth of said bladder being mounted on said retainer member, said casing comprising a first and second shell arranged opposite each other, each said shell comprising one of the said ends of said casing, said shells each including a cylindrical open end terminating in an annular rim, said open ends of said shells being mounted in opposite directions over said retainer member and intimately contacting the latter, to define respectively a first and a second annular contact zone delimited by said rim; the improvement comprising said first and second zones being separated by an annular intervening zone in which a portion of the said retainer member is exposed, an annular welding band extending along said rim of the said shells and said intervening zone to connect said rims and said retaining member, said pressure vessel being further characterized in that the retainer member is formed from a metal having a melting point below that of said shells and has a first portion with a relatively large mean thickness in the area of said first annular contact zone, and a second portion with a smaller mean thickness in the area of said second annular contact zone and of said intervening zone, the mouth of the bladder being mounted on the retainer member at a position on the same side of said intervening zone as said first annular contact zone.

4,192,351
VARIABLE FLEX HOSE

Brian Henry, Portadown, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 8, 1978, Ser. No. 904,179
Claims priority, application United Kingdom, Jul. 25, 1977, 31191/77
Int. Cl.² B31C ***13/00;*** **F16L** ***11/12***
U.S. Cl. 138—126 **13 Claims**



1. A large bore suction and discharge hose structure of elastomeric material exhibiting a variable flexibility comprising:

a hose body including a radially innermost elastomeric liner tube, a breaker ply of textile fabric radially outwardly of the liner tube, and at least two reinforcement plies of cord fabric wound at opposite hand orientation radially outwardly of the liner tube;

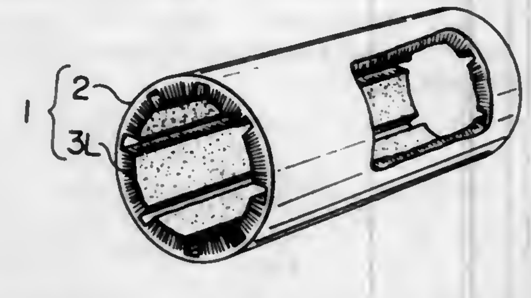
at least one reinforcement ply of a weftless cord fabric the cords of which lie substantially parallel to the longitudinal axis of the hose, said ply encircling and extending the full length of the hose body;

at least one reinforcement ply of a weftless cord fabric the cords of which lie substantially parallel to the longitudinal axis of the hose, said ply encircling the hose body and extending but for a portion of the length of the hose body; and

a radially outermost elastomeric cover ply; all of said plies being vulcanized into an integral hose structure.

4,192,352
INSULATOR FOR COVERING ELECTRIC CONDUCTORS

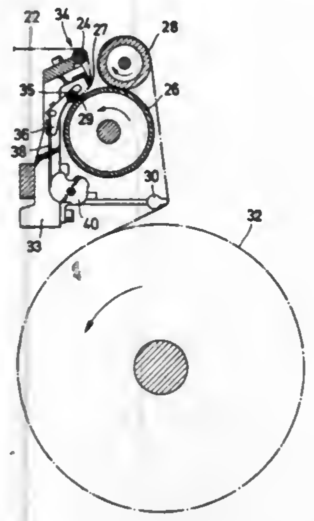
Takeshi Hakamada; Misao Soma, and Ikushi Kano, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan
Filed Aug. 1, 1975, Ser. No. 601,044
Claims priority, application Japan, Aug. 9, 1974, 49-90834
Int. Cl.² H01B ***7/02, 3/00***
U.S. Cl. 138—149 **14 Claims**



1. An insulator for covering electric conductors comprising a flexible plastic tube of polyimide film and a soft material layer of polyamide non-woven fabric secured to the inner surface of said tube, said soft material layer covering substantially the entire inner surface of said tube.

4,192,353
CLOTH TAKE-UP SYSTEM

Otto Hintsch, Walliseilen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Jun. 27, 1978, Ser. No. 919,712
Claims priority, application Switzerland, Jul. 6, 1977, 8317/77
Int. Cl.² D03D ***49/20***
U.S. Cl. 139—307 **14 Claims**



1. A cloth take-up system for taking-up a travelling length of cloth in a weaving machine comprising

a first cloth deflection element disposed in the path of cloth travel;

a cloth take-up roller located below said first cloth deflection element;

a deflecting roller downstream of said take-up roller relative to the direction of cloth travel, said deflecting roller being disposed above said take-up roller;

a cloth beam below said take-up roller for winding of the cloth thereon; and

a second cloth deflection element having a non-rotatable deflecting surface disposed in the path of travel of the cloth between said first deflection element and said take-up roller to deflect the cloth towards said take-up roller and said deflecting roller and increase the wrapping angle of the cloth about said take-up roller.

4,192,354
SHUTTLE SENSING MEANS FOR WEAVING MACHINE CATCHER MECHANISM

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed May 26, 1978, Ser. No. 910,088
Claims priority, application Switzerland, Jun. 1, 1977, 006707/77
Int. Cl.² D03D ***51/40***
U.S. Cl. 139—342 **7 Claims**

1. A catcher mechanism for a gripper shuttle comprising

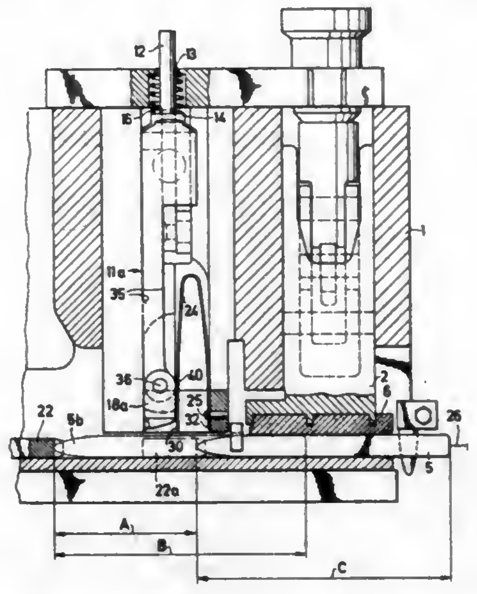
a housing;

a braking means in said housing for braking a gripper shuttle into a stop position;

a push-back member in said housing for pushing a stopped gripper shuttle from a stop position into a yarn release position;

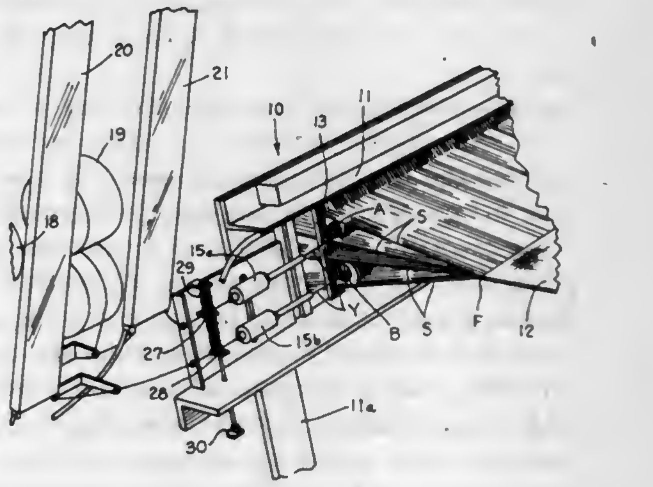
a spring member mounted in said housing; and

a sensing element mounted within an opening in said housing for movement into the path of a gripper shuttle, said sensing element being mounted adjacent said spring member whereby said sensing element is adapted to be pressed against said spring element by said push-back member in the direction of a push-back movement of said push-back member in the absence of a gripper shuttle.



4,192,355
APPARATUS FOR LOOMS HAVING FLUID OPERATED YARN INSERTION MEANS

Burin A. Peeler, Shelby, and Henry P. Neisler, Kings Mountain, both of N.C., assignors to Dicey Fabrics, Inc., Shelby, N.C.
Filed Dec. 11, 1978, Ser. No. 968,620
Int. Cl.² D03D ***47/28***
U.S. Cl. 139—435 **3 Claims**



1. For use in a loom having spaced fluid insertion means for carrying respective filling yarns into a shed, a reed comprising:

a plurality of spaced aligned dents defining spaced yarn tunnels within a shed for receiving respective filling yarns from said fluid insertion means;

said tunnels having opposed yarn exit eyes opening toward each other in opposed relation; and

an intermediate connecting portion of each of said dents between said tunnels receiving adjacent filling yarns from adjacent tunnels and thereafter beating up the filling yarns into a fell of the cloth being woven.

4,192,356

CATCHER MECHANISM IN A GRIPPER PROJECTILE WEAVING MACHINE AND METHOD OF OPERATING SAME

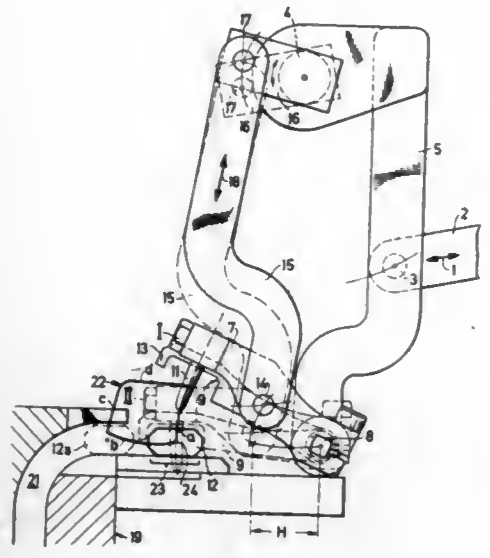
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 26, 1978, Ser. No. 910,087

Claims priority, application Switzerland, Jun. 1, 1977, 006708/77

Int. Cl.^{2} D03D *47/24*

U.S. Cl. 139—439 **2 Claims**



1. A catcher mechanism for a gripper shuttle having a pair of jaws for holding a yarn therebetween, said mechanism comprising

a housing disposed in a feed path of a series of gripper shuttles to sequentially receive a gripper shuttle therein at a preset location, said housing having an ejection channel on one side of said feed path to receive an ejected shuttle; and

an ejection mechanism on an opposite side of said feed path from said ejection channel including an opener pin for opening the jaws of a gripper shuttle at said preset location, an opener lever having said pin mounted thereon and being pivotally movable from a set position towards said preset location to effect opening of the jaws of a gripper shuttle, means including a pivotable drive lever and a link pivotally connected to said drive lever and to said opener lever for pivoting said lever from said set position towards said preset location, second means including a pivotally mounted lever pivotally connected at one end to said opener lever and a reciprocable drive rod connected to said opener lever and to said pivotally mounted lever at an intermediate point for reciprocally moving said lever laterally of said feed path from said preset location to an ejection position and a shaft having said lever of said second means and said drive lever of said first means pivotally mounted thereon, said first means and said second means being disposed to pivot said lever away from said ejection position to permit ejection of a gripper shuttle thereat and to a position with said lever and said pin out of said feed path prior to a return movement of said lever laterally to said set position whereby a following gripper shuttle can be received at said preset location.

4,192,357

WEFT YARN GRASPING APPARATUS FOR FLUID JET LOOM

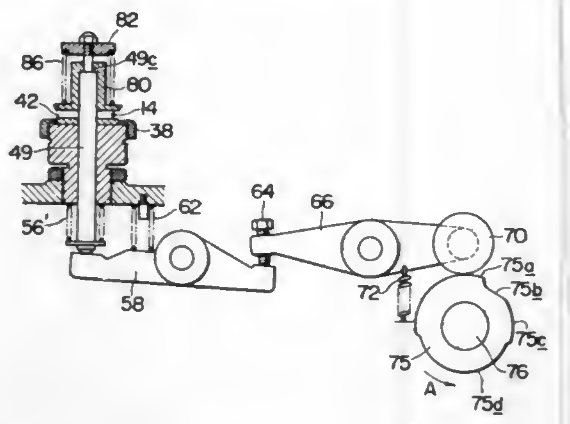
Shigenori Tanaka, Hachioji; Akio Tojo, Higashi-murayama; Kimimasa Ohnishi, Tokyo, and Takeshi Kikuchi, Chofu, allof, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Sep. 27, 1977, Ser. No. 836,958

Claims priority, application Japan, Dec. 27, 1976, 51-157739

Int. Cl.^{2} D03D *47/34*

U.S. Cl. 139—450 **9 Claims**



1. A weft yarn grasping apparatus for a fluid jet weaving loom having a jet nozzle for inserting a weft yarn, by the aid of a fluid jet stream, into the shed of warp yarns, said apparatus comprising:

gripping means by which said weft yarn is selectively gripped and released in response to the weaving operation of said loom; and

actuating means for actuating said gripping means to take first, second and third states thereof under the picking of said weft yarn, the beating of said weft yarn and a condition other than said picking and beating, respectively, said first state being a state in which said weft yarn is completely released by said gripping means, said second state being a state in which said weft yarn is softly gripped by said gripping means such that when a predetermined magnitude of tension is applied to said weft yarn, a slippage of said weft yarn is given by said gripping means to draw out a bit of said weft yarn from said gripping means, said third state being a state in which said weft yarn is strongly gripped by said gripping means such that even when said predetermined magnitude of tension is applied to said weft yarn, the slippage of said weft yarn is prevented,

said gripping means including:

movable and stationary members capable of defining therebetween a clearance in which said weft yarn is inserted, said members being respectively formed with openings which are aligned;

a rod member slidably passing through the aligned openings of said movable and stationary members and having first and second ends thereof which are outwardly projected from the respective movable and stationary members, said rod member being formed with an engaging section which is brought into contact with a portion of said movable member to move the same in a direction to increase said clearance when said rod is moved in a first direction beyond a predetermined distance;

a stop member fixed to said first end of said rod, said stop member being contactable with said movable member to move the same in a direction to decrease said clearance when said rod is moved in a second direction, said first and second directions being opposite to each other;

first biasing means for biasing said rod in said second direction; and

second biasing means disposed between said movable member and said stop member for biasing said movable member in the direction to decrease said clearance, the biasing force of said second biasing means being set smaller than that of said first biasing means.

4,192,358

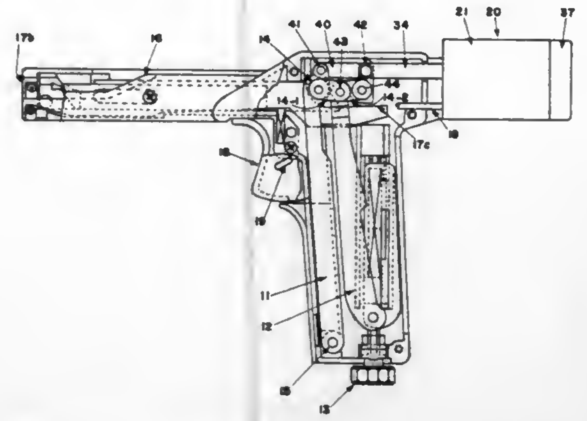
AIR POWERED INSTALLATION OF FASTENERS

Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Aug. 21, 1978, Ser. No. 935,206

Int. Cl.^{2} B21F *9/02*

U.S. Cl. 140—123.6 **6 Claims**



1. An improved tool for tensioning an item having a free end, of the type including means for gripping and drawing the free end of the item, means for severing an end portion of said item, apparatus for applying force to said drawing means to apply tension to the end of said item, and means for operating the severing means when the applied force reaches a prescribed level, wherein the improvement comprises improved apparatus for applying force to said drawing means, comprising:

a piston and piston rod assembly, housed in a piston chamber having actuating and non-actuating ends;

a valve assembly having activated and non-activated positions, comprising

a housing containing a channel, wherein the wall of the channel includes a "pressurizing" aperture and a "venting" aperture, with the pressurizing aperture connected by a duct to the source of high pressure air and the venting aperture connected to a venting port, and wherein a tunnel terminating in the channel between said apertures connects the channel to the piston chamber;

a valve spool which may slide within said channel;

a filler member creating a narrowed segment of said channel, located between said pressurized and venting apertures, whereby the tunnel connects the piston chamber to the narrowed segment of the channel;

first and second capping members on each end of said valve spool configured such that when the valve spool is in the activated position, the first capping member seals the narrowed segment of the channel from the venting aperture, whereas when the valve spool is in the non-activated position, the second capping member seals the narrowed segment of the channel from the pressurizing aperture;

a source of high pressure air;

activating means for urging the valve spool and capping members towards the activated position in response to an input signal; and

means for linking the piston rod and the drawing means, and for causing force to be applied to said drawing means when the piston moves toward the actuating end of the piston chamber.

4,192,359

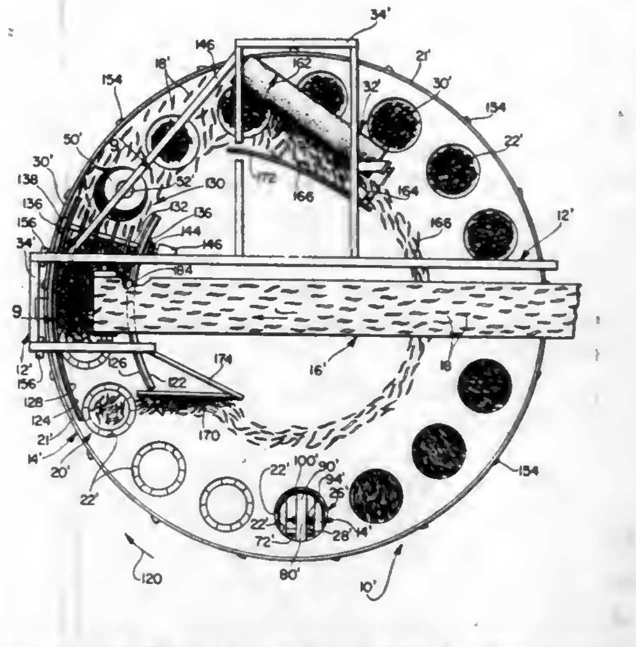
CONTAINER FILLING APPARATUS AND METHOD

Roy L. Pippin, P.O. Box 1077, Plant City, Fla. 33566

Continuation-in-part of Ser. No. 808,657, Jun. 21, 1977, abandoned. This application Nov. 7, 1977, Ser. No. 849,172

Int. Cl.^{2} B65B *1/04*

U.S. Cl. 141—12 **18 Claims**



12. The method of filling a container with a mass of units of an elongated material, comprising the steps of:

positioning the container in communication with a port in a horizontal surface;

depositing the material through the port to fill the container;

continuing depositing material to a level above the upper termination of the container;

compressing the material into the container to compact the mass of material in the container to reduce the voids therein; and

propelling the material along the horizontal surface in a direction generally opposite to the direction of movement of the horizontal surface.

4,192,360

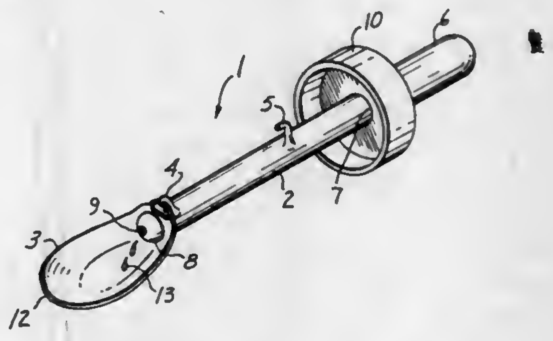
SPOON DROPPER

Oswaldo J. Rodriquez, 5751 Riverdale Rd., Apt. 2E, College Park, Ga. 30349

Filed May 19, 1978, Ser. No. 907,714

Int. Cl.^{2} B65B *3/30*

U.S. Cl. 141—24 **3 Claims**



1. A measuring device combination comprising:

a liquid dropper tube having a first tube terminus and having a flexible compressible bulb secured thereon, said dropper tube having a second tube terminus which includes a tube orifice, said dropper tube having a desired liquid volume, said dropper tube having a thermoplastic composition,

a cap closure mounted on said liquid dropper tube,

a hinge means integrally secured to said second tube terminus adjacent to said tube orifice, said hinge means having a thermoplastic composition,

a spoon bowl integrally secured to said hinge means, said spoon bowl hingedly movable to accept liquid from said tube orifice, said spoon bowl having a thermoplastic composition and a bowl volume, and

a flexible snap lock projection integrally secured to said dropper tube exterior, said projection being disposed at a position operative to provide a lock for a spoon bowl tip opposed to said hinge means, whereby said spoon bowl can be foldably secured coplanarly adjacent to said liquid dropper tube and locked there by said snap lock projection, prior to disposing said measuring device in a bottle for securing said cap closure.

4,192,361

APPARATUS FOR FILLING CAPSULES AND THE LIKE

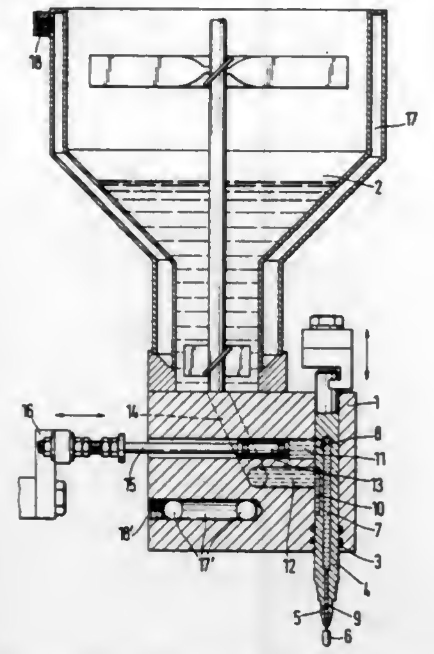
Theo Moser, Steinenberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,900

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742248

Int. Cl.^{2} B67C *3/26;* G01F *11/38*

U.S. Cl. 141—82 **3 Claims**



1. A dispensing apparatus for dispensing liquid, pasty or similar substances such as substances containing medicaments into hard gelatin capsules or the like comprising in combination, a housing having a vertically extending bore, a control plunger including a filling nozzle arranged for reciprocating axial movement between a filling position wherein said filling nozzle extends into a capsule to be filled and a non-filling position, said housing having a pair of horizontally extending bores disposed one above the other in perpendicular relationship with said vertically extending bore and in communication therewith, the outer surface of said plunger being provided with a circumferentially extending recess having a length corresponding to the distance between said pair of horizontally extending bores for selective coupling of said pair of horizontally extending bores in the non-filling position of said control plunger to control the flow of said filling substance into said dispensing apparatus, wherein one of said pair of horizontally extending bores is provided with a reciprocally movable metering piston adapted to draw material through said recess and said other horizontal bore from a supply in the non-filling position of said control plunger, said control plunger being provided with an axially extending bore communicating at one end with the filling nozzle end of said plunger, and a radially extending bore communicating at one end with the other end of said axially extending bore, said radially extending bore being arranged to communicate at its other end with said one horizontally extending bore in said filling position of said control plunger, whereby a metered amount of said material is dispensed from said one horizontal bore by said piston into said radially and axially extending bores out said filling nozzle, in the filling position of said control plunger.

4,192,362

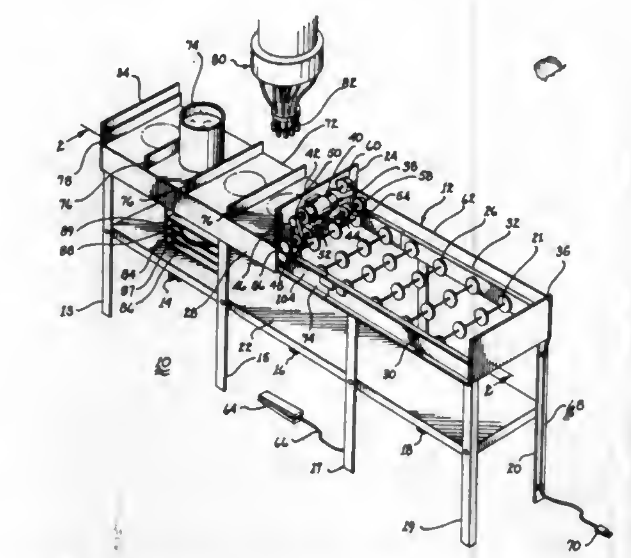
PAINT MIXING TABLE

John J. Achen, P.O. Box 5287, Yuma, Ariz. 85364

Filed Sep. 11, 1978, Ser. No. 941,145

Int. Cl.^{2} B65B *43/54*

U.S. Cl. 141—177 **2 Claims**



1. A table for serially locating each of a plurality of paint cans in alignment with a pigment dispensing unit for dispensing pigment into each paint can, said table comprising in combination:

(a) a tray for supporting each of the paint cans, said tray including means for locating each paint can upon said tray, said tray further including depending flanges disposed at opposed sides thereof;
(b) a conveyor having a longitudinal axis for accommodating reciprocal translatory motion of said tray with respect to the dispensing unit, said conveyor including side rails for engagement with said depending flanges to limit motion of said tray to motion along the longitudinal axis of said conveyor;
(c) drive means for imparting translatory motion to said tray with respect to said conveyor;
(d) switch means for controlling said drive means to impart incremental motion to said tray in either direction along the longitudinal axis of said conveyor;
(e) a shelf disposed beneath said conveyor for supporting a paint can; and
(f) said conveyor including a removable section in general vertical alignment with both the dispensing unit and a part of said shelf;

whereby, the paint cans are serially positionable in alignment with the dispensing unit or upon said shelf to receive dispensed pigments.

4,192,363

AUTOMATIC PROFILE-COPYING DEVICE

Gianfranco Casadei, Villa Verucchio (Forli), Italy

Filed Mar. 3, 1978, Ser. No. 883,026

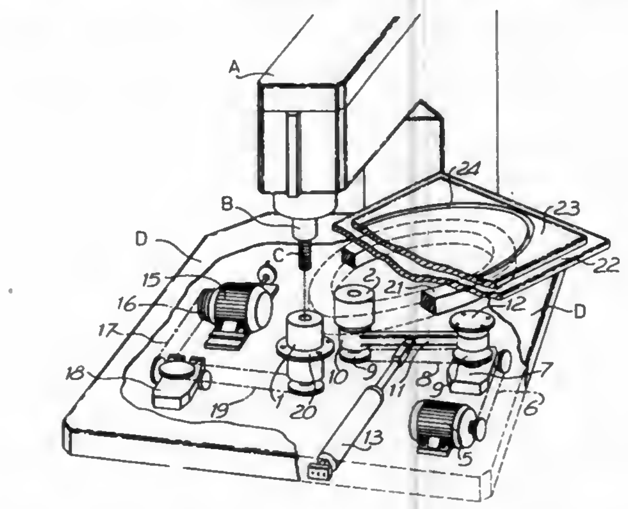
Claims priority, application Italy, Mar. 3, 1977, 20864 A/77

Int. Cl.^{2} B23C *1/18*

U.S. Cl. 144—145 A **3 Claims**

1. An improved profile-copying device for a milling machine having a work tool of the type including a rotatable central roller having an axis fixably and coaxially disposed relative to the axis of the work tool and a rotatable side roller having an axis disposed parallel to said axis of said central roller, means for driving at least one of said rollers and means for biasing said side roller in a direction towards said central roller so as to enable a profile to be inserted between and held by said rollers and advanced therebetween upon activation of said drive means, the improvement comprising:

said drive means comprising first drive means including a motor coupled to said central roller for rotating said central roller at an adjustable but constant speed, and second drive means coupled to said side roller for rotating said side roller at a variable speed as a result of which both of said rollers supply a torque to effect advancement of a profile fed between said rollers.



4,192,364

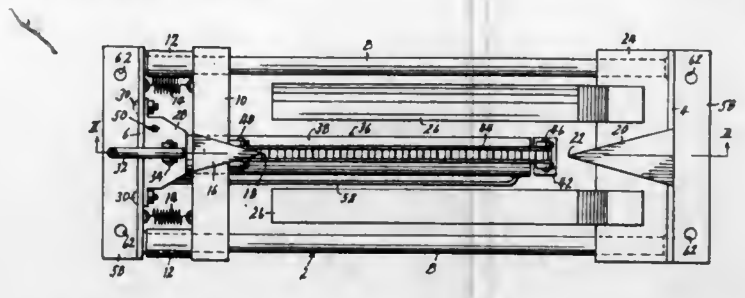
LOG SPLITTING DEVICE

Charles A. Findley, 7006 Rowland, Kansas City, Kans. 66109

Filed Jun. 5, 1978, Ser. No. 912,499

Int. Cl.^{2} B27L *7/00*

U.S. Cl. 144—193 A **8 Claims**



1. A log splitting device comprising:

a. a frame,
b. a pair of confronting knife edged wedges having generally parallel cutting edges carried by said frame, one of said wedges being fixed relative to said frame and the other of said wedges being movable relative to said frame in a direction normal to the cutting edges of said wedges,
c. support means on said frame for supporting a log in endwise relation between said wedges, and
d. power means carried by said frame and operable to move said movable wedge toward said fixed wedge, whereby said log is split from either or both ends.

4,192,365

ORGANIZER HANDBAG

Milton I. Siegel, Scottsdale, Ariz., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.

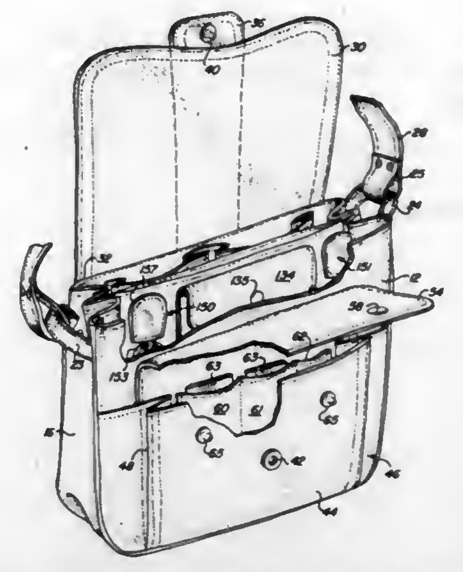
Continuation of Ser. No. 802,114, May 31, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 950,043

Int. Cl.^{2} A45C *3/06, 1/08*

U.S. Cl. 150—35 **2 Claims**

1. An organizer handbag for the orderly and accessible reception of personal convenience items comprising:

(a) a body having a bottom panel, a front panel and a rear panel having upper horizontal edges and side and bottom edges, said side edges being joined to an expandable end wall member on each side of said front and rear panels, the bottom edges and end wall members being joined to said bottom to form a main compartment;
(b) at least two transverse panels extending between and secured to each respective end wall member sub-dividing the main compartment into at least three subcompartments comprising:
    (i) a front subcompartment formed between one of said transverse panels and said front panel;
    (ii) an intermediate subcompartment adapted to secure a removable pouch at a position wherein an edge of said pouch is substantially co-extensive with the top of said main compartment; and
    (iii) a rear compartment formed between one of said transverse panels and said front panel;
(c) pocketbook means detachably secured to one of said panels at one of said subcompartments near the upper edge thereof whereby the pocketbook is readily accessible through the said subcompartment and whereby the pocketbook may be easily attached or detached when the handbag is in an open position;
(d) storage compartment means located within at least one of said subcompartments, said storage compartment means being adapted to receive a card carrying case for selective display of documents;
(e) an exterior pouch panel extending generally transversely across the front of said front panel and extending vertically from the bottom to a location below the upper horizontal edge of said front panel and being joined thereto at opposite vertical edges and along the bottom edge, an insert panel extending intermediate said pouch panel and said front panel forming an insert pocket between said front panel and said insert panel and an exterior pouch between said insert panel and said pouch panel, said insert panel having a vertical extension forming a flap moveable to a closed position overlying said pouch panel, said pouch further including interior pocket means adapted for reception of writing materials; and
(f) a flap hingedly affixed to the said rear panel substantially near the upper horizontal edge and moveable to a closed position over-lying said front panel and having an open position permitting free access to said interior subcompartments, said flap in said closed position obscuring the contents of said subcompartments and simultaneously covering said exterior pouch and insert pocket for added security;
(g) the bottom panel being generally flat and generally defining the total bottom perimeter of the handbag.



4,192,366

PNEUMATIC TIRE WITH MEDIUM VINYL POLYBUTADIENE/POLYISOPRENE BLEND TREAD

Richard M. Scriver, Jr., Atwater, and Waldemar A. Ross, Bolivar, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 22, 1978, Ser. No. 879,985

Int. Cl.^{2} B60C *1/00;* C08L *23/18*

U.S. Cl. 152—209 R **3 Claims**

1. In a pneumatic rubber tire which comprises a generally toroidal shaped carcass with an outer circumferential ground contacting tread, spaced beads and sidewalls extending radially

from and connecting said tread to said beads, where said tread is a cured elastomeric composition containing a medium vinyl polybutadiene, the improvement in which said tread is a cured elastomeric composition comprised of, based on 100 parts by weight rubber, (A) about 55 to about 75 parts by weight cis 1,4-polyisoprene rubber and correspondingly, (B) about 45 to about 25 parts by weight of a medium vinyl polybutadiene rubber having about a 35 to about 45 weight percent vinyl content (1,2-content) about 10 to about 40 weight percent cis 1,4-content and, correspondingly, 15 to about 55 weight percent trans 1,4 content and having a ML (100° C.) hardness in the range of about 40 to about 120, in which said elastomer composition is cured with a sulfur content in the range of about 2 to about 2.4 phr in an amount equivalent to about 25 to about 40 weight percent more than the sulfur content which would be required according to the test of maximizing the time to failure of the cured rubber composition according to blow-out test ASTM D-623, in which only for the purpose of said test, the medium vinyl polybutadiene is replaced with high cis 1,4-polybutadiene rubber.

4,192,367

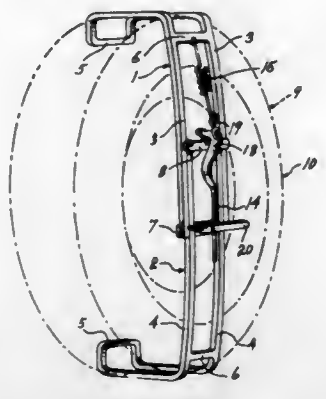
ANTI-SKID WHEEL ATTACHMENT DEVICE

Ovila Chabot, 78, rue du College, Pont-Rouge, Quebec, Canada (G0A 2X0)

Filed Jul. 14, 1978, Ser. No. 924,743

Int. Cl.^{2} B60C *27/20, 27/00*

U.S. Cl. 152—225 C **4 Claims**



3. An anti-skid wheel attachment device comprising separate first and second clamping frames, each including an outer generally U-shaped tire-clamping portion and an inner connection portion, said inner connection portion comprising a pair of spaced substantially parallel co-planar side bars adapted to be removably positioned across the exposed side of a vehicle wheel in aligned and overlapping position, each pair of side bars being rigidly interconnected by a first and a second cross bar interconnecting the outer portions and the inner ends of said side bars, respectively, said second cross bar of said first clamping frame being secured to the underside of the side bars of said first clamping frame and having a central boss level with the outer side of said side bars, said central boss defining a pair of recesses, one adjacent the related side bar, an arm pivoted on said boss intermediate its ends and pivotable between a locking position extending across said side bars of said first clamping frame and closing said recesses, and an unlocking position clearing and opening said recesses, said second cross bar of said second clamping frame extending across the outer side of the side bars of said second clamping frame and protruding beyond said same side bars, the spacing between the side bars of said second frame being less than the spacing between the side bars of said first frame, said side bars being telescopically and slidably interfitted with the side bars of said second frame slidably engaging said recesses, and said arm in transversely extending locked position overlying said side bars of said second frame and with said protruding end portions of the second cross bar of said second clamping frame overlying the side bars of the first clamping frame, so arranged that the two connection portions can be assembled and separated by relative movement toward and away from each other in a direction transverse to the planes of said connection portions, the side bars of the respective pairs being in longitudinal slidable contact two by two for maintaining the connection portions in alignment, and said cross bars maintaining said connection portions in co-planar relationship and said catch, when in locked position, maintaining the two connection portion in assembled position, and further including biasing means detachably connected to the two clamping frames and biasing the outer tire-clamping portions one towards the other.

4,192,368

TIRE CORE BEAD FOR TUBELESS TIRES

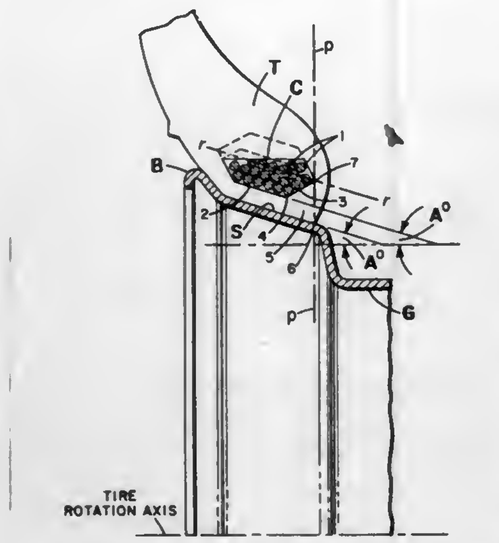
Luigi Maiocchi, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Dec. 5, 1977, Ser. No. 857,446

Claims priority, application Italy, Dec. 13, 1976, 30335 A/76

Int. Cl.^{2} B60C *13/04*

U.S. Cl. 152—362 R **4 Claims**



1. A vehicle tire of the type for being fitted onto a one-piece undetachable rim of the drop-center type and having its bead-seats for the tire beads shaped like a truncated cone with the vertex axially turned towards the inside of the rim,

said beads having bead bases which are substantially a frustrum-shaped surface for combining with the said bead-seat, and having approximately the same angle of inclination as the latter,

said beads being provided with a reinforcing metallic wire core, said wire core comprising a plurality of metallic turns closely wound together so as to constitute substantially a massive annular element that is circumferentially inextensible, and having a cross-section of a polygonal shape,

the radially innermost side, with respect to the axis of rotation of the tire, of said polygon being the core base, the side of said polygon having one end in common with the axially internal end, with respect to the equatorial plane of the tire, of said core base being the undercut,

the dihedral angle defined by the core base with the undercut being between 90° and 160°, said tire being charcterized in that it comprises said wire core disposed in the bead with the axially innermost extremity, with respect to the equatorial plane of the tire, of said undercut lying substantially on a plane perpendicular to the axis of rotation of the tire and passing through the axially innermost extremity of the bead base.

4,192,369

ADJUSTABLE DECORATIVE SHUTTER

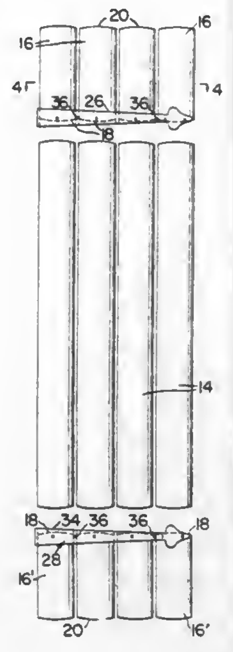
Ian D. Taylor, Beaconsfield, Canada, assignor to Hunter Douglas International N.V., ANX

Filed Feb. 23, 1977, Ser. No. 771,098

Claims priority, application Canada, Jan. 26, 1977, 270496

Int. Cl.^{2} E06B *7/08*

U.S. Cl. 160—223 **3 Claims**



1. A decorative shutter comprising:

(a) a plurality of parallel elongated panel assemblies;

(b) each panel assembly including a main panel member and an end panel member mounted on at least one end portion of the main panel member, each end panel member having an inner end, and an outer end directed outwardly and away from the main panel member;

(c) each of the panel members having opposed longitudinal edge portions shaped such as to retain said end panel members on said end portions of the main panel member and in telescoping mating relation therewith such as to allow said end panel members to be slid to and fro relative to their associated main panel members in a direction parallel to said opposed longitudinal edge portions;

(d) means for retaining said panel assemblies in said parallel relationship including a connector member extending transversely of said panel assemblies and connected to each of the end panel members situated at one end of said main panel members to enable said end panel members to be slid to and fro as a group relative to their associated main panel members thereby to effect variations in the overall length of the shutter;

(e) and wherein said connector member is a rigid member secured to all its associated end panel members in overlapping relation to the inner edges of the inner end portions of the end panel members such that said connector members conceals such inner edges from view and thus imparts a unitary appearance to each of the panel assemblies of the shutter;

(f) wherein each panel member has a major frontal surface and a back surface with said longitudinal edge portions of each panel member being curved inwardly toward each other in directions away from said major frontal surface and the longitudinal edge portions of the end panel members closely embrace the longitudinal edge portions of their associated main panel member; and

(g) the outer ends of said end panel members being free of any connection with any adjacent outer ends of end panel members.

4,192,370

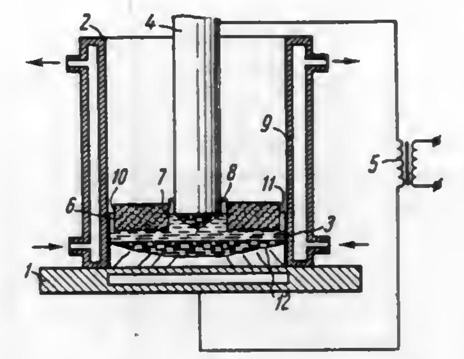
DEVICE FOR EFFECTING ELECTROSLAG REMELTING PROCESSES

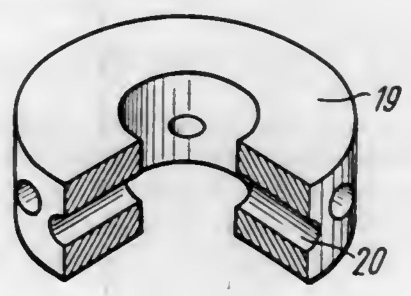
Volf I. Rabinovich; Jury N. Kriger, both of Chekhov; Igor A. Svitenko, Moscow, and Viktor E. Sapunov, Chekhov, all of U.S.S.R., assignors to Chekhovsky Zavod Energeticheskogo Mashinostroenia, U.S.S.R.

Division of Ser. No. 638,942, Dec. 8, 1975, abandoned. This application Jul. 18, 1977, Ser. No. 816,695

Int. Cl.^{2} B22D *27/02*

U.S. Cl. 164—252 **3 Claims**





1. A device for effecting an electroslag remelting process, comprising a baseplate on which is mounted a means for effecting an electroslag remelting process; a molten slag bath set up in said means for effecting an electroslag remelting process; an electrode having one of its ends dipped into said slag bath, its other end being connected to a current source; a protective shield positioned concentrically around the end of said electrode being dipped into said slag bath; said shield being made as a disc of an electrically conductive material which has a higher electrical conductivity than that of the molten slag and whose specific density is lower than that of the slag of said slag bath, said disc overlapping essentially the entire surface area of said slag bath and being arranged in said means for effecting an electroslag remelting process with a clearance between an internal surface of said means for effecting an electroslag remelting process and a side wall of said disc that amounts to at least the thickness of a scull crust on the internal surface of said means for effecting an electroslag remelting process, and with a clearance between the wall of the opening said disc and said electrode that is equal to at least the thickness of a scull crust of said electrode, and said protective shield being made as a disc with through radial conduits running inside said disc from its center to the periphery thereof.

4,192,371

PROCESS FOR SUPPLYING THERMAL ENERGY FOR AN ENDOTHERMIC REACTION FROM A SOURCE NOT AVAILABLE AT THE REACTION SITE

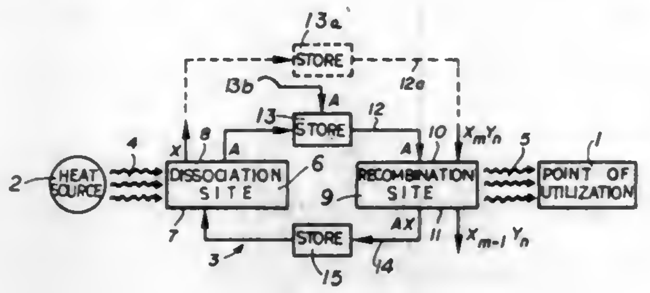
Jean-Jacques Derouette, Onex; Jacques Dartoy, Grand-Lancy, both of Switzerland; Jacques Fournier, Sciez, France, and Bernard Vollerin, Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland and Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Aug. 12, 1977, Ser. No. 824,308

Claims priority, application Switzerland, Aug. 13, 1976, 10312/76

Int. Cl.^{2} F28D *15/00*

U.S. Cl. 165—1 **20 Claims**



1. A process for the recovery of a constituent present in oxidized form in a compound which is available at a reaction site and is endothermally reducible in a predetermined temperature range, comprising the steps of:

(a) endothermally reducing at another location an oxidized reactant with the aid of thermal energy from a source not readily available at the reaction site, the reduction of said reactant proceeding in an elevated temperature range higher than said predetermined range, with release of the liberated oxygen;

(b) transferring the reduced reactant from said location to said reaction site;

(c) interacting said reactant at said reaction site with said compound for exothermally reoxidizing said reactant, the heat generated by the exothermic reaction being at least partly utilized to reduce said constituent;

(d) retransferring the reoxidized reactant to said location; and

(e) repeating steps (a) through (d).

14. A process for producing a synthesis gas, comprising the steps of:

(a) endothermally dissociating at a first location a metal carbonate, with the aid of thermal energy from an external source, into a metal oxide and carbon dioxide;

(b) transferring said metal oxide to a second location;

(c) exothermally recombining said metal oxide at said location with carbon dioxide to reconstitute said metal carbonate;

(d) endothermally decomposing an organic substance in contact with said metal oxide at said second location, with the heat generated by the reaction of step (c), into several constituents including methane, hydrogen and carbon monoxide;

(e) retransferring the reconstituted metal carbonate to said first location; and

(f) repeating steps (a) through (e).

4,192,372

ADJUSTABLE LEVER FOR FIRE DETECTION SYSTEM

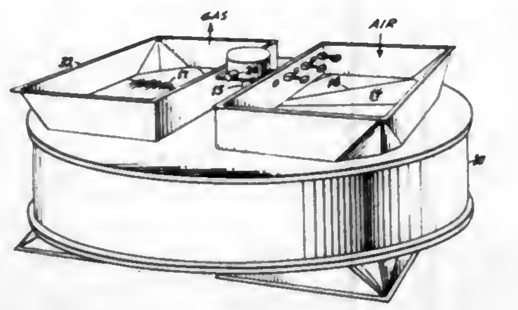
Kenneth O. Bellows, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Aug. 3, 1978, Ser. No. 930,461

Int. Cl.^{2} F28D *19/00;* F28G *15/00*

U.S. Cl. 165—5 **5 Claims**

1. Rotary regenerative heat exchange apparatus having a housing with inlet and outlet ports for a heating fluid and a fluid to be heated, a matrix of heat absorbent material carried in said housing, means for alternately subjecting said matrix to the heating fluid and to the fluid to be heated, a series of infra-red ray detecting heads arranged to view a portion of the matrix, a series of openings in said housing adapted to simultaneously receive each infra-red ray detecting head, a series of air locks each comprising an open ended enclosure having an open end thereof confronting each opening of the housing, a first lever arm carrying each detecting head, gear means pivoted upon said housing adapted to arcuately move each lever arm from a position within said housing where it faces the matrix of heat absorbent material to a position where it is seated upon an open end of the enclosure that comprises the air lock, a second lever operatively connected to said gear means, a prime mover for reciprocating the second lever, and means for varying the lateral movement of the second lever to permit each infra-red detecting head to simultaneously seat on an open side of said enclosure.



4,192,373

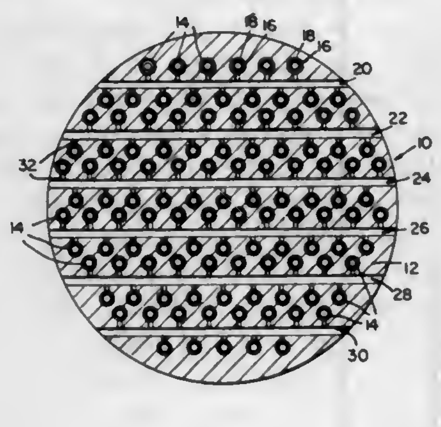
LEAK DETECTION SYSTEM FOR DUPLEX TUBE HEAT EXCHANGERS

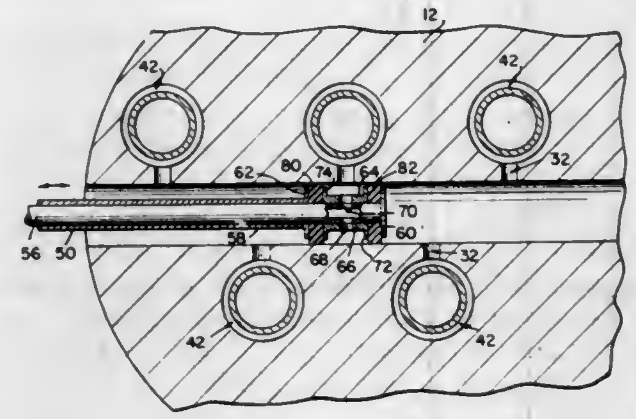
Walter Wolowodiuk, New Providence, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Oct. 31, 1977, Ser. No. 847,335

Int. Cl.^{2} F24H *9/16;* G01M *3/04*

U.S. Cl. 165—70 **7 Claims**





1. In a heat exchanger in which a fluid is passed through a plurality of heat exchange tubes to place said fluid in indirect heat exchange with another fluid:

a plurality of heat exchange tubes, each having an inner wall and a coaxial outer wall encircling and engaging against said inner wall, said inner wall extending axially farther than said outer wall at one end of said heat exchange tubes,

a tube sheet connected to each of said heat exchange tubes at said one end of said tubes, and having a plurality of annular spaces, each encircling one of said heat exchange tubes between the ends of said inner wall and said outer wall apparent to said one end of said heat exchange tubes, said tube sheet having a plurality of bores extending laterally of said tube sheet, each of said bores communicating with a portion of said annular spaces;

a probe comprising:

- a pipe,
- a sleeve encircling said pipe,
- a first flange at one end of said pipe,
- a second flange at the end of said sleeve closest to said one end of said pipe,
- a ring encircling said pipe and positioned between said first flange and said second flange, said ring having holes substantially aligned with holes in said pipe,
- a first deformable seal between said first flange and said ring,
- a second deformable seal between said ring and said second flange,

wherein said probe can be moved axially along one of said bores so that one of said annular spaces communicates with the space between said seals, and said pipe and said sleeve can be manipulated so that said first flange is moved toward said second flange to compress said first deformable seal between said first flange and said ring, and to compress said second deformable seal between said second flange and said ring, whereby if the heat exchange tube associated with said annular space is leaking, the leaking fluid will flow into said annular collection chamber, through said holes in said ring and said pipe and along said pipe to a location lateral of said tube sheet.

4,192,374

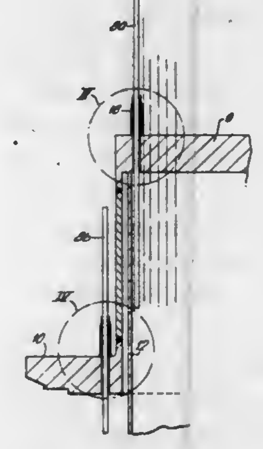
HEAT EXCHANGERS

Owen Hayden, Harwood; George E. Sheward, St. Annes; Derek T. Ormrod, Fulwood; Christopher R. Willby, Lymm, and George F. Firth, Croft, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 4, 1977, Ser. No. 765,745

Int. Cl.^{2} F28F *9/04*

U.S. Cl. 165—158 **12 Claims**



1. A heat exchanger comprising a shell adapted for conducting liquid metal and a bundle of heat exchange tubes within the shell for conducting water or steam, the shell having at least one tube sheet for passage of the tubes, each heat exchange tube extending through an individual aperture in the tube sheet with clearance between the tube and the tube sheet, the tube being sealed to the tube sheet by a sleeve upstanding from a face of the tube sheet and sealed at its free end to the outer wall surface of the tube, the tube and sleeve being bonded together by an interposed bonding metal to effect the seal, the bonding metal being of a kind not requiring, for the making of the bond, any recourse to temperature as high as would be required for the making of the joint by fusion welding.

12. A method of constructing a heat exchanger comprising an elongate vessel having inlet and outlet ports for liquid metal and housing a demountable heat exchange tube assembly, wherein the heat exchange tube assembly comprises:

- a flanged extension forming a closure for the vessel,
- a bundle of U-shaped heat exchange tubes having legs of unequal lengths suspended from the extension,
- an annular shroud arranged co-axially with the lengthwise axis of the bundle and enveloping the bundle of 'U'-tubes,
- a cylindrical baffle suspended from the extension and defining inner and outer annular chambers in the shroud, and
- means for laterally supporting the 'U'-tubes from the baffle, the limbs of the 'U'-tubes extending parallel with the longitudinal axis of the vessel, a longer limb of each tube extending along the inner chamber of the shroud to penetrate an end wall of the extension which thereby forms a first tube sheet of the heat exchanger, and a shorter limb of each tube extending along the outer chamber of the shroud to penetrate the flange of the extension which thereby forms a second tube sheet of the heat exchanger, each leg of each tube penetrating a complementary tube sheet through an individual aperture with a clearance between the tube and the tube sheet, the tube being sealed to the tube sheet by a sleeve upstanding from a face of the tube sheet and sealed at its free end to the outer wall surface of the tube, the tube and sleeve being brazed together to effect a seal, the method including the steps of brazing each tube and sleeve combination individually using radio frequency electric induction heating means with an inert gas atmosphere enveloping the joint being brazed.

4,192,375

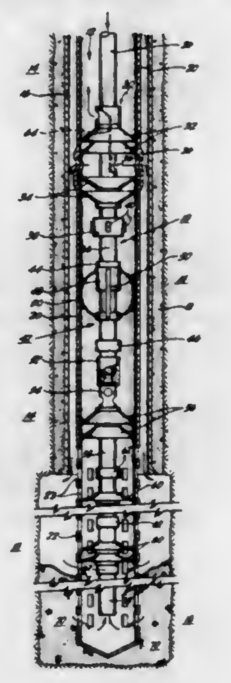
GRAVEL-PACKING TOOL ASSEMBLY

George P. Maly, Newport Beach, and Archibald M. Laurie, Santa Barbara, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Dec. 11, 1978, Ser. No. 968,483

Int. Cl.^{2} E21B *43/04*

U.S. Cl. 166—51 **5 Claims**



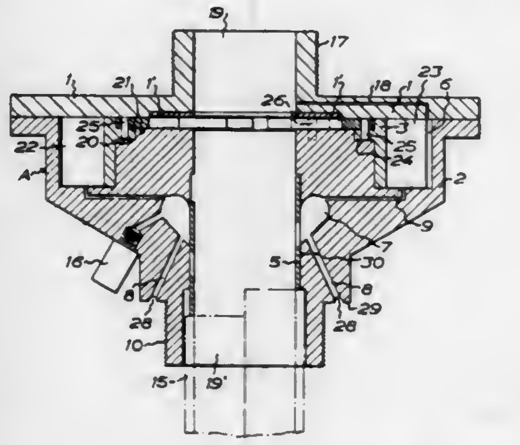
1. A tool assembly adapted for placement in a well for the purpose of forming a bed of granular material in a void space exterior to a perforate liner having substantially the same internal diameter as a casing string extending from said liner substantially to the earth surface, said tool assembly comprising:

crossover means adapted for connection with a tubing string and for placement in said well in sealable engagement with the interior of said casing string to thereby separate the

interior of said casing string and said liner into an upper section above said crossover means and a lower section below said crossover means, and adapted to provide fluid communication through a first passageway from the interior of said tubing string via a gravel port in said casing string to said void space and through a second passageway from the interior of a pipe extending from said crossover means into said lower section to a first annular space which surrounds said tubing string in said upper section;
check valve means adapted to allow fluid flow upwardly through said second passageway and to prohibit fluid flow downwardly through said second passageway;
bypass means coupled to and interposed between said pipe and said check valve means and adapted to selectively allow drainage of fluid from said first annular space downwardly through said second passageway and the interior of said pipe via said bypass means to a second annular space which surrounds said check valve means;
a pipe nipple coupled to said check valve means and having one or more apertures which allow fluid communication between said second annular space and the interior of said pipe nipple;
one or more annular swab cups attached to the portion of said pipe nipple below said apertures and adapted for sealable engagement with the interior of said casing string to thereby substantially prohibit fluid flow upwardly past said swab cups through the space between said pipe nipple and said casing string, said nipple and said swab cups being positioned in said tool assembly such that, upon placement of said tool assembly in said well, the apertures of said pipe nipple and said swab cups are adjacent a blank portion of said casing string spaced above the apertures of said perforate liner; and
a baffled stinger pipe coupled to the bottom of said pipe nipple and having a plurality of annular yieldable baffles mounted at spaced intervals along said stinger pipe, each of said baffles being adapted to offer substantial resistance to fluid flowing in said casing string or said perforate liner past said baffles.

4,192,376
SHUTTING-OFF DEVICE

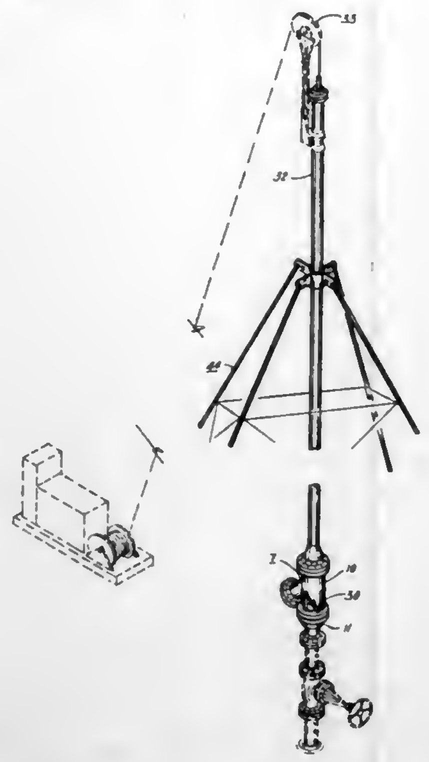
Per O. Lissmyr, Box 132, S-792 01 Mora, Sweden
Filed Jun. 13, 1978, Ser. No. 915,336
Claims priority, application Sweden, Jun. 17, 1977, 7707065
Int. Cl.^{2} E21B ***35/00***
U.S. Cl. 166—53 **8 Claims**



1. A device adapted to be fitted on a pipe end as an emergency device for shutting off fluid flowing out through the pipe under pressure, especially intended for use in drilling or extraction plants for oil, said device comprising two interconnected units provided with a throughpassage, including means on one end of said interconnected units for guiding the device into position over the effluent fluid jet to permit pulling the device onto the pipe end, a means in one of said interconnected units which senses the device as it achieves engagement with the pipe end and is adapted to branch off fluid from the jet at that moment, clamping means in one of said interconnected units for retaining the device to the pipe end, valve means in one of said interconnected units for closing the throughpassage, and cylinder-piston means actuated by branched-off pressure fluid of said sensing means to act on said clamping means and said valve means.

4,192,377
BOTTOM VALVE TRIPPING AND LIQUID CHANNELING DEVICE FOR AN AUTOMATED BAILER OF SHALLOW WELLS

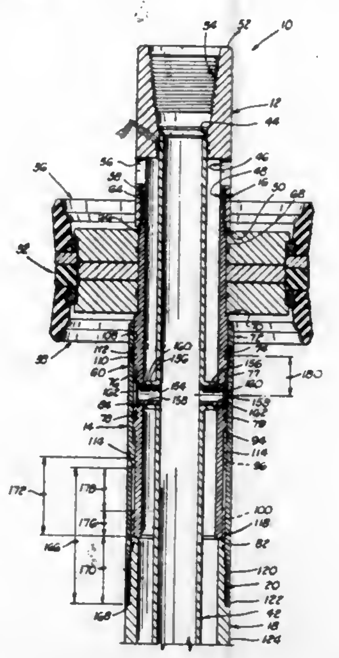
Robert P. Defourneaux, Jr., 800 Morse La., River Ridge, La. 70123
Filed Oct. 30, 1978, Ser. No. 955,844
Int. Cl.^{2} E21B ***33/03***
U.S. Cl. 166—70 **1 Claim**



1. In an automated bailer having a pipe bailer with a bottom valve and attached stinger, a bottom valve tripping and liquid channeling device comprising:
(a) a cylindrical body means mounted on the top of a shallow well production casing and defining a longitudinal passage for said pipe bailer in and out of said well and a side exit for the discharge of bailed liquid;
(b) a channeled member pivotally mounted in the longitudinal passage of said cylindrical body and below said side exit, and adapted to pivot upward from a depending vertical position adjacent periphery of said passage to a transverse position lifting said stinger to trip said bottom valve for discharging the bailed liquid in said pipe bailer above said channeled member, said channeled member defining a blind recess for receiving and thereby stabilizing said stinger against displacement by the flow of bailed liquid and adapted to extend diametrically across said longitudinal passage;
(c) a pair of spherical segments respectively fixed to opposite sides of said channeled member to extend radially outward for substantially closing said longitudinal passage when said channeled member is in its transverse position; and
(d) power actuated mechanical means for pivoting said channeled member and attached spherical segments between said vertical position clear of the passing pipe bailer and its transverse position substantially closing said passage for catching and channeling the flow of discharged liquid of said pipe bailer to and through said side exit.

4,192,378
PORT VALVE ISOLATION PACKER

Eugene E. Baker, and Ernest E. Carter, Jr., both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Sep. 13, 1978, Ser. No. 941,753
Int. Cl.^{2} E21B ***33/122;*** **F16L** ***35/00***
U.S. Cl. 166—186 **17 Claims**



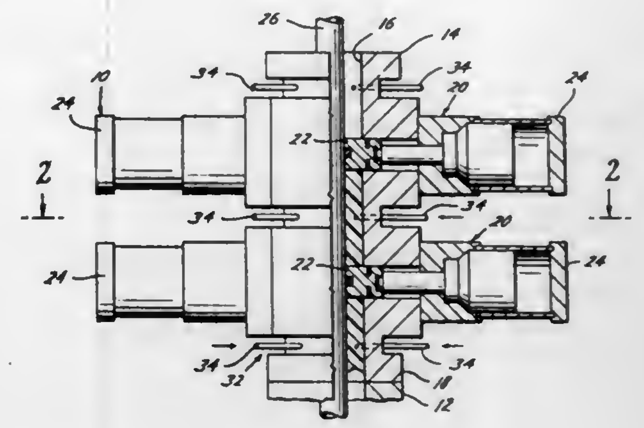
4. An isolation packer, comprising:
a tubular body;
an upper packer assembly, attached to said body;
a lower packer assembly, attached to said body;
a port, located between said upper and lower packer assemblies, communicating an inner cavity of said tubular body with an outer surface of said tubular body;
wherein said tubular body includes a slip joint port valve means, connected between said upper and lower packer assemblies, said valve means being moveable between a first position closing said port when a compressive axial force is applied across said tubular body, and a second position opening said port when a tensile axial force is applied across said tubular body, said valve means including:
  a slip joint mandrel having said port disposed radially therethrough, said mandrel including an inverted J-shaped groove, having a long leg groove segment and a short leg groove segment with a connecting groove segment joining an upper end of said long and short leg segments and with a lower end of said long leg segment communicating with a bottom end surface of said slip joint mandrel; and
  a slip joint sleeve slidingly engaging said slip joint mandrel, said sleeve including a radial bore disposed therethrough for alignment with said port when said valve is in said second open position, and including a lug constructed for insertion into the lower end of said long leg groove segment and for movement through said long leg segment and said connecting segment into said short leg segment, wherein said isolation packer further comprises;
  a means for retaining said lug in said short leg groove segment, so that said lug remains in said short leg groove segment and reciprocates therein when said valve means is moved between said first and second positions.

4,192,379
BLOWOUT PREVENTER AND METHOD OF INSURING PREVENTION OF FLUID LEAKS OUT OF A WELLHEAD

Alvin B. Kennedy, Jr., P.O. Box 897, Alvin, Tex. 77511
Continuation-in-part of Ser. No. 854,193, Nov. 23, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 917,916
Int. Cl.^{2} E21B ***33/06***
U.S. Cl. 166—250 **29 Claims**

2. A method of insuring the prevention of fluid leaks out of a well, comprising the steps of:
installing a blowout preventer at the wellhead, said blowout preventer having a body with a bore for communicating with the bore hole of a well, clamping means mounted with the body for keeping the fluid pressure within the bore hole, sealant directing means at the wellhead for directing sealant into the bore below the clamping means and sealant passage means in said body with outlets below and above said clamping means;
sensing the occurrence of a blowout in the well;
closing the clamping means in response to the sensed occurrence to seal the fluid pressure within the well; and
injecting a sealant through the sealant directing means into the bore so that the sealant will be carried to the closed clamping means by any fluids leaking past the closed clamping means, a seal being formed by such sealant at said clamping means to insure that fluids do not leak out of the well.

13. A blowout preventer used at a wellhead, comprising:
a body with a bore therethrough; means mounted with said body for coupling said body to the wellhead with the bore in communication with a borehole;
clamping means mounted with said body for clamping against pipe extending through said bore and controlling the passage of fluids through the bore by moving from an opened position where said clamping means is retracted to a closed position where said clamping means is in clamping and sealing engagement with said pipe;



means mounted with said body for directing sealant into the bore above the wellhead and below said clamping means, a sealant injected through said directing means is carried by fluid flowing up the bore to the clamping means and enhances the seal of said clamping means when the clamping means are closed and thereby insures that fluid does not leak past the closed clamping means.

18. A wellhead assembly for insuring the prevention of leaks out of a well, comprising:
a blowout preventer for sealing the fluid pressure within a borehole of the well, said preventer including a body with a bore in communication with the borehole and clamping means mounted with the body for sealing the fluid pressure within the borehole when a blowout is sensed; and
means mounted in said body beneath said clamping means of said blowout preventer for directing sealant into the bore of said blowout preventer below said clamping means when the clamping means move to a closed position to seal the fluid pressure within the borehole, the sealant being carried by leaking fluids up to the bore to the closed clamping means and cooperating with said clamping means to enhance the seal of said clamping means to insure that the fluids do not leak out of the well.

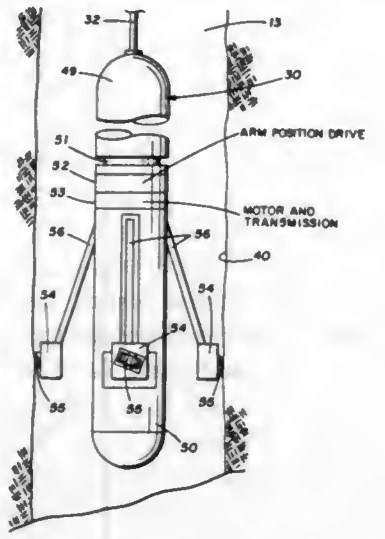
4,192,380
METHOD AND APPARATUS FOR LOGGING INCLINED EARTH BOREHOLES

John R. E. Smith, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 2, 1978, Ser. No. 947,680

Int. Cl.^{2} E21B *47/00*

U.S. Cl. 166—250 **11 Claims**



1. A method of logging formations surrounding an earth boreholes, comprising the steps of:

causing a well logging instrument to traverse an earth borehole by gravitational force;

detecting stoppage of said instrument within said borehole;

implanting an auger-like movement to said instrument in response to detection of said stoppage to facilitate movement of said instrument through said borehole.

3. Well logging apparatus for traversing earth borehole, comprising:

an elongated logging instrument adapted to traverse said earth borehole;

a plurality of pad members coupled to said elongated instrument;

at least one wheel means housed within, and extending beyond each of said pad members;

means for extending said wheel means within said pad members into contact with the formations surrounding said earth borehole; and

activatable means within said logging instrument for facilitating movement of said logging instrument through said inclined portions of said borehole.

4,192,381
IN SITU RETORTING WITH HIGH TEMPERATURE OXYGEN SUPPLYING GAS

Chang Y. Cha, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

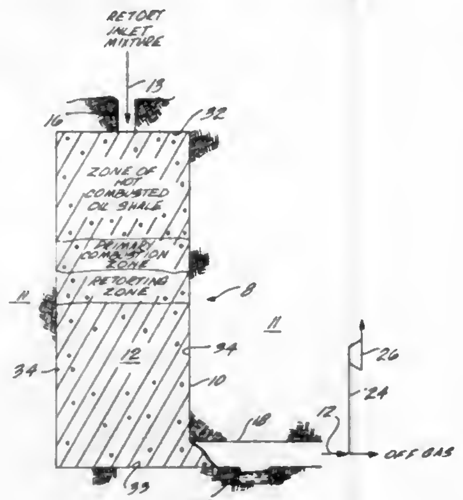
Continuation of Ser. No. 815,255, Jul. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 796,696, May 13, 1977, Pat. No. 4,089,375, which is a continuation-in-part of Ser. No. 615,558, Sep. 22, 1975, Pat. No. 4,036,299, which is a continuation-in-part of Ser. No. 492,289, Jul. 26, 1974, abandoned. This application Nov. 28, 1978, Ser. No. 964,146

Int. Cl.^{2} E21B *43/24*

U.S. Cl. 166—261 **29 Claims**

1. In a method for retorting oil shale in an in situ oil shale retort having boundaries of unfragmented formation, the retort containing a fragmented permeable mass of particles containing oil shale and having a combustion zone advancing therethrough and having a retorting zone on the advancing side of the combustion zone, where a retort inlet mixture comprising oxygen is introduced into the retort on the trailing side of the combustion zone and liquid and gaseous products are produced in the retorting zone, the improvement comprising:

introducing the retort inlet mixture at a temperature of at least about 1150° F. such that at least a portion of the fragmented mass on the trailing side of the combustion zone is maintained at a temperature of at least about 1150° F.



4,192,382
HIGH CONFORMANCE ENHANCED OIL RECOVERY PROCESS

Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 863,503, Dec. 22, 1977. This application Aug. 25, 1978, Ser. No. 936,651

Int. Cl.^{2} E21B *33/138, 43/22*

U.S. Cl. 166—269 **23 Claims**

1. A method of recovering petroleum from a subterranean, petroleum-containing formation, said formation containing water having a salinity of from 5000 to 240,000 parts per million total dissolved solids, said formation containing at least two distince petroleum-containing strata, the permeability of at least one stratum being at least 50 percent greater than the permeability of the other stratum, said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with substantially all of the strata of said formation, comprising

(a) injecting a first aqueous surfactant-containing oil-displacing fluid into the formation via the injection well, said fluid passing through at least one of the more permeable strata of said formation and displacing oil therein toward the production well, from which it is recovered to the surface of the earth;

(b) after said first aqueous oil displacing fluid has passed through at least one of said more permeable strata to the production well, discontinuing injected said fluid and injecting an amount of petroleum into the formation sufficient to raise the average oil saturation in the portion of the more permeable strata of the formation being treated to at least ten percent;

(c) injecting water or brine to displace petroleum injected in step (b) away from the injection well and distribute it in the portion of the strata to be treated;

(d) injecting an aqueous treating liquid whose viscosity is no more than twice the viscosity of water, said liquid containing at least one surfactant which is capable of producing a stable viscous oil-in-water emulsion with the petroleum present in the zone being treated at formation temperature and at a salinity about equal to the salinity of the formation water;

(e) thereafter injecting a second surfactant-containing, oil-displacing fluid into the formation to pass through and displace petroleum from at least one strata of the formation not depleted in step (a), and recovering oil from the formation via the production well.

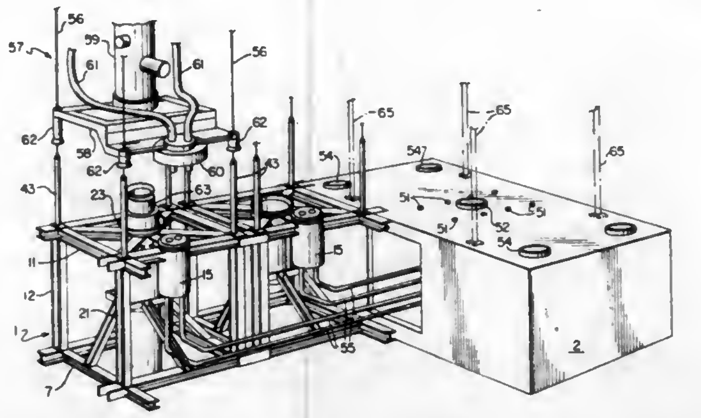
4,192,383
OFFSHORE MULTIPLE WELL DRILLING AND PRODUCTION APPARATUS

Kerry G. Kirkland, Houston, and Anthony J. Masciopinto, Humble, both of Tex., assignors to Armco Inc., Middletown, Ohio

Filed May 2, 1978, Ser. No. 902,255

Int. Cl.^{2} E21B *43/01;* **B01D** *19/00*

U.S. Cl. 166—341 **7 Claims**



1. In an underwater apparatus for use in drilling, completing and producing a plurality of wells, the combination of at least one drilling and production template module comprising

a rigid frame adapted to be installed on the floor of a body of water before the wells are drilled,

two sets of guide posts rigidly mounted on the frame in two horizontally spaced locations and extending upwardly therefrom to cooperate with guide means extending upwardly to an operational base at the surface of the body of water,

two upright tubular well-locating and casing-support devices mounted on said frame each in a predetermined location with respect to a different one of said sets of guide posts, and

two flowline connector bodies mounted on said frame, one of said flowline connector bodies occupying a first location near and spaced laterally from one of said locating and support devices, the other of said flowline connector bodies occupying a second location near and spaced laterally from the other of said locating and support devices;

a riser module rigidly secured to the frame of said at least one drilling and production module for installation therewith and comprising

a plurality of upwardly exposed riser flowline connector hubs, and

a set of guide posts fixed on the riser base module in predetermined positions relative to the riser flowline connector hubs to cooperate with guide means extending upwardly to the operational base at the surface of the body of water; and

conduit means communicating between respective ones of the flowline connector bodies of the drilling and production template and the riser flowline connector hubs.

4,192,384
SUBSEA PRODUCTION CHAMBER

David G. Croy, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 21, 1978, Ser. No. 899,000

Int. Cl.^{2} E21B *7/12*

U.S. Cl. 166—356 **10 Claims**

1. A subsea production chamber for location on the guide posts of a conventional subsea wellhead guide frame comprising

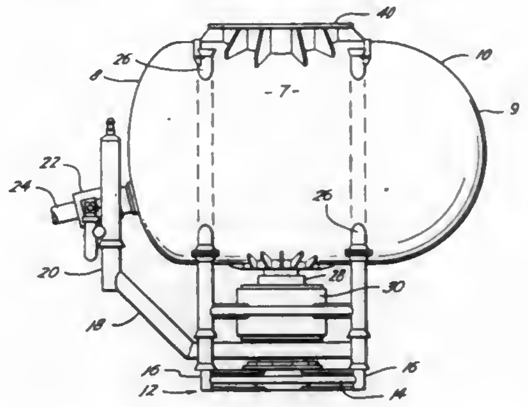
a vessel capable of withstanding external hydrostatic pressure,

a plurality of tubular reinforcing members secured vertically through said vessel, said tubular members being arranged to be received over the posts of a conventional guide frame,

means for connecting said vessel to a producing well,

means for connecting said well to production flowlines, and

a hatch connected through said vessel to provide access to the interior of said vessel.



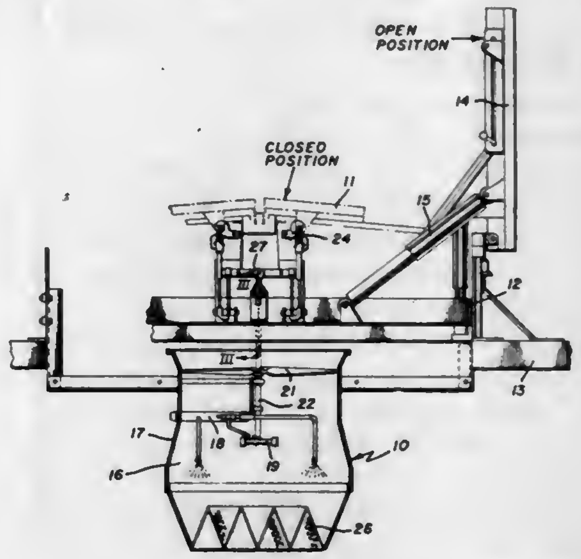
4,192,385
FIRE FIGHTING APPARATUS

Leo P. Pierce, Shrewsbury, Mass., assignor to Feecon Corporation, Westboro, Mass.

Filed Sep. 25, 1978, Ser. No. 945,539

Int. Cl.^{2} A62C *37/00*

U.S. Cl. 169—56 **9 Claims**



1. Fire fighting apparatus, comprising:

(a) an air vent consisting of a frame adapted to be mounted on the roof of a building and of a spring-loaded door hingedly mounted on the frame for movement from a closed position to an open position,

(b) a foam generator comprising a housing mounted on the frame and carrying a manifold adapted to receive fluid and a spindle rotatably carried in the housing, the spindle carrying a turbine wheel for rotation by the fluid and a fan for forming a flow of air to mix with the fluid to form foam, the spindle having a threaded portion,

(c) a latch retaining the door in the closed position, and

(d) a locking element that is engaged by the threaded portion of the spindle and is moved when the spindle rotates to actuate the latch and release the door, so that it moves from closed position to open position said spindle being rotated when a sensor starts the foam generator in the presence of a fire.

4,192,386

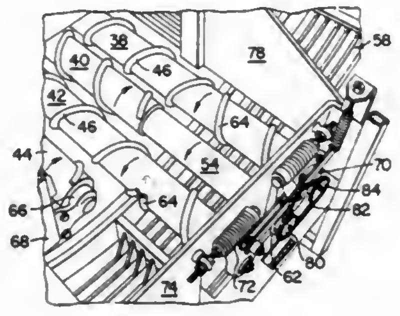
MATERIAL CONVEYOR

Virgil D. Haverdink, and Henry J. Landry, Jr., both of Ankeny, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 29, 1978, Ser. No. 947,182

Int. Cl.^{2} A01D *17/16*

U.S. Cl. 171—58 **7 Claims**



1. In a root crop harvester having a mobile frame; a root-digging means carried by the frame, an elevating means carried by the frame, and an improved conveyor means carried by the frame for receiving roots lifted by the digging means and conveying said roots towards the elevating means comprising: a pair of elongated roll means rotatable about longitudinal axes and disposed to form a root-conveying trough therebetween, one roll means including a conveying section and a discharge section, said sections mounted for rotation in opposite directions; and means for rotating the conveying section and the other roll means in opposing directions and the discharge section in the same direction as said other roll means.

4,192,387

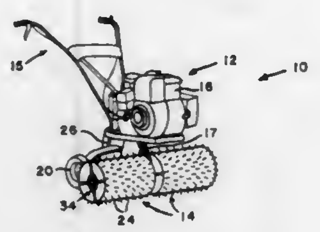
CYLINDRICAL DRUM TILLER ATTACHMENT

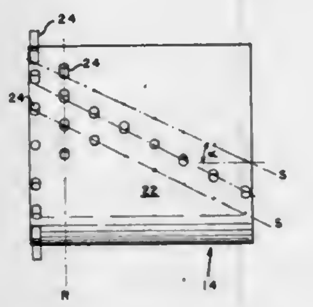
Theodore W. Stinson, 615 Fairdale Ave., Bowling Green, Ky. 42101

Filed Nov. 7, 1977, Ser. No. 849,358

Int. Cl.^{2} A01B *45/02, 33/02;* **B62D** *51/04*

U.S. Cl. 172—21 **6 Claims**





1. An attachment for a tiller controlled by an operator walking behind the tiller and comprising a horizontally disposed shaft, power means for rotating the shaft, handle means for engagement by the operator, and wheels disposed between the shaft and handle means, for supporting the tiller, said attachment comprising

a cylindrical drum having a tubular shell defining an exterior curved surface, and having a tubular sleeve disposed interiorly of and radially spaced from said tubular shell and concentric therewith, said sleeve having an interior surface adapted for engagement with the outside surface of said shaft;

detachable means for passing through said sleeve and said shaft for affixing said sleeve to said shaft for transferring rotation of said shaft to rotation of said sleeve,

means extending between said sleeve and said tubular shell for attaching said sleeve to said shell so that rotation of said sleeve effects coincident rotation of said shell while allowing access to said detachable means from a point exterior of said drum,

a plurality of substantially cylindrical teeth extending substantially linearly radially outwardly from the exterior curved surface of said drum, and

means for mounting said teeth in circumferential rows, at least three teeth in each circumferential row, so that they project radially outwardly from the curved exterior surface and are disposed in a plurality of spiral courses, all teeth in each circumferential row being disposed in a plane perpendicular to said tubular sleeve with each of said cylindrical teeth having a diameter of about one-third the distance that it extends radially outwardly from the exterior surface of said drum and the center of each of said teeth being spaced approximately four times its diameter from the teeth adjacent thereto.

4,192,388

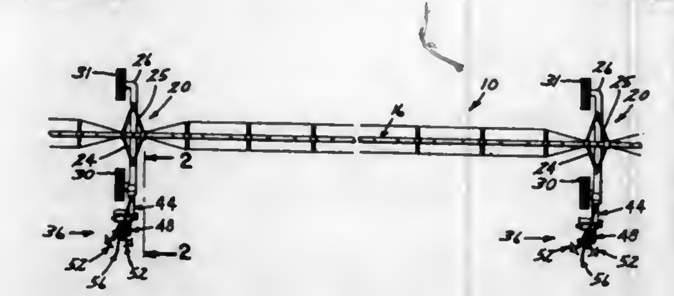
WHEEL RUT CLOSING DEVICE FOR IRRIGATION SYSTEM

Larry W. Goebel, Lebanon, S. Dak., assignor to Ray Goebel & Sons, Inc., Lebanon, S. Dak.

Filed Mar. 8, 1978, Ser. No. 884,685

Int. Cl.^{2} A01B *63/04, 37/00*

U.S. Cl. 172—463 **4 Claims**



2. In an irrigation system having an irrigation line support, said support having a horizontal bottom beam and a wheel rotatably mounted along side the rearward end of said beam, a wheel rut closing device comprising:

an implement support frame fixedly mounted at said rearward end of said beam, said frame having a rearwardly extending bottom bar, said bottom bar having fixedly attached at its rearward end a mounting bracket extending transversely behind said wheel, said frame further including a rearwardly extending top bar fixedly positioned above said bottom bar;

a rearwardly trailing implement holder, said holder being pivotally connected to said mounting bracket for pivotal movement about a generally horizontal longitudinal axis transverse to said bottom bar, said holder having a pair of generally rearwardly extending horizontally spaced arms;

a pair of circular discs for closing a rut created by said wheel, each of said discs being rotatably mounted on the rearward end of one of said arms for rotation about a longitudinal axis, so that said pair of discs are rearwardly converging and transversely spaced, whereby to force the edges of said rut toward the center thereof;

and means for varying the pivotal relation between said implement holder and said mounting bracket to vary the height of said discs relative to said beam.

4,192,389

SINGLE IMPACT RIVET GUN

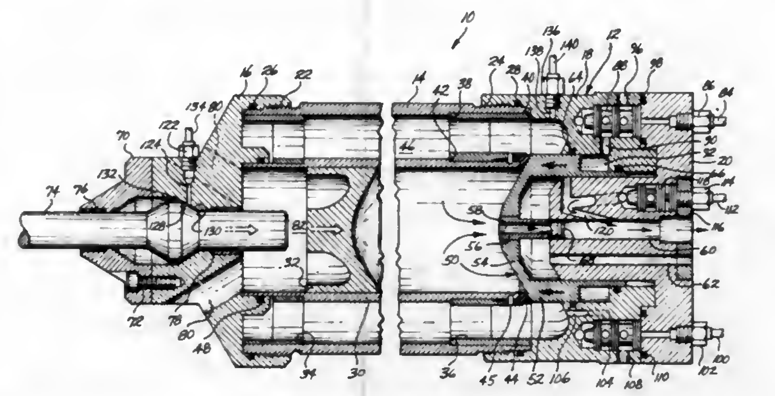
Rune E. B. Raman, Bellevue, Wash., assignor to Boeing Commercial Airplane Company, Seattle, Wash.

Filed Aug. 2, 1978, Ser. No. 930,456

Int. Cl.^{2} B23Q *5/00;* **E21C** *5/00*

U.S. Cl. 173—15 **8 Claims**

1. In an improved single impact rivet gun having, a cylinder, a piston movably mounted in the cylinder, and a pneumatic accumulator to supply air pressure to force the piston against an anvil located in the working end of the cylinder and thereby form a rivet wherein the improvement comprises: the gun having openings through the working end to continually expose the working side of the piston to the atmosphere, a valve to control flow of air from the accumulator to the cylinder and with said valve located to be abutted by the back side of the piston when the piston is in a starting position, the gun having a permanent opening extending through the valve into the cylinder to continuously communicate between the back side of the piston and the atmosphere, means for introducing air in an outward direction through the opening to create a vacuum to pull the piston into a starting position, and means for actuating the valve to introduce air from the accumulator into the cylinder to drive the piston against the anvil and set a rivet.



4,192,390

POWER TOOL

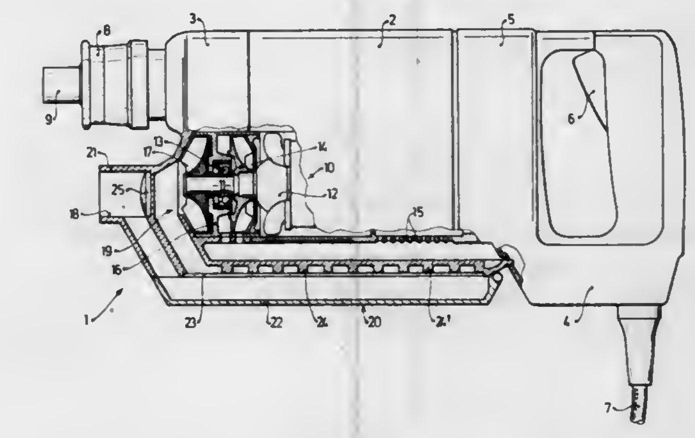
Karl Wanner, Echterdingen, and Wilbert Reibetanz, Leinfelden, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 2, 1978, Ser. No. 874,510

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705388

Int. Cl.^{2} B25D *17/14*

U.S. Cl. 173—75 **17 Claims**



1. In a power tool, which is of the type including a motor that drives a tool element of the power tool to remove particulate material from a structure and that has an output shaft, and which may be used in conjunction with an arrangement, particularly a separate arrangement that is assemblable with the power tool, that confines the removed particulate material in a confining space around the tool element, in a combination comprising a blower mounted on the output shaft of the motor for joint rotation therewith; conduit means for guiding a stream of air from the confining space to and beyond said blower, said conduit means including an elongated inlet section which has a central axis and in which a free end of the output shaft is located; means interposed in said conduit means and operative for collecting the particulate material which is entrained in said stream of air in the confining space and carried thereby through said conduit means; and intercepting means arranged in said conduit means upstream of said blower and operative for depriving the entrained particulate material at least of the greater part of the total kinetic energy possessed thereby, said intercepting means including an impact member extending radially outwardly of and substantially normal to said central axis of said inlet section, said impact member being mounted on the free end of the output shaft.

4,192,391

PISTON FOR A HAMMER DRILL HAVING A SEPARABLE PART

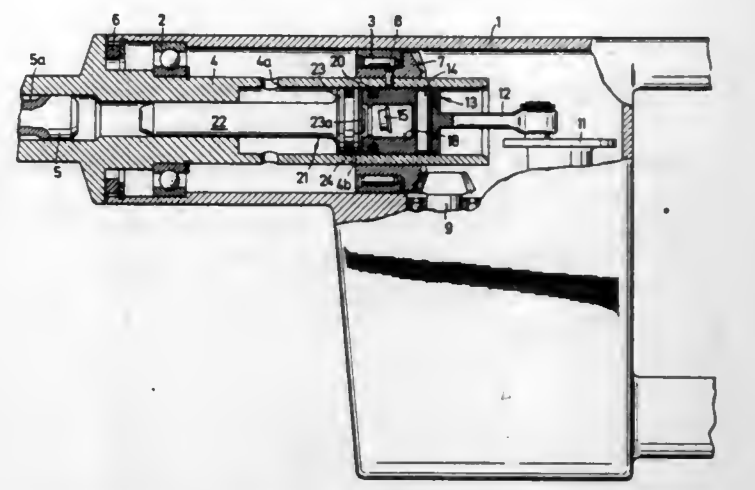
Gerhard Kastreuz, Tosters, Austria, and Volker Waschk, Munich, Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jun. 6, 1978, Ser. No. 912,981

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729596

Int. Cl.^{2} B25D *9/00*

U.S. Cl. 173—116 **13 Claims**



1. Hammer drill comprising a sleeve forming an axially extending bore having a front end and rear end, a first piston located within said bore, means connected to said first piston for reciprocating said first piston in the axial direction of the bore, a second piston located within said bore between the front end thereof and said first piston, and said first and second pistons disposed in axially spaced relation forming in combination with the said bore an air cushion therebetween, said first piston comprises walls forming a hollow cylinder having the axis thereof disposed in parallel relation with the axis of said bore, said hollow cylinder having a front end closer to said second piston and a rear end closer to the rear end of said bore, said walls include a headpiece extending across the front end of said hollow cylinder for forming an airtight closure for the hollow chamber so that the air cushion in the bore is sealed from the hollow cylinder, wherein the improvement comprises that said headpiece includes a separable part, and a predetermined breaking line formed in one of said walls and said headpiece so that said separable part separates from the remainder of said first piston when said second piston strikes against said headpiece for forming an opening between said hollow cylinder and the air cushion in the interior of said sleeve.

4,192,392

RECOVERY OF DRILLING FLUIDS

Jean-Paul Messines, Pau; Gaston Labat, Billere, and Bernard Tramier, Pau, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Feb. 21, 1978, Ser. No. 879,225

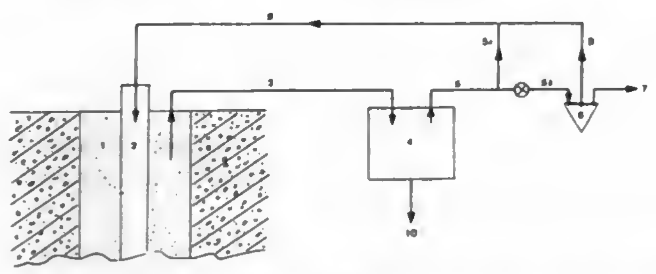
Claims priority, application France, Feb. 24, 1977, 77 05367

Int. Cl.^{2} C09K *7/00;* **E21B** *21/00, 41/00*

U.S. Cl. 175—66 **8 Claims**

1. A process for the recovery of drilling fluid by separating the solids contained in the mud leaving the drilling well, in which the initial fluid used has a density D, the separation of the solids gives a mud of density D' which mud still contains particles of a size less than about 100 microns, a part of this

latter mud being subjected to centrifugation, the centrifugation being so controlled that said centripetal effluent has a density D_c the value of which is comprised between D and D+0.5 (D′−D) mixing the centripetal effluent with the remainder of

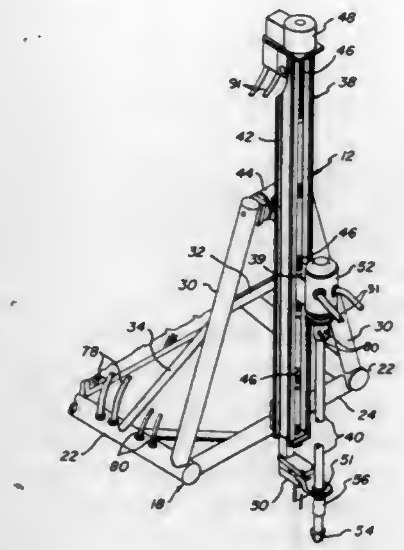


the mud D′, whereby a lighter mud is formed the density D″ of which is comprised between that of the initial fluid (D) and that of the remaining mud (D′) and recycling said lighter mud to the drilling well.

4,192,393
HELICOPTER PORTABLE EARTH DRILLING APPARATUS

D. Gene Womack, Littleton, and Charles G. Hignight, Westminster, both of Colo., assignors to Georex Industries, Inc., Westminster, Colo.

Filed Aug. 15, 1978, Ser. No. 933,807
Int. Cl.² E21B *1/08, 5/00*
U.S. Cl. 175—103 **1 Claim**



1. An air portable earth drilling apparatus comprising in combination,

a first module weighing less than 1300 lbs including a base frame having hollow tubular frame members adapted to store compressed air, and a drill rig secured to said base frame, said drill rig including a vertically oriented mast having a threaded rod extending along its length and motor means for reversibly rotating said threaded rod, a drill stem made of hollow tubing, second motor means operably connected to said threaded rod and drill stem so as to be movable vertically along said threaded rod while selectively imparting rotational movement to said drill stem, percussive type motor means connected to the lower end of said drill stem, and a drill bit operatively connected to the percussive type motor means,

a second module weighing less than 1300 lbs including a framework, compressor means and a cooling system for cooling the compressor means,

a third module weighing less than 1300 lbs including an internal combustion engine,

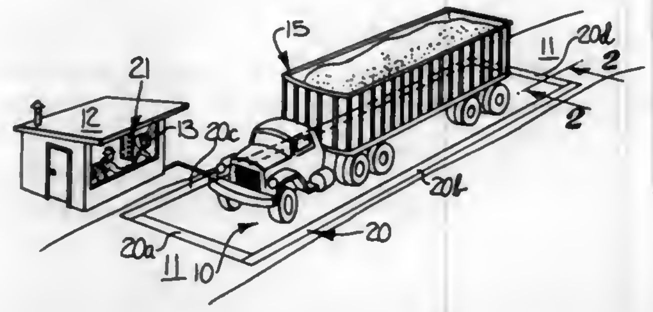
connection means for operably interconnecting the engine with the compressor means and the compressor means with said hollow frame members and percussive type motor means, and

a hydraulic system on said third module, and means operably interconnecting the hydraulic system with said first mentioned and second motor means.

4,192,394
ALARM SYSTEM FOR PLATFORM SCALE

Cullie M. Simpson, Rte. 3, Marshville, N.C. 28103

Filed Jun. 26, 1978, Ser. No. 919,374
Int. Cl.² G01G *19/02, 23/18*
U.S. Cl. 177—45 **7 Claims**

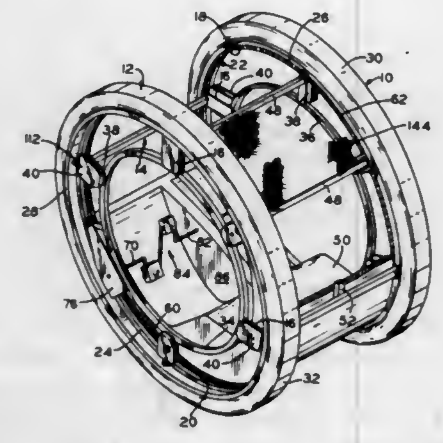


1. A platform scale of the type which includes an elongate weighing platform of a length and width adapted to accommodate a motor vehicle thereon and which is located in a surrounding roadbed to facilitate driving the motor vehicle onto the weighing platform, and in combination with said platform scale, an alarm system for alerting the operator of the scale in the event that the driver of a motor vehicle has purposefully or inadvertently positioned his vehicle with one or more of the vehicle wheels located off of the weighing platform so as to obtain a reduced tare weight when weighing, said alarm system comprising a weight responsive mat switch located in the roadbed and positioned closely surrounding all sides of the weighing platform for being engaged by the wheels of the motor vehicle when any portions of the wheels are improperly positioned and located off of the weighing platform, a signal located in the proximity of the scale operator, and means operatively interconnecting said mat switch and said signal for actuating the signal and alerting the scale operator in response to one or more wheels of the motor vehicle coming into engagement with said mat switch.

4,192,395
AMUSEMENT VEHICLE

Gerald L. Barber, 1209 Edwards Rd., Greenville, S.C. 29615

Continuation-in-part of Ser. No. 775,889, Mar. 9, 1977. This application Mar. 17, 1978, Ser. No. 887,741
Int. Cl.² B62K *17/00*
U.S. Cl. 180—6.5 **15 Claims**



1. A vehicle comprising:

a pair of coaxial wheels having inwardly facing annular surfaces,

a frame generally within the radial confines of said wheels extending axially between said wheels,

an inwardly extending annular support rim on the annular surface of each of said wheels, said support rims each having an inner surface and a side surface,

a plurality of rollers means rotatable on respective horizontal axes on said frame and distributed circumferentially in the planes of and supportingly engaging the inner surfaces of said support rims so as to rotatably support said frame on said wheels,

a seat in said frame adapted for seating an occupant,

the center of gravity of said frame including any occupants seated therein being substantially lower than the common axis of said wheels,

a chain rigidly secured circumferentially to each of said wheels within the radial confines of said wheels and concentric with the common axis of said wheels, each of said chains being axially displaced from the support rim for its respective said wheel,

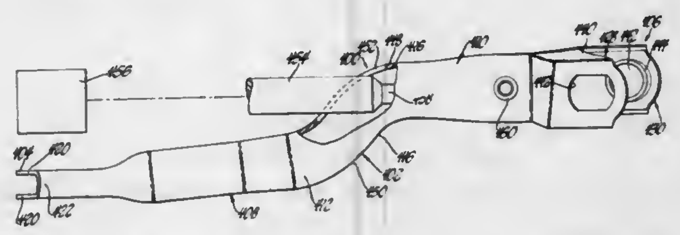
a rotatable sprocket engaged with each said chain, occupant actuated means drivingly connected to said sprockets, and

a plurality of first guide rollers connected to said frame for rotation about respective axes which intersect the common axis of said wheels, said rollers engaging the side surfaces of respective said support rims.

4,192,396
VEHICLE AXLE INCLUDING ENDWAYS OPENING AXLE END

John F. Austermann, Jr., Berkley, and Jerome E. Pack, Canton Township, Barron County, both of Mich., assignors to Lear Siegler, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 779,377, Mar. 21, 1977, abandoned. This application Jun. 27, 1977, Ser. No. 810,448
Int. Cl.² B60K *17/22, 17/30;* B60B *35/00*
U.S. Cl. 180—252 **24 Claims**

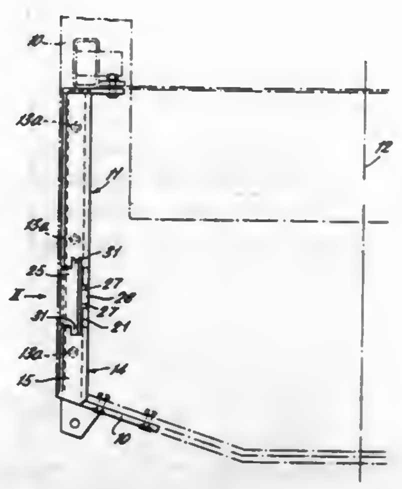


22. A front wheel drive unitary axle of an elongated tubular construction having an intermediate portion as well as a first end for mounting the axle on a vehicle and a second end for supporting a wheel; the second wheel end including upper and lower projections and webbed side walls extending between the projections with a thickness at least as great as the walls of the intermediate axle portion; the intermediate portion of the axle having vertically extending side walls as well as horizontally extending upper and lower walls connecting the side walls; said walls of the intermediate axle portion being of a substantially uniform thickness; a rectangular section along the intermediate axle portion defined by the upper, lower and side walls thereof immediately adjacent the wheel supporting axle end; the intermediate axle portion side walls having inward deformations forming an I-beam section immediately adjacent the rectangular section spaced from the second axle end; said inward deformations providing the I-beam section with a combined height along its side walls and width along its upper and lower walls that is less than the combined height and width of the axle at the rectangular section; a pair of abrupt horizontal bends of opposite curvature in the intermediate axle portion; and an aperture in the bend closest to the wheel supporting axle end for receiving a drive shaft that drives the wheel.

4,192,397
BATTERY LOCATING DEVICE

Robert J. Stroud, Reading, England, assignor to Lansing Bagnall Limited, Hampshire, England

Filed Jun. 8, 1978, Ser. No. 913,895
Claims priority, application United Kingdom, Jun. 15, 1977, 25130/77
Int. Cl.² B60K *1/04;* B61D *45/00;* B65J *1/22*
U.S. Cl. 180—68.5 **17 Claims**



1. An assembly for locating on a chassis a heavy component having a laterally extending location spigot, the assembly comprising a frame, adapted to be mounted on a chassis, for receiving such a heavy component, there being a slot formed in a side member of the frame, which slot extends downwardly from an upward facing surface of said side member when the frame is mounted on a chassis for the accommodation of said location spigot of a heavy component received by the frame, and a spigot restraining means adjacent said slot comprising a flap member which is pivotably mounted on the side member of the frame adjacent said slot for pivotal movement relative to the frame between an inoperative position in which it extends laterally outwardly of the side member of the frame and an operative position in which it covers a substantial portion of the slot, there being a recess in the flap member for accommodating the end of said location spigot of a heavy component received by said frame with its location spigot in said slot when the flap member is in its operative position, and a latch device for releasably securing the flap member to said side member of the frame when the flap member is in said operative position, the latch device being mounted on the flap member on the side of the recess therein remote from the pivotal connection between the side member of the frame and the flap member and being arranged for movement relative to the flap member to engage an adjacent portion of the side member of the frame when the flap member is in its operative position.

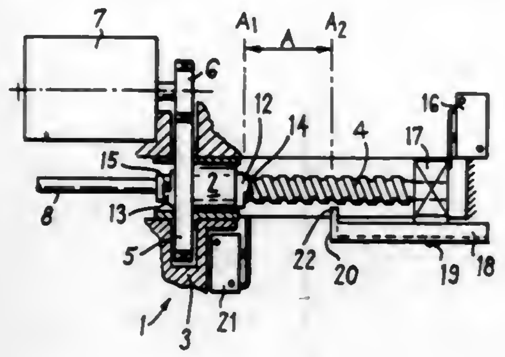
4,192,398
ACTUATOR MECHANISM INCORPORATING SCREW-AND-NUT DEVICES

Norman Hunt, Leamington Spa, England, assignor to Associated Engineering Limited, London, England

Filed Apr. 26, 1978, Ser. No. 900,239
Int. Cl.² B60K *27/00;* F02D *11/10;* H01H *3/16*
U.S. Cl. 180—178 **6 Claims**

1. A road vehicle powered by an internal combustion engine, and fitted with a speed control system including an electronic control circuit operable to sense the speed of the vehicle and produce an output which varies in dependence upon a comparison between the actual speed of the vehicle and a selected speed, said output being applied to an actuator mechanism connected to displace a speed change device of the engine, the actuator mechanism comprising a screw-and-nut device including a housing, a nut member, rotatably mounted in the housing, a screw member slidable within the housing and disposed concentrically within the nut member, the nut member being rotatably driven by a reversible electric motor controlled by the output of the control circuit, a series of balls, a

cage between the nut member and screw member and accommodating the balls, the cage having oppositely directed walls at its ends, extending in the general direction of the axis of rotation of the nut member, the balls co-operating with the cage, nut member and screw member so that rotation of the nut member produces generally axial displacement of the screw member via the balls during rotation of the cage relative to the screw member, whilst rotation of the nut member produces no axial displacement of the screw member when the cage is prevented from rotating relative to the screw member, the actuator mechanism further comprising a limit switch, operable to make and break the energising circuit of the motor, and positioned in axially stationary relation with said screw member, a block non-rotatably fixed to one end of the screw member within the housing, and bearing against, and constrained against rotation by, the housing, abutment means axially displaceable with the screw member, adjustable relative thereto, and arranged to engage a wall at one end of the cage, thereby to prevent rotation of the cage and thus prevent axial displacement of the screw member, substantially simultaneously with actuating the limit switch, at one end of the axial travel of the screw member, the abutment means comprising a plate adjustably mounted on the block and extending in a generally axial direction towards the nut member, the plate being provided with a peg arranged to engage the wall at said one end of the cage, a further switch associated with the other end of the axial travel of the screw member, means arranged to engage a wall at the other end of the cage, thereby to prevent rotation of the cage and axial displacement of the screw member, at the other end of the axial travel of the screw member, the screw member being connected to the displaceable speed change device of the engine to effect displacement of the speed change device, and the abutment means being adjustable axially relative to the screw member to adjust and extent of the axial travel of the latter to suit the amount of travel of the engine speed change device.



4,192,399
SAFETY VACUUM VALVE AND ELECTRIC SWITCH FOR SPEED CONTROL SYSTEMS

Jack O. Otteson, and Eugene J. Martin, both of Hagerstown, Ind., assignors to Dana Corporation, Toledo, Ohio
Filed Mar. 12, 1976, Ser. No. 666,405
Int. Cl.^{2} B60K *31/00*
U.S. Cl. 180—170 **8 Claims**

1. A combination vacuum valve and electric circuit switch for use with a vehicle speed control apparatus including a movable control member and a vacuum operated control system, such system requiring deactivation when said control member is moved from its normal operating position, said switch comprising:

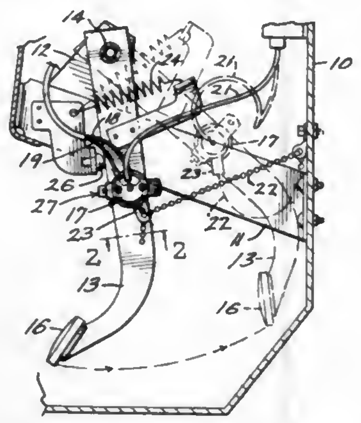
a base;

a switch lever rotatably mounted to said base and adapted to be rotated between an inoperative and an operative position;

a stationary vacuum port, adapted to be connected with such control system, adjacent said switch lever positioned to be covered by said switch lever when the switch lever rotates toward the operative position, and uncovered when the switch lever rotates away from the operative position;

a pair of electric contacts adapted to be connected with such speed control apparatus adjacent said base, and means for closing the contacts after the covering of the port as the switch lever rotates toward the operative position, and for opening the contacts before the port is uncovered as the switch lever rotates away from the operative position;

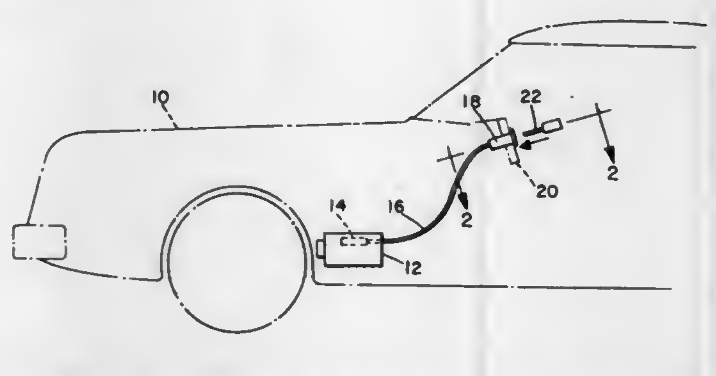
spring means mounted within said base and biasing the switch lever toward the inoperative position; and



flexible cable means connected to said switch lever and adapted to be connected to such control member for rotating said switch lever to its operative position when the movable control member assumes its normal operating position.

4,192,400
JUMP-PROOF ELECTRICAL DISENABLING SYSTEM

John A. McEwan, 1808 White Oaks Dr., Alexandria, Va. 22306
Filed Feb. 9, 1978, Ser. No. 876,537
Int. Cl.^{2} B60R *25/04*
U.S. Cl. 180—287 **7 Claims**



1. An anti-theft system for a protected system which has at least one essential electrical sub-system said anti-theft system comprising:

(a) an electronically controlled gate-acting element interposed in said sub-system and operable between a closed mode permitting normal operation of said sub-system and an open mode disenabling said sub-system;

(b) an electronic key and a receptacle to receive said key, said key containing a pre-determined code and being capable of reproducing said code as a coded chain of electrical pulses and delivering said chain of pulses to said receptacle;

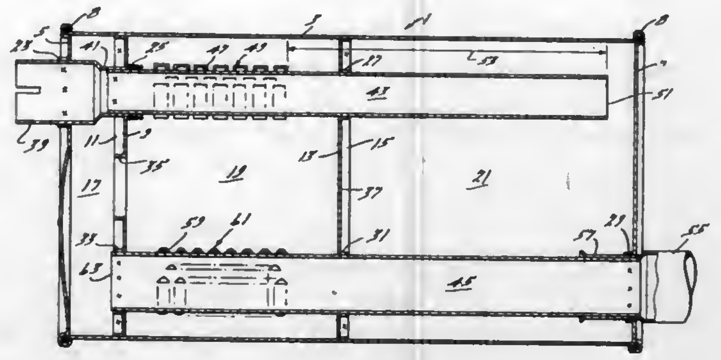
(c) a decoder electrically coupled to said receptacle for receiving said coded chain and producing an enabling signal to said gate-acting element whereby the latter is thrown into its closed mode and said sub-system is restored to normal operating capacity;

(d) wherein said key contains a precoded shift register and said decoder includes a second shift register electrically coupled through said receptacle to said pre-coded shift register, and including an electronic clock electronically coupled to said precoded shift register through said receptacle to said second shift register to simultaneously deliver a stepping pulse to both registers to effect the shift of said coded chain of electrical pulses from said pre-coded shift register to said second shift register.

6. A system according to claim 1 wherein said receptacle is mounted in the dashboard of a vehicle and said electronic clock and power supply are also mounted in the vehicle and electrically connected to said receptacle to make contact with said key when inserted in said receptacle.

4,192,401
COMPLETE LOUVER FLOW MUFFLER

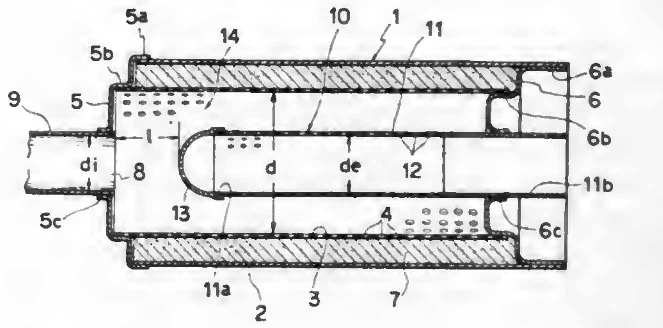
Don A. Deaver, Jackson, and Dale E. Sterrett, Grass Lake, both of Mich., assignors to Tenneco Inc., Deerfield, Ill.
Filed Jul. 26, 1976, Ser. No. 708,512
Int. Cl.^{2} F01N *1/08, 1/02*
U.S. Cl. 181—266 **29 Claims**



1. An acoustic muffler for attenuating sound in flowing gas such as the exhaust gas from a combustion engine comprising a housing having an inlet and an outlet, an elongated substantially straight inlet tube member in said housing having an inlet opening at one end arranged to receive substantially all gas entering the muffler, said tube member having a side wall with a perforated section therein, said perforated section comprising the gas outlet for said tube member and having a multiplicity of openings therein with a total open area for the flow of gas out of the tube member which is equal to at least substantially 100% of the cross sectional area of the section, the outlet flow of gas from said tube member through said gas outlet being in a direction transverse to the inlet flow and to the length of the tube member, means cooperating with said tube member to force substantially all gas entering the tube member to leave the tube member by flowing through said gas outlet perforated section, walls connected to said housing forming an expansion chamber means containing the entire gas outlet perforated section of the tube member whereby all gas flowing out of the perforated section enters said expansion chamber means, an elongated outlet tube member arranged to receive all gas entering the muffler and deliver it to said muffler outlet, said outlet tube member having an open inlet end and having a wall with a perforated section therein, said outlet tube member perforated section being totally contained in said expansion chamber means and comprising a multiplicity of in-flow gas openings therein that are individually smaller in open area than the openings in the perforated section of the inlet tube member to thereby present a substantial resistance to cross flow from the inlet tube member through the expansion chamber means and into the outlet tube member through the perforated section in the outlet tube member, said housing walls forming a chamber into which the open inlet end of the outlet tube opens to receive gas flow from said chamber, and means for the passage of gas from said expansion chamber means into said chamber.

4,192,402
MUFFLER FOR INTERNAL COMBUSTION ENGINES

Takashi Nakagawa, Tokorozawa; Tadashi Sugiuchi, Niiza; Kanau Iwashita, Tokyo, and Masaaki Uchida, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 23, 1978, Ser. No. 908,905
Claims priority, application Japan, May 27, 1977, 52-61841; May 27, 1977, 52-61842; Jun. 6, 1977, 52-66391
Int. Cl.^{2} F01N *1/24*
U.S. Cl. 181—256 **22 Claims**



1. A muffler device for an internal combustion engine, comprising:

a sealed diffusion chamber having an inlet port through which exhaust from said engine is directly introduced into said sealed diffusion chamber;

an outlet pipe extending into said sealed diffusion chamber and communicating therewith through a plurality of perforations formed in said outlet pipe;

said outlet pipe being disposed substantially concentrically and coaxially relative to said inlet port;

said outlet pipe having a front closed end disposed at a predetermined distance from and opposed to said inlet port;

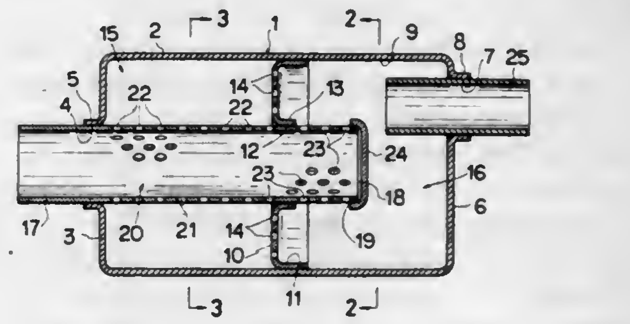
said muffler being constructed to satisfy the relation $0.5 \leqq 1/di \leqq 2$, where "1" is said predetermined distance between said inlet port and said front end of said outlet pipe, and di is the diameter of said inlet port;

said muffler being further constructed to satisfy the relation $de \geqq di$, where de is the outside diameter of said outlet pipe, and di is the diameter of said inlet port; and

said inlet port having a cross section that is smaller than the cross section of said sealed diffusion chamber.

4,192,403
MUFFLER FOR INTERNAL COMBUSTION ENGINES

Takashi Nakagawa, Tokorozawa; Tadashi Sugiuchi, Niiza, and Kanau Iwashita, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 23, 1978, Ser. No. 908,904
Claims priority, application Japan, May 26, 1977, 52/67793[U]
Int. Cl.^{2} F01N *1/08*
U.S. Cl. 181—268 **5 Claims**



1. A muffler for an internal combustion engine, comprising:

a muffler body;

a porous plate disposed within said muffler body and sectioning the interior of said muffler body into front and rear expansion chambers;

an exhaust inlet pipe extending into said front expansion chamber through a front wall of said body, said exhaust inlet pipe extending through said front expansion chamber, through said porous plate, and into said rear expansion chamber;

said exhaust inlet pipe being closed at the downstream end thereof, said closed downstream end being disposed within said rear expansion chamber;

said exhaust inlet pipe being provided with a plurality of perforations in the portion thereof disposed in said front expansion chamber, such that the interior of said exhaust inlet pipe directly communicates with said front expansion chamber;

said exhaust inlet pipe being provided with a plurality of perforations in the portion thereof disposed in said rear expansion chamber, such that the interior of said exhaust inlet pipe directly communicates with said rear expansion chamber; and

said rear expansion chamber being directly connected with the downstream side of an exhaust system through an exhaust outlet pipe.

4,192,404

MUFFLER FOR INTERNAL COMBUSTION ENGINES

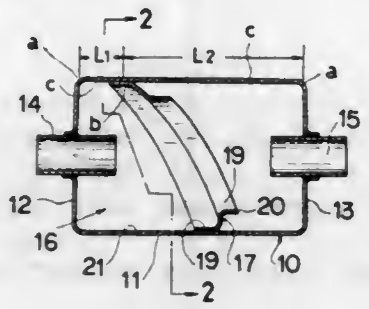
Takashi Nakagawa, Tokorozawa; Tadashi Sugiuchi, Niiza, and Kanau Iwashita, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1978, Ser. No. 908,261

Claims priority, application Japan, May 25, 1977, 52/60880

Int. Cl.² F01N *1/08*

U.S. Cl. 181—272 6 Claims



1. An expansion-type muffler for an exhaust system of an internal combustion engine, comprising:

a muffler body having a chamber therein communicating with an up-stream side and a down-stream side of an exhaust system;

said muffler body having a longitudinal axis;

a plate member disposed substantially transverse to said longitudinal axis of said muffler body;

said plate member being connected at various connecting points with an inner wall of said muffler body;

said connecting points between said plate member and said inner wall of said muffler body defining a closed-loop, three-dimensional, curved surface of connection between said plate member and said inner wall; and

all of said connecting points are not disposed in the same plane perpendicular to said longitudinal axis of said muffler body.

4,192,405

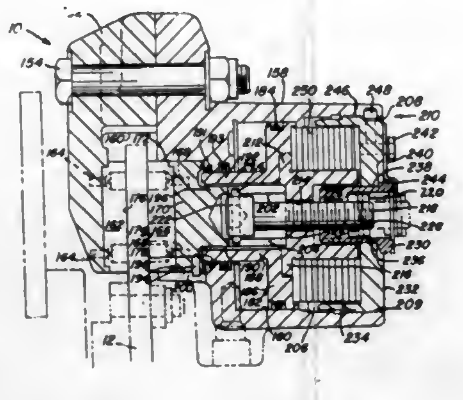
SPRING APPLIED BRAKE MECHANISM

Arthur L. Lee, and Arthur B. Coval, both of Columbus, Ohio, assignors to A. L. Lee Corporation, Columbus, Ohio

Division of Ser. No. 819,461, Jul. 27, 1977, Pat. No. 4,138,001, which is a continuation of Ser. No. 641,941, Dec. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 508,741, Sep. 24, 1974, abandoned. This application Nov. 13, 1978, Ser. No. 960,050

Int. Cl.² F16D *59/02*

U.S. Cl. 188—170 5 Claims



1. An improved brake mechanism comprising,

a housing having a chamber with a first open end portion and a second open end portion,

a brake applicator movably supported by said housing, said brake applicator being operable to apply a braking force to a wheel member,

a brake actuator movably positioned within said chamber and having an end portion extending into said second open end portion of said chamber,

said brake actuator being operable to apply a force upon said brake applicator and thereby urge said brake applicator into braking engagement with the wheel member,

seal means surrounding said end portion of said brake actuator for sealing said second open end portion of said chamber,

said chamber being adapted to receive pressurized fluid from a source to overcome the force applied by said brake actuator,

a first annular member positioned in said chamber in abutting relation with said brake actuator,

an axial bore in said first annular member,

a second annular member positioned in said chamber and closing said first open end portion of said chamber,

an axial bore in said second annular member,

a rod member extending through said axial bores of said first and second annular members,

said rod member having a portion extending through said axial bore of said first annular member and a portion positioned within said axial bore of said second annular member,

said rod member having a first enlarged member on a first end portion thereof for movement in said axial bore of said second annular member,

said brake actuator having an axial bore,

said brake applicator having a tubular body portion and an enlarged end portion, said tubular body portion extending into said brake actuator axial bore,

said tubular portion of said brake applicator having a bore therein and a pair of opposed longitudinal slots,

said rod member having a second enlarged member on a second end portion thereof for movement in said brake applicator axial bore,

said second enlarged member of said rod member having a pin member extending therethrough and into said slots of said brake applicator tubular body portion,

said pin member arranged to non-rotatably position said rod member in said brake applicator tubular body portion bore and move longitudinally in said slots,

a retractor member positioned in said bore of said second annular member, a bore extending through said retractor member,

said rod member extending through said bore of said retractor member,

said first annular member having a cylindrical body portion with a flanged end portion, said cylindrical body portion surrounding said retractor member,

said second annular member having a base portion closing said chamber first open end portion with said axial bore extending therethrough,

said second annular member having a flanged end portion extending into said chamber and threadedly secured to said housing at said chamber first open end portion,

resilient means positioned between said first and second annular members and having opposite end portions positioned in abutting relation with said first and second annular members respectively,

said resilient means having one end portion abutting said first annular member flanged end portion and a second end portion abutting said second annular member base portion,

said resilient means being operable to exert a preselected spring force through said first annular member upon said brake actuator and axially move said brake actuator to apply a force upon said brake applicator when the fluid pressure in said chamber is less than the force exerted by said resilient means on said brake actuator, and

said retractor member being operable upon rotation to move said first and second annular members in abutting relation and compress said resilient means between said first and second annular members to permit removal of said first and second annular members, said resilient means, said rod member, and said retractor member as a single unit from said chamber first open end portion.

4,192,406

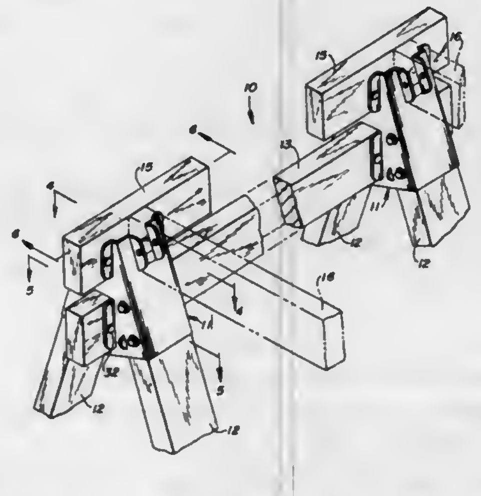
SAW HORSE BRACE

John R. Mitchell, 6300 Sherman St., Philadelphia, Pa. 19144

Filed Oct. 11, 1978, Ser. No. 950,305

Int. Cl.² F16M *11/00*

U.S. Cl. 182—185 9 Claims



1. A saw horse brace comprising a pair of facing spaced side walls, a pair of spaced upwardly convergent end walls extending between said side walls for conforming reception there within of a pair of downwardly diverging legs, said side walls having aligned through openings for passage therethrough of a cross member between the upper ends the legs, and four corner pieces upstanding from the junctures of said side and end walls, said corner pieces combining to define pairs of aligned notches for receiving additional cross members.

4,192,407

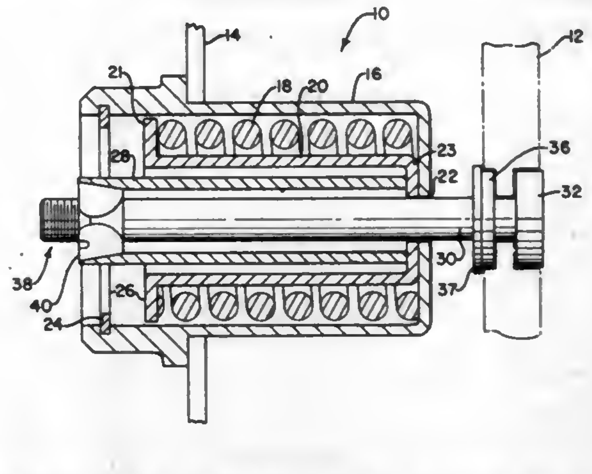
BRAKE ADJUSTER WITH INTERNAL SWAGE

Richard L. Crossman, Tallmadge, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Aug. 14, 1978, Ser. No. 933,338

Int. Cl.² F16D *65/54*

U.S. Cl. 188—196 R 16 Claims



1. In a braking system including a brake housing and a pressure plate, the improvement, comprising:

a casing connected to the brake housing;

reciprocating means maintained within said casing for reciprocating movement between first and second ends of said casing;

a tubular member, having first and second ends, in engagement at said first end thereof with said reciprocating means;

a shaft passing through said tubular member, one end of said shaft passing through an opening in said casing and being secured to the pressure plate; and

an enlarged portion connected to the other end of said shaft and in reshaping engagement with the inside circumference of said second end of said tubular member, said enlarged portion having a perimeter substantially equal to the inside circumference of said tubular member, said enlarged portion and said tubular member having different cross-sectional geometric configurations whereby passage of said enlarged portion through said tubular member changes the cross-sectional configuration of said tubular member without changing the inside circumference thereof.

4,192,408

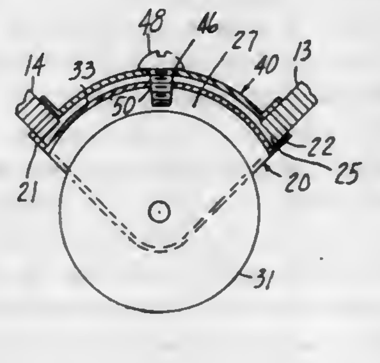
WHEELED SUPPORT FOR SUITCASES AND LIKE ARTICLES

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Filed Nov. 27, 1978, Ser. No. 964,032

Int. Cl.² A45C *5/14*

U.S. Cl. 190—18 A 7 Claims



1. In a carrying article, such as a suitcase, having a pair of walls in intersecting relation defining a corner, a wheel housing for such article comprising:

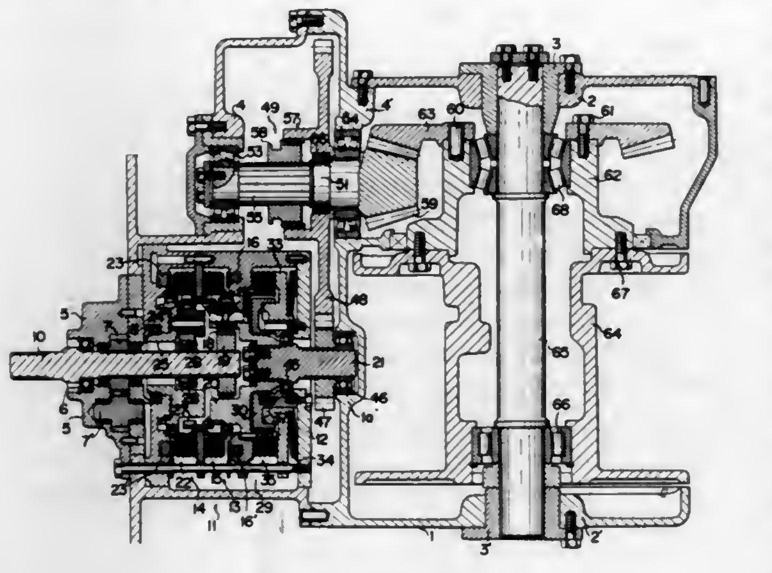
an exterior wheel mount adapted to be partially received within an opening in said corner, said mount including a faceplate formed to provide a pair of portions in intersecting planes and adapted to engage the outer surfaces of said walls respectively in face to face relationship,

a clamping member within said article and including a faceplate adapted to engage the inner surfaces of said walls in face to face relationship, and

means for holding said mount and said member together with said walls clamped therebetween.

4,192,409
CLUTCH MECHANISM FOR WINCH

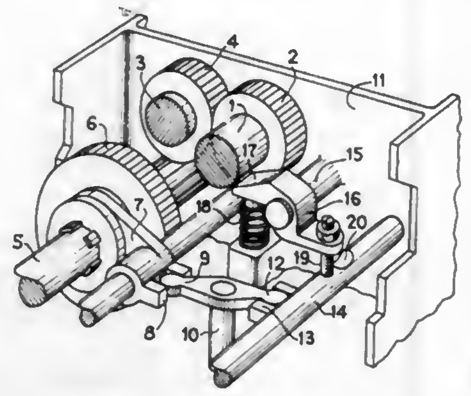
Masao Ueda, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed May 2, 1977, Ser. No. 792,976
Claims priority, application Japan, Apr. 30, 1976, 51-48479
Int. Cl.² B60K ***41/26;*** **F16H** ***57/10***
U.S. Cl. 192—4 R **5 Claims**



1. A transmission mechanism for a winch comprising:
a housing;
an input shaft rotatably supported within said housing;
an output shaft rotatably supported within said housing, the axis of said output shaft being aligned with the axis of said input shaft;
a first planetary gear set mounted on said input shaft and adapted to rotatably connect said input shaft with said output shaft in the same direction;
a second planetary gear set mounted on said input shaft and adapted to rotatably connect said input shaft with said output shaft in the opposite direction;
braking means mounted on said output shaft, said braking means comprising a cylindrical piston cage mounted on said output shaft, a cylindrical piston mounted on said cylindrical piston cage defining a fluid chamber therebetween, a first cylindrical friction plate, and spring means disposed between said cylindrical piston and said housing, said spring means being adapted to normally urge said first cylindrical friction plate toward said housing thereby locking said output shaft against rotation; and
means for selectively operating said first and second planetary gear sets by simultaneously releasing said braking means so as to transmit input rotation to said output shaft in the same or opposite direction.

4,192,410
GEARBOX COMPRISING MEANS FOR BRAKING THE INPUT SHAFT FOR ENGAGING A NON-SYNCHRONIZED SPEED

Daniel Poirier, La Garenne Colombes, France, assignor to Automobiles Peugeot, Paris, France
Filed Dec. 22, 1977, Ser. No. 863,252
Claims priority, application France, Jan. 19, 1977, 77 01447
Int. Cl.² B60K ***41/26***
U.S. Cl. 192—4 A **8 Claims**

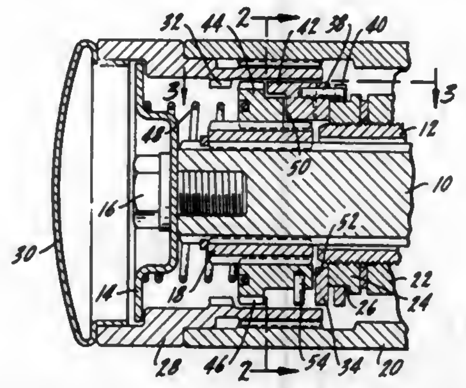


1. A gearbox comprising in combination, a housing, a plurality of gear means supported by the housing for producing different speed ratios of the gearbox, one of said gear means being non-synchronized gear means comprising a first gear member and a second gear member which members are relatively movable between a mutually engaged position for achieving the corresponding gear ratio and a mutually disengaged position, means supported by the housing for selecting and achieving engagement of said gear means including said non-synchronized gear means, an input shaft supported by the housing and being part of said plurality of gear means, a lever supported by the housing, means defining a braking surface and carried by the lever, the lever being pivotable between an inoperative position in which the braking surface is out of contact with the input shaft and an operative position in which the braking surface is in braking contact with the input shaft, means for shifting the lever between said inoperative and operative positions and comprising a slidable rod parallel to the input shaft and movably supported by the housing, means combining the rod with the selecting and engagement achieving means for the non-synchronized gear means for shifting the rod between a first position in which said gear members are in said mutually disengaged poisition and a second position in which said gear members are in said mutually engaged position, said rod having an intermediate position between said first and second positions which corresponds to an intermediate relative position of said first gear member and second gear member in which said gear members are not yet in mutual engagement, and camming means interposed between the rod and the lever for shifting the lever to said inoperative position when the rod is in either of said first and second positions and for shifting the lever to said operative position when the rod is in said intermediate position of the rod.

4,192,411
AUTOMATIC LOCKING CLUTCH

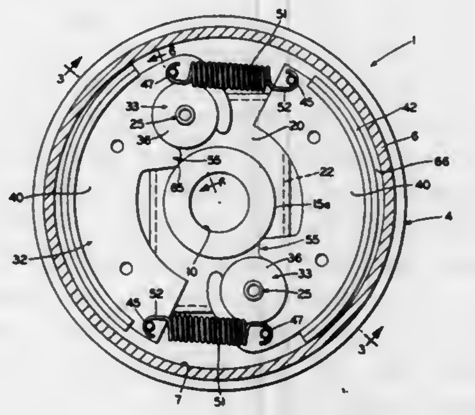
Mark J. Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.
Continuation of Ser. No. 799,793, May 23, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,609
Int. Cl.² B60K ***17/34***
U.S. Cl. 192—36 **29 Claims**

1. A clutch adaptable for effecting engagement between rotatable driving and driven members in response to rotation of the driving member, said clutch comprising first and second clutching means respectively rotatable with said driving and driven members, said first clutching means being movable relative to the driving member into and out of locking engagement with said second clutching means, means yieldably biasing said first clutching means out of locking engagement with said second clutching means, rotatable cam means, and means resisting rotation of said cam means, said first clutching means defining cam follower means cooperable with said cam means for moving said first clutching means into locking engagement with said second clutching means in response to rotation of the driving member, said first clutching means also defining means for rotating said cam means therewith upon effecting said locking engagement with said second clutching means, whereby said first clutching means is prevented from moving out of locking engagement with said second clutching means so long as the driving member is subject to rotation.



4,192,412
CENTRIFUGAL CLUTCH WITH SHOE STOPS

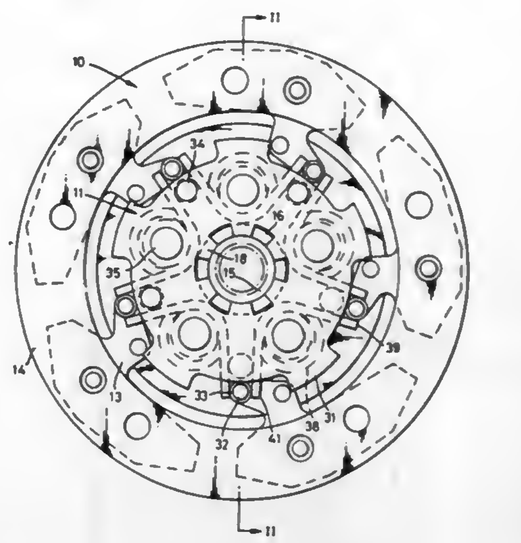
Larry L. Stoner, Massilon, Ohio, assignor to Aspro, Inc., Canton, Ohio
Filed Jun. 26, 1978, Ser. No. 918,783
Int. Cl.² F16D ***43/18***
U.S. Cl. 192—105 CD **3 Claims**



1. In an improved centrifugal clutch construction of the type having a driven clutch member and a drive clutch rotor, said rotor including axially extending hub means, drive flange means mounted on the hub means for rotation with the hub means, pin means mounted on the drive flange means, a pair of clutch shoes pivotally mounted on the pin means and arranged in end-to-end relationship with respect to each other and movable between engaged and disengaged positions with respect to the driven clutch member, said shoes each having a web and a curved outer shoe table, and spring means operatively engaged with the clutch shoes biasing said clutch shoes toward the disengaged position, wherein the improvement includes stop means formed on each of the clutch shoe webs and engageable with the hub means when the clutch shoes are in disengaged position, said stop means being a projection formed integrally with each shoe web and extending inwardly from the shoe web toward the hub means; each of the shoe webs having an arcuate configuration formed by curved outer and inner edges which terminate in first and second end edges with opening means being formed in each of the shoe webs adjacent the first end edges for receiving the pivot pin means; and said opening means having a discontinuous circular opening greater than 180° with the stop means projections defining a portion of said opening means.

4,192,413
DRIVEN PLATES FOR FRICTION CLUTCHES

Dennis G. Rawlings, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England
Continuation of Ser. No. 747,907, Dec. 6, 1976, abandoned. This application May 16, 1978, Ser. No. 906,641
Claims priority, application United Kingdom, Oct. 12, 1975, 50701/75
Int. Cl.² F16D ***3/14***
U.S. Cl. 192—106.2 **12 Claims**



1. A friction clutch driven plate which comprises a hub assembly, an annular friction facing carrier which is mounted substantially coaxially upon the hub assembly for limited rotational motion relative to the hub assembly, and resilient means which act between the annular friction facing carrier and the hub assembly to oppose rotational motion of the annular friction facing carrier in either sense of the rotation relative to the hub assembly, the resilient means comprising at least one pair of linked finger elements which are located with respect to one of the annular friction facing carrier and the hub assembly, each finger element being linked to the other finger element of the respective pair by a respective resilient link, one pair of abutments for each of said at least one pair of linked finger elements which are carried by the annular friction facing carrier and another pair of abutments for each of said at least one pair of linked finger elements which are carried by the hub assembly, both the linked finger elements of each of said at least one pair extending between the respective pair of abutments that are carried by the hub assembly and between the respective pair of abutments that are carried by the annular friction facing carrier, and the resilient link of each of said at least one pair of linked finger elements opposing deflection of either finger element of that pair towards the other finger element of that pair so that, during rotational motion of said annular friction facing carrier in either sense of rotation, the trailing one of the at least one pair of abutments that are carried by the annular friction facing carrier abuts the adjacent finger element of the respective pair of linked finger elements and deflects that finger element against the action of the respective resilient link, the other finger element of the at least one pair being held against the adjacent one of the respective pair of abutments that are carried by the hub assembly, wherein the ends of the finger elements of the at least one pair that are remote from the respective resilient link are unrestricted so that the point of contact between the trailing one of the at least one pair of abutments that are carried by the annular friction facing carrier and the finger element it abuts moves toward the respective resilitent link as it deflects that finger element whereby the reaction load applied by the finger element to the abutment that abuts it increases exponentially as that finger element is deflected, each of said at least one pair of linked

finger elements comprise a pair of tangs at each end of a coil spring, the turn or turns of the coil spring comprising the respective resilient link.

4,192,414

HYDRAULIC PRESS TOOL PROTECTION ARRANGEMENT

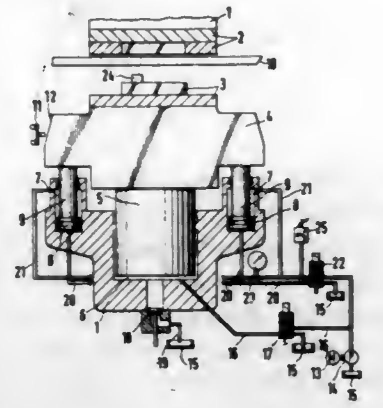
Horst Baltschun, Rulzheim, Fed. Rep. of Germany, assignor to SMG Suddeutsche Maschinenbau Gesellschaft mbH, Fed. Rep. of Germany

Filed Nov. 25, 1977, Ser. No. 854,642

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1976, 2653279

Int. Cl.^{2} B26D *7/24;* F16B *11/15*

U.S. Cl. 192—129 R **6 Claims**



1. An arrangement for protecting a set of tools in a hydraulic press against overloading by an object present in a tool space of the hydraulic press, the arrangement comprising a displacement switch means for monitoring at least a portion of a path of movement of a press ram in a working stroke direction and for providing an output signal indicative of a predetermined movement of the press ram, an additional switching means for providing an output signal during a movement of the press ram, and a control circuit means for evaluating a sequence of the output signals of the displacement switch means and the additional switching means in such a manner that a fault signal is generated when the additional switching means provides an output signal prior to an output signal from the displacement switch means, characterized in that at least one fast-stroke cylinder-piston means and at least one working stroke pressure means are provided for causing a displacement of the press ram in the working stroke direction with one of a piston and a cylinder of the at least one cylinder-piston means being connected to the press ram, the predetermined movement of the press ram is a movement to a position at which tools in a tool space of the hydraulic press are spaced from each other by a distance at least substantially corresponding to a thickness of a workpiece to be processed, the additional switching means includes at least one switch connected to a pressure medium supply line communicating with the fast-stroke cylinder-piston means, said at least one switch providing an output signal in dependence upon one of a pressure and speed of flow of a pressure medium in the pressure medium supply line during a displacement of the press ram in the working stroke direction at points in time prior to or at a beginning of a working of the workpiece by the tools of the hydraulic press.

4,192,415

APPARATUS FOR TRANSFERRING FROZEN CONFECTIONS FROM A SUPPLY CONVEYOR TO A DISCHARGE CONVEYOR

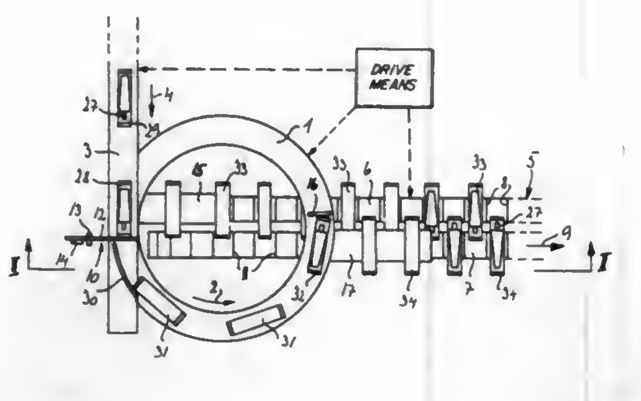
Ole G. Krener, Hojbjerg, and Ejvind Waldstrom, Beder, both of Denmark, assignors to O.G. Hoyer A/S, Hojbjerg, Denmark

Filed Apr. 4, 1978, Ser. No. 893,411

Claims priority, application Denmark, Apr. 14, 1977, 1667/77

Int. Cl.^{2} B65G *47/24*

U.S. Cl. 198—374 **8 Claims**



1. Apparatus for transferring frozen confections arriving in a single row at predetermined time intervals on a supply conveyor and passing from said supply conveyor to a discharge conveyor located at a lower level than said supply conveyor, the apparatus comprising

a turret rotatable on a vertical axis and extending below said supply conveyor, means for guiding confections from said supply conveyor onto said turret along a predetermined path, first transfer means for transferring every second confection in a row of confections from said supply conveyor to said discharge conveyor, said first transfer means comprising a stop located above said turret, said stop being cyclically movable into and out of the path of the confections on said turret, a first chute means associated with said movable stop and extending in the longitudinal direction of said discharge conveyor with a downward inclination from said turret towards said discharge conveyor, a first endless chain having an operative run extending above and parallel to said chute means, and carrier means on said chain for pushing confections along said chute means,

second transfer means for transferring the remaining confections from said turret to said discharge conveyor, said second transfer means comprising a stationary stop located above said turret substantially diametrically opposite said movable stop, a second chute means associated with said stationary stop and extending in the longitudinal direction of said discharge conveyor with a downward inclination from said turret towards said discharge conveyor, a seconnd endless chain having an operative run extending above and parallel to said second chute means, and carrier means on said chain for pushing confections along said chute means,

and a common drive mechanism for effecting a continuous rotation of said turret, continuous movement of said discharge conveyor and said endless chains, and a cyclical movement of said movable stop in timed relationship with the arrival of said confections on said supply conveyor, such that said stop is maintained in the path of said confections for a period sufficient to halt one confection until it has been engaged by a carrier means on said first endless chain, while said stop is subsequently maintained outside the path of said confections for a period sufficient to permit a confection subsequently arriving on said supply conveyor to pass clear of said movable stop.

4,192,416

DEVICE FOR TRANSFERRING PIECE MATERIAL, IN PARTICULAR PIECES OF FRUIT OR VEGETABLE

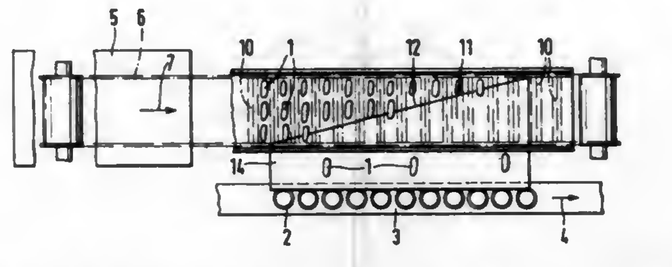
Willi Thonissen, Nettetal, Fed. Rep. of Germany, assignor to NIKO Konserven-Maschinenfabrik Hinsbek GmbH & Co., KG, Nettetal, Fed. Rep. of Germany

Filed Apr. 3, 1978, Ser. No. 892,506

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714594

Int. Cl.^{2} B65G *47/26;* B64G *47/66*

U.S. Cl. 198—433 **4 Claims**



1. In apparatus for transferring work pieces, in particular for elongated items such as cucumbers and the like, which are transported by a conveyor from a charging station to a transfer zone extending along a conveyor section, and the work pieces being then transferred to containers placed in a row below the transfer zone, the improvement comprising:

a conveyor (6) having a plurality of parallel scrapers (10) arranged transverse to the direction of travel, said scrapers being spaced apart from one another a distance greater than the width of the work pieces, whereby the work pieces can lie between adjacent pairs of scrapers and be pushed along thereby;

said scrapers sliding on the top surface (9) of a horizontal conveyor table (8) extending from the charging station (5) to the transfer zone; and the scrapers (10) having a cross-section of increasing width toward the conveyor table surface (9);

said conveyor table having an opening (11) in the transfer zone through which the work pieces drop when said scrapers pass over the opening, said opening increasing in width along the direction of travel of the conveyor; and

means below said opening for guiding the work pieces into the containers below the transfer zone as the work pieces drop through the opening.

4,192,417

BOTTOM-BELT BUNKER FOR RECEIVING AND DELIVERING PARTICLES SERVING FOR THE MANUFACTURE OF FIBERBOARDS, CHIPBOARDS, OR THE LIKE

Berndt Greten, Springe, Fed. Rep. of Germany, assignor to Bison-Werke Bahre and Greten GmbH and Co. KG, Fed. Rep. of Germany

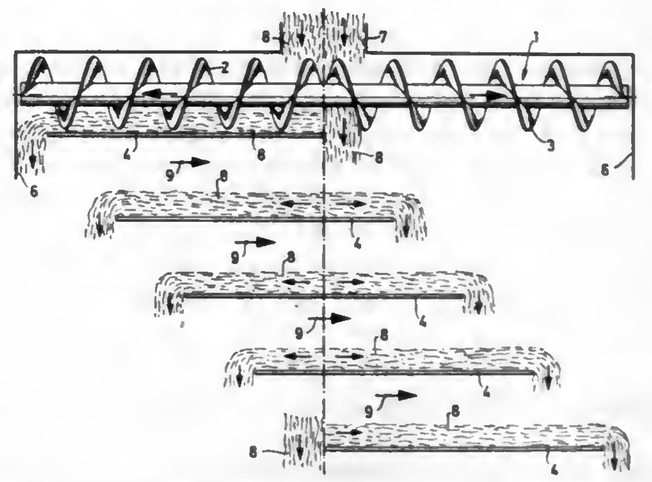
Filed Jun. 25, 1976, Ser. No. 700,023

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1975, 2528391

Int. Cl.^{2} B65G *47/72*

U.S. Cl. 198—601 **3 Claims**

1. Bottom-belt bunker for receiving and delivering particles serving for the manufacture of fiberboards, chipboards, or the like, and containing lignocellulose, these particles being optionally provided with binders, the bunker being located upstream of a glue applicator or in front of a forming station, characterized in that, for a pouring of uniform layers of a width corresponding to the width of the bunker, a centrally located feed opening is associated with a conventional, drivable auger arranged transversely to a longitudinal extension of the bunker, the auger having identical, mutually opposed helical flights; that a shoveling slide with an adjustable stroke is arranged underneath the auger and partially encompasses the auger, the shoveling slide having a length which is smaller than half the width of the bunker and/or half the length of the auger; that terminal positions of the reciprocating slide are located at a spacing from sidewalls of the bunker; and that an average moving speed of the slide is approximately half as great as a conveying velocity of the helical flights.



4,192,418

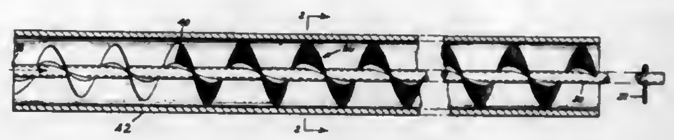
AUGER CONVEYER

Max L. Montgomery, Rte. 3, Kenton, Ohio 43326

Filed May 4, 1978, Ser. No. 902,715

Int. Cl.^{2} B65G *33/26*

U.S. Cl. 198—659 **10 Claims**



1. A spiral conveyer apparatus comprising:

an elongated arbor adapted to be mounted for rotation about the arbor longitudinal axis;

a spiral comprising a plurality of spirally wound closely spaced bristles affixed to and having bristle tips extending outwardly from said arbor and adapted to carry particles from the input spiral end to the discharge spiral end upon arbor rotation; and

an elongated conveyer tube extending from the input end to the discharge end and having an interior surface spaced from the bristle tips for carrying particles from the input end to the discharge end as the arbor is rotated; said tube being substantially free of abrupt changes in diameter;

a portion of the spiral adjacent said input end being solid to thereby inhibit particle expulsion from said input end of said tube.

4,192,419

CONVEYOR

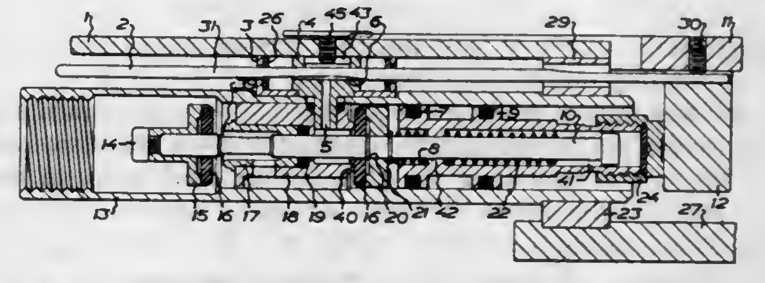
Nils H. Brodin, Hassleholm, Sweden, assignor to Henning Brodin, Olofstrom, Sweden

Filed Mar. 13, 1978, Ser. No. 886,320

Claims priority, application Sweden, Mar. 15, 1977, 7702895

Int. Cl.^{2} B65G *25/00, 27/16*

U.S. Cl. 198—750 **8 Claims**



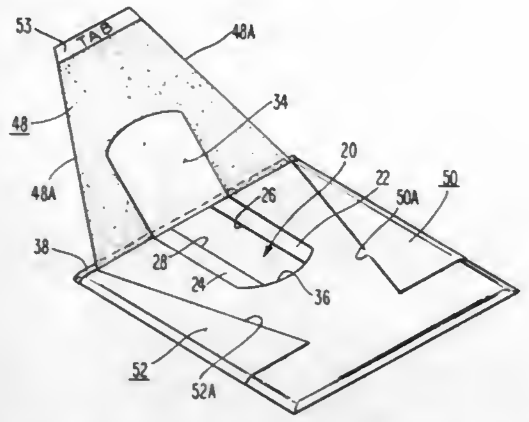
1. A conveyor comprising a frame to be anchored to a base, a piston and cylinder unit secured in said frame, a holder mounted on said frame and reciprocable by means of said piston and cylinder unit, a conveyor channel for receiving articles and for conveying said articles by said reciprocating movement, said piston being movable in said cylinder from a

first position to a second position by pressure medium, spring means adapted to be tensioned at said movement of the piston from said first position to said second position and to contribute to returning said piston from said second position to said first position, inlet and outlet valves for said pressure medium, means connected to the piston to control the inlet and outlet valves for the pressure medium so that the supply of pressure medium is suddenly interrupted when the piston reaches said second position and pressure medium contained in said cylinder is discharged at first slowly and then ever more rapidly when the piston is moved by the action of the spring means from said second position to said first position in which the outlet valve is suddenly closed and the inlet valve is opened.

4,192,420
FLEXIBLE AND PLIABLE MOISTURE-IMPERVIOUS PACKAGE

Robert A. Worrell, Sr., Chester, and Richard T. Ross, Aston, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Nov. 30, 1978, Ser. No. 965,026
Int. Cl.^{2} B65D *81/24*
U.S. Cl. 206—205 **3 Claims**



1. A flexible, moisture-impervious package for moistened webs, said package including:

three flexible layers joined together to form an integral structure, two of said layers being joined to each other about their peripheries to form top and bottom flexible walls of a pocket portion in which the moistened webs are retained;

a weakened region being provided in the top wall to define a plug section, said weakened region including spaced-apart leg sections extending forwardly from adjacent a rear sealed margin of the pocket portion, said spaced-apart leg sections providing a hinge region between them adjacent said sealed rear margin, said plug section being separable along said weakened region and movable about the hinge region to form a dispensing opening in the top wall through which the moistened webs can be dispensed; and

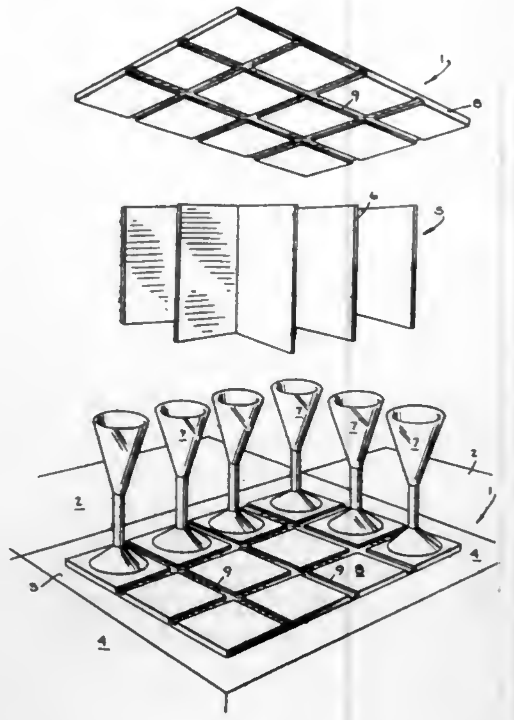
the third flexible layer constituting a flap section hingedly joined to the pocket portion at said sealed rear margin, said third layer including a pressure-sensitive adhesive layer on an inwardly facing surface thereof, said adhesive layer being continuous over an area that is sufficient to overlie the plug section and the top wall sections surrounding said plug section, said flap section being connected through said pressure-sensitive layer to the top flexible wall in at least the plug section and sections surrounding said plug section;

said flap section being movable about its hinged connection to the pocket portion to separate it from the top wall sections surrounding the plug section, and to move the plug section about its hinge region to separate the plug section along the weakened region to form the dispensing opening, said plug section remaining attached to the flap section through the adhesive layer and to the top wall of the pocket portion adjacent the rear sealed margin of said pocket portion, said plug section being adapted to be moved about its hinge region into overlying relationship with the dispensing opening when the flap section is removably connected to the top wall sections surrounding the dispensing opening through the pressure-sensitive adhesive layer.

4,192,421
CUSHIONING PADS FOR CARTONS

Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Mar. 7, 1978, Ser. No. 884,279
Int. Cl.^{2} B65D *81/06, 85/44*
U.S. Cl. 206—426 **2 Claims**



1. A package containing a plurality of relatively fragile articles having projecting extremities at one end comprising the combination of:

an outer carton with top and bottom members and side walls;

a divider contained within said carton formed of intersecting divider sheets extending from the carton top member to the carton bottom member and defining compartments;

one of said fragile articles positioned in each of the compartments;

the projecting extremities of all of said articles being adjacent to the same one of said members;

a cushioning pad positioned between said divider and said same one of said members and having a plurality of preformed intersecting grooves therein facing the other of said members and with each sheet of said divider being received in one of said grooves;

the elevated portions of the cushioning pad between the said grooves engaging the projecting extremities of the packaged articles whereby these projecting extremities are held inwardly of the divider from the divider sheet edges and are thereby completely separated from one another by the divider sheets.

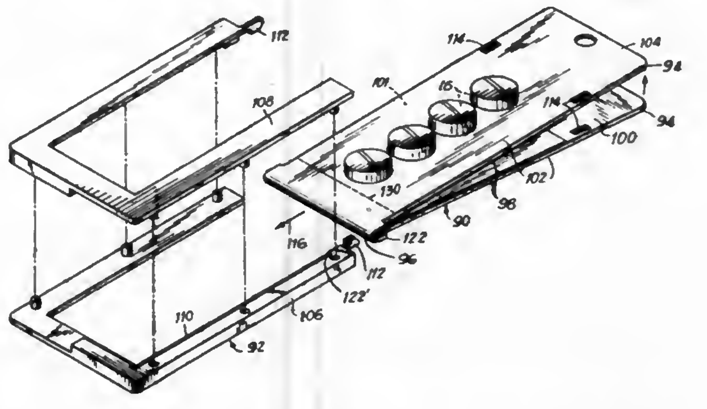
4,192,422
PILL PACKAGE

Bernard Kotyuk, Glendale, N.Y., assignor to Primary Design Group, Inc., New York, N.Y.

Division of Ser. No. 743,822, Nov. 22, 1976, Pat. No. 4,120,400. This application Jun. 29, 1978, Ser. No. 920,564
Int. Cl.^{2} B65D *85/56*
U.S. Cl. 206—528 **3 Claims**

1. A child-proof tablet package for holding tablets comprising a blister card for enclosing said tablets and a shield having legs with ends at their furthermost extent for substantially encircling said card, said card and shield together defining positive locking means including a lock receptacle and a lock member for assuming locked and unlocked positions and said card being slidable relative to said shield when said locking

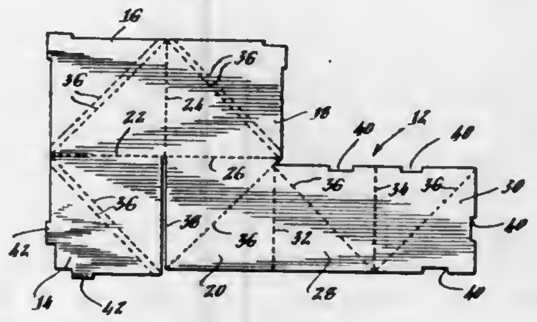
means is in an unlocked position and fixed relative to said shield when said locking means is in a locked position, said locking means including a pair of lock receptacles defined by said card and a pair of mating lock member tabs extending from said shield at said leg ends, said shield being in the form of a U-shaped track for confining said card in a slidable relationship, said tabs being at said leg ends and mating with said receptacles with said card in said track to establish a locked position and said card being flexible to enable twisting to lift one leg end and lower the other to remove said tabs from said receptacles to establish an unlocked position.



4,192,423
CORNER PAD

Vernon C. Rekow, St. Paul, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Nov. 6, 1978, Ser. No. 958,115
Int. Cl.^{2} B65D *85/30*
U.S. Cl. 206—586 **3 Claims**



1. A blank for forming a corner pad comprising:

two upper substantially square panels connected to four lower substantially square panels, two of said square panels of said lower four square panels being connected along a score line to said upper square panels,

said uppper square panels being connected along a score line to each other, and

said two remaining lower panels being connected to each other, at least one of said two remaining panels being connected to at least one of said other lower square panels by a score line,

each of said square panels including a score line extending along a diagonal,

some of said diagonal score lines consisting of two parallel lines, and

some of the edges of at least one of said bottom panels including a notch cut.

4,192,424
SHOE DISPLAY APPARATUS

Jon I. Allsop, 3157 Sunset Way, Bellingham, Wash. 98225

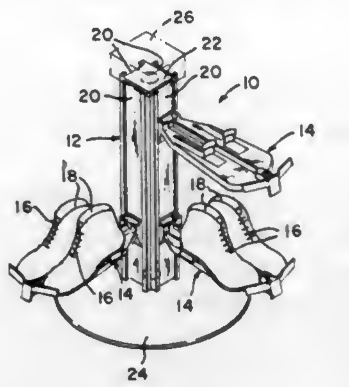
Filed Aug. 16, 1977, Ser. No. 825,061
Int. Cl.^{2} A47F *7/08*
U.S. Cl. 211—37 **43 Claims**

1. A display apparatus particularly adapted to display articles, such as pairs of shoes, in a manner that the shoes of each pair are in an upright position and in side-by-side relationship, said apparatus comprising:

a. a mounting post having a longitudinal axis and providing at least one vertical slideway in the form of a pair of longitudinally extending opposed mounting slots,

b. at least one display unit to be mounted to said post, said unit comprising:

1. a display platform adapted to support an article, such as a pair of shoes, thereon and having an inner end and an outer end,
2. a mounting member attached to the inner end of said platform, said mounting member having a pair of oppositely and outwardly extending mounting flanges resiliently attached to the mounting member so as to be able to be deflected outwardly into engagement in said mounting slots,
3. locking means positioned to engage said mounting flanges, said locking means having a locking position where it presses said mounting flanges outwardly into locking engagement in the mounting slots, and a release position where it releases said flanges from locking engagement in said mounting slots to permit movement of the mounting member and its associated platform relative to the mounting post,



4. a first outer securing device mounted to the outer end of the platform member by vertically-adjustable mounting means so that the outer securing device can be vertically-adjusted relative to the platform to engage in proper fashion one end of said article, such as a toe of a shoe being displayed,
5. a second inner securing device mounted to said platform at a location inwardly of the first securing device and arranged to engage an inner end of said article, such as a heel of a shoe being displayed,

whereby articles of varying sizes can be attractively displayed by adjustment of the location of the platform on the mounting post, and adjustment of the outer securing device is provided for proper engagement of the article being displayed.

4,192,425
TELEPHONE ACCESSORY

Paul H. Landau, and Harolyn S. Landau, both of 8632 W. Olympic Blvd., Los Angeles, Calif. 90035

Filed Jan. 4, 1978, Ser. No. 867,051
Int. Cl.^{2} B42F *13/00;* A47F *7/00*
U.S. Cl. 211—50 **4 Claims**

1. An accessory box for a telephone having housing and a cradle for supporting a handpiece and which is formed with a well cavity to the rear of the cradle, the combination comprising:

a support base portion;

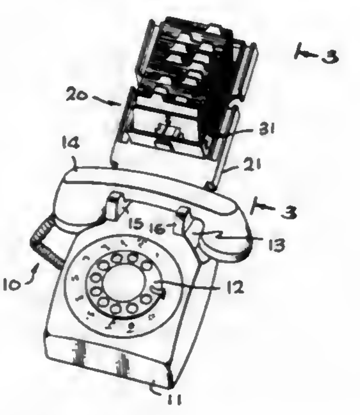
an attachment portion carried by said base portion for insertion into the well cavity for cantilevering said base portion rearwardly and at an upwardly sloping angle;

means releasably coupling with the cradle for supporting said base in the well cavity in cooperation with said attachment portion so as to cantilever rearwardly from the cradle at an angle thereto;

accessory means carried on said base portion;

said attachment portion includes a pair of steps defining a first external shoulder insertably received within the well cavity and a second external shoulder engaging a part of the cradle and,

a pair of hollow side projections outwardly carried from opposite sides of said attachment portion adapted to receive and cover a portion of the cradle;



said attachment portion first shoulder constitutes a foot insertably engageable with the underside of said cradle within the well cavity;

said base portion includes a display area for carrying indicia;

a plurality of holders constituting writing implement support means carried on opposite sides of said base portion in fixed spaced relationship so as to define an accessory supporting area therebetween.

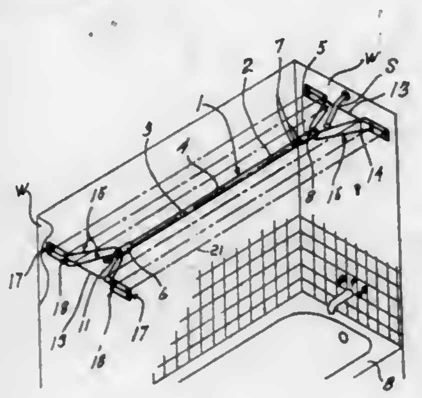
4,192,426
CLOTHES LINE DEVICE

Roland Gauthier, 100 Springdale Pl. Apt. 114, Dollard des Ormeaux, Quebec H9B 1N5, Canada

Filed May 10, 1978, Ser. No. 904,390

Int. Cl.² A47H *1/08*

U.S. Cl. 211—105.4 **6 Claims**



1. A clothes line device for mounting between opposed walls comprising an extendible stretcher unit defining a pair of opposite ends, a pair of clothes line attachment heads secured to the opposite ends respectively of said stretcher unit, each of said clothes line attachment heads including a pair of arms diverging away from the related end of said stretcher unit and a bow-shaped cross member extending transversely to said stretcher unit and secured to the outer ends of said arms, said cross member and arms forming a substantially triangular open frame for clearing a shower head extending therethrough when said cross member abuts against an adjacent wall from which the shower head protrudes, said cross-member resiliently yielding into biased engagement against the adjacent wall upon extension of said stretcher unit, each attachment head including an outer portion engaging the adjacent wall in a first position wherein said device is frictionally supported on a respective wall while allowing shifting of said device relative to the wall surface and an inner portion engaging the adjacent wall in a second position and holding said device in operative position against the adjacent wall in response to further extension of said stretcher unit.

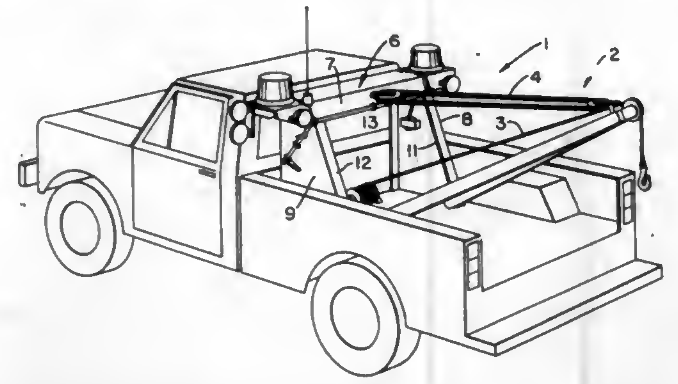
4,192,427
TOW TRUCK LIGHT SUPPORT

William D. Bergman, 5538 N. 25th st., Kalamazoo, Mich. 49001

Filed Apr. 24, 1978, Ser. No. 899,480

Int. Cl.² B60Q *1/46*

U.S. Cl. 212—8 R **5 Claims**



1. Mounting means for devices such as lights or radio antenna for a service truck, comprising:

a base plate;

a torsion bar extending along said base plate and rotatable with respect thereto;

a handle operatively associated with said torsion bar and catch means for selectively holding and releasing said handle in or from a predetermined position with respect to said base plate;

at least one mounting means, same including a platform rigidly fixed to said torsion bar and said platform being alignable substantially parallel with said base plate;

at least one stop fixed with respect to said base plate for limiting upward movement of said platform, the positioning of said stop being so related to the positioning of said catch means that when rotation of said torsion bar is stopped by said stop and said handle is in said catch means a substantial degree of tension will exist within the system comprising the handle, torsion bar and mounting means so as to hold same in a nonrattling condition;

means for mounting selected devices, as warning lights, service lights or radio antenna onto said mounting means;

whereby when said handle is positioned in said catch means, the platform of said mounting means is substantially parallel with the upper surface of said base plate and fixed with respect to said stop and said handle may be removed from said catch means and the entire system rotated to move said devices out of their raised position.

4,192,428
BOTTLE CAP

Bruno J. Segmuller, Niderfeld 766, 8260 Stein am Rhein, Switzerland

Filed Aug. 15, 1978, Ser. No. 933,885

Claims priority, application Switzerland, Aug. 16, 1977, 10173/77

Int. Cl.² B65D *45/32*

U.S. Cl. 215—256 **3 Claims**

1. A re-usable bottle cap adapted to reliably seal a bottle at high or low temperatures which is easily removed by hand and effectively prevents escape of liquid contents or carbon dioxide comprising:

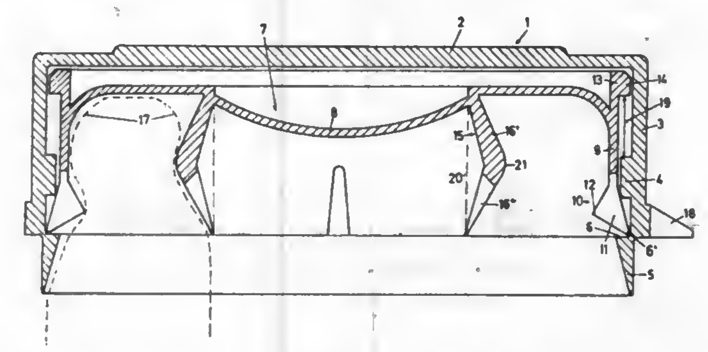
an outer hard plastic cap member;

an inner flexible, soft plastic sealing insert comprising a dished top member, an inner bottle sealing member below said dished top shoulder, a cylindrical outer side wall mounted within said hard plastic cap member and tapered tongues at the side wall;

a generally cylindrical opening ring with tapered side walls lying below and integral with the bottom edge of the side walls of said hard plastic cap member adapting the ring to fit over the shoulder of the bottle;

said taper having an inner wall sloping upwardly and inwardly from the bottom edge adapting fitting over the shoulder of the bottle;

said inner bottle sealing member below said dished top comprising a plurality of wall parts separated by slots which are formed integrally with the walls for opening of the bottle;



said outer hard plastic cap member having an angularly projecting inner stop collar adjacent the bottom of said cap creating a recess above said opening ring for receiving the tapered tongues of the collar; and

said outer hard plastic cap member being further provided with a recess above said stop collar which permits the axial displacement of the inner sealing insert,

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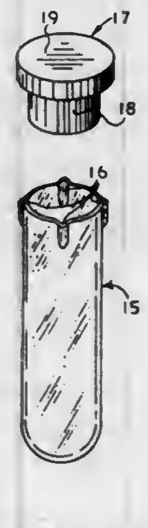
4,192,429
VENTED VACUUM TUBE AND STOPPER

Arthur J. Yerman, Manahawkin, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Continuation of Ser. No. 882,807, Mar. 2, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 19,007

Int. Cl.² B65D *51/16*

U.S. Cl. 215—307 **3 Claims**



1. A vacuum container assembly, which comprises;

(a) an air-evacuated tubular container having a first closed end and a second open end, adapted to receive in the open end a stopper having a plug portion to fit in the open end and a flange portion to sit on the edge of the open end; said container having at least one vent channel on the inner surface of the tubular container, having an open end at the edge of the container and extending from the edge of the open end to a predetermined point on the inner surface of the container distal from the open end; and

(b) a stopper mounted in the open end of the tubular container, said flange portion closing the open end of the vent channel and said plug portion closing the remaining open area of the vent channel; whereby the vent channel is sealed apart from the air-evacuated container.

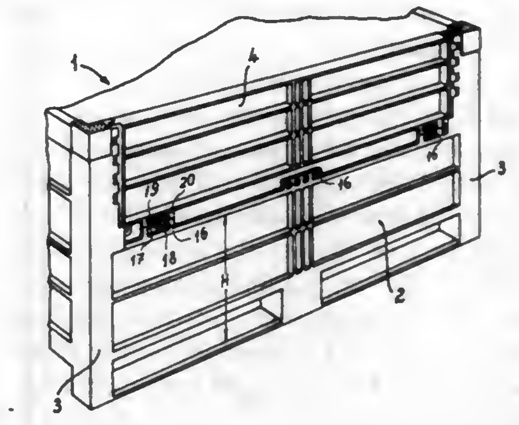
4,192,430
LATERALLY OPENABLE STORAGE AND TRANSPORT BOX

Jean Cornou, Verrieres le Buisson, France, assignor to Allibert Exploitation, Societe Anonyme, Grenoble, France

Filed Mar. 12, 1979, Ser. No. 19,551

Int. Cl.² B65D *87/00*

U.S. Cl. 220—1.5 **10 Claims**



1. A box comprising:

a floor;

a plurality of side walls extending upwardly from said floor and joined together at vertically extending corners, one of said side walls having an upper portion formed between the respective corners with a window having a lower edge and a pair of side edges;

a panel dimensioned to fit within and substantially close said window; and

at least one double-axis hinge element having a first portion journaled in said one wall adjacent said lower edge for pivoting about a first axis and having a second portion journaled in said panel for pivoting about a second axis generally parallel to and offset from said first axis, said axes being sufficiently spaced that said panel can move between a closed position flush with said one wall and blocking said window and a second position lying generally flatly against said one wall below said window.

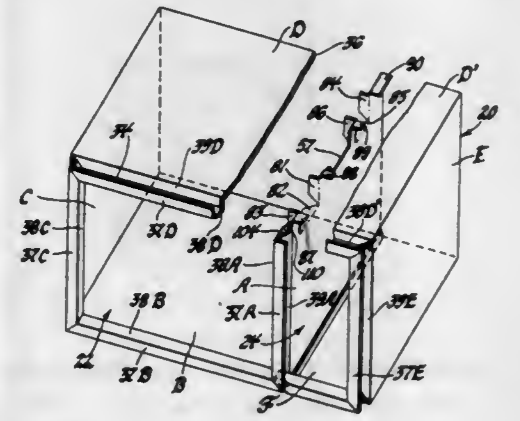
4,192,431
MICROWAVE OVEN SINGLE WALL CONSTRUCTION

Richard C. Brown, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 844,971, Oct. 25, 1971, abandoned. This application Jan. 9, 1979, Ser. No. 2,236

Int. Cl.² B65D *7/42;* H05B *9/06;* B65D *5/48*

U.S. Cl. 220—62 **3 Claims**



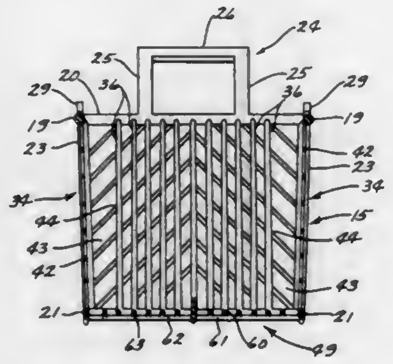
1. A microwave oven cabinet shell for maximizing interior volume while minimizing scrappage, said shell having side-by-side closed rectangular loop sections partially defining cooking and control compartments, the loop sections being formed from a one-piece blank presenting a divider panel, a first bottom panel, a first side panel, a top panel, a second side panel and a second bottom panel serially arranged in the order

named and foldably connected at fold lines forming five corner junctures of said rectangular loop sections, said divider panel forming a common partition wall between said control compartment and said cooking compartment, said first bottom panel forming an exterior bottom wall of said cooking compartment, said first side panel forming one exterior side wall of said cooking compartment, a portion of said top panel adjacent said first side panel forming the exterior top wall of said cooking compartment, the remaining portion of said top panel adjacent said second side panel forming the exterior top wall of said control compartment, said second side panel forming the exterior side wall of said control compartment, and said second bottom panel forming the exterior bottom wall of said control compartment, thereby to form with single wall construction the cavities of said cooking and control compartments, attachment means on the free edge of said divider panel for securing said divider panel free edge to the inner face of said top panel thereby defining the longitudinal separation of said cooking compartment top wall and said control compartment top wall, said second bottom panel free edge having flange means for securing said second bottom panel free edge to the outer face of said divider panel adjacent its corner juncture with said first bottom panel, the forward edge of said blank being integrally provided with a coextensive flange, said blank flange at its associated fold lines being notched-out in a predetermined manner providing each panel with a flange portion having integral foldable opposed gussets at each free end thereof, each said flange portion being formed in section into a downwardly, forwardly and upwardly projecting channel; whereby upon the formation of the loop sections and the folding of the gussets to a common diagonal plane with respect to the corner junctures and upon securing to each other at said plane the abutting surfaces of the juxtaposed gussets on adjacent flange portions, a microwave cabinet shell is formed with maximum interior volume for any predetermined exterior dimension which has rectangular channel framed openings for the cooking compartment and the control compartment, whereby sufficient rigidity is imparted to strengthen the cabinet and support a door adapted for closing the opening for said cooking compartment.

4,192,432
SIDEWALL CONSTRUCTION FOR SILVERWARE BASKET

Lawrence J. Jordan, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Jul. 17, 1978, Ser. No. 925,091
Int. Cl.² B65D *7/42, 7/20*
U.S. Cl. 220—83 2 Claims

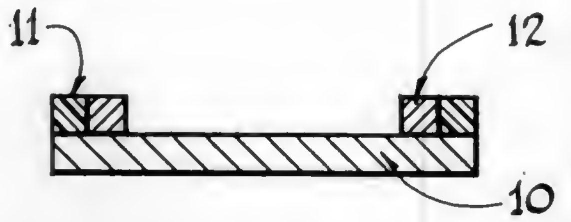


1. A silverware basket for use in a dishwashing apparatus having perforate bottom and peripheral walls wherein the improvement comprises: means for forming said peripheral walls including a plurality of generally upstanding ribs disposed in a first generally vertical plane and a plurality of downwardly sloping ribs disposed in a generally parallel second plane with said sloping ribs intersecting and connected to said upstanding ribs to form a latticework of perforations around said basket, the surfaces of said sloping ribs being free of horizontal planes and constructed and disposed for draining washing fluid from said basket whereby said latticework is substantially free of horizontal fluid supporting surfaces for minimizing the retention of said washing fluid thereon.

4,192,433
HERMETIC SEALING COVER FOR A CONTAINER FOR SEMICONDUCTOR DEVICES

Norman Hascoe, Larchmont, N.Y., assignor to Semi-Alloys, Inc., Mount Vernon, N.Y.

Filed Jan. 19, 1979, Ser. No. 4,654
Int. Cl.² B65D *41/00, 43/00, 51/00*
U.S. Cl. 220—200 9 Claims

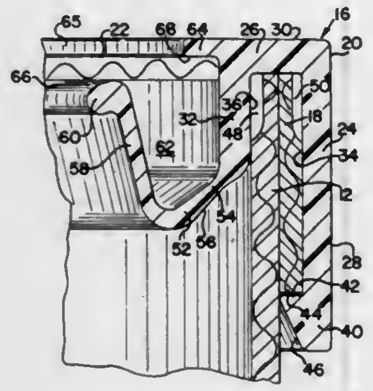


1. A cover unit for hermetically sealing a container for a semiconductor device comprising:
a metallic cover element;
a preformed ring of substantially chemically unreacted thermosetting plastic;
and a preformed ring of an alloy having the characteristic that it solidifies from the fluid state as a homogeneous mixture and a relatively thin oxidation-resistant coating thereon,
one of said rings being disposed substantially in registry with the periphery of the cover element and the other of said rings being nested closely inside said one ring,
whereby, upon heating the cover unit, the two rings are fused to each other and to the cover element.

4,192,434
CONTAINER CLOSURE ASSEMBLY

Michael F. Conroy, Bridgeville, Pa., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Aug. 14, 1978, Ser. No. 933,147
Int. Cl.² B65D *5/64, 43/00*
U.S. Cl. 220—306 2 Claims

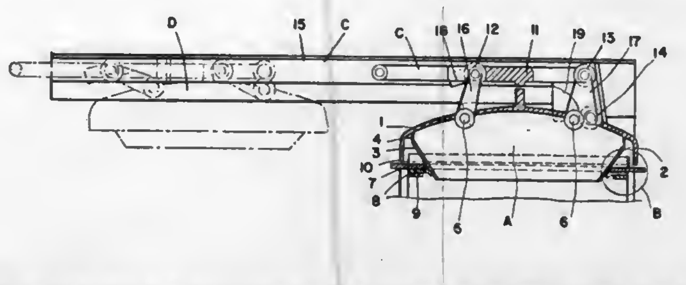


1. A closure forming arrangement for an open end of a tubular container which comprises a ring member of semi-rigid plastic material having a rim forming section with peripheral surfaces in planes generally normal to each other and having an outboard peripheral recess opening in a direction generally normal to one surface of said rim section and extending generally parallel to the other surface which outboard recess is configured to receive a marginal portion of the container wall at the open end thereof with means therein to grip said wall portion when the latter is seated in said recess, and said ring member having a recess inboard of said peripheral recess which opens in a direction to receive therein marginal portions of a closure forming disc member of paperboard or similar material with inwardly spaced means for holding the disc against movement inwardly of the container, said outboard recess extending generally parallel with an outboard peripheral surface of said rim section and between outboard and inboard wall sections which extend generally parallel to each other and normal to a connecting wall section extending between corresponding ends of said outboard and inboard wall sections, said inboard recess being defined by the inboard surface of said inboard wall section, an overhanging extension of said connecting wall section and a wall section spaced from said overhanging extension of said wall section and extending inwardly of said inboard wall section, said wall section which extends inwardly of said inboard wall section having an area of reduced thickness intermediate its innermost and outermost edges which increases its flexibility and cooperates with the overhanging extension of said connecting wall section in clamping said closure forming disc in position in said recess.

4,192,435
SELF-SEALING CLOSURE DEVICE FOR TRANSPORT TANK

Jacky Volpeliere, Gardanne, France, assignor to Aluminum Pechiney, Lyons, France

Filed Mar. 26, 1979, Ser. No. 23,542
Claims priority, application France, Apr. 7, 1978, 78 10998
Int. Cl.² B65D *43/14, 51/04*
U.S. Cl. 220—331 12 Claims



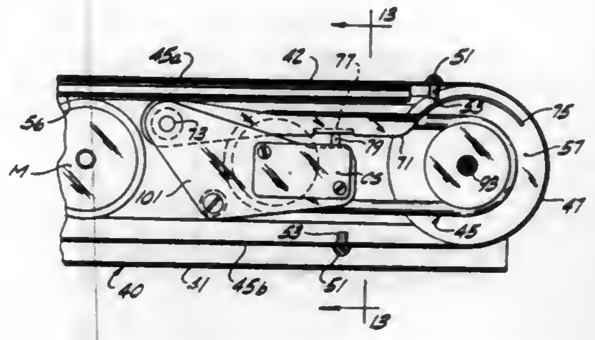
1. A novel device for closing the dome of a tank with gravity and/or pneumatic discharge, which is self-cleaning, self-sealing, operable with a low force, capable of being automated and having a high degree of safety for the operator, comprising a closure cap member which is applied to a seat provided with a resilient sealing gasket, and a closure mechanism for holding the cap member on the seat, characterised in that the cap member comprises a protection cap provided with fixing means for the closure mechanism, and a bearing surface whose surface is a surface of revolution and which is formed by at least one segment of a straight line and/or arc of a curve, that the seat comprises a support plate acting as an abutment for the bearing surface of the cap member, a resilient gasket which is loaded in bending by contact with the bearing surface of the cap member and a co-operating flange for fixing the gasket on the support plate, and that the closure mechanism is operable with a low mechanical force.

4,192,436
ARTICLE DISPENSING APPARATUS PARTICULARLY FOR USE FOR DISPENSING FOOD

James T. Schuller, and Harry C. Haeusser, both of St. Louis, Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Jan. 30, 1978, Ser. No. 873,141
Int. Cl.² B65G *15/60*
U.S. Cl. 221—129 34 Claims

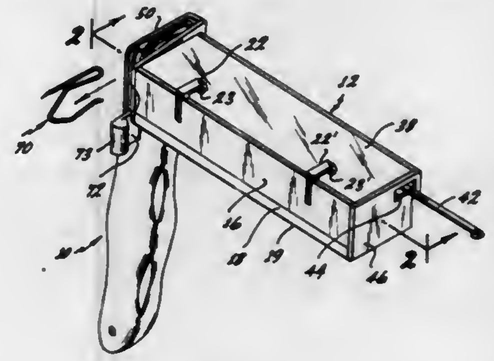
1. Article dispensing apparatus comprising:
an enclosure having a front, rear and sides;
a plurality of article dispensers in the enclosure each adapted to hold a row of articles to be vended extending in rear-to-front direction;
said dispensers being arranged in tiers with a plurality of dispensers in each tier located in side-by-side relationship in the tier;
the front ends of the dispensers being spaced rearwardly from the front of the enclosure so that there is a space between the front of the enclosure and the front ends of the dispensers;
each dispenser comprising means for feeding the respective row of articles forward and discharging the forward article off the front end of the dispenser;
a carrier extending heightwise of the tiers movable laterally with respect to the enclosure in said space;
said carrier having a plurality of article receivers, one for each tier at the level of the front of the respective tier;
said enclosure having a delivery station therein at the front thereof extending the height of the carrier to which said carrier is movable for delivery of an article on any one of said receivers; and
means for moving the carrier laterally with respect to the enclosure in said space to position any one of the receivers in front of the front end of any one of the dispensers in the respective tier, for operating said one dispenser to discharge the forward article off the front end of that dispenser onto said one receiver, and then moving the carrier to a delivery position at said delivery station where an article on any one of the receivers is accessible from the front of the enclosure.



4,192,437
PIN-HOOK DISPENSING AND INSERTING OR SETTING TOOL

James L. Wyatt, 32700 Coastsite Dr., Rancho Palos Verdes, Calif. 90274

Filed Feb. 27, 1978, Ser. No. 881,200
Int. Cl.² B65H *3/00*
U.S. Cl. 221—255 9 Claims



1. A drapery pin-hook dispensing and inserting tool including, in combination, means forming a chamber for holding pin-hooks, means carried by the said chamber means for ejecting individual pin-hooks to be inserted in drapery from an end of the chamber, the chamber means being provided with an opening lengthwise of the chamber of a size whereby a group of pin-hooks arranged in alignment on a spindle can be inserted into the chamber means in a position to feed to the ejector means, the chamber being free from a removable magazine part said chamber means having an internal construction contoured to conform to the shape of the pin-hooks whereby to hold and guide them in travelling toward the ejection means after removal of said spindle.

4,192,438

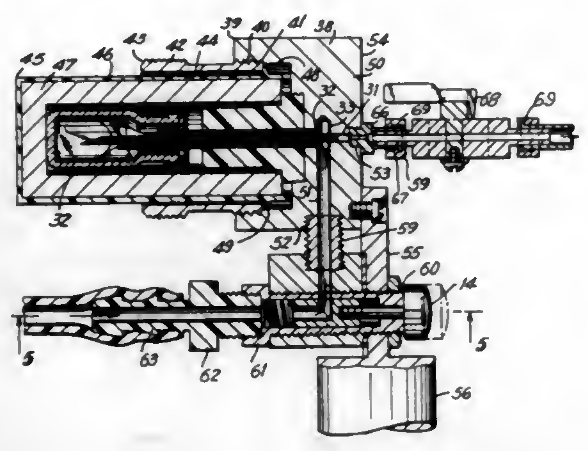
DEVICE FOR DELIVERING RADIOACTIVE GAS FROM A SEALED VIAL

Edward H. Foster, and James M. Reiss, both of Center Moriches, N.Y., assignors to Atomic Products Corporation, Center Moriches, N.Y.

Filed May 25, 1978, Ser. No. 909,504

Int. Cl.^{2} A61B *6/00;* B67B *7/24*

U.S. Cl. 222—5 **3 Claims**



1. A device for delivering radioactive gas from a sealed vial to a gas delivery unit for performing regional ventilation studies and the like, comprising: a housing element defining an enclosed chamber and a threaded flange adjacent said chamber and defining a recess; inlet and outlet ports communicating with said enclosed chamber; a pair of concentrically disposed hollow needles extending from said enclosed chamber into said recess, one end of each of said needles disposed in said chamber communicating with one of said inlet and outlet ports; a vial receiving element positioned within said recess, and disposed in the area of opposite ends of said concentric needles; a threaded cylindrical bushing selectively engageable with said threaded flange and having means engaging a protective shielded container of a vial after the removal of a cover of said container, said engagements positioning a vial disposed within said container opposite said needles for the simultaneous penetration thereof; and coupling means connecting with said inlet port including a manually operable valve for supplying an inert gas under pressure through one of said needles into said vial; whereby upon the engagement of a vial upon said needles, and the opening of said manually operable valve, gas under pressure may be supplied through one of said needles to displace gas within said vial and force the same through the other of said needles and through said outlet port.

4,192,439

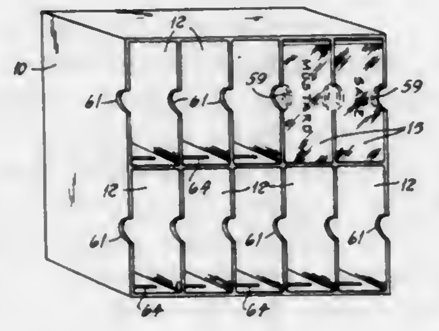
SPICE RACK FOR STORING AND DISPLAYING SPICES

Paul Segal, 15 Colonial Rd., White Plains, N.Y. 10605

Filed Dec. 26, 1978, Ser. No. 973,036

Int. Cl.^{2} B67D *5/64;* A47G *19/24*

U.S. Cl. 222—130 **7 Claims**



1. In a spice rack:

(a) a cabinet comprising a plurality of cubicles of generally rectangular cross-section,

(b) a plurality of spice boxes for respectively fitting within said cubicles in such a way as to be removable therefrom and reinsertable therein,

(c) at least some of said spice boxes each comprising a front wall, a back wall, spaced-apart sidewalls interconnecting said front and back walls, a bottom wall, a removable top, and a partition generally parallel to said front wall dividing said spice box into a relatively large-volume dispensing compartment between said partition and said back wall and a relatively small-volume reserve compartment between said partition and said front wall, said front wall being transparent so that spice stored within said reserve compartment will be readily visible from the front of said cabinet when said spice box is located within its associated cubicle,

(d) the at least some of said spice boxes each having a generally rectangular cross-section in a plane parallel to said front wall with external dimensions in said cross-sectional plane only slightly less than the internal dimensions of the associated cubicle in said plane so that said box fits snugly within said associated cubicle,

(e) and the tops of the at least some of said spice boxes each having perforations therein communicating with the associated dispensing compartment to allow spice within said dispensing compartment to be dispensed through said perforations, said tops being effectively imperforate where aligned with said reserve compartment.

4,192,440

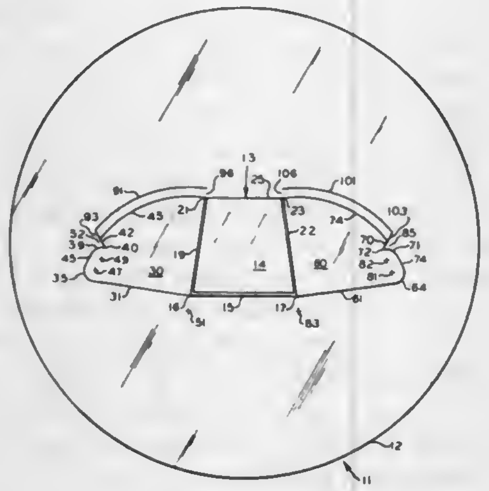
POUR SPOUT FOR A CONTAINER

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 12, 1978, Ser. No. 905,617

Int. Cl.^{2} B65D *25/44*

U.S. Cl. 222—528 **9 Claims**



1. A pour spout preform structure adapted to form a pour spout comprising an inner layer member and an outer layer member:

said inner layer member having a generally C-shaped die cut therein and a first score line extending between the ends of said generally C-shaped die cut, the portion of said inner layer member outside of the area enclosed by said generally C-shaped die cut and said first score line constituting a peripheral section, the portion of said inner layer member enclosed by said generally C-shaped die cut and said first score line constituting a pour spout section, said pour spout section being integrally connected to said peripheral section along said first score line, second and third score lines being formed in said pour spout section, each of said second and third score lines extending, in such a manner that said second and third score lines never cross, from a point at least closely adjacent a respective end of said generally C-shaped die cut to a respective point on the side of said generally C-shaped die cut generally opposite the respective ends of said generally C-shaped die cut to thereby divide said pour spout section into a central chute floor and first and second side panels, said central chute floor being integrally connected to said peripheral section along said first score line and being integrally connected to said first side panel along said second score line and to said second side panel along said third score line; said peripheral section having at least one die cut formed therein which is an arcuate strip extending generally alongside at least a part of the edge of said generally C-shaped die cut which forms the edge of said first side panel and the edge of said second side panel and which is generally opposite said first score line; and

said outer layer member having a generally U-shaped die cut therein and a fourth score line formed in said outer layer member extending between the ends of said generally U-shaped die cut, the portion of said outer layer member inside the area enclosed by said generally U-shaped die cut and said fourth score line constituting a flap section and the portion of said outer layer member outside the area enclosed by said generally U-shaped die cut and said fourth score line constituting a wall section, said outer layer member being positioned against said inner layer member with said fourth score line overlying said first score line of said inner layer member and said flap section being bonded to and overlying said central chute floor.

4,192,441

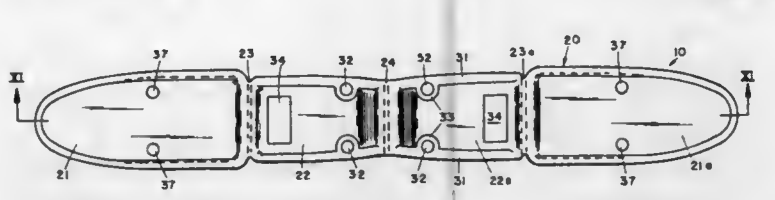
CLAMP CONSTRUCTION FOR ARTICLE HANGERS

John H. Batts, Grand Rapids, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.

Filed Jul. 17, 1978, Ser. No. 925,112

Int. Cl.^{2} A47J *51/14*

U.S. Cl. 223—96 **21 Claims**



1. A clamp for engaging and holding articles, said clamp having a pair of jaws hingedly joined together and spring means biasing one end of said jaws into closed, article clamping position, each of said jaws having normally divergent finger pads projecting from the hinge joint of said jaws oppositely from said one end of said jaws, said clamp characterized in that it has a pair of outer panels and a pair of inner panels, each outer panel being integral with and hingedly joined to one of said inner panels said inner panels being integral and connected to form said hinge joint between said jaws which hinge joint acts as a fulcrum about which said jaws are pivoted as said clamp is opened and closed; each of said outer panels being seated against a portion of one face of the adjacent one of said inner panels to form one of said jaws and means to secure the inner and outer panels of each jaw in abutting relationship; said inner and outer panels being moldable from plastic as a single piece.

4,192,442

ROLL SHEET DISPENSER

Lehyman J. Bastian, Media, Pa., and Richard D. Kley, New Castle, Del., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Oct. 12, 1978, Ser. No. 950,830

Int. Cl.^{2} B65H *17/26*

U.S. Cl. 226—127 **8 Claims**

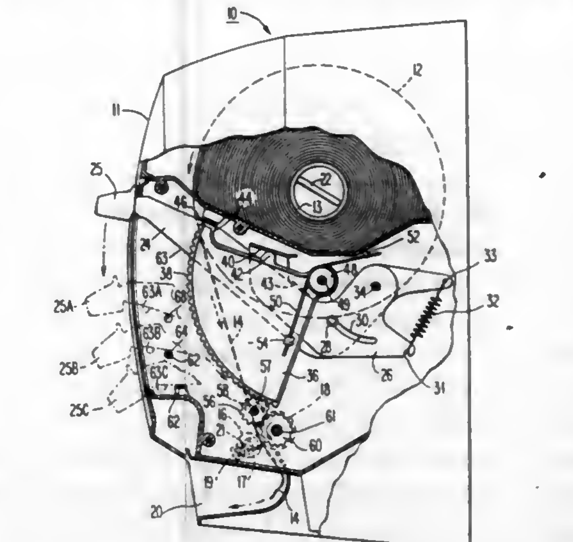
7. In a dispensing cabinet, an apparatus for feeding a sheet material through a nip formed by a rotatably mounted drive roller and a rotatably mounted pressure roller comprising:

(a) a gear segment mounted for rotation about a first point;

(b) a lever pivotally mounted about a second point;

(c) an actuator pivotally mounted about the second point, said actuator having a surface in moving contact with a portion of the gear segment, and said lever and actuator including a stop that limits the rotation of the lever with respect to the actuator;

(d) spring means for biasing the lever and actuator at the stop, so that rotation of the lever and the actuator through a given angle normally causes the gear segment to rotate through an angle greater than said given angle but when excessive force is applied to the lever and the actuator is unable to rotate, the spring means expands to allow the lever to rotate with respect to the actuator; and



(e) gear means driven by the gear segment and operably connected to the drive roller so that rotation of the gear segment results in rotation of the drive roller whereby the sheet material is fed through the nip and dispensed from the cabinet.

4,192,443

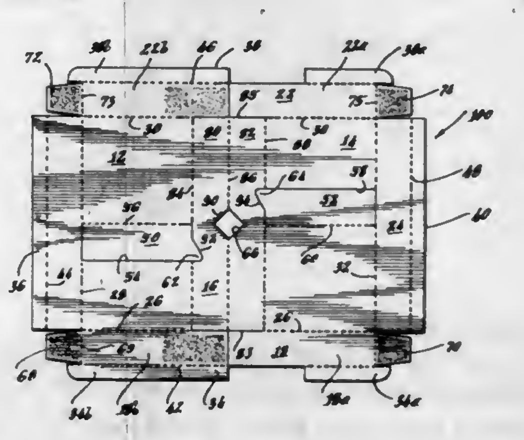
DIVIDED PAPERBOARD TRAY

Edwin C. McLaren, Apple Valley, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 10, 1978, Ser. No. 922,813

Int. Cl.^{2} B65D *5/48*

U.S. Cl. 229—28 R **3 Claims**



1. A compartmentalized container for packaging, storing and heating foods comprising:

a paperboard tray including

a horizontal base portion having a central divider wall extending upwardly therefrom substantially perpendicular thereto to form a pair of discrete food compartments on said base portion,

a plurality of upstanding walls foldably connected to said base portion,

a corner closure foldably connected to selected ones of said upstanding walls overlapping an adjacent upstanding wall and being connected thereto,

a horizontally disposed flange foldably connected to the top edge of each of said upstanding walls, each of said flanges abutting each other at their ends to form a peripheral flange,

a subdivider wall pivotally connected to said horizontal base portion along a fold line to move from a flat to an upright position transversely within each of said discrete food compartments,

means for interlocking said subdivider walls in an upright position, said interlocking means including a substantially V-shaped notch cut in the top of said central divider wall and an ear extending from one edge of each of said subdivider walls in abutment with each other in said V-shaped notch,

said plurality of upstanding walls including a first pair of opposed, upstanding walls, and a second pair of opposed, upstanding walls, the base portion of said tray being divided into a first and second portion by said central divider wall, the first of said base portions being foldably connected to one of said first pair of said opposed upstanding walls and both of said second pair of opposed upstanding walls, the second of said base portions being foldably connected to the other of said first pair of said opposed upstanding walls and both of said second pair of opposed upstanding walls, said central divider wall being formed by three parallel fold lines between said first and second portions of said base defining two panels folded about said fold lines into abutting back-to-back relation; and

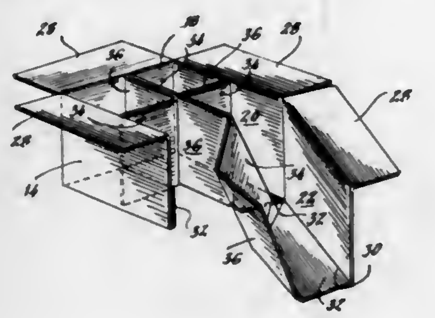
a leak proof liner for said paperboard tray comprising a preformed, semi-rigid blister of thermoformable material conforming generally to the interior of said paperboard tray, said blister being sealed to said tray at the flanges.

4,192,444
FOUR CELL BOX AND BLANK THEREFOR

Ivan E. Garmon, St. Joseph, Mo., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 2, 1978, Ser. No. 947,770
Int. Cl.² B65D *5/48*

U.S. Cl. 229—28 R **12 Claims**



1. A paperboard box comprising:

a front wall, a rearwall, and a pair of parallel side walls connecting said rear walls,

each of said front, rear and side walls having a bottom forming flap pivotably connected to the bottom edge thereof,

each of said bottom flaps being overlapped with an adjacent one thereof,

a plurality of divider walls within the interior of said box between said side walls, each divider wall including,

at least a pair of rectangular panels, each of said panels extending essentially the entire height of said front wall, said rear wall, and said side walls, and

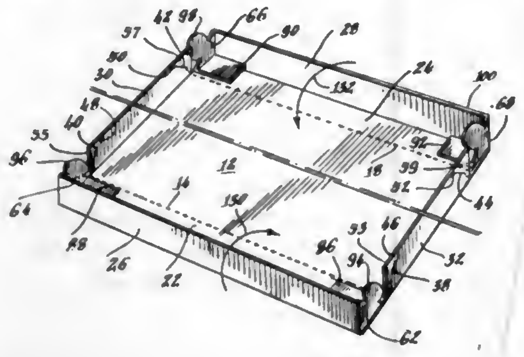
one of said rectangular panels being folded about a hinge line connecting it to a bottom flap within the interior of said box and each panel of each of said pair of rectangular panels being folded relative to the other into planar abutment with one of said panels in an adjacent one of said divider walls to form a plurality of cells within the interior of said box each partially defined by at least two walls, each of said last mentioned walls comprising at least two of said rectangular panels in planar abutment with each other.

4,192,445
PACKAGING CONTAINER INCLUDING INTEGRAL CORNER LOCKS

David R. Card, Memphis, Tenn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 29, 1979, Ser. No. 6,991
Int. Cl.² B65D *5/30*

U.S. Cl. 229—35 **6 Claims**



1. A packaging container including:

a pair of opposed end walls, a pair of opposed side walls, a rectangularly shaped bottom wall and a pair of spaced apart top walls connected together to form a rectangularly shaped enclosure,

said end walls, said side walls and said top walls being interconnected adjacent each corner of said bottom wall by corner locking structure including a flap joined to each end of said top walls extending perpendicular to the latter and generally coplanar with the corresponding side walls,

said locking structure further including a slot in each of said side walls configured to receive at least a portion of the corresponding flap therethrough, each of said slots extending diagonally from lower portions of the associated side wall in a direction away from the adjacent end wall toward upper portions of said associated side wall,

each of said flaps including a tab section passing through the corresponding one of said slots and disposed within said enclosure, a triangularly shaped base section extending between the corresponding top wall and end wall and disposed exterior of said enclosure, and a tuck flap portion having one edge thereof joined along one leg of said triangular base section thereof, said tuck flap portion being disposed within said enclosure in side-by-side abutting relationship to the corresponding end wall.

4,192,446
PAPERBOARD LIQUID CONTAINER

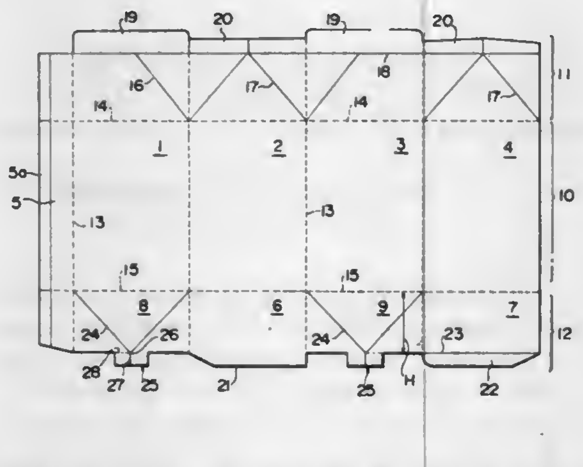
Naoki Naito, Tokyo, Japan, assignor to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1978, Ser. No. 949,093

Claims priority, application Japan, Oct. 18, 1977, 52-139702[U]

Int. Cl.² B65D *5/72*

U.S. Cl. 229—37 R **2 Claims**



1. A liquid impermeable prismatically shaped paperboard comprising

four peripheral surface sheets and an adjacent piece which are disposed in a manner to be continuous in a lateral direction through fold lines;

flaps forming a lid portion and a bottom portion respectively disposed in a manner to be contiguous to upper and lower edges of said peripheral surface sheets through fold lines;

said lid flap having oblique fold lines therein, and tip pieces for joining extending from an outermost end thereof, said tip pieces being folded along fold lines extending therebetween thereby forming the lid portion in the shape of a roof;

said bottom portion including outer bottom sheets and inner bottom sheets respectively opposing each other, tip pieces disposed at tips of the opposing bottom sheets of said container bottom portion, the opposing inner bottom sheets being formed with folds in the shape of isosceles triangles whose bases are the fold lines thereof, small pieces protruding outwardly beyond outer edges of said inner bottom sheets from central parts at which exist apexes of the isosceles-triangular folds; and

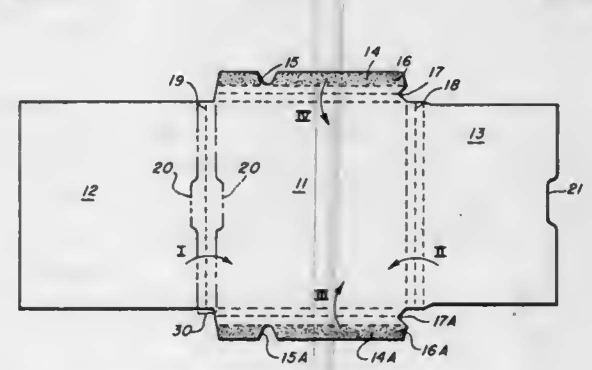
said opposing inner bottom sheets being foldable inwardly, said small pieces being insertable between the two outer bottom sheets, said tip pieces of said opposing outer bottom sheets being placeable thereon, opening parts of said paperboard thereby being joinable in a manner not exposed to the interior of said container.

4,192,447
MULTI-COMPARTMENT ENVELOPE

Ernest O. Ambrosat, and Arthur Weingartner, both of Hickory Hills, Ill., assignors to Victor Envelope Company, Elmhurst, Ill.

Filed May 1, 1978, Ser. No. 901,433
Int. Cl.² B65D *27/08*

U.S. Cl. 229—72 **8 Claims**



1. A multi-compartment envelope produced from a single sheet comprising:

an adjacent single sheet thickness front and back panel formed by folding one end of said single sheet over and adjacent a portion of the remainder of said single sheet, said panels secured together at opposing side edges and open at the top by cutting off said fold between said front and back panel forming an opening to the top of a first pocket, the bottom of said front and back panel not being fastened together;

a single sheet thickness front compartment panel folded upwardly from the bottom of said back panel adjacent said front panel and open at the top forming an opening to a second pocket; and

side securing means securing closed the side edges of said front compartment, front and back panels.

4,192,448
SELF-SEALING CLOSURE FOR MAILING BAGS

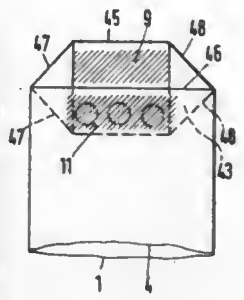
Erwin Porth, Wenningstedt, Fed. Rep. of Germany, assignor to "Wilhelmstal" Ernst & Sohn GmbH & Co. KG, Radevormwald, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 876,905

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1977, 2706507

Int. Cl.² B65D *27/16, 27/32, 33/20*

U.S. Cl. 229—80 **5 Claims**



1. A mailing bag having a backside having an upper free edge, a frontside having an upper free edge, side creases joining said frontside to said backside and self-sealing closure comprising: a closure flap; a template flap; an inside of said closure flap; adhesive means applied in strips on said inside of said closure flap and on a portion of said backside; said template flap being folded away from contact with said adhesive means and into said mailing bag for producing a first-class letter closure with complete adhesive bonding; said template flap forming a retainer flap for securing mailing bag contents inside said mailing bag; said retainer flap together with chemical closure by bonding with said adhesive means providing mechanical security against actions of the contents on the closure flap so that said closure flap is relieved and secured against damage from the contents; auxiliary crease lines in said closure flap and in said template flap; main crease lines delimiting the lower edges of said closure and template flaps; said side creases connecting said template flap to said closure flap; said auxiliary crease lines being inclined 45° from said main crease line and extending from an intersection of said main crease line with said side creases to said upper free edge, said template flap being foldable about said main crease line both outwardly onto said backside and inwardly into said mailing bag, regions of said closure flap and of said template flap located outside said auxiliary crease lines being located in a plane underneath said backside and inside said mailing bag on an inside surface of said front side.

4,192,449
CODING SYSTEM

K. Boyd Tippetts, Glendale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jul. 3, 1978, Ser. No. 921,664
Int. Cl.² G06K *1/10*

U.S. Cl. 234—111 **3 Claims**

1. A coding system for applying data by selectively piercing predetermined marking areas of a segment of a film strip, said film strip having two substantially parallel rows of sprocket holes, one row along each side of the film strip, said rows of sprocket holes being substantially uniformly spaced and parallel to one another, a predetermined number "p" of the sprocket holes of each segment being placement sprocket holes, a lead pattern located on the segment between the rows of sprocket holes, the area of the segment between the rows of the sprocket holes and the lead pattern of each segment defining the marking areas, said marking areas being divided into data blocks, comprising:

a base plate having an upper and a lower planar and parallel surfaces;

a die having upper and lower substantially planar and parallel surfaces;

means forming 2^n die pin holes through the die where "n" is an integer said die pin holes having a longitudinal axis each of which axis is substantially perpendicular to the planar surfaces of the die; there being $2^{(n-2)}$ die pin holes in each data block;

means forming "p" die pilot holes in the die, each die pilot hole having a longitudinal axis substantially perpendicular to the planar surfaces of the die, said die pin holes and die pilot holes being positioned in the die so that when the pilot holes underlie the placement sprocket holes of a segment, the data blocks of a segment overlie the die pin holes;

means for mounting the die on the base plate so that the upper surface of the die is substantially parallel to the upper surface of the base plate;

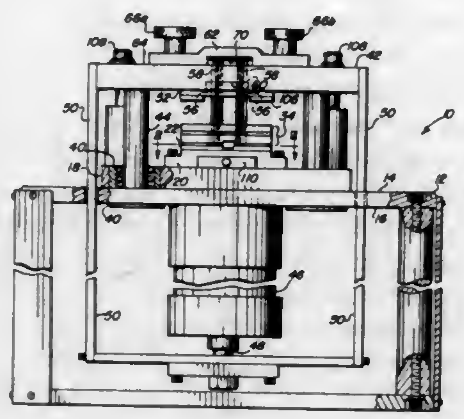
a lower punch guide plate having 2^n punch guide holes and p pilot guide holes each of said punch and pilot guide holes having a longitudinal axis, said guide holes being positioned so that the punch and pilot guide holes in the lower punch guide plate can be aligned with corresponding die pin holes and die pilot holes in the die;

means for mounting the lower punch guide plate on the die so that the longitudinal axes of the punch and pilot guide holes are substantially aligned with corresponding pin and pilot holes of the die;

a film guide channel formed in the lower punch guide plate;

a top plate having upper and lower parallel planar surfaces mounted for reciprocal linear motion with respect to the base plate;

a punch holder having upper and lower planar surfaces;



actuating means mounted on the lower surface of the base plate for moving the punch holder from a first position in which the punch holder is at a maximum distance from the base plate to a second position in which the punch holder is at a minimum distance from the base plate;

said punch holder having 2^n punch holes and p punch pilot holes each of said punch and punch pilot holes having a longitudinal axis, said punch and punch pilot holes in the punch holder being positioned so that said punch and punch pilot holes can be aligned with corresponding die pin and die pilot holes in the die;

means for mounting the punch holder on the lower surface of the top plate so that the longitudinal axis of said punch and punch pilot holes substantially coincide with the longitudinal axis of corresponding die pin and die pilot holes of the die;

a pilot pin fixedly mounted in each of the pilot holes of the punch holder;

2^n piercing punches positioned so that one is located in each of the punch holes of the punch holder for limited reciprocal movement therein; each of said piercing punches having an enlarged head;

2^n backup pin holes formed in the punch holder, each of the backup pin holes having a longitudinal axis, said backup pin holes being positioned so that the longitudinal axis of the backup pin holes substantially coincide with the longitudinal axis of the die pin holes;

a plurality of punch backup pins;

a punch backup plate removably mounted on the upper surface of the punch holder between a first position in which the backup pin holes of the punch holder are accessible and backup pins placed in said holes are free to move vertically and a second position in which each backup pin placed in a backup pin hole is held in contact with the head of a piercing punch, a backup pin when positioned in a backup pin hole in the top plate and with the backup plate in its second position, prevengint movement relative to the top place of the piercing punch whose head the backup pin contacts;

the lengths of the piercing punches and the pilots being such that they lie within the corresponding openings of the lower punch guide plate when the top plate is in its first position; and when the top plate is in its second position, the pilots project into the pilot holes of the die and each piercing punch in contact with a backup pin projects into its corresponding die, pin hole and the piercing punches not in contact with a backup pin are not forced into their corresponding pin holes.

4,192,450
ODOMETER

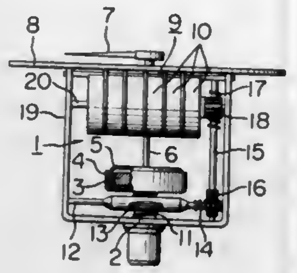
Hisao Nezu, Nagaoka, Japan, assignor to Nippon Seiki Kabishiki Kaisha, Niigata, Japan

Filed Feb. 15, 1979, Ser. No. 12,460

Claims priority, application Japan, Sep. 22, 1978, 53-130564[U]

Int. Cl.^{2} G01C *22/00*

U.S. Cl. 235—95 R **5 Claims**



1. An odometer comprising

a frame,

a first shaft unrotatably supported by said frame,

a driving gear loosely mounted on said first shaft for rotation thereabout and operatively coupled to a suitable rotating member the number of rotations in one direction of which represents a trip milage of a vehicle or the like,

a plurality of odometer wheels loosely mounted on said first shaft for rotation thereabout and operatively coupled to each other in conventional counter mechanism relationship,

a plurality of first engaging means formed on one side face of the least significant digit odometer wheel adjacent to said driving gear in equiangularly spaced apart relationship with each other and in coaxial relationship with said least significant digit wheel,

one or more second engaging means formed on said one side of said least significant digit wheel in suitably angularly spaced apart relationship with each other and in coaxial relationship with said least significant digit wheel, said one or more second engaging means being located radially inwardly of said first engaging means and spaced apart from each other radially by a suitable distance,

a driving plate mounted on said driving gear for rotation in unison therewith and formed with arcuate elastic arms which are extended concentrically in one direction and have engaging pawls formed at the free ends thereof for selective engagement with said first engaging means on said least significant digit wheel only in said one direction, and

a locking plate unrotatably mounted on or keyed to said first shaft and formed with arcuate elastic arms which are extended coaxially in one direction and have engaging pawls formed at the free ends thereof for selective engagement with said second engaging means on said least significant digit wheel only and only when the latter is rotated in the other direction, whereby when said driving gear is rotated in one direction, said driving wheel is rotated in unison therewith so that said pawls of said arcuate elastic arms of said driving wheel engage with said first engaging means on said least significant digit wheel, thereby rotating the same and its succeeding odometer wheels in said one direction while said pawls of said arcuate elastic arms of said locking plate being resilient pressed against said one side face of said least significant digit wheel but free from engagement with said second engaging means thereupon, but when said driving gear is rotated in the other direction so that said least significant digit wheel tends to rotate in said the other direction, said pawls of said arcuate elastic arms of said locking plate engage with said second engaging means on said least significant digit wheel, thereby locking the rotation in said the other direction of said least significant digit wheel, while said pawls of said arcuate elastic arms of said driving plate being resiliently pressed against said one side face of said least significant digit wheel but free from engagement with said first engaging means thereon and consequently free for rotation in said the other direction relative to said least significant digit wheel so that the rotation in the subtractive direction of said plurality of odometer wheels may be positively prevented.

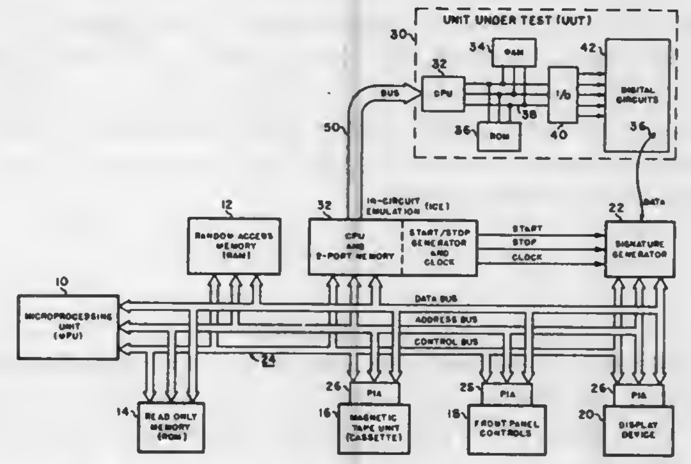
4,192,451
DIGITAL DIAGNOSTIC SYSTEM EMPLOYING SIGNATURE ANALYSIS

Stephen Swerling; Steven R. Smith, both of Portland, and Thomas W. Wiesmann, Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed May 30, 1978, Ser. No. 910,172

Int. Cl.^{2} G06F *11/04;* G01R *31/00*

U.S. Cl. 371—20 **6 Claims**



1. An apparatus for diagnosing faults in a unit under test containing digital electronic circuits, comprising:

a signature generator connectable to preselected locations in said digital electronic circuits for receiving digital signals in the form of predetermined bit patterns generated by said unit under test, said signature generator comprising a feedback shift register which generates cyclic redundancy check character test signatures in accordance with said predetermined bit patterns and synchronous start, stop, and clock signals provided by said unit under test;

means for storing predetermined correct signatures associated with selected locations in said unit under test; and

means for electronically comparing said test signatures with said predetermined signatures in a predetermined manner under program control.

4,192,452
INFORMATION READING SYSTEM

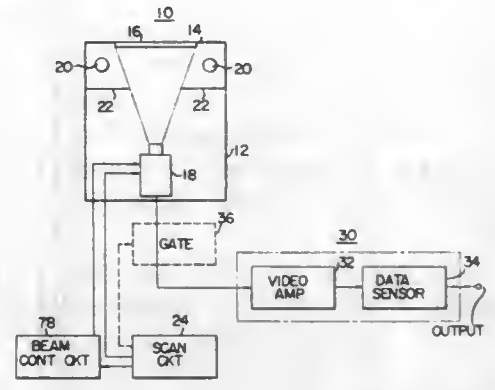
Tsutomu Hashimoto, and Nobuhiro Nakamura, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 18, 1977, Ser. No. 770,074

Claims priority, application Japan, Feb. 20, 1976, 51-17744; Feb. 23, 1976, 51-18686; Mar. 15, 1976, 51-27954; Mar. 15, 1976, 51-27955; Mar. 15, 1976, 51-27956; Mar. 15, 1976, 51-27958

Int. Cl.^{2} G06K *7/10;* H04M *5/38*

U.S. Cl. 235—471 **8 Claims**



1. An information reading system comprising a pedestal including a transparent window, a television camera disposed in opposite relationship with said transparent window on said pedestal, said television camera including a focusing coil having an elliptical cross section to form an elliptical scanning beam and an output and having a raster formed of scanning lines produced therein and rotated, signal processing means connected to said output of said television camera to produce a video signal produced by said television camera, and raster control circuit means connected to the television camera for contacting each pair of adjacent scanning lines with each other.

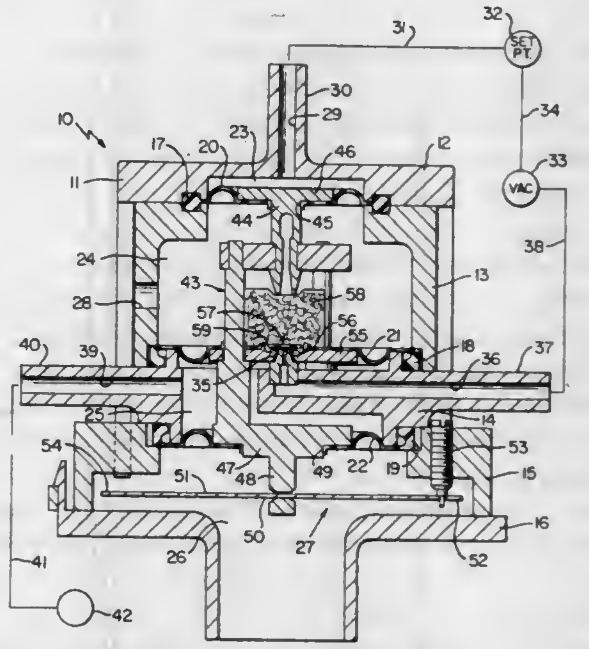
4,192,453
THERMOSTAT CONSTRUCTION AND METHOD OF MAKING THE SAME

Alfred A. Frankenberg, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 27, 1977, Ser. No. 864,674

Int. Cl.^{2} G05D *23/08*

U.S. Cl. 236—87 **18 Claims**



1. In a thermostat construction for producing a pneumatic signal in relation to sensed temperature and having a housing means provided with a pneumatically operated set point adjustment diaphragm operatively interconnected to a temperature sensor and a pneumatically operated feedback diaphragm

to control valve means for producing said pneumatic signal in an output chamber of said housing means that is defined in part by said feedback diaphragm, the improvement comprising a balancing diaphragm carried by said housing means and also defining in part said output chamber thereof, said balancing diaphragm being operatively interconnected to said feedback diaphragm.

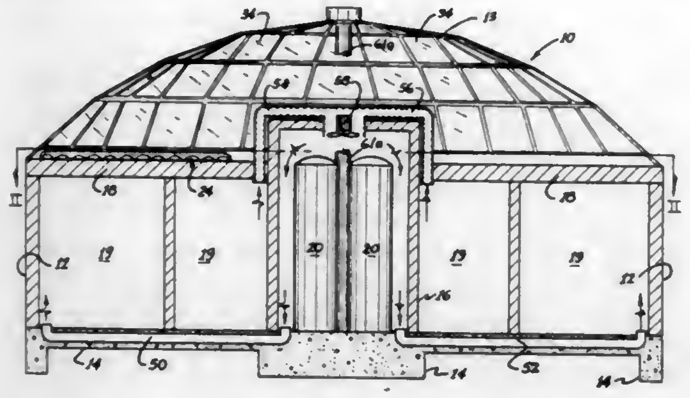
4,192,454
SOLAR HEATED BUILDING STRUCTURE
Robert W. Rugenstein, 2203 N. Malton Ave., Simi Valley, Calif. 93063

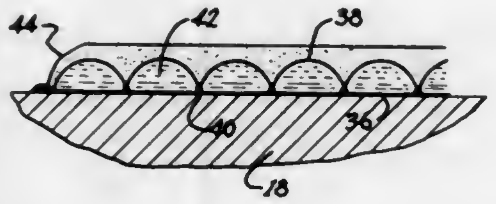
Filed Apr. 11, 1978, Ser. No. 895,499

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.² F24J ***3/02***

U.S. Cl. 126—427 9 Claims





1. A solar heated building structure comprising an exterior shell including side walls and a roof section, a major portion of said roof section comprising light-transmitting panels of material which permit passage of sunlight into the shell, horizontal floor means dividing the shell into a living compartment and an attic compartment above the living compartment and below the roof section, a hollow support column for said floor means extending upwardly through said living compartment to said attic compartment, liquid storage means located in said column, flexible conduit means positioned on the upper surface of said horizontal floor means in said attic compartment beneath said light-transmitting roof panels for receiving sunlight passing therethrough, liquid conduit means communicating said flexible conduit means with said liquid storage means in said column to permit circulation of liquir from said liquid storage means through said flexible conduit means and back to said storage means for heating the liquid in said storage means, air conduit means communicating the interior of said hollow column with said living compartment to permit circulation of air through said column to and from said living compartment, and fan means in said air conduit means for directing air over said liquid storage means in said column and to and from said living compartment to heat said living compartment.

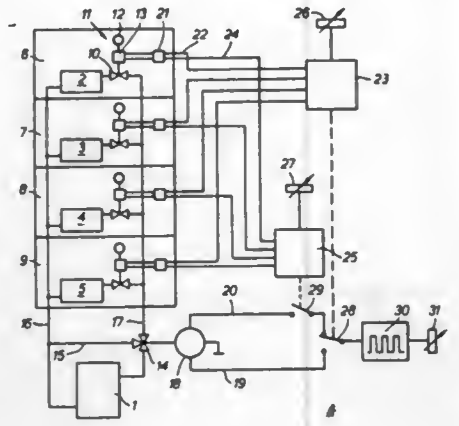
4,192,455
APPARATUS FOR CONTROLLING THE SUPPLY TEMPERATURE IN A CENTRAL HEATING INSTALLATION
Hans C. Rasmussen, Sonderborg, and Knud J. Hallgreen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Mar. 31, 1978, Ser. No. 892,075

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714511

Int. Cl.² F24D ***3/00***

U.S. Cl. 237—8 R 7 Claims



1. Apparatus for controlling the heating fluid temperature in a central heating installation having at least two radiators arranged in different rooms and associated valves comprising, a thermostat assembly for each room including a thermostat having an output with first and second output signals corresponding to demand and satisfied conditions, said assembly including valve means controlled by said thermostat having open and closed states corresponding to said first and second output signals, said assembly including amplifier means connected to said thermostat output, said amplifier means having input network means which generates a rising voltage pursuant to said thermostat demand condition, comparator means connected to all of said amplifier means, said comparator means having an upper control limit for actuating said comparator means when said limit is exceeded, cool and warm sources of fluid and a connecting mixing valve, a servomotor for said mixing valve, first and second circuit means for respectively rotating said servomotor in heating and cooling directions, first and second control means for said first and second circuits, said first control means being responsive to said comparator means, said first control means having priority over said second control means.

4,192,456
HEATING SYSTEM FOR MACHINE OPERATOR'S CAB
Charles H. Shields, and Gary D. Kane, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Aug. 21, 1978, Ser. No. 935,468

Int. Cl.² B60H ***1/02***

U.S. Cl. 237—12.3 R 6 Claims

1. A heating system comprising:

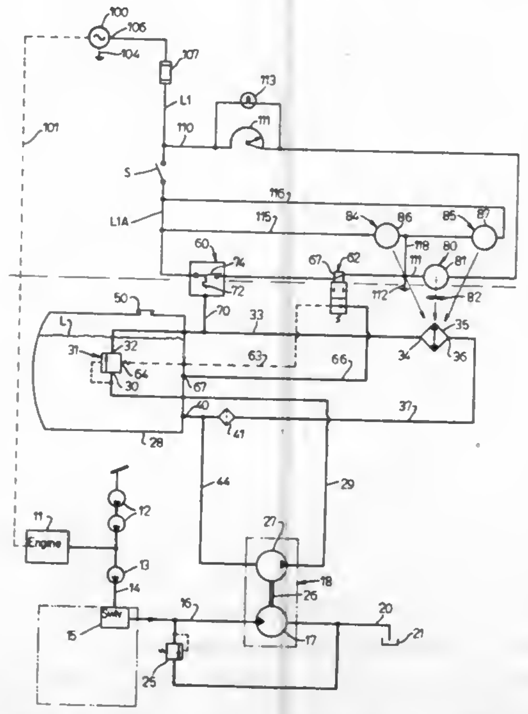
a hydraulic pump;

means for driving said pump;

a heat exchanger connected to said hydraulic pump;

a pressure relief valve connected between said hydraulic pump and said heat exchanger wherein hydraulic energy is converted to thermal energy as a result of a hydraulic fluid pressure drop in said pressure relief valve, said pressure relief valve being adjustable to change the fluid pressure drop therein and thereby change the hydraulic fluid temperature;

means responsive to hydraulic fluid temperature for adjusting said pressure relief valve to regulate the hydraulic fluid temperature;



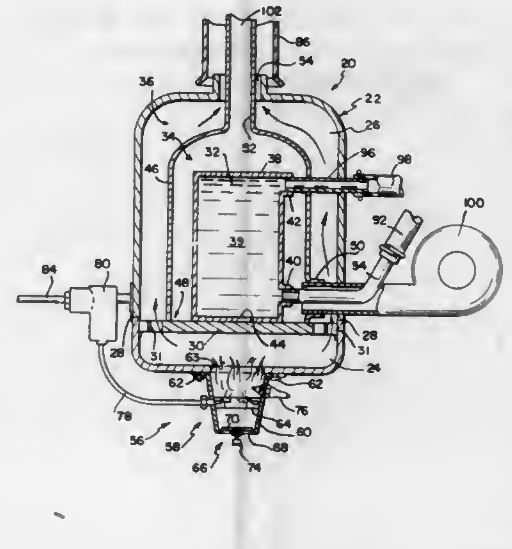
and a fan for directing air across said heat exchanger to effect heat transfer to said air.

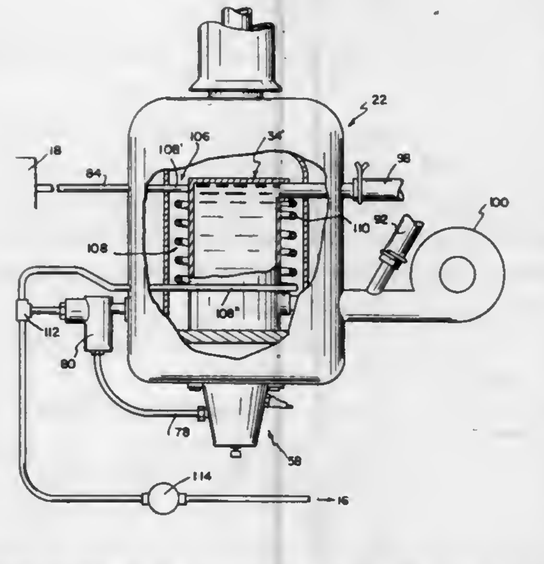
4,192,457
AUXILIARY TRUCK HEATER
Herbert D. Easterly, P.O. Box 767, Crossville, Tenn. 38555

Filed Aug. 30, 1978, Ser. No. 938,007

Int. Cl.² B60H ***1/02***

U.S. Cl. 237—12.3 C 17 Claims





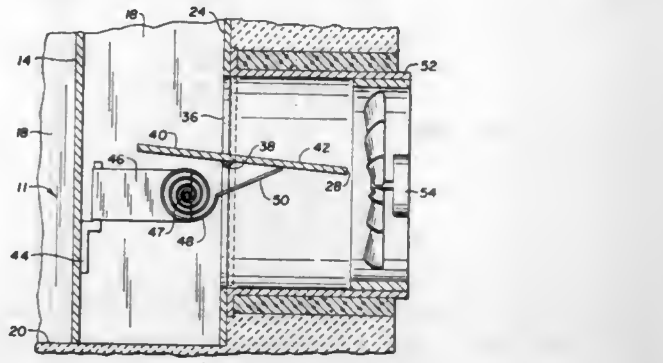
9. Heater apparatus comprising a housing having an upper portion which includes an exhaust port and a lower portion which includes a detachable heating means, a first heated chamber disposed within the housing for heating a fluid circulated therethrough, a second heated chamber disposed within the housing and housing the first heated chamber for heating air circulated therethrough said first and second chambers sharing a common heat conductive wall which is in direct conductive heat exchange relation with said heating means, and means disposed within the second heated chamber for heating a second fluid circulated therethrough whereby the air and second fluid are heated by heat transferred from said heating means to the second heated chamber.

4,192,458
FIREPLACE LINER
Jay L. Pinnock, 2727 Airport Rd., and Ivan C. Staten, 20 Century Cir., both of Carson City, Nev. 89701

Filed Feb. 13, 1978, Ser. No. 877,142

Int. Cl.² F24B ***1/18***

U.S. Cl. 237—51 2 Claims



1. An improved room heating combination of a fireplace and a liner therefor and a heat exchange chamber surrounding the fireplace from which heated air resulting from combustion is directed through a heat conveying passage into the room to be heated and wherein the heat conveying passage is connected from the heat exchanger chamber of the fireplace into which passage a connecting means is supplied to introduce also fresh unheated outer air from an external source to be heated and introduced into the room from the fireplace unit so that outside air may be heated prior to being circulated and supplied to the room, comprising, in combination,

an inlet duct for supplying fresh air from a region external to the heat exchanger chamber to be heated by the fireplace;

an outlet passage for supplying said heated outside air at controlled temperature into the region of the room;

means in the inlet duct to provide a propellant force to the intake air to direct it into the heat exchanger chamber;

a closure member within the inlet duct having a peripheral configuration and transverse size substantially corresponding to that of the interior of the inlet duct, thereby to substantially close the duct when transversely positioned thereto;

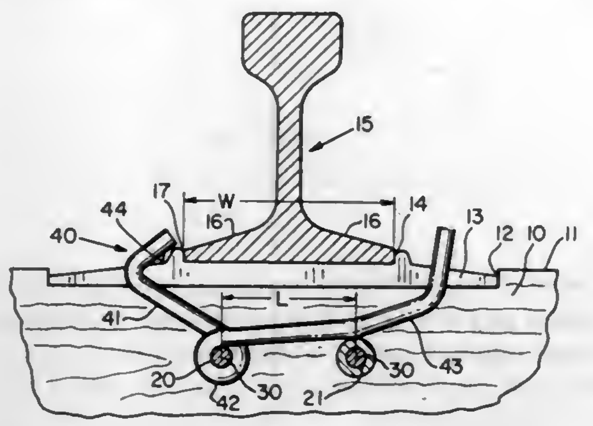
means for positioning the said closure member for pivotal movement thereof within the duct and between an open and a closed position relative to the duct by the pivotal movement thereof within the said duct, the pivot axis upon which said pivotal movement may be caused to occur being along an axis transverse to the duct length such that the closure member is divided into two unequal area parts and whereby the said member if unactivated will tend to close within the duct and whereby said member may be pivoted between an open and a closed position and when in a closed state of rest will interrupt air passage within the duct and when pivoted to a controlled open position will permit passage of controlled volumes of air through the duct and in a median position will determine the maximum air quantity passing therethrough;

a fixed position temperature control means within the passage for establishing the temperature of air passing beyond the region of the heat exchanger chamber and the region between said heat exchanger chamber and the outlet from the air supply to mingle therewith, and

means for controlling the instantaneous position of the closure member from the said control means comprising an arm member extending from the temperature control and sensing means toward the closure member and in frictional contact engagement with the said latter member at a region within its greater area portion to move the closure member to an open position with heat increases within the heat exchanger member, thereby to admit greater air quantities thereto and to provide means to remove the frictional stress on the said closure member with temperature decreases to permit gravitational closure of the said closure member and to provide stabilized and resulting temperature control of the air supply from the fireplace to the room.

4,192,459
RAIL ANCHORING SYSTEM

Charles J. Decaro, Marshfield, Mass., assignor to Textron Inc., Providence, R.I.
Filed Nov. 8, 1978, Ser. No. 958,746
Int. Cl.² F01B *9/30*
U.S. Cl. 238—356 13 Claims



1. A rail anchoring system for securing a rail having a bottom flange to a cross-tie or the like comprising

two pins,

said pins placed in separate, transverse, horizontal bores in the cross-tie, said bores being parallel to the rail, said pins having extensions at each end exposed on both sides of the cross-tie,

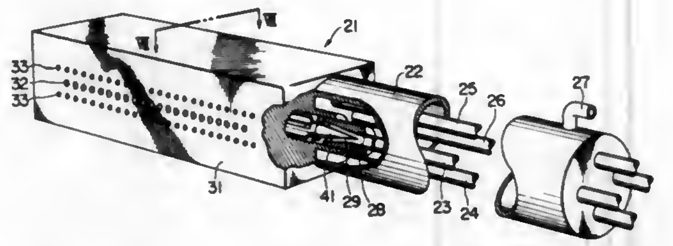
two resilient clips, each comprising a hooked extension, a looped section, and a lever extension,

the said looped sections of said clips respectively passing over and pivoted upon the extension at one end of different pins on opposite sides of the cross-tie, the hooked ends bearing on the upper and outer edge surfaces of the bottom flange of the rail and the lever extensions being wedged under extensions of a pin upon which said clips are respectively not pivoted.

4,192,460
REFRACTORY POWDER FLAME PROJECTING APPARATUS

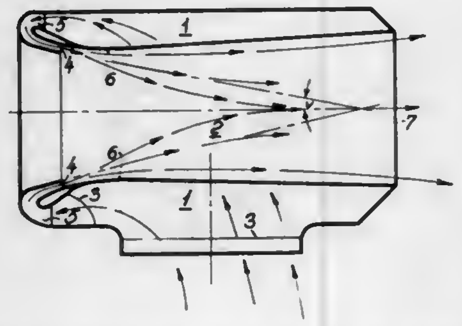
Masataka Matsuo, Nakama, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan
Filed Nov. 13, 1978, Ser. No. 959,771
Claims priority, application Japan, Nov. 15, 1977, 52-152317
Int. Cl.² B05B *1/24*
U.S. Cl. 239—79 4 Claims

1. A refractory powder flame projecting apparatus comprising a projecting burner body, means for supplying fuel gas, means for supplying oxygen gas, means for supplying refractory powder, said refractory powder supplying means containing an ejector for projecting the oxygen gas from said oxygen supplying means into said projecting burner body, a barrel containing a fuel gas supply pipe, an oxygen gas supply pipe and a refractory powder supply pipe extending from the corresponding supplying means, and said burner body being fixed to one end of said barrel and having a refractory powder passage, and further having a fuel gas passage and an oxygen gas passage communicating with each other, said burner body having a plurality of flame nozzles and powder projecting nozzles opening out of one face of said burner body, said flame nozzles being disposed in at least two parallel straight lines, said powder projecting nozzles being disposed between and parallel to said lines of flame nozzles and a distributor having a plurality of axial grooves, said grooves having individually separated cavities at the remotest end thereof, said distributor being inserted in said refractory powder passage parallel to the lines of powder projecting nozzles so that each cavity communicates with a different plurality of the powder projecting nozzles.



4,192,461
PROPELLING NOZZLE FOR MEANS OF TRANSPORT IN AIR OR WATER

Ole J. M. Arborg, Mordrupvej 52, DK-3060, Espergaerde, Denmark
Filed Oct. 26, 1977, Ser. No. 845,681
Claims priority, application Denmark, Nov. 1, 1976, 4930/76
Int. Cl.² B63H *11/02, 11/12*
U.S. Cl. 239—265.17 6 Claims



1. In a transport vehicle for use in air or on water, the new use of a propulsion nozzle comprising:

(a) an internal surface;

(b) a curved leading surface merging into said internal surface;

(c) a narrowed throat in said internal surface located towards the said curved surface;

(d) a jacket surrounding said internal surface;

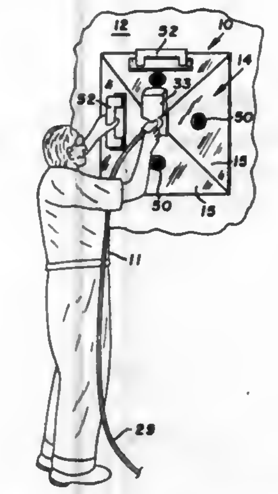
(e) an annular internal slot located in said internal surface between said curved surface and said narrowed throat and communicating with said jacket;

(f) an inner edge of said slot not protruding inside the narrowest circumference of the throat;

(g) means for supplying primary fluid under pressure through said slot; the slot being arranged at an acute angle of under 45°, to the direction of the exit flow so that the fluid is ejected tangentially to said curved leading edge and the fluid travels with greatest speed next to the internal surface, the fluid injected through the slot being the same as the medium through which the vehicle is being propelled.

4,192,462
SHIELDED SPRAY APPARATUS

Elwyn J. Erickson, 210 6th Ave. NW., Wells, Mich. 55097
Filed Jul. 17, 1978, Ser. No. 925,387
Int. Cl.² B05B *1/28*
U.S. Cl. 239—288 12 Claims



1. A shielded spray apparatus comprising:

housing means having sidewalls defining a spray chamber;

said sidewalls having forward edges defining a planar front opening to the chamber positionable adjacent the surface to be sprayed;

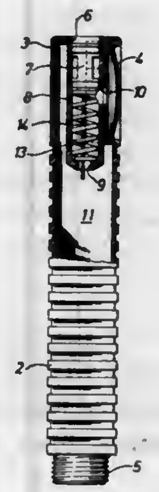
said housing having a planar rear opening to the chamber;

a flexible panel secured to the housing and closing the rear opening;

a spray gun assembled to the flexible panel orientated to direct spray material toward and through the front opening.

4,192,463
CONNECTING DEVICE

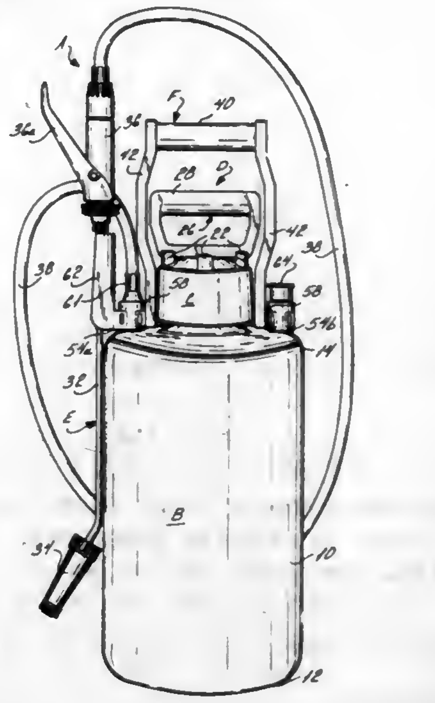
Leif J. Yxfeldt, Fregattvägen 14, S-181 37 Lidingö, Sweden
Filed Apr. 6, 1978, Ser. No. 893,830
Claims priority, application Sweden, Apr. 13, 1977, 7704242
Int. Cl.² B05B *15/08*
U.S. Cl. 239—289 8 Claims



1. Connecting device for connecting a water hose to an object and including at least two connecting pieces, of which one is connected to the water hose and the second to the object, characterized by the first connecting piece consisting of a hand-shower (1), in which a part (2) is formed as a handle and an other part (3) is equipped with a shower head (4), and in which the hand-shower contains a valve device (6,7,8,9) with a valve body (7) which is moveable between at least two positions and which is designed to be moved to a connected position by means of the second connecting piece (17, 21), in which the valve device is designed to allow water flow from the hand-shower (1) to the object (26) and at the same time prevent water flow out of the shower head, but in which the valve device is designed to allow water flow from the shower head when the valve body (7) is in its normal position, not influenced by the second connecting piece.

4,192,464
COMPRESSED AIR SPRAYER

Ho Chow, River Edge, N.J., assignor to Beatrice Foods Co., Chicago, Ill.
Filed Oct. 2, 1978, Ser. No. 947,509
Int. Cl.² B05B *9/04;* B65D *25/28*
U.S. Cl. 239—373 19 Claims



1. In a hand-pressurized compressed air sprayer comprising:

A. a tank for holding fluid, said tank having an open top;

B. a cap removably secured to said tank to cover said open tank top;

C. a pump means operatively secured to said tank for compressing air therein, said pump means including a manually operable pump handle means extending upwardly from said cap and being movable through an operative path along a generally vertical axis extending through said cap; and

D. a handle comprising a grasping portion remote from said tank and adapted to be held by a user and a connecting portion connecting said grasping portion to said tank;

the improvement wherein said handle is movable between a first generally vertical position wherein said grasping portion extends over said cap, a second stable position wherein said grasping portion is disposed to one side of said first position of said grasping portion and laterally beyond said cap, and a third stable position wherein said grasping portion is disposed to the other side of said first position of said grasping portion and laterally beyond said operative path of said pump handle means, said handle in said first position being adapted to enable carrying of said sprayer by said handle, said handle in said second position being adapted to secure said tank against rotation without impeding removal of said cap for filling purposes, and said handle in said third position being adapted to stabilize said tank against vertical lifting or tipping without impeding movement of said pump handle means and while providing a support for the user.

4,192,465
VORTEX GENERATING DEVICE WITH EXTERNAL FLOW INTERRUPTING BODY

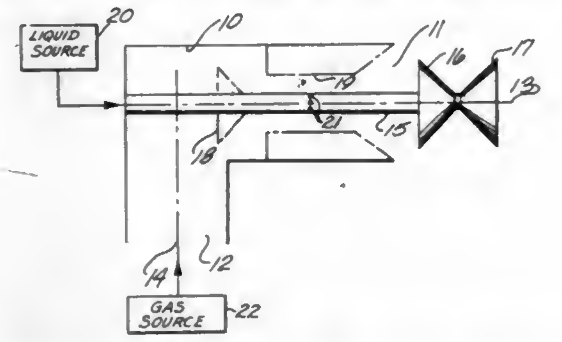
Nathaniel Hughes, 1934 Sonora Rd., Palm Springs, Calif. 92262
Continuation-in-part of Ser. No. 785,838, Apr. 8, 1977, Pat. No. 4,109,862. This application Mar. 13, 1978, Ser. No. 886,288
Int. Cl.² B05B *17/06;* F15C *1/16*
U.S. Cl. 239—405 63 Claims

1. A vortex generating device comprising:

a flow passage having a fluid inlet and a fluid outlet;

means for forming a vortex in fluid flowing through the passage from inlet to outlet;

- a first bluff body disposed at the outlet external to the passage; and
- a second bluff body disposed at the outlet external to the passage between the outlet and the first bluff body to form between the bluff bodies an annular channel, the second bluff body having a flat surface facing the outlet.



4,192,466
SWIRL INJECTION VALVE

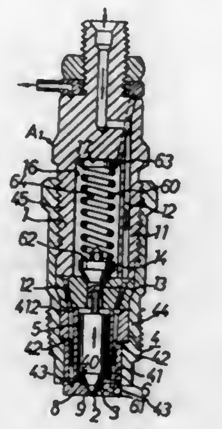
Yasusi Tanasawa, Nagoya; Norio Muto, Aichi, and Akinori Saito, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Feb. 21, 1978, Ser. No. 879,457

Claims priority, application Japan, Feb. 21, 1977, 52-18401

Int. Cl.² B05B *1/30*

U.S. Cl. 239—464 **23 Claims**



1. A swirl injection valve comprising
- a nozzle body,
- an injection port opening at an end of said nozzle body for injecting pressurized fluid,
- at least one pressurized fluid induction passage provided within said nozzle body, said pressurized fluid induction passage being connectable to a pressurized fluid supply source,
- a valve means having a movable member interposed into said injection port for controlling the fluid injection by on-off controlling the fuel supply to said injection port,
- a swirl chamber comprising a chamber having circular cross section formed at a position adjacent to said injection port within said nozzle body, said swirl chamber being connected to said injection port, and
- two tangential pressurized fluid supply passages formed within said nozzle body, which respectively open into a side wall of said swirl chamber in the tangential direction thereof at symetrically opposite portions with respect to the axis of said swirl chamber in order to form a swirl flow of said pressurized fluid within said swirl chamber,
- each of said two tangential pressurized supply passages being connected to the respective one of said pressurized fluid induction passages within said nozzle body at a predetermined angle, and being formed by a hole penetrating from an outer side wall to an inner side wall forming said swirl chamber, and a plug member being inserted into said hole from said outer side wall to said connecting part of said hole and said passage,
- said injection port, pressurized fluid induction passages, swirl chamber and tangential pressurized fluid supply passages being formed within said one nozzle body,
- whereby the swirl flow of said pressurized fluid may be injected in a pre-determined timing determined by said valve means.

4,192,467
DOCUMENT SHREDDER

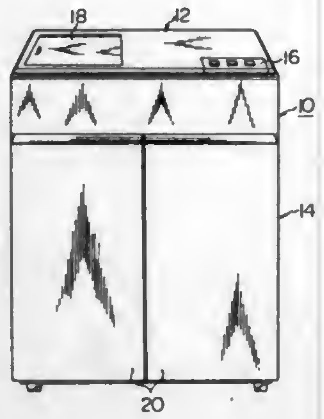
Takefumi Hatanaka, No. 276-19, Higashihiraga, Matsudo-shi, Chiba-ken, Japan

Division of Ser. No. 806,215, Jun. 13, 1977, Pat. No. 4,124,169. This application Aug. 16, 1978, Ser. No. 934,127

Claims priority, application Japan, May 6, 1977, 52-51250

Int. Cl.² B02C *23/02*

U.S. Cl. 241—34 **3 Claims**



1. A document shredder for processing waste documents, comprising:
- means for destroying the waste documents such that the documents are rendered unintelligible;
- drive means for providing driving power to said destroying means;
- a casing housing said destroying means and said drive means;
- a stand-by chamber formed in said casing to temporarily keep the waste documents in a stand-by condition;
- feed means for feeding at least one sheet from the waste documents kept in said stand-by chamber to said destroying means;
- a cover mounted on said casing to close said stand-by chamber;
- means for sensing the presence of the waste documents kept in said stand-by chamber and producing an output signal in response thereto; and
- locking means responsive to said output signal for locking said cover to said casing while said waste documents are kept in said stand-by chamber.

4,192,468
FEED ROLL ASSEMBLY FOR A FORAGE HARVESTER

Allan K. Lawrence; Merlyn D. Bass; Robert D. Black, and Jerry L. Krafka, all of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

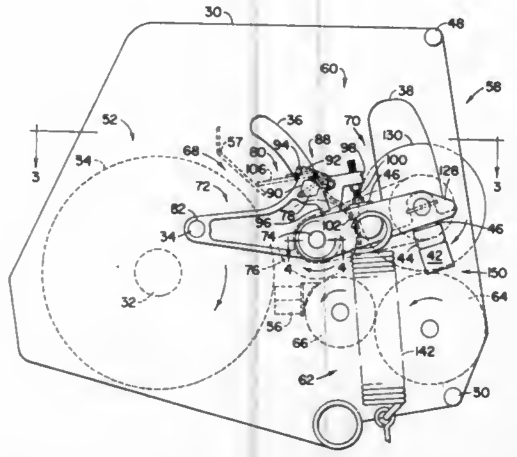
Filed Jul. 5, 1978, Ser. No. 922,029

Int. Cl.² B02C *18/22*

U.S. Cl. 241—101.7 **32 Claims**

1. In a forage harvester having a forward mounted harvesting unit, a cutterhead and a feeding assembly including a body and opposite generally fore-and-aft extending side walls and cooperating upper and lower conveyor assemblies for receiving crop material from the harvesting unit and conveying it rearwardly in a mat between the conveyor assemblies for delivery to the cutterhead, the upper conveyor assembly comprising:
- a pair of opposite radius arms, each arm extending fore-and-aft adjacent an opposite side wall and supported by the body for pivotal movement about a transverse axis;
- a first feed roll adjacent the cutterhead extending transversely between the opposite side walls and rotatably supported by and between the radius arms forward of the pivotal support of said arms;

- a stiff transverse leveler shaft, resistant to torsional and bending deflection and extending between and directly and rigidly attached to the opposite radius arms external to the periphery of the first feed roll, the leveler shaft cooperating with the opposite radius arms to form a rigid frame pivoted to the body for resisting relative rotational deflection between the radius arms and maintaining the transverse alignment of the first feed roll; and
- bias means for urging the upper conveyor towards the lower conveyor assembly and compressing the mat.



4,192,469
SPRING ROLL MILL

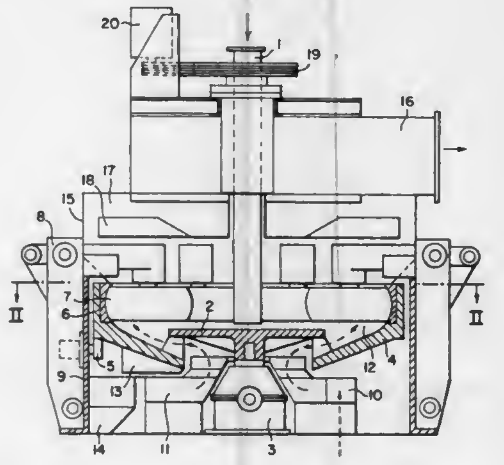
Heinz Jäger, Nevelstrasse 40, 4630 Bochum, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 880,223

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1977, 2707395

Int. Cl.² B02C *15/06*

U.S. Cl. 241—121 **2 Claims**



1. Spring roll mill having stationary grinding rolls yieldingly pressed from within the mill toward a circumferential grinding ring mounted on a grinding dish and revolving together therewith, a central feed inlet for supplying to the mill from above material to be ground therein, and a discharge outlet for discharging the ground material from the mill together with an air flow, comprising a distributor plate revolving together with the grinding dish, said distributor plate being disposed below the central feed inlet and below at least part of the grinding rolls for receiving thereon a supply of the material to be ground, means for centrally introducing the air flow from below said distributor plate and conducting the air flow between the grinding rolls and the grinding dish and between the grinding rolls themselves, a sifter having a centrifugal system disposed above the grinding dish, and separate means for driving the centrifugal system.

4,192,470
CUTTING DEVICE FOR THE SHREDDING OF FOODSTUFFS SUCH AS ONIONS, VEGETABLES AND FRUITS

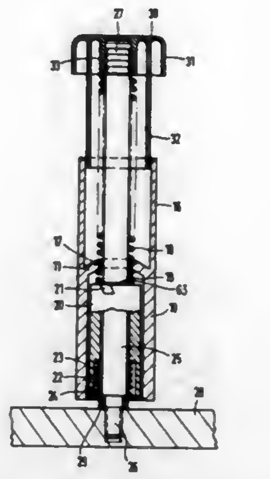
Horst Hartmann, Stuttgart, Fed. Rep. of Germany, assignor to Zyliss Zysset AG, Switzerland

Filed Jan. 18, 1978, Ser. No. 870,449

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 7702152[U]

Int. Cl.² B02C *18/04*

U.S. Cl. 241—169 **19 Claims**



1. A food chopper comprising a bell shaped housing having a cylindrical portion and a central neck portion, blade means locatable within the cylindrical portion of said housing and a plunger assembly extending through the neck of said housing comprising an axially movable ram attached at one end to said blade means, a handle at the other end, an outer sleeve surrounding a portion of said ram and means interposed between said sleeve and said ram for causing said ram to rotate about its axis on axial movement of said ram, said bell-shaped housing being formed of at least two separable sections divided along lines parallel to the axis of said ram and means for removably securing the outer sleeve to said housing sections, whereby said housing and said plunger assembly are separable.

4,192,471
CRUSHING APPARATUS

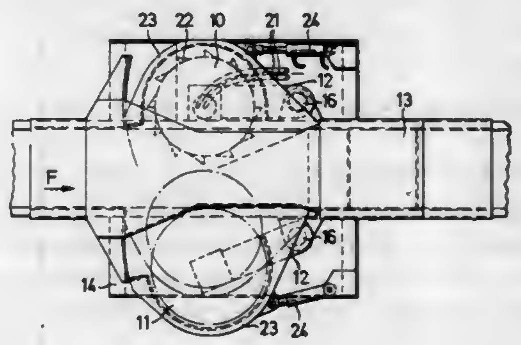
Klaus Beckman, and Richard Redemann, both of Lünen, Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Oct. 5, 1978, Ser. No. 948,953

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749313

Int. Cl.² B02C *4/02, 4/32, 4/42*

U.S. Cl. 241—185 R **8 Claims**

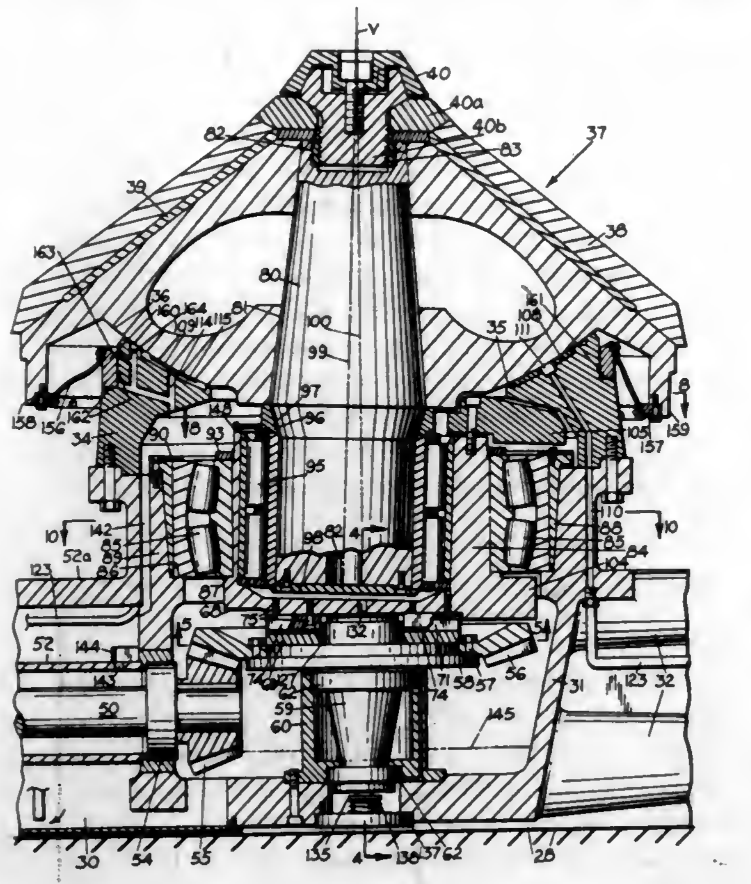


1. Apparatus for crushing or breaking material, especially mineral ores; said apparatus comprising a pair of contra-rotatable generally upstanding drums for crushing material fed therebetween and a hydraulic drive motor mounted inside each drum to rotatably drive the latter.

4,192,472

CONE CRUSHER

Louis W. Johnson, 345 Palomino Dr., Eugene, Oreg. 97401
Filed Apr. 17, 1978, Ser. No. 897,289
Int. Cl.^{2} B02C *2/04*
U.S. Cl. 241—215 **40 Claims**



35. A rock crusher comprising

(a) a base frame,

(b) a crusher head on said frame,

(c) a bowl on said frame associated with said head to form a crushing area,

(d) eccentric means operable with said head to produce gyratory movement upon rotation of said eccentric means,

(e) said eccentric means comprising a bearing assembly having inner and outer races and a middle race, said middle race having an eccentric shape,

(f) rotatable input powered drive means spaced from said eccentric means,

(g) and independent coupling means establishing a drive connection between said eccentric means and said input drive means.

4,192,473

WIRE REEL

Gerald A. Wellman, P. O. Box 1274, Rifle, Colo. 81650
Filed Nov. 16, 1978, Ser. No. 961,160
Int. Cl.^{2} B65H *75/02, 75/22*
U.S. Cl. 242—84 **1 Claim**

1. A reel for winding up or paying out a wire strand, comprising:

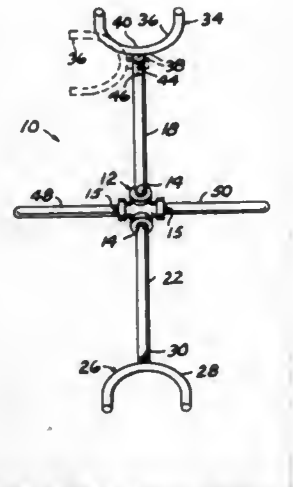
a rigid frame comprising a hub portion and a plurality of threadedly connected arms radially extending equidistant from said hub portion in substantially coplanar relation at least one of said arms having a transverse slot, normal to the plane of said arms, in its end portion facing away from said hub portion;

first and second rigid wire bracket means centrally secured to the end portion of at least two other said arms opposite the hub portion for nesting a plurality of convolutions of wire strands when wound thereon,

said rigid wire bracket means comprising a U-shaped member forming an arcuate abutment surface facing outwardly from the respective arm in a plane normal to the plane of said arms;

a third U-shaped member;

a strap member secured to the bight portion of said third U-shaped member in the plane of the third U-shaped member and being freely received by the arm transverse slot;



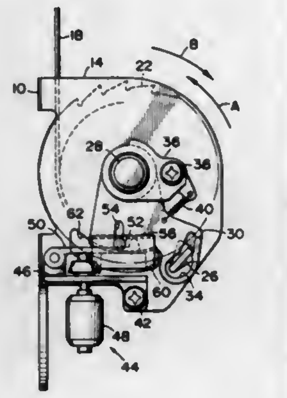
means including a rivet and a removable cotter pin for securing said strap member within the slot permitting selective lateral pivoting movement of said third U-shaped member relative to the plane of said arms; and,

a pair of axially aligned rod-like handles removably projecting from opposing surfaces of said hub portion normal to the plane of said arms for manually moving said reel across the surface of the earth in a rolling wheel-like wire winding up or paying out action.

4,192,474

WEBBING RETRACTOR FOR SEATBELT SYSTEM

Mitsuo Inukai, Nagoya; Masahiro Iwatsuki, Toyoake, and Keiichi Tamura, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Filed Sep. 5, 1978, Ser. No. 939,421
Claims priority, application Japan, Sep. 8, 1977, 52-108391
Int. Cl.^{2} A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **12 Claims**



1. A webbing retractor comprising:

a take-up shaft pivotally supported on a frame for winding up the webbing for restraining an occupant;

a ratchet wheel having teeth solidly secured to said take-up shaft;

a pawl supported on the frame and adapted to be engaged with the ratchet wheel to prevent wind-out rotation of the take-up shaft when tilted;

a working plate pivotally supported on the frame and causing said pawl to tilt when rotated;

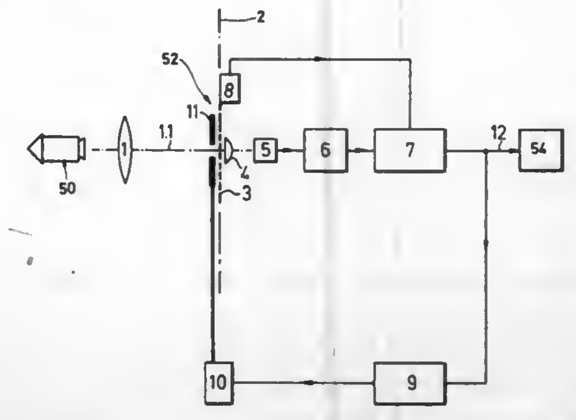
a balancer movable substantially radially of the ratchet wheel for engagement with said ratchet wheel and being rotatably coupled to and guided by said working plate; and

an acceleration detector for moving said balancer substantially radially of the ratchet wheel to engage the ratchet wheel whereby when said ratchet wheel engages with said balancer, said balancer is caused to move by the rotation of said ratchet wheel to thereby cause said working plate to rotate and tilt said pawl into engagement with said ratchet wheel.

4,192,475

METHOD AND DEVICE FOR STOPPING OUT INTERFERING RADIATORS IN AN OPTICAL MISSILE-STEERING DEVICE

Wilhelm Heinrich, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany
Filed Dec. 7, 1977, Ser. No. 858,428
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1976, 2655306
Int. Cl.^{2} F41C *9/00, 3/00*
U.S. Cl. 244—3.16 **6 Claims**

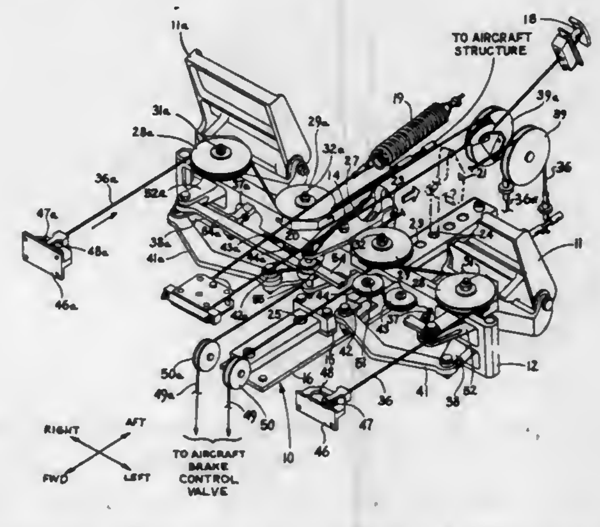


1. A method of stopping out interfering radiators in a device for optically viewing the radiation of a missile through a lens aperture which includes an image field, and detector for viewing the radiation which is aligned with the lens axis and for steering the missile, comprising directing the radiation to a spot within the image field of the lens system and continuously directing the optical axis of the lens system to a target, disposing a modulator disc in association with the lens system and ahead of the radiation detector so that the radiation is viewed by the detector, determining the off position of the missile relative to the optical axis of the lens system, and after the missile is launched and after the off position is determined, setting an aperture stop reducing the image field of the lens system to an image area immediately surrounding the missile.

4,192,476

RUDDER PEDAL ADJUSTMENT SYSTEM

Leroy R. Byers, Redondo Beach, Calif., assignor to Northrop Corporation, Los Angeles, Calif.
Filed Jul. 14, 1978, Ser. No. 919,469
Int. Cl.^{2} B64C *13/04, 13/30*
U.S. Cl. 244—83 K **5 Claims**



1. In an aircraft having a cockpit, a rudder and brake control system, and pilot's manual rudder and brake control mechanism, comprising:

a. a track member rigidly attached to a floor portion of said aircraft,

b. a slide member slidably attached to said track member, said slide member including means for adjusting and locking said slide member along said track member,

c. a bar member pivotally attached to said slide member,

d. two rudder pedals pivotally attached to said bar member, and

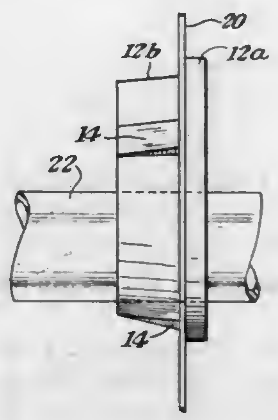
e. rudder and brake control means to independently operate said aircraft rudder and brake systems through actuation of said rudder pedals, said brake control means includes two brake control cables, each of said cables having one end thereof attached to aircraft structure and rigged such that each of said cables extends around an inboard and an outboard brake pulley mounted on each side of said slide member with said cables extending from said inboard and outboard pulleys to said aircraft brake control system,

wherein said brake control system is actuated by differential movement of said inboard and outboard brake pulleys operating on said brake control cables.

4,192,477

PIPE-WALL STUD CONNECTOR

John R. Decky, 1291 SE. 5th Ave., Pompano Beach, Fla. 33060, and Bruno P. Meyer, 560 NE. 44th St., Boca Raton, Fla. 33432
Filed Jul. 24, 1978, Ser. No. 927,486
Int. Cl.^{2} F16L *5/00*
U.S. Cl. 248—56 **1 Claim**



1. An insulating device for securing and supporting a pipe, conduit or tube through an aperture in a metal wall stud or other thin planar surface comprising:

an annular flexible body having a radially circumferentially raised barrier wall (**12***a*) joined integrally with tapered body wall (**12***b*); said tapered wall (**12***b*) diameter being largest at the junction with said barrier wall and thereat sized to fit firmly in such stud aperture; said tapered wall (**12***b*) joining with ribs (**18**) an inner wall to form a circular pipe-engaging passage (**16**) and radial slot opening (**12***c*); said barrier wall (**12***a*) having an opening registering with said radial slot opening (**12***c*); the central axis of said passage (**16**) being offset from the central axis of said tapered body wall (**12***b*); said tapered body wall (**12***b*) having resilient locking means (**14**) spaced from and cooperable with said barrier wall (**12***a*) for engaging the thickness of a stud (**20**); said device being characterized in that it can be rotated to properly align the longitudinal axis of a pipe in a desired position relative to the stud aperture and can be mounted transversely by way of said slot and opening on a pipe which is already disposed through an aperture in the stud.

4,192,478

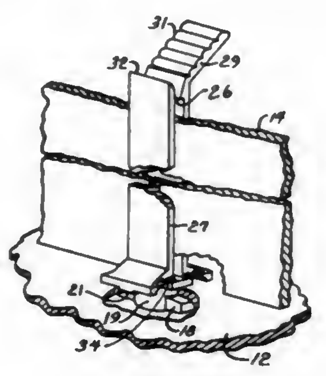
QUARTER TURN CIRCUIT BOARD GUIDE

Ronald A. Coules, Barrington, Ill., assignor to Richco Plastic Company, Chicago, Ill.

Filed Mar. 28, 1978, Ser. No. 891,021

Int. Cl.^{2} F16M *13/00*

U.S. Cl. 248—222.3 **11 Claims**



1. In a one piece plastic guide for supporting a circuit board upstanding on a panel, said guide comprising: a shaft, base means on one end of said shaft for resiliently securing said shaft upstanding on said panel, grooved retaining means parallel to the longitudinal axis of said shaft extending on one edge thereof for removably holding the edge of said circuit board therein, a gate on said shaft normally closing said retaining means to prevent unintended removal of said circuit board therefrom, and tab means connected to said gate for opening said retaining means to permit insertion and removal of said circuit board into and from said retaining means without disturbing the mounting of said base means on said panel, said retaining means having a bottom wall separated from said base means by slits permitting flexing of said base means independently of said retaining means.

4,192,479

MINE PROP CONSTRUCTION

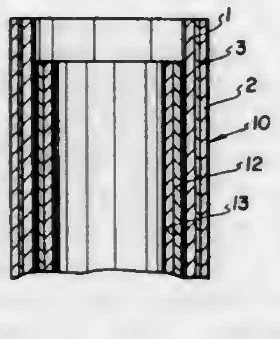
Herbert Friebe, deceased, late of Cologne, Fed. Rep. of Germany; by Axel Rodert, administrator, Haydnstr. 3, Cologne, Fed. Rep. of Germany, and Ulrich Reininghaus, Alte Kölner Str. 24, 3

Continuation of Ser. No. 830,037, Sep. 2, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,584

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1976, 2640104

Int. Cl.^{2} E04G *25/04*

U.S. Cl. 248—354 H **11 Claims**



1. A hydraulic mine prop of aluminum for continuous operation in a mine without hot sparking, comprising an outer tubular prop portion and at least one inner tubular prop portion telescopically arranged in said outer prop portion, said prop portions both being provided with a protective jacket of hard metal on the outer surfaces of both the inner and outer props which is impact-resistant and prevents hot spark formation, said hard metal jacket having a thickness of from about 0.2 mm to 0.6 mm.

4,192,480

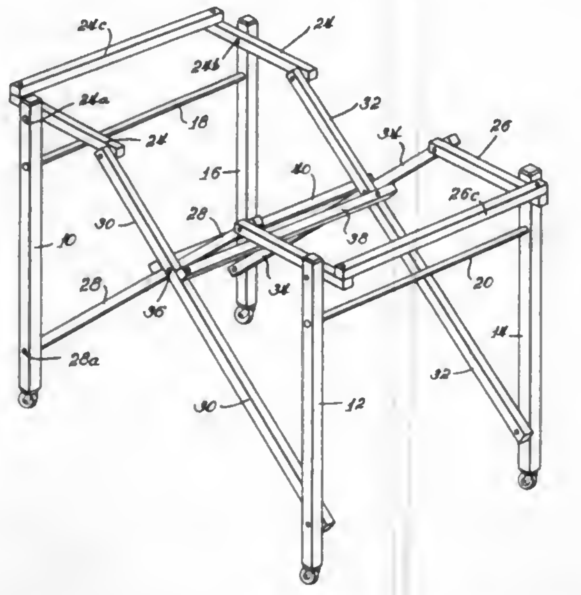
FOLDING STAND FOR BASSINET OR THE LIKE

Theodore F. Schmidt, 1223 N. Main St., Wheaton, Ill. 60187

Filed Aug. 28, 1978, Ser. No. 937,064

Int. Cl.^{2} F16M *11/38*

U.S. Cl. 248—436 **10 Claims**



1. A folding framework, comprising in a single general plane:

- a pair of spaced parallel legs;
- a pair of bars articulated respectively from corresponding ends of the respective legs so as to be pivotable inwardly toward each other;
- a pair of diagonal intersecting braces, each pivotally connected at opposite ends to the inner end of the respective bar and the opposite leg, said braces being pivotally interconnected where they intersect, said braces making approximately 45° angles with said legs and approximately 90° with each other when said framework is fully unfolded, and
- stop means for firmly stopping and holding the framework in its fully unfolded position in which said bars are approximately aligned at right angles to said legs, said stop means comprising a pair of stops square in cross section and affixed respectively upon respective braces to engage the other brace.

4,192,481

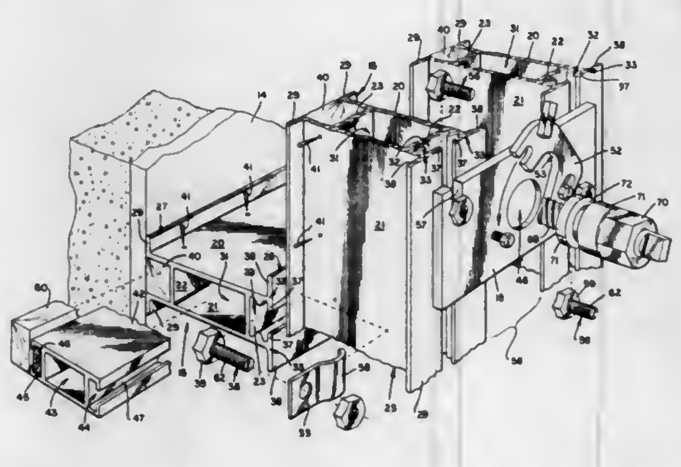
CONCRETE WALL FORMING SYSTEM

James Durbin, 2000 Old Lost Mountain Rd., Powder Springs, Ga. 30073

Filed May 26, 1978, Ser. No. 910,027

Int. Cl.^{2} E04G *17/06*

U.S. Cl. 249—42 **10 Claims**



1. A form support structure for supporting plywood forms used to form concrete walls, said support structure comprising:

- a plurality of "H"-shaped beams each comprising a front and back face and a central portion between said front and back faces, an elongated central cavity extending the length of said beams through said central portion, a grooved channel formed in said central portion at said front face, extending the length of said beam adjacent said central cavity and including an opening in said front face extending the length of said beam, a bolt holding channel formed in said central portion at said back face of said beam, extending the length of said beam for slidably accepting the head of a bolt, and including a slot defined in said back face extending the length of said beam through which a bolt shaft can protrude from said bolt holding channel perpendicular to said beam face;
- extension sliders for telescopic insertion into the elongated central cavity of said beams;
- clip means for attaching any two said beams in perpendicular relation to one another;
- a plurality of nailer means attachably inserted into said grooved channel,
- whereby said plurality of beams are arranged in a grid pattern having a first series of parallel beams backed by a second series of beams perpendicular to said first series and are held together by clipping said first and second series of beams together with said clip means, said nailer means are attached to said grooved channels of said first series of beams and said nailer means are fastened to said plywood form thus attaching said grid to said form.

4,192,482

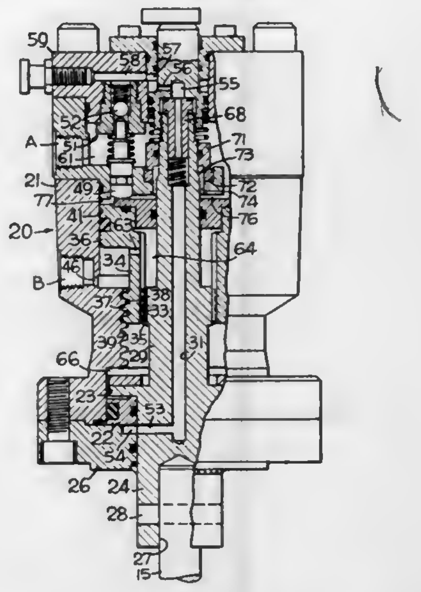
HYDRAULIC ACTUATOR TO PROVIDE BOTH ROTARY AND LINEAR MOTIONS TO A MOVABLE VALVE

Holliday L. Goldman, Red Lion, Pa., and Svend E. Winther, Copenhagen, Denmark, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 20, 1978, Ser. No. 952,996

Int. Cl.^{2} F16K *39/06;* **F01B** *21/00*

U.S. Cl. 251—56 **3 Claims**



1. A totally enclosed actuator for effecting axial and rotary movement of a valve plug between a seated closed position and an unseated open position including mechanism operated by a pressure medium comprising:

- a housing having a bore;
- a first piston deposed within the bore of said housing for axial movement by the pressure medium;
- coupling means connecting said first piston with the valve plug for effecting axial movement of the valve plug, wherein axial movement of said first piston in a first axial direction operates to unseat the valve plug and axial movement of said first piston in a second axial direction operates to seat the valve plug;
- a second piston disposed within the bore of said housing for axial and rotary movement;
- rotary drive means within said housing and operatively connected to said second piston to effect rotation of said second piston upon axial displacement thereof by the pressure medium, wherein the rotary movement of said second piston in a first direction operates to rotate the valve plug from a closed position to an open position and the rotary movement of said second piston in a second direction operates to rotate the valve plug from its open position to its closed position;
- drive means operatively connected to transmit the rotary movement of said second piston to said coupling means to effect rotation of the valve plug upon axial displacement of said second piston by the pressure medium; and,
- control means within said housing normally operable to prevent the movement of said first piston in its second direction of movement, said control means being constructed and arranged to be operated by said second piston upon said second piston completing its movement in its second direction wherein the valve plug is rotated from an open to a closed position.

4,192,483

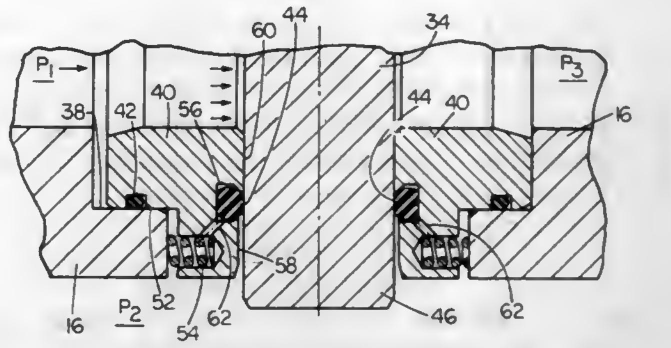
ONE PIECE SEAT RING WITH O-RING SEAL

Marvin G. Combes, Castro Valley, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Dec. 20, 1978, Ser. No. 971,269

Int. Cl.^{2} F16K *3/16*

U.S. Cl. 251—172 **5 Claims**



1. For use in a gate valve including a body with aligned flow passages, a flat, parallel sided gate and means for moving said gate between open and closed positions relative to said flow passages;

- a main seal assembly comprising:
- a one-piece seat ring carried in said body upstream of said gate;
- means biasing said seat ring against the upstream side of said gate;
- an annular groove in the leading face of said seat ring; and
- a resilient O-ring loosely received in said groove;
- said leading face of the seat ring being relieved over the full area radially outward of said annular groove to provide a small clearance with the upstream side of the gate.

4,192,484

HIGH PRESSURE DISC VALVE

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla. 73129

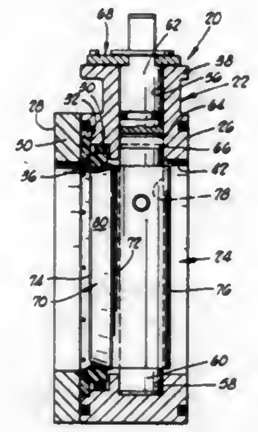
Filed Nov. 13, 1978, Ser. No. 959,718

Int. Cl.^{2} F16K *25/00*

U.S. Cl. 251—173 **13 Claims**

1. In a valve including a valve body having a valve chamber therein containing a valve disc adapted to be turned between open and closed positions, and an annular groove in the valve body surrounding the valve chamber opposite the outer periphery of the disc when the disc is in the closed position, the improvement comprising:

- a seat ring having a butt portion anchored to the valve body at one side wall of said groove and a seal portion extending generally axially from the butt portion to terminate in a free end near the opposite side wall of said groove, wherein the outer periphery of the seal portion is radially spaced from the outer periphery of said groove to form an annular cavity extending circumferentially about said seal portion, wherein the free end of said seal portion is spaced from the valve body to form a first vent between the one end of the cavity and portions of the valve chamber on one side of the disc when the disc is in the closed position, and wherein a second vent is formed in the seat ring to provide fluid communication between the opposite end of said cavity generally adjacent said butt portion and portions of the valve chamber on the opposite side of the disc; and



elastomeric means in said annular cavity about the seal portion of seat ring for closing the first vent when the second vent is exposed to the higher of differing fluid pressures on opposite sides of the disc and for closing the second vent when the first vent is exposed to the higher fluid pressure, whereby the seal portion of the seat ring is forced against the disc when differing fluid pressures are exerted on opposite sides of the disc in the closed position of the disc.

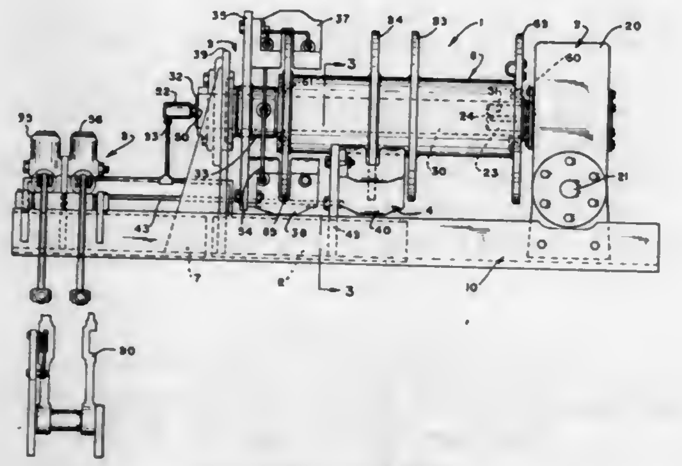
4,192,485
DRILL RIG HOIST

Charles L. Rassieur, and Richard R. Hesskamp, both of St. Louis, Mo., assignors to Central Mine Equipment Company, St. Louis, Mo.

Continuation of Ser. No. 749,158, Dec. 9, 1976, abandoned. This application Jun. 23, 1978, Ser. No. 918,478

Int. Cl.^{2} B66D *1/04*

U.S. Cl. 254—187.5 **7 Claims**



1. In a drilling rig hoist connected to a power source, the improvement comprising a central shaft, bearing means for supporting said shaft at one end for rotation about a central axis and means for coupling its other end to a power source, a caliper mounting plate secured to said shaft for rotation with said shaft, a plurality of caliper means mounted on and symmetrically about said caliper mounting plate, each of said caliper means having spaced, oppositely disposed friction elements arranged for movement toward and away from one another, a drum, mounted for rotation on and with respect to said central shaft and a clutch rotor fixed to said drum for rotation with it, said clutch rotor being positioned to extend between said friction elements, and fluid pressure means for actuating said caliper means.

4,192,486
METHOD FOR CONTROLLING EXHAUST GASES IN OXYGEN BLOWN CONVERTER

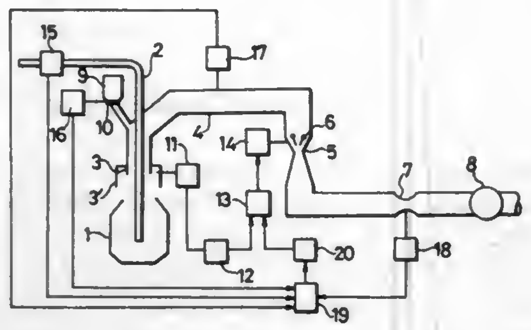
Yuziro Ueda; Toru Yoshida, both of Sakai, and Michiyasu Honda, Chihayaakasaku, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 20, 1976, Ser. No. 752,288

Claims priority, application Japan, Dec. 20, 1975, 50/152281

Int. Cl.^{2} C22B *5/40*

U.S. Cl. 266—44 **1 Claim**



1. A method of controlling exhaust gases in an oxygen blown converter for recovering the exhaust gases in an unburnt state, comprising the steps of:
(a) providing means including a hood for recovering gases generated within the said converter in the unburnt state;
(b) providing a duct means communicating with the said hood for sucking the said gases;
(c) providing at least one damper means mounted in the said duct for adjusting the flow rate of the said gases;
(d) providing means for cleaning the said gases sucked through the said duct and for eliminating dust contained in the said gases;
(e) providing means for preventing air from penetrating into the said converter between the said hood and a furnace throat of the said converter to enhance the efficiency in the recovery of the said gases;
(f) providing a charge information input means for supplying a charge information signal consisting of the quantity of hot metal, the quantity of scrap metal, the temperarture of the hot metal, and the silicon content;
(g) detecting the flow rate of oxygen supplied to the converter to obtain a first flow rate signal;
(h) detecting the amount of secondary raw material charged to the converter to obtain a secondary raw material charge signal;
(i) analyzing the composition of the gases passing through the said duct to obtain an analysis signal;
(j) detecting the flow rate of the gases passing through the said duct to obtain a second flow rate signal;
(k) combining the said charge information signal, the said secondary raw material charge signal, the said analysis signal, the said first flow rate signal, and the said second flow rate signal and computing by calculation the amount of the generated gases after reaction, the amount of gases resulting from the decomposition reaction and the amount of combustion gases at the furnace throat:
(l) providing means for calculating a prediction control variable by using the output from step (k);
(m) detecting the pressure difference between the gas pressure within the said hood and atmospheric pressure to obtain a pressure differential signal;
(n) providing a pressure controlling adjusting means for receiving the said pressure differential signal and comparing it with a predetermined reference value to obtain an exhaust damper control signal for reducing the difference between the said pressure differential signal and the said reference value; and
(o) determining the optimum control signal to adjust the degree of opening of the said damper by combining said damper control signal from said pressure controlling adjusting means and the output signal from the said prediction control variable calculating means in a signal processing circuit, wherein each of said output signals is multiplied by a respective coupling coefficient, said coefficient being responsive to equipment operational conditions, and transmitting the said optimum control signal from the said signal processing circuit to a servo mechanism for operating the said damper to minimize blow out and intake phenomena at the furnace throat of the said converter.

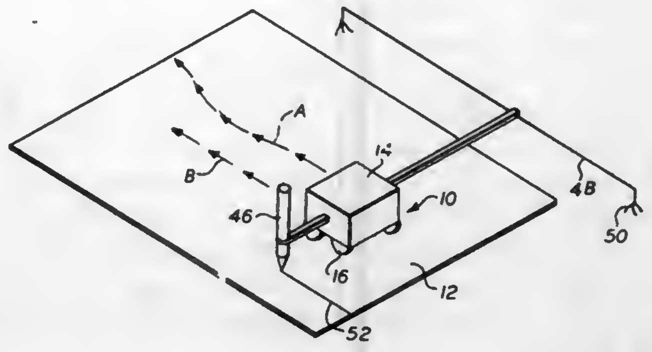
4,192,487
APPARATUS FOR CUTTING SHEET PLATE

Adrian H. Krieg, 2627 Dunning Dr., Yorktown, N.Y. 10598

Filed Jul. 18, 1978, Ser. No. 925,819

Int. Cl.^{2} B23K *7/02, 7/10*

U.S. Cl. 266—58 **5 Claims**



1. Apparatus for cutting sheet plate comprising a trackless carriage, an elongated support rod journalled in said carriage for free linear movement relative to said carriage along a path parallel to the longitudinal axis of the rod, means for propelling said carriage in a direction substantially perpendicular to the longitudinal axis of the rod, an elongated extending guy mounted free of said carriage, means at one end of said rod for working said plate, and means on the other end of said rod cooperating with said guy whereby said rod is carried by said carriage in a direction perpendicular to the axis of the rod while said work means maintains a fixed position parallel to said guy irrespective of the direction of movement of the carriage.

4,192,488
MACHINE MOUNTED TORCH

Georg Roeder; Helmut Sachs, both of Frankfurt am Main, and Dieter Hajok, Hattersheim, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

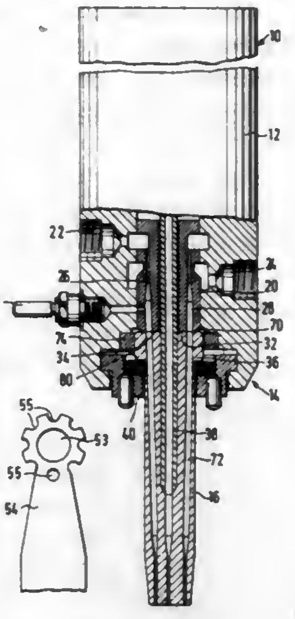
Filed Apr. 11, 1979, Ser. No. 29,359

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819073

Int. Cl.^{2} B23K *7/00*

U.S. Cl. 266—77 **11 Claims**

1. In a machine mounted torch, such as machine mounted cutting torches, marking torches and the like, wherein a torch head has one end to which the torch is arranged in a machine mounting and on the other end to which a nozzle is exchangeably fastened by means of a holding device, the improvement being two support surfaces disposed opposite each other on said end of said torch body facing said nozzle, and said support surfaces holding the counter surfaces of a spring loaded clamping bushing which holds said nozzle.



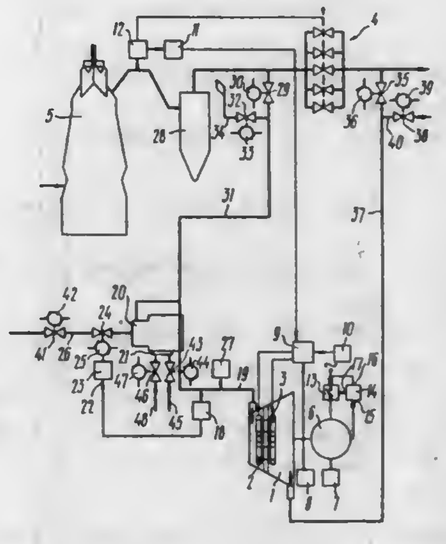
4,192,489
CONTROL SYSTEM FOR AN INSTALLATION UTILIZING PRESSURE ENERGY OF OUTGOING BLAST-FURNACE GAS

Vladimir A. Babich, Ulitsa Stachek 25, Kv. 33; Abram M. Vitlin, Prospekt Ordzhonikidze 11, Kv. 11; Arnold P. Kolchanov, Ulitsa 8 Marta 123/54, Kv. 17, and Elena I. Sheveleva, Ulitsa Taganskaya, 8, all of Sverdlovsk, U.S.S.R.

Filed Jul. 22, 1977, Ser. No. 818,167

Int. Cl.^{2} C21B *7/00*

U.S. Cl. 266—88 **9 Claims**



1. A control system for an installation utilizing the energy of the pressure of outgoing blast-furnace gas, comprising:
an electric generator with a power-driven ventilator;
a gas turbine having a rotor to rotate said electric generator;
an air-cooling system for said electric generator;
an oiling system for said gas turbine and said electric generator having an oil pump;
a control diaphragm gate mounted on said gas turbine;
a closing diaphragm gate mounted on said gas turbine;
a throttle unit placed in parallel with said gas turbine;
a regulating system for regulating the rotational speed of said rotor of said gas turbine connected to said control and closing diaphragm gates;
a selector of the rotational speed for said rotor being part of said regulating system;
a pressure regulator of the pressure of the blast-furnace under the top of the blast furnace;
a converting device for converting input signals received

from said pressure regulator connected to said throttle unit and to said regulating system;

a switch connecting and disconnecting said electric generator to and from an a.c. power line and having a signalling and interlocking contact;

a synchronizing device for synchronizing the rotational frequency of the rotor and the power line frequency having a first input connected to an output of said electric generator, a second input connected to said power line, and a first output electrically connected to said switch;

a first conduit for the delivery of blast-furnace gas to said gas turbine;

a second conduit for the delivery of blast-furnace gas to the installation;

a gas heater mounted on said first conduit and being provided with an ignitor;

a temperature regulator of the temperature of the blast-furnace gas delivered to said gas turbine;

a first sensor responsive to the temperature of the blast-furnace gas ahead of said gas turbine, located on said first conduit of said gas heater and connected to the input of said temperature regulator;

a second sensor responsive to the temperature of the blast-furnace gas ahead of said gas turbine;

a first valve mounted in said second conduit and having an electric drive;

a third conduit for the discharge of blast-furnace gas from said installation;

a second valve mounted on said third conduit and having an electric drive;

a fourth conduit for the delivery of gas to said gas heater;

a third valve mounted in said fourth conduit and having an electric drive;

a fifth conduit for the delivery of gaseous fuel to the ignitor of said gas heater;

a fourth valve mounted in said fifth conduit and having an electric drive;

a sixth conduit for the delivery of inert gas to said installation;

a fifth value mounted in said sixth conduit and having an electric drive;

a seventh conduit for the discharge of contaminated inert gas from said installation;

a sixth valve mounted in said seventh conduit and having an electric drive;

an eighth conduit for the delivery of air to said ignitor of said gas heater;

a seventh valve mounted in said eighth conduit and having an electric drive;

a readiness control unit, for checking the installation for start-up readiness, having inputs and outputs;

a third sensor responsive to the position of said third valve, producing a signal indicative of said third valve being closed and connected to a first input of said readiness control unit;

a fourth sensor responsive to the position of said seventh valve, producing a signal indicative of said seventh valve being closed, and connected to a second inut of said readiness control unit;

a fifth sensor responsive to the position of said fourth valve, producing a signal indicative of said fourth valve being closed, and connected to a third input of said readiness control unit;

a sixth sensor responsive to the air pressure in said fourth conduit ahead of said third valve, producing a signal indicative of said air pressure being within operative limits, and connected to a fourth input of said readiness control unit;

a seventh sensor responsive to the air pressure in said eighth conduit ahead of said seventh valve, producing a signal indicative of said air pressure being within operative limits, and connected to a fifth input of said readiness control unit;

an eighth sensor responsive to the gaseous-fuel pressure in said fifth conduit ahead of said fourth valve, producing a signal indicative of the gaseous-fuel pressure being within operative limits, and connected to a sixth input of said readiness control unit;

a ninth sensor responsive to the oil level in the oiling system of said gas turbine, producing a signal indicative of the oil level being within operative limits, and connected to a seventh input of said readiness control unit;

a tenth sensor responsive to the position of said closing diaphragm gate, producing a signal indicative of said closing diaphragm gate being closed, and connected to an eighth input of said readiness control unit;

an eleventh sensor responsive to the position of said control diaphragm gate, producing a signal indicative of said control diaphragm gate being closed, and connected to a ninth input of said readiness control unit;

a twelfth sensor responsive to the position of said selector, producing a signal indicative of said selector being in an initial position, and connected to a tenth input of said readiness control unit;

a thirteenth sensor responsive to the position of said converting device, producing a signal indicative of said converting device being in an initial position, and connected to an eleventh input of said readiness control unit;

a start-up control unit having inputs and outputs, a first input of said start-up unit being connected to a first output of said readiness control unit, a first output of said start-up control unit being electrically connected to said oil pump, a second output of said start-up control unit being electrically connected to said electric drive of said first valve, a third output of said start-up control unit being electrically connected to said ventilator, a fourth output of said start-up control unit being electrically connected to said selector, and a fifth output of said start-up control unit being electrically connected to a third input of said synchronizing device;

a fourteenth sensor responsive to the oil pressure in said oiling system of said gas turbine, producing a signal indicative of said oil pressure being within operative limits, and connected to a second input of said start-up control unit;

a fifteenth sensor responsive to the position of said first valve, producing a signal indicative of said first valve being in an open position, and connected to a third input of said start-up control unit;

a sixteenth sensor responsive to the position of said first valve, producing a signal indicative of said fourteenth valve being in a closed position, and connected to a fourth input of said start-up control unit;

a seventeenth sensor responsive to the air pressure in said cooling system of the electric generator, producing a signal indicative of said air pressure being of a specified value, and connected to a fifth input of said start-up control unit;

an eighteenth sensor responsive to the rotational speed of the rotor, producing a signal indicative of the rotational frequency of said rotor reaching a value about equal to the electric-generator synchronizing frequency, and connected to a sixth input of said start-up control unit;

a synchronizing control unit, for synchronizing the electric-generator frequency and the power-line frequency, having inputs and outputs, a first input of said synchronizing control unit being connected with a sixth output of said startup control unit, a second input of said synchronizing control unit being connected with said signalling and interlocking contact of said switch, said contact of said switch emitting a signal indicative of the electric generator being connected to the power line, a first output of said synchronizing control unit being connected to said selector to increase the rotational speed of the rotor of said gas turbine, a second output of said synchronizing control unit being connected to said selector to reduce the rotational speed of the rotor of said gas turbine;

a nineteenth sensor responsive to the position of said selector, producing a signal indicative of the selector being shifted to its extreme position for an increase in rotor speed, and connected to a third input of said synchronizing control unit;

a twentieth sensor responsive to the rotational speed of the rotor, producing a signal indicative of the minimum rotor speed at which the electric-generator frequency can be synchronized with the power line frequency, and connected to a fourth input of said synchronizing control unit;

a load control unit for increasing the load of the gas turbine having inputs and outputs, a first input of said load control unit being connected with a third output of said synchronizing control unit, a third input of said load control unit being connected to said nineteenth sensor, a first output of said load control unit being connected to said selector;

a twenty-first sensor responsive to the flow rate of the furnace gas, producing a signal indicative of the maximum rate of gas flow through said gas turbine without operating the gas heater, and connected to a second input of said load control unit;

a heating control unit for controlling the heating of blast-furnace gas having inputs and outputs, a first input of said heating control unit being connected to a second output of said load control unit, a second input of said heating control unit being connected with a second output of said readiness control unit, which produces respective signals indicative of the minimum and maximum gas temperatures at which said gas heater is shut down, seventh and eighth inputs of said heating control unit being connected to said second sensor, a first output of said heating control unit being electrically connected to said electric drive of said seventh valve to open said seventh valve, a second output of said heating control unit being electrically connected to said electric drive of said fourth valve to open said fourth valve, a third output of said heating control unit being electrically connected to said electric drive of said third valve to open said third valve, a fourth output of said heating control unit being electrically connected to said ignitor, a fifth output of said heating control unit being electrically connected to said temperature regulator for switching it "on" and "off", a sixth output of said heating control unit being electrically connected to said electric drive of said seventh valve to close said seventh valve, a seventh output of said heating control unit being electrically connected to said electric drive of said fourth valve to close said fourth valve, an eighth output of said heating control unit being electrically connected to said electric drive of said third valve to close said third valve;

a twenty-second sensor responsive to the flow rate of furnace gas, producing a signal indicative of the rate of gas flow through said gas turbine reaching a value at which the gas heater is actuated and connected to a third input of said heating control unit;

a twenty-third sensor responsive to the temperature of gas at the outlet of said ignitor, producing a signal indicative of said gas temperature exceeding its ignition point and connected to a fourth input of said heating control unit;

a twenty-fourth sensor responsive to the position of said third valve, producing a signal indicative of said third valve being in an open position, and connected to a fifth input of said heating control unit;

a twenty-fifth sensor responsive to the flow rate of furnace gas, producing a signal indicative of the minimum rate of gas flow through the gas turbine at which the delivery of air to the gas heater is stopped, and connected to a sixth input of said heating control unit;

a changeover control unit, which is used to connect and disconnect an output of said pressure regulator through said converting device to an input of said regulating system or to an input of said throttle unit, having inputs and outputs, a first input of said changeover control unit being connected with a ninth output of said heating control unit, a second input of said changeover control unit being connected to a tenth output of said heating control unit, a third input of said changeover control unit being connected with an eleventh output of said heating control unit, a fourth input of said changeover control unit being connected to said twenty-first sensor, a first output of said changeover control unit being electrically connected to said selector, a second output of said changeover control unit being electrically connected to said pressure regulator for connection and disconnection thereof through said converting device to the input of said regulating system, a third output of said changeover control unit being electrically connected to said pressure regulator for connection and disconnection thereof to the input of said throttle unit, a fourth output of said changeover control unit being connected to the input of said regulating system through said converting device for transmitting a signal to reduce the load of said gas turbine;

a twenty-sixth sensor responsive to the gas temperature ahead of said gas turbine, producing a signal indicative of the minimal temperature of the gas in said turbine at which said pressure regulator is connected to said input of said selector, and connected to a fifth input of said changeover control unit;

a shut-down control unit having inputs and outputs, a first input of said shut-down control unit being connected with a seventh output of said start-up control unit, a second input of said shut-down control unit being connected to said tenth sensor, a sixth of said inputs of said shut-down control unit being connected to said second sensor, a first output of said shut-down control unit being connected to a seventh input of said start-up control unit, a second output of said shut-down control unit being connected to an eighth input of said start-up control unit, a third output of said shut-down control unit being electrically connected to an input of said regulating system for rapid opening and closing of said control and closing diaphragm gates, a fourth output of said shut-down control unit being electrically connected to said selector to transmit a signal thereto for its return to the initial position, a fifth output of said shut-down control unit being connected to a ninth input of said heating control unit, a sixth output of said shut-down control unit being connected to a tenth input of said heating control unit, a seventh output of said shut-down control unit being connected to an eleventh input of said heating control unit, an eighth output of said shut-down control unit being connected to a sixth input of said changeover control unit, a ninth output of said shut-down control unit being electrically connected to said switch;

a twenty-seventh sensor responsive to the rotational speed of the rotor, producing a signal indicative of the maximum rotor speed, and connected to a third input of said shut-down control unit;

a twenty-eighth sensor responsive to the oil pressure in the oiling system, producing a signal indicative of the oil pressure dropping to its minimal value, and connected to a fourth input of said shut-down control unit;

a twenty-ninth sensor responsive to the position of said first valve, producing a signal indicative of said first valve being in an open position, and connected to a fifth input of said shut-down control unit;

a thirtieth sensor responsive to the maximum temperature of bearings of said gas turbine and said electric generator and connected to a seventh input of said shut-down control unit;

a thirty-first sensor responsive to vibration of bearings of said gas turbine and said electric generator and connected to an eighth input of said shut-down control unit;

a supply control unit for controlling the filling and emptying of the installation having inputs and outputs, a first input of said supply control unit being connected with a tenth output of said shut-down control unit, a second input of said supply control unit being connected to said sixteenth sensor, a first output of said supply control unit being connected to a twelfth input of said readiness control unit, a second output of said supply control unit being electrically connected to said electric drive of said first valve to close said first valve, a third output of said supply control unit being electrically connected to said electric drive of said second valve to close said second valve, a fourth output of said supply control unit being electrically connected to said electric drive of said fifth valve to close said fifth valve, a fifth output of said supply control unit being electrically connected to said electric drive of said sixth valve to close said sixth valve, a sixth output of said supply control unit being electrically connected to said electric drive of said second valve to open said second valve, a seventh output of said supply control unit being electrically connected to said electric drive of said fifth valve to open said fifth valve, an eighth output of said supply control unit being electrically connected to said electric drive of said sixth valve to open said sixth valve;

a thirty-second sensor responsive to the position of said second valve, producing a signal indicative of said second valve being in a closed position, and connected to a third input of said supply control unit;

a thirty-third sensor responsive to the position of said second valve, producing a signal indicative of said second valve being in an open position, and connected to a fourth input of said supply control unit;

a thirty-fourth sensor responsive to the position of said fifth valve, producing a signal indicative of said fifth valve being closed, and connected to a fifth input of said supply control unit;

a thirty-fifth sensor responsive to the position of said fifth valve, producing a signal indicative of said fifth valve being in an open position, and connected to a sixth input of said supply control unit;

a thirty-sixth sensor responsive to the position of said sixth valve, producing a signal indicative of said sixth valve being in a closed position, and connected to a seventh input of said supply control unit;

a thirty-seventh sensor responsive to the position of said sixth valve, producing a signal indicative of said sixth valve being in an open position, and connected to an eighth input of said supply control unit.

4,192,490

LANCE FOR INJECTING POWDERY MATERIAL INTO MOLTEN METAL

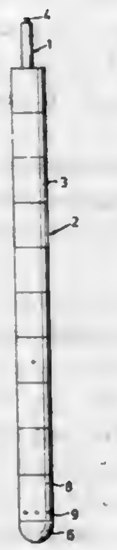
Per A. Nilsson; Gunnar B. Harryson; Leif T. Larsson; Karl J. Poderschan, all of Fagersta; Pekka Ritakallio, and Theo Lehner, both of Lulea, all of Sweden, assignors to Stiftelsen for Metallurgisk Forskning, Lulea, Sweden

Filed Sep. 26, 1978, Ser. No. 945,821

Claims priority, application Sweden, Oct. 4, 1977, 7711065

Int. Cl.² C21C *5/48*

U.S. Cl. 266—225 **7 Claims**



1. An elongate lance for injecting a powdery material carried by a carrier gas into metal melts in a ladle, comprising:

a tubular body with an inner pipe bore having an inlet and an outlet end;

a rounded tip formed of ceramic material located at the outlet end of said tubular body; and

at least one outlet duct having an inlet opening adjacent the outlet end of the pipe bore and an outlet opening located above said tip, said duct forming an angle of less than 90° with the longitudinal axis of the lance and being directed slopingly outwards and downwards from the pipe bore towards said tip;

such that the lance is lowered into the ladle until said tip abuts against the bottom of the ladle and the powdery material is carried by the carrier gas through the pipe bore and said duct, exiting into the metal melt above said tip.

4,192,491

ROTATABLE OR TILTABLE METALLURGICAL VESSEL

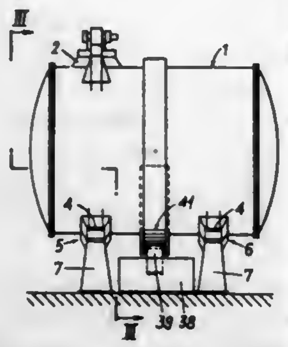
Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Apr. 3, 1978, Ser. No. 893,051

Claims priority, application Austria, Apr. 14, 1977, 2590/77; Aug. 3, 1977, 5709/77

Int. Cl.² C21C *1/06;* **F16C** *11/02*

U.S. Cl. 266—245 **19 Claims**



1. In a rotatable or tiltable metallurgical vessel, e.g. a pig iron mixer, of the type including a jacket, a fixed bearing and an expansion bearing for mounting said metallurgical vessel, two raceways fastened to said jacket of said metallurgical vessel at a distance from each other, one of said two raceways being mounted in said fixed bearing and the other of said two raceways being mounted in said expansion bearing, a toothed element arranged on said jacket of said metallurgical vessel between said two raceways, a driven counter-element engaging with said toothed element, and drive means for driving said driven counter-element, the improvement characterized in that said expansion bearing and said fixed bearing are designed as slide bearings, each slide bearing including one of said two raceways and an arcuate slideway formed by a plurality of slide plates, each one of said two raceways resting on its pertaining arcuate slideway.

4,192,492

DEVICE FOR FABRICATION OF TAPHOLES IN METALLURGICAL VESSELS

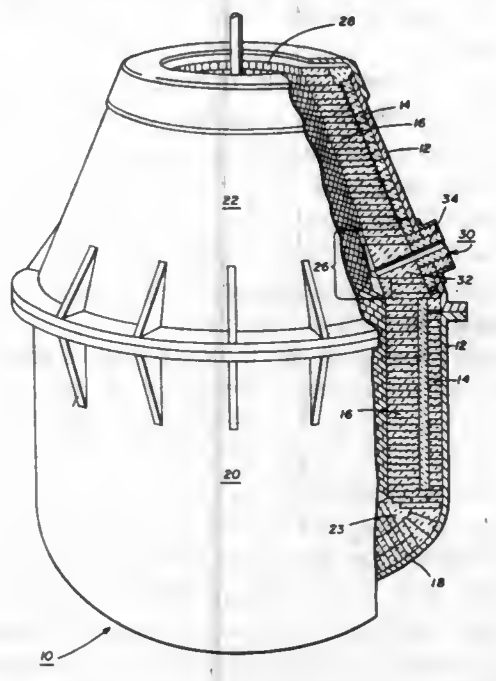
Harry A. Marsh, Jr., Pittsburgh, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 23, 1979, Ser. No. 23,417

Int. Cl.² F27D *1/16*

U.S. Cl. 266—281 **6 Claims**

1. A device for installing a taphole, composed of refractory blocks and sleeves, in a metallurgical vessel having an outer metal shell, a refractory lining in contact with the interior of the shell and a taphole opening passing through the metal shell comprising a vertical wall conforming to the silhouette of the taphole blocks, a pair of lower wing members extending laterally from each side of the wall to the extent of the width of the taphole blocks, and a vertical neck member extending forwardly of the vertical wall, said neck member terminating in a laterally extending wing conforming substantially to the internal and external dimensions of the taphole sleeves.



4,192,493

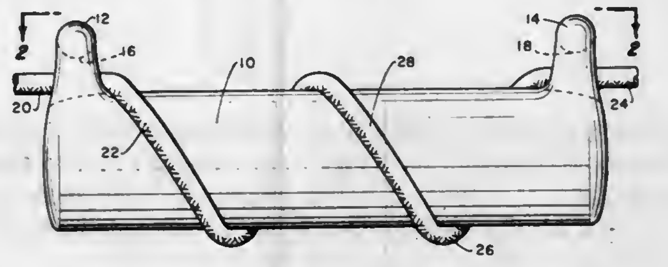
SHOCK-ABSORBING LINE DEVICE

Walter L. Koughan, 18011 NE. 196th St., Woodinville, Wash. 98072

Continuation of Ser. No. 812,083, Jul. 1, 1977. This application Sep. 14, 1978, Ser. No. 942,203

Int. Cl.² F16F *1/46*

U.S. Cl. 267—74 **2 Claims**



1. Shock-absorbing line device comprising:

a resilient cylindrical member having an axis;

a first line engaging said member at one end and effective when tensioned to apply a torque to said member about said axis;

a second line engaging said member at the opposite end and effective when tensioned to apply a counter-torque to said member about said axis;

a flange aligned on the same side and substantially normal to said axis at each end of said member, each said flanges having an eyelet passing through it;

each of said lines being passed through the respective eyelet and wound around said member;

said eyelet being substantially larger than the cross-section of said lines, whereby said lines will slide freely in said eyelets;

whereby upon tensioning of said lines, said resilient member is torsionally strained about said axis to absorb shock in said lines.

4,192,494

CUTTER MAT AND METHOD OF MAKING SAME

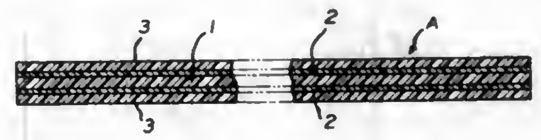
Rikichi Mima, Ikoma, Japan, assignor to Miwa Gomu Kogyo Kabushiki Kaisha, Japan

Filed Jan. 9, 1978, Ser. No. 867,870

Claims priority, application Japan, Feb. 9, 1977, 52-15410[U]

Int. Cl.² B32B *7/02, 27/00;* **B23Q** *3/00*

U.S. Cl. 269—289 R **4 Claims**



1. A cutter mat for use as a support upon which sheet material such as a sheet of paper or plastic to be cut is placed on either side, comprising a base plate of synthetic resin, two intermediate layers of synthetic resin each laminated to one side of said base plate, and two surface layers of synthetic resin each laminated to one of said intermediate layers to thereby provide a five-ply laminated mat, each of said intermediate layers being of the same thickness and having the same coefficient of expansion and contraction, each of said surface layers being of the same thickness and having the same coefficient expansion and contraction, such that both sides of the mat on opposite sides of the base plate are symmetrical with respect to the base plate and have the same coefficients of expansion and contraction to thereby preclude warping of the mat due to temperature variations, said surface layers having a softness and restoring property such that a cutting knife will penetrate into said surface layer along a cut line which closes and restores itself upon withdrawal of the knife, said intermediate layers being harder than said surface layers to provide increased resistance to further penetration of the knife into the mat without impairing the cutting operation and at the same time protecting the base plate from penetration by said knife, said base plate being harder than said intermediate layers to thereby provide rigidity to the cutting mat while the softer surface and intermediate layers provide flexibility to the mat, said surface layers each having on their outer surface a woven patten of projections and indentations corresponding to that of a woven fabric and obtained by peeling a woven fabric from said outer surfaces subsequent to heating and pressing thereof, whereby the woven pattern of projections and indentations provides a fine roughened surface to prevent slipping of the mat and without impairing the functioning of the surface layers to stably support the sheet material during the cutting operation.

4,192,495

FILM FEEDER

Karl-Georg Heinzelmann, Neunkirchen, and Sigismund Klein, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 2, 1978, Ser. No. 874,515

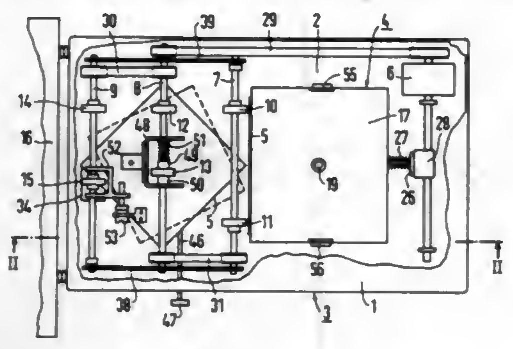
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707777

Int. Cl.² B65H *5/00*

U.S. Cl. 271—10 **8 Claims**

1. A film feeder for feeding automatic developers with individual film sheets, including a receiver magazine for the film sheets, an extraction device and a transport device for the transferral of the individual film sheets extracted from the receiver magazine in a sheet transport direction for supply to an automatic developer, the transport device having sheet rotation apparatus (**7** to **15**, **48** to **51**) for the rotation of the film sheets (**5**) by approximately 45° about their surface normal, characterized in that the sheet rotation apparatus for rotating the film sheets (**5**) comprises three shafts (**7**, **8**, **9**) arranged successively in the sheet transport direction, each disposed

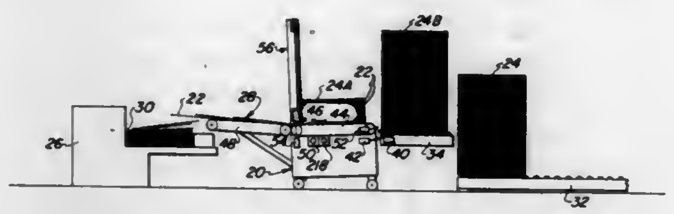
generally perpendicularly to the sheet transport direction and parallel to the transport plane, the first shaft (7) in the sheet transport direction carrying driven transport rollers (**10, 11**) each associated with one of two edge regions of the transport path, the second and third shafts (**8, 9**) in the sheet transport direction each carrying a driven transport roller (**12, 14**) associated respectively with one edge region, the third shaft carrying a driven transport roller (**15**) associated with the middle of a transport path, and a controlled transport roller (**13**) arranged on the second shaft (**8**) and associated with the middle of the transport path, said controlled transport roller being slightly braked but mounted in a free-wheeling manner on the second shaft.



4,192,496
APPARATUS FOR FEEDING CASE BLANK SHEETS

Louis R. Baselice, Cliffside Park; Anthony Freakes, Leonia; Joseph A. Miller, Englewood, and George A. Ventz, Clifton, all of N.J., assignors to General Corrugated Machinery Co., Inc., Palisades Park, N.J.

Filed Mar. 9, 1978, Ser. No. 885,040
Int. Cl.^{2} B65H *3/04, 1/26, 3/54*
U.S. Cl. 271—10 **14 Claims**



1. A case blank sheet feeder for receiving a stack of case blank sheets from a source of supply and delivering the sheets in a forward direction from the bottom of the stack in shingled arrangement for further processing, said case blank sheet feeder comprising:

receiving means located at a first level for receiving the stack of case blank sheets from the source;

feed means located at a second level above the first level for advancing the sheets in the forward direction from the bottom of each stack to feed the sheets from the sheet feeder:

elevator means for raising the receiving means from the first level toward the second level, the elevator means including an elevator for moving the receiving means in a vertical direction generally perpendicular to the forward direction, dwell means for stopping the receiving means at a further level intermediate the first level and the second level, and override means for deactivating the dwell means to enable the elevator means to raise the receiving means to the second level;

stripper means associated with the feed means for controlling the feeding of the sheets from the sheet feeder so as to feed a shingled stream in the forward direction from the bottom of the stack of sheets; and

stabilizing means for precluding toppling of the stack in a backward direction during feeding of the sheets from the bottom of the stack.

7. A case blank sheet feeder for receiving a stack of case blank sheets from a source of supply and delivering the sheets in a forward direction from the bottom of the stack, one sheet at a time in shingled arrangement, for further processing, said case blank sheet feeder comprising:

receiving means located at a first level for receiving the stack of case blank sheets from the source;

feed means located at a second level about the first level for delivering the sheets in the forward direction from the bottom of each stack to feed the sheets from the sheet feeder, the feed means including a feed conveyor having a rearward end adjacent the receiving means, a forward end, and feed conveyor belts for advancing the sheets longitudinally toward the forward end;

elevator means for raising the receiving means from the first level toward the second level; and

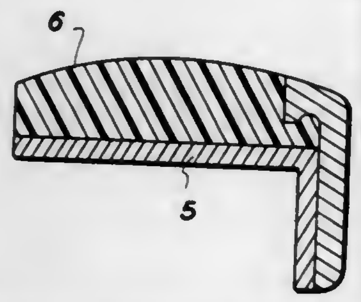
stripper means located at the forward end of the feed conveyor for controlling the feeding of the sheets from the sheet feeder so as to feed a shingled stream in the forward direction from the bottom of the stack of sheets;

the feed conveyor terminating at the stripper means, and the feed means including a delivery conveyor extending in a forward longitudinal direction from the stripper means, the delivery conveyor having delivery conveyor belts mounted for movement laterally to selected lateral locations relative to the feed conveyor belts for selected adjustment to different lateral widths so as to accommodate sheets of different lateral widths while enabling ease of access to the sheets on the delivery conveyor.

4,192,497
COMPOSITION FOR THE SURFACE OF SHEET SEPARATING DEVICES

William D. Perun, and Paul C. Amatangelo, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 464,393, Apr. 26, 1974, abandoned. This application Feb. 28, 1977, Ser. No. 772,388
Int. Cl.^{2} B65H *3/52*
U.S. Cl. 271—18 **20 Claims**



1. In an apparatus for separating and feeding sheets by means of a sheet separating and feeding device having a retard member the surface of which is a friction member formed of a resilient material, the surface comprising a microcellular elastomer having a hardness of at least 25 durometer.

4,192,498
SHEET SEPARATING AND FEEDING APPARATUS

John A. Toto, Milford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

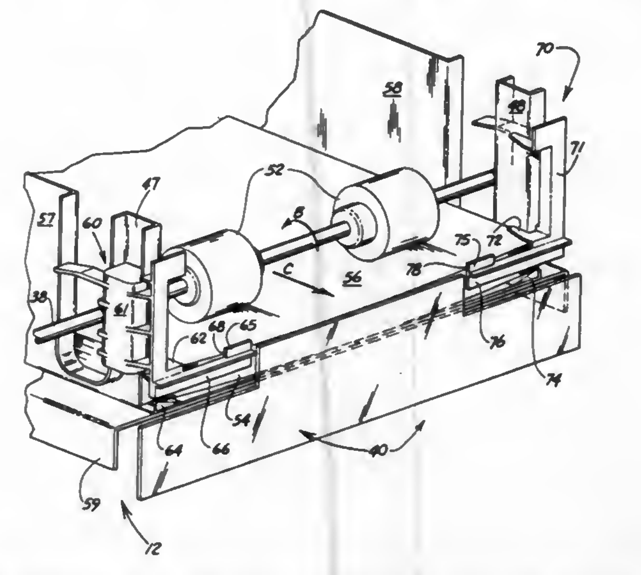
Filed Oct. 2, 1978, Ser. No. 947,532
Int. Cl.^{2} B65H *3/30*
U.S. Cl. 271—21 **8 Claims**

1. A two-stage sheet separating and feeding apparatus for separating and feeding the top sheet from a stack of sheets, comprising:

means for frictionally feeding the top sheet of a stack of sheets along a predetermined path;

a first separator stage including a pair of corner separators, each of said corner separators being operatively associated with one of the two corners of the leading edge of said stack of sheets for separating the top sheet from the stack of sheets; and

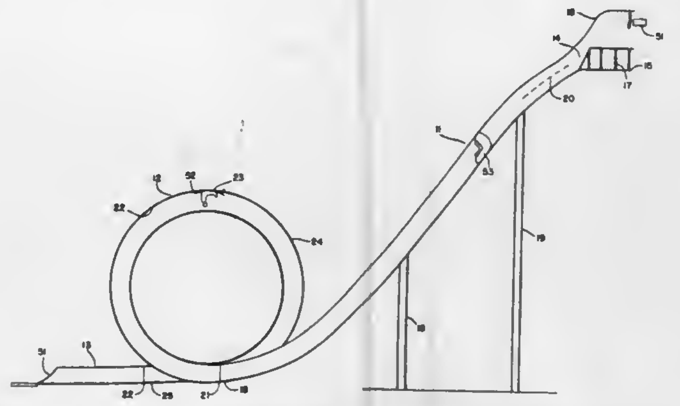
a second separator stage downstream of said first separator stage for separating the top sheet from any lower sheets which may have been carried along with the top sheet past the first separator stage, said second separator stage including a pair of retarding blades, each of said retarding blades being operatively associated with one of the corner separators and having a transverse groove for receiving the leading edge of a plurality of sheets wherein all but the top sheet is retarded in its forward movement along the predetermined path.



4,192,499
LOOPED SLIDE

Kenneth L. Groves, Jr., 1909 Fifth St., Ceres, Calif. 95307

Filed Jan. 17, 1978, Ser. No. 870,199
Int. Cl.^{2} A63G *21/02*
U.S. Cl. 272—56.5 R **8 Claims**



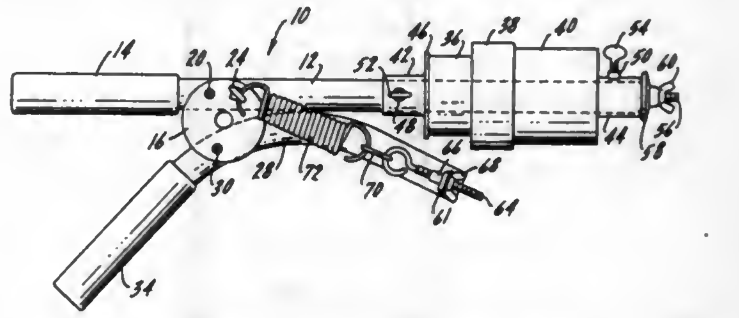
1. A slideway amusement device for conveying a person in a sitting posture from a first position to a second position by low-friction, sliding contact with said device comprising an acceleration element having a smooth sliding-contact surface, at least one tubular, vertical looping element substantially circular in cross-section and having a smooth sliding-contact surface, and a deceleration element having a smooth sliding-contact surface.

4,192,500
RACQUET GAME EXERCISER

Dennis W. Crow, and William E. Kreger, both of 3019 Mac Heath Crescent, Flossmoor, Ill. 60422

Filed Apr. 10, 1978, Ser. No. 895,152
Int. Cl.^{2} A63B *11/08*
U.S. Cl. 272—68 **9 Claims**

1. An apparatus capable of being employed by a single human user comprising an elongated member having a weight and a substantially straight longitudinal axis; weight means locatable toward one end of said elongated member to provide additional weight to said apparatus; and grip means positioned in association with said elongated member, said grip means including two elements capable of being grasped in one hand by said human user to hand hold said apparatus, one of said elements being located at or near the end of said elongated member away from said weight means and having substantially the same longitudinal axis as said elongated member, said elements being movable toward each other by said human user,

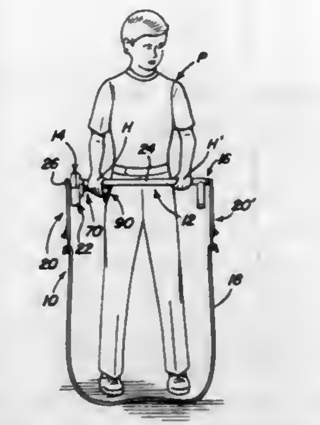


said grip means further including bias means acting to provide force to urge said elements apart, said bias means being structured to allow said force to be adjustable over a substantially continuous range.

4,192,501
ELECTRIC JUMP ROPE

John R. Peoples, Rte. 9, Box 457, Johnson City, Tenn. 37601

Filed Nov. 16, 1977, Ser. No. 852,158
Int. Cl.^{2} A63B *5/20*
U.S. Cl. 272—75 **2 Claims**



1. A jump rope comprising, in combination:
(a) a longitudinally extending member having longitudinally spaced ends, and comprising: a tubular housing; an elongated rod journalled within the housing and extending therefrom at the longitudinally spaced ends of the member, the tubular housing and rod extending longitudinally of the extent of the member;
(b) a flexible element having end portions attached directly to the rod at points thereon outside of the tubular housing;
(c) motor means including a variable speed electric motor mounted at one of the ends of the elongated member, batteries for energizing the motor being mountable at the other of the ends of the member, and a cable electrically connecting the motor to the batteries, the cable extending along the longitudinal extent of the member;
(d) a variable speed switch inserted in the cable for controlling the speed of the motor, said switch including: rheostat provided with a plurality of contacts; and a lever pivotally mounted on the member and having a pair of diverging arms, one of the arms engaging the rheostat for varying the resistance of the rheostat, and the other of the arms being engageable by a hand of a person grasping the member for pivoting the member and moving the other of the arms toward the member and decreasing the resistance of the rheostat;
(e) a spring mounted on the member and engaging the other of the arms of the lever for biasing the other of the arms away from the member;
(f) a ratchet mounted on the member and arranged engaging the other of the arms of the lever for holding in any one of a plurality of positions against the bias of the spring and

varying the speed of the motor in predetermined increments; and

(g) wherein the member further includes branch housing portions provided at either longitudinal end of the member and disposed extending perpendicularly to the tubular housing and rod and attached to the tubular housing for enclosing the motor and batteries, respectively, the one of the branch housing portions enclosing the motor also enclosing the rheostat and being disposed immediately adjacent the pivotally mounted lever of the speed control switch.

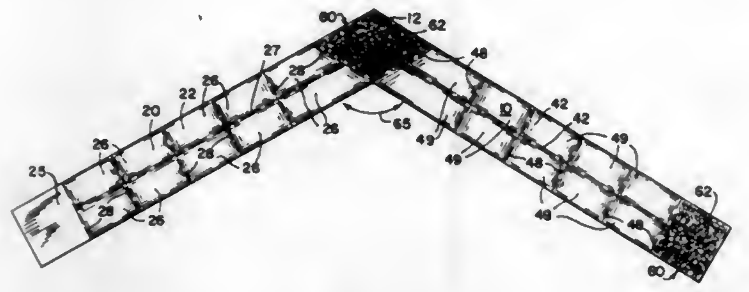
4,192,502
WRAPAROUND WEIGHTED EXERCISE DEVICE FOR THE FOOT AND ANKLE

Robert Owen, 49 Concord Ave., North Kingston, R.I. 02852

Filed Aug. 11, 1978, Ser. No. 932,775

Int. Cl.^{2} A63B *23/04*

U.S. Cl. 272—119 **12 Claims**



6. A V-shaped exercising device for wearing about the foot and ankle of a wearer comprising:

first and second elongate and flexible legs each having a longitudinal length greater than its width;

said legs meeting at a common apex section in an angular relation to define an included angle therebetween having a quantity less than 180 degrees, and each of said legs having a free end portion disposed in spaced relation to said common apex section;

weight means disposed along the length of each said leg; and

fastening means disposed on said apex section and on said free end portions of each said leg for releasably affixing one said leg about the ankle and said other leg about the foot of the wearer and securing each of said free end portions to said apex section.

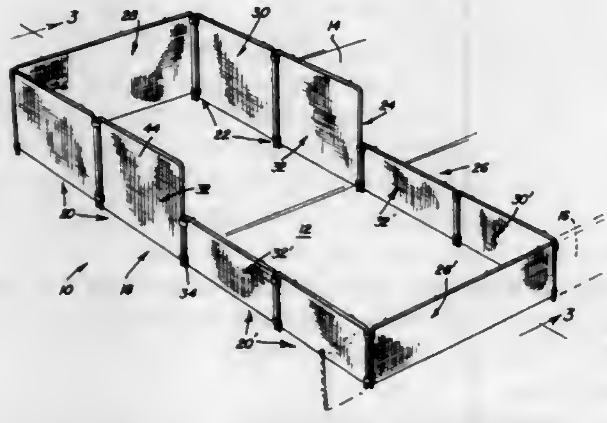
4,192,503
TENNIS SERVING CAGE

Anthony J. Karas, 634 Beverly Dr., Macomb, Ill. 61455

Filed Aug. 22, 1978, Ser. No. 938,301

Int. Cl.^{2} A63B *69/40*

U.S. Cl. 273—29 A **10 Claims**



8. In combination with a standard U.S. Lawn Tennis Association tennis court having a designated service court area, a serving cage for capturing tennis balls served into the service court area, the serving cage comprising a continuous barrier having a rectangular configuration in plan and conforming dimensionally to the periphery of said service court area .

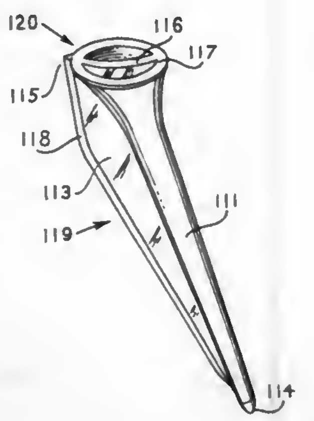
4,192,504
METHOD AND APPARATUS FOR SUPPORTING A GOLF BALL

Robert G. Clugage, P.O. Box 5905, Incline Village, Nev. 89450

Filed Jun. 9, 1977, Ser. No. 804,992

Int. Cl.^{2} A63B *57/00*

U.S. Cl. 273—33 **8 Claims**



3. A golf tee comprising: (1) An elongated stem tapering to a point at one end and to an enlarged golf ball supporting area at the other end, said enlarged end having a suitable configuration to support a golf ball; (2) A rib formed within the configuration suitable to support a golf ball; (3) A pointer depending outward from the golf ball supporting surface and in alignment with said rib; and (4) a fin directionally aligned with said rib and pointer and extending from the said enlarged golf ball supporting portion along the stem.

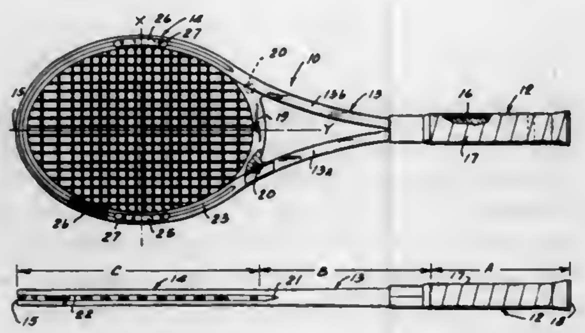
4,192,505
GAME RACKET

Maurice L. Tabickman, Bloomingdale, and Douglas E. Dempsey, Palatine, both of Ill., assignors to Pepsico, Inc., Purchase, N.Y.

Filed Nov. 7, 1977, Ser. No. 848,940

Int. Cl.^{2} A63B *49/10*

U.S. Cl. 273—73 C **18 Claims**



1. A game racket frame of controlled stiffness properties composed of an integral structure of high modulus fibers in a matrix of a synthetic resin, said fibers having a specific modulus of elasticity of at least 6×10^7 inches, said integral structure being of substantially uniform wall thickness throughout, and including a rounded open head portion, an open throat portion forming a continuation of said head portion and a handle portion terminating said throat portion, said handle portion having a generally uniform height greater than the height of the remainder of said frame and having the greatest moment of inertia of any portion of said frame, said handle being composed of two mating portions each of which is non-symmetrical with respect to a vertical plane passing through its center, said frame having a substantially uniform taper extending from the inward end of said handle portion into and through said throat portion, thereby providing a smooth decrease in stiffness in said throat portion from said handle portion to said head portion, said smooth taper extending into said head portion to an extent of at least 15% of the long axis of the open head portion, said throat also having a non-symmetrical cross section with respect to a vertical plane passing through its center, said frame providing the characteristics of a variable cross section beam.

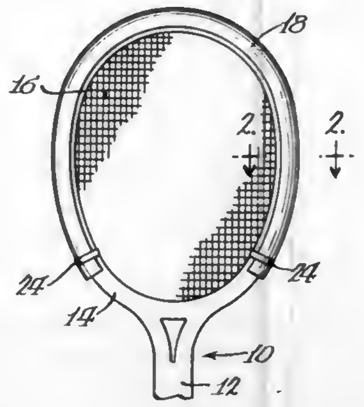
4,192,506
RACQUET SAFETY DEVICE

Anthony A. Sofia, 9035 W. Cermak Rd., North Riverside, Ill. 61466

Filed Jun. 13, 1978, Ser. No. 915,147

Int. Cl.^{2} A63B *59/00*

U.S. Cl. 273—73 R **1 Claim**



1. In combination, a racquet and a safet device mounted thereon, said racquet comprising a head comprising a frame surrounding a striking surface, and a handle extending away from the head, said safety device comprising an elongate member of compressible foam material of constant cross section having a rounded outer impact surface and sufficient thickness to substantially absorb impacts, said member having an inner channel conforming to the shape of the racquet frame and having shoulders on each side overlapping the sides of the racquet frame, said device extending around a portion of the racquet head and terminating at each end short of the handle, said shoulders being spaced away from the striking surface of the racquet to avoid interference therewith, and adhesive means between the channel of the member and racquet frame for removably securing said member to said frame.

4,192,507
LIGHT ACTUATED SHOOTING ARCADE GAME

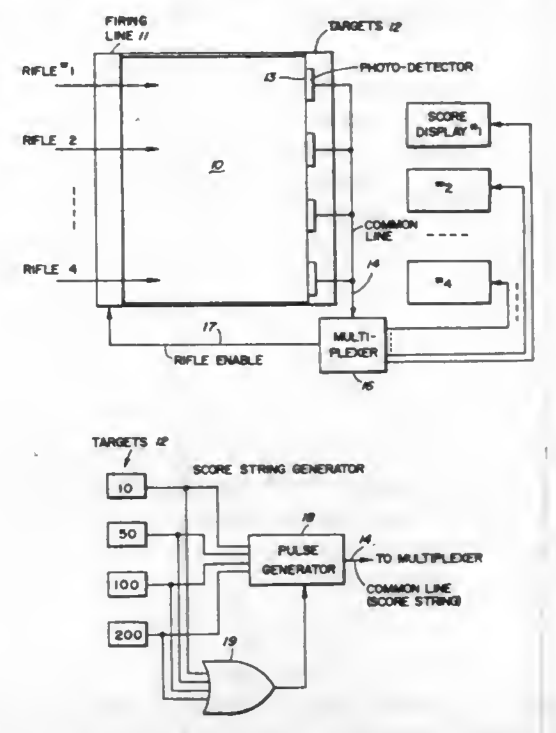
Lyle V. Rains, San Jose; Stephen D. Bristow, Los Altos Hills, and Richard J. Patak, Cupertino, all of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 813,807, Jul. 8, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 966,429

Int. Cl.^{2} F41J *5/02;* A63F *9/02*

U.S. Cl. 273—311 **1 Claim**

1. A shooting arcade game having a plurality of rifles with triggers actuated by game players shooting at a common plurality of targets comprising: a light source adapted to be affixed to each of said rifles and to be actuated by said trigger to produce a light flash; a photo-detector for each of said targets, respectively, for sensing a light flash striking a target, each of the photo-detectors and thereby its respective target being assigned a weighted scoring value at least one value being different from the other values; a score display for each of said rifles, respectively; a common electrical line; means for electrically connecting all of said photo-detectors to said common line, said connecting means including a pulse generator responsive to the sensing of light by said photo-detectors and having output means for providing output pulses corresponding in number to the weighted scoring values of the photo-detectors; time multiplexing means for successively connecting said common line to said score displays for time periods which are unique to respective score displays and for successively enabling said light sources for time periods which are unique to respective guns and which are at least partially concurrent with the time periods of respective score displays.



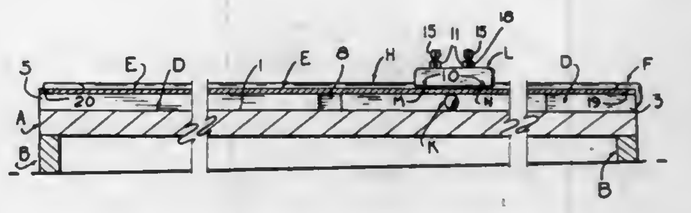
4,192,508
MAGNETIC BALL GAME

Lester R. Livick, 15106 Beatty St., San Leandro, Calif. 94579

Filed May 3, 1978, Ser. No. 902,438

Int. Cl.^{2} A63F *9/14*

U.S. Cl. 273—118 A **3 Claims**



1. A device of the type described, comprising:

(a) a rectangular board having a flat upper surface with guide grooves therein large enough in width and depth to permit a ball bearing to move along a desired groove, said grooves extending from one end of the board to the other end, the grooves being open at each board end;

(b) a transparent flat cover plate covering the grooves and the flat upper surface of the game board;

(c) a carriage movably supported by the upper surface of the cover and housing a magnet; and

(d) means for positioning the magnet in said carriage so that the undersurface of said magnet will be disposed a predetermined distance above the upper surface of the cover, said cover separating the magnet from the ball bearing and the magnet exerting sufficient magnetic force on said ball bearing to move it along the groove in which the ball bearing is disposed as the carriage is moved.

4,192,509
THREE DIMENSIONAL PUZZLE FIGURE

Medilen S. Singh, 208 PCIB Bldg., Greenhills Commercial Center, San Juan Rizal, Philippines

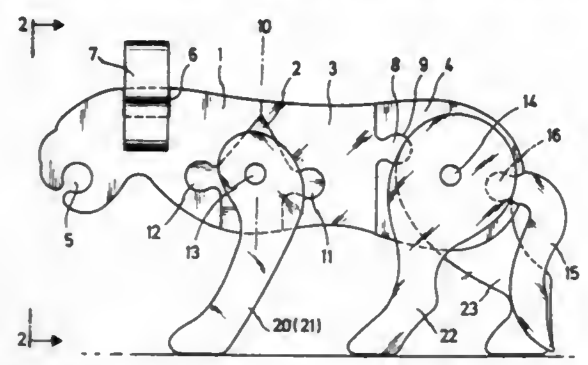
Filed Jan. 30, 1978, Ser. No. 873,361

Int. Cl.^{2} A63F *9/12*

U.S. Cl. 273—157 R **4 Claims**

1. A puzzle figure comprising a plurality of equally thick, plate-like and partly exchangeable parts, the body thereof consisting of at least one exchangeable head part, two torso parts and one pelvis part which are formfittingly intercon-

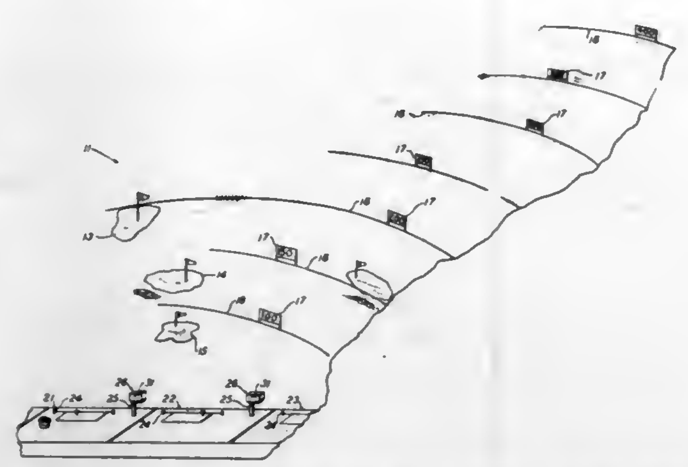
nected on one plane, and wherein said pelvis part and one of said torso parts respectively is provided with a borehole perpendicular to the plane of said figure and said one torso part is formed as a mirror image about a perpendicular plane through



said borehole; rods sized for insertion through said boreholes, each of said rods having a length greater than the thickness of said head, torso and pelvis parts; and leg parts movably attachable on said rods, said leg parts being of equal thickness to said head, torso and pelvis parts.

4,192,510
APPARATUS FOR SIMULATING GAME OF GOLF

Franklin C. Miller, 909 Volante Dr., Arcadia, Calif. 91106
Filed Jul. 24, 1978, Ser. No. 927,291
Int. Cl.² A63B ***69/36***
U.S. Cl. 273—176 A **1 Claim**

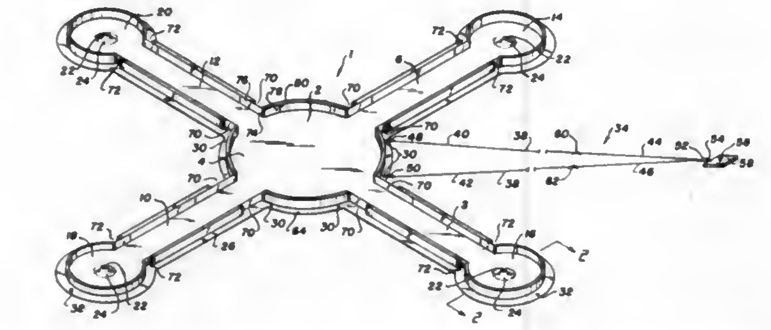


1. Apparatus for playing a simulated round of golf on a golf practice course and comprising a practice driving range, a plurality of putting practice greens, a tee zone on the driving range, a video screen computer at the tee zone, a changeable computer programming unit adapted to image a golf course hole layout on the screen of said computer, computer controls for imaging a simulated ball on said computer screen, a plurality of approach greens at differing distances from said tee zone and dispersed on said driving range, and distance markers on said driving range indicating distance to said approach greens and distance from said tee zone for measuring the distance of driven golf balls.

4,192,511
PORTABLE MINIATURE GOLF GAME

Denis E. Fitzgerald, 212 S. Kamloops St., Vancouver, British Columbia, Canada (V5K 3T9)
Filed Dec. 7, 1978, Ser. No. 967,191
Int. Cl.² A63B ***69/36***
U.S. Cl. 273—176 G **11 Claims**

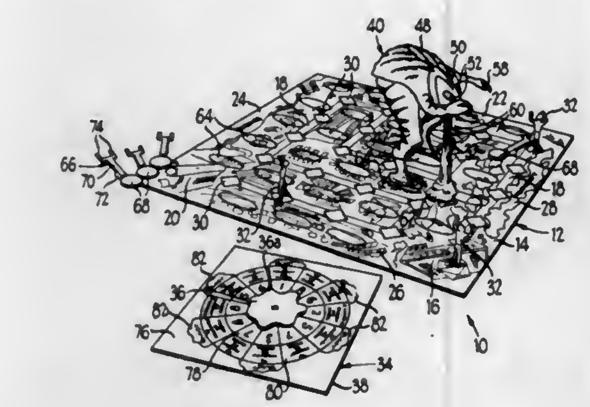
1. A portable folding golf game comprising:
a flat, flexible putting surface with a circular central fairway, a plurality of elongate fairways extending radially outwards from the central fairway and a plurality of circular greens, one green at the end of each fairway, each green having a central aperture for receiving a golf ball;
a teeing means comprising a flat teeing surface with a golf tee extending upwardly therefrom and bridle means for connecting the teeing surface to the putting surface;
a peripheral barrier surrounding the putting surface, the barrier having gaps between the central fairway and the elongate fairways and between the elongate fairways and the greens to permit folding of the golf game; and



a plurality of detachable barrier extensions for bridging the gaps in the peripheral barrier when the game is in use.

4,192,512
BOARD GAME APPARATUS

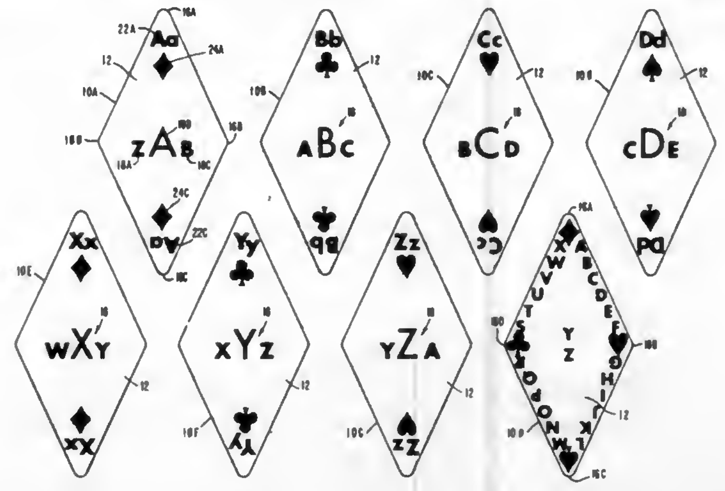
Erick E. Erickson, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 31, 1978, Ser. No. 874,013
Int. Cl.² A63F ***3/00***
U.S. Cl. 273—243 **19 Claims**



1. A board game comprising:
a gameboard having a playing surface thereon with a travel path defined by a plurality of spaced apart play stations;
a plurality of playing pieces including one for each player adapted to move along said travel path between said play stations;
chance means for directing the movement of each playing piece for an associated player's turn for a chance determined number of play spaces along said path;
a plurality of spaced apart foot spaces on said playing surface arranged in pairs straddling said travel path at several positions thereon; and
a toy figure having a pair of spaced apart feet adapted to rest on pairs of said foot spaces and including a body supported on a pair of spaced legs extending upwardly of said feet, said body including a pan for holding a quantity of viscous mucous of cohesive, gelatinous material, said pan including at least one opening therein permitting said material to flow downwardly of said pan to contact said playing surface forming a cohesive strand at least partially blocking a path between said spaced legs above said playing surface below said pan.

4,192,513
DIAMOND ALPHABET PLAYING CARDS

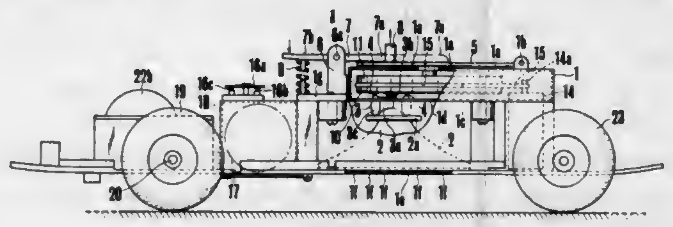
John M. Feeley, and Ruth E. Feeley, both of 19333 Plummer St., Northridge, Calif. 91324
Continuation of Ser. No. 722,381, Sep. 13, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 898,716
Int. Cl.² A63F ***1/02***
U.S. Cl. 273—294 **17 Claims**



12. Game apparatus comprising
a deck including a plurality of playing cards,
each of said cards having first and second faces,
each of said cards having imprinted on the first face thereof a designation of its value relative to the remaining cards in said deck, said value designation comprising a sequence of three letters imprinted centrally on the first face of each of said cards, the letters forming a natural alphabetic sequence, said cards being divided into four suits, a designation of the suit of each of said cards also being imprinted on the first face of said cards, each of said suits including twenty-six cards, the second letters in said sequences on said cards in each of said twenty-six card suits corresponding to the letters of the alphabet from "A" to "Z".

4,192,514
SOUND REPRODUCING MECHANISM FOR TOYS

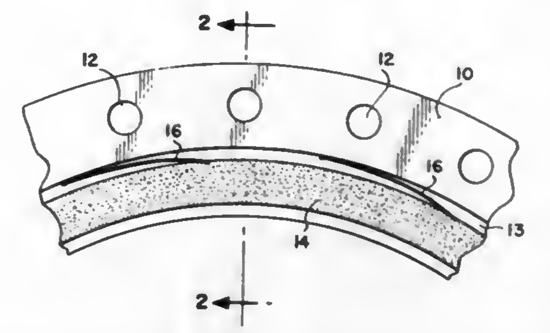
Tasuku Ohno, Tokyo, Japan, assignor to Stiron Chemical Industry Co. Ltd., Tokyo, Japan
Filed Jul. 24, 1978, Ser. No. 927,562
Claims priority, application Japan, Sep. 12, 1977, 52-110144
Int. Cl.² G11B ***3/00***
U.S. Cl. 274—1 A **2 Claims**



1. A sound reproducing device for toys comprising: a speaker **2** fixed to the inner bottom of a casing **1** in a state where the opening portion of a cone type diaphragm is turned down; a pickup **3** pivoted on the casing through a suitable support member located therein such that, while it permits an upward stylus **4** mounted on a boss **3*c*** to be in engagement with a groove, it is caused to move against a return spring **3*b*** and the boss **3*c*** is caused to be in connection with the speaker **2** during playback operation; an upper lid **5** pivoted **1*b*** swingingly on the upper opening **1*a*** of the casing **1** and provided rotatably with a turntable **11** on the under face of which a phonograph record is supported; and a mechanism **7*a*** for harmonizing stylus pressure in which a lever plate **7** is pivoted **6*a*** between support plates **6** and **6** mounted on a stepped portion **1*g*** of the casing **4** which is diametrically opposite to the pivoting point **1*b*** of the upper lid **5**, the front arm **7*a*** of the lever plate **7** is snap-fit into a ring **8** mounted on the upper lid **5** and a relatively weak spring **9** is interposed between the rear arm of the lever plate **7** and the upper face of the stepped portion **1*g***.

4,192,515
GASKET RETAINING SPRING

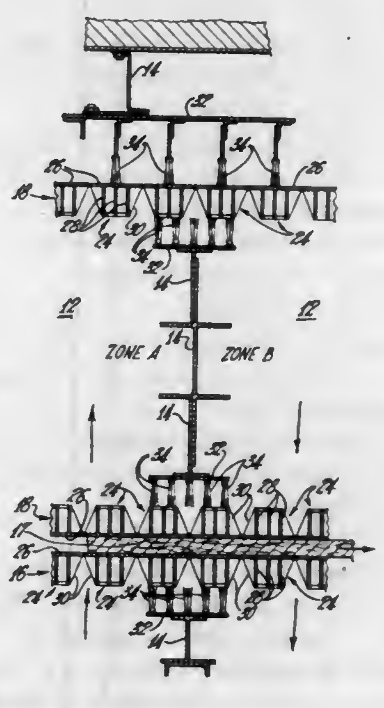
Hosea E. Smith, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Jun. 5, 1978, Ser. No. 912,892
Int. Cl.² F16J ***15/06;*** **F16L** ***23/02***
U.S. Cl. 277—11 **4 Claims**



1. A flanged connection comprising a first flanged member containing an annular gasket recess bounded by a wall formed by said recess in said first member, an annular gasket positioned within said gasket recess and having an outer edge located adjacent said wall, a plurality of resilient metallic gasket retainer springs tack welded to said recess wall in said first flanged member and extending within said recess in contact with said edge of said gasket at spaced intervals about said gasket, a second flanged member aligned with said first flanged member and abutting against said gasket, and means for securing said second flanged member to said first flanged member.

4,192,516
SEALS FOR OVENS

Ralph E. McCort, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Dec. 26, 1978, Ser. No. 973,467
Int. Cl.² F26B ***11/02;*** **F16J** ***15/44***
U.S. Cl. 277—12 **12 Claims**



1. Apparatus comprising:
a. an oven;
b. a baffle positioned within said oven to divide said oven into zones;
c. a first belt mounted for travel through at least two of said zones, said belt having foraminous and non-foraminous portions; and,
d. a plurality of members extending from said baffle across

the width of said first belt, said members being positioned so that at all times at least one of said members is in a contact relationship with a non-foraminous portion of said belt.

4,192,517

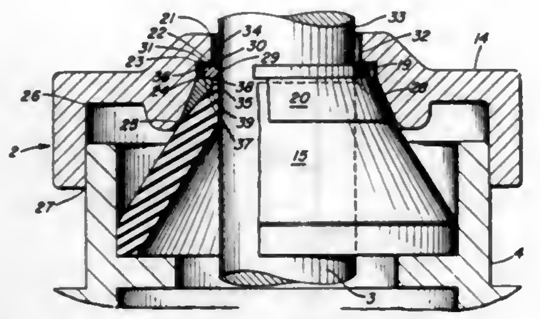
ANTI-SCALE STUFFING BOX IMPROVEMENT

Julio A. Torres, Pecos, Tex., assignor to Conoco, Inc., Ponca City, Okla.

Filed Feb. 26, 1979, Ser. No. 15,263

Int. Cl.² F16J *15/12*

U.S. Cl. 277—24 **3 Claims**



1. In combination with a wiper assembly positioned about a reciprocating polished rod; the wiper assembly comprised of a lower housing member, an upper housing member, an upright trunciated conoid elastomeric wiper seal positioned in wiping fit about the reciprocating polished rod, and a means for tightening the upper housing member against the lower housing member in a direction axial to the long axis of the polished rod, the wiper assembly situated upstroke of and fastened to or integral with a stuffing box situated about and in sealing fit with the reciprocating polished rod;

the upper housing member having an internal surface defined by rotating a line 360° about the long axis of the polished rod,
- (a) the line starting at the upper surface of the upper housing member in proximity to the polished rod,
- (b) then extending downward parallel to the long axis of the polished rod,
- (c) then extending outward radially to the long axis of the polished rod,
- (d) then extending downward parallel to the long axis of the polished rod,
- (e) then extending axially-radially to the long axis such as to be in proximity with the upper sloping axial surface of the trunciated conoid wiper seal,
- (f) then extending in a generally radial direction, and
- (g) then extending in a generally axial direction; the upper housing member matable with the lower housing member and movable with respect therewith in a direction axial to the long axis of the polished rod;

the improvement comprising:
- (h) a rigid upper wiper ring in combination with
- (i) a rigid lower retainer ring; the wiper ring and retainer ring positioned about

the polished rod above the trunciated end of the conoid wiper seal and within the cavity formed by the housing members of the wiper assembly;

the wiper ring having an internal diameter in snug slidable fit with the polished rod and of sufficient closeness to scrape any deposits from the polished rod, having substantially rectangular or square cross-sections as viewed in a plane taken radially through the long axis of the polished rod, the radial distance of each cross-section being greater than the total radial distance between the surfaces of the polished rod and the surfaces of the upper housing member defined by rotating line (b) extending downward parallel to the long axis of the polished rod as taken through any radial plane through the long axis of the polished rod, the axial distance of the cross-section being not greater than the axial distance defined by line (d) extending downward parallel to the long axis of the polished rod and not less than about 90 percent of said distance of line (d), the total diameter of the outer surface of the wiper ring not being greater than the diameter defined by rotating line (d) defining an internal surface in the upper housing member;

the lower retaining ring having an upper surface radial to the long axis of the polished rod, having an inner surface of greater diameter than the diameter of the inner surface of the wiper ring, having an outer surface substantially nestable in the surface of the upper housing member defined by line (e) extending axially-radially, and having a fourth lower and inner surface defined by the rotation of a line more radial and less axial than line (e) about the long axis of the polished rod.

4,192,518

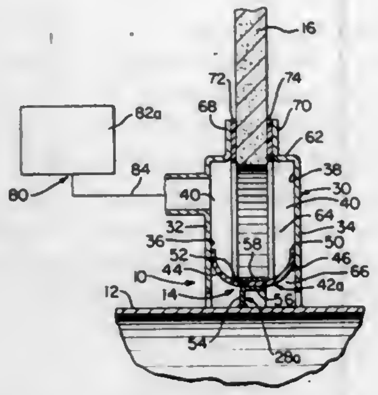
DEVICE FOR SEALING AN APERTURE IN A PARTITION WALL THROUGH WHICH A ROTATING DRUM EXTENDS

Hans F. Arendt, Bleichinsel, 712 Bietigheim, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 961,065

Int. Cl.² F16J *15/38, 15/40*

U.S. Cl. 277—27 **24 Claims**



1. A device for sealing an aperture in a partition wall having opposed sides through which partition wall a rotating drum extends, the device comprising:
- (a) a first annular member attached to the drum and extending radially outwardly therefrom;
- (b) a second annular member attached to the partition wall and extending radially inwardly into the aperture therein, said second annular member having first and second spaced surfaces which partially define an annular sealing space;
- (c) sealing means extending between, on the one hand, said spaced surfaces of said second annular member and, on the other hand, said first annular member;
- (d) whereby the opposed sides of said partition wall are isolated from each other by said sealing space.

4,192,519

HIGH PRESSURE MULTI-PURPOSE SEAL

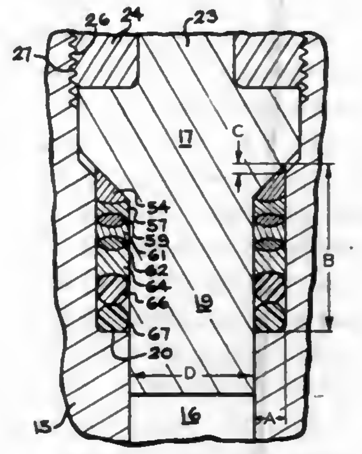
Alvin E. Buggele, 7 Milan Manor Dr., Milan, Ohio 44846

Filed Jul. 24, 1978, Ser. No. 927,479

Int. Cl.² F16J *15/12*

U.S. Cl. 277—115 **16 Claims**

1. An apparatus for achieving a seal between a container defining an enclosed volume and a closure comprising a plurality of axially aligned bands disposed about said closure including a band having a substantially triangular cross section adjacent said closure, a first plurality of metallic bands, a second plurality of metallic bands having a double convex cross section interleaved with said first plurality of metallic bands and at least one band having a substantially circular cross section.



4,192,520

SEAL STRUCTURE

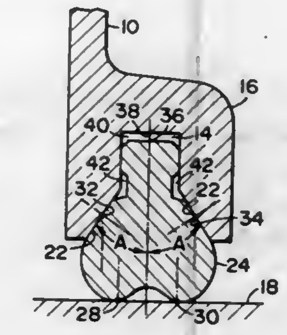
Tadao Hasegawa, Teromachi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 19, 1978, Ser. No. 907,754

Claims priority, application Japan, Jan. 30, 1978, 53-10266[U]

Int. Cl.² F16J *15/12*

U.S. Cl. 277—235 B **8 Claims**



1. A sealing structure including a substantially flat sealing surface, a gasket and a groove formed in a flange facing the sealing surface for the gasket and for applying a sealing force to the gasket in a direction substantially perpendicular to the sealing surface, wherein a groove is formed such that the groove has inclined surfaces with the width of the groove increasing towards the sealing surface and such that the inclined surfaces apply a pressing force to the gasket and wherein contacting points along a cross section of the gasket and the sealing surface are closer to the center of the gasket than are the respective centers of the inclined surfaces in the groove.

4,192,521

4-JAW WORK HOLDING CHUCKS

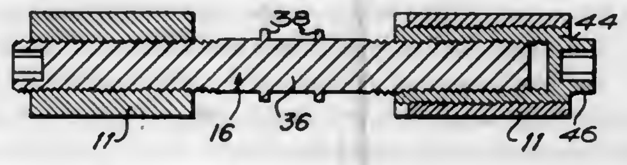
Bernard Smith, 33 Bagshaw Ave., Chapel-en-le-Frith, Via Stockport, Cheshire, England

Filed Sep. 23, 1977, Ser. No. 836,080

Claims priority, application United Kingdom, Oct. 2, 1976, 41017/76; Oct. 7, 1976, 41637/76

Int. Cl.² B23B *31/36, 31/12*

U.S. Cl. 279—112 **9 Claims**



1. A 4-jaw work holding chuck, comprising a body provided with two pairs of oppositely disposed radiating guides, a jaw slidably adjustable along each said guides, a pair of adjusting screws extending diametrically across the body and threadedly connected to oppositely disposed pair of jaws, each adjusting screw having a right hand thread at one end and a left hand thread at its other end whereby, as the screw is turned, the oppositely disposed pair of jaws concerned are adjusted in position with equal and opposite movement, a sleeve located on at least one end of at least one of the adjusting screws between said screw and the associated jaw at said one end, said sleeve being internally screwthreaded for engaging the screwthread at that end of its associated screw and externally screwthreaded for engaging the associated jaw whereby rotation of said sleeve provides a differential adjustment of its associated jaw relative to the opposite jaw independent of said adjusting screw.

4,192,522

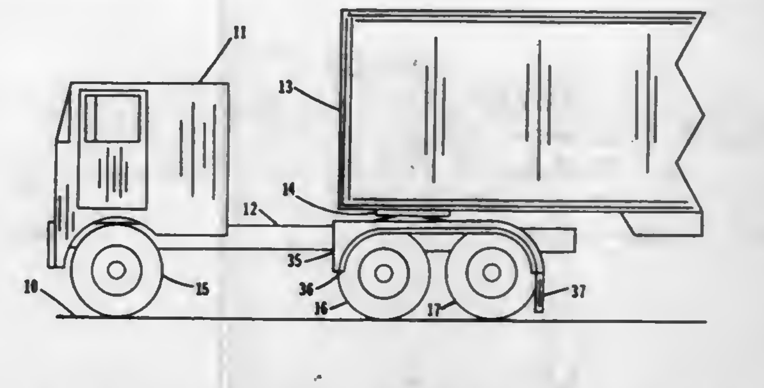
HIGHWAY VEHICLE SPLASH AND SPRAY CONTROL SHIELD

John H. Morgan, 4905 Linda Ave., Baltimore, Md. 21236

Filed Aug. 14, 1978, Ser. No. 933,287

Int. Cl.² B62D *25/16*

U.S. Cl. 280—154.5 R **4 Claims**



1. A device for controlling the discharge of wet weather splash and spray of a highway vehicle comprising a shield consisting of a unit with side walls and a top wall that covers the uppermost forward part, over the top of and the uppermost rearward part of a wheel, or dual wheels, or a set of wheels of adjacent axles, the uppermost forward section of said shield comprising an air collector known as a "scoop", which is aerodynamically designed to collect and direct the flow of air caused by the forward movement of the vehicle, across the top of, backwardly and downward, behind the wheel or wheels or most rearward wheels of a set of adjacent axles, directly to the road surface,

said air scoop utilizing the outer surface of the forward arcuately shaped portion of said shield as its arcuate bottom wall, and having generally triangular side members extending upwardly from the respective side edges of said bottom wall, and a generally horizontal top wall interconnecting the top edges of said side members, said air scoop defining an enlarged front opening and a constricted rear opening through which the flow of air is forcefully directed rearwardly along the top wall of said shield.

4,192,523

LOADER VEHICLES

Winfried Hausmann, Klein-Lobke, Fed. Rep. of Germany, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 752,955, Dec. 20, 1976, abandoned. This application Apr. 6, 1978, Ser. No. 937,306

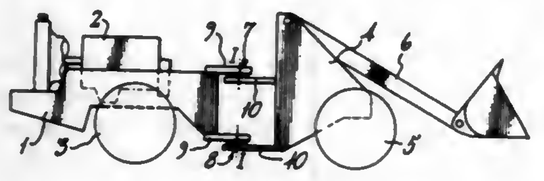
Claims priority, application United Kingdom, Dec. 24, 1975, 52927/75

Int. Cl.² B62D *53/02*

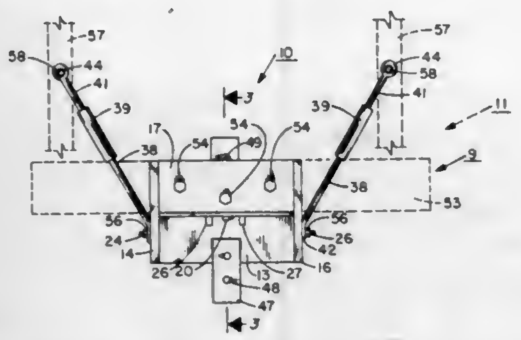
U.S. Cl. 280—400 **3 Claims**

1. An articulated vehicle having two frame sections, one of

which supports the drive unit and the other an implement, said frame sections each including first and second arms with opposed overlapping end portions for mounting first and second hinge joints therebetween to enable steering movement between said frame sections, a first ball and socket bearing for said first joint mounted in a first arm of one of said frame sections, a pin interconnecting said first bearing with the other first arm of said other frame section, means locking said first socket bearing against movement in said first arm of said one frame section, a second ball and socket bearing, means defining a bore in the second arm of said one frame section for slidably receiving said second socket bearing therein, a second pin interconnecting said second ball and socket bearing with the second arm of said other frame section, and means connected to said second arm of said one frame and extending across said bore to limit sliding movement of said second socket bearing in one direction.



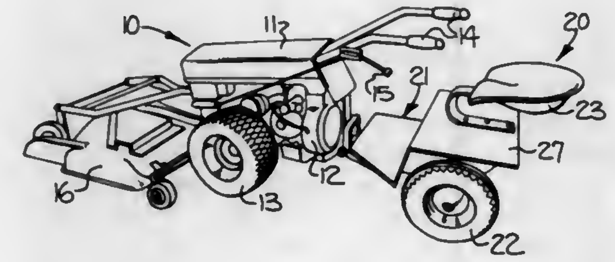
4,192,524
TRAILER HITCH APPARATUS
Terry B. Twiestmeyer, R.R. #1, Belgrade, Nebr. 68263
Filed Jan. 31, 1978, Ser. No. 873,806
Int. Cl.² B60D *1/00*
U.S. Cl. 280—415 A **7 Claims**



1. A trailer hitch device for attachment to a bumper plate of a towing vehicle, the vehicle further having frame members disposed distal of said bumper plate, the device comprising:
support frame means for attachment to said bumper plate;
a draw bar means secured to said support frame means; and
elongated linkage means having one end secured to said support frame means and having another end for attachment to said frame members; wherein said support frame means has a horizontally disposed passage formed therethrough from front to rear and said draw bar means is disposed in said passage, said draw bar means having a ball hitch secured thereto, said draw bar means also having at least one opening formed therein for receiving a clevis pin, said support frame means including a reinforced bottom wall, a pair of spaced side walls secured to and projecting upwardly from said bottom wall, and a top wall secured between said sidewalls and spaced from said bottom wall, said bottom wall having said passage formed therethrough and further having a vertical hole drilled therethrough and passing into said passage; and said draw bar means including a drop pin mounted in said vertical hole and one of said draw bar openings, and wherein said support means includes a pair of spaced upstanding tabs secured to the top of said bottom wall with said tabs opposite each other with said vertical hole disposed therebetween, each said tab having a hole formed therethrough; and a locking pin mounted in said tab holes over said drop pin to prevent said drop pin from working out of said vertical hole.

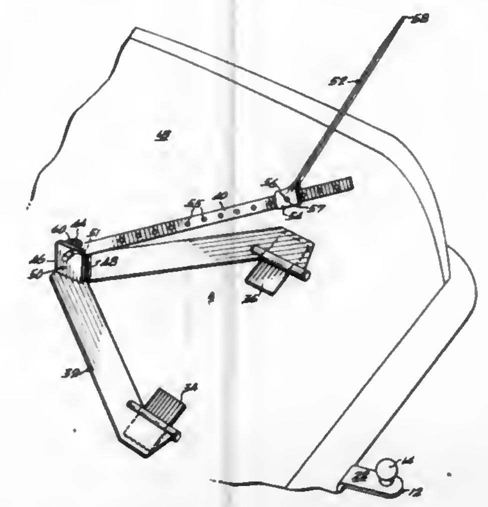
7. A trailer hitch device for attachment to a bumper plate of a towing vehicle, the vehicle further having frame members disposed distal of said bumper plate, the device comprising:
support frame means for attachment to said bumper plate;
a draw bar means secured to said support frame means; and
elongated linkage means having one end secured to said support frame means and having another end for attachment to said frame members; wherein said support frame means has a horizontally disposed passage formed therethrough from front to rear and said draw bar means is disposed in said passage, said draw bar means having a ball hitch secured thereto, said draw bar means also having at least one opening formed therein for receiving a clevis pin and wherein said drawbar means has a first end and a second end opposite thereto, and said ball hitch being secured at said first end and said clevis pin openings being formed at said second end, said drawbar means being disposed in said passage in a first position, and then reversed end to end to be disposed in said passage in a second position, in said first position said drawbar being connectable to a trailer by means of said ball hitch, and in said second position said draw bar being connectable to a trailer by means of said clevis pin openings.

4,192,525
STEERING SULKY FOR TWO-WHEEL TRACTORS
John D. Clark, Winston-Salem, N.C., assignor to Clarke-Gravely Corporation, Clemmons, N.C.
Filed Sep. 22, 1978, Ser. No. 944,708
Int. Cl.² B62D *53/02*
U.S. Cl. 280—443 **8 Claims**



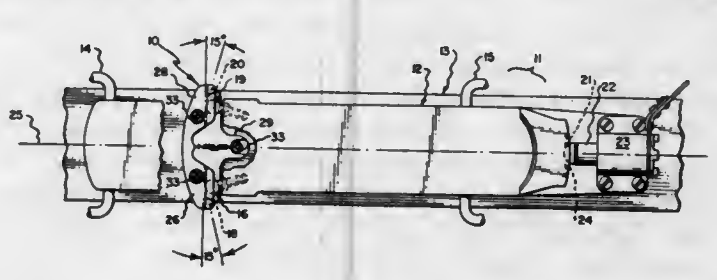
1. In combination, a two-wheel tractor having rearwardly extending handlebar means adapted for guiding the tractor, and a steerable two-wheel trailer articulately connected to said tractor and positioned rearwardly thereof and including means for receiving an operator of the tractor on the trailer in position for grasping said handlebar means and applying a lateral steering force thereto, and said trailer comprising a frame having a forwardly extending tongue pivotally connected to said tractor, a pair of wheels, a pair of wheel mounts pivotally carried by said frame and mounting said wheels for pivotal movement relative to said frame, and linkage means carried by said frame and connected to said wheel mounts and to said tractor and operable for effecting unison pivotal movement of said wheels upon articulative movement between said tractor and said frame as a result of the application of a lateral steering force to said handlebar means during movement of the tractor so as to thereby steer the tractor and trailer assembly in the desired direction while minimizing the steering force required upon the handlebar means and the amount of lateral movement thereof relative to the trailer and while also providing enhanced lateral stability to the tractor and trailer assembly.

4,192,526
TRAILER HITCH GUIDING DEVICE
Casper E. Myers, 1601 Palm Way, Largo, Fla. 33541
Filed Sep. 22, 1978, Ser. No. 944,787
Int. Cl.² G01C *5/00*
U.S. Cl. 280—477 **10 Claims**



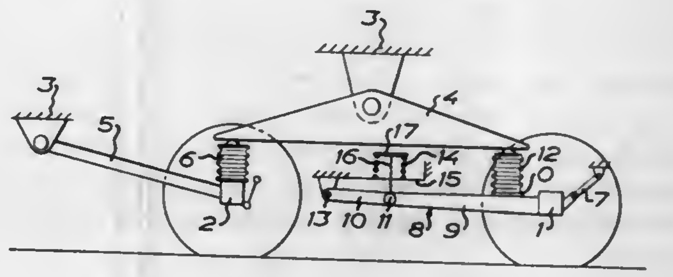
1. A hitch guide assembly for aligning a pair of coupling members of a hitch used to couple a towing vehicle to a towed vehicle, said hitch guide assembly comprising;
a target post adapted for mounting on the towed vehicle,
a mounted bracket adapted for detachable attachment to said towing vehicle,
an extension arm pivotally connected by an end portion to said mounting bracket for rotation in a plane disposed in substantially perpendicular relationship to said mounting bracket,
a guide pointer secured to said extension arm and capable of longitudinal adjustment along said extension arm,
locking means for securing said guide pointer in a selected fixed position along the longitudinal dimensions of said extension arm,
said mounting bracket having a substantially V-shaped configuration defining a vertex,
said extension arm being pivotally connected at said vertex of said V-shaped mounting arm,
said V-shaped mounting bracket defining two legs with a magnetic fastner being positioned on an end portion of each said leg,
said end portion of said extension arm which is pivotally attached having at least one indicia mark thereon for providing a visual aid to pivotally position said extension arm with respect to said mounting bracket,
said extension arm disposed in angled relationship relative to said guide pointer.

4,192,527
PIVOT CLIP FOR A SKI BINDING
Douglas L. Replogle, Amherst, N.Y., assignor to Moog Inc., East Aurora, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,168
Int. Cl.² A63C *9/08*
U.S. Cl. 280—618 **3 Claims**



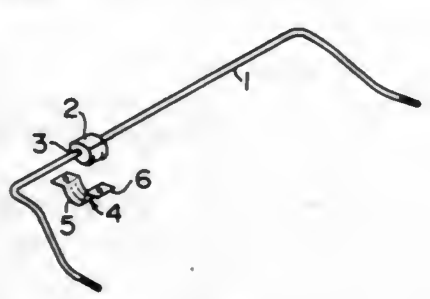
1. In a ski binding having resiliently-loaded holding means operatively interposed between a boot assembly and a ski for releasably holding said boot assembly to said ski and for permitting said boot assembly to separate from said ski in any direction away from said ski, said holding means including at each of three mutually-spaced locations arranged at the apices of an imaginary triangle a concave surface on one of said boot assembly and ski and a convex surface on the other of said boot assembly and ski and contacting said concave surface, the improvement which comprises: a pivot clip mounted fast to one of said ski and boot assembly, said pivot clip including
a first cam surface providing a first of said concave surfaces at a first of said locations arranged on one side of the longitudinal axis of said ski;
a second cam surface providing a second of said concave surfaces at a second of said locations spaced transversely from said first location and arranged on the other side of said longitudinal axis;
each of said first and second cam surfaces being so inclined such that an external moment applied to said boot assembly about the tibial axis of the skier's leg will produce a reaction force between one of said cam surfaces and its associated convex member, and wherein the longitudinal component of said reaction force will not oppose said applied moment.

4,192,528
SPRING-SUSPENDED BOGIE WITH TWO OR MORE WHEEL AXLES
Lennart Bergquist, Oxelösund, Sweden, assignor to Volvo BM AB, Eskilstuna, Sweden
Filed Jan. 16, 1978, Ser. No. 869,864
Claims priority, application Sweden, Jan. 19, 1977, 7700522
Int. Cl.² B60G *5/00*
U.S. Cl. 280—677 **14 Claims**



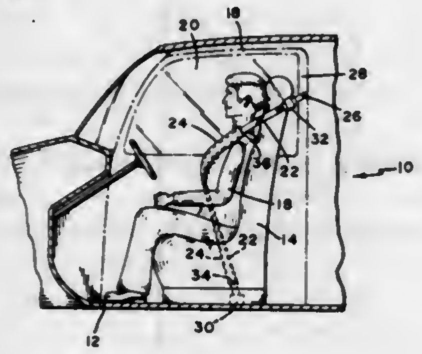
1. A vehicle truck or bogie comprising:
a chassis having associated therewith at least first and second wheel axles;
at least one pair of balance beams pivotally mounted on said chassis, each said beam having longitudinally spaced first and second ends, said beams being laterally spaced;
interconnecting means, connecting each of said first and second axles to laterally spaced first and second ends of said beams, respectively, for transmitting vertical forces therebetween;
a flexible unit rigidly connected to said first axle and pivotally connected to said chassis;
at least said interconnecting means connecting said first axle to said first ends of said beams comprising substantially vertically extending elements of a construction which are rigid when subjected to substantially vertically directed stresses, but which are flexible and yieldable when subjected to substantially horizontally directed stresses;
said elements being supported by said flexible unit at points thereon which are longitudinally spaced from said first axle, such that a first imaginary vertical plane through said first axle is longitudinally spaced from a second imaginary vertical plane through said points;
said first axle, upon vertical movement thereof, being pivotable about an imaginary straight line connecting said points, thereby causing flexing of said flexible unit; and
spring means associated with said flexible unit for counteracting said flexing of said flexible unit.

4,192,529
STABILIZER MOUNTING MEANS
Harunori Shiratori, and Kenichi Kikuchi, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jul. 18, 1978, Ser. No. 925,782
Claims priority, application Japan, Jan. 30, 1978, 53-9929[U]
Int. Cl.^{2} B60G *11/18*
U.S. Cl. 280—689 **2 Claims**



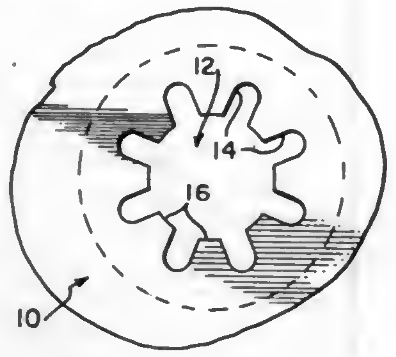
1. A device for mounting a stabilizer on a vehicle frame, comprising:
(a) a substantially tubular cushion member having an axial bore for receiving said stabilizer;
(b) a lobe portion integral with and radially projecting from the peripheral surface of said member at each opposed axial end thereof;
(c) a bracket member for straddling said cushion member and securing it to said frame comprising a U-shaped strap portion and a pair of flanges each having means for attaching said bracket to said frame, one of said pair of flanges extending from a respective one end of said strap portion, said strap portion having an annular recess in the inside surface proximate each opposed axial end thereof for cooperation with said lobe portions of said cushion member, the depth of said annular recesses being substantially less than the height of said lobe portions such that on securing said bracket to said frame over said cushion member the opposed axial ends of said cushion member are subjected to substantially greater compression than is the portion of said cushion member between said lobe portions.

4,192,530
PASSIVE SEAT BELT SYSTEM
Joseph M. Cachia, Detroit, Mich., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Filed Aug. 29, 1977, Ser. No. 828,450
Int. Cl.^{2} B60R *21/02*
U.S. Cl. 280—802 **10 Claims**



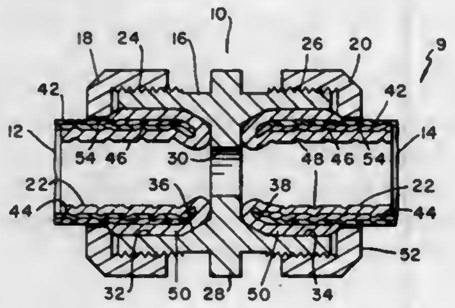
1. In a vehicle passive seat belt restraint system including a seat belt adapted to be positioned across and in contact with the torso of the vehicle occupant, the improvement comprising cover means surrounding said seat belt and extending substantially along the entire length of that portion of said seat belt which otherwise would contact the occupant's torso, said seat belt being slideable within the interior of said cover means and said cover means being fixed at one end to a part of said vehicle, whereby the position of said cover means is fixed with respect to said occupant.

4,192,531
TUBE-TO-PLATE CONNECTION
Ronald S. Williams, and Robert S. Hill, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.
Filed May 22, 1978, Ser. No. 908,392
Int. Cl.^{2} F16L *41/00*
U.S. Cl. 285—222 **9 Claims**



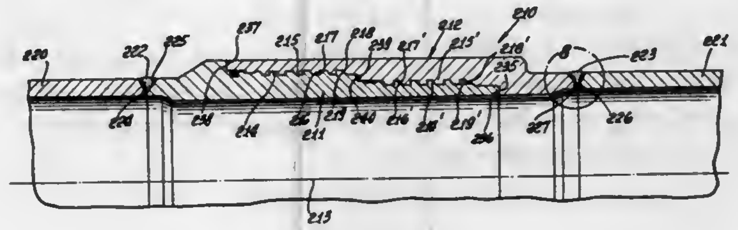
1. A tube-to-plate connection comprising means on a plate defining an aperture where a tube is to be attached to the plate, the region of the plate surrounding the aperture including a flange for receiving the end of the tube, the flange including a proximal end at its junction with the plate and extending away from the plane of the plate to provide at its distal end a plurality of fingers, the tube including a side wall portion lying adjacent the flange, the fingers at the flange distal end being formed to include radially inwardly extending portions and finger distal end portions projecting back toward the plate, the tube end projecting into the spaces formed by the flange and fingers and contacting the radially inwardly extending finger portions, the finger distal end portions being disposed within radially inwardly opening indentations provided in the tube adjacent the tube end.

4,192,532
FLEXIBLE CONDUIT CONNECTOR
Samuel S. Pacella, 14727 Hanfor, Allen Park, Mich. 48101
Filed Jul. 24, 1978, Ser. No. 927,470
Int. Cl.^{2} F16L *19/00, 33/00, 33/18, 33/20*
U.S. Cl. 285—248 **1 Claim**



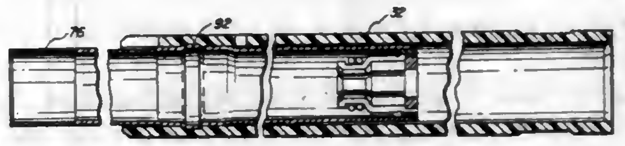
1. A coupling assembly including two sections of flexible electrical conduit, a tubular double-female connector which is open at both ends to receive the ends of both sections of conduit, said connector having a radially inwardly projecting circular rib midway between its ends, the inner surfaces of said connector adjacent said rib on both sides thereof being tapered radially inwardly in directions toward said rib, said connector having external threading on both ends and an external formation between said threading to which a wrench may be applied to turn said connector, tubular ferrules each having an inner sleeve portion and an outer sleeve portion, said inner and outer sleeve portions being connected by a fold, the wall portions of said inner and outer sleeve portions of each ferrule adjacent to said fold being cylindrical in the free state condition thereof, said ferrules being assembled with said respective conduit sections by having the inner sleeve portion of each ferrule fitted into an end of the associated conduit section and the outer sleeve portion thereof extending along the outer surface of said conduit section with said fold extending across the end edge of said conduit section, said ends of said conduit sections with said ferrules assembled therewith as aforesaid being inserted respectively in the ends of said connector, and nuts threaded on the threading on the ends of said connector and engaging said outer sleeve portions of said ferrules to clamp said ends of said conduit sections within said ends of said connector under sufficient pressure to cause said folds of said ferrules to abut said rib and said wall portions thereof to be compressed and deformed radially inwardly to frusto-conical form by the tapered inner surfaces of said connector and form a seal therewith.

4,192,533
DOVETAIL CONNECTION FOR PIN AND BOX JOINTS
Thomas L. Blose, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.
Continuation of Ser. No. 679,476, Apr. 22, 1976, abandoned. This application Feb. 6, 1978, Ser. No. 875,672
Int. Cl.^{2} F16L *25/00*
U.S. Cl. 285—334 **8 Claims**



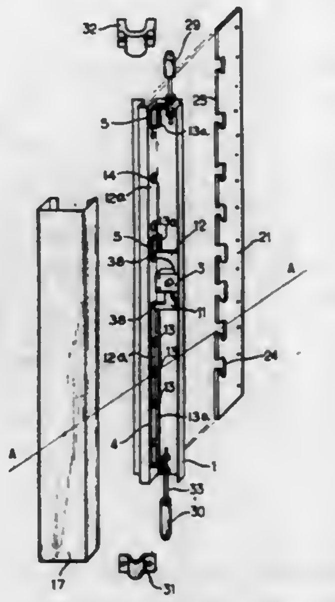
1. In a tubular pin member adapted to be coupled to a tubular box member, thereby to form a joint having an axis,
(a) first thread means on the pin member adapted to interfit second thread means on the box member, and third thread means on the pin member adapted to interfit fourth thread means on the box member, said first and third thread means defining a two-step thread,
(b) a first frusto-conical make-up shoulder on the pin member located between said first and third thread means and adapted to interfit a corresponding first make-up shoulder on the box member,
(c) said first and third thread means having flanks angled negatively in axial radial planes, and relative to planes normal to said axis and intersecting said flanks, said flanks facing in one axial direction being negatively angled to lesser extent than the flanks facing in the opposite axial direction, and
(d) a second frusto-conical make-up shoulder on the pin member proximate the end of one of said first and third thread means remote from said first make-up shoulder, said first and second shoulders being positively angled in axial radial planes and relative to planes normal to said axis and intersecting said shoulders, said second shoulder on said pin member being adapted to be in a spaced relation from a corresponding second shoulder on the box member on normal make-up of said pin member to such box member, said second frusto-conical make-up shoulder on said pin member being adapted to engage the corresponding second shoulder on the box member in the event of sufficient coining of said first frusto-conical make-up shoulder on said pin member and of said corresponding first make-up shoulder on such box member.

4,192,534
HIGH VOLTAGE FUSE HAVING ATTACHED TUBULAR MEMBERS
Joseph Bernatt, Arlington Heights, and Alfred Steegmueller, Skokie, both of Ill., assignors to S & C Electric Company, Chicago, Ill.
Division of Ser. No. 741,026, Nov. 11, 1976, Pat. No. 4,075,755. This application Jan. 4, 1978, Ser. No. 866,929
Int. Cl.^{2} F16L *13/14*
U.S. Cl. 285—382.2 **5 Claims**



1. An improved circuit interrupter of the type which includes a metal tube partially inserted into and extending from an insulator tube, wherein the improvement comprises:
a groove formed in the interior surface of the insulator tube generally perpendicular to the major axis thereof;
a metal tube portion expanded outwardly, radially of both tubes into the groove; and
a slightly expanded area on the exterior of the insulator tube caused by the expansion of the metal tube portion into the groove,
whereby the tubes are attached.

4,192,535
LOCKING MECHANISM
Jacques Picard, 15 Boulevard Flandrin, 75116 Paris, France
Filed Jul. 24, 1978, Ser. No. 927,295
Claims priority, application France, Jul. 26, 1977, 77 22975
Int. Cl.^{2} E05C *1/06*
U.S. Cl. 292—37 **12 Claims**



1. In a lock mechanism for locking a movable member to a stationary member, such as a movable door to a stationary door frame, comprising:
a vertical chamber device connected with said movable door and including at least one U-shaped longitudinal section, said U-shaped section having a base and a pair of longitudinally extending legs having a chamber therebetween;
at least one rod mounted for sliding movement in said chamber longitudinally of said legs;
a locking mechanism associated with said rod and including means to displace said rod longitudinally of said legs;
at least one bolt integrally connected with said rod extending cross-wise within said U-shaped longitudinal section; each leg of said U-shaped section having at least one longitudinally elongated recess forming at least one pair of recesses, said at least one pair of recesses being aligned

cross-wise of said U-shaped section, said at least one bolt extending through said aligned recesses and having freedom of movement longitudinally within said longitudinally elongated recesses;

A member fastened to said stationary door frame and including a projecting rim projecting beyond said frame and receivable within said chamber in said U-shaped section, said projecting rim having at least one tongue-shaped notch opening at the portion thereof receivable within said U-shaped section and an inclined portion, said at least one notch being aligned with said at least one bolt and being at the level thereof when said rod positions said at least one bolt in an open condition of the lock mechanism;

a plug terminal consisting of a rectangular section, open on one side, closing said vertical chamber device; and,

means fastening said plug terminal to said vertical chamber device comprising a longitudinal rim on one side cooperating with a rim set on one of the external legs of said chamber and by means of a gripper on the other side, a longitudinal uncoupling lever cooperating with said gripper, said uncoupling lever being provided on the external face of the other external leg of the chamber.

4,192,536

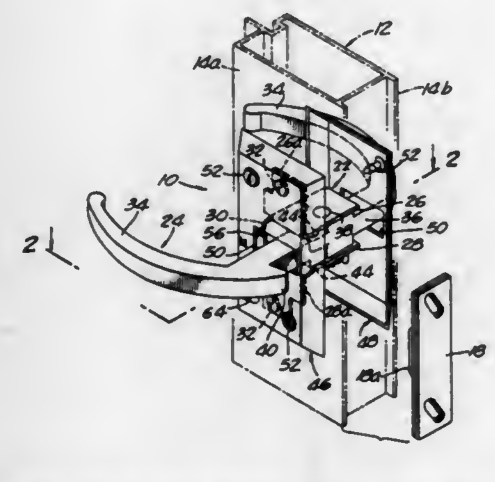
PUSH-PULL DOOR LATCH

Angel F. Laureano, Bayamon, P.R., assignor to Bel Air Aluminum Manufacturing, Inc., Hato Rey, P.R.

Filed Jul. 13, 1978, Ser. No. 924,238

Int. Cl.^{2} E05C *3/30*

U.S. Cl. 292—228 **16 Claims**



1. A push-pull latch mechanism for mounting on a screen door, storm door and the like having a cylindrical opening adjacent its swinging edge extending between opposite facing surfaces thereof, comprising:

(a) a casing frame adapted to fit within the cylindrical opening;

(b) means for securing the casing in an operative position within said opening including casing portions engageable with one of said opposite facing surfaces;

(c) a double-ended handle extending through said casing and being pivoted thereto, said handle having a projecting latch dog in offset relation to the pivot;

(d) means within the casing for urging the handle and latch dog towards a latching position; and

(e) interchangeable inner and outer escutcheon plates securable to the opposite surfaces of the door independently of said casing, said plates respectively having an opening for receiving a handle end therethrough.

4,192,537

SAFETY DEVICE FOR DOORS, WINDOWS AND SIMILAR

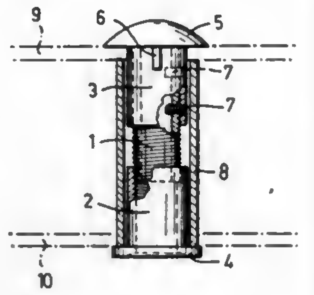
Yrjö T. Laine, Niemenmäentie 12 A 26, 00350 Helsinki 35, Finland

Filed Nov. 20, 1978, Ser. No. 963,563

Claims priority, application Finland, Apr. 27, 1978, 78-1318

Int. Cl.^{2} E05C *17/36*

U.S. Cl. 292—264 **5 Claims**



1. A safety device for doors, windows and similar, comprising a locking device attached to a movable part and comprised of a cylindrical housing a pin placed in the housing and a locking means for locking the pin in the housing in a certain turning position, and further comprising a safety chain or similar, attached to the outer end of the pin, the other end of said chain being attached to an immovable part, such as a frame, and said housing being provided with means for attaching it to said movable part, the improvement comprising that the housing is made of a sleeve provided with an outer thread and that the fixing means of the housing is comprised of two flanges surrounding the sleeve, at least one of said flanges being located on a socket to be threaded on the sleeve in order to adjust the relative distance between the flanges, and the flanges being arranged to be pressed against the opposite outer surfaces of the movable part.

4,192,538

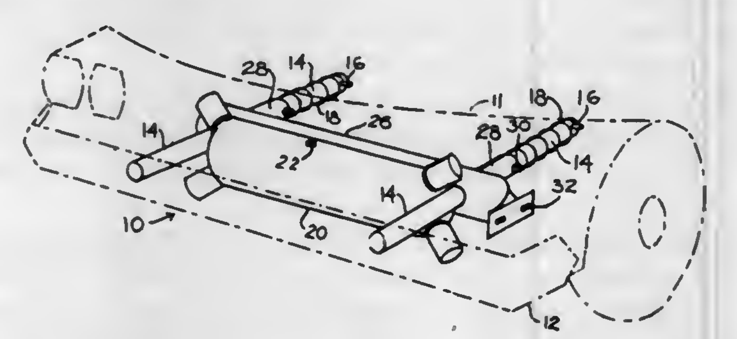
BUMPER CONSTRUCTION FOR MOTOR VEHICLES

Frank Gulli, 62 Livingston Ave., Dobbs Ferry, N.Y. 10522

Filed Apr. 21, 1978, Ser. No. 898,928

Int. Cl.^{2} B61F *19/04*

U.S. Cl. 293—134 **1 Claim**



1. Improved bumper construction for motor vehicles comprising first and second bumper members, said second bumper member having means for mounting the same to the frame of a vehicle, said first bumper member slideably carried on said second bumper member, a flexible air container means disposed between said bumper members, yieldable means associated with said bumper members for yieldably urging said first bumper member inwardly in respect to said second bumper member and against said air container means, said air container means having an air inlet valve and air outlet valve means, whereby, in the event of collision of said vehicle in which said first bumper member is forced inwardly thereof, air escapes from said air container means at a controlled rate to absorb the energy of said collision, each said bumper member having a pair of pipes extending perpendicularly inwardly thereof, the pipes of said first bumper member slideable in the pipes of said second bumper member, said air container means being an elongated cylindrical air bag of a length substantially equal to the distance between the pipes of said first bumper member, said bumper members being oppositely concave in shape to conform to the cylindrical shape of said air bag.

4,192,539

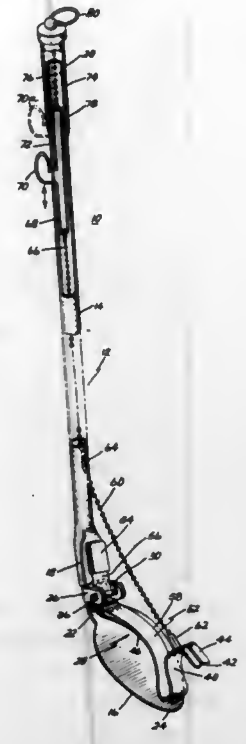
STAND-UP TRASH RETRIEVING AND DUMPING DEVICE

Marshall W. Broyles, 201 Lincoln Ave., and Charles D. Schrader, 119 E. Monroe St., both of Alexandria, Ind. 46001

Filed Jul. 28, 1978, Ser. No. 929,163

Int. Cl.^{2} B25J *1/00*

U.S. Cl. 294—19 R **8 Claims**



1. A stand-up device for retrieving an object from a generally flat surface and thereafter dumping the same comprising: an elongated member including a handle element having opposite ends and a generally flat spatula element extending from one end of said handle element and defining an obtuse angle therewith; an arm element having an inner end pivotally mounted on said spatula element adjacent said one end of said handle element, said arm element comprising an elongated member formed of flat strip material, said arm element being movable between a first closed position cooperating with said spatula element selectively to grasp an object therebetween, and a second open position spaced from said spatula element for dumping said object, said arm element having an outer end engaging said spatula element in said closed position and having an outwardly curved portion between said ends thereof thereby to grasp an enlarged object, said arm element having a hook portion integral therewith extending outwardly from said outer end adapted to be engaged with an abutment thereby to move said arm element to said open position thereof; a leaf spring having opposite ends with one end engaging said handle element adjacent said one end thereof and the other end engaging said arm element for normally biasing said arm element toward said closed position thereof; and an elongated flexible element guided by said handle element and having opposite ends with one end attached to said hook portion of said arm element and its other end having manually actuated pulling means thereon adjacent the other end of said handle element for moving said arm element to said open position.

4,192,540

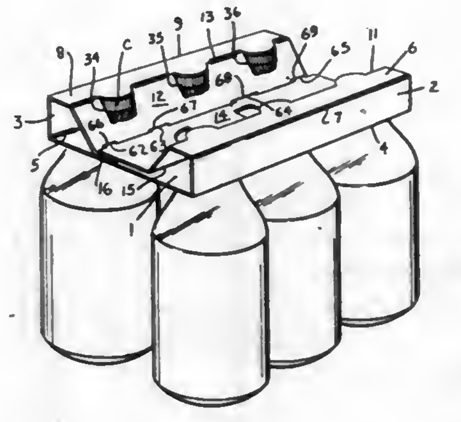
ARTICLE CARRIER BLANK

James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 21, 1978, Ser. No. 962,611

Int. Cl.^{2} B65D *71/00;* **B66F** *19/00*

U.S. Cl. 294—87.2 **8 Claims**



1. An article carrier blank comprising a bottom panel (1), a pair of side panels (2,3) foldably joined respectively to the longitudinal side edges of said bottom panel, a pair of top panels (6,8) foldably joined respectively to the longitudinal edges of said side panels remote from said bottom panel, a neck receiving aperture (40–45) formed in said bottom panel, a transverse retention tab (47) foldably joined to said bottom panel along a V-shaped fold line (52) and disposed in said neck receiving aperture, and characterized in that a medial bend line (57) is formed in said transverse retention tab and a bend line extension (59) is formed in said bottom panel and is disposed in alignment with said medial bend line and a pair of auxiliary bend lines (60,61) are formed in said bottom panel and extend from the ends of said V-shaped fold line and are disposed substantially parallel to said bend line extension.

4,192,541

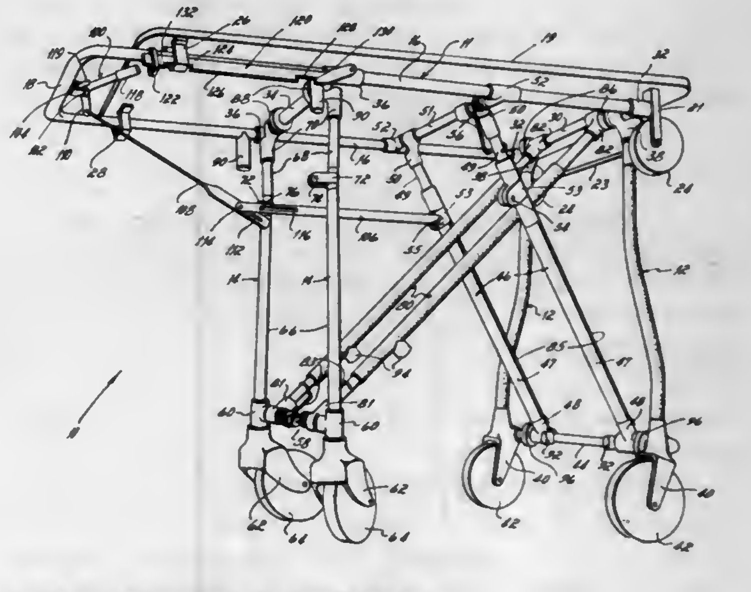
CART HAVING EXTENSIBLE AUXILIARY WHEELS

Richard H. Ferneau, Washington Court House, Ohio, assignor to Burt Weil, Cincinnati, Ohio

Filed Feb. 8, 1978, Ser. No. 875,994

Int. Cl.^{2} A61G *1/02;* **B62B** *3/02*

U.S. Cl. 296—20 **14 Claims**



1. A cart comprising in combination:

a generally horizontal frame,

a platform mounted on said frame for supporting an article, forward and rearward legs depending from said frame and having wheels at their lower ends;

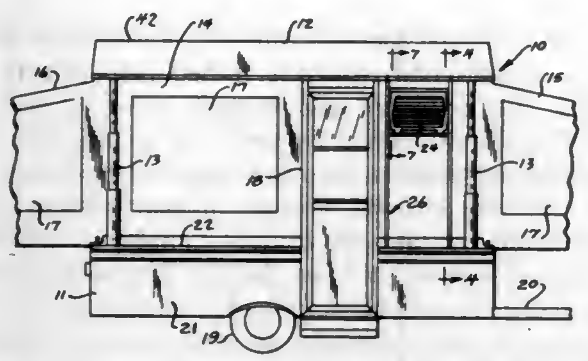
auxiliary wheels mounted at the forward end of said frame, said auxiliary wheels normally disposed adjacent to said forward legs,

means mounting said auxiliary wheels to said frame to per-

mit said auxiliary wheels to be slidably projected a substantial distance forward of said forward legs,
releasable means normally fixing said legs in perpendicular relation to said frame, and
an operator mounted on said frame for releasing said releasable means to permit said legs to swing rearwardly to a folded position beneath said frame when said auxiliary wheels are projected forwardly and are resting on a vehicle deck as the cart is thrust into a vehicle, said auxiliary wheels adapted to retract after said cart is thrust into a vehicle.

4,192,542
AIR CONDITIONER MOUNTING ASSEMBLY FOR A CAMPING TRAILER

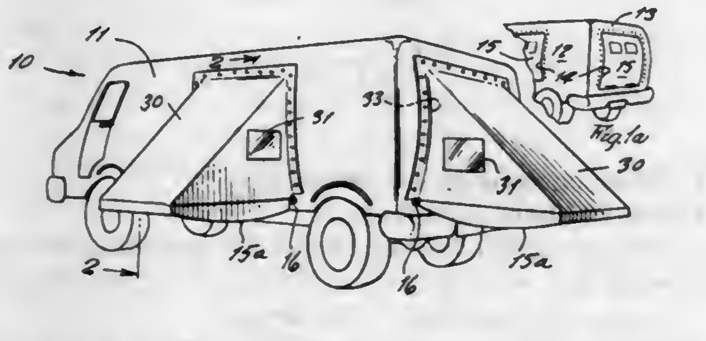
Max L. Hill, Listie, Pa., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Jun. 12, 1978, Ser. No. 914,377
Int. Cl.² B60H *1/00*
U.S. Cl. 296—173 **9 Claims**



4. An air conditioner mounting assembly for a camping trailer, the camping trailer having a side wall, a top above the side wall, and a canvas sheet extending between the top and the side wall, the canvas having an opening therein through which an air conditioner can extend, the mounting assembly comprising a generally vertically extending frame supported by the side wall and extending upwardly to the top, the frame including a pair of horizontally extending vertically spaced upper and lower cross members adjacent the opening in the canvas and a pair of vertically extending horizontally spaced frame members which extend upwardly from the side wall to the top, the cross members extending between the vertically extending frame members and being secure thereto, the lower cross member being adapted to support an air conditioner which extends through the opening in the canvas, and strap means attached to the upper cross member for supporting the air conditioner when the air conditioner extends between the upper and lower cross members.

4,192,543
HORIZONTAL AUXILIARY SLEEPER DOOR

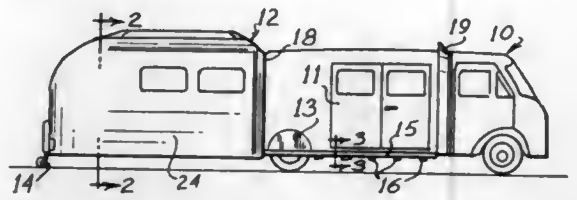
James F. X. Crawford, 533 62nd St., Brooklyn, N.Y. 11220
Filed Sep. 1, 1978, Ser. No. 938,881
Int. Cl.² B60P *3/34*
U.S. Cl. 296—159 **1 Claim**



1. An automotive camper with auxiliary sleeping area, comprising in combination, a camper box-like body including opposite side walls and a rear wall, a doorway opening in said walls, a door in each said doorway opening, said door being pivotable about a hinge along its lower edge, and between a vertical and an outwardly horizontal positions, and a detachable canopy over said door in said horizontal position to form said auxiliary sleeping area, wherein a stationary, vertical channel at each side end of said doorway opening supports a hydraulic shock absorber and a lock arm to said door, and a winch mounted on said channel including a reel having a cable connected to an upper corner of said door, wherein said canopy is secured by snap fasteners around an edge of said doorway opening, said canopy being shaped to rest upon said cables connected to said door.

4,192,544
TELESCOPING EXTENSION FOR VEHICLES

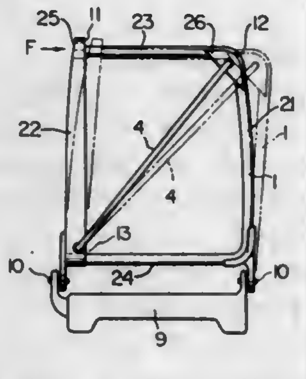
Lewis K. Patterson, 4025 Pine Ridge Dr., Lilburn, Ga. 30247
Filed Jul. 3, 1978, Ser. No. 921,741
Int. Cl.² B60P *3/32*
U.S. Cl. 296—165 **7 Claims**



1. A telescoping vehicle extension for mounting on a vehicle having a vehicle body, generally parallel side walls, and a roof, said vehicle extension comprising a vehicle extension body having generally parallel side walls, said side walls of said vehicle extension being spaced outwardly of said side walls of said vehicle for defining storage spaces between said side walls of said vehicle and said side walls of said vehicle extension, rail means carried by said vehicle generally longitudinally of said vehicle, bearing means carried by said vehicle extension generally longitudinally of said vehicle extension for reciprocal engagement with said rail means, the arrangement being such that said vehicle extension is selectively extendible rearwardly of said vehicle and telescopable over said body of said vehicle, and further including a floor for said vehicle extension, said floor for said vehicle extension being pivotal mounted on to at least one of said side walls of said vehicle extension for selective disposition in a generally horizontal position for use as a floor and in a generally vertical position for storing within one of said storage spaces in the retracted position.

4,192,545
SEAT-BACK FRAME FOR AN AUTOMOTIVE VEHICLE

Kazuo Higuchi, Tokyo, and Katsuhiko Matsumoto, Kunitachi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 21, 1978, Ser. No. 944,395
Claims priority, application Japan, Sep. 29, 1977, 52-129988
Int. Cl.² B60R *21/10*
U.S. Cl. 297—216 **7 Claims**

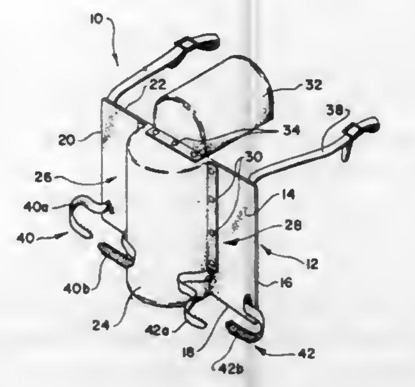


1. In a seat-back frame for an occupant seat in an automotive vehicle which comprises a generally rectangular frame having generally vertical side rails and generally horizontal upper and

lower rails defining upper and lower corners beween adjacent rails and a seat belt having an end anchored to said frame at one upper corner thereof, the improvement comprising a tensile member connected to and extending between one of said upper corners and a diagonally opposed lower corner of said frame, said tensile member being bowed in the backward direction of said seat-back so as not to cause interference with a cushioning material and cushioning springs when they are pushed backward by an occupant of the seat and sufficiently flexible to straighten in response to rhomboidal deformation of the frame in the direction in which the tensile member tends.

4,192,546
WHEELCHAIR ABDUCTION PILLOW

Margaret B. Smith, 1215 Kent Rd., Raleigh, N.C. 27606
Filed Aug. 7, 1978, Ser. No. 931,300
Int. Cl.² A62B *35/00;* **A47C** *31/00*
U.S. Cl. 297—466 **10 Claims**

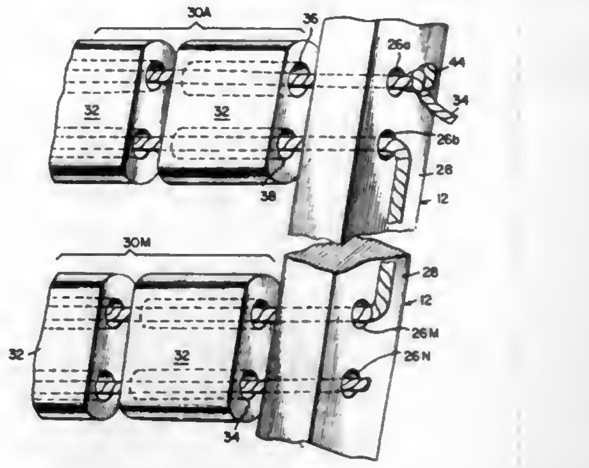


1. A wheelchair abduction pillow adapted to be utilized in conjunction with a wheelchair of the type having a seat, a footrest, and support members depending downwardly for supporting said footrest, where said wheelchair abduction pillow maintains a sitting patient's legs in a proper position and generally prohibits the patient's legs from being drawn inwardly and underneath the seat area of the wheelchair; said abduction pillow comprising: a back leg retaining means adapted to be positioned between the seat area and footrest of said wheelchair so as to generally close the area about the lower front portion of the wheelchair below said seat area for preventing a patient's legs from being drawn into the area below said seat area; divider cushion means secured to said back leg retaining means and extending generally vertically thereacross to define a leg retaining area about each side thereof, said divider cushion means projecting forwardly from said leg retaining means for effectively dividing the patient's legs and preventing the patient's knees from crossing over the area occupied by said cushion means.

4,192,547
ROCKING CHAIR FRAME

James M. Geier, 2 Howard St., Burlington, Vt. 05401
Continuation-in-part of Ser. No. 758,584, Jan. 12, 1977. This application Aug. 3, 1977, Ser. No. 821,517
Int. Cl.² A47C *7/02, 3/02*
U.S. Cl. 297—452 **10 Claims**

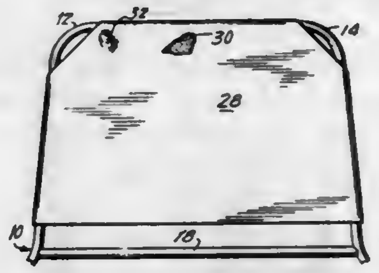
1. A chair for receiving a person comprising:
(a) first and second support members each having a back support portion extending generally vertically and a seat support portion extending generally horizontally, and a series of holes extending along the lengths of said back and seat support portions;
(b) means disposed between said first and second support portions for fixedly supporting said first and second support members in a substantially parallel relationship with each other; and
(c) support surface means comprising flexible rope means for suspending blocks in a plurality of rows thereof, each block being made of a hard material, each row comprised of a plurality of blocks extending between said first and second support members in a direction substantially perpendicular to the length ofthe person sitting in the chair and suspended at each end by said support members, and each of said blocks having an opening therethrough for receiving said rope means, and being of a small dimension



relative to a lateral dimension along the direction of the person and being loosely suspended upon said rope means to move freely therewith, whereby each row of blocks provides a surface flexible in said direction and conforming to the body of the person sitting in the chair.

4,192,548
APPARATUS AND METHOD FOR RECONSTITUTING SEAT BACKS

Amos Williams, 70 S. 29th St., Wyandanch, N.Y. 11798
Filed Dec. 5, 1977, Ser. No. 857,393
Int. Cl.² A47C *7/02*
U.S. Cl. 297—452 **5 Claims**

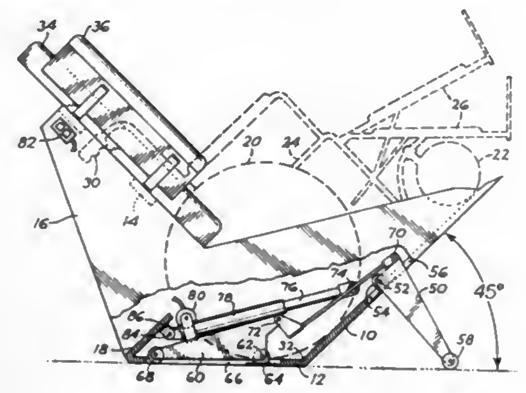


1. A cover for a seat back having a generally vertical frame with two upper corners and a back member on said frame and defining a depression therewith, said cover comprising inner and outer cover members, said inner member being of a sponge-like material, said inner member having at least one side adapted for fitting at least substantially into said depression and two corner pockets on said side adopted for being draped over the upper corners of said frame, the other side of said inner cover member being substantially open, said outer cover member being of a plastic material and covering said inner member and forming therewith a downwardly opening mouth to facilitate mounting the cover over said frame and back member, said outer cover member and said inner cover member being laminated together, said cover member being formed of two sides and an interconnecting edge, said edge being provided with recesses extending into said sides adjacent said mouth to form facing flaps which are adapted for interconnection thereby to facilitate closing the outer cover member around said frame.

4,192,549
WEEELCHAIR TILT CRADLE

John F. Petersen, 9911 SE. Mt. Scott Blvd., Portland, Oreg. 97266

Filed Aug. 14, 1978, Ser. No. 933,153
Int. Cl.^{2} A47C *31/00, 13/00*
U.S. Cl. 297—464 **9 Claims**

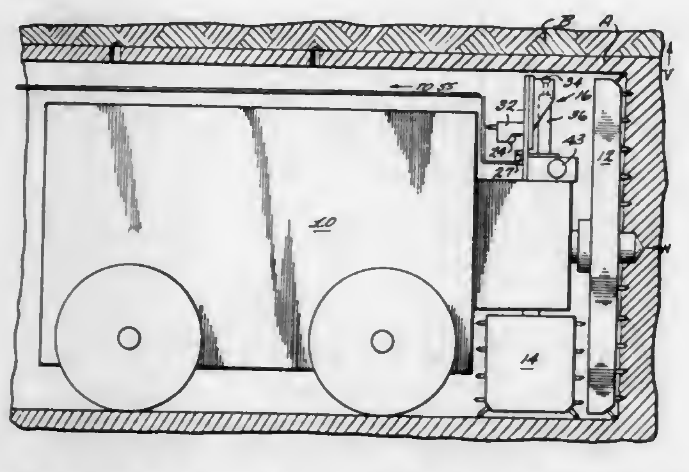


1. A wheelchair tilt cradle, comprising an angular frame forming two sections disposed angularly with respect to each other and arranged to removably support a wheelchair, the frame being adjustable angularly to place each section selectively in engagement with an underlying floor, whereby in one of said adjusted positions a wheelchair patient is disposed in a substantially upright sitting position and in the other said adjusted positions the wheelchair patient is disposed in a rearwardly tilted, reclining position.

4,192,550
REFLECTED LIGHT DETERMINATION OF GEOLOGICAL STRATA

John W. Heimaster, Charleston, S.C., assignor to Coaltex, Inc., Beckley, W. Va.

Filed Jun. 23, 1978, Ser. No. 918,693
Int. Cl.^{2} E21C *35/08*
U.S. Cl. 299—1 **27 Claims**



1. A method of mining a desired geological stratum from surrounding undesired geological strata, the desired and undesired strata having different light reflecting properties, utilizing a mining machine, said method comprising the steps of

boring in a first generally horizontal direction into the desired geological stratum with the mining machine,

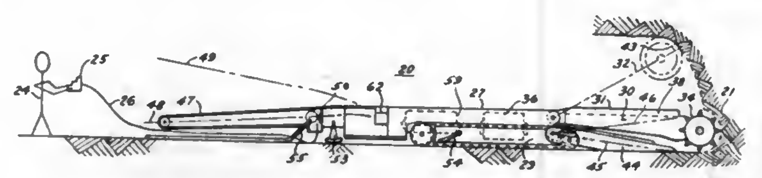
progressively penetrating the desired geological stratum with the mining machine while effectively measuring the distance of the mining machine from the undesired strata in a second generally vertical direction generally perpendicular to said first direction, said measuring being accomplished by taking advantage of the different light reflecting properties of the desired stratum and the surrounding undesired strata, and

controlling the direction of boring based on the received measurements so that the machine generally stays within the desired stratum.

4,192,551
REMOTE CONTROL SYSTEM FOR MINING MACHINES

James C. Weimer; William S. Locks, both of Bethlehem; Edwin B. Wilson, Quakertown, and Francis G. Miller, Bethlehem, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 10, 1978, Ser. No. 949,911
Int. Cl.^{2} E21C *35/24*
U.S. Cl. 299—1 **27 Claims**



15. A mining machine system for remotely controlling one or more fluid-powered machine operating functions, said system comprising:

(a) a pressurized fluid source,

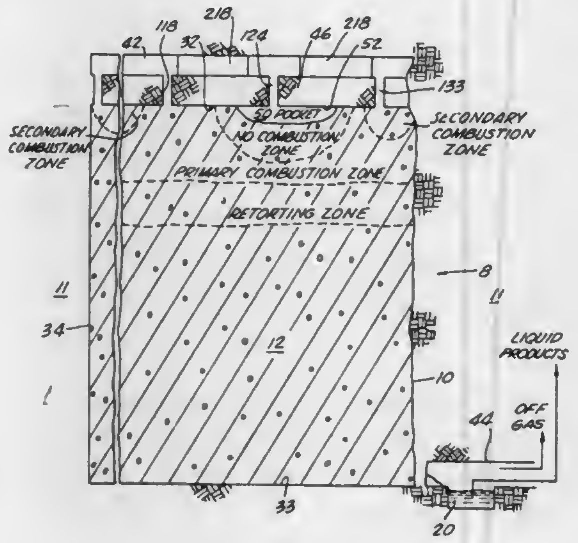
(b) electro-control valve means including a hydraulic servo-controlled pilot stage valve for each machining operation function which receives a separate operating function control signal, each pilot stage valve connected to the fluid source and to a load having proportional flow and/or valve deadband characteristics, and

(c) remote control means initiated by an operator for the separate operating function control signals, at least one of said signals having valve-related proportional flow characteristics and/or modified by an offset signal component for overcoming the valve deadband characteristic.

4,192,552
METHOD FOR ESTABLISHING A COMBUSTION ZONE IN AN IN SITU OIL SHALE RETORT HAVING A POCKET AT THE TOP

Chang Y. Cha, 1904 Glenmont Dr., Bakersfield, Calif. 93309

Filed Apr. 3, 1978, Ser. No. 892,451
Int. Cl.^{2} E21C *41/10;* E21B *43/24*
U.S. Cl. 299—2 **58 Claims**



1. A method for retorting oil shale in an in situ oil shale retort in a subterranean formation containing oil shale, the retort having a top boundary of unfragmented formation and containing a fragmented permeable mass of formation particles, wherein a portion of the top of the fragmented permeable mass is separated from the top boundary, and another portion of the top of the fragmented permeable mass is proximate to the top boundary to thereby form at least one pocket intermediate the fragmented permeable mass and the top boundary, the method comprising the steps of:

igniting oil shale in a first portion of the fragmented permeable mass which is proximate to the top boundary and laterally separated from said pocket to establish a combustion zone in said first portion;

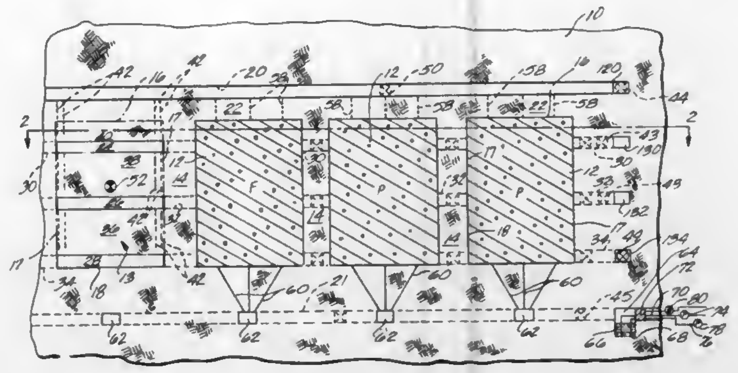
introducing to the combustion zone in the first portion a retort inlet mixture comprising oxygen for propagating the combustion zone across an upper portion of the fragmented permeable mass; and

introducing to such pocket under a pressure greater than the pressure in the fragmented mass adjacent such pocket a fluid having a temperature less than the temperature at which unfragmented formation of the top boundary would slough into such pocket and at a sufficient rate of flow to prevent thermal sloughing of unfragmented formation from the top boundary into such pocket such that there is a flow of the fluid out of the pocket and into the fragmented mass.

4,192,553
METHOD FOR ATTENUATING SEISMIC SHOCK FROM DETONATING EXPLOSIVE IN AN IN SITU OIL SHALE RETORT

Irving G. Studebaker, and Richard Hefelfinger, both of Grand Junction, Colo., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Apr. 3, 1978, Ser. No. 892,736
Int. Cl.^{2} E21C *41/10*
U.S. Cl. 299—2 **17 Claims**



1. A method for attenuating the effects of seismic shock produced by detonating explosive in a subterranean formation containing oil shale for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort, the method comprising the steps of:

forming a permeable seismic shield containing a fragmented permeable mass of formation particles;

excavating at least one void in formation containing oil shale within an in situ oil shale retort site, leaving a remaining portion of unfragmented formation within the retort site adjacent such a void;

placing explosive in such a remaining portion of unfragmented formation;

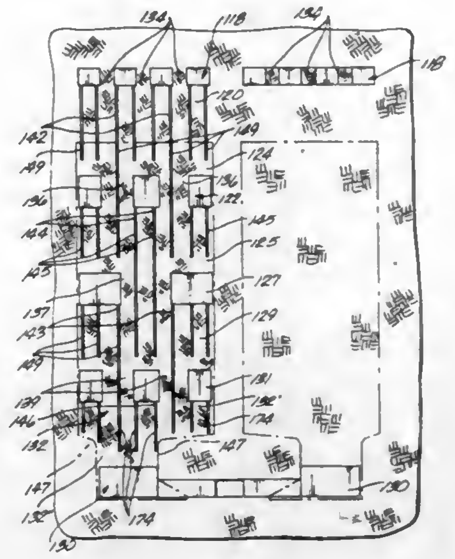
placing equipment to be protected from seismic shock in underground workings spaced a selected distance from the in situ oil shale retort site, such equipment being sufficiently sensitive to seismic shock that it could be damaged if subjected to a seismic shock wave traveling straight to such equipment the selected distance through unfragmented formation from detonation of such explosive, the seismic shield being located at least in part in a direct line between such equipment in the underground workings and the in situ oil shale retort site; and

detonating such explosive for explosively expanding such remaining portion of unfragmented formation toward such a void for forming a fragmented permeable mass of formation particles containing oil shale in the in situ oil shale retort, such explosive expansion producing a seismic shock wave at least a portion of which travels through the permeable seismic shield for attenuating the shock velocity and magnitude of the seismic shock wave prior to the shock wave reaching unfragmented formation in the vicinity of the underground workings containing such equipment.

4,192,554
METHOD FOR EXPLOSIVE EXPANSION TOWARD HORIZONTAL FREE FACES FOR FORMING AN IN SITU OIL SHALE RETORT

Thomas E. Ricketts, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jul. 31, 1978, Ser. No. 929,250
Int. Cl.^{2} E21C *41/10*
U.S. Cl. 299—2 **57 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in a retort site in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, comprising the steps of:

excavating formation from within the retort site for forming at least one void extending horizontally across the retort site, leaving an upper zone of unfragmented formation within the retort site immediately above the void, and leaving a lower zone of unfragmented formation within the retort site immediately below the void, the lower zone having substantially the same vertical height as the upper zone;

placing explosive in mutually spaced apart vertical upper blast holes in the upper zone of unfragmented formation, and placing explosive in mutually spaced apart vertical lower blast holes in the lower zone of unfragmented formation;

initiating detonation of explosive in each of the upper and lower blast holes in a single round, such detonation being initiated at substantially the same vertical distance from the void for explosively expanding substantially the same amount of formation from the upper zone downwardly toward the void that is explosively expanded from the lower zone upwardly toward the void for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort;

establishing a retorting zone in an upper portion of the fragmented mass;

introducing a retorting gas into the fragmented mass for sustaining the retorting zone and for advancing the retorting zone through the fragmented mass; and

withdrawing liquid and gaseous products of retorting from a lower portion of the fragmented mass on the advancing side of the retorting zone.

4,192,555

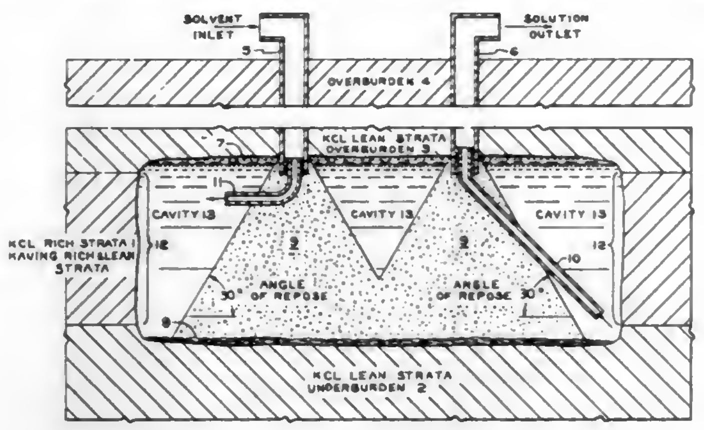
METHOD OF DISPOSING SOLID SODIUM CHLORIDE WHILE SELECTIVELY SOLUTION MINING POTASSIUM CHLORIDE

Boyd R. Willett, Denver, Colo., assignor to PPG Industries Canada Ltd., Regina, Canada

Filed Aug. 22, 1978, Ser. No. 935,821

Int. Cl.² E21B *43/28*

U.S. Cl. 299—4 **13 Claims**



11. A method of disposing solid sodium chloride while selectively mining potassium chloride from a subterranean can deposit containing potassium chloride and sodium chloride which comprises the steps of:

- (A) injecting through a bore hole in communication with a cavity in the deposit wherein face having rich and lean potassium chloride ore is exposed, and aqueous solvent saturated with respect to sodium chloride and unsaturated with respect to potassium chloride, thereby depositing sodium chloride from the solvent solution while dissolving potassium chloride; and
- (B) withdrawing from the cavity through a bore hole in communication therewith a solution enriched in potassium chloride.

4,192,556

TUNNEL BORING MACHINES

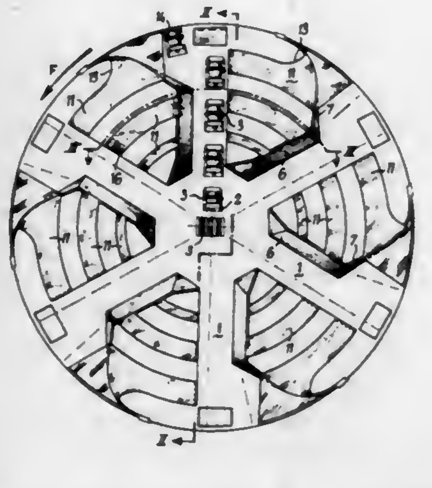
Carlo Grandori, Rome, Italy, assignor to The Robbins Company, Seattle, Wash.

Continuation of Ser. No. 761,351, Jan. 21, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,978

Claims priority, application Italy, Feb. 2, 1976, 47913 A/76

Int. Cl.² E21D *9/04, 9/08*

U.S. Cl. 299—56 **6 Claims**



1. A tunneling machine cutterhead of the rotary type which in use is advanced in a direction coincident with its axis of rotation, said cutterhead comprising:

- a plurality of forwardly directed cutters having cutting portions for cutting concentric kerfs in a tunnel face,
- a plurality of passageways through which excavated materials pass,
- a rigid grid structure having a plurality of tunnel face contacting, radially spaced apart breasting rings, said breasting rings being concentric with the axis of rotation of the cutterhead and defining the forward face of the cutterhead,
- said radially adjacent breasting rings defining annular openings radially between them of a width corresponding to the optimun dimention of fragments of excavated material, said breasting rings being positioned such that all excavated material must pass through a said opening before entering a said passageway,
- said cutters being mounted on said cutterhead rearwardly of said grid structure so that the cutting portion of each of said cutters projects slightly forwardly of said breasting rings to permit said breasting rings to support the tunnel face as said cutter cutting portion penetrates into the tunnel face.

4,192,557

PNEUMATIC-HYDRAULIC BRAKE SYSTEM FOR VEHICLES

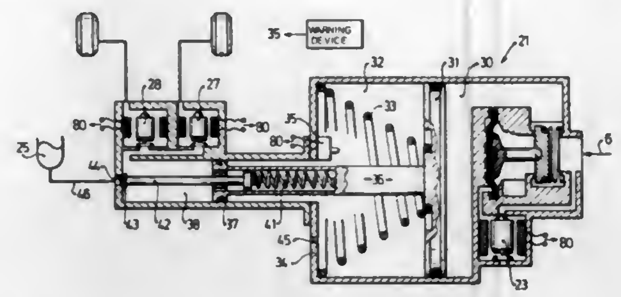
Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 12, 1978, Ser. No. 914,632

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1977, 2726640

Int. Cl.² B60T *8/04*

U.S. Cl. 303—114 **10 Claims**



1. In a pneumatic-hydraulic brake system for vehicles having hydraulic wheel cylinders and a foot-operated brake valve, the improvement comprising:

- at least one pneumatic-hydraulic pressure modulator connected to the hydraulic wheel cylinders and to the brake valve, said brake valve controlling the application of operating air to the pressure modulator;
- at least one multiple-way air valve connecting the pressure modulator to the brake valve; and
- at least one hydraulic valve connecting the pressure modulator to the wheel cylinders, wherein the pressure modulator, the air valve and the hydraulic valve serve as an anti-lock device.

4,192,558

SELF-LUBRICATING BEARING

Elman E. Wade, Ruffsdale, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

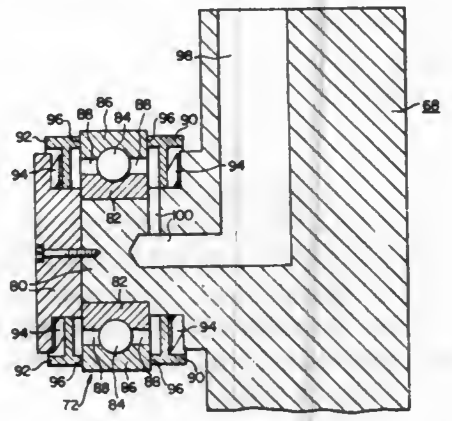
Division of Ser. No. 748,352, Dec. 7, 1976, Pat. No. 4,113,558. This application Sep. 28, 1977, Ser. No. 837,068

Int. Cl.² F16C *17/00, 1/24;* G21C *19/20*

U.S. Cl. 308—6 R **4 Claims**

1. A bearing comprising:

- an inner race mounted on an axle;
- rolling element bearings disposed in said inner race;
- an outer race disposed around said inner race and enclosing said roller element bearings between said inner and outer races, said roller element bearings allowing said outer race to rotate relative to said inner race;
- alignment means disposed on said axle and adjacent said outer race for maintaining alignment of said outer race with respect to said inner race while allowing rotation of said outer race;
- a reservoir disposed in said axle capable of being filled with lubricant when said axle is submerged in a lubricant pool; and
- supply means establishing fluid communication between said reservoir and said roller element bearings for supplying said lubricant to said roller element bearings, said lubricant flowing between said outer race and said alignment means establishing an outward flow of said lubricant thereby preventing impurities from seeping inward.



4,192,559

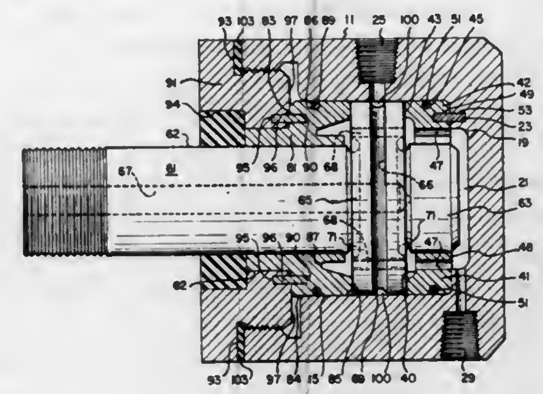
ROTARY UNION

William Hewitt, Bel Air, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 28, 1978, Ser. No. 900,919

Int. Cl.² F16C *17/02*

U.S. Cl. 308—36.1 **7 Claims**



1. A rotary union for connection to a rotating element which rotates with respect to said union which comprises:

- (a) a housing defining a generally circular chamber;
- (b) inlet means for continuously receiving a pressure influenced fluid with lubricating capacity into said chamber;
- (c) a rotating shaft rotatably mounted in said chamber, said shaft being rotatably supported within said chamber, said shaft extending axially within said chamber and beyond said chamber, said rotating shaft having a first and second port which ports feed into each other, said first port aligned to receive said fluid from said inlet means, said second port aligned to discharge said fluid to said rotating element suitably affixed to said shaft;
- (d) support means stationarily mounted in said chamber, rotatably supporting said shaft;
- (e) lubricating means for continuously lubricating said rotating shaft and relieving said union of excess internal heat, said lubricating means to provide a flow passage for a portion of said fluid within said chamber between said shaft interfaced with said support means and said chamber wall, said lubricating means in communication with said inlet means, deriving a portion of said fluid from seepage between said inlet means and said first port;
- (f) outlet means for continuously discharging that portion of said fluid utilized as a lubricant within said chamber, said outlet means in communication with said lubricating means; and
- (g) means for sealably enclosing said chamber and allowing said shaft to be attached to said rotating element.

4,192,560

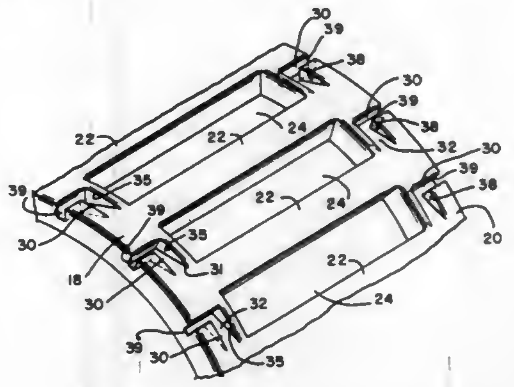
BEARING WITH BEARING CAGE

Michael J. Hartnett, Litchfield, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Aug. 21, 1978, Ser. No. 935,350

Int. Cl.² F16C *33/66*

U.S. Cl. 308—187 **15 Claims**



1. A bearing comprising: a first race; a second race spaced from the first race; a cage located in the space between said races and normally spaced from both the first race and the second race, said cage having a plurality of circumferentially spaced rolling member pockets; rolling members located in said pockets, said cage being rotated by the rolling members in response to relative rotation of the first race with respect to the second race; fluid in the space between said two races; said cage having a plurality of generally wedged-shaped recesses, each recess having at least one opening at its deep end, the opening at said deep end being located so that during cage rotation in a particular direction, fluid is scooped into the recess and wedged at the shallow end of its recess between the cage wall and a cage piloting surface so that during rotation of the cage, any force tending to move the cage from said normally spaced position into contact with said cage piloting surface is automatically opposed by a hydrodynamic force acting to keep the cage out of such contact.

4,192,561

STORAGE CONTAINER FOR ROLL TISSUE PAPER

Joann Gunn, 32299 Susilane, Roseville, Mich. 48066

Filed May 24, 1978, Ser. No. 908,813

Int. Cl.² A47F *1/00;* B65D *85/66*

U.S. Cl. 312—42 **1 Claim**

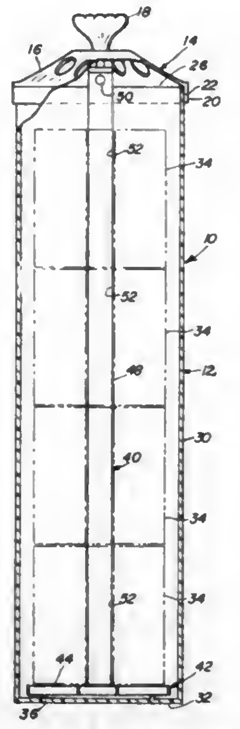
1. A portable storage container for storing roll tissue paper of the type rolled about a tubular core, said container comprising:

- an upright housing having a circular side wall and a bottom wall enclosing the bottom of said housing;
- a vertically raised circular ridge located on and integral with the inside surface of said bottom wall at a position radially, inwardly spaced from said circular side wall, said housing having an opening at its top which is sized to receive a roll of tissue paper;
- a roll tissue paper holder having a post sized to be received in and extend through the tubular cores of said roll tissue paper;
- a circular base made from a plastic material, said circular base being attached at its center to one end of said post, said base being sized larger than said tubular cores and smaller than said housing circular wall, said circular base comprising a central core section to which said post is attached, said core section having a plurality of radially extending spokes integral therewith and an outer ring member, the outer ends of said spokes being integrally connected to the inner surface of said ring member, said post being of a length to receive and support a plurality of

stacked and aligned roll tissue paper, said holder being received within said container with said plurality of tissue being maintained in alignment by said post and supported by said holder base while said holder base is positioned above said housing bottom wall by the abutting engagement of the bottom of said spokes with said raised circular ridge, said post being of such a length as to extend above the housing top opening a sufficient distance to permit the user to grasp said post and remove same along with said tissue from said housing when said base is positioned on said housing bottom wall;

means at the top of said post for facilitating grasping the same; and

a cover releasably attached to said container to enclose the top of said container.



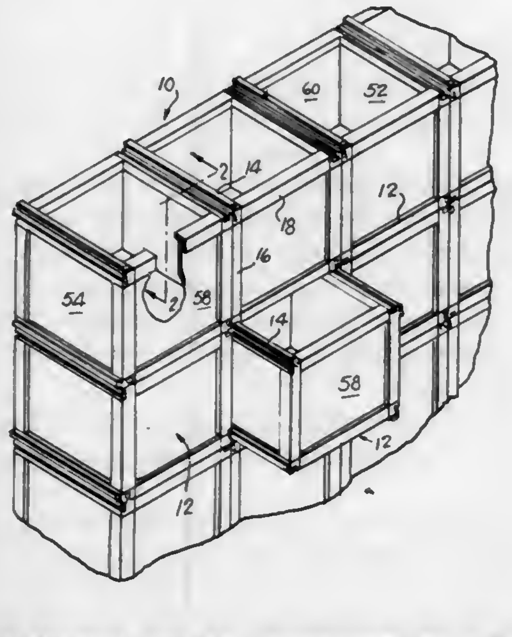
4,192,562
INTERFITTING AND REMOVABLE MODULAR, FRAME, STORAGE UNITS

Mark L. Bishoff, 10331 Wilde Lake Ter., Columbia, Md. 21043, and Theodore Bishoff, 4701 Willard Ave., Apt. #1022, Chevy Chase, Md. 20015

Filed Aug. 22, 1978, Ser. No. 935,966

Int. Cl.² A47B *87/00, 47/00, 88/04*

U.S. Cl. 312—108 **20 Claims**



1. A modular storage unit kit, comprising a set of four longitudinal, four vertical, and four cross bars, adapted to be secured together to form an open three dimensional frame, each of said longitudinal, vertical and cross bars of the set being formed with a notch extending from end to end along one edge of the bar, said notch having perpendicular sides adapted to seat and secure panels forming walls of the storage unit, said longitudinal bars each having longitudinal ribs and longitudinal recesses, the rib protruding from one side and the notch being formed in the opposite side, said recess being formed in a third side, the recesses of one frame being of a size and shape to slideably receive the ribs of adjacent frames so that a plurality of assembled frames may be fitted together with their ribs and recesses in interlocked fashion to form a self sustaining structure having slideable, removable units.

4,192,563
DEVICE FOR DISPLAYING SAMPLES OF DRAPES, FABRICS OR OTHER TEXTILE PRODUCTS

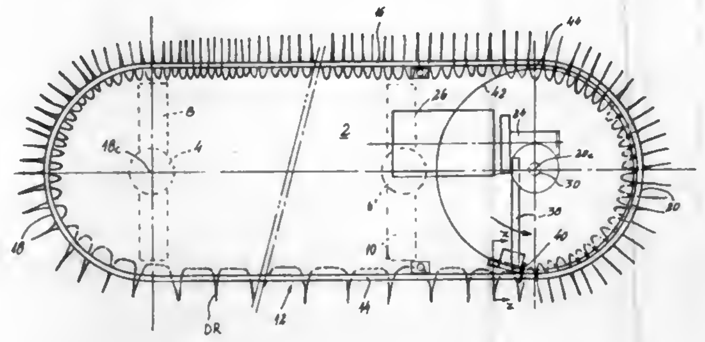
Shimon N. Levkovitch, Hapalmach 32, Tel Aviv, Israel

Filed Jun. 28, 1978, Ser. No. 919,986

Claims priority, application Israel, Jun. 30, 1977, 52418

Int. Cl.² A47F *3/08*

U.S. Cl. 312—134 **9 Claims**



1. A device for displaying drapes, fabrics or other products, comprising: a rigid closed loop track supported in a horizontal plane a flexible closed loop slidably supported on the track for suspending therefrom a plurality of vertically-hanging drapes, fabrics or other products to be displayed said closed loop track having a front section and a rear section joined together by curved end sections; a drive motor; and a pusher member driven by said drive motor along a curved path partly coextensive with one of the curved end sections of the closed loop track between the trailing end of the track front section and the leading end of the track rear section; said pusher member being located to push the flexible closed loop along said one curved end section of the closed loop track to cause it to slide therealong towards the rear section thereof to thereby compact the flexible closed loop track, and the products suspended therefrom, at said rear section of the track for space-saving purposes, and to extend the flexible closed loop, and the products suspended therefrom, at the front section of the track for viewing purposes.

4,192,564
LOAD EQUALIZING SUPPORT SYSTEM

Gerhard K. Losert, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 13, 1978, Ser. No. 959,546

Int. Cl.² F16M *11/24;* **B60B** *33/00*

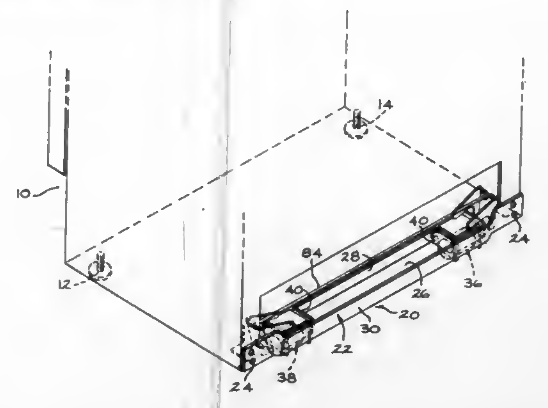
U.S. Cl. 312—253 **3 Claims**

1. A leveling assembly for supporting an appliance or the like on a surface, said assembly comprising:

A. a bracket secured to and extending across the lower end of one side wall of said appliance, said bracket including;
  (1) a lower wall portion having spaced apart openings,
  (2) flange portions formed adjacent opposite longitudinal sides of said openings and extending upwardly therefrom;

B. a wheel assembly mounted in said bracket openings being arranged for vertical movement relative to said bracket, said wheel assembly including;
  (1) a generally U-shaped housing having a central portion connecting leg portions extending substantially perpendicular thereto,
  (2) means supporting said wheel rotationally between said leg portions,
  (3) tab portions extending outwardly from the vertically disposed edge portion of said leg portions dimensioned to provide a guideway for said flange portions to permit movement of said wheel assembly through said opening relative to said flange portions along a vertical axis while maintaining the axis of said wheel parallel with said surface and for preventing movement of said wheel assembly about said vertical axis in a plane defined by the axis of said wheel;

C. a member associated with each of said wheel assembly housings being pivotally mounted in said bracket for maintaining the wheel assemblies in their respective bracket openings including;



  (1) a first portion having pivoting means including locating means dimensioned to engage holding means in the lower wall portion of said bracket for allowing pivotal movement of said member relative to said bracket; and
  (2) a second portion having a segment in engagement with the central portion of said housing for transmitting a force on said housing substantially perpendicular to the axis of said wheel;

D. connecting means having means at each end portion arranged in said members at a point intermediate said first and second portions for transmitting movement therebetween for causing rotational movement of said members about its pivot in the same direction, whereby when one of the wheel assemblies raises to move one of said members by its movement relative to said surface, the other member moves to cause a lowering of the other wheel assembly relative to said surface with the axis of both of said wheels being parallel to said surface.

4,192,565
MULTI-LEVEL SOCKET FOR AN INTEGRATED CIRCUIT

Richard Gianni, 216 Livorna Heights, Alamo, Calif. 94507

Continuation-in-part of Ser. No. 736,577, Oct. 28, 1976, Pat. No. 4,080,026. This application Nov. 25, 1977, Ser. No. 854,540

Int. Cl.² H01R *13/12*

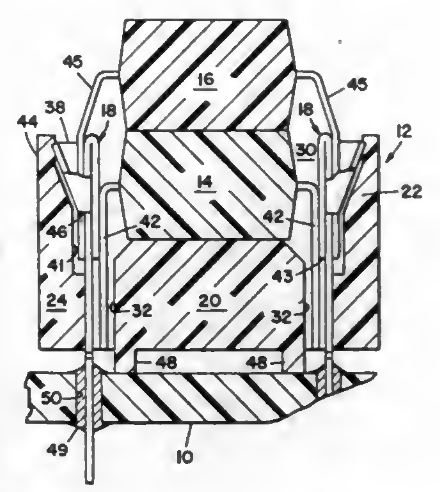
U.S. Cl. 339—17 CF **4 Claims**

1. A multi-level socket for mounting a plurality of integrated electrical circuits, each circuit having a plurality of subtending leads arranged in one or more rows, the socket comprising:

a non-conductive elongated body comprising a base portion, an edge portion unitarily formed with said base portion and upstanding from one side thereof, the body defining a plurality of holes extending through said base portion aligned along the major axis and adjacent the one edge thereof; and

at least two elongated metal contact members each retainably positioned in one of said holes to extend therethrough, each metal contact member having a frictional retention means for retaining one of the subtending leads of a first integrated electrical circuit and one of the subtending leads of a second integrated electrical circuit, each metal contact member further having a contact portion distal of retention means;

each metallic contact member comprising a metal contact pin and wherein said frictional retention means comprises first and second pockets integrally formed with and extending outwardly of one side of said metal contact pin, one pocket disposed above the other, and said metal contact pin including means for retaining said metal contact pin in one of the plurality of holes extending through the base portion of the non-conductive elongated body.



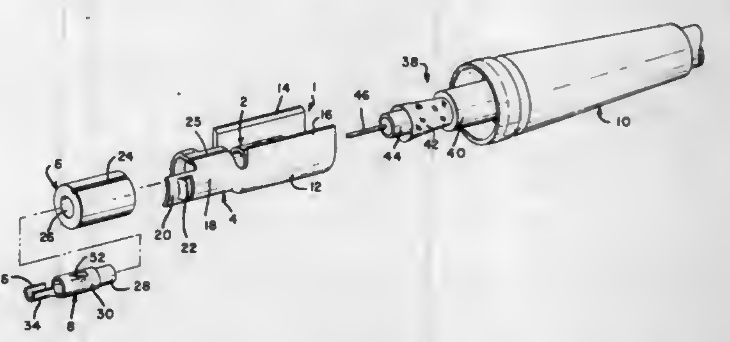
4,192,566
ANTENNA LEAD SPLICE

Ronald C. Laudig, Mechanicsburg, and John A. Morelli, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 26, 1978, Ser. No. 972,758

Int. Cl.² H01R *25/00*

U.S. Cl. 339—47 R **5 Claims**



1. A pair of intermatable connector bodies for splicing the ends of electrical coaxial cable, comprising:

an outer one piece metal shell of each connector body having a split barrel portion encircling and radially crimped on a corresponding coaxial cable to be spliced,

each said shell having a closed barrel portion and a dielectric insert received therein,

each said shell including a cavity between said closed barrel portion and a portion of said dielectric insert defining an outer receptacle,

each said insert having a coaxial bore and a metal center contact received in said bore,

each said center contact having an open ended sleeve section and a split barrel section projecting outwardly of a corresponding said insert,

said conductor projecting within and along said sleeve section and being secured in said split barrel section,

said sleeve section being larger in diameter than said corresponding conductor to define an inner receptacle matingly receiving the split barrel section of the other connector body, and

each said shell having an elongated tongue portion projecting outwardly beyond said split barrel portion and matably received in said outer receptacle of the other connector body.

4,192,567

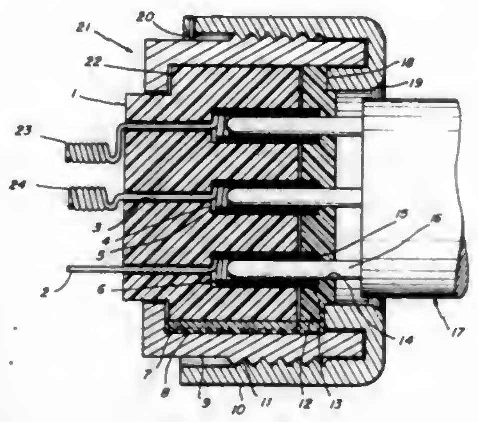
ELECTRICAL CONNECTOR

William Gomolka, 1 Patriots Dr., Canton, Mass. 02021

Filed May 8, 1978, Ser. No. 903,410

Int. Cl.^{2} H01R *7/28, 9/12, 13/62*

U.S. Cl. 339—75 M **23 Claims**



1. An electrical connector comprising a female part including a housing having at least one bore therein, receptacle means comprising a coiled spring disposed in the bore of the housing and for receiving a male part having an outer dimension comparable to the inner dimension of the coiled spring, and means for engaging the spring to change the state thereof so that the inner diameter of the receptacle changes from one diameter to a lesser, locked-position diameter including a restraining means at one end of the housing facing the open bore and means for urging the restraining means against the spring to axially compress the spring to thereby increase its diameter so as to easily accommodate the male part.

4,192,568

CONNECTOR ASSEMBLY AND IMPROVED CONNECTOR PLUG

Richard L. Marks, Mechanicsburg, and Charles H. Weidler, Lancaster, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 12, 1978, Ser. No. 905,503

Int. Cl.^{2} H01R *13/54*

U.S. Cl. 339—91 R **4 Claims**

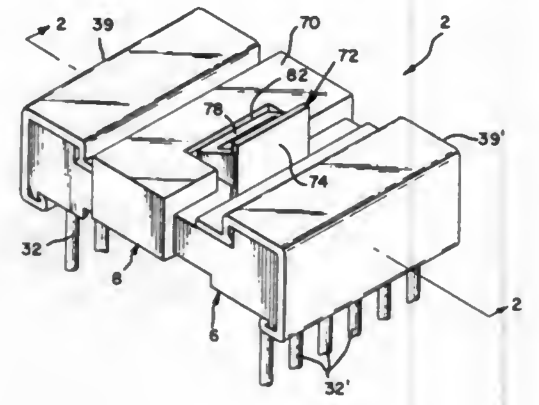
1. A plug type multi-contact electrical connector which is adapted to be disengageably mated with a complementary receptacle connector and which can also be mated with a post header on a circuit board, said plug connector comprising:

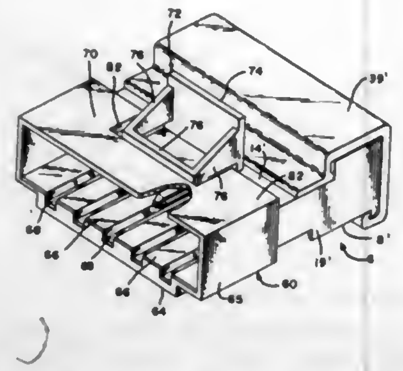
an insulating housing having a mating face and a wire-receiving face, sidewalls and endwalls extending between said mating face and said wire-receiving face, a plurality of terminal-receiving cavities extending through said housing and between said faces, said cavities being in a single row which extends between said endwalls,

a pair of spaced-apart latch ears centrally located between said endwalls on one of said sidewalls, each of said latch ears each having a ramp portion which extends obliquely beginning at said mating face away from said one sidewall and towards said wire-receiving face, each of said latch ears further having a latching shoulder spaced from said mating face and directed towards said wire-receiving face,

a pair of spaced-apart camming ramp members extending from said one sidewall, said latch ears being between said camming ramp members, each of camming ramp members comprising a first ramp which begins at said mating face and extends obliquely away from said one sidewall and towards said wire-receiving face, said first ramp merging at a ridge with a second ramp which extends obliquely towards, and merges with, said one sidewall and extends towards said wire-receiving face, said ridges of said camming ramp members having an elevation above said one sidewall which is at least equal to the elevation of said shoulders above said one sidewall whereby,

said connector can be mated with a receptacle connector having positive latch means which are engageable with said shoulders to latch said receptacle connector to said plug connector, and said plug connector can aso be mated with a pin header having a latch arm extending therefrom, said camming ramp members being engageable with said latch arm to flex said latch arm away from said locking ears when said plug connector is mated with, and unmated from said pin header.





4,192,569

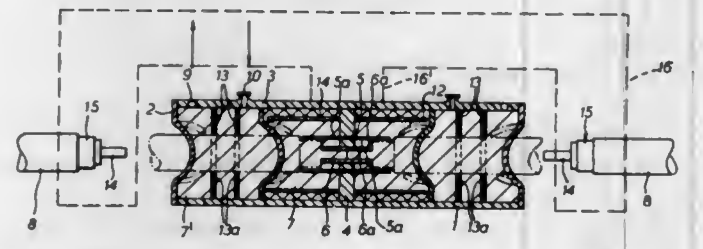
UNDERWATER CONNECTOR

Peter E. R. Mucci, Gravesend, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,253

Int. Cl.^{2} H01R *13/52*

U.S. Cl. 339—96 **8 Claims**



1. A connector comprising an outer casing, first wall members defining a first chamber in the casing, at least one connection terminal within the first chamber, a first diaphragm closing the first chamber, second wall members defining a second chamber behind the first diaphragm a second diaphragm closing the second chamber, each diaphragm having an aperture openable by a plug plugged into the connector terminal and penetrating both diaphragms, both chambers being adapted to be filled with an electrically insulating grease, jelly or similarly viscous liquid.

4,192,570

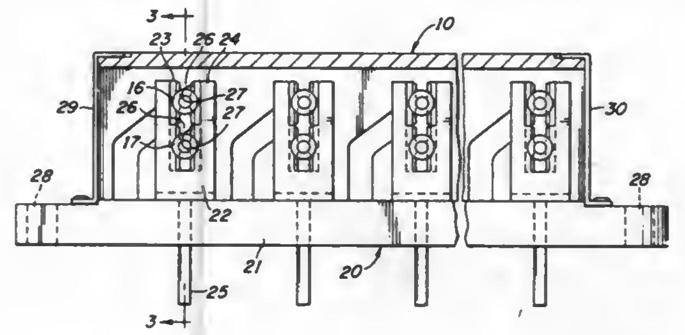
INSULATED ELECTRICAL CONDUCTOR TERMINATION CONSTRUCTION

Robert H. Van Horn, Worthington, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 21, 1978, Ser. No. 935,475

Int. Cl.^{2} H01R *9/08*

U.S. Cl. 339—98 **5 Claims**



1. An electrical connector construction comprising terminal block means mounting a plurality of insulation piercing terminals, each of said terminals comprising a pair of opposing bifurcated blades, one of said pair having cutting edges at the opening of a bifurcation, the other of said pairs having cutting edges at the base of a bifurcation, and a substantially "U" shaped clip having a pair of opposing flanges, said flanges having corresponding pairs of slots extending inwardly from the edges of said flanges, said pairs of slots terminating in corresponding pairs of conductor seatings aligned perpendicularly from said flange edges and in registration with said blade bifurcations, said clip being moveable into engagement with said terminal block means for simultaneously inserting conductor pairs when loaded in said conductor seatings across said flanges through said slots in said blade bifurcations of corresponding ones of said terminals.

4,192,571

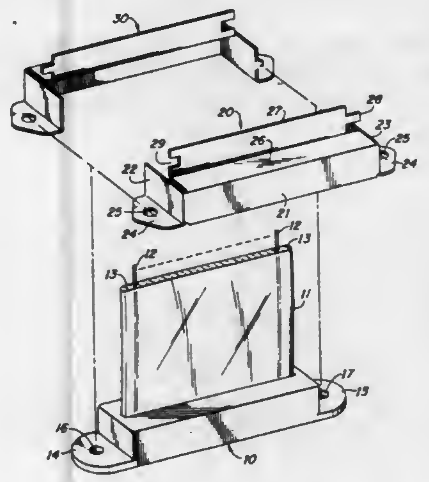
ELECTRICAL CONNECTOR STRAIN RELIEF HOUSING

Michael G. Strautz, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 10, 1978, Ser. No. 949,448

Int. Cl.^{2} H01R *13/58*

U.S. Cl. 339—103 M **6 Claims**



1. Strain relief apparatus for a flat ribbon cable (11) terminating in an electrical connector (10) characterized in a housing (20, 30) for partially enclosing said connector (10), said housing (20, 30) having a pair of flanges (27) extending outwardly from said connector (10) for clasping opposite sides of said cable (11), further characterized in an outwardly extending lug (28) on one end of one flange (27) and a notch (29) on the corresponding end of the other flange (27), said lug (28) being adapted to fold into said notch (29) thereby piercing a margin (13) of said cable (11).

4,192,572

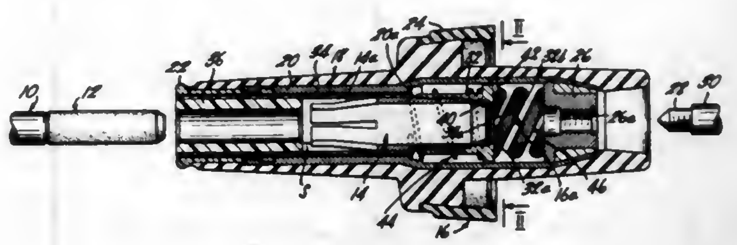
ELECTRICAL CONNECTOR APPARATUS

Robert J. Stanger, Alpha, and Larry N. Siebens, Great Meadows, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Continuation of Ser. No. 856,903, Dec. 2, 1977, abandoned, which is a continuation of Ser. No. 406,281, Oct. 15, 1973, abandoned. This application Nov. 13, 1978, Ser. No. 960,021

Int. Cl.^{2} H01R *13/52*

U.S. Cl. 339—111 **51 Claims**



1. A separable female connector for use in connecting or disconnecting an energized high voltage circuit by engagement or disengagement with a complementary connector having a male contact element, said female connector comprising:

a housing, said housing having first and second ends and an axially extending opening therebetween,

a female contact assembly in said housing opening, said assembly including

(a) a tubular sleeve having piston means at one end thereof for defining a first chamber within said tubular sleeve,

(b) female contact means fixedly positioned with respect to said tubular sleeve in said first chamber for engaging said male contact element, said female contact means being electrically connected to said piston means,

(c) guide means at the other end of said tubular sleeve for receiving and guiding said male contact element for movement within said first chamber, and for evolving arc-quenching gas in response to an arc being struck between said male contact element and said female contact means during said movement,

said tubular sleeve being mounted in said housing opening for axial movement between a first position wherein said piston means is substantially adjacent to said second end of said housing and a second position wherein said piston means is located between its said first position and said first end of said housing,

said housing opening defining a second chamber, said female contact assembly further including

(d) valve means responsive to arc-quenching gas of predetermined pressure in said first chamber to provide a passage from said first chamber to said second chamber for applying said gas to said piston means thereby displacing said tubular sleeve from said first position to said second position and accelerating engagement of said female contact means with said male contact element to extinguish said arc,

biasing means between said housing and said tubular sleeve for normally maintaining said tubular sleeve in said first position, for permitting joint movement of said male contact element and said tubular sleeve between said first position and said second position during withdrawal of said male contact element from said connector, and for accelerating the return of said tubular sleeve to said first position upon disengagement of said male contact element from said female contact means,

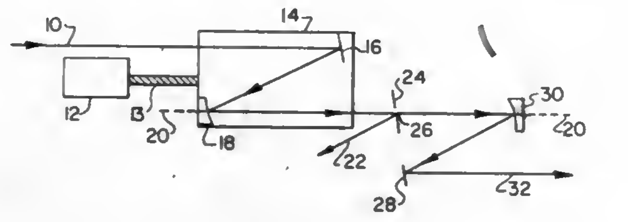
terminal means in said second end of said housing adapted for connection in a high voltage circuit, and

conductor means disposed interiorly of said second chamber between said second end of said housing and said piston means for electrically connecting said piston means and said terminal means.

4,192,573
VARIABLE POWER ATTENUATOR FOR LIGHT BEAMS

Ray B. Brown, Jr., Upper Marlboro, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 768,657, Feb. 14, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,105
Int. Cl.^{2} G02B *17/06*
U.S. Cl. 350—55 **8 Claims**

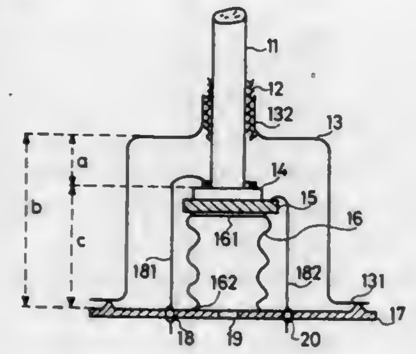


1. An attenuator for attenuation of an input beam of light comprising:
a first flat mirror for reflecting the input beam of light;
a first focusing mirror for receiving the beam of light reflected from said first flat mirror, said first focusing mirror being fixed relative to said first flat mirror so that the axis of the beam of light reflected by the first focusing mirror is offset from and parallel to the axis of the input beam of light;
a pinhole assembly for receiving the beam of light reflected from said first focusing mirror, said pinhole assembly including a pinhole positioned on the axis of the beam of light reflected by said first focusing mirror; and
means for moving said first flat mirror and said first focusing mirror in unison relative to said pinhole assembly in a direction parallel to the axis of the input beam of light, said parallel movement of said mirrors acting to vary the proportion of the input beam of light that passes through said pinhole.

4,192,574
SEALED ENCLOSING SYSTEM FOR COUPLING AN OPTOELECTRONIC DEVICE AND AN OPTICAL FIBRE

Raymond Henry; Jean-Claude Resneau, and Jean-Victor Bouvet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 10, 1978, Ser. No. 895,224
Claims priority, application France, Apr. 13, 1977, 77 11061
Int. Cl.^{2} G02B *5/14*
U.S. Cl. 350—96.17 **5 Claims**

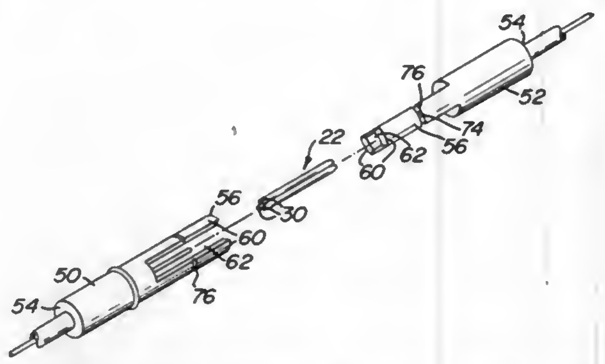


1. A sealed system for coupling an optoelectronic device and an optical fiber, comprising:
a first enclosure consisting of a metal cap having, at its top, a sealed passageway for an optical fibre, said cap being welded onto a base;
a second enclosure, located in said first enclosure, consisting of a length of bellows tube closed by a metallic plate at one end and welded to said base at the other end, said base being common to both of said enclosures;
a platform adapted to support said optoelectronic device and being integral with said metallic plate.

4,192,575
GUIDE-CONNECTOR ASSEMBLY FOR JOINING OPTICAL FIBERS AND METHOD OF MAKING GUIDE THEREFOR

Malcolm H. Hodge, Philadelphia, Pa., assignor to TRW Inc., Elk Grove Village, Ill.

Continuation of Ser. No. 758,106, Jan. 10, 1977, abandoned. This application Dec. 8, 1978, Ser. No. 968,044
Int. Cl.^{2} G02B *5/14*
U.S. Cl. 350—96.21 **50 Claims**

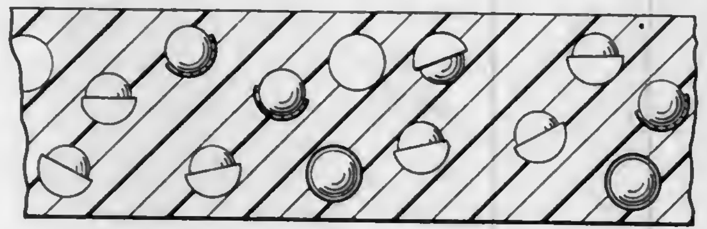


33. A connector for making an optic signal transmissive connection between the ends of a pair of optic fibers, said connector comprising first and second mateable connecting portions and a guide member comprising at least three predetermined length glass members having cylindrical surface portions disposed in a side-by-side array parallel to one another, with the longitudinal peripheral portions of adjacent members fused together to form an integral unit having a cusp-shaped interstitial channel whose surfaces are smooth, whereby said surfaces guide the ends of a pair of optic fibers inserted into said channel into immediate proximity with each other to form a good optical signal transmissive joint.

4,192,576
ULTRA-HIGH-INDEX GLASS MICROSPHERES AND PRODUCTS MADE THEREFROM

Chi F. Tung, Mahtomedi, Minn., and James A. Laird, Saint Joseph Township, Saint Croix County, Wis., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 20, 1978, Ser. No. 962,324
Int. Cl.^{2} C03C *3/12, 3/30;* **G02B** *5/128*
U.S. Cl. 350—105 **14 Claims**



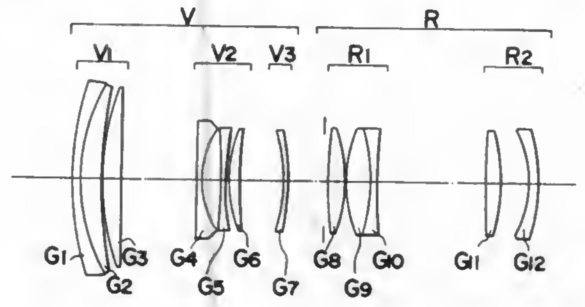
1. Transparent glass microspheres having an index of refraction of 2.7 or higher comprising 65–85 weight-percent Bi_2O_3 and 5–35 weight-percent TiO_2, with any added ingredients totaling up to about one-fourth of the composition by weight; said microspheres having been heat-treated, as indicated by the absence from their temperature profile during differential thermal analysis of an exothermic peak in the temperature interval of about 500° to 650° C.

12. Transparent film in which hemispherically reflectorized microspheres of claims 1, 2, or 5 are fully embedded.

4,192,577
ZOOM LENS SYSTEM

Shuji Ogino, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1978, Ser. No. 873,796
Claims priority, application Japan, Feb. 4, 1977, 52-12007
Int. Cl.^{2} G02B *15/14*
U.S. Cl. 350—184 **14 Claims**

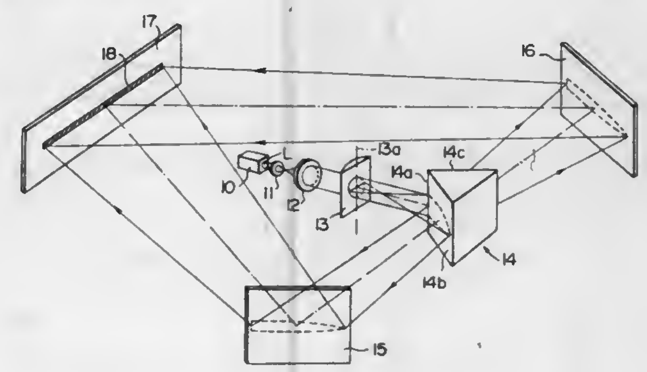


1. A zoom lens system comprising:
a front lens group of a positive refractive power consisting of a positive single lens component and a positive doublet component formed by cementing negative and positive single lenses;
a variator lens group of a negative refractive power consisting of a first negative single lens component, a second negative single lens component at the image side of the first negative single lens component and a positive single lens component at the image side of the second negative single lens component, the second negative single lens component and the positive single lens component forming a negative meniscus shaped air space therebetween;
a compensator lens group of a negative refractive power consisting of one lens component; and
a relay lens group having a first sub-group and a second sub-group at the image side of the first sub-group, the first sub-group following the compensator lens group without any lens element interposed and consisting of a positive single lens component and a positive doublet component, while the rear sub-group consisting of a positive lens component and a negative single lens component at the image side of the positive lens component.

4,192,578
METHOD OF PROJECTING A LINE IMAGE OF UNIFORM BRIGHTNESS

Masane Suzuki, Omiya, and Kenzi Yasuda, Kitamoto, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Jul. 5, 1978, Ser. No. 921,974
Claims priority, application Japan, Jul. 8, 1977, 52-81751
Int. Cl.^{2} G02B *27/14*
U.S. Cl. 350—320 **4 Claims**

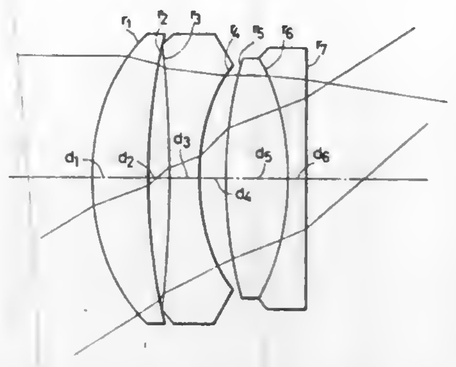


1. A method of projecting a line image of uniform brightness onto a surface, comprising
causing a laser beam to be emitted from a laser,
diverging the emitted laser beam into a flat beam, the flat beam being symmetrical about its optical axis with respect to distribution of intensity,
dividing the flat beam into two portions along a line passing normal thereto through its optical axis, said two portions being symmetrical to each other with respect to intensity distribution, and
utilizing mirrors to reflect and project the two portions onto the surface to be superimposed with each other so that the maximum intensity area of one portion falls on the minimum area of the other portion, thereby forming a line image of uniform brightness on the surface.

4,192,579
BEHIND-STOP TYPE LENS SYSTEM FOR PHOTOGRAPHIC CAMERAS

Kazushi Hyakumura, Hachiouji, Japan, assignor to Olympus Optical Company Limited, Toyoto, Japan

Filed Jan. 30, 1978, Ser. No. 873,499
Claims priority, application Japan, Feb. 8, 1977, 52-12693
Int. Cl.^{2} G02B *9/20*
U.S. Cl. 350—227 **8 Claims**



1. A behind-stop type lens system for photographic cameras comprising a first positive meniscus lens component having a convex surface on the object side, a second biconcave lens component and a third cemented doublet component consisting of a biconvex lens element and a negative lens element, and said lens system satisfying the conditions enumerated hereunder:
(1) $0.23f < \Sigma d < 0.28f$
(2) $0.55 < f_1 < 0.59f.$
(3) $-0.37f < f_2 < -0.32f$
(4) $n_1 > 1.71$
(5) $n_2 < 1.67$
(6) $|r_7| > 4.8f$
(7) $0.26f < -r_6 < 0.34f$
(8) $|r_3|/r_4 > 6.0$
(9) $\nu_1 - \nu_2 > 14$
wherein the reference symbol Σd represents total length of said lens system as a whole, the reference symbols f_1, f_2 and f designate focal lengths of the first, second lens components and the lens system as a whole respectively, the reference symbols n_1 and n_2 denote refractive indices of the first and second lens components respectively, the reference symbols r_3 and r_4 represent radii of curvature on the respective surfaces of the second lens component, the reference symbols r_6 and r_7 designate radii of curvature on the cemented surface and image side surface respectively of the third lens component and the reference symbols ν_1 and ν_2 denote Abbe's numbers of the first and second lens components respectively.

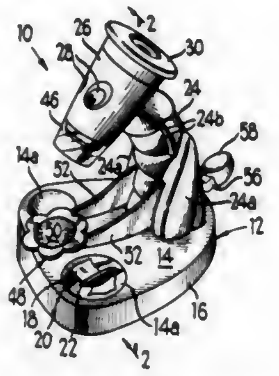
4,192,580
TOY MICROSCOPE

Burton C. Meyer, Downers Grove, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Aug. 17, 1977, Ser. No. 825,197
Int. Cl.^{2} G02B *27/02*
U.S. Cl. 350—238 **3 Claims**

1. A toy microscope, comprising:
a base portion;
a body extending upwardly from said base portion;

- a hollow head portion mounted at the upper end of said body in a stationary position, at an angle with respect to said base;
- lens means mounted in said hollow head portion for magnifying an object;
- a transparent closed end cup-shaped spacer mounted on the lower end of said lens means for maintaining a predetermined spacing between said lens means and said object;



- an object mounting platform for supporting an object to be viewed through said lens means; and
- a leg structure mounted on said upwardly extending body by means for supporting said platform for selective movement between a pair of alternative positions relative to said lens means to facilitate mounting of an object on said platform prior to movement thereof into contact with said transparent spacer for viewing.

4,192,581
ELECTROCHROMIC DISPLAY DEVICE

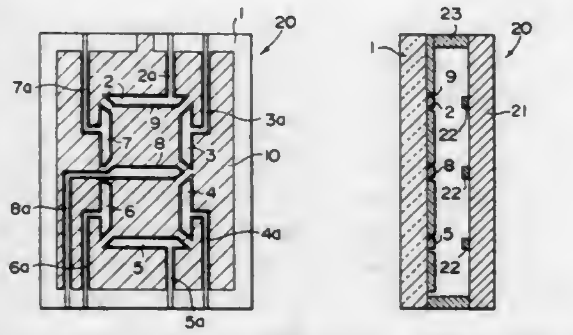
Masachika Yaguchi, Yokohama, and Haruhiro Kato, Kawasaki, both of Japan, assignors to Dai Nippon Toryo Co, Ltd., Osaka, Japan

Filed Feb. 17, 1977, Ser. No. 769,564

Claims priority, application Japan, Feb. 20, 1976, 51-17509

Int. Cl.^{2} G02F *1/17, 1/23*

U.S. Cl. 350—357 **24 Claims**



1. An electrochromic display device comprising a pair of oppositely disposed electrode plates each bearing on the inner surface thereof an electrode and an electrochromic composition sealed between said pair of oppositely disposed electrode plates, said electrochromic composition consisting essentially of an electrochromic compound which is colored in and present in its reduced state and a solvent selected from the group consisting of (a) water and (b) water and alcohol, the solubility of said electrochromic compound to said solvent being not less than 10^{-2} mol/(100 g solvent) in said reduced state and not less than 10^{-1} mol/(100 g solvent) in an oxidized state, said electrochromic composition being sealed between said pair of electrode plates in said reduced state.

4,192,582
OPHTHALMOMETER

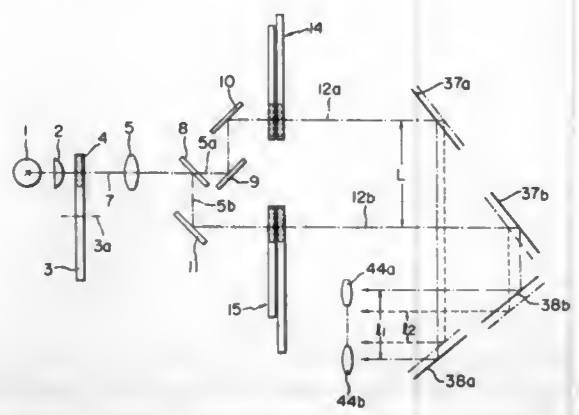
Mitsugu Aoki; Yoshikazu Konishi, and Taketoshi Ishihara, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,439

Claims priority, application Japan, Apr. 20, 1977, 52-45554

Int. Cl.^{2} A61B *3/02*

U.S. Cl. 351—30 **4 Claims**



1. Ophthalmometer comprising chart projecting optical means having a projecting optical path, ophthalmoscopic inspection chart means having a plurality of inspection charts each including a Landolt ring with a slit, chart advancing means for driving said chart means so that said charts are located in the projecting optical path in sequence one after another whereby an image of the chart in the projecting optical path is produced on a projecting plane, corrective lens means having a plurality of corrective lenses of different dioptral values, lens driving means for driving said corrective lens means so that the corrective lenses are brought into an operative position in sequence one after another, means for providing a mark around the chart image on the projecting plane, means for moving the mark circumferentially around the chart image, manual switch means adapted to be actuated by a patient, discriminating circuit means for discriminating whether the switch means has been actuated when the mark is in a position corresponding to the slit of the projected chart, means connected with the discriminating circuit means for energizing the chart advancing means so that an advanced chart is projected when the switch means is actuated while the mark is in a position corresponding to the slit of the projected chart and for energizing the lens driving means so that a lens having a larger dioptral value is placed in the operative position when the switch means is actuated while the mark is in a position other than the position corresponding to the slit of the projected chart.

4,192,583
SOLAR RECEIVER HELIOSTAT REFLECTOR HAVING A LINEAR DRIVE AND POSITION INFORMATION SYSTEM

Richard H. Horton, Schenectady, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 21, 1977, Ser. No. 844,403

Int. Cl.^{2} G03B *21/00*

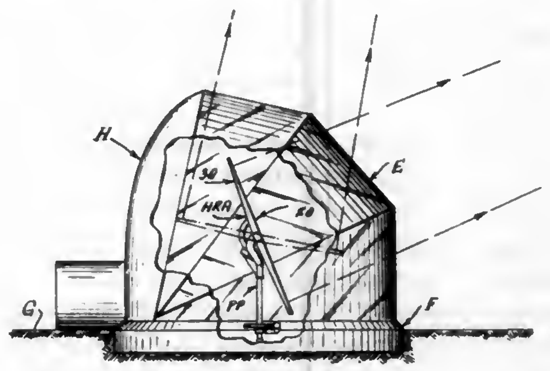
U.S. Cl. 353—3 **24 Claims**

1. A heliostat for a solar energy system comprising:

A. a reflector;

B. means for supporting said reflector for bi-axial movement about a horizontal axis and a vertical axis whereby said reflector is capable of movement about said axes to have its elevation angle and azimuth angle changed,

C. drive means for operating said supporting means for moving said reflector to adjust the angular disposition of said reflector in both elevation and azimuth comprising increment movement motor means, said motor means comprising a linear drive tape, and



D. a position control tape for controlling the position of said linear drive tape.

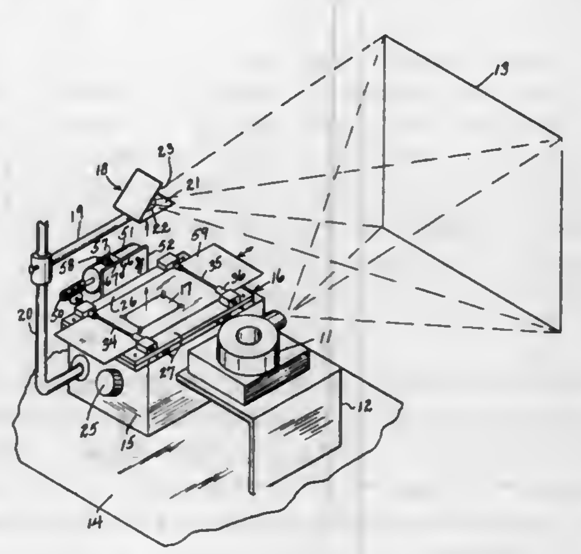
4,192,584
SYSTEM FOR CREATING MOTION EFFECTS EMPLOYING STILL PROJECTION EQUIPMENT

Walter S. Dougherty, Stone Mountain, Ga., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Aug. 15, 1978, Ser. No. 933,746

Int. Cl.^{2} G03B *21/26, 21/14*

U.S. Cl. 353—30 **19 Claims**



1. Projection apparatus for producing visual motion effects, the apparatus comprising a viewing surface, a first projection means to project a still first image onto said viewing surface, a second projection means to project a moving second image onto said viewing surface superimposed on said first image, said second projection means comprising a light source provided with a housing having a clear top portion, carrier means supported over said clear top portion, an image-forming element on said carrier means arranged to be illuminated by said light source, projection lens means focussed on said image-forming element, means arranged to direct output light rays from said lens means toward said viewing surface, whereby a second image from said image-forming element is superimposed on the still first image, means for varying the intensity of said light source to selectively vary the intensity of said second image superimposed over said first image, said carrier means being capable of orientation selectively in different directions around the optical axis of said lens means, said carrier means being rotatably movable about an axis substantially perpendicular to its plane of rectilinear movement for varying its direction of movement, transport means to move said carrier means rectilinearly over said light source to cause the superimposed second image to move rectilinearly over the still first image on said viewing surface in a direction in accordance with the orientation of said carrier means, and means to vary the speed of rectilinear movement of the carrier means over the light source.

4,192,585
SLIDE PROJECTOR WITH AUTOMATIC FOCUSING SYSTEM

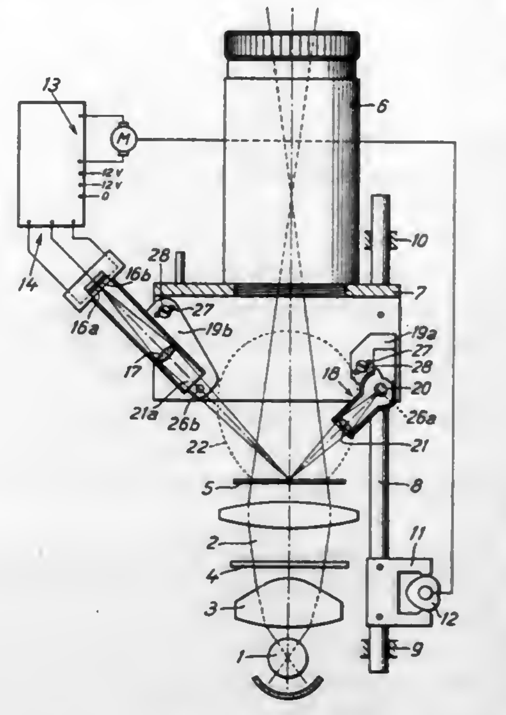
Kurt Henkelmann, Wissmar, and Dietrich Brückner, Nauborn, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Mar. 8, 1978, Ser. No. 884,499

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713186

Int. Cl.^{2} G03B *3/10*

U.S. Cl. 353—101 **4 Claims**



1. In a slide projector having an automatic focusing system comprising a scanning auxiliary projecting system equipped with a light source projecting a light beam and position control for focusing a slide, a main projection beam passing through said slide along an optical axis, a scattered light zone generated by said slide when said main projection beam passes through said slide, and a light sensor with a lens in front thereof detecting light reflected from said slide after being projected thereon by said scanning auxiliary projecting system, the improvement comprising:

(a) said lens (**17**) in front of said light sensor (**15**) of said scanning auxiliary projecting system arranged with an entry aperture (**21*a***) outside said scattered light zone (**22**) for increasing the difference in the intensities between the measuring light and light scattered from said main projection beam;

(b) said light source (**20**) of said scanning auxiliary projecting system (**18**) operated below the rated voltage thus increasing the portion of infrared light within said light beam without using respective filter means; and

(c) silicon cells protectively covered with a layer of crystal-clear resin used in said light sensor.

4,192,586
ELECTRONIC SYSTEM FOR PHOTOGRAPHIC DEVICES

Jean Orban, Santa Monica, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Jul. 21, 1975, Ser. No. 597,479

Int. Cl.^{2} G03B *17/20*

U.S. Cl. 354—24 **33 Claims**

1. In a photographic device having a lens through which light passes for exposing film, and having shutter means interposed between said lens and film for controlling the time of

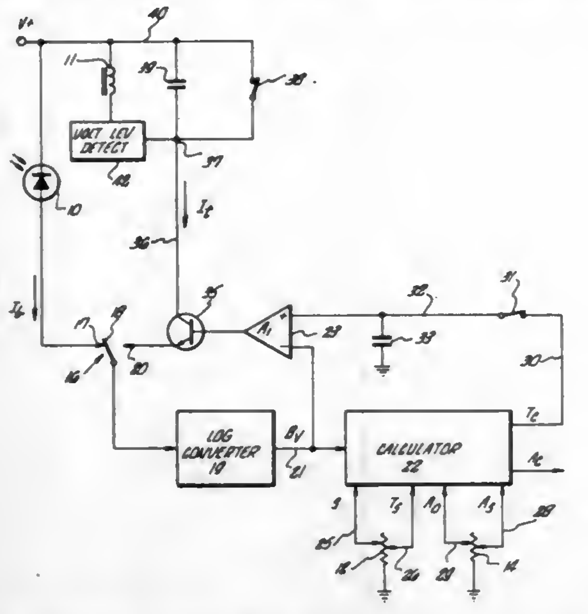
exposure, an electronic system for controlling the shutter means comprising

light sensor means for receiving light and providing an electrical output signal as a function of the received light,

logarithmic converter means having an input for receiving said electrical output signal and providing an output log signal proportional to brightness value,

control circuit means coupled with said logarithmic converter means for receiving said brightness value signal and providing a shutter control signal which is a function of the brightness value signal and other input parameters, and

feedback circuit means for receiving said shutter control signal and including amplifier means adapted to be selectively connected with the input of said logarithmic converter means and thereby form a feedback circuit loop including said logarithmic converter means for generating an antilog signal as a function of said shutter control signal, said antilog signal being adapted to control said shutter means.



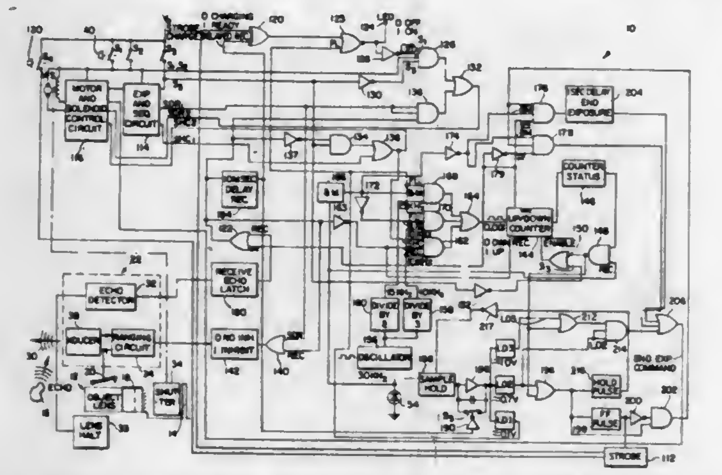
4,192,587
PROPORTIONAL FILL FLASH

Arthur G. LaRocque, Belmont; George D. Whiteside, Lexington, and Bruce K. Johnson, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 13, 1978, Ser. No. 960,062

Int. Cl.^{2} G03B ***7/08, 15/03***

U.S. Cl. 354—27 **37 Claims**



1. A camera including a system for controlling the energization of a source of artificial illumination during a photographic exposure interval occurring under conditions of substantial ambient scene light intensity, said camera comprising:

means for defining a film exposure plane;

means for automatically controlling a photographic exposure interval, said control means comprising a shutter blade mechanism operable to provide progressively increasing aperture values during an exposure interval and means for detecting and integrating scene light in correspondence with the scene light admitted by said blade mechanism to said film exposure plane during the photographic exposure interval and for automatically closing said shutter blade mechanism upon the detection and integration of a quantity of admitted scene light corresponding to a select proportion of the optimum film exposure value;

means for providing a range responsive timed signal commencing in correspondence with the initiation of said exposure interval and terminating at a subsequent time corresponding to the distance between said camera and a subject to be photographed;

means responsive to the termination of said range responsive timed signal for providing an output signal to initiate the energization of the source of artificial illumination; and

means responsive to said output signal of said last stated means for controlling said scene light detecting and integrating means to discount the artificial illumination provided by the source of artificial illumination such that said select proportion of the optimum film exposure value is directly attributable to ambient scene light while the remaining proportion of the optimum film exposure value is directly attributable to artificial scene light provided by the source of artificial illumination.

23. In a camera adapted to be energized at least in part by a source of electrical energy and including means for defining a film plane and means for mounting a source of artificial illumination adapted to be fired from the source of electrical energy under conditions of substantial ambient light, the improvement comprising means for providing substantially the same proportions of ambient and artificial light from the subject for different exposure operations of said camera in which the camera-to-subject distances vary over a significant range of camera-to-subject distances, said ambient light from the subject constituting a substantial amount, but less than the total amount, of the light from the subject provided at said exposure plane in each such exposure operation of said camera.

4,192,588
CONTROL SYSTEM FOR CONTROLLING THE DIAPHRAGM IN A PHOTOGRAPHIC CAMERA

Eduard Wagensonner, Aschheim; Alois Rieder, Munich, and Bernhard von Fischern, Ottobrunn, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

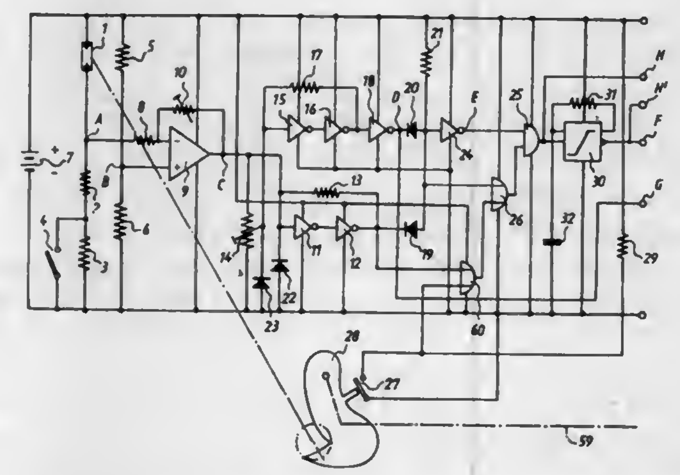
Continuation of Ser. No. 629,546, Nov. 6, 1975, Pat. No. 4,079,391. This application Sep. 20, 1977, Ser. No. 835,854

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1974, 2453285

The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.

Int. Cl.^{2} G03B ***7/08***

U.S. Cl. 354—43 **3 Claims**



1. In an exposure-light-intensity control system, in combination,

an adjustable diaphragm;

a stepper motor having an output coupled to the diaphragm for adjusting the diaphragm setting, the stepper motor having a plurality of successively energizable windings, the stepper motor being capable of changing the diaphragm setting within arrange of settings bounded by a first extreme setting and a second extreme setting;

motor-control circuit means connected to the stepper motor windings, and having an enablement-signal input for receipt of an enablement signal commanding that the stepper motor operate, and having a direction-signal input for receipt of a direction signal indicating the direction in which the stepper motor is to operate, the motor-control circuit means being operative for preventing stepper motor operation in the absence of an enablement signal irrespective of the presence of a direction signal, and being operative in the presence of an enablement signal for causing the stepper motor to operate in the direction indicated by the direction signal;

photosensitive means operative for generating an actual-value signal corresponding to the intensity of light actually passing through the diaphragm;

reference means operative for generating a desired-value signal indicating a reference value for the intensity of light passing through the diaphragm;

differential amplifier means having inputs connected to receive the actual-value and desired-value signals and having an output, and operative for producing at its output an error signal indicating the sense and the amount of the discrepancy between the actual-value and desired-value signals, the error signal having a predetermined intermediate value when the discrepancy between the actual-value and desired-value signals is zero;

first and second bistable threshold circuits, each having an input and an output, the inputs of the threshold circuits being connected to receive the error signal, the first threshold circuit producing an output signal when the error-signal amplitude exceeds a predetermined first threshold value lower than said intermediate value, the second threshold circuit producing an output signal when the error-signal amplitude exceeds a predetermined second threshold value higher than said intermediate value, said first and second threshold values together defining a tolerance range containing said intermediate value,

the concurrent absence of both a first threshold-circuit output signal and a second threshold-circuit output signal constituting a first signal combination,

the concurrent presence of both a first threshold-circuit output signal and a second threshold-circuit output signal constituting a second signal combination;

extreme-setting detector switch means operative for generating an extreme-setting signal indicating that the diaphragm has been brought to an extreme setting;

evaluating circuit means operative for causing the stepper motor to change the diaphragm setting in the direction towards said first extreme setting in response to said first signal combination and in the direction towards said second extreme setting in response to said second signal combination, said first extreme setting being associated with said first signal combination, said second extreme setting being associated with said second signal combination,

said evaluating circuit comprising

direction-signal furnishing means having an input connected to the output of at least one of the two threshold circuits and having an output connected to the direction-signal input of the motor-control circuit, and

logic circuit means comprising a plurality of interconnected logic gates, the logic circuit means having an output connected to the enablement-signal input of the motor-control circuit means and operative for alternatively applying or not applying an enablement signal to the enablement-signal input, the logic circuit means having inputs connected to the first threshold circuit, the second threshold circuit and the extreme-setting detector switch means,

the logic circuit means being operative for distinguishing among the following distinct situations:

(a) absence of extreme-setting signal, plus absence of first threshold-circuit output signal, plus absence of second threshold-circuit output signal,

(b) absence of extreme-setting signal, plus presence of first threshold-circuit output signal, plus absence of second threshold-circuit output signal,

(c) absence of extreme-setting signal, plus presence of first threshold-circuit output signal, plus presence of second threshold-circuit output signal,

(d) presence of extreme-setting signal, plus presence of the one said first and second signal combinations associated with the extreme setting corresponding to the extreme-setting signal,

(e) presence of extreme-setting signal, plus presence of first threshold-circuit output signal, plus absence of second threshold-circuit output signal,

(f) presence of extreme-setting signal, plus presence of the one of said first and second signal combinations not associated with the extreme setting corresponding to the extreme setting signal,

the logic circuit means being operative for applying an enablement signal to the enablement-signal input of the motor-control circuit means in response to any one of situations (a), (c) and (f), but withholding an enablement signal from the enablement-signal input in response to any one of situations (b), (d) and (e).

4,192,589
ABNORMAL OPERATION WARNING APPARATUS FOR A CAMERA

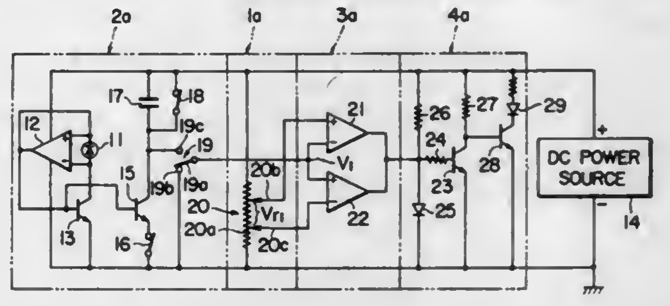
Seijiro Tokutomi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1977, Ser. No. 849,579

Claims priority, application Japan, Nov. 8, 1976, 51/149732[U]

Int. Cl.^{2} G03B ***17/20***

U.S. Cl. 354—53 **3 Claims**



1. An abnormal operation warning apparatus for a camera, comprising:

first voltage signal generating means for producing a first voltage signal having a level proportional to the sensitivity of the film used;

a second voltage signal generating means for producing a second voltage signal having a level proportional to the amount of light exposed onto an exposure surface portion of said film, said second voltage signal generating means comprising a light measuring circuit including a light receiving element for receiving light reflected from the exposure surface portion of the film;

a comparison means coupled with said first and second voltage signal generating means for comparing the level of said first voltage signal derived from the former with that of said second voltage signal derived from the latter; and

a discriminating means coupled with said comparison means for detecting the difference between the levels of said first and second voltage signals compared thereby and for generating an output which permits the photographer to identify each photographic result in response to the magnitude of said difference.

4,192,590
INDICATING SYSTEM FOR CAMERAS

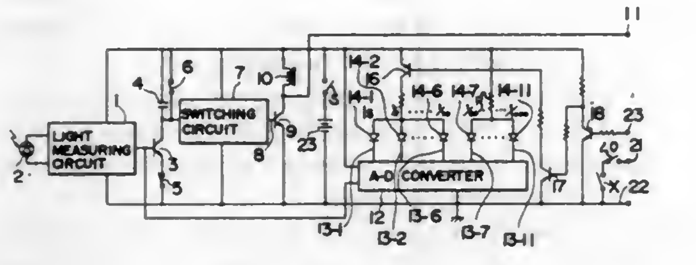
Mashio Kitaura, Tondabayashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 12, 1978, Ser. No. 941,730

Claims priority, application Japan, Sep. 13, 1977, 52-124035[U]

Int. Cl.² G03B *17/20, 7/16*

U.S. Cl. 354—53 **9 Claims**



1. A photographic condition indicating system for a camera with an electronic flash device including an electronic flash tube, a main capacitor for energizing the flash tube and a circuit for charging the main capacitor at least to a given level, and which permits flash firing when the prospective effective exposure time is longer than a given value, said indicating system comprising:

a light measuring circuit for generating an output signal as a function of the brightness of an object to be photographed;

an indicating means;

a first control circuit responsive to said output signal for controlling said indicating means to provide a first indication of an exposure time dependent on said output signal; and

a second control circuit for controlling said indicating means to provide a second indication different than said first indication in response to said output signal when said main capacitor is charged to said given level and the prospective exposure time is longer than said given value.

4,192,591
ROTATABLE ADAPTER FOR USE IN OPTICALLY COUPLING A VIEWING DEVICE WITH A PHOTOGRAPHIC CAMERA

Edward A. Yobaccio, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 27, 1978, Ser. No. 955,338

Int. Cl.² G03B *29/00*

U.S. Cl. 354—62 **3 Claims**

1. An adapter for optically and mechanically coupling a photographic camera to the proximal end of an optical viewing device such as an endoscope so that the image of an object formed by the optical viewing device can be simultaneously viewed and photographed, the camera being of the type which has a through-the-lens viewing system and the optical viewing device being of the type which has an eyepiece located at its proximal end for forming a viewable image of the object, said adapter comprising:

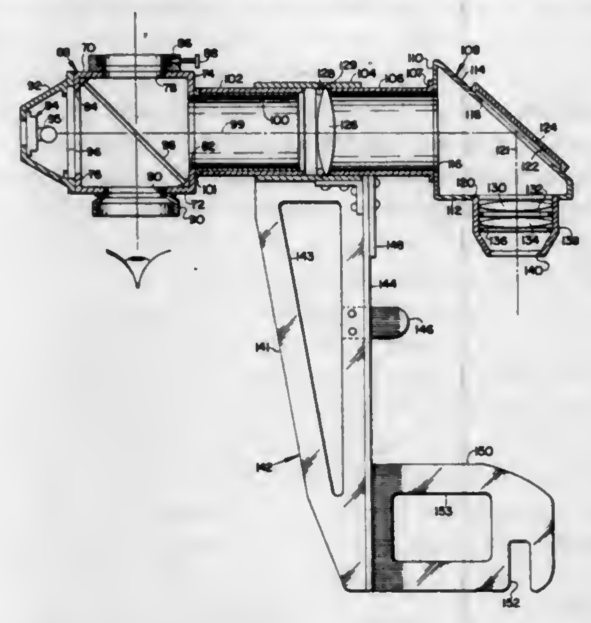
a first housing section for forming a releasable generally light-tight mechanical connection with the proximal end of the optical viewing device;

optical means disposed within said first housing section for establishing a folded light path having one axis, aligned with the optical axis of the viewing device's eyepiece, along which the viewable image formed by the viewing device can be directly viewed and another axis, disposed at a predetermined angle with respect to said one axis, along which light rays which form said viewing device's viewable image are directed by said optical means;

a second generally light-tight housing section structured for rotatably coupling with said first housing section and having apertured entrance and exit ends of which said entrance end is aligned with said other axis of said first housing section's folded light path so that the light rays which form the viewing device's viewable image and are directed along said other axis of said first housing section's folded light path by said optical means enter said second housing section through said second housing section's entrance aperture;

rotationally symmetric optical means fixedly mounted in said second housing section for establishing a folded light path between said second housing section's entrance and exit apertures, for intercepting the image forming light rays which are directed along said other axis of said first housing section's folded light path to form at a predetermined spatial location within said second housing an aerial image of the object viewed via the optical viewing device and for facilitating focusing of the camera's objective lens on said aerial image through said second housing section's exit aperture; and

means for releasably attaching the camera to said second housing section so that the camera's objective lens is aligned in a predetermined manner with said exit aperture of said second housing section whereby the viewing device's viewable image can be viewed through said exit aperture via the camera's viewing system for purposes of focusing the camera thereon and afterwards for photographing said aerial image,



said adapter thus being structured to permit the viewable image of the object formed by the optical viewing device to be directly viewed along said one axis of said first housing section's folded light path, to be viewed through the camera's viewing system along said second housing section's folded light path for purposes of focusing or alternate viewing, to be photographed along said second housing section's folded light path, and also structured for rotating said second housing section, including the camera, with respect to said first housing section so that the camera can be moved to a plurality of angular positions with respect to said first housing section from any of which positions the viewing device's viewable image of the object can be photographed after the camera has been focused, the availability of said plurality of camera positions thus providing the photographer with the option of placing the camera in a comfortable position for his purposes without introducing any reversals in the image as observed directly along said one axis of said first housing section's folded light path.

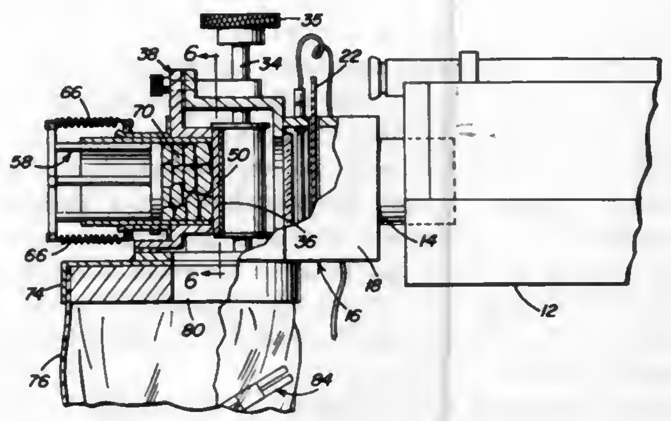
4,192,592
CHEMICALLY DEHYDRATED COLD CAMERA

Robert H. Thayer, 1501 Ariz. St., El Paso, Tex. 79902

Filed Jun. 16, 1978, Ser. No. 917,024

Int. Cl.² G03B *29/00*

U.S. Cl. 354—76 **9 Claims**



1. In a multiple exposure camera having a sealed housing enclosing an airtight film chamber through which photographic film is displaced from a storage roll and positioned for prolonged exposure through an exposure window and a contractible refrigerating chamber within which dry ice is stored for maintaining the film at a temperature inhibiting latent image decay, means for preventing precipitation of ice on the film, comprising an auxiliary enclosure attached to the housing having an access opening in communication with said film chamber, chemical dehydrating means carried in said enclosure for removing moisture from said film chamber, and means for externally heating said exposure window of the film chamber to prevent condensation of moisture thereon.

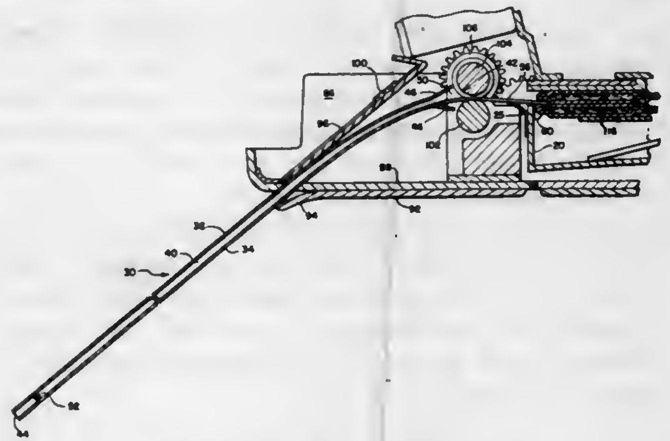
4,192,593
PHOTOGRAPHIC FILM ASSEMBLAGE

Philip R. Norris, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 2, 1978, Ser. No. 947,425

Int. Cl.² G03B *17/50, 17/26*

U.S. Cl. 354—86 **7 Claims**



1. A film assemblage for use with a camera of the self-developing type having a pair of superposed rollers mounted in position to receive therebetween an exposed film unit as it exits from a cassette for rupturing a container of processing liquid attached to the exposed film unit to thereby spread its contents across a photosensitive layer thereof to initiate formation of a visible image therein while simultaneously advancing the exposed film unit toward the exterior of the camera, said film assemblage comprising:

a film cassette having an exposure opening in one wall thereof, through which a film unit is adapted to be exposed, an ingress opening through which a portion of a film advancing member is adapted to extend prior to moving an exposed film unit out of said film cassette, and an egress opening through which the exposed film unit is adapted to be moved from said film cassette by the film advancing member;

a plurality of film units located within said film cassette, each said film unit comprising a photosensitive layer and a container of processing liquid, said film units being arranged in a stack with said photosensitive layer of an endmost film unit being located adjacent to and in alignment with said exposure opening;

an imbibition chamber formed from an opaque material ahd having first and second oppositely located open ends, said imbibition chamber being located within said film cassette between said endmost film unit and said exposure opening so as to prevent premature exposure of said endmost film unit and with said first open end located adjacent said ingress opening and said second open end located in alignment with said egress opening, said first and second open ends having a width larger than that of said film units; and

means for tethering said imbibition chamber to said film cassette such that when said film assemblage is properly located within the camera and said imbibition chamber is moved out of said film cassette via said egress opening by the film advancing member and the rollers, said tethering means terminates movement of said imbibition chamber when said first open end of said imbibition chamber first moves out of engagement with said rollers and a portion of said imbibition chamber including said second open end is located exteriorly of the camera, whereby said imbibition chamber is maintained in position to receive said endmost film unit, subsequent to its exposure, via said first opening as it exits from the rollers and maintain at least the portion of its said photosensitive layer which is located within said portion of said imbibition chamber which is located exteriorly of the camera in a substantially light free environment until said exposed endmost film unit is removed from said imbibition chamber via said second opening.

4,192,594
CAMERA FILM PROCESSOR

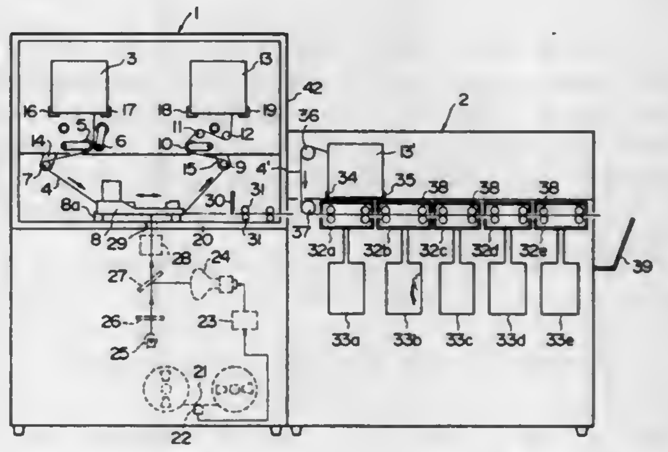
Toshiaki Oidaira; Katsumi Asanuma; Takekazu Yanagimoto; Senzi Yasui, all of Tokyo; Kozo Saito, Higashikurume, and Yoshio Hakamata, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 20, 1978, Ser. No. 953,175

Claims priority, application Japan, Oct. 21, 1977, 126466

Int. Cl.² G03B *17/50*

U.S. Cl. 354—90 **3 Claims**



1. A camera film processor composed of a camera portion and a processor portion, said camera portion having a camera for recording information on a roll film and said processor portion having a processor for processing the film,

said camera portion comprising a roll film feed-out magazine holding means, a photographing station where the roll film is exposed to imagewise light for photographing, a roll film take-up magazine holding means, film feeding means for feeding a roll film from said roll film feed-out magazine holding means to said roll film take-up magazine holding means by way of photographing station, and a cutter for cutting the roll film into sheet film after the film has been exposed to the imagewise light,

said processor portion comprising a roll film take-up magazine holding means, and a roll film guiding means for guiding the roll film taken out of the roll film take-up magazine to said processor,

a sheet film guiding means being provided between said cutter and said processor for feeding the cut sheet film from the cutter to the processor.

4,192,595
ELECTROFLASH CONTROLLING CIRCUIT INCLUDING A DELAY CIRCUIT FOR ELECTRICALLY CONTROLLED FOCAL PLANE SHUTTERS

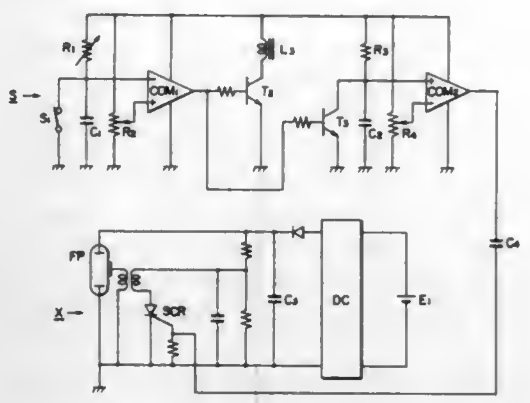
Kenji Wakazono; Yasuo Ishiguro, both of Itabashi, and Toshihisa Saito, Nakano, all of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Aug. 22, 1978, Ser. No. 935,985

Claims priority, application Japan, Aug. 23, 1977, 52-111960[U]

Int. Cl.² G03B *15/05*

U.S. Cl. 354—133 **4 Claims**



1. An electroflash controlling circuit for electrically controlled focal plane shutters comprising a switch means capable of being switched by the releasing operation of a camera, a first electric delaying means for controlling the exposure time which is connected to said switch means and is made to start its delaying operation by switching said switch means, a first electromagnetic means which is connected to said first electric delaying means and has its operating state converted by the end signal of the delaying operation of said first electric delaying means and can thereby start the shutter closing motion, a second electric delaying means which is connected to said first electric delaying means and is made to start its delaying operation by the end signal of the delaying operation of said first electric delaying means and has a fixed delay time shorter than the time from the issuance of the end signal to the start of the shutter closing motion, and an electroflashing circuit which is connected to said second electric delaying means and is triggered by the end signal of the delaying operation of said second electric delaying means.

4,192,596
CAMERA WITH IMPROVED SHUTTER ARRANGEMENT

Ib Penick, Prospect Heights, Ill., assignor to Camera Plus, Inc., Fairfield, N.J.

Filed Jun. 12, 1978, Ser. No. 914,674

Int. Cl.² G03B *15/03*

U.S. Cl. 354—142 **5 Claims**

1. A camera adapted for use with percussion-ignitable flashlamps, which camera comprises

a housing,

a lens opening in said housing,

a striker element mounted for movement in a straight line direction within said housing between a first loaded position and a second exposed position,

reset means on said striker element for permitting it to be manually moved from said second position to said first position,

a spring biasing said striker element to said second position,

a spring-biased sear lock engageable with said striker element to hold it in the loaded position against the action of said first spring,

a trigger pivotally mounted within said housing,

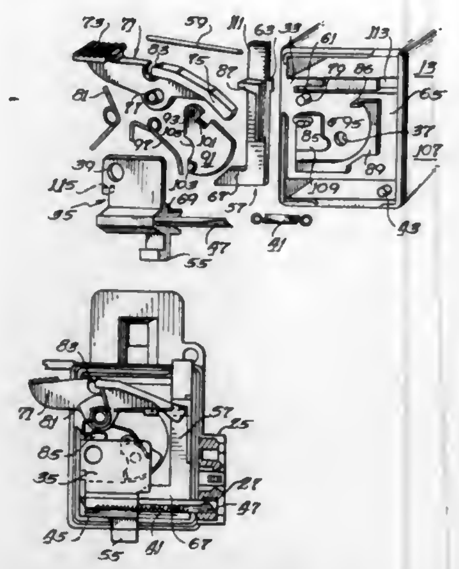
a trigger spring biasing said trigger to a ready position,

said trigger having a part extending exterior of the housing and having an actuator portion for moving said sear lock so as to release said striker element,

said striker element having a pin portion which is aligned with an opening in said housing adjacent a socket for receiving a percussion-ignitable flashlamp,

said pin being proportioned so as to protrude through said aligned opening and actuate said flashlamp when said striker element is moving from said first position to said second position,

a pivotally mounted shutter plate,



spring means biasing said shutter plate to an at-rest position where it blocks said lens opening,

lug means on said shutter plate projecting toward said striker element,

an ear on said striker element projecting toward said shutter plate,

said ear being positioned to hit said lug means and cause said shutter to pivot to a position where it no longer blocks said lens opening and thus allows film exposure to occur,

said spring means having a spring constant such as to maintain said shutter plate in such a non-blocking position for a predetermined amount of time, and

means for halting movement of said striker element in said second position which is located so that said returning shutter plate is halted in an intermediate position by said lug resting against said ear, said shutter plate being proportioned such that it blocks said lens opening in said intermediate position.

4,192,597
PHOTOGRAPHIC APPARATUS FOR SELECTIVELY ACTUATING A PULSABLE ELECTRONIC STROBE

Lawrence K. M. Ting, Bedford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 27, 1978, Ser. No. 955,378

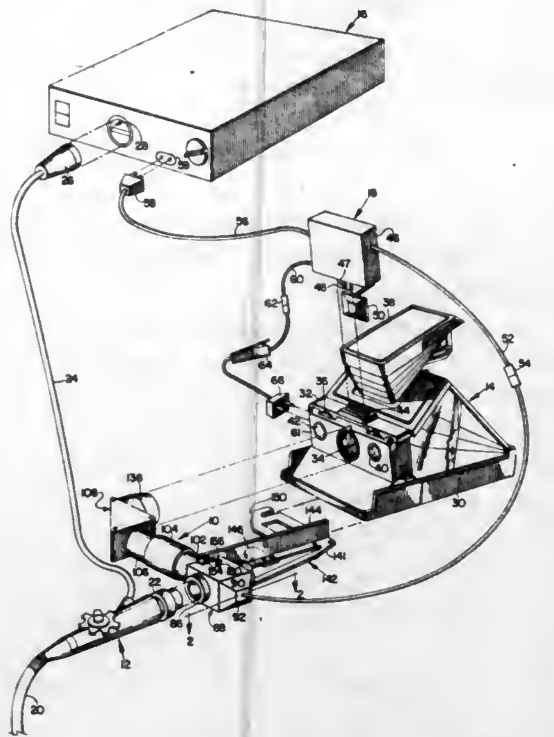
Int. Cl.² G03B *15/03*

U.S. Cl. 354—145 **12 Claims**

1. Photographic apparatus for use with an electronic strobe of the type which produces a light pulse of given intensity and duration in response to receiving a predetermined input switching signal and has a recharge time which is substantially shorter than the light pulse's duration and with automatic cameras of the type which, upon actuation, begin a photographic cycle during which film exposure commences after a predetermined delay upon the opening of an electro-mechanical shutter and thereafter is automatically terminated by a light sensing circuit which measures scene brightness and commands the shutter to close upon detection of a predetermined exposure value and wherein the predetermined delay time to initiation of film exposure varies from camera to camera within select limits, said apparatus comprising:

means responsive to camera actuation for providing an electrical output signal at the instant the camera is actuated;

means, responsive to said electrical output signal, for presenting to the camera's light sensing circuit at least one predetermined level of illumination equivalent to a predetermined scene brightness by which the camera's shutter is caused, via its light sensing circuit, to remain open for a select time;



electrically actuable means connectable to the strobe for providing to the strobe, upon actuation, the predetermined input switching signal by which the strobe is fired; and

control means, electrically coupled with said electrically actuable means and responsive to said electrical output signal, for actuating said electrically actuable means such that a plurality of strobe input switching signals are provided in a sequence of equal intervals which begins at a predetermined time before the shortest possible camera delay time and terminates after the exposure interval following the longest possible delay time so that whenever a camera of the type is used with the strobe type and said apparatus at least a portion of a strobe pulse will occur during the select exposure interval of this type camera.

4,192,598
MIRROR DRIVING DEVICE FOR USE IN A SINGLE LENS REFLEX CAMERA

Akihiko Sato, and Yoshitaka Araki, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

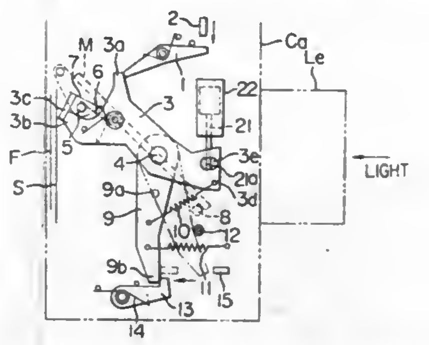
Filed Apr. 12, 1978, Ser. No. 895,614

Claims priority, application Japan, Apr. 19, 1977, 52-44142

Int. Cl.² G03B *19/12*

U.S. Cl. 354—153 **5 Claims**

1. A mirror driving device for use in a single lens reflex camera for controlling ascension and descension of a mirror, said device comprising a driving member pivotally mounted to a body of said camera and having an engaging portion, means for holding the mirror, said holding means being operated by means of reciprocating motion of said driving member to control the ascension and descension of the mirror, and biasing means consisting of a first biasing member and a second biasing member both of which are provided on said driving member, said holding means having a portion surrounded by said first and second biasing members and said engaging portion, said first biasing member having relatively strong biasing force and engaging said engaging portion, said second biasing member having relatively weak biasing force and always biasing said holding means so as to cause the mirror to descend, whereby the mirror is raised when said holding means is moved by said driving member upon forward motion of said driving member and the mirror is lowered when said holding means is moved by said first and second biasing members upon returning motion of said driving member and the mirror is stationed in a viewing-focusing position by pressing said holding means solely with the biasing force of said second biasing member when said driving member returns to its original position.



4,192,599
SWITCH MECHANISM FOR A MOTOR DRIVEN DEVICE

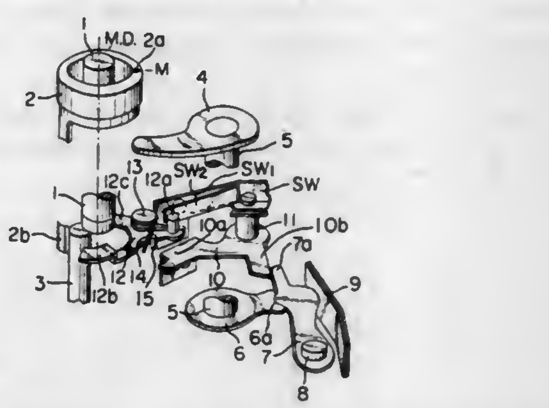
Mikihito Furuya, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 3, 1977, Ser. No. 803,263

Claims priority, application Japan, Jun. 18, 1976, 51-70968

Int. Cl.² G03B *1/18, 17/42*

U.S. Cl. 354—173 **3 Claims**



1. A switch mechanism for a motor driven device in a camera provided with the motor driven device for winding a film by an advance lever, said switch mechanism comprising:

a switch for effecting ON-OFF operation of said motor driven device, said switch having a pair of switch contact members; and

switch control means operatively associated with the advance lever to control operation of said switch, said switch control means assuming different positions respectively for the retracted position and the drawn-out position of the advance lever, and said switch control means being engageable with one of said switch contact members;

said switch and said switch control means being arranged so that the switch is closed for the retracted position of the advance lever and opened for the drawn-out position of the advance lever.

4,192,600
FILM FEED MECHANISM FOR A SPACED APART TAKE-UP SHAFT AND FILM TAKE-UP SPOOL

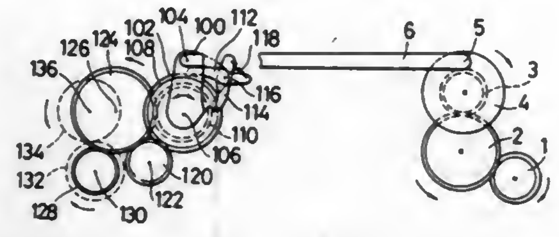
Tohru Karikawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1978, Ser. No. 926,066

Claims priority, application Japan, Jul. 19, 1977, 52-96419[U]

Int. Cl.² G03B *1/14*

U.S. Cl. 354—212 **3 Claims**



1. In a camera film feed mechanism of the type having a film take-up shaft adapted to rotate in only one direction and a link secured at a first end to a control disc coupled to a take-up shaft, said link exhibiting reciprocating movement in a first direction and a second direction opposite said first direction when said take-up shaft is rotated, the improvement comprising:

means coupled to said second end of said link for converting said reciprocating movement in both said first and said second directions into a rotational movement of only one direction and for providing said rotational movement to a spool gear associated with said film take-up shaft.

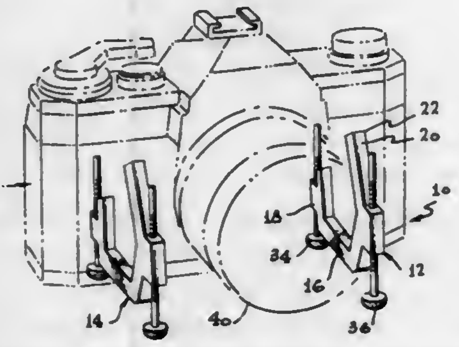
4,192,601
CAMERA QUADRIPOD

Robert S. Frankel, 11905 Woodbridge St. #10, Studio City, Calif. 91604

Filed Dec. 4, 1978, Ser. No. 966,218

Int. Cl.² G03B *17/00;* A47B *23/00*

U.S. Cl. 354—293 **17 Claims**



1. A camera quadripod comprising:

a pair of substantially identical bipods, each of said bipods having first and second spaced arms, one of said arms being resilient, a crossbar interconnecting said arms so that a camera body can be engaged on said crossbar and resiliently detachably embraced within said arms for support of the camera body, each of said bipods having first and second spaced legs, at least one of said legs on each of said bipods being adjustable for supporting said quadripod in a selected position and for supporting a camera engaged within the arms of and supported by said quadripod in a selected position.

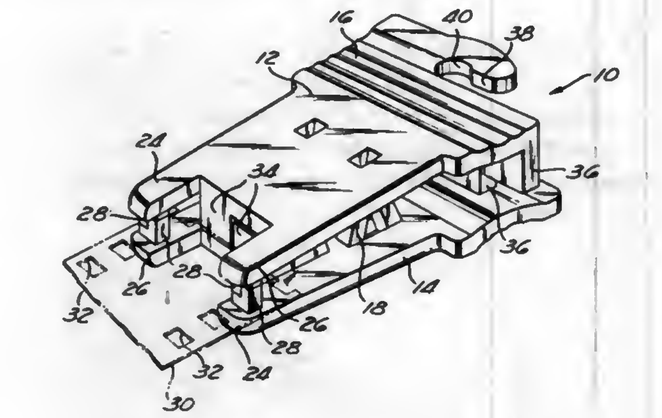
4,192,602
PHOTOGRAPHIC FILM CLIP

Kenneth C. Lamoreaux, Jr., 30 San Jano, Goleta, Calif. 93017

Filed Mar. 20, 1978, Ser. No. 890,648

Int. Cl.² G03D *13/10*

U.S. Cl. 354—346 **9 Claims**



1. A clip for use primarily to suspend in the air a wet strip of recently processed photographic film to facilitate drying of the film, said clip comprising:

a pair of identical body members hingedly connected together in a facing relationship, each said body member having a fore end and a rear end with said fore end and said rear ends respectively being adjacent each other, said body members being movable in respect to each other between a closed position and an open position;

a first projection formed on each one of said members in the area of said fore end, each said first projection having an irregularly shaped outer surface, said irregularly shaped outer surfaces of said first projections cooperating together in a mating relationship when said body members are in said closed position; and

a pair of second projections located on each of said body members in the area of said rear ends, said second projections extending toward the other of said body members, said second projections to contact the other of said body members when said body members are in said open position to therefore prevent further opening movement of said body members, and when said body members are in said closed position said second projections cooperate together to provide lateral stability between said body members.

4,192,603
REPLENISHABLE PHOTOCONDUCTOR SYSTEM

Kenneth J. Buck, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 27, 1978, Ser. No. 946,006

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 BE **8 Claims**

1. A belt assembly having a replaceable photoconductive belt, including:

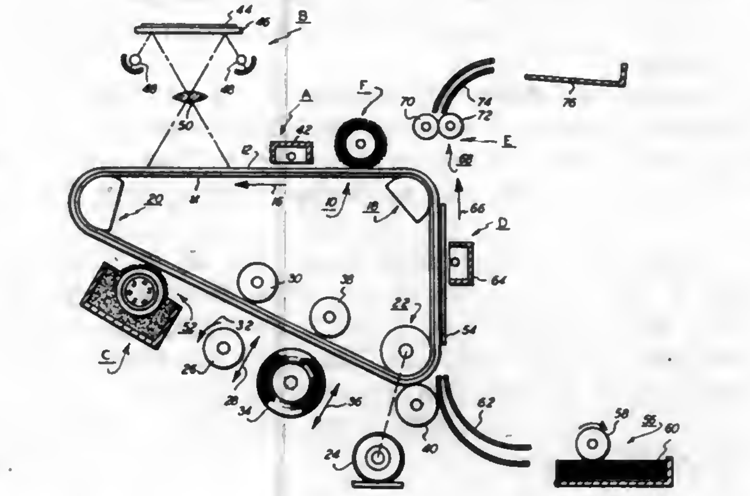
a sub-belt;

means for supporting movably said sub-belt, said suporting means defining a path about which said sub-belt moves in unison with the photoconductive belt secured releasably thereon;

a supply spool holding the photoconductive belt;

means for moving said supply spool from a position wherein the lead edge of the photoconductive belt contacts said sub-belt so as to be secured releasably thereto to a position remote therefrom with the lead edge of the photoconductive belt remaining secured to said sub-belt; and

means for partially unwinding the photoconductive belt from said supply spool with said supply spool being in the remote position so that the photoconductive belt moves freely and adheres to said sub-belt in a substantially wrinkle-free condition.



4,192,604
BIAS VOLTAGE SOURCE FOR APPLYING A BIAS VOLTAGE ON A MAGNETIC BRUSH MEANS OF AN ELECTROSTATIC PRINTING APPARATUS

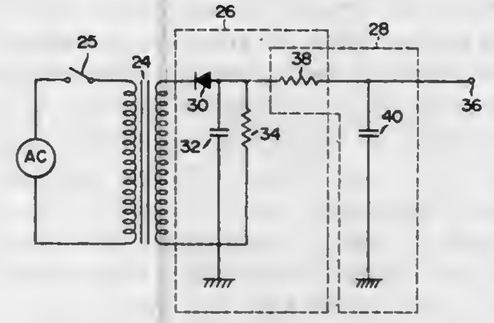
Mitsuaki Koyama, Higashikurume, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 1, 1978, Ser. No. 882,141

Claims priority, application Japan, Mar. 9, 1977, 52-25631

Int. Cl.² G03G *21/00*

U.S. Cl. 355—3 DD **5 Claims**



1. A bias voltage source for applying a bias voltage to a magnetic brush which contacts a photosensitive surface of a rotatable cylindrical drum, comprising:

a transformer whose primary winding is connected to an input power source;

a switch means which is connected between the power source and the primary winding of said transformer and is opened when the rotation of the cylindrical drum is brought to rest;

a rectifier circuit connected to the secondary winding of said transformer and including a series circuit formed of a uni-directional current flow means and an energy storage means, and a protective resistor connected between said uni-directional current flow means and the magnetic brush means to protect said magnetic brush means; and

charge storage means connected between said energy storage means and the magnetic brush and including a capacitor connected in parallel to said energy storage means through said protective resistor for the magnetic brush means for slowly attenuating a bias voltage applied to the magnetic brush when said switch means is opened.

4,192,605
METHOD AND APPARATUS FOR MAKING COLOR PRINTS

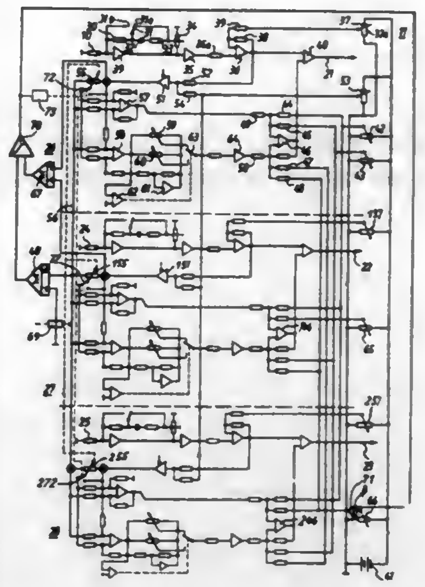
Berthold Fergg, Taufkirchen; Günter Findeis, Sauerlach, and Wolfgang Zahn, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 8, 1978, Ser. No. 903,691

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722321

Int. Cl.² G03B *78*

U.S. Cl. 355—38 **13 Claims**



6. Apparatus for making color prints on color sensitive printing material from color transparencies made on universal film by exposure to light of different color temperature, especially daylight or artificial light, comprising means for uniformly illuminating successive transparencies by light including the three primary colors; and control means including means for ascertaining the density of each transparency and hence the amount of light by which the respective transparency was exposed, means for measuring the integrated transmittances of each transparency in two different colors which transmittances are influenced by the color temperature of light by which the respective transparency was exposed, means for generating for each transparency a first signal a characteristic of which denotes a predetermined ratio of said transmittances, means for comparing said characteristic of said first signal with the corresponding characteristic of a reference signal denoting a threshold value and for generating a third signal denoting the color temperature of light by which the respective transparency was exposed, means for varying said characteristic of said reference signal as a function of the overall density of the respective transparency, and means for regulating the reproduction of each transparency on printing material in dependency on the color temperature of light denoted by the respective third signal.

4,192,606
COMBINATION COPY MACHINE AND MICROFILM CAMERA

Bernard Lewis, 2049 S. Ocean Dr., Hallandale, Fla. 33009

Filed Aug. 16, 1978, Ser. No. 934,095

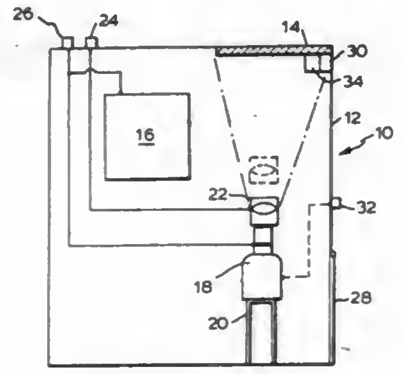
Int. Cl.² G03B *27/52*

U.S. Cl. 355—40 **4 Claims**

1. A device for providing a microfilm copy of each document copied on a conventional copy machine and attachable thereto, comprising:

a conventional copy machine including a housing;

a camera, the camera mounted within said copy machine housing and disposed in optical communication with the document holder of said conventional copy machine; and a means for driving said camera for single frame photography connected to the means for actuating the copy machine such that whenever the copy machine is actuated a single frame microfilm photograph will be taken.



4,192,607

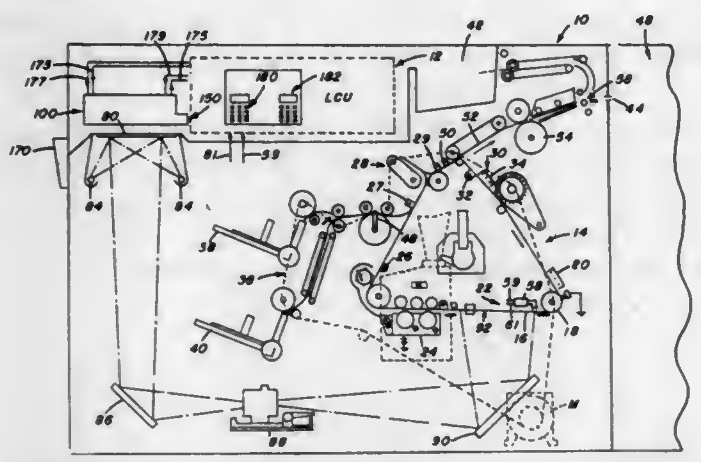
APPARATUS FOR SELECTIVELY COPYING DOCUMENTS FROM TWO DIFFERENT DOCUMENT FEEDERS

Charles T. Hage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 12, 1978, Ser. No. 924,106

Int. Cl.² G03B *27/48, 27/50*

U.S. Cl. 355—50 **5 Claims**



1. Apparatus for feeding document sheets to an exposure station for copying from two spaced locations comprising: means defining a plurality of sheet paths extending from the locations to the exposure station, means for feeding document sheets to the exposure station along each of said paths, and control means for operating said feeding means, said control means including means responsive to the presence of document sheets at both locations for operating the feeding means in a programmed order providing preference for feeding of document sheets to the exposure station for copying first from one location and then from the other location.

4,192,608

COPYING APPARATUS

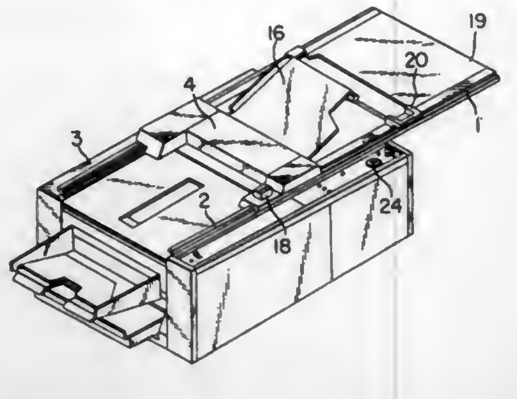
Yoshitomo Goshima, Yokohama; Hiroyuki Hattori, Mitaka; Shiro Komaba, Kawasaki, and Kazumi Umezawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 749,060, Dec. 9, 1976, abandoned, which is a division of Ser. No. 585,602, Jun. 10, 1975, Pat. No. 4,110,029, which is a division of Ser. No. 509,744, Sep. 26, 1974, Pat. No. 3,957,368. This application Oct. 10, 1978, Ser. No. 949,550

Claims priority, application Japan, Sep. 27, 1973, 48-108677; Oct. 1, 1973, 48-111249; Oct. 5, 1973, 48-116829[U]; Oct. 5, 1973, 48-116830[U]; Nov. 30, 1973, 48-135155; Dec. 13, 1973, 48-140956; Dec. 20, 1973, 48-146414[U]; Jan. 8, 1974, 49-5503; Jan. 8, 1974, 49-5504; Feb. 12, 1974, 49-16988

Int. Cl.² G03B *27/48, 27/50, 27/70*

U.S. Cl. 355—51 **2 Claims**



1. A device for controlling a movable member of a copying machine which reciprocates in forward and reverse directions to scan an original, comprising:

a movable member for carrying and reciprocating an original to be copied;

driving means for moving said movable member in forward and reverse directions;

buffer stopping means for absorbing and storing energy from the reverse movement of said movable member while braking and stopping the reverse movement of said movable member at an end position of the reverse movement, and for applying a force in the forward direction to said movable member from the stored energy upon the start of forward movement of said movable member;

movement restricting means for preventing the forward movement of said movable member, while allowing the reverse movement thereof, when said movable member is braked by said buffer stopping means; and

control means for releasing the preventing action of said movement restriction means to enable application of the force in the forward direction from the stored energy in said buffer stopping means to said movable member, when the forward movement of said movable member is to be started.

4,192,609

METHOD FOR EFFECTING REGISTRATION FOR A COPYING APPARATUS

Tatsuo Tani, Tokyo, and Masao Kono, Yokohama, both of Japan, assignors to Ricoh Co., Ltd., Japan

Filed Mar. 14, 1978, Ser. No. 886,355

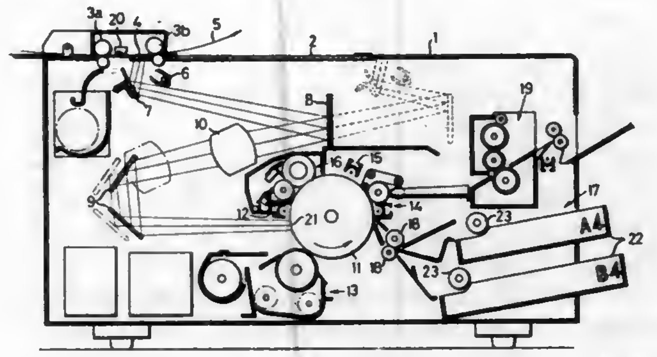
Claims priority, application Japan, Mar. 18, 1977, 52-29337; Mar. 22, 1977, 52-30483; Apr. 20, 1977, 52-44539; Apr. 22, 1977, 52-45871

Int. Cl.² G03B *27/32;* G03G *15/28*

U.S. Cl. 355—77 **4 Claims**

1. A method for effecting registration for a copying apparatus having a magnification ratio varying device, in which a photosensitive member in motion is exposed to an optical image of an original by slit exposing to form an electrostatic latent image thereon, by varying the original scanning velocity in accordance with the magnification ratio selected; such method comprising the steps of:

providing first detection means detecting the leading end of the original in a path of travel of the original, to produce a first detection signal; providing an other detection means detecting a reference position of the photosensitive member in motion, to produce an other detection signal; temporarily stopping the movement of the original after the lapse of a predetermined time following production of the first detection signal and before exposing the photosensitive member to the original; re-starting the travel of the original after the lapse of a predetermined time following the production of said other detection signal; and delivering a transfer-printing sheet after the lapse of a predetermined period of time following the re-starting of the original, with the predetermined period of time being varied to conform with the selected magnification ratio.



4,192,610

METHOD AND DEVICE FOR THE MEASUREMENT OF PHOTOELASTICITY

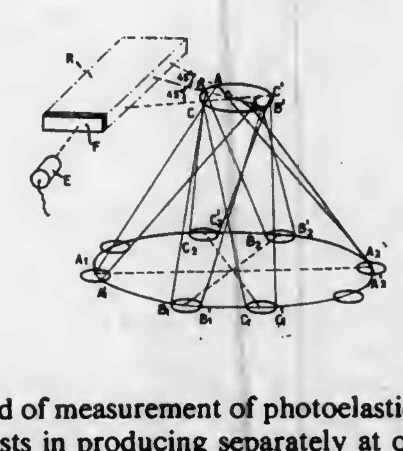
Dimitri Paraskevas, Creil, France, assignor to Centre Technique des Industries Mecaniques, Senlis, France

Filed Apr. 13, 1977, Ser. No. 787,280

Claims priority, application France, Apr. 14, 1976, 76 10923

Int. Cl.² G01B *11/18;* G01J *4/00*

U.S. Cl. 356—33 **12 Claims**



1. A method of measurement of photoelasticity wherein said method consists in producing separately at one and the same point of measurement of a specimen of photoelastic material four beams of linearly polarized light by Rayleigh scattering in one direction of observation at right angles to a unitary sheet of said specimen, two of said beams being emitted from a front face of the sheet whilst the two others are emitted from the opposite face or rear face of the sheet so as to pass through said sheet, said beams being produced by Rayleigh scattering respectively from four incident beams which are in turn located in the plane of the front face in the case of the first two beams and in the plane of the rear face in the case of the other two beams, in determining in the common direction of scattering and on each of the four scattered beams the components of the four Stokes vectors representing the corresponding forms of polarized light received externally of the specimen, in determining from said components the elements of the Mueller matrix operator representing the transformation to which the polarized light is subjected as it passes through said sheet, in carrying out the aforesaid determination of the Mueller operator in respect of two different light-wavelengths in succession, and in deducing therefrom the state of mechanical stress in the plane of the unitary sheet.

4,192,611

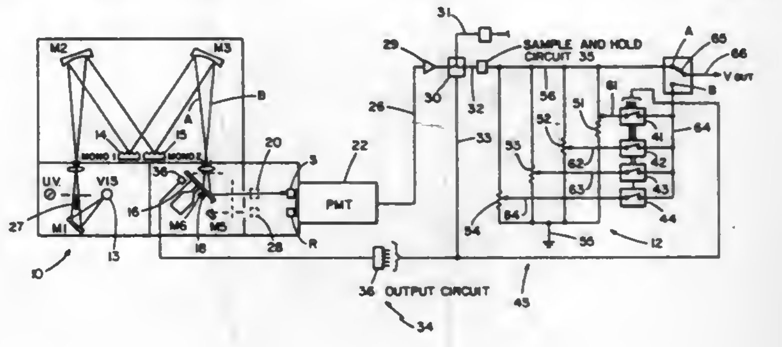
REFLECTIVITY COMPENSATING APPARATUS

Horace T. Jones, Rockville, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 13, 1978, Ser. No. 886,284

Int. Cl.² G01J *3/42*

U.S. Cl. 356—320 **7 Claims**



1. In an optical system, such as a spectrophotometer, wherein a light beam is reflected by two or more reflecting surfaces to a photodetector and where the reflectivity of each surface varies slightly, the improvement residing in means for compensating for the differences in reflectivity between two or more reflecting surfaces which reflect the same light to a photodetector, said compensating means including impedance means adapted to be coupled to an output signal channel from the photodetector, said impedance means including at least two different impedances, switch means for coupling the impedance to said output signal channel in a manner to attenuate the output signal on the signal channel and control means for synchronously and cyclically operating said switch means to couple sequentially to the output signal channel a particular impedance related to the reflectivity of the reflecting surface from which the signal then on the signal channel was generated so that output signals generated by the same light and reflected by the two or more reflecting surfaces are equal in value.

4,192,612

DEVICE FOR CONTACT-FREE THICKNESS MEASUREMENT

Viktor Bodlaj, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 647,669, Jan. 9, 1976, Pat. No. 4,068,955. This application Nov. 30, 1977, Ser. No. 856,005

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654478

The portion of the term of this patent subsequent to Jan. 17, 1995, has been disclaimed.

Int. Cl.² G01B *11/06*

U.S. Cl. 356—381 **9 Claims**

1. A device for contact-free thickness measurement comprising means for contact-free thickness measurement of an object tilted relative to a reference plane, said means including:

light source means for producing a sharply bundled light ray;

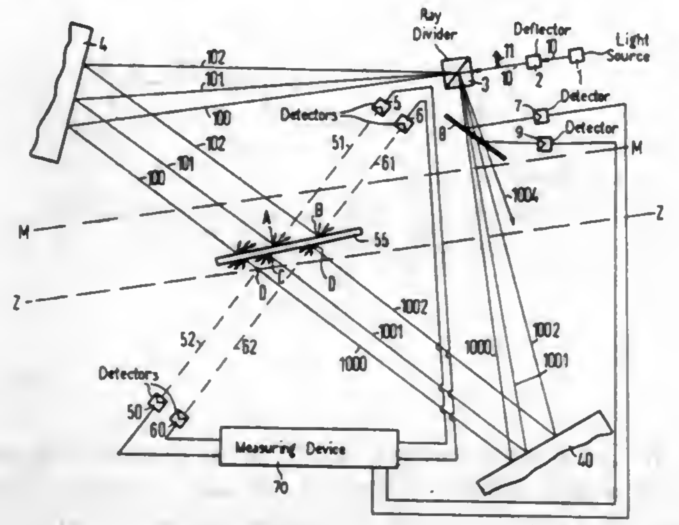
a single light deflector means for deflecting the sharply bundled light ray and a single ray divider means for producing two simultaneously and periodically deflectable light rays to be guided over surfaces of the object;

means for projecting one of the light rays on one surface of the object and the other of the light rays on an opposite surface of the object;

reference detector means for determining a time to at which said two rays corresponding to a zero position of the light deflector means strike the object;

a first detector means for picking up light only along a first sighting line which intersects the object at a first point on one surface thereof, said first detector means detecting a time t_A when a first of the two light rays strikes the first point;

a second detector means for picking up light only along a second sighting line which intersects the object at a second point on said one surface thereof, said second detector means detecting a time t_B when the first light ray strikes the second point;



a third detector means for picking up light only along a third sighting line which intersects the object at a third point on the opposite surface thereof, said third detector means detecting a third time t_C when a second of the two light rays strikes the third point; and

a fourth detector means for picking up light only along a fourth sighting line which intersects the object at a fourth point on the opposite surface thereof, said fourth detector means detecting a fourth time T_D when the second of the two light rays strikes the fourth point.

4,192,613
CONTOUR DETECTING AND DIMENSION MEASURING APPARATUS

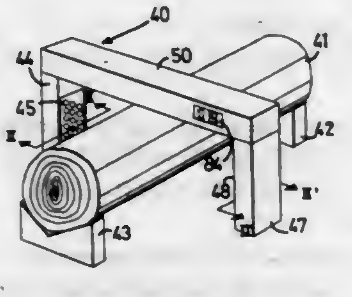
Martin Hammar, Erik Sandbergs Gata 21, S-171 34 Solna, Sweden

Continuation of Ser. No. 750,552, Dec. 14, 1976, abandoned. This application Aug. 24, 1978, Ser. No. 936,644

Claims priority, application Sweden, Jan. 8, 1976, 7600141

Int. Cl.^{2} G01B ***11/10***

U.S. Cl. 356—386 **7 Claims**



1. Apparatus for detecting the contours of an object, comprising:

(a) a measuring station to and from which said object is moved;

(b) a plurality of light transmitting means at said station for providing a scan of an equal plurality of light rays;

(c) an equal plurality of light receiving means at said station each arranged to sequentially receive light from only a complementary one of said light transmitting means;

(d) each of said light transmitting and light receiving means having a predetermined physical dimension in a predetermined direction, said physical dimension restricting the minimum closeness between two light transmitting and light receiving means, respectively, to an edge-to-edge relationship;

(e) means for guiding said object through the paths of the light rays such that said light receiving means are prevented by said object from receiving light from those of the light rays that shine on one side of each of said contours;

(f) counter means for counting the number of said light receiving means which receive light from said complementary light transmitting means;

(g) said light transmitting means disposed in a predetermined configuration having a first and a second row of light transmitting means, the distance between the centers of two consecutive light transmitting means in each of the rows having a predetermined like value, the rows being arranged in parallel and staggered such that the center of each said light transmitting means in one of the rows is located at a predetermined distance from a point in said one row which point lies opposite to the center of a said light transmitting means in the other row, said predetermined distance being less than said predetermined value and less than said physical dimension;

(h) said light receiving means being disposed in a configuration corresponding to said predetermined configuration; and

(i) movable light source means being provided to sequentially activate a predetermined number of said light transmitting means alternately in each of said rows such that each of said rows emits a scan of light travelling in said predetermined direction, the scans of the different rows forming a composite scan wherein the distance between two consecutive light rays, as seen along said predetermined direction, is equal to said predetermined distance.

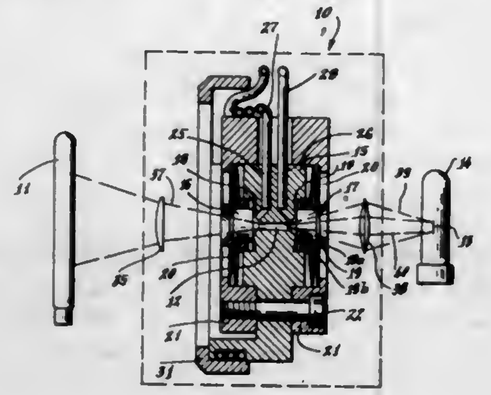
4,192,614
L/C DETECTOR CELL ASSEMBLY

Charles F. deMey, II, West Redding, and Charles C. Helms, Trumbull, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 547,758, Feb. 6, 1975, abandoned. This application Jul. 28, 1978, Ser. No. 928,928

Int. Cl.^{2} G01N ***21/02***

U.S. Cl. 356—410 **4 Claims**



1. A detector cell assembly for use in a spectrophotometer having a source of radiation and a photodetector with a photosensitive surface spaced from the source, said cell assembly being positionable between the radiation source and the photodetector within the spectrophotometer, and comprising:

a body having an open-ended bore therethrough with radiation transparent windows respectively closing the ends of said bore which thereby defines the spectrophotometer detector cell, said body having an inlet passage and an outlet passage opening into said bore at separate ends thereof for flowing fluid therethrough;

means for providing a heat sink effect whereby the temperature of the fluid flowing through the cell is maintained substantially constant;

optical means for focusing the radiation from the source into said bore with the diameter of the radiation being less than the diameter of said bore; and

energy collecting means interposed between said detector cell and said photosensitive surface for collecting the radiation exiting from said bore and convergently directing it to said photosensitive surface, including the maximum deviated rays of radiation resulting from changes in refractive index of fluid flowing through said cell bore, said energy collecting means and said photosensitive surface being spaced relative to one another such that the maximum deviated rays and principal rays between said energy collecting means and said photosensitive surface intersect in a plane coincident with and defining an area on said photosensitive surface and which area remains substantially constant in size and location on said photosensitive surface for all radiation exiting from the bore;

said area being located between said energy collecting means and its front focal plane.

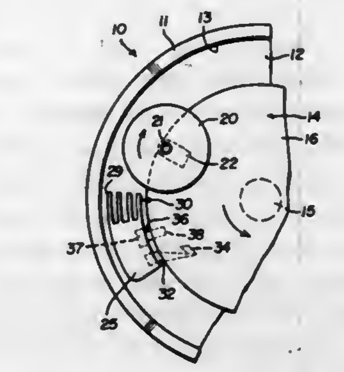
4,192,615
SAND MULLING MACHINE PLOW

Anthony C. Fortunski, Grosse Pointe Park, and Everett G. Gentry, Grosse Ile, both of Mich., assignors to Fargo Machine & Tool Company, Detroit, Mich.

Filed Feb. 23, 1979, Ser. No. 14,708

Int. Cl.^{2} B01F ***7/20***

U.S. Cl. 366—65 **4 Claims**



1. In a mulling plow for use in a sand mulling machine having a vertically axised mulling bowl with a bottom wall and a generally cylindrical shaped peripheral wall and a vertically axised, central, rotatable hub, with the plow being formed as a generally flat, elongated plate spaced away from, but secured to the hub for rotation therewith, with the plate located adjacent the peripheral wall and being sloped along its longer length dimension relative to the bottom wall, so that its leading length edge, i.e., its narrower edge which leads in the direction of rotation, is close to the bottom wall, and its opposite trailing, edge is spaced a distance above the bottom wall, wherein the plow rotates in a circular path adjacent the peripheral wall and lifts and directs the sand material being mulled upwardly from the bowl bottom wall, that is, from the leading edge, and in an upwardly sloped direction along the upper, elongated surface of the plate and across the trailing edge, the improvement comprising:

the plow trailing edge portion being formed in the shape of a number of spaced apart, narrow, elongated, roughly parallel fingers extending from the trailing edge approximately one-third the length dimension of said plow plate towards the leading edge of the plate to form the rear portion of the plow in a comb-like configuration;

said spaced apart fingers providing spaces between adjacent fingers such that the sand material is lifted upwardly along the sloped surface of said plow plate, the material in part passes between said fingers and in part over the fingers and said material is thereby subjected to a combing-like action as it passes along and leaves the trailing portion of the plate to blend and mix the sand material.

4,192,616
INJECTION UNIT FOR INJECTION MOLDING APPARATUS

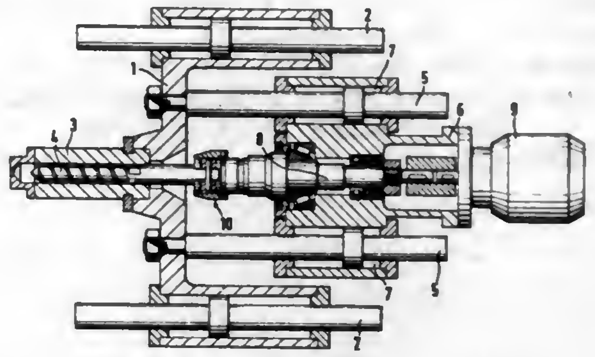
Hermann Spanier, Windhagen, Fed. Rep. of Germany, assignor to Dr. Boy KG, Fernthal, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 901,094

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 2719067

Int. Cl.^{2} B29F ***1/04***

U.S. Cl. 366—79 **7 Claims**



1. In an injection unit for an injection molding apparatus, having a guide casing, a plasticizing cylinder detachably mounted on said guide casing, a helix mounted for axial and rotational movement within said plasticizing cylinder, and an axially and rotationally reciprocable shaft for actuating said helix, the improvement for detachably coupling said helix to said actuation shaft wherein said actuation shaft has a fork-shaped end forming a slit in the end face of said shaft, said helix is provided with a flattened end for mating with said fork-shaped end of said actuation shaft, said fork-shaped end and said flattened end are provided with respective radially extending boreholes which are co-aligned when said flattened end and fork-shaped end are mated, further including a pin extending through said aligned boreholes and a ring mounted slidably on said actuation shaft for securing said pin in position in said boreholes, said ring being mounted on said actuation shaft for movement between a locking position completely encircling said boreholes and pin to prevent retraction of said pin from said boreholes and an uncoupling position completely axially spaced from said boreholes permitting removal of said pin from said boreholes, and releasable means for securing said locking ring in said locking position.

4,192,617
SCREW EXTRUDER FOR PROCESSING RUBBER OR PLASTICS MATERIAL

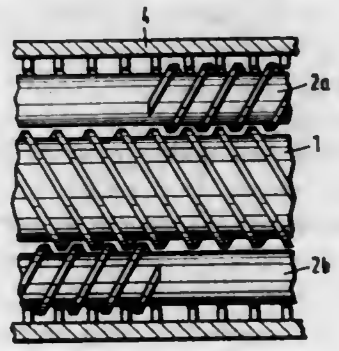
Horst Spielhoff, Aligse, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,436

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1977, 2719095

Int. Cl.^{2} B29B ***1/10;*** **B29F** ***3/02***

U.S. Cl. 366—83 **9 Claims**



1. A screw extruder for processing rubber and plastics materials comprising a cylinder jacket with a feed hopper, a central geared shaft and geared planet shafts disposed between said

central shaft and said cylinder jacket and drivably engaged with said central shaft and said cylinder jacket, wherein parts of some of said planet shafts are bare of gearing.

4,192,618

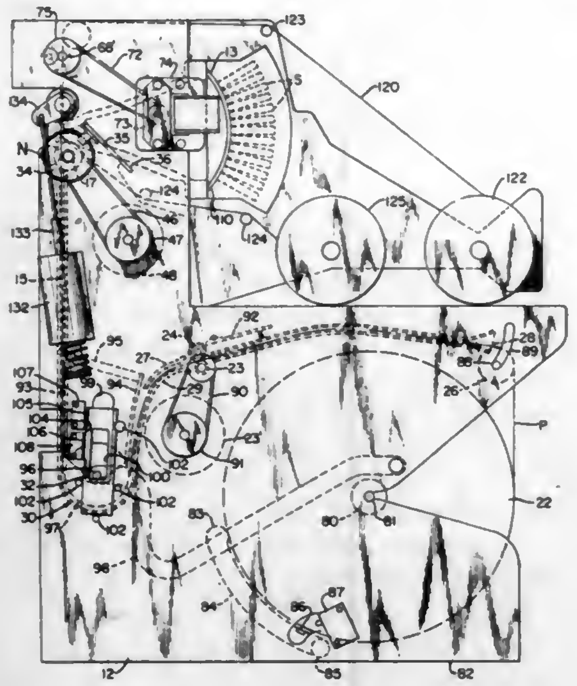
HIGH SPEED TICKET PRINTER

Nicholas Kondur, Jr., Riverton, Wyo.; James E. Blomquist, San Antonio, Tex., and Roland R. Rucinski, Riverton, Wyo., assignors to LRC, Inc., Riverton, Wyo.

Continuation of Ser. No. 782,092, Mar. 28, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 957,921

Int. Cl.² B41J *3/10, 15/16, 11/70*

U.S. Cl. 400—124 **15 Claims**



6. In ticket printing apparatus wherein a print bar is disposed in confronting relation to a print head and a guide path is established for advancement of a length of paper stock from a continuous supply roll betwen the print bar and print head, the combination comprising:

- paper drive means stationed in the guide path upstream of said print head for continuously advancing the paper at a predetermined rate of speed along the guide path including means for sensing the rate of advancement of the paper along the guide path and generating signals correlated with such rate of advancement;
- a cutter mechanism disposed in the guide path downstream of said print bar including a stationary blade member provided with a cutting edge in proximity and in facing relation to the path of paper travel away from said print head, and a rotary blade including a cutting edge aligned with and in spaced facing relation to the stationary cutting edge, and reciprocal drive means for energizing said rotary blade to shear across said stationary cutting edge whereby to sever the paper on a line normal to its direction of travel without interrupting continuous advancement of said paper past said print head;
- tension sensing means for sensing the tension in said paper as it is drawn along said guide path by said paper drive means, and drive means cooperative with said paper drive means when energized in response to increasing tension in said paper as sensed by said tension sensing means to aid in advancing said paper along said guide path; and
- an ejector mechanism movable into engagement with the paper downstream of said cutter mechanism including roller drive means to advance the paper as it is severed in a direction away from said cutter mechanism, and deflector means for deflecting the paper as it is severed into a discharge area downstream of said ejector mechanism.

4,192,619

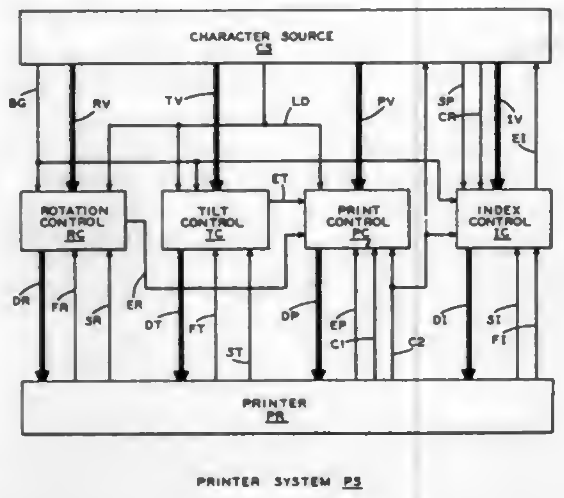
ELECTRONICALLY CONTROLLED PRINTER SYSTEM

Edward H. Lau, Old Westbury, N.Y., assignor to Redactron Corporation, Yaphank, N.Y.

Continuation of Ser. No. 492,692, Jul. 29, 1974, abandoned. This application Jan. 19, 1976, Ser. No. 650,414

Int. Cl.² B41J *1/60*

U.S. Cl. 400—163 **6 Claims**



1. A printer comprising a platen, a rocker means, a print shell having a plurality of type characters thereon, a support means on said rocker means to support said print shell to rotate about a first axis and to tilt about a second axis, a first motor having a shaft, said first motor and shaft being carried by said rocker means, means for connecting the shaft of said first motor to said print shell for rotating the latter whereby a unitary structure is obtained, means for pivoting about a third axis said rocker means carrying said print shell and said first motor to drive a type character on said print shell against said platen, a second motor supported remotely from said rocker means, an arm connected to said second motor, and a link having one end pivotably connected to said arm and a second end pivotably connected to said support means, a straight line joining the ends of said link passing through said third axis about which said rocker means pivots.

2. A printer comprising a platen, a rocker means, a print shell on said rocker means having a plurality of type characters, means on said rocker means for driving said print shell to rotate about a first axis, means for pivoting said rocker means about a pivot axis to drive a type character on said print shell against said platen, a support means on said rocker means to support said print shell to tilt about a second axis, a motor supported remotely from said rocker means, an arm connected to said motor, a link having one end pivotably connected at a first point to said arm and a second end pivotably connected at a second point to said support means, the line connecting said points passing through said pivot axis.

4,192,620

LOOSE LEAF BINDER

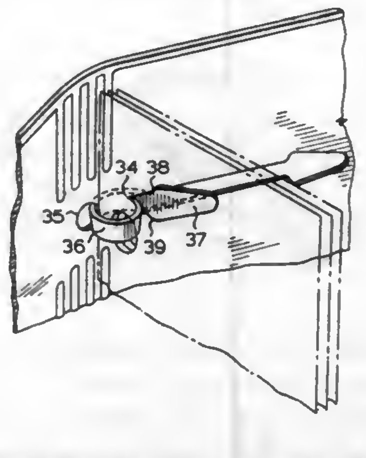
Gerhard Jahn, Apt. 1907, 655 Broadview Ave, Toronto, Ontario, Canada

Continuation of Ser. No. 636,817, Dec. 1, 1975, abandoned. This application Jan. 19, 1979, Ser. No. 4,811

Int. Cl.² B42F *3/04*

U.S. Cl. 402—15 **4 Claims**

1. A binder of one step construction manufactured from a single sheet of material comprising front and back covers, a spine disposed therebetween joining said covers at hinge lines about which the covers pivot relative to the spine, and forming a continuation of the plane of the adjacent covers, a plurality of fastening means, each fastening means formed integrally from a portion of one of said covers thereby presenting a cut-out portion in the cover corresponding to the shape of the fastening means when a part of the fastening means is lifted from the plane of the binder cover, each of said fastening means comprising a thin, narrow, bendable strap and a wider tab, said strap being connected to the cover at one end, said tab being disposed at the other end of said strap, and being of a width at the juncture with the strap to define therewith at least one locking shoulder, a plurality of apertures disposed in said spine, one aperture for each fastening means, each said fastening means being inserted through the corresponding aperture for positioning exterior of the binder cover and said tab inserted through the corresponding cut-out portion in the cover to be positioned within the interior of the binder and be locked and secured therein by at least one locking shoulder of said tab engaging cover portions on either side of the cut-out portion.



4,192,621

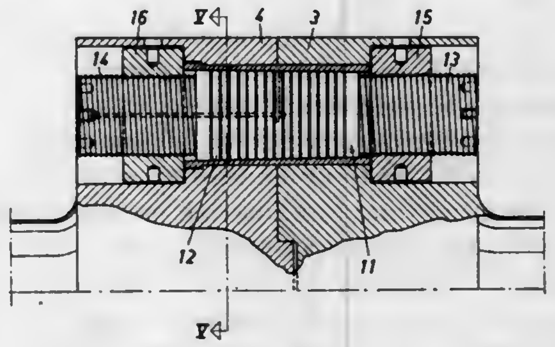
METHOD FOR INTERCONNECTING TWO SHAFT-ENDS AND A SHAFT COUPLING MADE IN ACCORDANCE WITH SAID METHOD

Aksel Barth, Hisings Backa, Sweden, assignor to Ab Gothenburg Motor, Gothenburg, Sweden

Filed Sep. 26, 1978, Ser. No. 945,912

Int. Cl.² F16D *1/02*

U.S. Cl. 403—15 **2 Claims**



2. A shaft coupling for interconnecting two flanged shaft ends comprising taper pin bolts and expander sleeves cooperating therewith, said bolts and sleeves having the same inner taper, and extending through bores in the flanges, means for fixing the axial position of the sleeves in the respective bores, each pin bolt including a shank located inside a respective sleeve, said shank having cumferential grooves communicating with a feed passage, said passage communicating with the larger end of the taper bolt for the supply of pressure medium to said grooves, said bolt shank having a threaded shaft extension at its smaller end, a nut threaded on said extension, said extension projecting beyond said nut for the connection of a tightening device, said means for fixing the axial position of the sleeves in the bores comprising a locking washer designed to be applied to each said shank extension outside the bore.

4,192,622

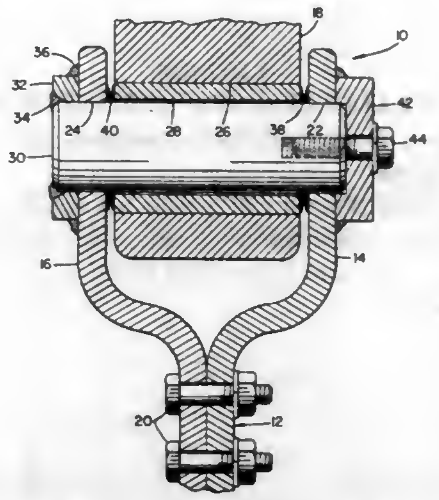
ARTICULATED JOINT INCLUDING BELLEVILLE SPRING SEALS MAINTAINED IN A PRESELECTED COMPRESSED STATE

Gary L. Stecklein, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 15, 1979, Ser. No. 20,609

Int. Cl.² F16C *11/00;* **F16D** *1/12*

U.S. Cl. 403—146 **1 Claim**



1. In an articulated connection between first and second members, the first member including a pair of parallel portions disposed on opposite sides of and pivotally interconnected to the second member by a pivot pin assembly including aligned holes located in the pair of parallel portions and the second member, a bushing located in the hole of the second member and receiving a pin extending into the holes in the pair of parallel portions, and first and second pairs of opposed Belleville washers located on the pin at opposite ends of the bushing, the improvement comprising: fastening means releasably securing at least one of the pair of parallel portions in place; said pin being fixed to a first one of the pair of parallel portions; a cap disposed against an outer surface of a second one of the pair of parallel portions so as to cover the hole therein; a first end of the pin being received in the cap; and a cap screw extending through the cap and into the pin and holding the pin tight against the cap to thereby effect preselected compression of the pairs of Belleville springs between the pair of parallel portions and the opposite ends of the bushing.

4,192,623

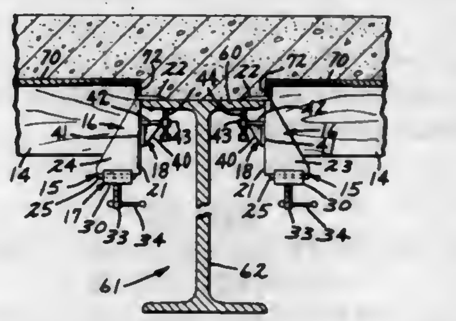
ADJUSTABLE JOIST HANGER

Carl W. Borg, 1040 Garland Ln., Wayzata, Minn. 55391

Continuation of Ser. No. 807,504, Jun. 17, 1977, abandoned, which is a continuation of Ser. No. 617,498, Sep. 29, 1975, abandoned. This application Jan. 26, 1978, Ser. No. 872,385

Int. Cl.² E04G *21/00*

U.S. Cl. 403—232.1 **17 Claims**



1. A joist hanger comprising, in combination:

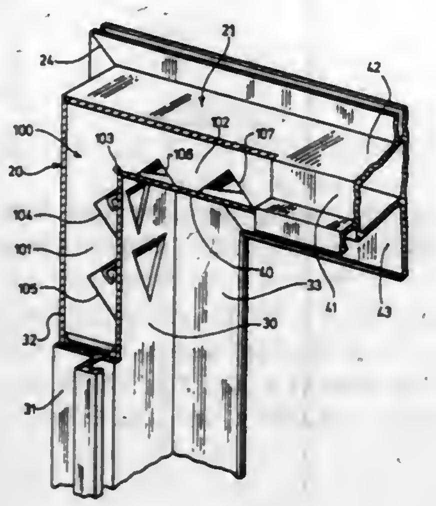
(a) a body including an elongated flat member;

(b) a support member projecting perpendicularly from the face of said member, in a first direction only, at one end thereof;

(c) and a pair of parallel walls projecting from said flat member in the opposite direction only and mutually spaced by the thickness of a joist;
(d) joist support means carried by said walls at the end of said body remote from said lip and adjustably projecting between said walls and parallel to said body;
(e) and clamping means removably carried by said flat member and adjustably parallel to said flat member for cooperating with said support member to secure said hanger orthogonally to an object such as the flange of a steel beam.

4,192,624
FRAME CORNER STRUCTURE

Carlo G. Bucci, Bronte, Canada, assignor to Repla Limited, Oakville, Canada
Filed Sep. 8, 1977, Ser. No. 831,521
Claims priority, application Canada, Jul. 20, 1977, 283119
Int. Cl.² F16B *12/36*
U.S. Cl. 403—295 **2 Claims**

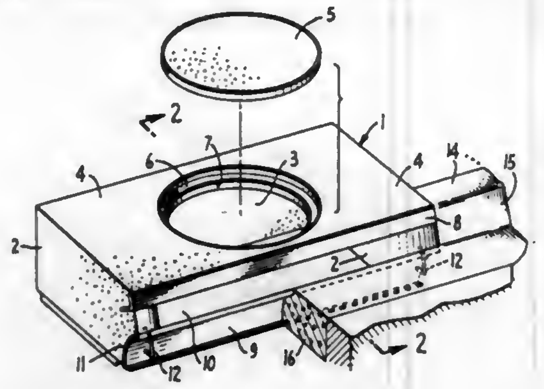


1. A corner structure for window frames and the like comprising:
- a bracket having a pair of angularly disposed legs, each leg being of rigid metal and having a surface opposed to a surface on an adjacent leg, each opposed surface also having a pair of longitudinally spaced triangular depressions therein;
- a pair of metal frame members each having a longitudinally extending channel extending from a mitred end, each channel being defined by opposed sides slideably receiving a respective leg of the bracket;
- the depression in one surface of each leg nearest the opposed surface of the other leg having a depth less than the depth of the other depression by at least the thickness of the adjacent side of said channel; and
- the said adjacent side of each channel having a pair of longitudinally spaced tongues extending in a direction away from the respective mitred end into a respective depression, each tongue engaging at least part of both surfaces of the depression to urge said mitred ends of said frame members together, the two longitudinally spaced depressions in each leg being laterally offset relative to one another, with the tongues in said depressions being correspondingly laterally offset.

4,192,625
PRECAST CONCRETE CATCH BASIN WITH FORM FOR GUTTER INLET

Harold Peletz, 471 W. College Ave., Santa Rosa, Calif. 95401
Filed Sep. 18, 1978, Ser. No. 942,998
Int. Cl.² E01C *11/22*
U.S. Cl. 404—5 **3 Claims**

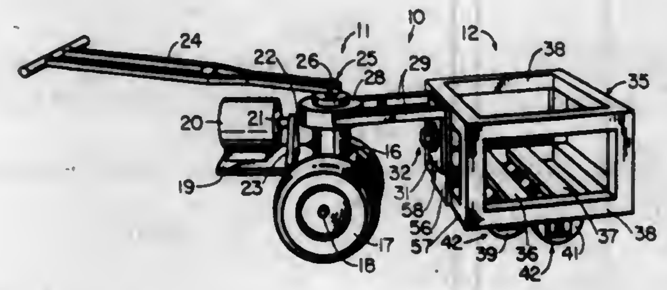
1. In a catch basin assembly for collecting surface drainage from a street gutter wherein said catch basin has a pair of vertical substantially parallel side walls, a rear wall connecting the side walls and a top slab also connecting said side walls, the improvement comprising:
an integral transverse form attach to and extending across the front of said side walls and spaced from said top slab



to define therewith an inlet opening to accommodate the passage of water into said catch basin, said transverse form being adapted to form, and remain in place as a water conducting surface for, a cast concrete gutter.

4,192,626
MACHINE FOR APPLYING A UNIFORM PRESSURE

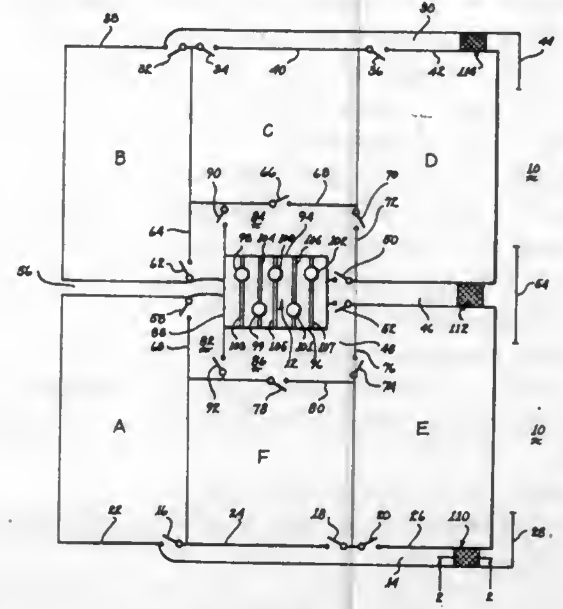
Frank K. Wyckoff, and Roger C. Silver, both of Des Moines, Iowa, assignors to Atlas Products, Inc., Des Moines, Iowa
Filed Dec. 15, 1978, Ser. No. 969,944
Int. Cl.² E01C *19/26*
U.S. Cl. 404—123 **4 Claims**



1. In a machine for uniformly applying pressure on a relatively level surface, said machine comprising:
(a) a portable weight bearing frame,
(b) at least one transversely extended frame supporting roller rotatably mounted from the bottom of said frame,
(c) axle means for said roller having the ends thereof laterally projected from opposite sides of said roller, and
(d) means for journaling said roller on said frame including:
  (1) a pair of transversely spaced upright bracket means, each having an upright guideway with an adjacent upright surface, and a top end secured to the bottom of said frame,
  (2) a pair of bearing means corresponding to said bracket means for receiving the ends of said axle means, each bearing means having a body portion guidably movable in a guideway of an associated bracket means, said body portion including laterally projected flange portions positioned between said associated bracket means and said roller and formed with fulcrum portions rideable on the upright surface of said associated bracket means for pivotal movement of said bearing means with respect to said associated bracket means, and
  (3) yieldable pressure means coacting with said bracket means and said bearing means to oppose upward vertical movement of said bearing means.

4,192,627
APPARATUS FOR GENERATING ELECTRICAL POWER

Wilfred J. Casebow, Star Rte. Box 358, Elgin, Ariz. 85611
Filed Sep. 14, 1978, Ser. No. 942,444
Int. Cl.² E02B *9/08*
U.S. Cl. 405—76 **4 Claims**



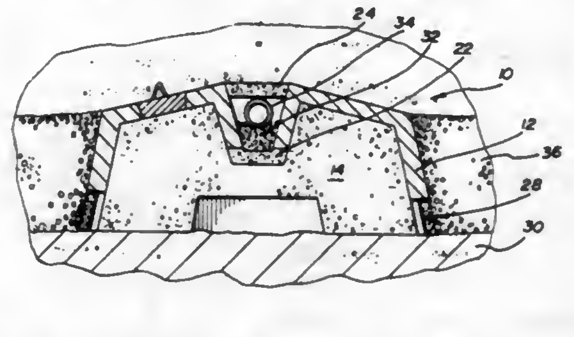
1. A hydroelectric power generating station for use with tidal waters, said station comprising in combination:
(a) means for generating electrical power in response to a flow of water, said generating means including an upstream side and a downstream side;
(b) a first compartment disposed in fluid communication with said upstream side for maintaining a continuing source of water for said upstream side;
(c) a second compartment disposed in fluid communication with said downstream side for maintaining a continuing receptacle for the flow of water from said downstream side;
(d) a first plurality of reservoirs for supplying water to said first compartment;
(e) first gate means for regulating the source of flow of water to said first compartment from the reservoirs of said first plurality of reservoirs;
(f) first channel and gate means for replenishing the water in said first plurality of reservoirs from the tidal water;
(g) a second plurality of reservoirs for receiving water from said second compartment;
(h) second gate means for regulating the flow of water from said second compartment to the reservoirs of said second plurality of reservoirs;
(i) second channel and gate means for discharging the water in said second plurality of reservoirs to the tidal water;

whereby, said first channel and gate means are actuated to maximize the water levels in said first plurality of reservoirs, said second channel and gate means are actuated to minimize the water levels in said second plurality of reservoirs, said first and second compartments maintain a continuing source and receptacle, respectively, for the water flowing through said gernating means and said first and second gate means are actuated to maximize the water head pressure between said first compartment and said second compartment.

4,192,628
FLOW DISTRIBUTOR FOR LEACHING FIELDS

Edward D. Gorman, Myra Rd., Box 18, R.R. #1, Porters Lake, Halifax County, Nova Scotia, Canada
Filed May 12, 1978, Ser. No. 906,230
Int. Cl.² E02B *13/00*
U.S. Cl. 405—45 **13 Claims**

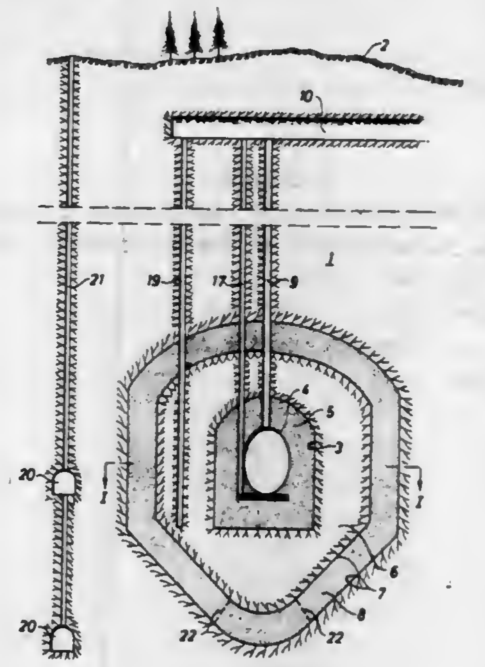
1. A unit for supporting a perforated liquid supply pipe above an absorption bed and for distributing liquid from said pipe onto said bed, comprising a hollow open-bottomed structure having a top wall and side and end walls defining a central cavity, and wherein said top wall is provided with an upwardly opening longitudinal channel extending along the full length of said top wall and suitable for receiving said supply pipe, said top wall having apertures allowing fluid to flow from said channel into the cavity, and wherein said channel has removable cover means extending along the full length of the top of



the channel and allowing direct vertical access to the whole length of said channel for lifting of said pipe from the channel and for providing direct vertical access to said apertures for cleaning purposes.

4,192,629
SYSTEM FOR THE STORAGE OF RADIOACTIVE MATERIAL IN ROCK

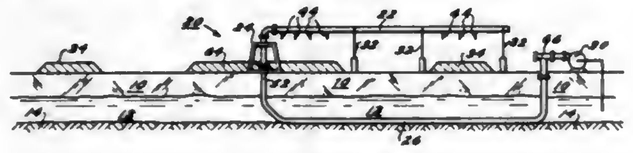
Tore J. Hallenius, Tegelbruksgatan 93, 852 40 Sundsvall, and Karl I. Sagefors, Klevstigen 22, 170 71 Öregrund, both of Sweden
Filed Dec. 2, 1977, Ser. No. 857,041
Claims priority, application Sweden, Dec. 13, 1976, 7613996; Jan. 19, 1977, 7700552; Mar. 2, 1977, 7702310
Int. Cl.² G21F *7/00*; E02D *29/00*
U.S. Cl. 405—128 **17 Claims**



1. An underground repository for the storage of radioactive material and other materials in a rock formation, comprising a first cavity in said rock formation, a first body of rock derived from said rock formation by having been left at the excavation of said first cavity so as to be located within said first cavity and spaced on all sides from the walls of said first cavity, the space between said first body of rock and the walls of said first cavity being filled with a plastically deformable material supporting said first body of rock in said spaced relationship relative the walls of said first cavity, said first body of rock being hollow and containing in its interior storage space for the material to be stored, and shaft means extending through said rock formation, said space filled with said plastically deformable material and said first body of rock to said storage space for the transfer of the material to be stored into said storage space.

4,192,630
METHOD AND APPARATUS FOR BUILDING ICE ISLANDS

Frederick C. Duthweiler, Anchorage, Ak., assignor to Union Oil Company of California, Brea, Calif.
Filed Oct. 18, 1978, Ser. No. 952,547
Int. Cl.² E02B *3/00*
U.S. Cl. 405—217 **27 Claims**

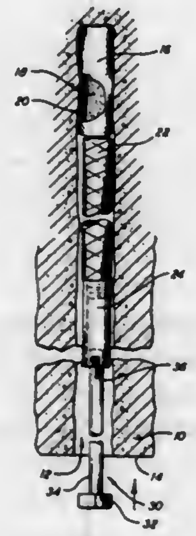


1. An apparatus for distributing water onto a sheet of ice floating on a water body overlying a marine bottom in a cold offshore region so as to form a thickened ice mass, said apparatus comprising:

a water pump positioned at a first location on said ice sheet;
a fluid flow conduit comprised of (1) a first water supply line having an inlet end fluid-tightly connected to the outlet of said water pump and having at least a substantial portion of its length disposed in said water body between said ice sheet and said marine bottom, (2) a vertical standpipe fluid-tightly connected to the outlet end of said first water supply line, said standpipe extending through said ice sheet at a second location spaced from said first location, and (3) a horizontal swing arm rotatably and fluid-tightly connected to said standpipe and disposed in an elevated position above said ice sheet;
means for fixedly supporting said standpipe at said second location;
means for supporting said swing arm in said elevated position so as to be rotatable about said standpipe;
drive means for rotating said swing arm about said standpipe; and
discharge means mounted on said swing arm for discharging water from said swing arm onto said ice sheet.

4,192,631
MINE ROOF SUPPORT METHOD AND APPARATUS

George S. Vass, Summersville, W. Va., assignor to The Eastern Company, Naugatuck, Conn.
Filed May 12, 1978, Ser. No. 905,125
Int. Cl.² E21D *20/02*
U.S. Cl. 405—261 **10 Claims**

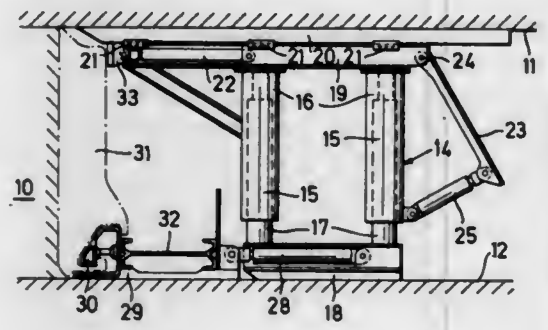


1. A method of reinforcing a rock formation comprising the steps of:

(a) drilling a blind hole of predetermined dimensions into a face of the rock formation;
(b) inserting a destructible resin cartridge into said hole;
(c) inserting an elongated anchor bar into said hole with the leading end of said bar engaging said cartridge;
(d) said bar on its trailing end being affixed to an internally threaded collar having at least one slot extending axially from the open end thereof for a portion of its length at least partially through the wall thereof for effecting mutual rotational engagement therewith of one end of an elongated rod having a fixed member extending radially therefrom for engagement in said slot;
(e) effecting said rotational engagement of said rod with said collar by inserting said fixed member into said slot;
(f) advancing said rod, and thereby said bar and said cartridge, into said hole with the other end of said rod remaining outside said hole;
(g) engaging said other end of said rod with torque-applying means to rotate said rod, and thereby said bar, while advancing said rod and bar into said hole to rupture said cartridge and mix the contents thereof to form a hardenable resin mixture;
(h) stopping rotation for a period of time sufficient for the resin mixture to harden about said bar while maintaining said bar in engagement with said rotational engagement means;.
(i) removing said rod from said hole;
(j) advancing the threaded end of an elongated headed bolt into said hole; and
(k) engaging the headed end of said bolt with torque-applying means to advance said threaded end of said bolt into said internally threaded collar to engage the bolt head with structure engaging the face of said rock formation and tension said bolt to a desired degree.

4,192,632
SUPPORT SYSTEMS FOR MINERAL MINING INSTALLATIONS

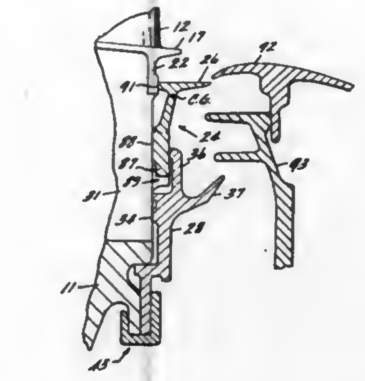
Hans E. Von Viebahn, and Julius Tengler, both of Lünen, Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lünen, Fed. Rep. of Germany
Filed Jun. 5, 1978, Ser. No. 912,475
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732339
Int. Cl.² E21D *17/00, 23/06*
U.S. Cl. 405—298 **20 Claims**



1. A support unit for use in mineral mining, said unit comprising a generally rectangular floor frame structure, hydraulic props carried by the floor frame structure, a generally rectangular roof frame structure supported by the props, a plurality of elongate narrow roof-engaging bars mounted on the roof frame structure, the roof bars being arranged in closely-adjacent side-by-side relationship with each roof bar having a width small in relation to the overall width of the unit, guide means for guiding the roof bars for mutual relative longitudinal displacement in relation to the roof frame structure and hydraulic rams connected between the roof frame structure and the roof bars for selectively displacing the roof bars.

4,192,633
COUNTERWEIGHTED BLADE DAMPER

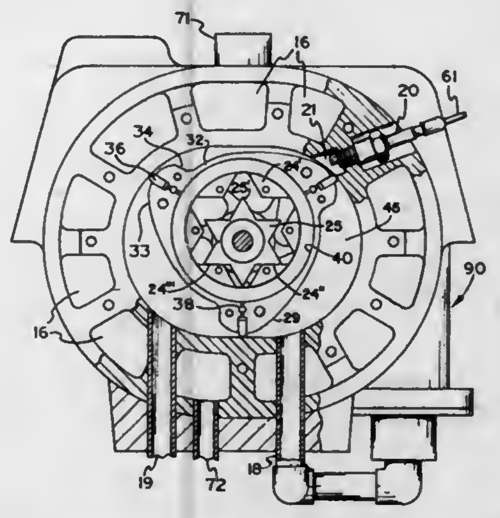
Frederick C. Herzner, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Dec. 28, 1977, Ser. No. 865,343
Int. Cl.² F01B *5/30, 5/26*
U.S. Cl. 416—221 **15 Claims**



1. A circumferentially segmented blade damper having a lower portion which is restrained in both the radial and axial directions in such a way as to be pivotable in an axial plane, and an upper portion having a pressure bearing surface for axial damping engagement with a blade surface, said damper having a center of gravity which is in a radial plane that is axially spaced from that of the damper's radial restraining point such that when said damper is rotated, centrifugal force causes said pressure bearing surface to pivot against said blade surface.

4,192,634
ROTARY INTERNAL COMBUSTION ENGINE

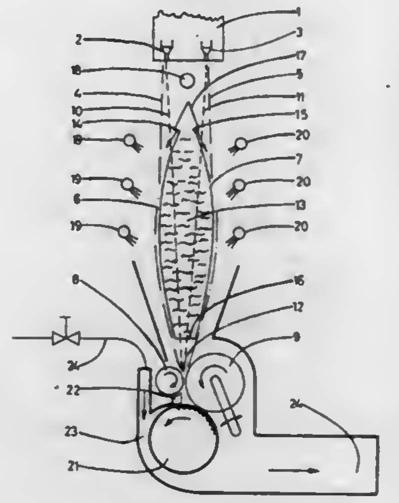
Adolph A. Campos, and Joseph V. Michele, both of Nutley, N.J., assignors to Campos Associates
Continuation-in-part of Ser. No. 749,642, Dec. 10, 1976, Pat. No. 4,120,620. This application Nov. 23, 1977, Ser. No. 854,290
Int. Cl.² F01C *1/02, 17/02, 21/04*
U.S. Cl. 418—61 A **1 Claim**



1. In a rotary combustion engine comprising a main housing formed with a generally oval (vertically) horizontally elongated rotor cavity with the middle portion extending slightly inwardly comprising two substantially semi-cylindrical opposed chambers (lower portion, an arcuate top portion at a radial distance from the center of said lower portion greater than the radius of said lower portion, and arcuate upwardly convergent side portions smoothly connecting said arcuate top portion and substantially semi-cylindrical lower portion,) said cavity having a fuel intake port communicating with the cavity at one side of said top portion, fuel ignition means in the cavity adjacent the opposite side of said top portion, said cavity being provided with a peripheral exhaust port in said lower portion at the same side of the cavity as said intake port, a shaft journaled in the housing with its axis displaced from center toward said arcuate top portion, a rotor having a periphery comprising three successive sides of similar shape, means for supporting said rotor on said shaft and respective sealing members on the periphery of said rotor between its successive sides sealing engaging the peripheral surface of said rotor cavity and cooperating with said convergent side portions to cause the rotor to at times assume a depressed position providing a differential of radial distance between the center of the shaft and the portion of said peripheral surface at opposite sides of the ignition means engaged by two successive sealing members whereby to define a differential surface on which combustion pressure in the space immediate adjacent to one of said sealing members to provide a thrust on the rotor, the improvement which comprises utilizing as said means for supporting said rotor on said shaft a shaft having a six-sided star-shaped gear and utilizing as said rotor twin sections each having a circular aperture, a plate positioned in said circular aperature having a six-sided star-shaped aperature and loosely receiving said star-shaped gear so that said gear can not rotate in said star-shaped aperature, and wherein said rotor is connected to means for circulating oil within the rotor, and passage means for delivering the oil to and from the interior of said rotor to said sealing means wherein said passage means comprises a feeding channel extending from the internal portion of the rotor to said sealing means and a fiberous felt band extending around said interior portion of said rotor covering said feed channel to meter the flow of oil to said sealing means.

4,192,635
APPARATUS FOR COOLING AND GRANULATING THERMOPLASTIC STRANDS

Friedrich Hunke, Grossostheim-Ringheim, and Heinz Philipp, Aschaffenburg, both of Fed. Rep. of Germany, assignors to Automatik Apparate-Maschinenbau H. Hench GmbH, Grossostheim, Fed. Rep. of Germany
Filed Dec. 7, 1977, Ser. No. 858,387
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1976, 2655840
Int. Cl.² B29C *25/00*
U.S. Cl. 425—71 **7 Claims**



1. An apparatus for cooling and granulating thermoplastic strands, comprising spinneret means including two rows of nozzles (2, 3) arranged so that the nozzles in one row are staggered relative to the nozzles in the other row, one single pair of transport rollers (8, 9) arranged below said nozzle means, cooling chute means (6, 7) operatively arranged between said nozzles and said single pair of transport rollers, a single set of chutting means (21) arranged below said transport roller means which form an inlet for said single set of cutting means, cooling liquid supply means arranged for supplying cooling liquid to said cooling chute means (6, 7) substantially at the upper end thereof, said cooling chute means comprising two chutes arranged back to back in mirror symmetrical relationship relative to each other, each chute having a curved guide surface that projects toward the respective strands beyond a plane defined by the respective row of nozzles and said transport roller means whereby the strands from said two rows

of nozzles are cooled separately, and wherein both guide surfaces have an inward curve portion converging inwardly toward said inlet of the single set of cutting means to such an extent that the cooling liquid remains substantially in contact with the guide surface of the respective chute, whereby the strands are surrounded by cooling liquid along the entire travel path on the chutes, said staggering of said nozzles causing the strands from one row of nozzles to fit into the spaces between the strands from the other row of nozzles and vice versa as the strands are fed to the cutting means, whereby said staggering of said nozzles in combination with said converging of said guide surfaces permits the feeding of a single set of strands from said two rows of nozzles into said single set of cutting means.

4,192,636

APPARATUS FOR STRETCHING DOUGH MATERIAL

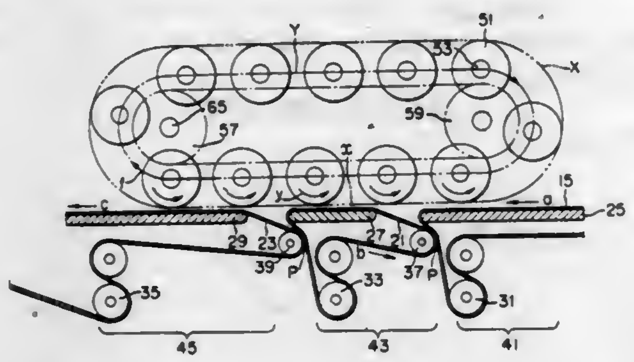
Torahiko Hayashi; Takashi Maeda, and Michio Morikawa, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Continuation of Ser. No. 716,660, Aug. 23, 1976, abandoned. This application Jun. 22, 1978, Ser. No. 917,968

Claims priority, application Japan, Aug. 22, 1975, 50/102478

Int. Cl.² A21C ***3/02***

U.S. Cl. 425—96 **8 Claims**



1. An apparatus for stretching dough for cakes, bread or the like, comprising:

(a) means including a plurality of serially arranged conveying members adapted to underlie and support said dough for carrying it along a predetermined path,

(b) a plurality of rollers moveable in unison along a closed roller path having a straight lower portion spaced above and along each of said conveying members, said rollers during their movement along said lower portion being in contact with the dough moving along said predetermined path, and

(c) means operatively associated with said rollers for moving them laterally along said lower portion in the same direction as and at a speed greater than that of said dough so as to compress and stretch it,

(d) each of said conveying members being constituted by an upper flight of a respective conveyor belt, said belts each moving at a speed greater than that of the nearest upstream conveyor belt so as to stretch said dough in regions between upper flights of adjacent conveyor belts, the upper flights of adjacent conveyor belts being spaced from one another sufficiently so as to provide said regions with a length throughout which the stretching by said belts can be distributed while the regions are unsupported from below so as to receive only a light contact pressure from said rollers as they pass thereover.

4,192,637

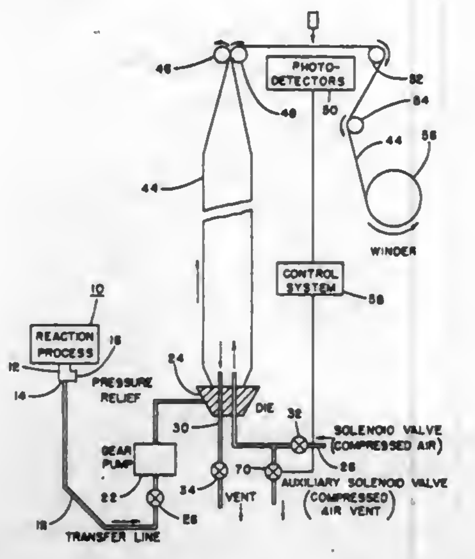
INTEGRATED SYSTEM FOR FORMING SHEETS AND FILMS OF SYNTHETIC RESINS

Antonio T. Chong, Taipei, Taiwan, assignor to USI Far East Corporation, Taipei, Taiwan

Filed Jan. 16, 1978, Ser. No. 869,746

Int. Cl.² B29D ***23/04***

U.S. Cl. 425—140 **7 Claims**



1. An integrated commercial system for extruding a commercial end product from a polymer obtained directly from a polymerization reactor, in the absence of intermediate, energy-consuming process steps involved with the use of an intermediate product, comprising:

(a) means for directly withdrawing substantially all of the molten polymer produced by a polymerization reactor, including transfer means for conducting said molten polymer from the polymerization reactor;

(b) an extruder connected to said transfer means and receiving substantially all of said molten polymer withdrawn by said withdrawing means;

(c) a film blowing extrusion die connected to said extruder for forming the extruded polymer into a tubular polymeric product so as to eliminate intermediate steps including cooling the polymer from the reactor, forming it into a suitable intermediate product, transferring the intermediate product to a processing plant and reheating and repressurizing the intermediate product to render the latter suitable for extrusion;

(d) means for flattening said tubular product;

(e) means for sensing the lateral dimension of the tubular product;

(f) ventilation means for venting the interior of said tubular product to prevent undue concentrations of monomer from accumulating therein, whereby monomer dissolved in the extruded polymer which is released interiorly of said tubular product is prevented from building up to potentially explosive concentrations, said ventilation means comprising gas inlet means for introducing fresh gas into the tubular product including a first inlet passageway which is continually open during operation of the system for supplying gas into the tubular product and a second passageway communicating with said first passageway for venting fresh gas therefrom, and gas outlet means continually open during operation of the system for venting monomer-containing gas from said tubular product; and

(g) means, responsive to said sensing means, for controlling said ventilation means to maintain the diameter of said extruded tubular product within predetermined limits, including a control valve arranged in said second passageway for regulating gas vented therethrough from said first passageway so as to control the amount of gas flowing through said gas inlet means into the tubular product.

4,192,638

MOLDING DEVICE HAVING HEAT TRANSFER CHAMBERS INSULATED FROM EACH OTHER FOR MOLDING EXPANDABLE THERMOPLASTIC RESIN PARTICLES

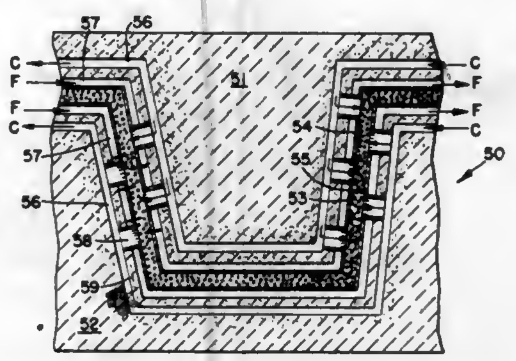
Gérard Lezier, 1 boulevard Mariette, 62200 Boulogne-sur-Mer, and Bernard Vasseur, Beaudricourt, 62810 Avesnes-le-Comte, both of France

Continuation-in-part of Ser. No, 796,609, May 13, 1977, abandoned. This application May 19, 1978, Ser. No. 904,220

Claims priority, application France, May 17, 1976, 76 14779

Int. Cl.² B29D ***27/00***

U.S. Cl. 425—256 **7 Claims**



1. A molding device for the production of expanded thermoplastic resin articles from expansible thermoplastic resin particles such as expanded polystyrene beads comprising a plurality of mold cavities defined by two spaced mold elements including molding dies for each mold element, means adapted for feeding said mold cavities with said expansible thermoplastic resin particles to be molded and means adapted for supplying and removing heating and cooling fluids to and from said mold elements, wherein said elements each comprise two superimposed chambers independent and insulated from each other, an outer one of said chambers being a heating chamber, and the other of said chambers being a cooling chamber, said chambers being located substantially parallel with each other and with the surface of the dies defining the mold cavities, separate conduit passages extending from each of said heating chambers, said conduit passages leading to openings in the walls of said mold cavities, said mold being constructed of materials adapted to provide satisfactory mechanical strength during molding at temperatures of about 250° F. and at pressures of about 100 psi.

4,192,639

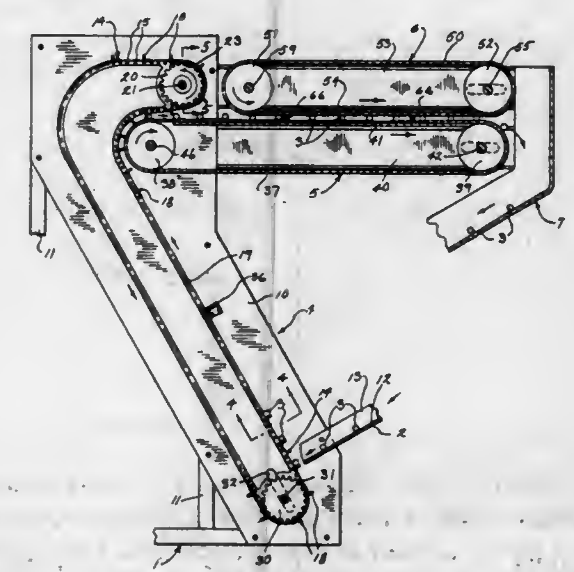
APPARATUS FOR STRAIGHTENING SAUSAGE LINKS

Edward C. Jones, Jr., Fort Atkinson, Wis., assignor to Jones Dairy Farm, Fort Atkinson, Wis.

Filed Jan. 3, 1977, Ser. No. 756,483

Int. Cl.² B29C ***15/00;*** **A22C** ***17/00***

U.S. Cl. 425—372 **9 Claims**



1. An apparatus for straightening elongated generally cylindrical articles, comprising: a first conveyor, said first conveyor being an endless belt, a second endless belt disposed in parallel spaced relation overlying said first conveyor, said first conveyor including a conveyor run having a feed end projecting upstream beyond a corresponding end of said second endless belt, a portion of said feed end being curved about a horizontal axis, a third endless belt feed conveyor spaced from said portion of said feed end and curved around said feed end so as to be adapted to convey said articles deposited on said feed conveyor, between said feed conveyor and said feed end and then deposit said articles on said conveyor run, and drive means operably connected to supporting means for driving cooperating portions of said belts in the same direction.

4,192,640

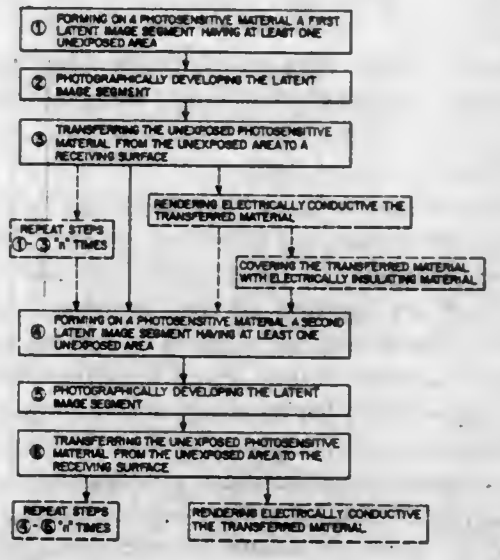
MULTIPLE TRANSFER PROCESS AND ARTICLE RESULTING THEREFROM

Glenn W. Merry, Lincoln, Mass., assignor to Winter Park Associates, Winnetka, Ill.

Continuation of Ser. No. 602,295, Aug. 6, 1975, abandoned. This application Aug. 17, 1977, Ser. No. 825,445

Int. Cl.² G03C ***5/54, 5/00***

U.S. Cl. 430—248 **27 Claims**


① FORMING ON A PHOTOSENSITIVE MATERIAL A FIRST LATENT IMAGE SEGMENT HAVING AT LEAST ONE UNEXPOSED AREA
② PHOTOGRAPHICALLY DEVELOPING THE LATENT IMAGE SEGMENT
③ TRANSFERRING THE UNEXPOSED PHOTOSENSITIVE MATERIAL FROM THE UNEXPOSED AREA TO A RECEIVING SURFACE
RENDERING ELECTRICALLY CONDUCTIVE THE TRANSFERRED MATERIAL
REPEAT STEPS ①-③ "n" TIMES
COVERING THE TRANSFERRED MATERIAL WITH ELECTRICALLY INSULATING MATERIAL
④ FORMING ON A PHOTOSENSITIVE MATERIAL A SECOND LATENT IMAGE SEGMENT HAVING AT LEAST ONE UNEXPOSED AREA
⑤ PHOTOGRAPHICALLY DEVELOPING THE LATENT IMAGE SEGMENT
⑥ TRANSFERRING THE UNEXPOSED PHOTOSENSITIVE MATERIAL FROM THE UNEXPOSED AREA TO THE RECEIVING SURFACE
REPEAT STEPS ④-⑥ "n" TIMES
RENDERING ELECTRICALLY CONDUCTIVE THE TRANSFERRED MATERIAL

1. A photographic process comprising the steps of:

(1) exposing a first photosensitive material comprising a silver halide emulsion layer to form a first latent image segment having at least one unexposed area;

(2) photographically developing said first latent image segment;

(3) transferring by diffusion the unexposed silver halide from said unexposed area in the developed first latent image segment as a soluble silver halide complex to a receiving surface to form a first silver image thereon by the precipitation of the transferred silver halide from the soluble silver halide complex;

(4) exposing a second photosensitive material comprising a silver halide emulsion layer to form a second latent image segment having at least one unexposed area;

(5) photographically developing said second latent image segment; and,

(6) transferring by diffusion the unexposed silver halide from said unexposed area in the developed second latent image segment as a soluble silver halide complex to said receiving surface to form a second silver image thereon with at least a portion of said second silver image being formed in superposed relation to said first silver image, said second silver image being formed by the precipitation of the transferred silver halide from the soluble silver halide complex and with the diffusion transfer of Step (6) occurring after the diffusion transfer of Step (3).

4,192,641
COMBUSTION CONTROL APPARATUS

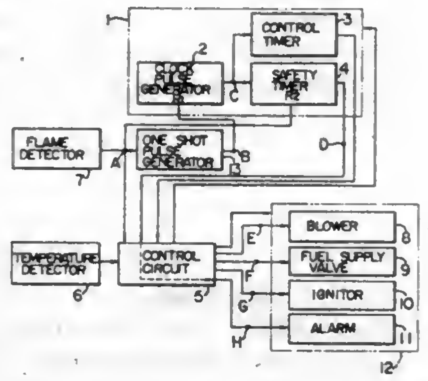
Sumio Nakagawa, Tokyo; Toshio Tanaka, Toride, and Kenji Todo, Yanai, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 29, 1977, Ser. No. 865,486

Claims priority, application Japan, Jan. 10, 1977, 52/821

Int. Cl.^{2} F23N *5/24, 5/00*

U.S. Cl. 431—15 **27 Claims**



15. A combustion control apparatus of digital type including therein at least a fuel supplying apparatus, a blower, an ignitor and an alarm, comprising:

means for generating a reference clock pulse signal;

first timer circuit means connected with said reference clock pulse generating means, for frequency-dividing said reference clock pulse signal to establish a first predetermined period of time;

second timer circuit means connected with said reference clock pulse generating means, for frequency-dividing said reference clock pulse signal to establish a second predetermined period of time; and

control circuit means connected with said first and second timer circuit means, for receiving at least a first external input signal indicating the presence of flame generated as a result of the ignition of fuel supplied from said fuel supplying apparatus, said control circuit means delivering a first and a ninth output signal simultaneously, said first output signal being for resetting said reference clock pulse generating means in response to the extinction of said first external input signal during a combustion operation and immediately thereafter setting said reference clock pulse generating means to resume its operation, said ninth output signal being for setting said second timer circuit means to start the frequency-dividing operation for establishing said second predetermined period of time, said control circuit means further delivering a fifth and a second output signal simultaneously at the end of said second predetermined period of time established by said second timer circuit means, said fifth output signal being for actuating said ignitor to operate, said second output signal being for setting said first timer circuit means to start the frequency-dividing operation for establishing said first predetermined period of time, said control circuit means further delivering a third output signal for actuating said alarm to operate unless said first external input signal arrives within said first predetermined period of time, thereby stopping the operations of said fuel supplying apparatus, said blower and said ignitor included in said combustion system.

4,192,642
UNIVERSAL PILOT ASSEMBLY

Roman F. Lempa, Philadelphia, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Apr. 17, 1978, Ser. No. 897,209

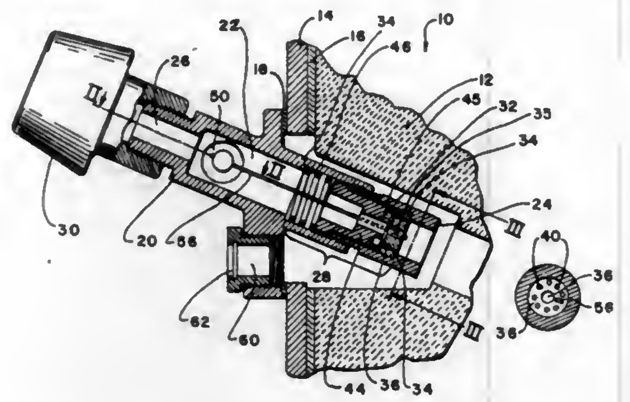
Int. Cl.^{2} F23Q *7/06*

U.S. Cl. 431—263 **24 Claims**

1. A pilot flame assembly suitable for generating a pilot flame for igniting the main flame of a furnace comprising:

(a) a housing having a central passageway extending longitudinally through said housing, said central passageway having a pilot flame emitting end;

(b) a first port accommodating a semiconductor flame detection means at an end of the central passageway opposite said pilot flame emitting end, the opening of said first port being in communication with the central passageway in a substantially coaxial relationship, said semiconductor flame detection means constructed for detection of the pilot flame or the main furnace flame by sensing the emitted radiation of said flames;



(c) a baffle assembly within said central passageway and coaxially disposed to said first port, said baffle assembly in proximity to the pilot flame emitting end;

(d) an inlet port for accommodating a fuel-air mixture;

(e) a second port accommodating a spark ignition means, the openings of said second port and inlet port communicating with said central passageway; and

(f) a third port mating with means for viewing the pilot flame of said pilot assembly, said third port being disposed below said first port, the opening of said third port having an axis which is at an angle with respect to the axis of said central passageway.

4,192,643
APPARATUS FOR HEAT TREATING FINE-GRAIN SOLIDS

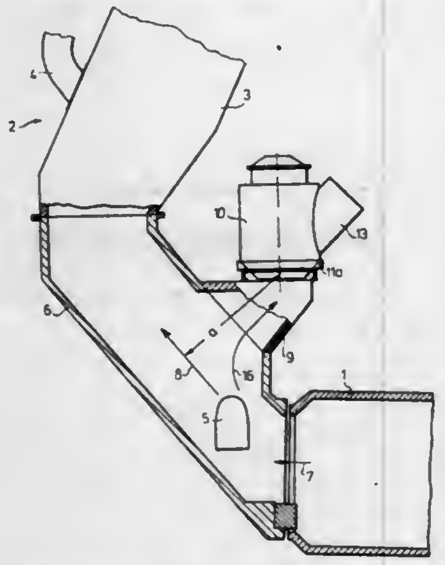
Karl Krutzner, Jr., Beckum, Fed. Rep. of Germany, assignor to Polysius AG, Beckum, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,261

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742099

Int. Cl.^{2} F27B *7/02*

U.S. Cl. 432—106 **4 Claims**



1. Apparatus for heat treating fine grain solids, comprising a rotary tubular kiln, a preheater for material supplied to the kiln, and a duct inclined to the vertical and leading from one end of the kiln to the preheater, for conducting waste gases from the kiln to the preheater, wherein the improvement comprises

(a) a bypass conduit connected to the upper wall of said inclined duct for diverting part of said waste gases, which extends from the duct at an angle of about 90°,

(b) an upright mixing chamber which is connected at its bottom to said bypass conduit to cause said diverted stream of gases to flow upward through said mixing chamber,

(c) the lower portion of the interior of said mixing chamber is funnel shaped, and the initial section of the bypass conduit which opens into said mixing chamber has the form of a short chute-like pipe;

(d) said mixing chamber having in its lower portion at least one lateral inlet for introducing cooling air into said diverted stream of gases, and the distance between the axis of said duct and a point on the axis of said mixing chamber at the level of said inlet being from 1.5 to 3 times the square root of the quotient of the cross-sectional area of the duct divided by pi.

4,192,644
COOLED GRATE FOR SUPPORTING A WORKPIECE IN AN OVEN

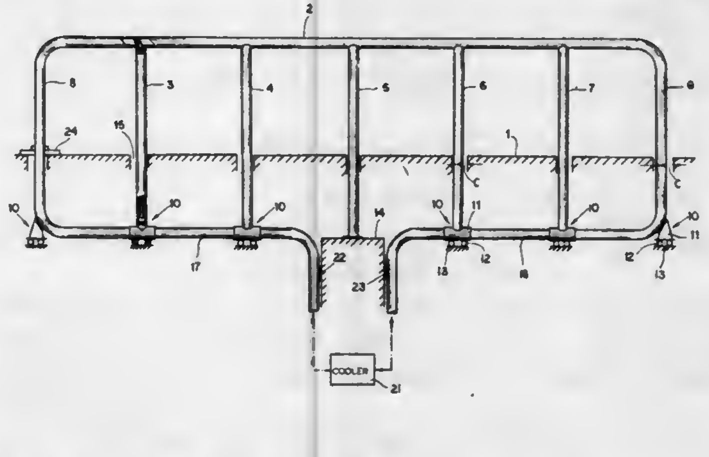
Heinz Westerhoff, Jakobstrasse 36, and Wilhelm Riege, Brandsheide 24a, both of 4330 Mülheim, Ruhr, Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 888,493

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1977, 2713014

Int. Cl.^{2} F27B *9/14*

U.S. Cl. 432—122 **10 Claims**



1. A grate element comprising:

a horizontally elongated support tube having a pair of ends;

a fixed support;

a supply tube extending generally parallel to and underneath said support tube and having one end underneath one end of said support tube and another end fixed to said support;

a connector tube extending vertically between supply tube and said support tube at said one ends thereof, whereby said supply, connector, and support tubes form a circulation loop terminating at said other ends;

means for passing a heat-exchange fluid through said loop between said other ends thereof;

at least one upright post extending vertically between said support tube and said supply tube intermediate said ends thereof with said support tube supported by said post on said supply tube; and

means supporting said supply tube except at said other end for displacement on said support in a direction parallel to said supply tube.

4,192,645
TUNNEL OVEN FOR BAKING CERAMIC PRODUCTS

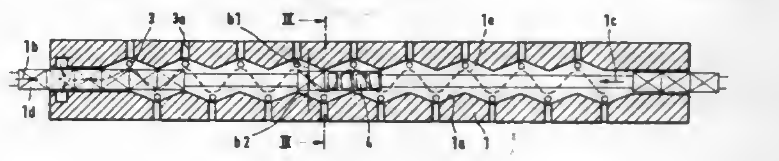
Andreas Hassler, Jahnstr. 45, D-7904 Erbach, Fed. Rep. of Germany

Filed Feb. 10, 1978, Ser. No. 876,765

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705783; Oct. 6, 1977, 2744975; Nov. 26, 1977, 2752949

Int. Cl.^{2} F27B *9/00*

U.S. Cl. 432—144 **19 Claims**



1. A tunnel oven for baking ceramic products, said oven comprising a tunnel of elongated configuration having at least one movable carriage therein for carrying products to be baked from one end of the tunnel to the other, gas-producing means for producing a stream of heated gas which flows along the length of said tunnel through a first distance opposite to the direction of movement of said carriage and thereafter through a lesser distance in the direction of movement of said carriage whereby said stream of gas flows in reciprocating fashion through said tunnel in a general direction opposite to the direction of movement of said carriage, each inner side wall of said tunnel including a plurality of inwardly extending projections spaced from one another by recesses, said gas-producing means comprising fire producing means located in each of said recesses, the inwardly extending projections on each of said side walls being disposed respectively opposite to the recesses on the other of said side walls, said projections and recesses being operative to produce cross currents in said reciprocating stream of heated gas which causes said stream of heated gas to flow through said recesses and fire producing means along a generally sinuous path which periodically crosses the axis of said tunnel in a flow direction opposite to the direction of movement of said carriage.

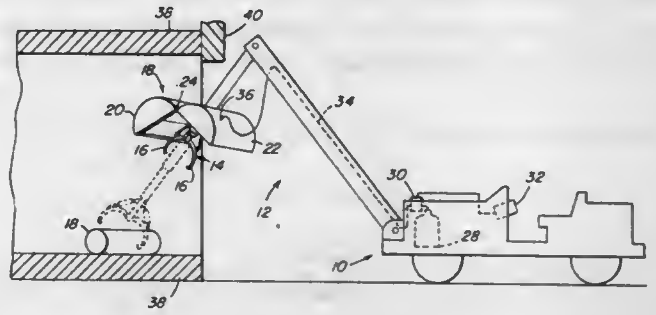
4,192,646
HEAT CONSERVATION IN WORKPIECES

Charles A. Berg, Buckfield, Me., assignor to Pyreflex Corporation, Buckfield, Me.

Filed Mar. 20, 1978, Ser. No. 888,211

Int. Cl.^{2} F27D *3/00, 5/00*

U.S. Cl. 432—239 **8 Claims**



1. In an apparatus for transporting a workpiece that is at a temperature substantially above the ambient, the apparatus including support means for supporting the workpiece, the improvement wherein said apparatus includes enclosure means including an interior surface coating positioned to be exposed to but separated from a workpiece supported in said support means and formed from a material that is highly reflective of radiant infrared energy, said enclosure means comprising at least two segments, at least one of which is movable relative to the other between a first open configuration facilitating entry of a workpiece therebetween and a second closed configuration in which said interior surface of said enclosure means substantially surrounds said support means and said workpiece.

CHEMICAL

4,192,647

PRINT PASTE FORMULATIONS WITH HYDROXYALKYL CARBOXYALKYL CELLULOSE

William C. Kuryla, Saint Albans, and Russell H. Raines, Nitro, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 24, 1977, Ser. No. 809,896

Int. Cl.² D06P *1/48*

U.S. Cl. 8—62 **7 Claims**

1. In a print paste formulation containing water and a dye chosen from the group consisting of acid metallized and neutral metallized dyes, the improvement which comprising having hydroxyalkyl carboxyalkyl cellulose present therein as a thickener.

4,192,648

CATIONIC DYE CARRIER AND SELECTIVE PROCESS FOR DYEING POLYESTERS

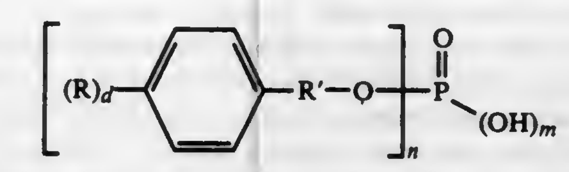
Roop C. Nahta, Charlotte, N.C., assignor to GAF Corporation, New York, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,689

Int. Cl.² D06P *1/667, 3/854, 3/87*

U.S. Cl. 8—86 **5 Claims**

1. A dye carrier composition for cationic dyestuffs wherein the active carrier is a mixture consisting essentially of from about 50 to about 85 wt% phenoxyethanol; from about 5 to about 45 wt% of the triethanol amine salt of a phenoxy poly (ethyleneoxy) phosphonic ester having the formula:



wherein n is a whole integer of 1 or 2; m is 3-n; d is 0 or 1; R' is a mixture of polyoxyethylene units averaging 8, 9, 10, 11 and 12 units and R is alkyl having from 4 to 18 carbon atoms and between about 0 wt% and about 45 wt% butylbenzoate.

5. A cationic dye-carrier composition comprising the carrier composition of claim 1 and between 4 wt% and about 25 wt% of a cationic dye based on the weight of the carrier composition.

4,192,649

PROCESS OF SIZING, WEAVING, DESIZING AND WASTE WATER TREATMENT

Hiroshi Kato, Nishinomiya; Yoshiaki Ito; Hiroshi Tokonami, both of Itami, and Atsuo Sawada, Hirakata, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 1, 1978, Ser. No. 874,349

Claims priority, application Japan, Feb. 1, 1977, 52-10383

Int. Cl.² D01C *3/02;* **B01D** *5/00*

U.S. Cl. 8—138 **10 Claims**

1. A process of sizing, weaving, desizing and waste water treatment which comprises the steps of

(1) sizing a warp by employing a sizing liquid containing a low-hydrolyzed polyvinyl alcohol having a degree of hydrolysis of 50% to 80% by mole and an average degree of polymerization of not less than 400 and an anionic surface active agent capable of solubilizing said polyvinyl alcohol in water or capable of raising the cloud point of said polyvinyl alcohol, and then weaving,

(2) subjecting the obtained woven cloth to desizing in a scouring bath, and washing the cloth, and

(3) treating the resulting desizing and washing waste water with an agent selected from the group consisting of polyvalent metal salt chelate-forming agents, strong acids and cationic compounds by adding said agent to the waste water to deposit the polyvinyl alcohol, and separating the deposited polyvinyl alcohol.

4,192,650

PROCESS FOR DRYING AND STABILIZING COAL

Walter H. Seitzer, West Chester, Pa., assignor to Sunoco Energy Development Co., Dallas, Tex.

Filed Jul. 17, 1978, Ser. No. 925,575

Int. Cl.² C10L *5/00*

U.S. Cl. 44—1 R **5 Claims**

1. A process for stabilizing lignitic and subbituminous coal containing from about 25 to about 40% by weight water which comprises drying said coal to essentially zero percent moisture and subsequently treating said dried coal with steam at a temperature of from about 100° C. to about 115° C. so as to rehydrate said coal to a moisture level of from 2% to about 10% by weight, whereby said coal is stabilized against spontaneous combustion.

4,192,651

METHOD OF PRODUCING PULVERULENT CARBONACEOUS FUEL

Leonard J. Keller, Dallas, Tex., assignor to The Keller Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 853,031, Nov. 22, 1977, Pat. No. 4,146,366. This application Aug. 21, 1978, Ser. No. 935,351

Int. Cl.² C10L *9/10*

U.S. Cl. 44—1 SR **8 Claims**

1. A method of producing dry, pulverulent, highly-reactive particulate fuel of low density, high porosity, and high permeability, from a fluid material comprising carbonaceous fuel particles and alcohol, comprising the steps of:

pressurizing said fluid material to a level sufficient to prevent vaporization of liquids or solids during heating to a temperature T1,

heating said pressurized material under pressure to a temperature T1 sufficient to effect single stage flashing of substantially all of the alcohol and high enough that the temperature of the remaining solids after the single stage flashing of substantially all of the alcohol is above the condensing temperature T2 of said alcohol and any water vaporized therewith,

passing said heated fluid material to expansion means to reduce the pressure rapidly to initiate flashing and vaporization of substantially all of the alcohol in said fluid material as well as other volatized materials and leave a puffed, dry, pulverulant, highly-reactive particulate fuel as the solids, and maintaining said solids above the temperature T2 until after said vapors that have been flashed have been separated from said solids,

passing the resulting solid particulate material and vapor mixture from said expansion means to a gas-solids separator means to separate the vapors from the solid particulate material while maintaining said solids above said temperature T2 so as to prevent said condensation of said vapors, and

removing the separated vapors and solid particulate material from said separator.

4,192,652

PROCESS FOR PREPARING SULFUR-CONTAINING COAL OR LIGNITE FOR COMBUSTION HAVING LOW SO_2 EMISSIONS

Robert H. Smith, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 27, 1977, Ser. No. 864,569

Int. Cl.² C10L *5/00, 9/10*

U.S. Cl. 44—10 R **6 Claims**

1. A process for preparing sulfur-containing coal or lignite for combustion having low SO_2 emissions, which comprises in combination:

(a) reducing the particle size of said coal or lignite;

(b) deeply cleaning said coal or lignite of reduced particle size;

(c) admixing said clean coal or lignite with a finely divided inorganic material selected from the group consisting of an oxide; hydroxide; or carbonate of sodium, potassium, calcium or barium; and dolomite;

(d) forming said resulting admixture into large particles.

5. The process of claim 1 wherein said large particles are pellets or briquettes.

4,192,653
NOVEL FUEL COMPOSITIONS COMPRISING UPGRADED SOLID AND/OR SEMI-SOLID MATERIAL PREPARED FROM COAL

Joseph P. Giannetti, Allison Park, and Harold E. Swift, Gibsonia, both of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Dec. 29, 1977, Ser. No. 865,607

Int. Cl.^{2} C10L *1/00;* C10G *1/06*

U.S. Cl. 44—51 **12 Claims**

1. Novel fuel compositions comprising:

(A) a solid and/or semi-solid material formed by a process for producing an upgraded material which is solid and/or semi-solid at room temperature having a substantially lower ash, sulfur and nitrogen content from coal containing from about 0.1 to about 30 weight percent ash, from about 0.25 to about 2.5 weight percent nitrogen and from about 0.3 to about 10 weight percent sulfur consisting essentially in the steps of (1) subjecting a slurry composed of said coal containing ash, nitrogen and sulfur and a solvent containing donatable hydrogen, together with hydrogen, to substantially catalyst-free hydrogenation conditions in a first hydrogenation zone wherein the temperature is in the range of about 343° to about 510° C., the pressure is in the range of about 500 to about 5000 psig, the solvent to coal weight ratio is in the range of about 0.5/1 to about 10/1, the hydrogen/coal feed weight ratio is in the range of about 0.01 to about 0.30/1, the hydrogen gas purity is in the range of about 85 to about 100 mole percent and the residence time is in the range of about 0.1 to about 5.0 hours, to form an intermediate coal-solvent slurry; (2) deashing said intermediate coal-solvent slurry to form a coal-solvent solution, said coal-solvent solution being such that in the absence of solvent therein at ambient temperature and pressure left behind would be deashed coal; (3) subjecting said coal-solvent solution to catalytic hydrogenation in a second hydrogenation zone in the presence of a catalyst consisting essentially of nickel, titanium and molybdenum wherein the temperature is in the range of about 260° to about 538° C., the pressure is in the range of about 500 to about 10,000 psig, the liquid hourly space velocity is in the range of about 0.3 to about 10 volume feed/volume catalyst/hour and the hydrogen flow rate is in the range of about 25 to about 190 kmol H_2/m^3 feed to obtain a liquid product, (4) separating said liquid product to obtain (a) said desired upgraded material which is solid and/or semi-solid at room temperature having a substantially lower ash, sulfur and nitrogen content than the coal charge, (b) a first liquid fraction boiling at a temperature in the range of about 100° to about 375° C. and (c) a second liquid fraction boiling above said first liquid fraction at a temperature in the range of about 200° to about 525° C.; and then (5) recycling at least a portion of said second liquid fraction to said first hydrogenation zone; and

(B) a light-boiling hydrocarbon stock boiling at a temperature in the range of about 100° to about 375° C. at ambient pressure.

4,192,654
COAL GASIFICATION PLANT

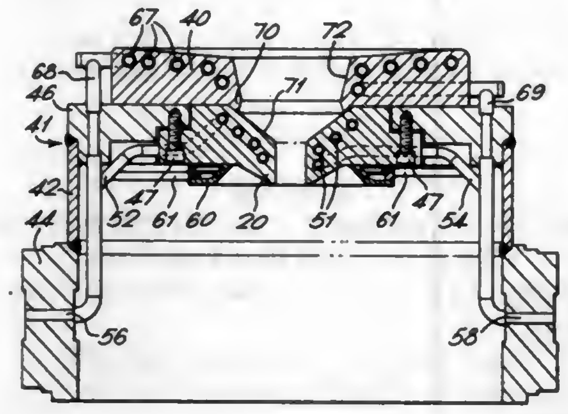
Charles T. Brooks, Kinross, Scotland, assignor to British Gas Corporation, London, England

Filed Oct. 16, 1978, Ser. No. 951,459

Claims priority, application United Kingdom, Sep. 8, 1978, 36126/78

Int. Cl.^{2} B01J *3/00*

U.S. Cl. 48—62 R **4 Claims**



1. A coal slagging gasifier comprising: a gasifying vessel; means for introducing coal into said vessel for gasification thereof in said vessel; means for introducing oxygen and steam into said vessel to effect gasification of coal therein; and a hearth located at the bottom of said vessel and including a liquid cooled slag tap member having a slag removal orifice located centrally within said hearth for removing slag from the vessel; wherein said hearth further includes a removable liquid cooled annular hearth member and in contact with said slag tap member located above said slag tap member with the opening in said annular hearth member being vertically aligned with said orifice for discharge of slag therethrough.

4,192,655
PROCESS AND APPARATUS FOR THE CONVEYANCE OF REAL GASES

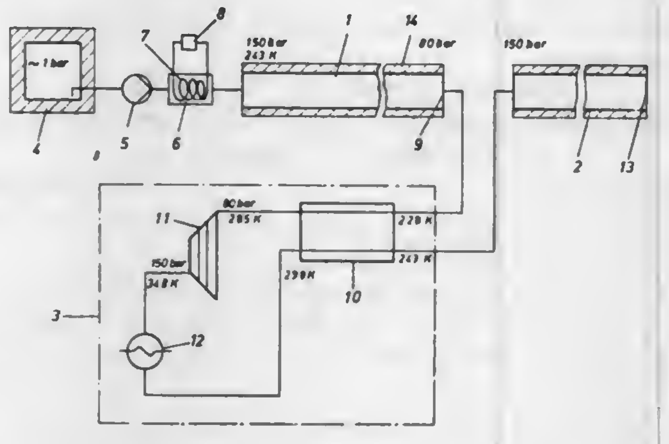
Robert von Linde, Gräefelfing, Fed. Rep. of Germany, assignor to Caloric Gesellschaft fur Apparatebau m.b.H., Graefelfing, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,644

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1977, 2732428; Jan. 24, 1978, 2802881

Int. Cl.^{2} F17D *3/00*

U.S. Cl. 48—191 **19 Claims**



1. A method of conveying real gases over long distances by means of a pipeline having a plurality of sections connected in series by; providing between said sections one or more compressor stations to compensate for the pressure loss in the preceding pipeline section, controlling the pressure and temperature of the gas at the start of each pipeline section so that a lowering of gas temperature results from the Joule-Thompson effect created by the drop in pressure in the pipe section, and using this low temperature gas for re-cooling the gas

heated by compression at one of said compressor stations, before entry into the next pipeline section.

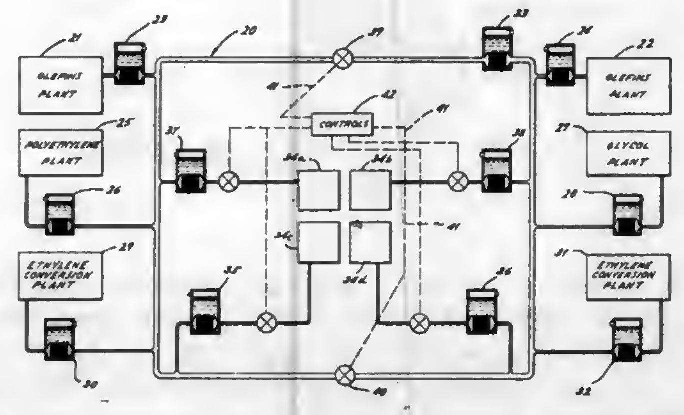
4,192,656
METHOD AND APPARATUS FOR HALTING THE ADVANCEMENT OF ACCIDENTAL ETHYLENE DECOMPOSITION IN A GAS PIPELINE

G. Richard Worrell, Media, Pa., and Frank F. McKay, Jr., Baytown, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 15, 1977, Ser. No. 860,791

Int. Cl.^{2} F17D *1/02, 1/04*

U.S. Cl. 48—192 **6 Claims**



1. In a system for the pipeline flow of compressed ethylene along relatively great distances, wherein non-catalytic decomposition of ethylene to form carbon, miscellaneous products, and methane is an exothermic reaction which can advance from a point of origin in various directions, the method of halting the advancement of a reaction boundary of such decomposition reaction which consists of:

controlling the path of the compressed gaseous ethylene so that, at appropriate zones of contemplated flow of ethylene, the ethylene instead of flowing through a conventional portion of a gas pipeline, is directed through an array of narrow tubes having cross-sectional dimensions of not more than 4 centimeters and having a length greater than a meter, and

cooling the ethylene in said plurality of narrow tubes by transferring heat from the ethylene to a liquid normally maintained below about 150° C., whereby the compressed ethylene flowing throughout the entire length of said narrow tubular stream is quenched to a temperature below the decomposition temperature of ethylene at such conditions.

4,192,657
METHOD AND APPARATUS FOR HALTING THE ADVANCEMENT OF ETHYLENE DECOMPOSITION FLAME FRONTS

G. Richard Worrell, Media, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 3, 1978, Ser. No. 921,546

The portion of the term of this patent subsequent to May 31, 1996, has been disclaimed.

Int. Cl.^{2} F17D *1/02, 1/04*

U.S. Cl. 48—192 **2 Claims**

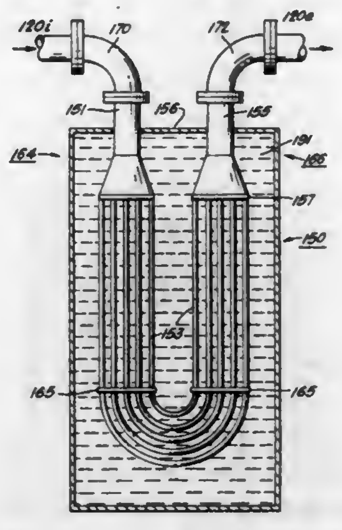
1. The method of halting the advancement of ethylene decomposition flame fronts within a control zone in a system for the pipeline flow of ethylene along a relatively great distance, there being a hazard of accidental advancement of one or more flame fronts, which method consists of:

controlling the path of the compressed ethylene so that, at appropriate control zones of contemplated flow of said ethylene, the ethylene instead of flowing through a conventional portion of an ethylene pipeline is directed through an array of narrow tubes having cross-sectional dimensions of not more than 4 centimeters and having a length greater than a meter, said tubes following a path which is a return loop connecting with adjacent portions of said pipeline system, and

cooling the ethylene in said plurality of narrow tubes by transferring heat from the ethylene streams to a liquid normally maintained below about 150° C., said liquid having an upper surface so exposed that vapor may evaporate from such upper surface, said tubes normally being immersed significantly below said upper surface of said liquid, whereby the compressed ethylene flowing throughout the entire length of said narrow tubes is cooled and quenched to a temperature below the decomposition temperature of ethylene at such conditions.

2. In a system for the pipeline flow of compressed ethylene along relatively great distances, there being a hazard of accidental advancement of one or more ethylene decomposition flame fronts which can advance through the pipeline system from a point of origin, the apparatus for halting the advancement of flame fronts which consists of:

an array of narrow tubes having a length of at least 1 meter and an internal diameter of not greater than about 4 centimeters through which said compressed ethylene flows



each tube following a path which is a return loop maintaining structural integrity during expansion and contraction attributable to rapid changes of temperature;

a shell defining a vat, said vat containing a pool of liquid normally maintained at about ambient temperature, the upper surface of the pool of liquid being exposed to the surroundings in such manner that vapor may evaporate from the upper surface of the liquid, said array of tubes being immersed significantly below the surface of said pool of liquid;

entry means connected to the ethylene pipeline system directing ethylene flowing from an upstream portion of an ethylene pipeline through an entry pipe into the entry zone of said return loop; and

exit means connected to the ethylene pipeline system directing ethylene flowing through said plurality of tubes, through an exit zone of said return loop toward a downstream portion of said ethylene pipeline, said exit pipe being closely adjacent the entry pipe, and said upstream portion of the pipeline being closely adjacent said downstream portion of said pipeline system.

4,192,658
PIPELINE FLAME ARRESTOR

G. Richard Worrell, Media, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 3, 1978, Ser. No. 921,636

Int. Cl.^{2} F17D *1/02, 1/04*

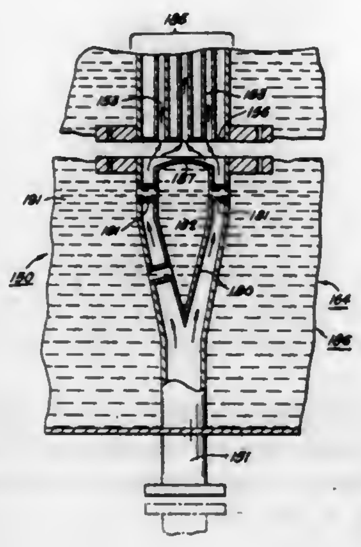
U.S. Cl. 48—192 **1 Claim**

1. Apparatus for halting the advancement of ethylene decomposition flame fronts advancing thereto which apparatus consists of:

an array of narrow tubes having a length of at least 1 meter and an internal diameter not greater than about 4 centimeters through which an ethylene gas stream flows, there being relatively large zones for heat transfer liquid between adjacent tubes, whereby the cross section of the array of tubes is significantly larger than the cross section of an ethylene pipeline with which said array of narrow tubes is connected, said pipeline being used for distributing ethylene to a plurality of customers;

structural means for maintaining the exterior of said array of narrow tubes submerged in a pool of heat transfer liquid normally maintained at about ambient temperature, and adapted to cool the ethylene gas flowing within said array of tubes to a temperature below about 150° C., whereby in the event of the advancement of a flame front into one end of the array of narrow tubes the flame front is cooled and quenched to below reaction temperature before such flame front can advance to the other end of such tubes;

liquid-cooled entry means directing gas flowing through an entry pipe connected to an upstream portion of said ethylene pipeline into said array of tubes, the cross section of said array of tubes being significantly larger than the cross section of said entry pipe, said entry means comprising a wall encompassing the gas stream, the opposite side of said wall contacting said pool of liquid, and said entry means comprising hollow baffle means, conduit means connected to said hollow baffle means and said pool of heat transfer liquid for circulating heat transfer liquid between the hollow of said baffle means and said pool of heat transfer liquid and said hollow baffle means being spaced from said wall encompassing the gas stream, said baffle means providing a cross-sectional area for gas flow maintaining the gas flow velocity at about the speed in the pipeline;



liquid-cooled exit means directing gas flowing through said array of tubes into an exit pipe connected to a downstream portion of said ethylene pipeline, the cross section of said array of tubes being significantly larger than the cross section of said exit pipe, said exit means comprising a wall encompassing the gas stream, the opposite side of said wall contacting said pool of liquid, and said exit means comprising hollow baffle means, conduit means connected to said hollow baffle means and said pool of heat transfer liquid for circulating heat transfer liquid between the hollow of said baffle means and said pool of heat transfer liquid and said hollow baffle means being spaced from said wall encompassing the gas stream, said baffle means providing a cross-sectional area for gas flow maintaining the gas flow velocity at about the speed in the pipeline.

4,192,659

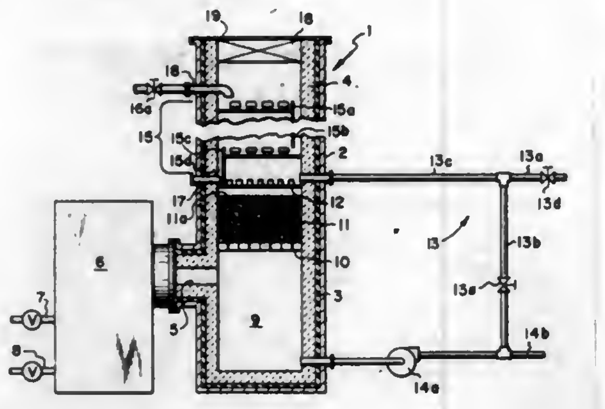
METHOD FOR HOT GAS COOLING AND GASEOUS CONTAMINANT REMOVAL

Yen-Hsiung Kiang, Collegeville, Pa., assignor to The Trane Company, La Crosse, Wis.

Filed Aug. 7, 1978, Ser. No. 931,580

Int. Cl.^{2} B01D ***47/14***

U.S. Cl. 55—89 **8 Claims**



1. A method of cooling a process gas stream comprising products of combustion which contain gaseous contaminants and having a temperature in the range from about 400° F. to 3000° F., and absorbing gaseous contaminants therefrom wherein contact is effected between said process gas stream and respective quench and absorbent liquids in order to provide said cooling and absorbing functions, the flow rates of said process gas stream, quench liquid, and/or absorbent liquid being subject to substantial variations; said method comprising the steps of

- a. passing said gas stream through a first treatment column in contact with a quench liquid in order to at least cool said process gas stream, said first treatment column being of the packed, differential type exhibiting an adequate cooling efficiency over said substantial variations in flow rates of said process gas stream and/or quench liquid; and
- b. passing the cooled process gas stream from said first treatment column through a second treatment column in contact with an absorbent liquid to at least absorb a portion of said gaseous contaminants from said process gas stream and thereby produce a concentrated absorbent liquid, said second treatment column being of the equilibrium-stage type exhibiting an adequate absorption efficiency over said substantial variations in flow rates of said process gas stream and/or absorbent liquid;

whereby the flow rates of said process gas stream, quench liquid, and/or absorbent liquid may undergo said substantial variations without substantial effect upon the adequate cooling of or contaminant removal from said process gas stream.

4,192,660

AIR CLEANER INCLUDING NOISE-LIMITING COOL AIR INTAKE NOSE

Takashi Ishidera, Aichi, and Masahiko Enjoji, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 19, 1978, Ser. No. 897,596

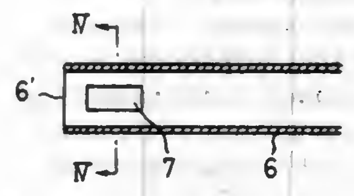
Claims priority, application Japan, Apr. 20, 1977, 52-48901

Int. Cl.^{2} B01D ***46/02***

U.S. Cl. 55—276 **4 Claims**

1. In a combined air cleaner and cool air intake pipe for a carburator of an internal combustion engine for use within an engine compartment of an automobile, said air cleaner comprising an air inlet, and said cool air intake pipe having front and back open ends and being connected at said back end to said inlet with the front end of said cool air intake pipe being adapted to be located at the front end of said engine compartment, the improvement comprising:

means to reduce noise within the automobile by reducing air column resonance within said cool air intake pipe including a tuning hole passing through the wall of said cool air intake pipe on the underside thereof and adjacent the front end thereof.



4,192,661

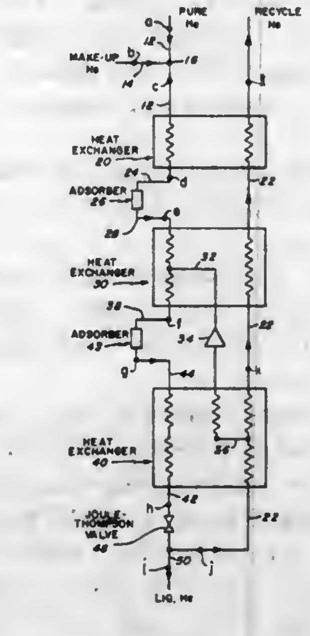
ADSORBING IMPURITIES FROM CRYOGENIC FLUID MAKE-UP PRIOR TO ADMIXING WITH FEED

Robert W. Johnson, Holbrook, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Jun. 1, 1978, Ser. No. 911,624

Int. Cl.^{2} F25J ***3/00***

U.S. Cl. 62—12 **10 Claims**



1. A cryogenic apparatus, comprising, in combination:

- a. a feed stream of cryogenic fluid to be cooled in said apparatus;
- b. a make-up stream of cryogenic fluid containing an elevated level of at least one contaminant with respect to said feed stream;
- c. mixing means for combining the feed and make-up streams into a combined stream of cryogenic fluid;
- d. means for passing said combined stream of cryogenic fluid through a heat exchanger wherein it is cooled to a temperature below the freezing point of said contaminant;
- e. adsorber means for reducing the level of said contaminant; and,
- f. means for directing said make-up stream through the adsorber means prior to directing it to said mixing means.

4,192,662

PROCESS FOR LIQUEFYING AND RECTIFYING AIR

Shunji Ogata, Machida, and Yohei Yamamoto, Tokyo, both of Japan, assignors to Japan Oxygen Co., Ltd. and Tokyo Cryogenic Industries Co., Ltd., both of Tokyo, Japan

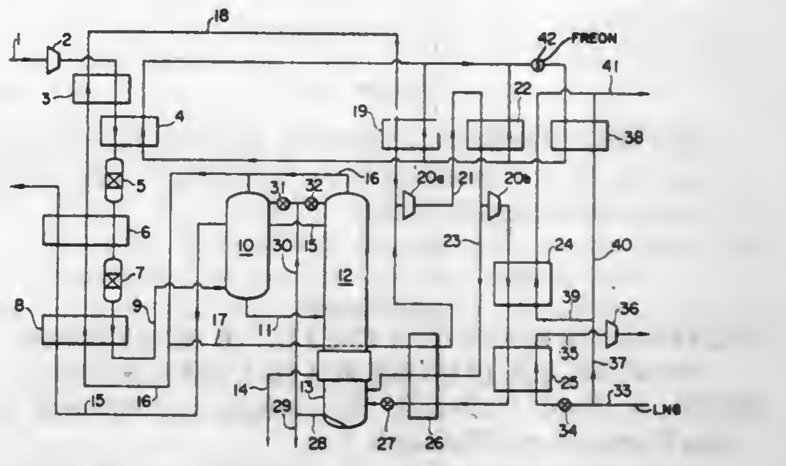
Filed Dec. 23, 1977, Ser. No. 863,889

Int. Cl.^{2} F25J ***3/04***

U.S. Cl. 62—13 **6 Claims**

1. In a process for separating air by liquefaction and rectification to produce liquid oxygen and liquid nitrogen as main products, wherein in such processes the cold of liquefied natural gas is used, the improvement comprising the steps of:

- (a) compressing feed air to a low pressure at which the air can still be fed into a rectification step;
- (b) cooling said feed air in a non-reversing heat exchanger by heat exchange with low-temperature gas which is obtained from separation of said feed air, said low temperature gas being (1) nitrogen or (2) nitrogen and oxygen in separate process lines;
- (c) removing water and carbon dioxide impurities contained in said feed air by adsorptive purification;
- (d) cooling said purified feed air by heat exchange with low temperature gas which is obtained from separation of said feed air, said low temperature gas being (1) nitrogen or (2) nitrogen and oxygen in separate process lines;
- (e) separating said cooled feed air from step (d) into nitrogen and oxygen at approximately atmospheric pressure by liquefaction and rectification to provide at least liquid oxygen which is removed as a product, said rectification including refluxing and reboiling;
- (f) warming a portion of said nitrogen which is obtained in separation step (e) by heat exchange with said feed air;
- (g) cooling the said portion of the nitrogen by heat exchange with freon which has been cooled by liquefied natural gas;



- (h) compressing said cooled nitrogen to a pressure higher than a pressure required for reboiling at a low temperature in said rectification step (e), the pressure of compressed nitrogen in step (h) being enough to liquefy the nitrogen by heat exchange with the cold of liquefied natural gas transmitted to said compressed nitrogen, and
- (i) cooling further said compressed nitrogen by heat exchange with the liquefied natural gas to liquefy the nitrogen;
- (j) expanding said compressed and cooled liquid nitrogen until a pressure required for reboiling at low temperature in said rectification step (e) is achieved;
- (k) circulating said expanded liquid nitrogen which is obtained from step (i) as a heat source for reboiling and withdrawing a portion of said liquid nitrogen as said reflux in step (e) and as a product,

wherein said compressing step (h) is done at the lower inlet temperature to reduce the power of said compression.

4,192,663

APPARATUS FOR COATING GLASS FIBERS

Gary M. Schmandt, Reynoldsburg, Ohio; Robert N. Chappelear, and Ronnie D. Hand, both of Anderson, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 29, 1978, Ser. No. 937,908

Int. Cl.^{2} C03B ***37/00***

U.S. Cl. 65—11 R **9 Claims**

1. Apparatus adapted to apply a coating to advancing continuous filaments comprising:

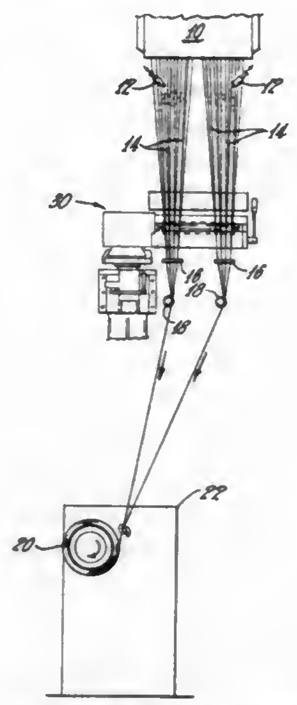
a bracket;

a base journaled at said bracket for rotation about a first axis;

means for rotating said base;

applicator means adapted to apply a coating to the advancing filaments;

a carriage joined to said applicator means, the carriage being adapted for a sliding engagement with said base along a path substantially transverse to said first axis; and



a first adjustment means adapted to rotate said carriage and said applicator means about a second axis substantially transverse to said first axis.

4,192,664

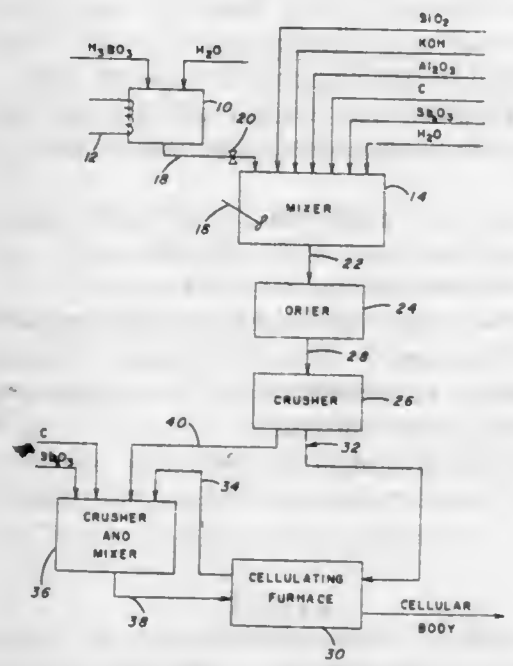
METHOD OF MAKING A CELLULAR BODY FROM A HIGH SILICA BOROSILICATE COMPOSITION

Shridhar B. Joshi, Pittsburgh, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 743,218, Nov. 19, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,610

Int. Cl.² C03B *19/08*

U.S. Cl. 65—22 **30 Claims**



1. A method of making a cellular body from a high borosilicate composition comprising,

mixing at a temperature below the melting temperature of any of the constituents amorphous silica having particles of submicron size, alumina, boric acid, less than 3% by weight alkali metal oxide and a cellulating agent and forming a pulverulent homogeneous mixture, said mixture containing more than 80% by weight amorphous silica, and

thereafter subjecting said pulverulent homogeneous mixture to a temperature sufficient to coalesce but insufficient to further homogenize said homogeneous mixture, said temperature being sufficient to gasify said cellulating agent and form a cellular body having a substantially uniform cell structure.

17. A method of making a cellular body from a high borosilicate composition comprising,

comminuting and mixing constituents at a temperature below the melting temperature of any of the constituents comprising alumina, boric acid, alkali metal salt and a cellulating agent to form a first mixture,

adding amorphous silica having particles of submicron size to said first mixture to form a second mixture, said second mixture containing more than 80 percent by weight amorphous silica and less than 3 percent by weight alkali metal oxide, and

thereafter subjecting said second mixture to a temperature sufficient to coalesce said second mixture but insufficient to further homogenize said second mixture, said temperature being sufficient to gasify said cellulating agent and form a cellular body having a substantially uniform cell structure.

4,192,665

RAPIDLY CRYSTALLIZED BETA-SPODUMENE GLASS-CERAMIC MATERIALS

Kenneth Chyung, Painted Post, and John E. Megles, Jr., Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 7, 1977, Ser. No. 848,862

Int. Cl.² C03B *32/00;* C03C *3/22*

U.S. Cl. 65—33 **3 Claims**

1. A method for producing a white, opaque, chemically durable, low-expansion glass-ceramic material comprising beta-spodumene solid solution as the principal crystal phase which comprises the steps of:

(a) selecting for crystallization a glass having a composition falling within one of Ranges I and II below, wherein:

Range I includes compositions consisting essentially, in weight percent, of about 63–67%, SiO_2, 18–21% Al_2O_3, 3.0–5.0% Li_2O, 1.0–2.5% MgO, 0.4–2.5% ZnO, 4.0–5.0% TiO_2, 1.5–4.0% PbO, 0–1.0% B_2O_3, 0–1.0% Na_2O, 0–2.0% P_2O_5, and 0–2% total of B_2O_3+-$Na_2O+P_2O_5$, and

Range II includes compositions consisting essentially, in weight percent, of about 68–71% SiO_2, 16–18% Al_2O_3, 3.0–5.0% Li_2O, 1.0–2.5% MgO, 0.4–2.5% ZnO, 4.0–5.0% TiO_2, 0–1.0% B_2O_3, 0–1.0% Na_2O, 0–2.0% P_2O_5, and 0.2–2.2% total of $B_2O_3+Na_2O+P_2O_5$; and

(b) converting the selected glass to a glass-ceramic material utilizing a crystallization heat treatment comprising heating the glass to a nucleation temperature in the range of about 750°–800° C. for a time in the range of about 1–4 hours to develop crystal nuclei throughout the volume of the glass, followed by heating the glass to a crystallization temperature in the range of about 900°–1000° C. for a time not exceeding about 2 hours, whereby a white, opaque, chemically durable, low-expansion glass-ceramic material comprising beta-spodumene solid solution as the principal crystal phase is provided.

4,192,666

METHOD OF PRODUCING GLASS-CERAMICS WITH UNIFORM BROWN STAIN DECORATION

Vincent Lupoi, Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 14, 1978, Ser. No. 942,254

Int. Cl.² C03B *32/00;* C03C *17/00*

U.S. Cl. 65—33 **8 Claims**

1. A method for producing uniformly colored brown stain decorations in glass-ceramic articles which include inhomogeneities which affect stain coloration, comprising the steps of:

forming a glassy article from a crystallizable glass composition comprising SiO_2, Al_2O_3, Li_2O, ZnO, and as a crystal growth nucleating agent, either TiO_2 or a mixture of TiO_2 and ZrO_2;

heating said glassy article to a temperature at which a major portion of the article crystallizes within a glassy matrix, thereby forming a glass-ceramic;

applying a palladium-containing stain-decorating composition onto the surface of the crystallized glass-ceramic article; and

heating the crystallized glass-ceramic article with the stain-decorating composition thereon so as to migrate palladium ions from the composition into surface portions of the article, thereby producing a uniformly colored, brown stained pattern in the surface of the article.

2. A method for producing brown colored stain decorations in glass-ceramic articles comprising the steps of:

forming a glassy article from a crystallizable glass composition comprising SiO_2, Al_2O_3, Li_2O, ZnO, and as a crystal growth nucleating agent, either TiO_2 or a mixture of TiO_2 and ZrO_2;

heating said glassy article to a temperature at which a major portion of the article crystallizes within a glassy matrix, thereby forming a glass-ceramic;

applying a palladium-containing stain-decorating composition onto the surface of the crystallized glass-ceramic article; and

heating the crystallized glass-ceramic article with the decorating composition thereon so as to migrate palladium ions from the composition into surface portions of the article, thereby producing a uniformly colored, brown stained pattern in the surface of the article.

4,192,667

PLATINUM GROUP METAL LAYER ON A REFRACTORY

Max G. Chrisman, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 862,996, Dec. 21, 1977. This application Oct. 23, 1978, Ser. No. 954,045

Int. Cl.² C03B *37/00*

U.S. Cl. 65—374 RM **2 Claims**

1. In an apparatus having a glass contacting member comprising a refractory substrate, a platinum group metal sheet and means bonding said sheet to said substrate, the improvement wherein said means is an alloy composition consisting essentially of platinum and rhodium.

4,192,668

DESICCANT AND DEFOLIATING SPRAY COMPOSITION FOR LEGUMINOUS PLANTS

Clarence A. L. Phillips, Pointe-a-Pierre, Trinidad and Tobago, and Henry W. Archer, New York, N.Y., assignors to Texaco Trinidad, Inc., Pointe-a-Pierre, Trinidad and Tobago and Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 835,388, Sep. 21, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,415

Int. Cl.² A01N *9/04*

U.S. Cl. 71—70 **4 Claims**

1. A process for defoliating and/or desiccating the foliage of leguminous plants which consists essentially in applying to said foliage from 56 to 560 liters per hectare of a composition comprising at least one mineral oil having a viscosity range at 100° F. of between about 34 and 110 SUS, an aromatic content of between 18 and 55 percent; a boiling range of about 180° C. with initial boiling temperatures of between 180° and 420° C.; and a surface tension of between 24 and 28 dines per centimeter at 30° C.; a Harkins Spreading Coefficient for one minute of between 19 and 28 and for 30 minutes of between about 17 and 31 a maximum unsulfonated residue of 85 percent.

4,192,669

HERBICIDAL ETHERS

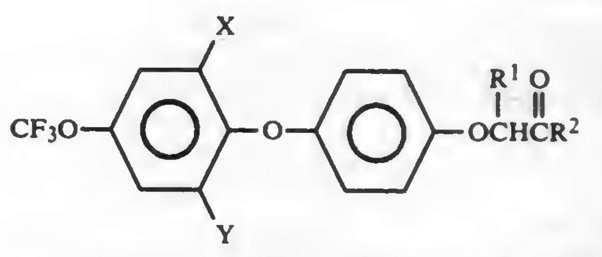
John B. Adams, Jr., Hockessin, and Joel B. Wommack, Jr., Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1977, Ser. No. 863,268

Int. Cl.² A01N *9/24;* C07C *65/02, 69/76*

U.S. Cl. 71—108 **27 Claims**

1. A compound of the formula



wherein

R^1 is H, CH_3 or CH_3CH_2;

R^2 is OR^3, NR^4R^5, or SR^6;

R^3 is H, alkyl of one through six carbons, $Na^{\oplus}$, $K^{\oplus}$, Ca^{+2} or $^{\oplus}NR^7R^8R^9R^{10}$;

R^4 is H, or CH_3;

R^5 is H, alkyl of one through four carbons or OCH_3;

R^6 is alkyl of one through six carbons;

R^7, R^8, and R^9 can be the same or different and each can be hydrogen, alkyl of one through four carbon atoms or hydroxyalkyl of two through four carbon atoms;

R^{10} is hydrogen, alkyl of one through twelve carbon atoms or benzyl;

provided that when R^5 is OCH_3, R^4 is CH_3;

X is H, Cl, Br or NO_2; and

Y is H or Cl;

provided that when Y is Cl, X must be H or Cl.

19. A method for control of weeds which comprises applying to a locus to be protected an effective herbicidal amount of a compound of claim 1.

4,192,670

ACETAL DERIVATIVES OF 4-(SUBSTITUTED AMINO)-3,5-DINITROBENZALDEHYDES

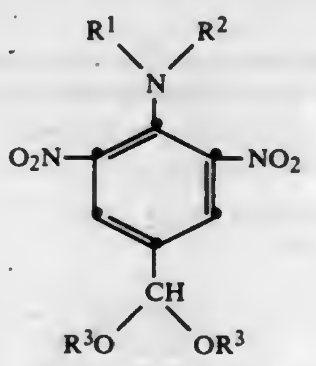
Quentin F. Soper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 707,416, Jul. 21, 1976, Pat. No. 4,054,439, which is a division of Ser. No. 557,866, Mar. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 514,674, Oct. 15, 1974, abandoned. This application Aug. 3, 1977, Ser. No. 821,280

Int. Cl.² A01N *9/20*

U.S. Cl. 71—121 **9 Claims**

1. A compound of the formula



wherein

R^1 represents

- (A) C_1–C_6 alkyl, optionally monosubstituted with
  - (1) methoxy,
  - (2) halo,
- (B) C_3–C_4 alkenyl,
- (C) halo(C_3–C_4)alkenyl,

(D) C_3–C_4 alkynyl, or
(E) cyclopropylmethyl;
R^2 represents
(A) C_1–C_6 alkyl, optionally monosubstituted with
  (1) methoxy,
  (2) halo,
(B) C_3–C_4 alkenyl,
(C) halo(C_3–C_4)alkenyl,
(D) C_3–C_4 alkynyl, or
(E) cyclopropylmethyl;
(F) hydrogen;
provided that R^1 and R^2 together contain no more than 8 carbon atoms; and R^3 is C_1–C_3 alkyl.

4,192,671
PLANT GROWTH REGULATORS

Eberhard P. Schott, Neustadt, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,474

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741343

Int. Cl.^{2} A01N *9/20*

U.S. Cl. 71—121 **1 Claim**

1. A process for improving the abscission of citrus fruits which comprises applying to trees bearing such fruit an effective amount of an N,N-dimethyl-N-C_{12}–C_{14}-alkyl-N-benzylammonium salt or an N,N-dimethyl-N,N-dibenzylammonium salt.

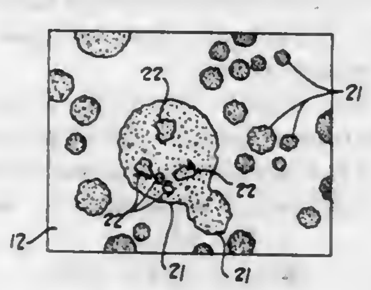
4,192,672
SPRAY-AND-FUSE SELF-FLUXING ALLOY POWDERS

Larry N. Moskowitz, Warrensville Heights, and Erhard Klar, Beachwood, both of Ohio, assignors to SCM Corporation, Cleveland, Ohio

Filed Jan. 18, 1978, Ser. No. 870,339

Int. Cl.^{2} B22D *23/08*

U.S. Cl. 75—0.5 C **10 Claims**



1. A boron-containing nickel or cobalt spray-and-fuse, self-fluxing alloy powder containing hard precipitates of chromium boride and/or chromium carbide which precipitates are internally precipitated from a viscous melt of said alloy, at least about 5% of said precipitates by volume of said powder have an average size of at least about 10 microns.

4,192,673
METHOD OF MANUFACTURING GRANULATED FERRONICKEL

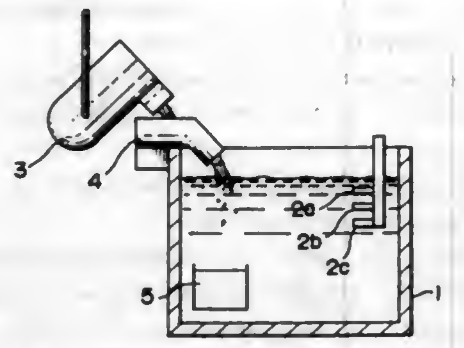
Kohzo Baba, Hyuga, and Itsuyoshi Nagatomo, Miyazaki, both of Japan, assignors to Hyuga Smelting Co., Ltd., Hyuga, Japan

Filed Dec. 19, 1978, Ser. No. 970,956

Int. Cl.^{2} B22D *23/08*

U.S. Cl. 75—0.5 C **8 Claims**

1. A method of manufacturing granular ferronickel from fused ferronickel containing no less than 0.1% by weight of carbon by deoxidizing said fused ferronickel with addition of a deoxidizing agent and then water granulating the resultant mixture.



4,192,674
METHOD OF OBTAINING TANTALUM-NIOBIUM FROM ORES HAVING A HIGH TITANIUM CONTENT

Bruno Krismer, Goslar, and Harmut Pungs, Laufenburg, both of Fed. Rep. of Germany, assignors to Hermann C. Starck Berlin, Berlin, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,834

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733193

Int. Cl.^{2} C22B *4/00;* **C21B** *15/02;* **C22B** *9/10*

U.S. Cl. 75—10 R **12 Claims**

1. A process for reducing an ore having a substantial content of tantalum, niobium and titanium oxides and being substantially free of tin and iron oxides to obtain a metal having a substantial tantalum and niobium content, said process comprising the steps of:

melting said ore in the presence of calcium oxide, heavy spar and metallic aluminum in an electric arc furnace, the weight of said aluminum being between about 1.5 and 3.0 times the equivalent weight of aluminum theoretically required for the stoichiometric reducton of the total tantalum and niobium in the ore, the weight ratio of said calcium oxide to said aluminum being between about 0.3 and 0.5, and the weight ratio of said heavy spar to said aluminum being between about 0.1 and 0.8, the weight ratio of said heavy spar to said calcium oxide being selected to effectively prevent the formation of calcium-aluminum titanates, to form a metal fraction rich in tantalum and niobium and lean in titanium relative to said ore, and a slag fraction; and

separating said metal fraction from said slag fraction.

4,192,675
PROCESS FOR DECARBURIZING FERRO-MANGANESE

Robert A. Featherstone, Northcliff; Paul P. Roos, Florida; Willem A. Gericke, Meyerton, all of South Africa; Jean Saleil, Saint-Etienne, France; Pierre J. Leroy, Saint-Germain-en-Laye, France, and Jean-Marcel Masson, Saint-Etienne, France, assignors to S.A. Manganese Amcor Ltd., Johannesburg, South Africa and Creusot-Loire, Paris, France

Filed Dec. 28, 1978, Ser. No. 974,507

Claims priority, application France, Jan. 17, 1978, 78 01171

Int. Cl.^{2} C21C *5/34*

U.S. Cl. 75—60 **14 Claims**

1. A process for decarburizing a ferro-manganese melt by blowing an oxidizing gas into the melt through at least one immersed tuyere protected with a peripheral fluid introduced into the outer tube of said tuyere, and then into said melt, which comprises the successive steps of

(a) blowing an oxidizing gas consisting of pure oxygen through an inner tube of said tuyere to reduce the carbon content from an initial value, C_1, of from 6% to 7.5% to a second value, C_2, of from 2% to 3.5% and to raise the melt to a temperature of from 1650° to 1750° C., and

(b) blowing an oxidizing gas consisting of 0 to 50% of oxygen, at least 30% of steam, and 0 to 70% of an inert gas, all by volume through an inner tube of said tuyere to reduce the carbon content from the second value, C_2, to a third value, C_3, which is at most 1.6% and to maintain the temperature of the melt at from 1670° C. to 1710° C.

4,192,676
HIGH TEMPERATURE REDUCTION OF COPPER SALTS

James E. Reynolds, Golden; Wayne C. Hazen, Denver, and Duane N. Goens, Golden, all of Colo., assignors to Cyprus Metallurgical Processes Corporation, Los Angeles, Calif.

Filed May 11, 1978, Ser. No. 905,091

Int. Cl.^{2} C22B *15/00*

U.S. Cl. 75—72 **30 Claims**

1. A process for reducing copper bearing materials selected from the group consisting of copper chlorides and copper oxychlorides to elemental copper with hydrogen which comprises:

injecting the copper bearing materials into a reactor in finely divided solid form;

maintaining the reactor temperature in excess of 1083° C.;

contacting the copper bearing materials with hydrogen under conditions which require intimate contact and a substantially instantaneous reduction reaction in order to produce liquid elemental copper.

4,192,677
1,3,4-OXADIAZOLE DERIVATIVES AND USE THEREOF

Mitsuo Okazaki, Tama; Akihiro Yamaguchi, Yokohama, and Masaomi Sasaki, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

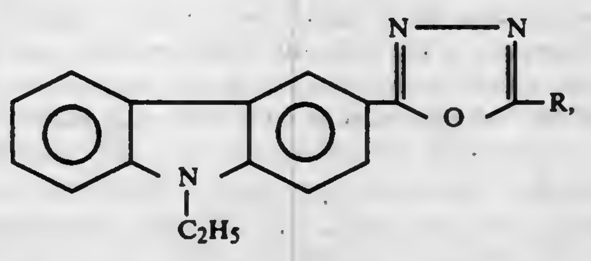
Division of Ser. No. 796,221, May 12, 1977, Pat. No. 4,141,729. This application Nov. 6, 1978, Ser. No. 958,190

Claims priority, application Japan, May 18, 1976, 51-56830; May 18, 1976, 51-56832

Int. Cl.^{2} G03G *5/06*

U.S. Cl. 430—77 **28 Claims**

1. An electrophotographic plate comprising an electrically conductive support and a photoconductive layer overlying said electrically conductive support, said photoconductive layer consisting essentially of a mixture of a charge-generating pigment, a compound having the formula



wherein R is selected from the group consisting of phenyl, halogenophenyl, nitrophenyl, alkylphenyl wherein alkyl has 1 to 4 carbon atoms, alkoxyphenyl wherein alkoxy has 1 to 4 carbon atoms, cyanophenyl, carboxylic ester substituted phenyl, dialkylaminophenyl wherein alkyl has 1 to 4 carbon atoms, naphthyl, anthryl and a binding agent.

4,192,678
N-ALKYL- OR N-ARYL-BENZISOXAZOLONE SCAVENGER COMPOUNDS

Richard A. Chasman, Hilton, and Wayne F. Erickson, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 15, 1978, Ser. No. 960,888

Int. Cl.^{2} G03C *1/40, 5/54, 7/00, 1/06*

U.S. Cl. 430—214 **42 Claims**

15. In a photographic assemblage to be processed by an alkaline processing composition, said assemblage comprising:

(a) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a negative-working, dye image-providing material which produces an imagewise distribution of diffusible dye in the areas where said silver halide is developed; and

(b) a dye image-receiving layer;

the improvement wherein said photographic assemblage contains an N-alkyl- or N-aryl-benzisoxazolone compound.

4,192,679
BIFUNCTIONAL BENZISOXAZOLONE COMPOUNDS

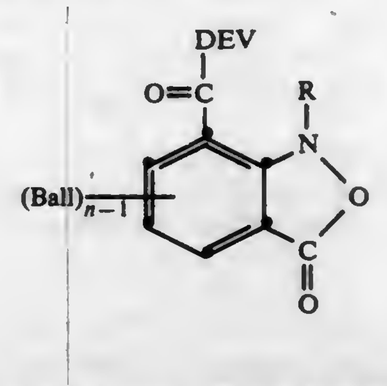
Wayne F. Erickson, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 15, 1978, Ser. No. 960,889

Int. Cl.^{2} G03C *1/40, 5/54, 7/00, 1/10*

U.S. Cl. 430—214 **48 Claims**

37. A process for producing a photographic image in color in an imagewise-exposed photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a negative-working, dye image-providing material which produces an imagewise distribution of diffusible dye in the areas where said silver halide is developed, said element containing a compound having the following formula:



wherein:

R represents a substituted or unsubstituted alkyl or aryl group;

DEV is a silver halide developing agent;

Ball is at least one organic ballasting radical of such molecular size and configuration as to render said compound nondiffusible in said photographic element during development in an alkaline processing composition; and

n is a positive integer of 1 to 4;

said process comprising:

treating said element with an alkaline processing composition to cause the benzisoxazolone ring to open and release the silver halide developing agent by nucleophilic displacement, said developing agent then effecting development of each exposed silver halide emulsion layer, whereby:

(a) an imagewise distribution of said dye is formed as a function of said development of said silver halide emulsion layer; and

(b) at least a portion of said imagewise distribution of said dye diffuses out of said element.

4,192,680
PROCESS FOR TREATING LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Isamu Fushiki; Atushi Kamitakahara, both of Hino, and Keiichi Mori, Odawara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 24, 1978, Ser. No. 908,913

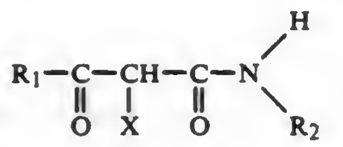
Claims priority, application Japan, May 26, 1977, 52-61917

Int. Cl.^{2} G03C *7/00*

U.S. Cl. 430—380 **11 Claims**

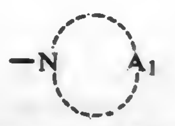
1. A process for developing an image-wise exposed light-sensitive silver halide color photographic material with a color developing solution which process comprises conducting the development with the developing solution containing 0.0534 to

3.0 mol/l of bromide ion in the presence of a yellow coupler represented by general formula [I], [II], [III]or [IV];

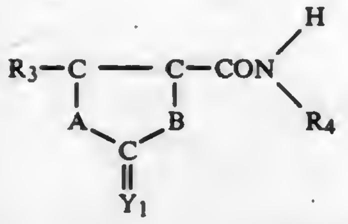


$R_1-\underset{O}{\underset{\|}{C}}-\underset{X}{\underset{|}{CH}}-\underset{O}{\underset{\|}{C}}-N\begin{matrix}H\\ \\ R_2\end{matrix}$ (I)

wherein R_1 represents a chained or cyclic alkyl group having at the end thereof a tertiary carbon atom which is directly attached to the carbonyl group, or an aryl group, X represents

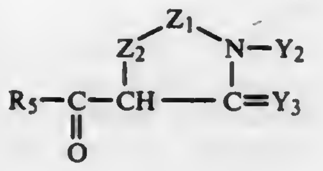


or a group on which oxygen is directly attached to the active point, said group being able to split off during coupling and said oxygen being directly attached to a non-metal atom having a double bond, A_1 represents and atomic group necessary for forming an imido group, a pyrrole group or a diazole group, and R_2 represents an aryl group or a heterocyclic ring;



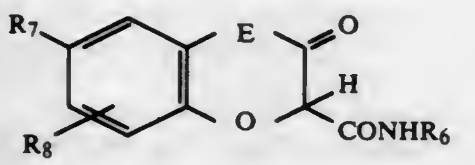
(II)

wherein R_3 represents a chained or cyclic alkyl group, an aryl group or a heterocyclic ring, A and B each represent oxygen or >N—R′(wherein R′ represents hydrogen, an alkyl group, an aryl group, or an acyl group), Y_1 represents oxygen or sulfur and R_4 represents an aryl group or a heterocyclic ring, provided that there are excluded the case where A and B are the same;



(III)

wherein R_5 represents a chained or cyclic alkyl group, an aryl group or a heterocyclic ring, Y_2 represents hydrogen or R_3; when Z_1 represents a carbonyl group or a thiocarbonyl group, Y_3 and Z_2 each represent oxygen or sulfur; and when A_1 represents a chained or cyclic alkylene group, an arylene group or a divalent heterocyclic ring, Y_3 represents oxygen and Z_2 represents oxygen, sulfur, or nitrogen substituted by an acyl group or a sulfonyl group;



(IV)

wherein R_6 represents an aryl group, R_7 represents a group which is not split off during coupling, R_8 represents hydrogen, halogen, an alkyl group, an alkoxy group, an aryloxy group or an acylamino group, and E represents a simple bond or $—C(CH_3)_2—$.

4,192,681
PROCESS FOR FORMING AN AMPLIFIED DYE IMAGE

Mitsuto Fujiwhara; Syunji Matsuo; Mikio Kawasaki; Toyoaki Masukawa, and Yutaka Kaneko, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Nihonbashi-Muro, Japan

Filed Oct. 1, 1976, Ser. No. 728,794
Claims priority, application Japan, Oct. 7, 1975, 50/121559
Int. Cl.^{2} G03C *5/32, 7/00*
U.S. Cl. 430—373 **6 Claims**

1. An improved process for forming an amplified dye image by:

(a) imagewise exposing a light-sensitive silver halide photographic material comprising a support and thereon at least one silver halide emulsion layer containing a silver halide and a coupler and further provided with a hydrophilic colloid intermediate layer adjacent to the silver halide emulsion layer,

(b) developing the exposed material with a developer containing a color developing agent, and

(c) processing the developed material with an amplifying solution in the presence of an imagewise-distributed metallic silver in the silver halide emulsion layer which acts as a catalyst and developing agent, the improvement of which comprises:

(1) the coupler being present stoichiometrically in excess of at least 50% relative to the amount of the silver halide,

(2) the ratio in dry thickness of each hydrophilic colloid intermediate layer to the silver halide emulsion layer adjacent thereto in the photographic material being 1 to 10, and

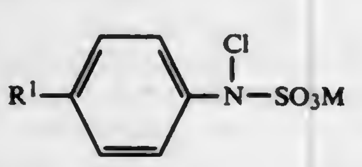
(3) the amplifying solution containing hydrogen peroxide.

4,192,682
PROCESS OF FORMING A HIGH-CONTRAST SILVER IMAGE

Yoshio Nishina; Syunji Matsuo; Toshio Nagatani; Kazuo Takahashi, and Takeshi Habu, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1978, Ser. No. 869,630
Claims priority, application Japan, Jan. 26, 1977, 52-7459
Int. Cl.^{2} G03C *5/30*
U.S. Cl. 430—405 **8 Claims**

1. A process of forming a high-contrast silver image by use of a light-sensitive silver halide photographic material comprising a support, a silver halide emulsion layer and another hydrophilic colloidal layer coated on said support, at least one of said silver halide emulsion layer and said another hydrophilic colloidal layer containing a substantially non-diffusible compound having oxidation power on a hydroquinone developing agent, said substantially non-diffusible compound being selected from the group consisting of (i) a N-chloroarylsulfonamide having the general formula



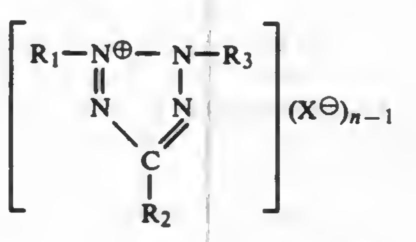
wherein R^1 representa an alkyl group having 6–12 carbon atoms and M represents an alkali metal atom,

(ii) a bipyridinium compound having the formula

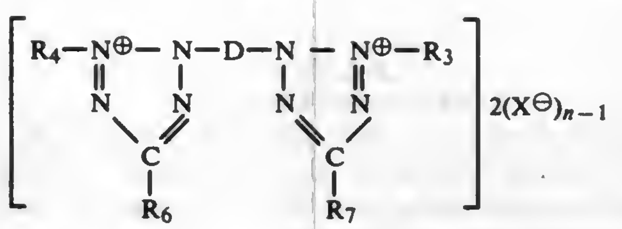
$[B]^{2+}(X^-)_2$

wherein $[B]^{2+}$ represents a bipyridinium compound, and X^- represents an anionix surface active moiety having at least 9 carbon atoms,

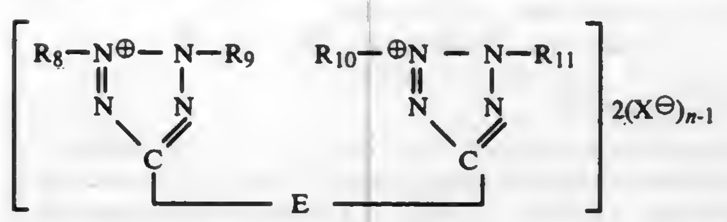
(iii) tetraphenylphosphonium bichromate, (iv) tetraphenylphosphonium permanganate, (v) tetraphenylarsonium perchromate and (vi) a quaternary salt, said quaternary salt being a tetrazolium salt of the following general formulae I, II and III



I



II



III

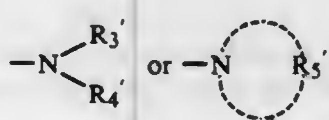
wherein R_1, R_3, R_4, R_5, R_8, R_9, R_{10} and R_{11} each represent an alkyl, allyl, phenyl, naphthyl or heterocyclic group; R_2, R_6 and R_7 each represent an allyl, phenyl, naphthyl, heterocyclic, alkyl or amino group, carboxyl or the salt thereof, mercapto, nitro or hydrogen; D represents an arylene group; E represents an alkylene, allylene or aralkylene group; $X^\ominus$ represents an anionic surface active moiety having at least 9 carbon atoms; and n represents an integer of 1 or 2, providing that the compound forms a molecular inner salt when n is 1;

comprising exposing said light-sensitive silver halide photographic material to light;

and developing said exposed photographic material with a developer containing no hydroquinone developing agent, said developer being selected from the group consisting of (A) a compound having the following formula

$R_1'—Z—R_2'$,

wherein Z is an arylene group; and R_1' and R_2' are individually hydroxyl or an



group in which R_3' and R_4' each represent hydrogen, hydroxyl or an alkyl or aryl group, provided that both of R_1' and R_2' cannot simultaneously be hydroxy when R_1' and R_2' are attached to said arylene group of Z in para-position relation; and R_5' is an atomic group for forming a 5- or 6-membered heterocyclic ring,

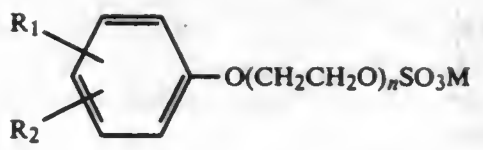
(B) sodium ascorbate, and (C) 1-phenyl-3-pyrazolidone.

4,192,683
PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiichi Sakamoto; Masao Ishihara; Kazuo Nakazato; Hiroshi Yamada; Sadatugu Terada; Kenichi Kitahara; Naoto Abe; Mamoru Komiya, and Masaru Kanbe, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 641,672, Dec. 17, 1975, abandoned.
This application Oct. 18, 1977, Ser. No. 843,318
Int. Cl.^{2} G03C *1/76, 1/02*
U.S. Cl. 430—536 **3 Claims**

1. A photographic light-sensitive material comprising a layer which contains a compound represented by the following Formula I



wherein R_1 and R_2 are individually a branched alkyl group having 1 to 18 carbon atoms; M is a cation; and n is a number of 1 to 50.

2. A photographic light-sensitive material comprising a support and a subbing layer formed by applying an aqueous emulsion, which comprises a particulate vinyl polymer and a compound as defined in claim 1, to said support.

4,192,684
PHOTOSENSITIVE COMPOSITIONS CONTAINING HYDROGENATED 1,2-POLYBUTADIENE

Takahashi Gensho; Yanai Masamitsu; Kurihara Masakazu; Tanaka Yoneharu, and Suzuoki Kazuhiro, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 760,211, Jan. 17, 1977, abandoned. This application Apr. 20, 1978, Ser. No. 898,258
Claims priority, application Japan, Jan. 24, 1976, 51/6877
Int. Cl.^{2} G03C *1/68*
U.S. Cl. 430—284 **25 Claims**

1. A photosensitive composition comprising:

(I) 100 parts by weight of one prepolymer having terminal ethylenically unsaturated groups and a number average molecular weight of about 2,000 to 30,000 whose main segment is selected from the group consisting of (i) a chain consisting essentially of a hydrogenated 1,2-polybutadiene having two ends per molecule and a hydrogenation ratio of pendent vinyl groups of the 1,2-addition units of about 50 to 100 percent, about 1.2 to 2 of such ends per molecule carrying hydroxy groups, (ii) a residue consisting essentially of a chain extended hydrogenated 1,2-polybutadiene having 2 to 20 urethane bonds obtained by reaction between the hydrogenated 1,2-polybutadiene and a diisocyanate, (iii) a chain consisting essentially of a hydrogenated 1,2-polybutadiene having two ends per molecule and carboxyl groups at such ends introduced by esterification between the hydroxy groups of the hydrogenated 1,2-polybutadiene and the carboxyl groups of a dicarboxylic acid and (iv) a chain consisting essentially of a chain extended hydrogenated 1,2-polybutadiene having two ends per molecule and carboxyl groups at such ends introduced by esterification between the hydroxy groups of a chain extended hydrogenated 1,2-polybutadiene having hydroxy groups at such ends and 2 to 20 urethane bonds having been prepared by reaction between the hydrogenated 1,2-polybutadiene and the diisocyanate, and the carboxyl groups of a dicarboxylic acid,

(II) about 5 to 100 parts by weight of at least one polymerizable ethylenically unsaturated monomeric compound,

(III) a photopolymerization initiator in an amount of about 0.001 to 10 weight percent of the total weight of the prepolymer (I) and the polymerizable ethylenically unsaturated monomeric compound (II), and

(IV) a stabilizer in an amount of about 0.001 to 2.0 weight percent of the total weight of the prepolymer (I) and the polymerizable ethylenically unsaturated monomeric compound (II).

4,192,685

PHOTOCURABLE UNSATURATED POLYESTER RESIN COMPOSITION AND CROSS-LINKING AGENTS

Akihiro Horike, Hino; Yoshio Itakura, Tokyo, and Tadashi Shingu, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 673,809, Apr. 5, 1976, abandoned, which is a continuation of Ser. No. 482,552, Jun. 24, 1974, abandoned. This application Feb. 1, 1978, Ser. No. 874,134

Claims priority, application Japan, Jun. 28, 1973, 48-72214; Jul. 2, 1973, 48-73596

Int. Cl.² G03C *1/68*

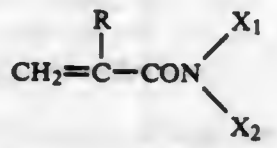
U.S. Cl. 430—283 **14 Claims**

1. In photosensitive resin composition consisting essentially of: an unsaturated polyester having an acid value of at least 20 and present in from 0.01 to 10% by weight based on the weight of the entire composition; a cross-linking agent; and a photosensitizer; the improvement comprising:

a cross-linking agent present in from 5 to 70% by weight based on the weight of the entire composition and consisting essentially of the combination of

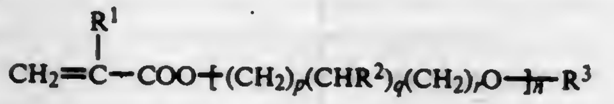
(1) a polyacrylate or polymethacrylate compound,

(2) an acrylamide or methacrylamide compound present in from 1 to 20% by weight based on the weight of the entire composition of the formula



wherein R is hydrogen or alkyl and X_1 and X_2 are organic groups, and

(3) a compound present in from 0.5 to 40% by weight based on the weight of the entire composition and not more than 80% by weight based on the total weight of the cross-linking agent of the formula



$$CH_2=\overset{R^1}{C}-COO\left[(CH_2)_p(CHR^2)_q(CH_2)_rO\right]_n R^3$$

wherein n is an integer of at least 1, p, q, and r are 0 or an integer of at least 1, with the proviso that $p+q+r$ equals from 2 to 6, R^1 is hydrogen or methyl, R^2 is lower alkyl optionally substituted with a halogen, and R^3 is alkyl, aryl or saturated acyl optionally substituted with a halogen.

4,192,686

COMPOSITIONS AND METHOD FOR INHIBITING FORMATION OF EXPLOSIVE COMPOUNDS AND CONDITIONS IN SILVERING CONCENTRATES FOR ELECTROLESS DEPOSITION OF SILVER

Joseph F. Soltys, London, Canada, assignor to London Laboratories Limited Co., Woodbridge, Conn.

Filed Oct. 11, 1977, Ser. No. 840,840

Int. Cl.² C23C *3/02*

U.S. Cl. 106—1.23 **31 Claims**

1. An improved method for inhibiting formation of explosive conditions or compounds in a mixture resulting from contact of (1) a concentrated aqueous solution of an ammonical silver salt and (2) a concentrated aqueous solution of a strong alkali, which comprises providing an effective amount of an explosion inhibitor comprising a polyhydric alcohol having 4 to 6 carbon atoms in at least one of said concentrated aqueous solutions (1) or (2).

13. An improved multi-part system capable of effecting electroless deposition of silver by simultaneous admixture of diluted portions thereof on a work surface and protected against formation of explosive compounds or conditions in a mixture resulting from contacting the system parts, said system comprising the following parts:

(A) a concentrated aqueous silvering solution comprising ammonical silver salt, an effective amount of explosion inhibitor comprising a polyhydric alcohol having 4 to 6 carbon atoms and sufficient extraneous ammonium ions to stabilize said polyhydric alcohol in said aqueous silvering solution and thereby prevent deterioration of the same, and

(B) a concentrated aqueous solution of strong alkali.

4,192,687

LINING MATERIALS

Werner Bade, Bendorf; Günther Gelsdorf, Nordenstadt, and Günther Wieland, Wiesbaden, all of Fed. Rep. of Germany, assignors to Didier-Werke AG and Mannesmann AG, both of Wiesbaden, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,815

Int. Cl.² B28B *7/36*

U.S. Cl. 106—38.24 **10 Claims**

1. A material suitable for use as lining for vessels designed to hold molten iron or steel consisting essentially of burned granular dolomite, 1 to 6% by weight of a natural triglyceride oil or a mixture of triglyceride oils and 2 to 6% by weight of dry inorganic particulate binding agents.

4,192,688

PRODUCT AND PROCESS FOR FORMING SAME

Clarence L. Babcock, Toledo; Robert A. Busdiecker, Woodville, and Erwin C. Hagedorn, Oregon, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 533,575, Dec. 17, 1974, abandoned, which is a continuation of Ser. No. 269,667, Jul. 7, 1972, abandoned, which is a division of Ser. No. 70,500, Sep. 8, 1970, Pat. No. 3,788,865, which is a continuation of Ser. No. 464,147, Jun. 15, 1965, abandoned, which is a continuation-in-part of Ser. No. 386,693, Jul. 31, 1964, abandoned. This application Feb. 6, 1975, Ser. No. 547,690

Int. Cl.² C03C *3/22, 3/04, 3/20*

U.S. Cl. 106—39.7 **4 Claims**

1. A shaped, non-porous, low-expansion at least partially crystalline light blue ceramic article containing a multitude of substantially homogeneously dispersed crystals dispersed in a glassy matrix, said ceramic article having been formed from a preformed amber glass article by thermal in situ crystallization, said glass being a thermally crystallizable glass having a composition consisting essentially of the following components, present in the following weight percent ranges:

Component	Weight Percent
SiO_2	50–75
Al_2O_3	16–35
Li_2O	3–5.5
B_2O_3	0–9
ZrO_2	0–5
TiO_2	0–10
SnO_2	0–5
P_2O_5	0–3
F_2	0–0.2
Alkaline earth oxide	0–4.5
ZnO	0–4
Na_2O	0–2
CoO and NiO	0.005–2
$(ZrO_2 + TiO_2 + SnO_2)$	not over 10
$(SiO_2 + Al_2O_3)$	75–92

the total of TiO_2, ZrO_2 and SnO being from 2–10%, where the glass and the resulting ceramic contains 94–100 percent of the foregoing components, the other 6 to zero percent being other compatible inorganic components, said article having a coefficient of lineal thermal expansion of less than 15×10^{-7}°C. (0°–300° C.).

4,192,689

ION EXCHANGE STRENGTHENING OF SODA-LIME-SILICA GLASS

Dale W. Rinehart, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 30, 1978, Ser. No. 910,705

Int. Cl.² C03C *3/04, 21/00*

U.S. Cl. 106—52 **6 Claims**

1. In a glass composition of the conventional soda-lime-silica flat glass type which consists of SiO_2 as the major constituent, 12 to 16 percent by weight Na_2O, 0 to 2 percent by weight K_2O, but no more than 17 percent by weight total of Na_2O and K_2O, a substantial inclusion of CaO, optionally a relatively small amount of Al_2O_3, and 0 to 2 percent by weight total of SO_3 and colorants, essentially free of Li_2O, and exhibiting a melting temperature less than about 2850° F. and a working range greater than about 90° F., the improvement comprising:

enhanced ion exchange strengthening below the strain point by virtue of an elevated annealing point above 1030° F. by the inclusion of 2 to 4.5 percent by weight ZrO_2 and 0 to 4.5 percent by weight Al_2O_3; the CaO content being restricted to 6 to 8.5 percent by weight to avoid reducing the working range; whereby the SiO_2 remainder is 67 to 74 percent by weight.

6. In a glass composition of the conventional soda-lime-silica flat glass type which consists of SiO_2 as the major constituent, 12 to 16 percent by weight Na_2O, 0 to 2 percent by weight K_2O, but no more than 17 percent by weight total of Na_2O and K_2O, a substantial inclusion of CaO, 0 to 5 percent by weight MgO, optionally a relatively small amount of Al_2O_3, and 0 to 2 percent by weight total of SO_3 and colorants, essentially free of Li_2O, and exhibiting a melting temperature less than about 2850° F. and a working range greater than about 90° F., the improvement comprising:

enhanced ion exchange strengthening below the strain point by virtue of an elevated annealing point above 1030° F. by the inclusion of 3 to 4.5 percent by weight ZrO_2 and/or Al_2O_3; the CaO content being restricted to 4 to 8.5 weight percent and the total CaO and MgO content being restricted to 6 to 13 percent by weight to avoid reducing the working range; whereby the SiO_2 remainder is 67 to 74 percent by weight.

4,192,690

FIBER-REINFORCED HYDRAULICALLY HARDENABLE SHAPED OBJECTS

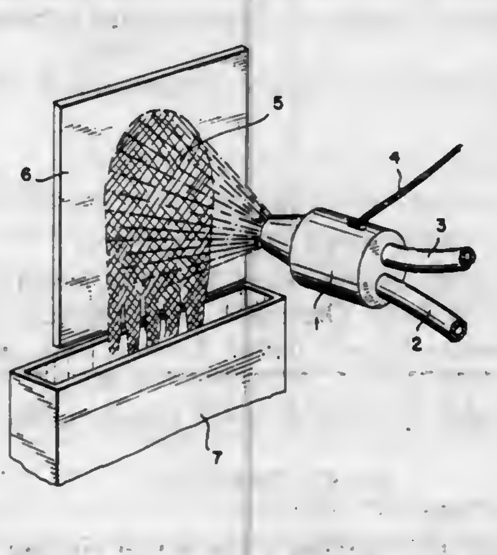
Adolf Meyer, Leimen bein Heidelberg, and Peter O. Gutfleisch, Mannheim, both of Fed. Rep. of Germany, assignors to Portland-Zementwerke Heidelberg A.G., Heidelberg, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,763

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617741

Int. Cl.² B28B *21/44, 21/56*

U.S. Cl. 106—99 **13 Claims**



1. Process for the preparation of fiber-reinforced cement-based hydraulically hardenable shaped objects, which comprises spraying cement-based matrix and fibers with a spraying apparatus onto a deflecting surface to produce on said surface a mixture of matrix and fibers, removing the mixture in the unhardened state from said deflecting surface into a mould, and moulding from the mixture fiber-reinforced cement-based hydraulically hardenable shaped objects by hardening under water.

13. Fiber-reinforced cement-based hydraulically hardenable shaped objects prepared by the process of claim 1.

4,192,691

METAL OXIDE PLATELETS AS NACREOUS PIGMENTS

Louis Armanini, Pleasantville, N.Y., assignor to The Mearl Corporation, Ossining, N.Y.

Filed Oct. 26, 1978, Ser. No. 954,928

Int. Cl.² C09C *1/00, 1/36*

U.S. Cl. 106—291 **15 Claims**

1. A method for the preparation of a nacreous pigment which comprises the step of subjecting a non-toxic metal oxide coated mica nacreous pigment to an extractive dissolution by contacting said pigment with an aqueous acidic solution comprising hydrofluoric acid together with a mineral acid at an elevated temperature until the desired amount of mica has been removed and the luster has thereby been increased, and recovering the resulting pigment.

4,192,692

PROCESS FOR REMOVING LAYERS OF SELENIUM

Heinz Herrmann, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,561

Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723799

Int. Cl.² B08B *3/08*

U.S. Cl. 134—2 **13 Claims**

1. A process for removing a layer, which contains amorphous selenium or consists thereof, from a metal base, which comprises contacting the layer with a first fluid which contains an amine or a mercaptan in an effective amount sufficient to cause flaking-off of said selenium from said metal base, at a temperature in the range between about 60° and 150° C., and then contacting the layer with an inert second fluid at a temperature not exceeding 40° C.

4,192,693

ALUMINUM COPPER ALLOY ELECTRICAL CONDUCTOR AND METHOD

E. Henry Chia, and Roger J. Schoerner, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 724,687, Sep. 20, 1976, which is a continnation-in-part of Ser. No. 685,469, May 12, 1976, which is a continuation-in-part of Ser. No. 505,821, Sep. 13, 1974, abandoned, which is a continuation of Ser. No. 194,757, Nov. 1, 1971, abandoned. This application Aug. 18, 1977, Ser. No. 825,639

Int. Cl.² C22F *1/04*

U.S. Cl. 148—2 **7 Claims**

1. A process for preparing a heat resistant aluminum alloy conductor having an electrical conductivity of at least fifty-seven percent (57%) IACS, a percentage elongation of at least 12 percent, and a tensile strength of at least 12,000 psi and containing copper aluminate inclusions having a particle size diameter of less than 10,000 angstrom units when measured along the transverse axis of said inclusions, comprising the steps of:

(a) alloying from about 0.10 to about 1.00 weight percent copper and from about 99.00 to about 99.90 weight percent aluminum; said aluminum consisting essentially of no more than about 0.10 weight percent each of trace elements selected from the group consisting of vanadium, iron, silicon, manganese, magnesium, zinc, boron and

titanium with the total concentration of said trace elements not exceeding about 0.30 weight percent;
(b) casting the alloy into a continous bar in a moving mold formed by a groove in the periphery of a casting wheel and an endless belt lying adjacent to the groove along a portion of the periphery of the wheel;
(c) hot-working the bar substantially immediately after casting while the bar is in substantially that condition as cast by rolling the bar in closed roll passes to obtain a continuous aluminum alloy rod;
(d) drawing the rod with no intermediate anneals to form wire containing the intermetalic precipitate Al_2Cu; and
(e) annealing or partially annealing the wire.

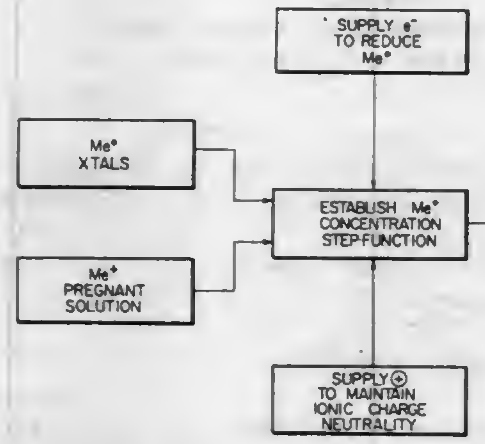
4,192,694
SOLID OR MOLTEN REAGENT TREATMENT OF METAL TIRE CORD

Grover W. Rye, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 644,672, Dec. 29, 1975, abandoned. This application Aug. 4, 1978, Ser. No. 931,231
Int. Cl.^{2} B29H *9/10*
U.S. Cl. 148—6.11 **6 Claims**

1. In a process of treating a brass coated steel filament with a reagent reactive with the brass surface or exposed steel surface of the filament so as to promote and/or retain adhesion between a cord comprised thereof any adjacent vulcanized rubber, and/or which improves the resistance of the filament or cord to corrosion, the improvement wherein the filament is either (a) passed through said reagent in its molten form or (b) passed through said reagent in its solid form with the temperature of the wire being above the melting point of the reagent so that the portion of the solid reagent in direct contact with the surface of the filament is in molten form.

4,192,695
METAL CRYSTALS AND PROCESS

Shalom Mahalla, P.O. Box 11183, Phoenix, Ariz. 85012
Continuation-in-part of Ser. No. 677,690, Apr. 16, 1976, Pat. No. 4,086,082. This application Apr. 24, 1978, Ser. No. 898,799
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.^{2} C22B *9/08, 13/00, 25/00, 30/00*
U.S. Cl. 148—32 **7 Claims**



SUPPLY e⁻ TO REDUCE Me⁺
Me° XTALS
Me⁺ PREGNANT SOLUTION
ESTABLISH Me⁺ CONCENTRATION STEP-FUNCTION
PRODUCT Me° XTALS
SUPPLY ⊕ TO MAINTAIN IONIC CHARGE NEUTRALITY

1. As a new article of manufacture, a metal crystal which is
(a) macrocrystalline,
(b) unicrystalline,
(c) columnar,
(d) a single prime particle bounded by at least two sets of distinguishable (hkl) planes specific to said metal which are determined by the internal crystal structure, the crystal orientation being such that another (hkl) plane specific to said metal is perpendicular to the long axis of the crystal, said sets of planes defining a plurality of parallel, non-coplanar, macroscopic facets, which microscopically are crystallographic step-growth surfaces.

7. A process for producing a product metal from a solution of values thereof, comprising:
(a) providing in a crystallization zone
  (i) a pregnant solution of values of said product metal, and
  (ii) crystals of said product metal;
(b) supplying electrons to said crystals to preferentially reduce product metal ions to product metal in a reduction zone adjacent said crystals;
(c) supplying positive ions in a region of said crystallization zone remote from reduction zone to maintain ionic charge neutrality in said solution;
(d) establishing a concentration step-function of said metal values in said crystallization zone in the locus of said crystals, the gradient thereof being at least sufficient to cause said product metal to attach to the crystal lattice of said crystals by atomic bonding; and
(e) maintaining the concentration step-function of step (d) for a time sufficient to produce a macrocrystalline, unicrystalline, columnar product.

4,192,696
PERMANENT-MAGNET ALLOY

Anton Menth, Nussbaumen; Hartmut Nagel, Wettingen, and Ulrich Spinner, Aeugst, all of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland
Continuation-in-part of Ser. No. 746,226, Nov. 3, 1976, Pat. No. 4,131,495. This application May 16, 1978, Ser. No. 906,421
Claims priority, application Switzerland, Dec. 2, 1975, 15631/75
Int. Cl.^{2} H01F *1/04, 1/14, 7/02*
U.S. Cl. 148—101 **5 Claims**

1. A permanent magnet alloy selected from the group consisting of

$$RE(Co_{1-u-v-w-x-y}Fe_uMn_vCr_wV_xX_y)_z$$

wherein RE is samarium, cerium, cerium mischmetal (MM), praseodymium, neodymium, lanthanum or mixtures thereof, X is Al, copper or a mixture thereof, and
$0.05<u<0.15$
$0.003<v<0.15$
$0.003<w<0.10$
$0.003<x<0.10$
$0.05<y<0.20$
$6.5<z<8.5$
which has been prepared by the process which comprises homogenization heat-treating the alloy of the molten and cast starting materials at a temperature just above the solidus temperature or in the temperature range in which the non-RE and non-Co components of the alloy have their maximum solubility in the RE_2Co_{17} mixed crystals; crushing and grinding the alloy to particles of a size of from 2 μm to 10 μm of monophase RE_2Co_{17} crystals; magnetically aligning the resultant powder; isostatically compressing the resultant powder; sintering the resultant briquette just below the solidus temperature; and finally annealing the alloy at a temperature between 700° C. and 900° C.

5. The monophase alloy of any of claims **1**, **2**, **3**, or **4** wherein $7.0<z<7.5$.

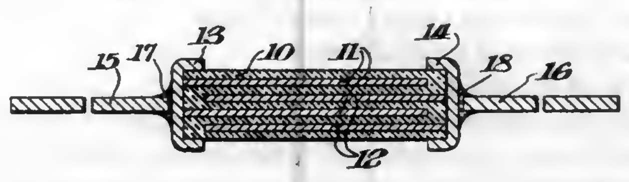
4,192,697
HOT APPLIED COATINGS

William D. Parker, London; Harry M. Smith, North Cheam, and Margaret P. Edwards, Orpington, all of England, assignors to Winn & Coales (Denso) Limited, London, England
Filed Mar. 15, 1978, Ser. No. 886,832
Claims priority, application United Kingdom, Mar. 25, 1977, 12753/77
Int. Cl.^{2} B65H *8/00*
U.S. Cl. 156—188 **10 Claims**

1. A method for forming a protective coating on a pipe which method comprises wrapping a hot fabric strip helically over the pipe, the said fabric strip having been previously impregnated with a hot, molten adhesive, and wrapping a strip of plasticized polyvinyl chloride sheet under tension over the hot fabric wrapping to form a sheathing.

4,192,698
MAKING AN ELECTRODING INK FOR A MONOLITHIC CERAMIC CAPACITOR

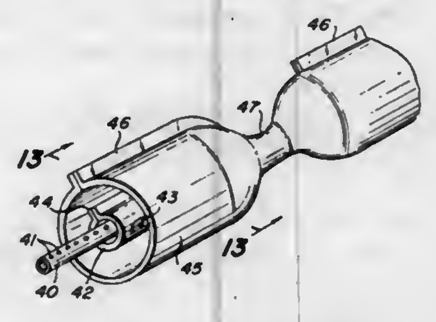
John P. Maher, Adams, and Robert T. Jacobsen, Williamstown, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.
Filed Sep. 7, 1977, Ser. No. 831,199
Int. Cl.^{2} H01G *1/01*
U.S. Cl. 156—89 **9 Claims**



1. A method for preparing a smooth electroding ink for use in making monolithic ceramic capacitors comprising: (a) forming a mixture of a metal powder selected from the group of silver and silver-palladium, milling elements, a surfactant and an organic vehicle, said metal amounting to from 65 to 95 percent of the sum of said metal plus said vehicle by weight; (b) milling said mixture in a non-violent mode, by means of a rotary impeller so as to establish a splash-free laminar flow, until said metal powder exhibits a fineness of grind of less than 8 microns and a surface of a dried sample film of said ink exhibits a peak to peak amplitude of less than 6 microns; (c) removing said milling elements from said milled mixture; and (d) blending into said mixture containing said vehicle an organic binder to obtain a screen printable electroding ink having a viscosity of from 20,000 to 150,000 centipoise.

4,192,699
METHOD OF MAKING INFLATABLE CELLULAR ASSEMBLIES OF PLASTIC MATERIAL

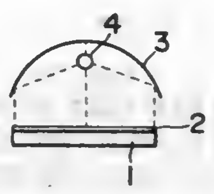
Stephen Lewicki, 7 Forest View Rd., Wallingford, 19086; Gregory D. Lewicki, 47 Springhouse La., Media, 19063, and Stephen J. Lewicki, 7 Forest View Rd., Wallingford, all of Pa. 19086
Division of Ser. No. 778,249, Mar. 16, 1977, Pat. No. 4,076,872. This application Nov. 25, 1977, Ser. No. 854,621
Int. Cl.^{2} A45B *19/00;* **A45C** *7/00;* **B32B** *33/00*
U.S. Cl. 156—145 **4 Claims**



1. The method of producing inflatable cellular assemblies from thermoplastic components, which comprises
(a) forming a plurality of collapsible and distendable portions in an outer wear-resistant and gas-impervious component,
(b) sealing an apertured component comprising a thin sheet of plastic material to said first component to permit the entry and egress of a gaseous medium relative to said distendable portions, and
(c) interposing a thin flexible plastic member between said components having apertures offset from those in said apertured component and responsive to the direction of flow of said gaseous medium through said apertured component to exert a valving control thereon and to stop communication therethrough at any desired degree of preponderance in pressure in the interior of said distendable portions relative to that on the exterior thereof.

4,192,700
PROCESS FOR FUSION-BONDING OF RESINS

Kazuyoshi Nagai, 17-6, Kumisawa-Cho, Totsuka-Ku, Yokohama City, Kanagawa Pref., Japan
Filed Apr. 5, 1979, Ser. No. 27,261
Int. Cl.^{2} B29C *19/02;* **B05D** *3/06*
U.S. Cl. 156—272 **3 Claims**



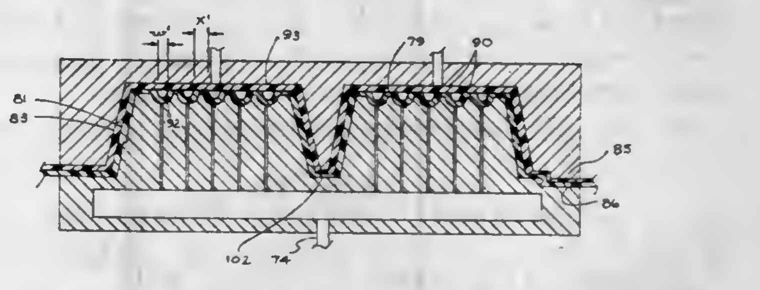
1. A process for fusion-bonding of resins, which comprises applying a powdery or filmy thermoplastic resin having a melting point of 40° to 300° C. to a paper and fusion-bonding the resin to the paper by emission energy of a flash discharge lamp comprising a glass bulb filled with a rare gas as the main component, wherein the energy emission density of the flash discharge lamp, which is represented by the following formula:

$$Q=J/((P/4)D^2Lt)$$

wherein Q stands for the energy emission density (joule/cm^3·msec), J stands for an electric input energy (joule) necessary for irradiation of one sheet of the material to be heated, D stands for the inner diameter (cm) of the bulb of the flash discharge lamp, L stands for the flash discharge passage length (cm), t stands for the pulse width (msec) corresponding to $\frac{1}{3}$ of the peak value of the electric current wave form, and P stands for the circumference ratio, is controlled within a range of $1 \leqq Q \leqq 600$.

4,192,701
DOUBLE WALL PLASTIC ARTICLE AND METHOD AND APPARATUS FOR FORMING A DOUBLE WALL PLASTIC ARTICLE WITH A PAIR OF THERMOPLASTIC SHEETS

Raymond H. Martin, 228 W. Brown, and Larry R. Brushaber, 3437 N. Branch Dr., both of Beaverton, Mich. 48612
Filed Jul. 14, 1977, Ser. No. 815,567
Int. Cl.^{2} B29C *17/00*
U.S. Cl. 156—285 **23 Claims**



1. A method of differential pressure forming a double wall, plastic article with a pair of individual deformable thermoplastic foam sheets comprising the steps of:
mounting said individual foam sheets in face to face contiguous relation;
heating said contiguously disposed, individual foam sheets to forming temperature and moving said foam sheets to positions between a pair of mold members, which are relatively movable between spread positions and closed, clamping positions, while maintaining the individuality of

the foam sheets and without bonding the confronting faces of said foam sheets to each other;

then relatively moving said mold members from said spread positions to said closed molding positions to press opposing portions of said heated contiguous foam sheets together and bond said opposing portions to form a perimetrical border of the wall of the article being formed; and

thereafter applying differential forming pressures to a first central portion of at least one of said foam sheets within said border to move said central portion from a position contiguous with an opposing contiguous portion of the other foam sheet to a position removed from said opposing contiguous portion to form a central wall portion of said article.

4,192,702

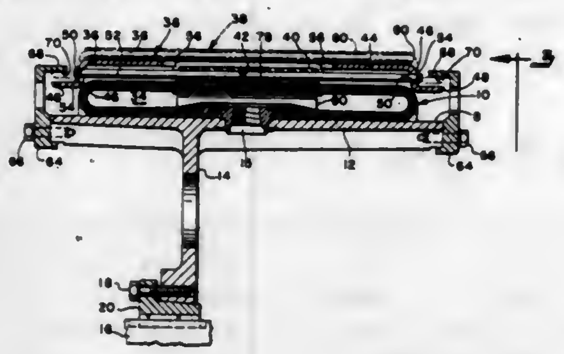
FLUID EXPANDABLE TIRE BUILDING DRUM WITH SHOE MEANS ATTACHED THERETO TO FORM A TIRE BUILDING SURFACE

Marcus H. Collins, Akron, and John K. Smith, Parma, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 5, 1977, Ser. No. 813,151

Int. Cl.² B29H *17/16*

U.S. Cl. 156—416 **14 Claims**



1. A fluid expandable drum for building a tread and a radial tread ply band in a tire building machine comprising an annular support drum having an annular outer surface thereon, an expandable annular tube element having an inner peripheral surface supported on said annular outer surface of said support drum and an outer annular peripheral surface, support means rigidly secured to said outer annular peripheral surface of the tube element for movement therewith, a plurality of shoe means rigidly connected to said support means for movement therewith, said plurality of shoe means cooperating to define an annular building surface thereon which is movable in a radial direction toward and away from said annular support drum upon contraction and expansion, respectively, of said tube element, said tube element being expanded to expand the diameter of said building surface to enable a tread and a radial tread ply band to be built thereon and contracted to decrease the diameter of said building surface to enable a built tread and radial tread ply band to be removed therefrom.

4,192,703

UNIVERSAL LABELING APPARATUS

Frank E. Brown, Hacienda Heights, Calif., assignor to Avery International Corporation, San Marino, Calif.

Filed Jul. 5, 1978, Ser. No. 921,957

Int. Cl.² B65C *3/12*

U.S. Cl. 156—443 **27 Claims**

1. A universal labeling system comprising:

a standard base having a cross-section of inverted "T-shaped" configuration; said base including a heavy gauge sheet metal cabinet having a central longitudinally extending raised portion and a heavy metal deck plate mounted on said raised portion;

conveyor belt means for carrying containers to be labeled from an input end to an output end of said conveyor belt means, mounted on said deck plate;

means for applying labels to products moving along said conveyor belt means;

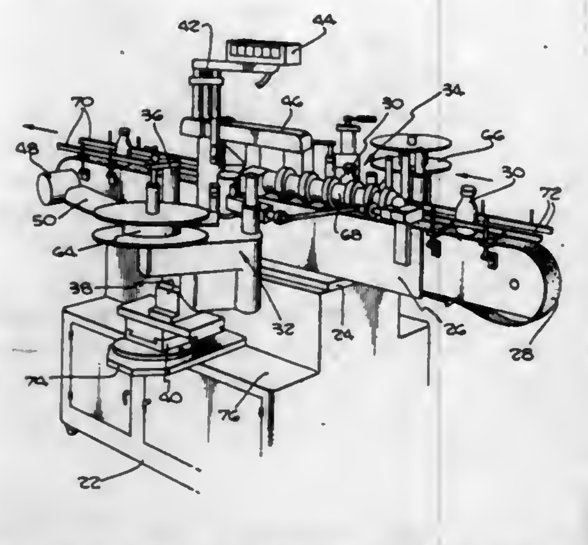
standard mechanical drive system means within said base for providing power to power take-off points for each of the following: (a) said conveyor belt means; (b) a feed screw on one side of the conveyor belt means, (c) a feed screw on the other side of the conveyor belt means, (d) a wrap belt, and (e) top power means for moving an upper product engaging means at the same surface speed as the conveyor belt means and above and spaced from the conveyor belt means;

a hold down belt assembly;

means for selectively connecting said hold-down belt assembly to said top power take-off point to stabilize tall products for label application;

a pair of matched product feed screws;

means for selectively connecting said pair of feed screws to said two power take-off points on one side and on the other side of said conveyor belt means, respectively, and at the input end of said conveyor belt means; and for driving said feed screws to accelerate products to be labeled onto said conveyor belt means at the speed of said conveyor belt means;



a wrap belt assembly;

means for selectively connecting said wrap belt assembly to said wrap belt power take-off point to rotate a generally circular product and secure a label to its outer surface;

a single feed screw;

means for selectively mounting said single feed screw near the center of said conveyor belt means and for driving said feed screw from the downstream end of said feed screw from one of said two feed screw power take-off points;

a top powered roller; and

means for selectively mounting said top powered roller to said top power take-off point to apply labels to the top of products; and

said standard base being provided with openings, through its heavy duty cabinet or deck plate and associated with each of said power take-off points, to accommodate the transmission of mechanical power from within said base to each of the external associated equipment to be driven.

4,192,704

EXPANDABLE MUFF MOULD

Ingvar Stange, 3880 Dalen, Telemark, Norway

Filed Mar. 27, 1978, Ser. No. 890,217

Claims priority, application Norway, Apr. 18, 1977, 771336

Int. Cl.² B65C *1/00*

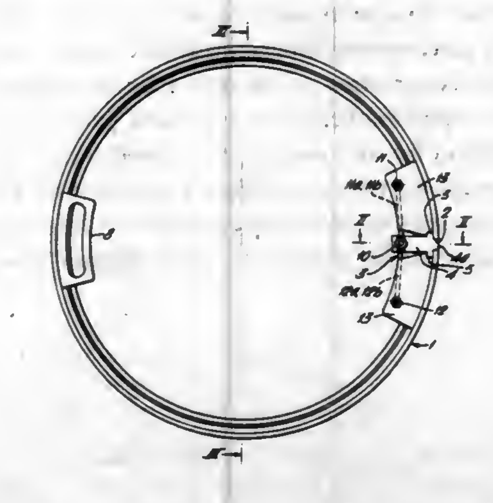
U.S. Cl. 156—443 **3 Claims**

1. In an expandable muff mold for making pipe muff portions, said expandable muff mold including an annular elastic metal member having an axial slot and including a wedge means attached to the inside of said metal member so as to be movable from a position remote from said slot to a position within said slot, the diameter of said annular elastic metal member increasing when said wedge means is positioned within said slot, the improvement wherein

said wedge means comprises a generally U-shaped member which includes a bottom portion which is positionable within said slot and two leg portions, said two leg portions including axially aligned holes therein,

a first bolt means which extends through said axially aligned holes in said two leg portions of said generally U-shaped member,

two pairs of spaced-apart brackets mounted on the inside of said annular elastic metal member, each of said pairs of brackets having aligned holes therein,



second and third bolt means respectively mounted to extend through the aligned holes in said pairs of brackets,

first and second link arms mounted on said first bolt means and to said second and third bolt means, respectively, so as to be pivotable with respect thereto, and

a single detachable tool capable of connection with said first bolt means and one of said second and third bolt means such that said first bolt means and thus said wedge means can be moved from a first position remote from said slot to a self-blocking second position in said slot where said wedge means is locked in position.

4,192,705

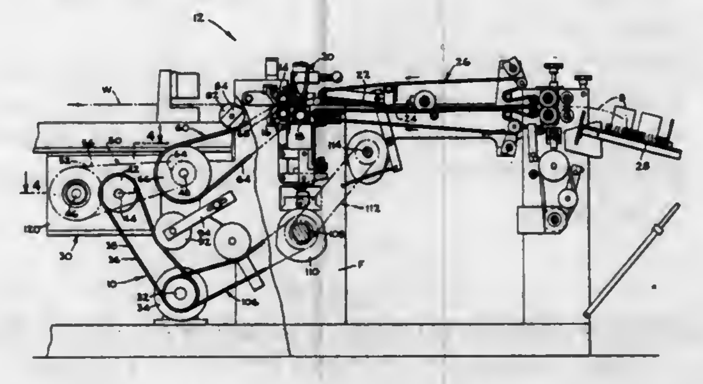
INDEXING ROLL DRIVE SYSTEM

Robert J. Wech, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 15, 1977, Ser. No. 824,938

Int. Cl.² B31B *19/60;* B65H *17/22;* F16H *27/04*

U.S. Cl. 156—515 **13 Claims**



12. An indexing role drive system for intermittently moving a web of material through a machine comprising: a pair of draw rolls for engaging the web therebetween; a cam shaft; first and second cams secured to said cam shaft; an output shaft; cam follower carrier means secured to said output shaft; a first group of cam followers on said carrier means for engaging said first cam; a second group of cam followers on said carrier means for engaging said second cam; a drive motor having a driven motor shaft; an input drive train connecting said motor shaft to said cam shaft for continuously driving said input shaft; and an output drive train for providing an uninterrupted connection during operation between said output shaft and one of said draw rolls for intermittently driving said one draw roll and intermittently moving the web a predetermined distance during each cycle; said first and second cams being contoured to begin a cycle of operation constituting one revolution of said input shaft with said output shaft and said one draw roll starting at zero velocity, smoothly accelerating to a maximum velocity and maintaining said maximum velocity in excess of 90° of said cycle and until smoothly decelerating said output shaft and said one draw roll to zero velocity at about 270° of said cycle and to retain zero velocity of the output shaft and said one draw roll during a dwell period to the end of the cycle.

13. A drive system according to claim 12 wherein said machine is a bag machine, and wherein said web is a thermosealing bag forming material.

4,192,706

GAS-ETCHING DEVICE

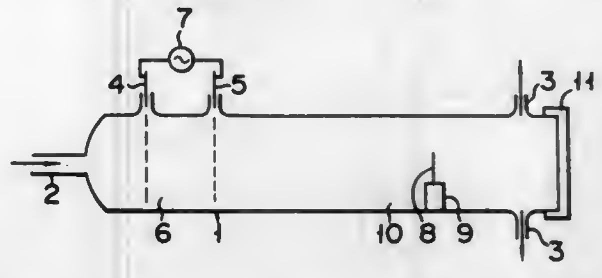
Yasuhiro Horiike, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 647,448, Jan. 8, 1976, Pat. No. 4,123,663. This application Aug. 15, 1978, Ser. No. 933,846

Claims priority, application Japan, Jan. 22, 1975, 50-8642; Mar. 25, 1975, 50-34994; Mar. 28, 1975, 50-36851

Int. Cl.² H01L *21/302;* B44C *1/22;* B01K *1/00*

U.S. Cl. 156—643 **14 Claims**



1. A gas etching process comprising:

introducing into a discharge region an oxygen gas and a flurocarbon gas,

producing a long life active species etching gas by applying high frequency power to said gases in the discharge region, and

reacting said etching gas with the material to be etched in a reaction region spaced from the discharge region a distance such that electric fields in the discharge region do not extend to the reaction region.

4,192,707

HEAT TREATMENT OF CHRYSOTILE ASBESTOS FIBRES

Roger W. Glass, Oakville, and Richard A. Kuntze, Mississauga, both of Canada, assignors to Ontario Research Foundation, Mississauga, Canada

Filed Dec. 29, 1977, Ser. No. 865,410

Claims priority, application United Kingdom, Jan. 12, 1977, 1222/77

Int. Cl.² D21B *1/02*

U.S. Cl. 162—3 **6 Claims**

1. A method for the formation from Group 4 or Group 5 chrysotile asbestos fibres of long, very straight, smooth-surfaced, hard asbestos fibres having enhanced impact strength in resin reinforcement, which comprises:

initially separating a coarse fraction from said chrysotile asbestos fibres and heat treating said coarse fraction to form said hard asbestos fibres;

said heat treatment being effected by heating in an ambient atmosphere having a substantially uniform temperature of about 400° to about 600° C. for a time from about 1 to about 5 hours sufficient to increase the impact strength of the coarse fraction of fibres in resin reinforcement and insufficient to result in a loss of water of crystallization of the fibres of greater than about 2% by weight of the total weight of water of crystallization.

4,192,708

METHOD FOR CONTROLLING THE ADDITION OF ACTIVE CHEMICAL FOR DELIGNIFYING AND/OR BLEACHING CELLULOSE PULP SUSPENDED IN A LIQUOR CONTAINING CHEMICALS REACTIVE WITH THE DELIGNIFYING AND/OR BLEACHING CHEMICAL

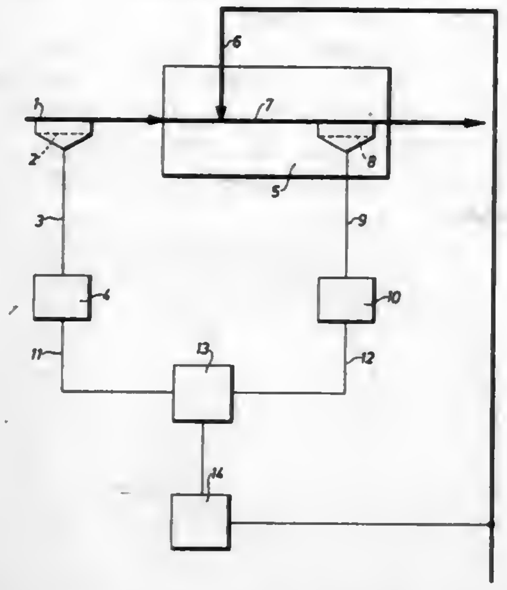
John R. Bergstrom; Bengt G. Hultman, both of Domsjoverken, and Astrid T. P. Dalborg, Bonassund, all of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation of Ser. No. 608,310, Aug. 27, 1975, abandoned. This application Feb. 9, 1977, Ser. No. 767,174

Claims priority, application Sweden, Sep. 5, 1974, 7411247

Int. Cl.^{2} D21C *9/10;* **G01N** *31/16, 33/00*

U.S. Cl. 162—49 **34 Claims**



1. A process for controlling the addition of delignifying chemical for delignifying cellulose pulp suspended in an aqueous liquor containing spent chemical other than the cellulose pulp that is reactive with such delignifying chemical, which comprises determining firstly prior to the addition of delignifying chemical the amount of delignifying chemical consumed by the chemical reactive with the delignifying chemical in the liquor in the absence of the cellulose pulp; adding a known amount of the delignifying chemical to the cellulose pulp suspension, and then, during the delignification after a predetermined time interval following addition of the delignifying chemical to the cellulose pulp suspension, determining secondly in the absence of cellulose pulp fibers the residual amount of delignifying chemical in the liquor; from these first and second determinations and the known amount of delignifying chemical determining the amount of delignifying chemical consumed by the pulp; and then adding an amount of delignifying chemical adjusted according to the amount of delignifying chemical consumed by the pulp, and carrying out the delignification.

4,192,709

CREPING DOCTOR

Harold E. Dunlap, Auburn, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

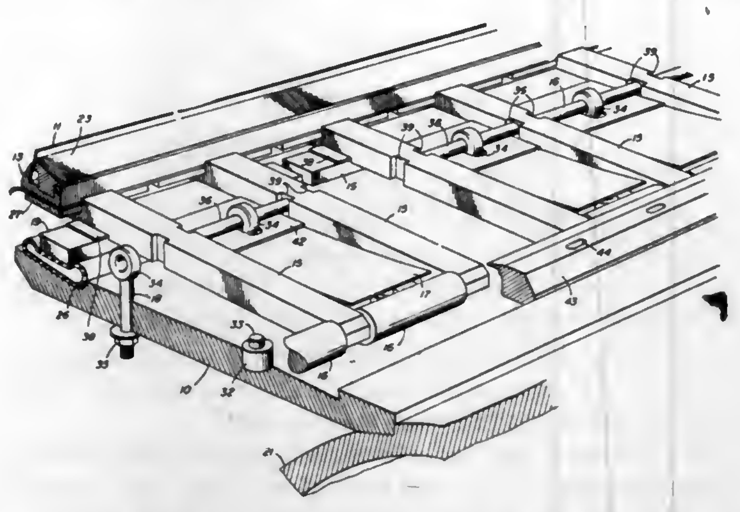
Continuation-in-part of Ser. No. 762,308, Jan. 25, 1977, abandoned. This application Jul. 21, 1978, Ser. No. 926,755

Int. Cl.^{2} D21G *3/02, 3/04*

U.S. Cl. 162—111 **22 Claims**

10. A bladeholder apparatus for creping a web of paper or the like on a surface of a roll rotating to move said surface in a prescribed direction, comprising:
- a doctor back providing a reference platform;
- a plurality of pressure finger means arrayed side-by-side on said back, each finger being rotatably mounted at one end to said back in a common axis;
- a pad attached to each pressure finger means at its other end and confronting said reference platform;
- resilient profiling means positioned on said doctor back between said reference platform and all of said pads;
- bladeholder means mounted on said pressure finger means at said other end of each on the sides thereof opposite said pads;
- spring means disposed between adjacent pairs of said pressure finger means, each said spring means being supported at one extremity by said pads and at the other extremity by a member between said adjacent pairs; and means for holding said spring means to said doctor back intermediate said extremities so as to cause said spring means to present a pre-loading force on said profiling means.

22. A method for removing or creping a thin sheet of material from a moving carrier surface by means of a doctor blade having an elongate working edge with flat front and rear faces extending width-wise therefrom, said method comprising:



- supporting the blade transversely to the direction of movement of the carrier surface and applying the blade to the carrier surface so that its working edge is in frictional engagement with the carrier surface;
- maintaining the blade so that it lies substantially along a plane which is generally normal to the direction of movement of the carrier surface, thereby to present a region of the front face adjacent to the working edge to the continually advancing sheet;
- supporting the blade by engagement with its rear face along a longitudinally extending pivot line to resist the frictional force imparted to the blade at the working edge by the moving carrier surface while permitting the blade to pivot about said pivot line; and,
- applying a reaction force to the front face of the blade at a location more remote from the working edge than the pivot line, to control the extent to which the blade may pivot about the pivot line and to maintain the blade stably in said plane.

4,192,710

METHOD AND APPARATUS FOR MEASURING THE THROUGHFLOW QUANTITY OF A LIQUID SUBSTANCE PER UNIT OF TIME IN A PAPERMAKING MACHINE

Alfred Bubik, Ravensburg; Rainer Jox, Weingarten, and Hans-Joachim Schultz, Ravensburg-Oberhofen, all of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Oct. 5, 1978, Ser. No. 948,689

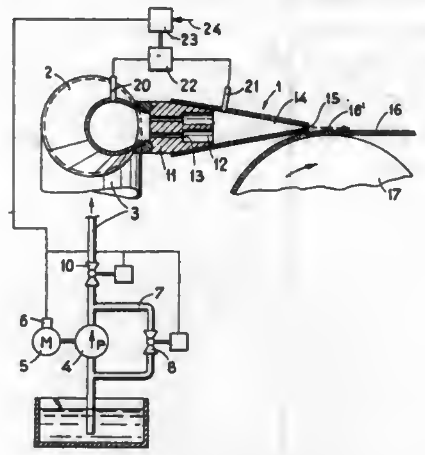
Claims priority, application Switzerland, Oct. 20, 1977, 12786/77

Int. Cl.^{2} D21F *1/06;* **F16L** *55/04*

U.S. Cl. 162—198 **9 Claims**

1. A method for measuring the throughflow quantity of a

liquid substance in the form of a fibrous suspension per unit of time in papermaking machine, comprising the steps of:
- providing a throttle element in the form of a performed plate having a number of essentially parallel channels through which flows the liquid substance therethrough with only a fine turbulence;
- infeeding the liquid substance to said perforated plate for throughflow in a predetermined direction of flow through said essentially parallel channels; and



- measuring the pressure drop at the throttle element essentially directly upstream and downstream of the throttle element with respect to the direction of flow of the liquid substance and wherein during the measurement of the pressure drop there does not occur any pressure fluctuations which adversely affect the measurement.

2. The method as defined in claim 1, further including the steps of:
- utilizing a perforated plate as the throttle element whose friction has negligible effect on the measurement of the pressure drop.

4,192,711

PAPER-MANUFACTURING METHOD AND APPARATUS FOR CONVEYING A WEB FROM A FORMING WIRE TO A DRYING SECTION

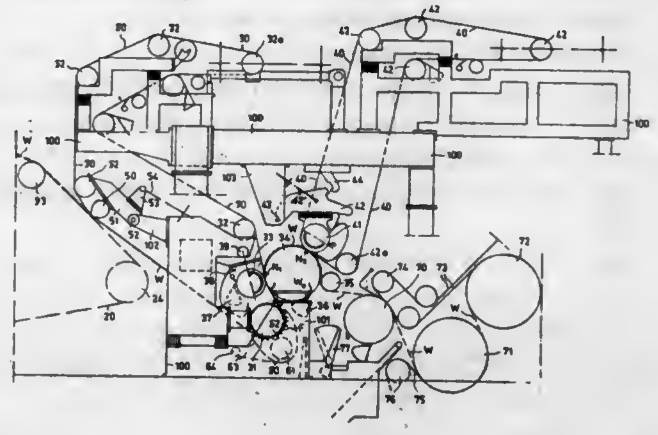
Olli Tapio; Lassi Veijonen, and Eero Hannonen, all of Jyväskylä, Finland, assignors to Valmetoy, Finland

Filed Nov. 21, 1977, Ser. No. 853,538

Claims priority, application Finland, Nov. 30, 1976, 763434

Int. Cl.^{2} D21F *3/02, 3/04*

U.S. Cl. 162—199 **17 Claims**



1. A method in a paper making machine for detaching a paper web from a forming wire and conducting the web over a closed draw to the press section of the machine such that the web only laps non-suction rolls and for carrying out a dewatering pressing operation, comprising the steps of:
- transferring the web from a forming wire onto a felt;
- conducting the web carrying felt over a substantial sector of a non-suction guide roll prior to passing the web carrying felt through the first press nip in the press section of the machine defined by a first press roll and a smooth surface roll;
- simultaneously directing a steam treatment onto the portion of the web which laps said non-suction guide roll such that the web is heated, said steam treatment acting to support said web on said felt; and
- directing said web carrying felt from said non-suction guide roll through the first press nip of the press section.

7. In a method as recited in claim 1 and including the step of engaging the smooth-surfaced roll with a doctor blade at a location where the surface of the smooth-surfaced roll is exposed, and guiding waste away from said smooth-surfaced roll after the waste has been separated therefrom by the doctor blade.

4,192,712

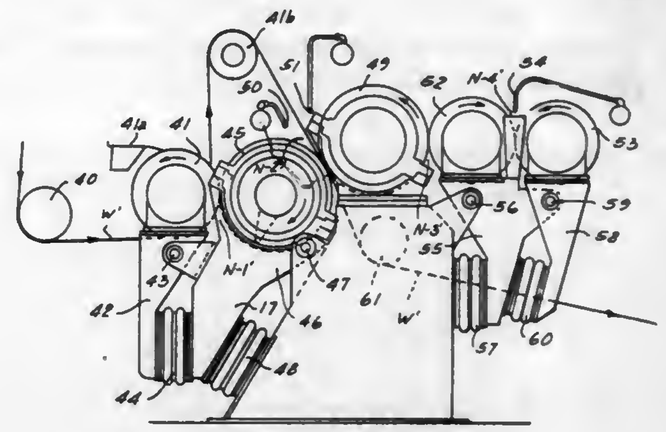
COMBINED BREAKER SIZE PRESS COATER

George L. Dreher, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 13, 1977, Ser. No. 860,208

Int. Cl.^{2} B05C *1/12, 3/132, 5/02*

U.S. Cl. 162—265 **9 Claims**



1. In a paper web processing machine, the combination comprising:
- means for supplying a continuous traveling paper web;
- a breaker press having a breaker nip formed between a first roll and a second roll,
- said first and second rolls having smooth metal surfaces for performing a breaker press operation for smoothing and laying down the fibers on the web;
- means for controlling the nip pressure between said rolls;
- a third roll forming a coating nip with said second roll with said web passing through said coating nip immediately following the breaker nip;
- and a coating supply means applying coating to at least one surface of the web as it moves into said coating nip.

4,192,713

INTERMEDIATE PRESS NIP OF A PAPER MACHINE PRESS SECTION

Paavó J. Valkama, Leppaluoto B 1, 68610 Leppaluoto, Finland

Filed Feb. 17, 1978, Ser. No. 878,916

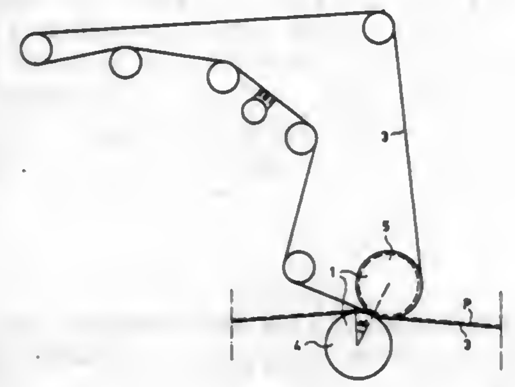
Claims priority, application Finland, Feb. 18, 1977, 770541

Int. Cl.^{2} D21F *3/04*

U.S. Cl. 162—358 **2 Claims**

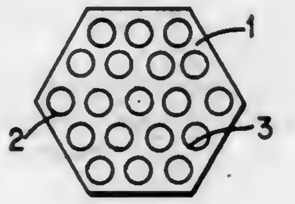
1. In a paper machine press section, an intermediate press nip including a pair of press rolls defining said nip between themselves, a web-conveying fabric means travelling between said press rolls while engaging one of said press rolls and conveying a web together with said fabric means through said nip defined between said rolls, and an additional endless fabric means lapping the other of said press rolls and travelling also through said intermediate nip while engaging the web at the surface thereof which is directed away from said web-conveying fabric means, so that the web is pressed between said web-conveying and additional fabric means while travelling through said intermediate press nip, said one press roll which engages said

web conveying fabric means being a smooth-surfaced press roll while the other press roll does not cooperate with any suction assist and has a surface formed with water-receiving recesses, said smooth-surfaced press roll being located rearwardly with respect to said other press roll in the direction of travel of said web-conveying fabric means through said intermediate nip so that the plane defined by the axes of said pair of press rolls is tilted with respect to a vertical plane and such that said web-conveying fabric means together with the web conveyed thereby laps said one smooth-surfaced press roll immediately subsequent to said intermediate press nip through an angle of at least 5°.



4,192,714
REACTOR SAFETY METHOD

Lawrence J. Vachon, Clairton, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Dec. 7, 1966, Ser. No. 600,695
Int. Cl.² G21C *7/06*
U.S. Cl. 176—22 **4 Claims**

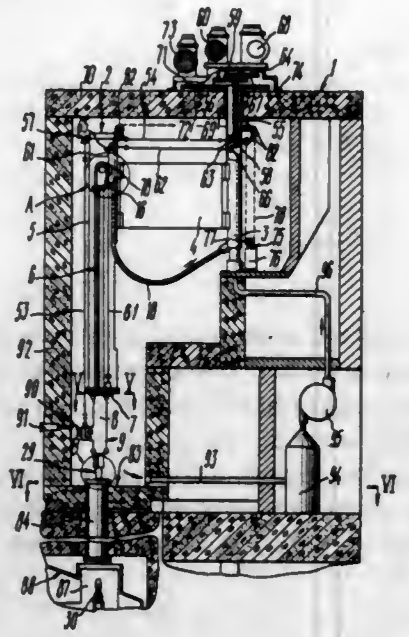


1. In a gas cooled nuclear reactor having a ratio of fissionable material to moderator, wherein the fissionable material is uranium and the moderator is solid graphite having coolant channels and gaseous hydrogen coolant, control drums capable of maintaining the reactor in a subcritical state prior to start-up in the absence of hydrogenous liquid, and safety means for maintaining the reactor in a subcritical state prior to start-up in the event the reactor is immersed in a hydrogenous liquid comprising:

a coating of an essentially thermal neutron absorbing material on the inside surface of the coolant channels in an amount sufficient to prevent the reactor from attaining criticality when immersed in a hydrogenous liquid but not so great as to prevent the reactor from attaining criticality in the absence of hydrogenous liquid, wherein said coating vaporizes at a temperature lower than the operating temperature of the reactor.

4,192,715
FUEL ASSEMBLY HANDLING SYSTEM OF NUCLEAR REACTOR

Jury N. Koshkin, ulitsa Zvezdinka, 3, kv. 10; Georgy V. Ordynsky, ulitsa Strazh Revoljutsii, 9/6, kv. 9; Tsolak G. Shkhiyan, naberezhnaya Zhdanova, 6, kv. 16; Alexandr F. Shapkin, ulitsa Zvezdinka, 3, kv. 64; Alexandr I. Fadeev, ulitsa Engelsa, 21, kv. 46; Fedor V. Laptev, prospekt Lenina, 57, kv. 31; Vladimir I. Batjukov, ulitsa Prygunova, 9, kv. 29; Konstantin I. Korolkov, ulitsa Shalyapina, 19, kv. 77; Ivan V. Borodin, ulitsa Shalyapina, 15, kv. 2; Evgeny N. Chernomordik, ploschad Gorkogo, 2, kv. 30, and Vitaly G. Osipov, ulitsa Berezovskaya, 89, kv. 55, all of Gorky, U.S.S.R.
Filed Aug. 23, 1977, Ser. No. 826,976
Int. Cl.² G21C *19/20;* **B66C** *17/08, 1/10*
U.S. Cl. 176—30 **3 Claims**



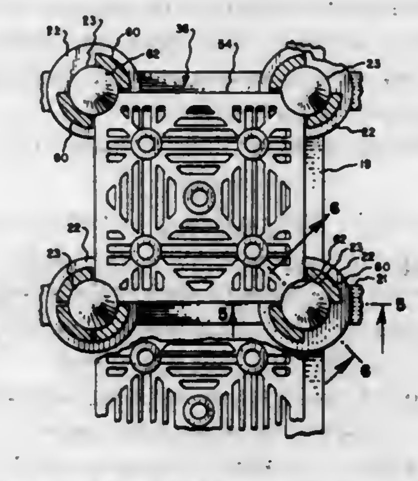
1. A system for handling fuel assemblies of a nuclear reactor, comprising:

a sealed chamber having a cover, a closed wall, and a bottom;
an opening provided in said cover of said sealed chamber;
a recharging machine arranged inside said sealed chamber and having:
  a vertical rotary tube extending through said opening in said cover of said sealed chamber, so that one of its ends protrudes from said sealed chamber;
  a bracket mounted on an exterior surface of said vertical rotary tube;
  a carrier tube suspended on said bracket and having a lower flange and an internal cavity;
  a manipulator tube arranged inside said carrier tube, having an upper flange and an outer surface and moved along a predetermined path and through a prescribed angle by said rotary tube;
  a rack hatched on said outer surface of said manipulator tube;
  a first reduction gear having a housing with a gear of said first reduction gear arranged in said housing and interacting with said rack of said manipulator tube;
rollers arranged in said housing of said first reduction gear and interacting with said manipulator tube;
said housing of said first reduction gear being mounted on said lower flange of said carrier tube;
a second reduction gear having a second housing and mounted on said upper flange of said manipulator tube;
an opening provided in said second housing;
a stop rigidly mounted on said internal surface of said carrier tube;
an opening provided in said stop;
a pipe connection having an inlet and an outlet;
a carrier pipe of a stepped configuration, having an inlet and an outlet;

said outlet of said pipe connection communicating with said opening provided in said second housing;
said inlet of said pipe connection communicating with said outlet of said carrier pipe;
a device for circulating an insert cooling gas through said fuel assembly;
a flexible hose of said device for circulating communicating with said inlet of said carrier pipe;
said stop limiting the vertical travel of said carrier pipe;
a sprocket arranged in said second housing;
a chain interacting with said sprocket and having a first end and a second end;
a grip for clamping and transporting said fuel assembly mechanically coupled to one end of said chain and having axles and profiled grip pawls movably mounted on said axles;
a first drive having shafts interconnected by toothed pairs kinematically connecting the first drive to said first reduction gear;
a second drive having shafts interconnected by toothed pairs kinematically connecting the second drive to said second reduction gear;
a third drive having a shaft and a toothed pair kinematically connecting the third drive to said end of said vertical rotary tube, which protrudes outside said sealed chamber, and rotating said vertical rotary tube through a prescribed angle;
one of said shafts of said first drive and one of said shafts of said second drive extending through said opening in said cover of said sealed chamber and arranged inside said vertical rotary tube;
said drives being located outside said sealed chamber;
channels provided in said bottom of said sealed chamber on said path of movement of said manipulator tube;
inductive position transmitters for sensing the position of said manipulator tube positioned in said sealed chamber;
plugs installed in said closed wall of said sealed chamber, said inductive position transmitters being arranged in said plugs,
the number of said inductive position transmitters being equal to that of said channels.

4,192,716
PERIPHERAL PIN ALIGNMENT SYSTEM FOR FUEL ASSEMBLIES

Andrew J. Anthony, Tariffville, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.
Division of Ser. No. 754,625, Dec. 27, 1976, Pat. No. 4,127,445. This application Jan. 16, 1978, Ser. No. 869,801
Int. Cl.² G21C *3/02*
U.S. Cl. 176—78 **18 Claims**

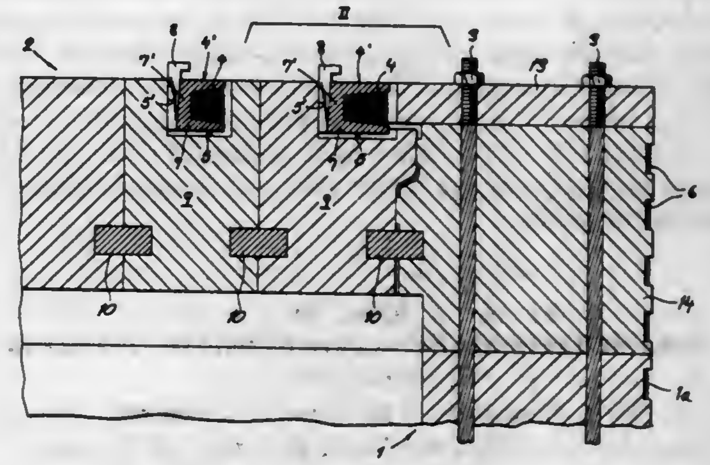


1. An improved nuclear reactor of the type having a vessel containing a core therewithin, said vessel and said core having parallel longitudinal axes, the improvement comprising:

(a) a nuclear core comprising a multiplicity of longitudinally extending, regularly spaced, vertically disposed fuel assemblies, each of said fuel assemblies having a plurality of depressions provided in its lateral periphery; and
(b) a core support structure disposed within said vessel for supporting and aligning said multiplicity of fuel assemblies, said core support structure including longitudinally extending alignment pins engaging said depressions of said fuel assemblies.

4,192,717
COVER FOR A NUCLEAR REACTOR PRESSURE VESSEL

Heiko Gross, Krefeld, Fed. Rep. of Germany, assignor to Siempelkamp Giesserei KG, Krefeld, Fed. Rep. of Germany
Division of Ser. No. 749,757, Dec. 13, 1976, Pat. No. 4,124,447, which is a continuation-in-part of Ser. No. 638,075, Dec. 5, 1975, Pat. No. 4,057,162. This application Apr. 25, 1977, Ser. No. 790,536
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1974, 2457661; France, Oct. 28, 1975, 75 32869
Int. Cl.² G21C *13/04*
U.S. Cl. 176—87 **1 Claim**



1. A cover for a nuclear reactor pressure vessel comprising:

a disk formed by a plurality of one-piece cast bodies in contiguous abutting relationship, said disk comprising:
a central first array of said bodies lying in a common plane,
a second annular array of said bodies around said central first array and coplanar therewith,
a third annular array of said bodies around said second annular array and coplanar therewith,
a fourth annular array of said bodies around said third annular array and coplanar therewith, said bodies of said central first array being of isosceles hexagonal configuration, said bodies of said second annular array being of pentalateral and hexalateral plan configuration, said bodies of said third annular array being of quadrilateral plan configuration and said bodies of said fourth annular array being circular arc segments, said bodies of said second, third and fourth annular arrays forming wedge-shaped sections displsed around the center of said disk,
a circumferential abutment formed by and on said fourth annular array,
cable means extending around said abutment and bearing inwardly thereon, and
adjacent ones of said bodies formed with mutually interfitting means parallel to the plane of said disk for taking up forces transverse thereto.

4,192,718

BURST-PROTECTED STEEL PRESSURE VESSEL WITH DOUBLE PROTECTION IN RADIAL AS WELL AS AXIAL DIRECTION

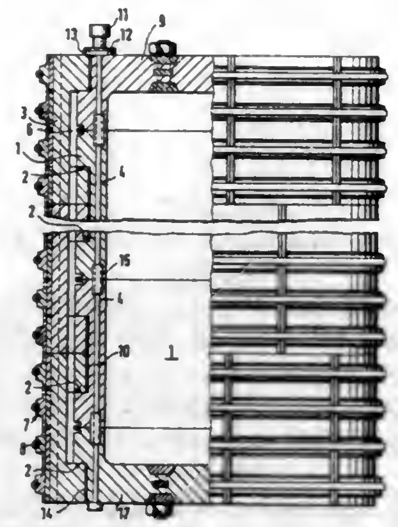
Nikolai Janakiev, Thywissenstrasse 69, 4150 Krefeld, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,483

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629735

Int. Cl.^{2} G21C *13/04*

U.S. Cl. 176—87 **14 Claims**



1. Pressure vessel composed of wall elements, cover and bottom, wherein the wall is constructed of ring-segment-shaped steel or cast-steel elements having surface plates and axial openings for the passage of tension cables and cooling media, said elements being stacked in layers and the surface plates of each layer being offset relative to those of the superjacent and subjacent layers, and said plates having radial recesses at the outer side into which ring segments of C-shaped cross-section matingly engage under axial clamping of at least two superjacent plates.

4,192,719

METHOD OF MAKING A SHEARFOIL FOR DRY SHAVERS

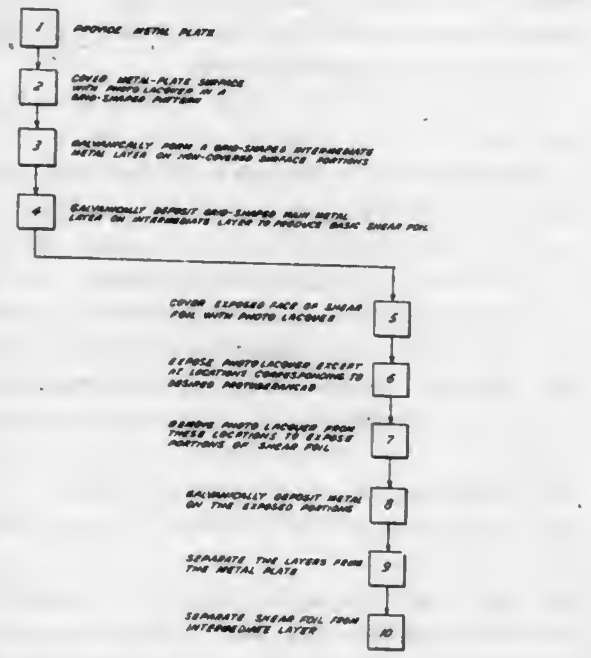
Robert Wich, Oberursel, Fed. Rep. of Germany, assignor to Braun AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,134

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717632

Int. Cl.^{2} C25D *1/08, 1/20, 7/06*

U.S. Cl. 204—11 **7 Claims**



1
PROVIDE METAL PLATE
2
COVER METAL-PLATE SURFACE WITH PHOTO LACQUER IN A GRID-SHAPED PATTERN
3
GALVANICALLY FORM A GRID-SHAPED INTERMEDIATE METAL LAYER ON NON-COVERED SURFACE PORTIONS
4
GALVANICALLY DEPOSIT GRID-SHAPED MAIN METAL LAYER ON INTERMEDIATE LAYER TO PRODUCE BASIC SHEAR FOIL
5
COVER EXPOSED FACE OF SHEAR FOIL WITH PHOTO LACQUER
6
EXPOSE PHOTO LACQUER EXCEPT AT LOCATIONS CORRESPONDING TO DESIRED PROTUBERANCES
7
REMOVE PHOTO LACQUER FROM THESE LOCATIONS TO EXPOSE PORTIONS OF SHEAR FOIL
8
GALVANICALLY DEPOSIT METAL ON THE EXPOSED PORTIONS
9
SEPARATE THE LAYERS FROM THE METAL PLATE
10
SEPARATE SHEAR FOIL FROM INTERMEDIATE LAYER

1. In a method of making a dry shaver shearfoil capable of erecting the beard hair of a user, the steps of providing a shearfoil having a plurality of apertures and a surface adapted to contact the skin of a user; applying a coating of an electrically non-conductive substance on said surface of said shearfoil, excepting said apertures; galvanically depositing metallic material on said surface only about and immediately proximal to said apertures, so as to form collar-like protuberances adapted to erect a user's bear hair by tensioning the skin when the shearfoil is moved over the skin in contact therewith; and removing said non-conductive substance from said surface.

4,192,720

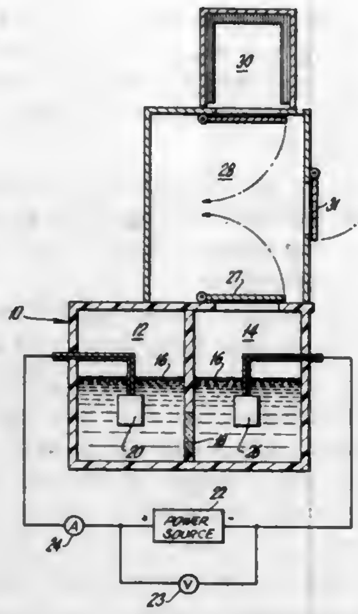
ELECTRODEPOSITION PROCESS FOR FORMING AMORPHOUS SILICON

Edward R. Bucker, Cranford, and James A. Amick, Princeton, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 16, 1978, Ser. No. 951,580

Int. Cl.^{2} C25D *3/02, 5/50*

U.S. Cl. 204—14 N **15 Claims**



1. A method for producing a stabilized photoconducting semiconductor film of amorphous silicon containing hydrogen, said method comprising:

electrolyzing a non-aqueous solution of a silicon solute selected from the group consisting of silane, halogenated silane, silicon halides or mixtures thereof dissolved in a liquid aprotic solvent, or a mixture of a liquid aprotic solvent and an aromatic solvent said solution further having a supporting ion additive electrolyte, soluable in said solution, and imparting sufficient conductivity thereto to permit the electro reduction of said solute;

reducing said silicon solute to electroplate a film containing silicon onto a cathode body immersed in said solution;

heat treating said film in an oxygen free ambient at a temperature ranging from above about 250° C. to about 350° C. for a period sufficient to stabilize said film.

4,192,721

METHOD FOR PRODUCING A SMOOTH COHERENT FILM OF A METAL CHALCONIDE

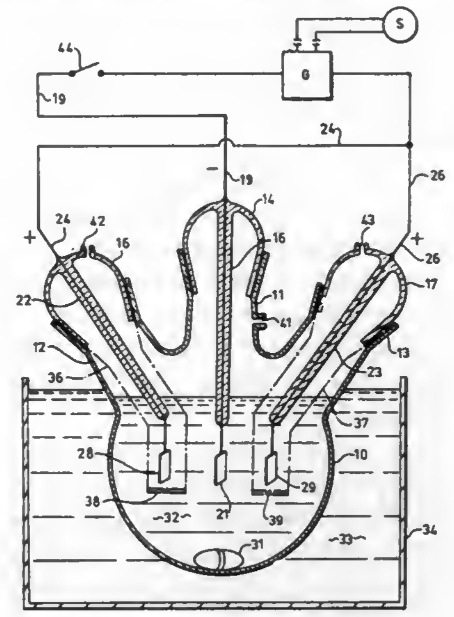
William R. Fawcett, and Andrzej S. Baranski, both of 30 Dean Ave., Guelph, Ontario, Canada (N1G 1K7)

Filed Apr. 24, 1979, Ser. No. 32,762

Int. Cl.^{2} C25D *3/02, 9/08*

U.S. Cl. 204—14 N **30 Claims**

1. A method for producing a smooth coherent film of a metal chalconide of which the metal moiety is a metal selected from the group consisting of Cd, Pb, Hg, Cu, Bi, Co, Ni, and Tl, and the chalconide moiety is a chalcogen selected from the group consisting of S, and Se, comprising the steps of providing an electrolytic bath comprising an organic polar solvent having dissolved therein (a) a salt of said metal that is ionised and is electrically conductive in solution in said solvent and (b) said chalcogen is elemental form; maintaining the bath at elevated temperature; subjecting the bath to electrolysis at a current density that is sufficiently low with respect to the surface area of the cathode that a smooth coherent film of said chalconide is deposited on the cathode; and continuing the electrolysis until a desired thickness of film has built up on the cathode.



4,192,722

COMPOSITION AND METHOD FOR STANNATE PLATING OF LARGE ALUMINUM PARTS

Daniel J. Schardein, Richmond; Charles M. Rogers, Powhatan, and Diane N. Vice, Richmond, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jul. 25, 1978, Ser. No. 927,915

Int. Cl.^{2} C25D *5/10, 5/44;* **C23C** *3/02*

U.S. Cl. 204—38 B **15 Claims**

1. An aqueous alkaline stannate solution, suitable for both immersion and electrolytic plating of aluminum alloys with tin, particularly as an activation step prior to subsequently plating said alloys with other metals such as bronze, which for activating the 7029 and 7129 aluminum alloys provides an allowable transfer time between the activation bath and the subsequent strike bath of at least 45 seconds, said solution comprising:

A. stannate values selected from the group consisting of sodium stannate, potassium stannate, and mixtures thereof;
B. polyhydroxy carboxylic acid anion values;
C. a hydroxyl compound selected from the group consisting of sodium hydroxide, potassium hydroxide, and mixtures thereof, at free equivalent KOH levels of about 24 grams per liter of said solution.

4,192,723

AQUEOUS SOLUTION OF MONOVALENT GOLD AND AMMONIUM SULFITE COMPLEX, PROCESS FOR THE PREPARATION THEREOF AND ELECTROLYTIC BATH OBTAINED THEREFROM FOR THE PLATING OF GOLD OR GOLD ALLOYS

Pierre Laude, Prevessin, France; Erwin Marka, Geneva, and Franco Zuntini, Morrens, both of Switzerland, assignors to Systemes de Traitements de Surfaces S.A., Switzerland

Filed Aug. 8, 1978, Ser. No. 931,914

Claims priority, application Switzerland, Aug. 29, 1977, 10523/77

Int. Cl.^{2} C01G *7/00;* **C25D** *3/48*

U.S. Cl. 204—43 G **12 Claims**

1. An aqueous solution of a monovalent gold and ammonium sulfite complex, which is stable under slightly acidic conditions.

4,192,724

METHOD FOR ELECTROLYZING MOLTEN METAL CHLORIDES

Takeshi Minami, and Shinichi Toda, both of Tokyo, Japan, assignors to Chlorine Engineers Corporation, Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 950,111

Claims priority, application Japan, Oct. 26, 1977, 52/127584

Int. Cl.^{2} C25B *11/08;* **C25C** *3/02, 3/04, 3/06*

U.S. Cl. 204—67 **4 Claims**

1. A method for electrolyzing a molten chloride which comprises electrolyzing a molten bath of a chloride of a metal more base than hydrogen in an electrolytic cell containing an anode and a cathode to form chlorine at the surface of the anode and the metal at the surface of the cathode,

wherein the anode comprises an electrically conductive substrate resistant to corrosion by the molten bath of the metal chloride and the electrolysis products thereof and having thereon a coating of a noble metal oxide, and

with the electrolysis being carried out in the presence of an oxide or oxychloride of a metal more base than the metal formed at the cathode where the concentration of the oxide or oxychloride of the metal present in the molten bath, expressed as the mole fraction of free oxygen ion, is at least about 1×10^{-4}.

4,192,725

ELECTROLYTIC PRODUCTION OF HIGH PURITY ALKALI METAL HYDROXIDE

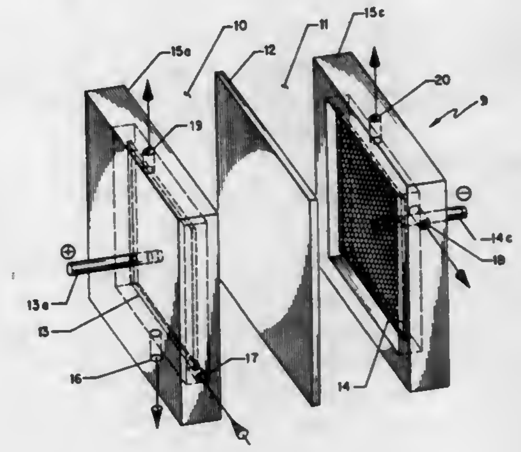
Ronald L. Dotson, Mentor, and Kevin J. O'Leary, Cleveland Heights, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Continuation of Ser. No. 191,424, Oct. 21, 1971, Pat. No. 4,025,405. This application Feb. 16, 1977, Ser. No. 769,100

The portion of the term of this patent subsequent to May 24, 1994, has been disclaimed.

Int. Cl.^{2} C25B *1/16, 1/26*

U.S. Cl. 204—98 **24 Claims**

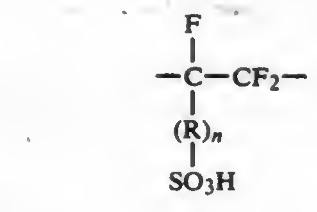


1. A process for the continuous production of alkali metal hydroxide substantially free from alkali metal halide and other impurities which comprises:

(a) continuously providing an aqueous alkali metal halide solution to the anode compartment of an electrolytic cell in which a dimensionally stable anode and a cathode are maintained in separate anode and cathode compartments, respectively, by a stable, hydrated, cation selective, hydraulically impermeable, electrically conductive membrane interposed between said anode and said cathode;
(b) electrolyzing the alkali metal halide solution while maintaining said solution at a temperature of from about 35° C. to about 100° C. and at a pH of about 1.0 to about 5.5;
(c) continuously removing alkali metal hydroxide solution, substantially free from alkali metal halide and other impurities, and hydrogen from the cathode compartment and halogen from the anode compartment;

said membrane consisting essentially of a film of a fluorinated copolymer having pendant sulfonic acid groups or derivatives thereof and containing recurring structural units of the formula:

(1)

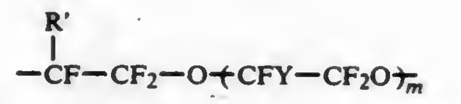


$$-\overset{F}{\underset{(R)_n-SO_3H}{C}}-CF_2-$$

and

(2) $-CXX'-CF_2-$

wherein R represents the group



$$-\overset{R'}{CF}-CF_2-O\!+\!CFY-CF_2O\!+_m$$

in which R′ is fluorine or perfluoroalkyl of 1 to 10 carbon atoms, Y is fluorine or trifluoromethyl, and m is 1, 2 or 3, n, is 0 or 1; X is fluorine, chlorine, hydrogen or trifluoromethyl; and X′ is X or $CF_3-(CF_2-_z$ wherein z is 0 or an integer from 1 to 5; the units of formula (1) being present in an amount from 3 to 20 mole percent.

4,192,726

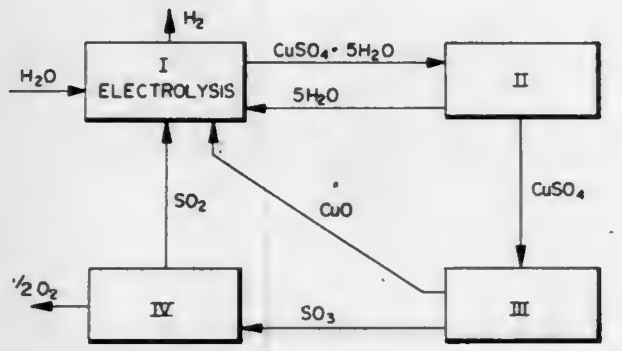
THERMOELECTROCHEMICAL PROCESS USING COPPER SULFATE FOR PRODUCING HYDROGEN AND OXYGEN FROM WATER

Jon B. Pangborn, Lisle, and James R. Dafler, Lombard, both of Ill., assignors to Gas Research Institute, Chicago, Ill.

Filed Nov. 6, 1978, Ser. No. 957,893

Int. Cl.^{2} C25B *1/04, 1/12*

U.S. Cl. 204—129 **21 Claims**



1. A process for the production of hydrogen and oxygen from water comprising the steps:

electrolytically oxidizing in an electrolytic cell an aqueous solution of sulfur dioxide in the presence of copper oxide to produce copper sulfate in solution in the anode chamber while producing hydrogen in a separated cathode chamber and removing the produced hydrogen from the cycle;

crystallizing said copper sulfate solution to solid copper sulfate pentahydrate;

thermally dehydrating said copper sulfate pentahydrate to copper sulfate and steam; and

thermally decomposing said copper sulfate to copper oxide and sulfur dioxide for recycle to said electrolytic cell and to oxygen which is removed from the cycle.

4,192,727

POLYELECTROLYTE HYDROGELS AND METHODS OF THEIR PREPARATION

James A. Ward, Goshen, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 717,397, Aug. 24, 1976, abandoned. This application Aug. 3, 1977, Ser. No. 821,082

Int. Cl.^{2} C08F *2/54*

U.S. Cl. 204—159.12 **54 Claims**

1. A method of preparing an insoluble polyelectrolyte hydrogel capable of absorbing more than about 20 times its weight in aqueous solution which comprises:

forming a predetermined mass comprised of a mixture of an acrylate salt and acrylamide in a ratio of acrylate salt to acrylamide between about 0.3 to 1 and about 20 to 1, the predetermined mass having a pH in solution between about 6 and about 12; and

exposing the predetermined mass to a dose of from about 0.2 to about 10 Megarads of ionizing radiation at a dose rate between about 0.001 Megarads per second and about 10 Megarads per second for a time period sufficient to form said hydrogel which is substantially free of unreacted monomer.

4,192,728

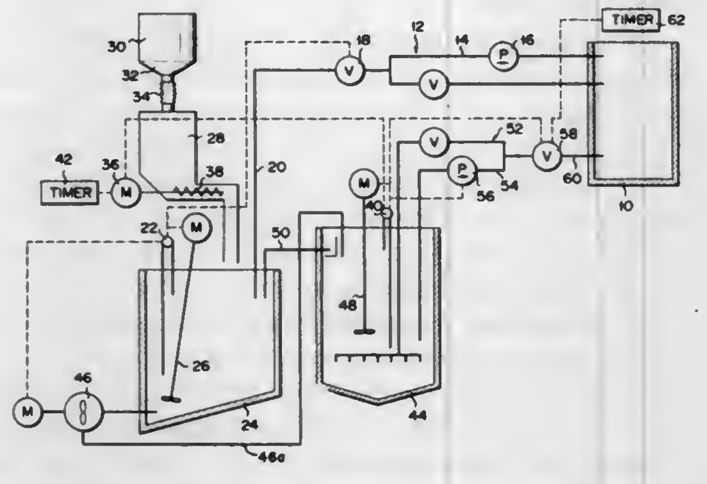
METHOD FOR SUPPLYING POWDER INTO A COATING TANK AND ITS APPARATUS

Kunio Enomoto, Kawagoe; Uhee Kikuchi, Sayama; Masanori Kobori, Kawagoe; Suguru Kimura, Sayama; Satoru Kamiyama, Tokyo; Nobuaki Todoroki, Warabi, and Jun-ichi Yasukawa, Chigasaki, all of Japan, assignors to Taikisha Ltd.; Honda Motor Co., Ltd., both of Tokyo and Shinto Paint Co., Ltd., Amagasaki, all of, Japan

Filed Sep. 12, 1978, Ser. No. 941,456

Int. Cl.^{2} C25D *13/24, 15/00, 17/00*

U.S. Cl. 204—181 R **4 Claims**



1. A method for supplying powder into a coating tank for electrophoretic powder coating comprising:

a first step of taking out a specified amount of plating bath from the coating tank, in which plating bath the electrophoretic powder is reduced as a result of coating work;

a second step including: supplying powder of much the same amount as the reduced amount of the powder to the plating bath taken out from the coating tank; agitating the taken out plating bath while supplying the powder to form a supplementary plating bath; and carrying out a first dispersion of the powder in the supplementary plating bath;

a third step including: carrying out a second dispersion of the powder in the supplementary plating bath to form a further uniformly dispersed state; and aging the supplementary plating bath with the dispersed powder therein; and

a fourth step of supplying to the coating tank sufficiently aged supplementary plating bath which is obtained from said third step and which has a high density of powder substantially uniformly dispersed therein.

4,192,729

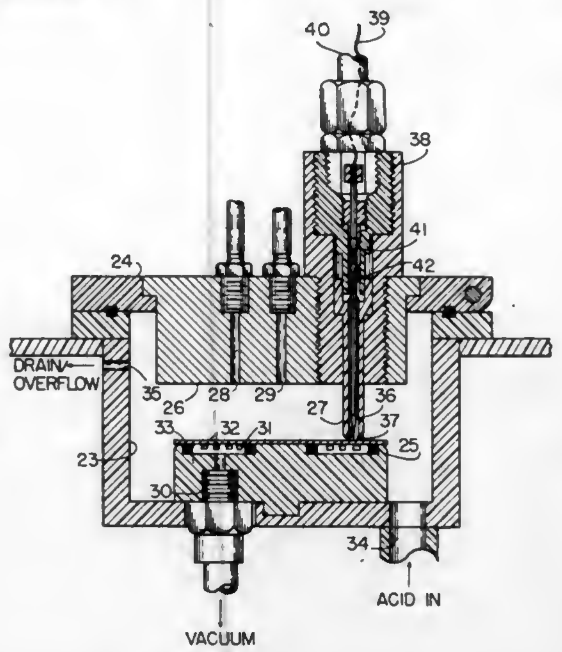
APPARATUS FOR FORMING AN ALUMINUM INTERCONNECT STRUCTURE ON AN INTEGRATED CIRCUIT CHIP

Dan Cancelleri, Oceanside, and Charles E. Thompson, Carlsbad, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 3, 1978, Ser. No. 892,916

Int. Cl.^{2} C25F *3/14, 7/00*

U.S. Cl. 204—272 **1 Claim**



1. Apparatus for forming an aluminum interconnect structure on a substrate which structure is formed of an aluminum layer having a hard barrier aluminum oxide layer on the surface thereof, and a resist pattern to define the interconnect structure, said apparatus comprising:

a chamber having a pedestal to receive and hold said substrate in an etchant-electrolyte solution;

an anode in said chamber to make electrical contact with said substrate;

a cathode in said chamber above said pedestal;

said chamber being provided with an etchant-electrolyte solution supply port to supply said chamber with said solution to etch said aluminum oxide layer so as to expose portions of said aluminum layer;

supply means coupled to said supply port to continuously supply said solution thereto;

voltage means coupled to said cathode and anode to supply voltages thereto at a finite time after such substrate has resided in said solution so as to anodize said exposed portions while said solution is being continuously supplied thereto;

said cathode having a planar surface to reside in parallel with said substrate and said anode extending through said cathode to make contact with said substrate;

a shield around said anode; and

nitrogen means coupled to said shield to supply nitrogen under pressure between said shield and said anode.

4,192,730

CARBONACEOUS LUTING PASTE AND AMBIENT TEMPERATURE LUTING PROCESS

Daniel Dumas, Saint-Priest; Serge Lacroix, Lyons, and Jean Vallon, Andresy, all of France, assignors to Societe des Electrodes et Refractaires Savoie, Paris, France

Filed Apr. 20, 1979, Ser. No. 31,952

Claims priority, application France, Apr. 20, 1978, 78 12447; Feb. 19, 1979, 79 04769

Int. Cl.^{2} C25C *7/00*

U.S. Cl. 204—294 **14 Claims**

1. A carbonaceous luting paste capable of being cold shaped, essentially comprising at least about 70% by weight of particulate calcined carbonaceous material, a high-temperature plasticizing agent comprising a water-insoluble organic carbonaceous compound, and an ambient-temperature plasticizing agent comprising a compound in aqueous solution.

4,192,731

COAL EXTRACTION PROCESS

Richard S. Stearns, Malvern, Pa., and Elmer J. Hollstein, Wilmington, Del., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Jun. 23, 1978, Ser. No. 918,216

Int. Cl.^{2} C10G *1/00*

U.S. Cl. 208—8 LE **5 Claims**

1. A process for obtaining liquids from solid fossil fuels by heating at super critical temperature in the absence of added hydrogen a mixture of particulate solid fossil fuel and a solvent mixture of from about 50% to about 75% by weight of tetralin and from about 50% to about 25% of xylene whereby said solid fuel is extracted and the solid residue retains its particulate form.

4,192,732

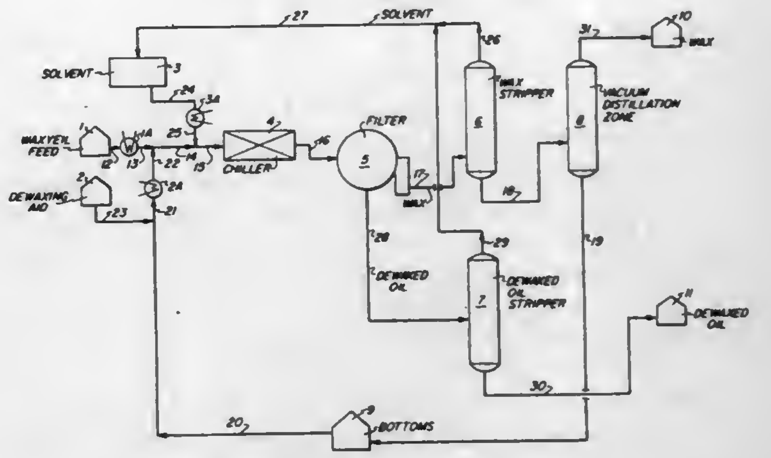
RECOVERY AND RECYCLE OF DEWAXING AID

Takashi Onodera, Urawa; Kikuji Komine, Tokorozawa, and Fumio Ohashi, Ohi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,859

Int. Cl.^{2} C10G *43/06, 43/08*

U.S. Cl. 208—33 **14 Claims**



1. In a solvent dewaxing process wherein a waxy hydrocarbon oil is mixed with solvent and a dewaxing aid comprising a chlorinated paraffin/naphthalene condensate, an alpha-olefin polymer and mixture thereof and wherein the mixture of oil, solvent and dewaxing aid is chilled to form a slurry comprising solid particles of wax containing said dewaxing aid and a mixture of dewaxed oil and solvent and wherein said wax is separated from said dewaxed oil and solvent as a solvent-containing wax cake and wherein solvent is removed from the wax cake to produce substantially solvent-free wax, the improvement which comprises vacuum distilling off most of said solvent-free wax under conditions such that the dewaxing aid therein is not decomposed, said conditions including a temperature no higher than about 320° C., to form a wax bottoms containing said dewaxing aid and recycling said dewaxing aid-containing bottoms back into the dewaxing process wherein it is mixed with said waxy hydrocarbon oil.

4,192,733

SOLVENT DEWAXING WAXY HYDROCARBON OILS USING DEWAXING AID

Takashi Onodera, Urawa; Kikuji Komine, Tokorozawa; Fumio Ohashi, and Tsutomu Naito, both of Ohi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,811

Int. Cl.^{2} C10G *43/06, 43/08*

U.S. Cl. 208—33 **16 Claims**

1. In a solvent dewaxing process wherein a waxy hydrocarbon oil is mixed with a dewaxing aid and dewaxing solvent and

chilled to form a slurry comprising solid particles of wax and a mixture of dewaxed oil and solvent, the improvement which comprises using, as a dewaxing aid, a mixture of (A) a polymer of one or more paraffinic alpha-mono-olefins of from 4 to 30 carbon atoms, said polymer having an average molecular weight of from about 10,000 to 1,000,000 and (B) an olefin-vinyl acetate copolymer having a vinyl acetate content of from about 15–40 wt. % and an average molecular weight ranging from between about 50,000 to 1,000,000 and wherein components (A) and (B) are used in a weight ratio to each other ranging from about 95/5 to 5/95 of (A)/(B).

4,192,734

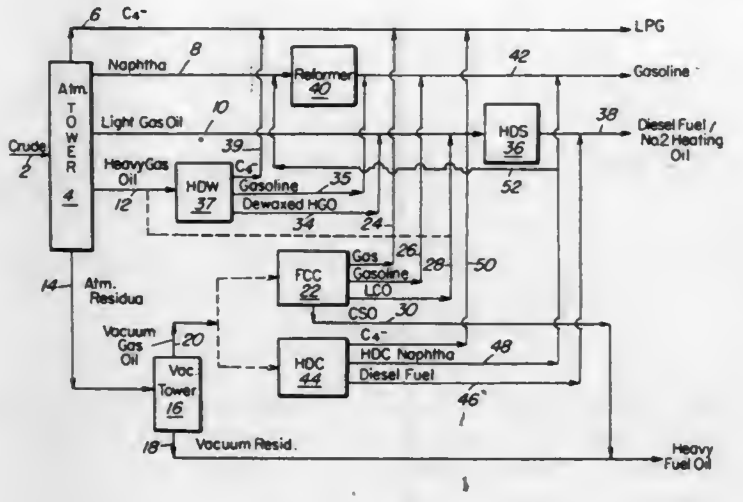
PRODUCTION OF HIGH QUALITY FUEL OILS

Robert T. Pavlica, Princeton; Thomas R. Stein, Cherry Hill, and Carl W. Streed, Haddonfield, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 10, 1978, Ser. No. 922,948

Int. Cl.^{2} C10G *37/04, 39/00*

U.S. Cl. 208—80 **10 Claims**



1. A process for upgrading crude oil to fuel oil comprising diesel fuel and No. 2 heating oil which comprises,

- separating a crude oil to obtain naphtha boiling material, a light gas oil fraction boiling in the range of 320° to 650° F., a heavy atmospheric gas oil with an end boiling point in the range of 750° to 950° F. and a higher boiling atmospheric residua,
- separating the atmospheric residua to obtain vacuum residua and heavy vacuum gas oil with an end point up to about 1075° F., processing the heavy vacuum gas oil through one or both of catalytic cracking with or without hydrogen under conditions to particularly increase the yield of a cycle oil product suitable for use as diesel fuel with or without further hydrogenation,
- processing the heavy atmospheric gas oil with an end point in the range of 750° F. to 950° F. by catalytic hydrowaxing with a special class of crystalline zeolites represented by ZSM-5 zeolite to produce particularly a dewaxed gas oil of substantially improved pour point and cetane value,
- hydrodesulfurizing a dewaxed heavy gas oil product of hydrodewaxing and
- blending the gas oil products of cracking and dewaxing of acceptable sulfur concentration to form diesel fuel and/or No. 2 heating oil.

4,192,735

HYDROCRACKING OF HYDROCARBONS

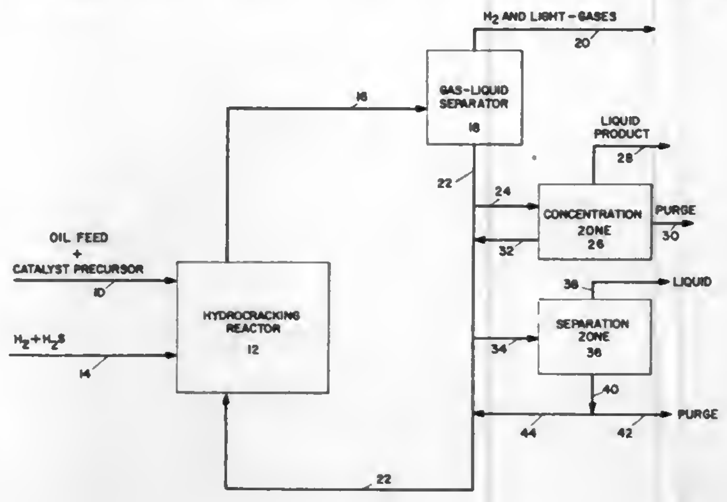
Clyde L. Aldridge, and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 847,898, Nov. 2, 1977, Pat. No. 4,134,825, which is a continuation-in-part of Ser. No. 702,227, Jul. 2, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 955,797

The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.

Int. Cl.^{2} B01J *27/04;* **C10G** *13/06*

U.S. Cl. 208—112 **24 Claims**



1. A process for hydrocracking a hydrocarbon oil chargestock having a Conradson carbon content of less than about 5 weight percent, which comprises:

(a) adding to said chargestock a thermally decomposable metal compound in an amount ranging from about 25 to about 950 weight parts per million, calculated as the elemental metal, based on said oil chargestock, said metal being selected from the group consisting of Groups IVB, VB, VIB, VIIB and VIII of the Periodic Table of Elements and mixtures thereof;

(b) heating said thermally decomposable metal compound within said chargestock in the presence of a gas selected from the group consisting of a hydrogen-containing gas, a hydrogen sulfide-containing gas, and a gas comprising hydrogen and hydrogen sulfide, to produce a solid, non-colloidal catalyst within said chargestock, said solid catalyst comprising from about 25 to about 950 wppm of said metal, calculated as the elemental metal, based on said chargestock;

(c) reacting the chargestock containing said catalyst with hydrogen under hydrocracking conditions, in a hydrocracking zone, and

(d) recovering a hydrocracked hydrocarbon oil.

4,192,736

REMOVAL OF INDIGENOUS METAL IMPURITIES FROM AN OIL WITH PHOSPHORUS OXIDE-PROMOTED ALUMINA

Harris E. Kluksdahl, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 29, 1978, Ser. No. 964,766

Int. Cl.^{2} C10G *29/16, 23/02*

U.S. Cl. 208—251 H **4 Claims**

1. In a process for upgrading an oil selected from the group consisting of petroleum and syncrude oils, fractions and mixtures thereof containing at least a substantial content of at least one metal impurity selected from the group consisting of metal impurities indigenous to said oils, by contact thereof under oil demetallizing conditions with a solid consisting esentially of alumina containing an oxide promoter, the improvement comprising (1) carrying out said contact with an alumina having a pore volume of at least 0.3 cc per gram and said oxide promoter being phosphorus oxide in the range of from about 0.1 to 10 parts; calculated as phosphorus, for each 100 parts of alumina in parts by weight.

4,192,737

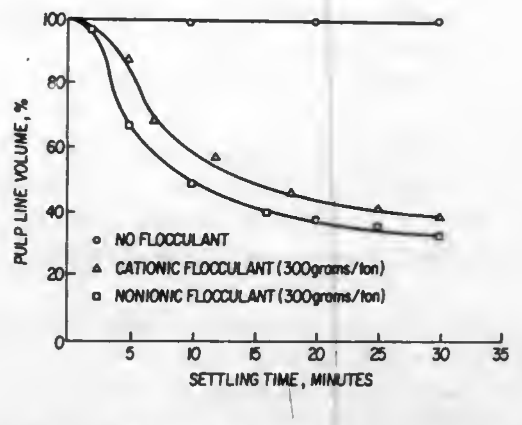
FROTH FLOTATION OF INSOLUBLE SLIMES FROM SYLVINITE ORES

Philip Thompson, Salt Lake City; Jerry L. Huiatt, Murray, and Don C. Seidel, Salt Lake City, all of Utah, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 15, 1978, Ser. No. 942,833

Int. Cl.^{2} B03D *1/02*

U.S. Cl. 209—5 **5 Claims**



1. A froth flotation process for removing insoluble slimes from sylvinite ore in a saturated brine pulp prior to potash flotation, comprising utilizing as the froth flotation collector a mixture of distilled fuel oil and a defoamer consisting essentially of ethylene glycol monoacetate and floating off said insoluble slimes.

4,192,738

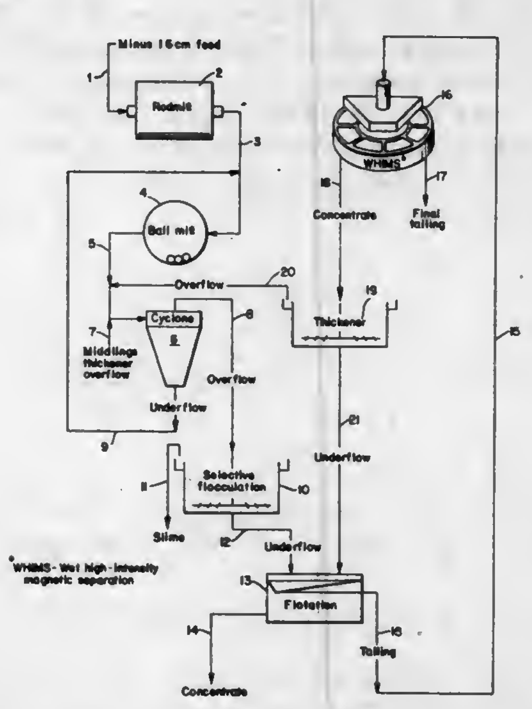
PROCESS FOR SCAVENGING IRON FROM TAILINGS PRODUCED BY FLOTATION BENEFICIATION AND FOR INCREASING IRON ORE RECOVERY

Arthur F. Colombo, and David M. Hopstock, both of Twin Cities, Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 23, 1978, Ser. No. 953,395

Int. Cl.^{2} B03B *1/00*

U.S. Cl. 209—5 **15 Claims**



1. A process for recovery of iron from iron ore consisting essentially of subjecting the ore to cationic gangue flotation to produce a flotation concentrate as underflow and flotation tailings as overflow, and subsequently scavenging iron from said tailings by means of a wet high-intensity magnetic separator, whereby a magnetic concentrate of increased iron content and a magnetic tailings of reduced iron content are obtained.

4,192,739

PROCESS FOR BENEFICIATION OF NON-SULFIDE ORES

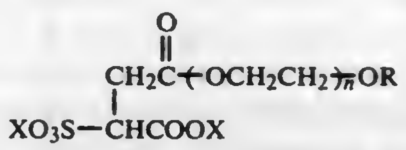
Samuel S. Wang, Cheshire, and Eugene L. Smith, Jr., Milford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 21, 1977, Ser. No. 862,994

Int. Cl.^{2} B03D *1/02*

U.S. Cl. 209—166 **10 Claims**

1. A process for beneficiating non-sulfide ores selected from the group consisting of phosphate, fluorite, barite, hematite, taconite, magnetite and fluorspar which comprises classifying the ore to provide particles of flotation size, slurrying the classified ore in aqueous medium, conditioning the slurry with an effective amount of a collector combination and floating the desired mineral values, said collector combination comprising from about 1 to about 99 weight percent of a fatty acid derived from a vegetable or animal oil and, correspondingly, from about 99 to about 1 weight percent of a monoester of a sulfosuccinic acid of the general formula



$$\begin{array}{l} \qquad\qquad\;\; \text{O} \\ \qquad\qquad\;\; \| \\ \qquad\quad\;\, \text{CH}_2\text{C}\!\left(\text{OCH}_2\text{CH}_2\right)_{n}\text{OR} \\ \qquad\quad\;\, | \\ \text{XO}_3\text{S}-\text{CHCOOX} \end{array}$$

wherein R is an alkyl radical of about 4 to 18 carbon atoms an aryl radical of one to two carbocyclic rings, an alkaryl radical of about 7 to 18 carbon atoms, or an aralkyl radical of about 7 to 18 carbon atoms, n has a numerical value of about 1 to 12, and X is hydrogen, alkali metal or ammonium ion.

4,192,740

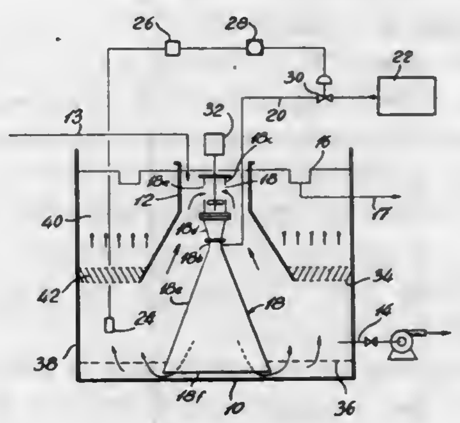
TWO ZONE PROCESS FOR BIOLOGICAL TREATMENT OF WASTE WATER

Guy Savard, Westmount; Robert G. H. Lee, Montreal, and Derek Hornsey, Roxboro, all of Canada, assignors to Canadian Liquid Air Ltd., Air Liquide Canada Ltee, Montreal, Canada

Continuation-in-part of Ser. No. 730,478, Oct. 7, 1976, abandoned. This application May 11, 1978, Ser. No. 905,008

Int. Cl.^{2} C02C *5/10*

U.S. Cl. 210—3 **8 Claims**



1. A process of treating waste water containing biodegradeable waste to provide a clarified liquid effluent and a disposable sludge, in which waste water is continuously passed through a single treating enclosure open to the atmosphere containing waste-degrading micoorganisms, to which oxygen is added to sustain the microorganisms and from which the clarified effluent is continuously overflowed and from which excess sludge and gases are removed, comprising, initially establishing:

(a) in a lower part of the enclosure a biological reaction zone containing mixed liquor containing said microorganisms and in which a biological reaction to degrade the waste is conducted,

(b) in an upper part of the enclosure a clarification zone in which clarified liquid rises and overflows, and

(c) between the reaction and clarification zones a transition zone in which the liquid of the mixed liquor rises and the solids settle,

and continuously,

withdrawing a recycle stream of mixed liquor from the reaction zone and conducting the stream through an oxygen dissolving device disposed outside the reaction zone, adding influent waste water to it, dissolving oxygen in the stream and injecting the supplemented stream into a lower part of the reaction zone remote from the vicinity of withdrawal,

conducting the waste water into the recycle stream at a variable rate within a range related to the depth and surface area of the enclosure to provide a residence time within the reaction zone effective for the biodegradation of the waste and for the formation and settling of biological floc,

adding oxygen to said recycle stream at a rate to provide an oxygen concentration within a controlled range below the saturation level of oxygen in the liquid effective to meet the oxygen demand of the organisms and maintaining it in contact with the liquid in a contact zone of said stream for a time and under a pressure such that the oxygen is dissolved in the liquid,

controlling the overall flow rate of said recycle stream to a substantially constant rate several times that of the incoming waste water effective to provide:

(d) for dissolving the oxygen which is added to the recycle stream,

(e) an amount of dilution of the recycle stream entering the reaction zone effective to prevent the oxygen coming out of solution at an upper part of the reaction zone,

distributing the flow of said recycle stream entering the reaction zone to reach a substantial area of a lower part thereof:

(f) to provide a wide spread direct flow through the reaction zone, from the vicinity of injection to the vicinity of withdrawal, whereby there is controlled agitation effective to keep the solids dispersed, and good access of the organisms to the biodegradeable waste,

(g) and to provide at an intermediate level of the enclosure, and upward velocity of the mixed liquor less than the settling rate of the solids, whereby there is maintained in the enclosure said separate reaction and clarification zones intervened by said transistion zone,

continuously monitoring the concentration of dissolved oxygen in the reaction zone to determine variations thereof resulting from variations in the flow rate and concentration therein of waste,

periodically adjusting the rate of addition of the oxygen to the recycle stream in response to variations in the oxygen concentration in the reaction zone to maintain said concentration within said controlled range and at a level where there is substantially avoided effervescence that would lead to gas bubbles rising into the clarification zone,

continuously withdrawing said effluent from the clarification zone to keep pace with the influent waste water, and

continually removing excess sludge from the reaction zone and carbon dioxide from the mixed liquor.

4,192,741

PROCESS FOR TREATING SEWAGE EFFLUENT

Daniel H. Deeks, 231 Franklin Ave., Sea Cliff, N.Y. 11579, assignor to Daniel H. Deeks, Sea Cliff, N.Y.

Continuation-in-part of Ser. No. 817,448, Aug. 25, 1977, abandoned. This application Dec. 27, 1978, Ser. No. 956,242

Int. Cl.^{2} C02G *1/04*

U.S. Cl. 210—6 **1 Claim**

1. A process for treating sewage effluent comprising:

(a) removing grit from the sewage effluent:

(b) passing the effluent to a drum separator and separating the effluent into a sludge fraction and a sewage fraction;

(c) passing the sludge fraction through a low pressure venturi and adding oxygen to produce an activated sludge;

(d) passing the activated sludge through a high pressure venturi for aerobic digestion;

(e) passing the sludge from (d) through a low pressure venturi to remove excess oxygen;

(f) passing the sludge from (e) through a high pressure venturi for anaerobic digestion;

(g) removing the combustible gas formed in (f);

(h) dewatering the sludge from (f) by means of a drum separator into a sludge fraction and a sewage fraction;

(i) incinerating the grit from (a) and the sludge fraction from (h);

(j) passing the sewage from (b) and the sewage from (h) into a low pressure venturi aerator, a high pressure venturi aerator, and a second low pressure venturi aerator;

(k) passing the sewage from (j) into a high pressure venturi filled with sand which contains nitrite bacteria to break down ammonia in the sewage into nitrites;

(l) passing the sewage from (k) into a short high pressure verturi filled with charcoal;

(m) passing the sewage from (l) into a high pressure venturi filled with sand which contains nitrate bacteria to convert nitrites into nitrates;

(n) passing the sewage from (m) into a high pressure venturi filled with sand which contains denitrifying bacteria to liberate nitrogen from the nitrates, and venting the nitrogen;

(o) passing the sewage from (n) through an additional charcoal filter to produce usable water.

4,192,742

PROCESS AND APPARATUS FOR THE BIOLOGICAL TREATMENT OF WASTE WATER

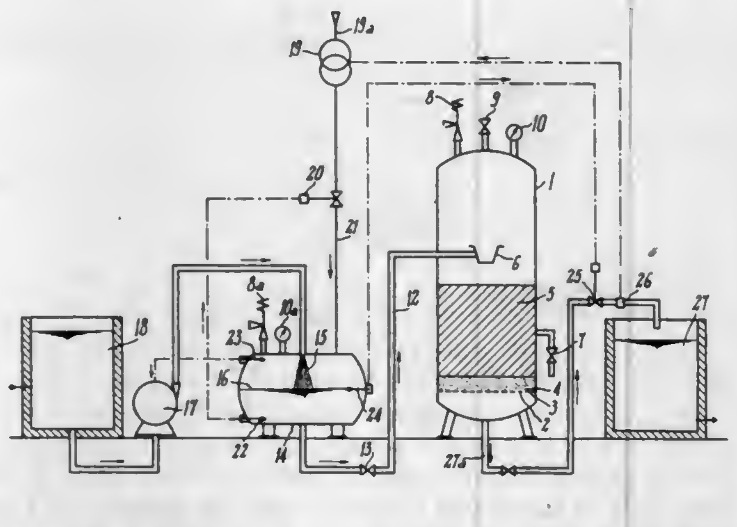
Jacques Bernard, Saint-Germain-en-Laye; Jean Bebin, and Jean-Pierre Hazard, both of Rueil-Malmaison, all of France, assignors to Degremont S.A., Rueil-Malmaison, France

Filed Apr. 28, 1978, Ser. No. 901,259

Claims priority, application France, May 10, 1977, 77 14196

Int. Cl.^{2} C02C *5/10*

U.S. Cl. 210—17 **10 Claims**



7. A process for the continuous biological treatment of waste water, said process comprising:

introducing waste water to be treated from a waste water source into an enclosed gas tight oxygenation chamber;

introducing oxygen-containing gas into said oxygenation chamber, at a pressure higher than atmospheric pressure, and therein dissolving oxygen of said gas in said waste water in a quantity higher than the saturation concentration value of oxygen in the waste water at atmospheric pressure, while maintaining said pressure within said oxygenation chamber, thereby superoxygenating said waste water;

passing the thus superoxygenated waste water into an enclosed gas tight filtering chamber, separate from said oxygenation chamber and from said waste water source, while maintaining the interior of said filtering chamber at said pressure, and while avoiding the introduction into the interior of said filtering chamber of any oxygen other than that dissolved in said waste water;

passing said superoxygenated waste water through a biological filter bed within said filtering chamber, thereby forming purified water;

removing said purified water from said filtering chamber, and passing said purified water to a position of utilization separate from said oxygenation chamber and from said waste water source;

measuring the residual dissolved oxygen content of said purified water; and

regulating said pressure and thus the amount of oxygen dissolved in said waste water to be treated as a function of the measured residual dissolved oxygen content of said purified water.

4,192,743

PROCESS OF DEWATERING SLUDGE-TYPE MATERIAL AND INSTALLATION FOR CARRYING OUT THE PROCESS

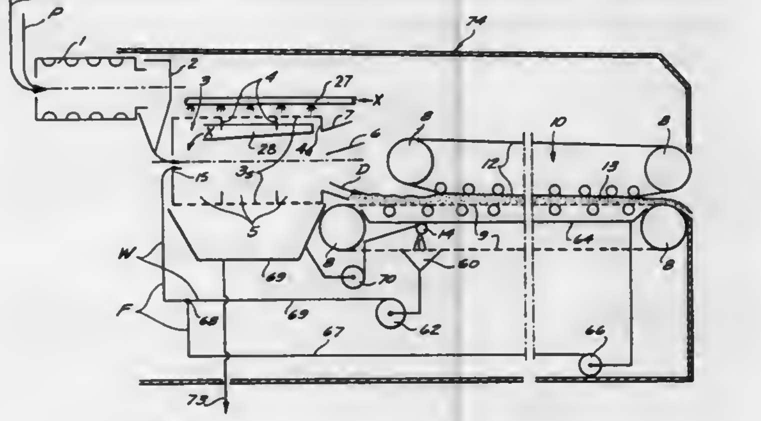
Wendel Bastgen, Betzdorf/Sieg; Helmut Schreiber, Bottenberg, and Eugen Grümbel, Niederfischbach, all of Fed. Rep. of Germany, assignors to Albert Klein KG, D 5241 Niederfischbach, Fed. Rep. of Germany

Continuation of Ser. No. 574,290, May 5, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 812,568

Claims priority, application Fed. Rep. of Germany, May 8, 1974, 2422208

Int. Cl.^{2} B01D *17/08;* **C02C** *3/00*

U.S. Cl. 210—42 R **2 Claims**



1. A process for continuously dewatering sludge-type material containing solid particles, said process comprising the steps of:

feeding sludge-type material to be dewatered to a mixing means;

feeding flocculant to said mixing means;

mixing the sludge-type material and flocculant in the mixing means to form a flocculated sludge;

feeding the flocculated sludge to a reactor-thickener means;

removing water from the flocculated sludge in said reactor-thickener means;

continuously feeding the now dewatered flocculated sludge from the reactor-thickener means to an inlet of a filtering means;

removing additional water from the dewatered flocculated sludge in said filtering means;

discharging separated water from said reactor-thickener means into a first basin;

discharging filtrate separated from the dewatered flocculated sludge by the filtering means into a second basin;

pumping a portion of the water from the first basin to said filtering means to wash off adhering solid particles and flocculant in said filtering means;

collecting the wash water after passage through the filtering means and returning at least a portion thereof to the reactor-thickener means;

returning at least part of the filtrate discharged by the filtering means to the reactor-thickener means;

residual flocculant in the filtrate and the wash water returned to the reactor-thickener means producing further flocculation of sludge contained in the filtrate and wash water whereby the water in the first basin becomes relatively pure;

discharging the remaining portion of water from the first basin; and

discharging the dewatered sludge from the outlet of the filtering means.

4,192,744

TREATMENT OF AQUEOUS SYSTEMS

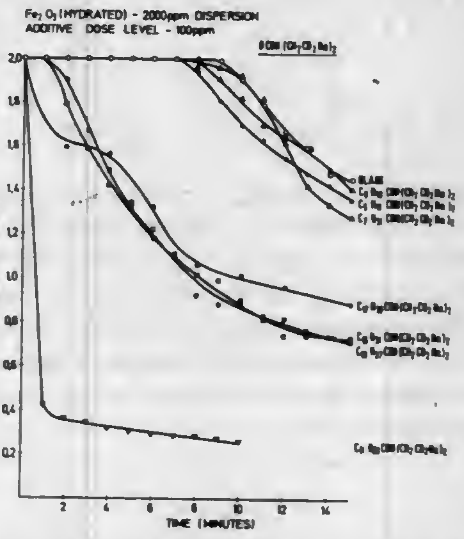
David R. Clark, Sale; Alan Marshall, and Michael A. Finan, both of Macclesfield, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 28, 1977, Ser. No. 846,301

Claims priority, application United Kingdom, Nov. 2, 1976, 45464/76

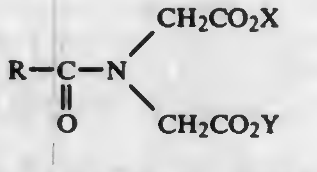
Int. Cl.^{2} B01D *21/01;* **C02B** *1/20*

U.S. Cl. 210—54 **3 Claims**



1. A method of treating an aqueous system to flocculate dispersed Fe_2O_3 (hydrated) selectively therefrom which comprises

adding to the aqueous system from 0.1 to 500 ppm, based on the water to be treated, of a compound having the formula I



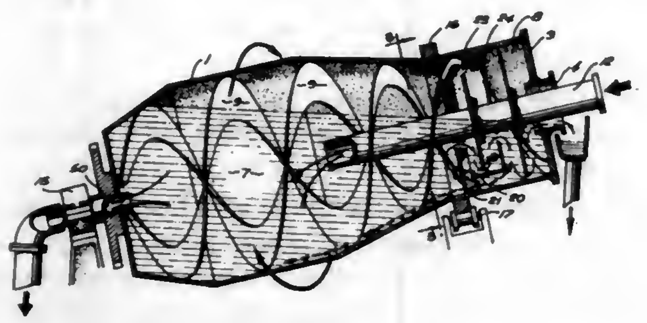
$$R-C(=O)-N(CH_2CO_2X)(CH_2CO_2Y) \qquad \text{I}$$

wherein R is N-undecye and X and Y are the same or different and each is an alkali metal, an alkaline earth metal, ammonium, an amine radical or hydrogen.

2. A method according to Claim 1 wherein X and Y are independently selected from the group consisting of sodium, potassium and ammonium radical.

4,192,745
RECLAMATION OF CEMENT SLURRY

Maxwell G. Hood, Brookvale, Australia, assignor to Fowlerex Pty. Limited, Brookvale, Australia
Filed Oct. 24, 1978, Ser. No. 954,287
Claims priority, application Australia, Oct. 24, 1977, PD2163
Int. Cl.^{2} B01D *21/10*
U.S. Cl. 210—66 **9 Claims**



1. A method for disposing of cement solids from a slurry of cement in water when said cement has been a component of an unset concrete comprising the steps of:

separating some of the water from said slurry to produce a more concentrated slurry;

agitating said concentrated slurry to keep it as a dispersion; and

mixing said concentrated slurry with newly produced concrete in the proportion such that the weight of concentrated slurry solids is from 0.1% to 5% of the weight of cement in the total concrete produced.

6. Apparatus for separating some of the water from a slurry of cement in water to produce a more concentrated slurry while maintaining said concentrated slurry as a dispersion, comprising

an inclined drum with a closed lower end and having water outlet means at its upper end;

rotation means to rotate said drum about its axis;

apertured baffled means defining in said drum a lower mixing section and at least one upper clarifying section;

delivery means whereby a slurry to be concentrated may be deposited in said mixing section and withdrawal means whereby concentrated slurry may be withdrawn from said mixing section;

said mixing section having fixed to the interior drum wall thereof at least one screw flight arranged with respect to the direction of rotation of said drum to urge solids settling in said mixing section towards the lower end thereof;

said clarifying section having means for permitting the outflow of supernatent water from said outlet means; and

means for returning solids settling in the clarifying section to said mixing section.

4,192,746
LIQUID CLARIFICATION SYSTEM

Kostas S. Arvanitakis, 14945 S. Dogwood Ave., Orland Park, Ill. 60462
Filed May 24, 1978, Ser. No. 909,162
Int. Cl.^{2} B01D *21/06, 33/26, 37/02*
U.S. Cl. 210—73 S **10 Claims**

1. A liquid clarification system for clarifying liquid bearing solid and/or chemical contaminant materials comprising

storage means for retaining in a quiescent state a quantity of unclarified liquid bearing suspended contaminant materials to effect a gravitational separation of at least a portion of the suspended contaminant materials from the unclarified liquid,

means for withdrawing the portion of unclarified liquid bearing the gravitationally separated contaminants into a storage reservoir,

a storage reservoir for retaining unclarified liquid bearing the gravitationally separated contaminants, means for controlling the percentage of contaminants in said unclarified liquid and means for discharging said unclarified liquid and contaminants at a controlled discharge output,

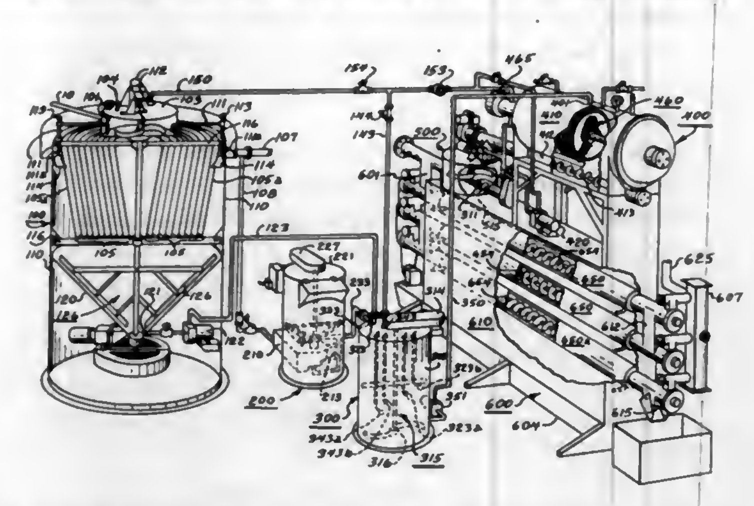
filtration means operatively connected to said storage reservoir for receiving said controlled discharge of contaminant bearing liquid,

said filtration means including filter means for removing the suspended contaminants from the unclarified liquid and discharging the liquid clarified thereby, and

means for conveying the discharge of clarified liquid from said filtration means to said storage reservoir for controlling the discharge output of the unclarified liquid and contaminants in said storage reservoir.

6. A method of clarifying liquids bearing solid and/or chemical contaminant materials comprising the steps of

retaining a quantity of unclarified liquid bearing suspended contaminant materials in a quiescent state and gravitationally separating at least a portion of the suspended contaminants from the unclarified liquid,



withdrawing at least that portion of the unclarified liquid bearing the gravitationally separated suspended contaminants,

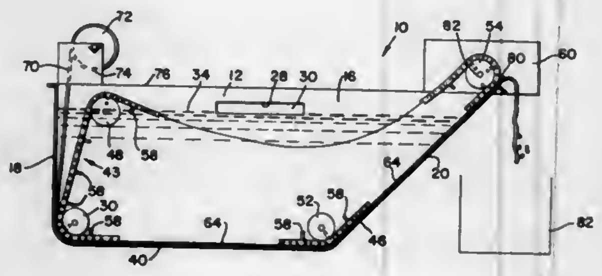
retaining that portion of the unclarified liquid bearing the gravitationally separated suspended contaminants, controlling the percentage of suspended contaminants in said unclarified liquid, and discharging said unclarified liquid and contaminants at a controlled discharge output,

filtering said controlled discharge output of unclarified liquid and contaminants removing the suspended contaminants from the unclarified liquid, and

discharging the liquid clarified by filtering into the retained unclarified liquid bearing the gravitationally separated suspended contaminants to control the discharge output prior to the filtering thereof.

4,192,747
LIQUID-SOLID SEPARATOR

Richard H. Wykoff, Livonia, Mich., assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed Nov. 6, 1978, Ser. No. 957,708
Int. Cl.^{2} B01D *21/18*
U.S. Cl. 210—83 **4 Claims**



1. A method particularly adapted for partially separating solids from a liquid comprising the steps of:

(1) flowing a supply of said liquid with solids therein into a tank by means of an inlet pipe located in an upper portion of said tank,

(2) maintaining a level of said liquid in said tank at a near constant level,

(3) flowing said liquid in a nonturbulent manner in a downward direction at a selective slow rate to pass below a lengthwise partition laterally offset in said tank,

(4) separating downwardly by gravity and by said downward flow up to 80% of said solids in said liquid as said liquid flows downwardly,

(5) flowing said liquid and a remainder of said solids upwardly at a selective faster rate to improve said downward separation on a side opposite said partition to be discharged through a weir opening,

(6) collecting said separated solids on a movable collection means forming in part a bottom of said tank,

(7) advancing said movable collection means periodically toward a discharge point exterior of said tank, and

(8) dumping said collected solids upon said solids reaching said discharge point,

wherein a substantial volume of said liquid may be processed to separate a substantial portion of said solid within said tank having selectively small volume.

4. In a high volume liquid-solid separator particularly adapted for effecting partial separation, said separator, including a tank having an upper inlet to receive a flow of a liquid and solids suspended therein, the improvement thereof comprising,

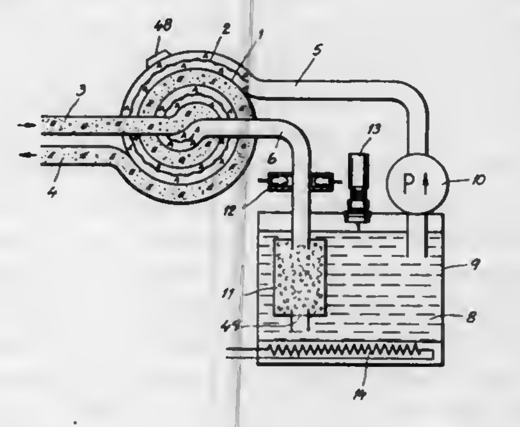
a lengthwise partition carried by end walls of said tank to divide said tank into an inlet chamber and an outlet chamber with said inlet chamber having a dimensioned volume substantially greater than said outlet chamber to produce a slow downward flow in said inlet chamber and a faster upward flow in said outlet chamber, said partition having a bottom edge located above a bottom of said tank to allow a substantial portion of said liquid and a selective small portion of said solids exceeding 20% to flow to a weir outlet in said tank outlet chamber,

a pass-through portion carried in a bottom of said tank to allow a remainder portion proximating 15% of said liquid to pass from tank, and

a movable collection means in part formed into an endless loop, said means continuously covering said bottom of said tank and said pass-through section to collect a remainder portion of said solids.

4,192,748
DIALYSIS APPARATUS WITH SELECTIVE CHEMICAL ACTIVITY

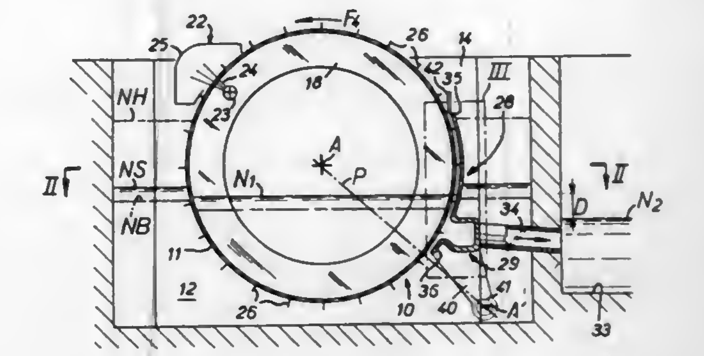
Viktor H. Hyden, Geijersgatan 6, 411 34 Goteburg, Sweden
Continuation of Ser. No. 480,811, Jun. 19, 1974, abandoned. This application Nov. 2, 1976, Ser. No. 738,328
Claims priority, application Sweden, Jul. 5, 1973, 7309501
Int. Cl.^{2} B01D *31/00*
U.S. Cl. 210—87 **10 Claims**



1. A dialysis apparatus comprising a dialysate container, cover means for said dialysate container, a dialysis container mounted on said cover means, said dialysis container having an inlet means and an outlet means, spectrometer means mounted on said cover means, a first fluid circuit means connecting said dialysis container and said dialysate container through said spectrometer means, said first fluid circuit including purification means in said dialysate container, a dialysis membrane for permitting passage of substances with molecular weights of up to between 10,000–15,000 removably mounted in said dialysis container and having a selectively chemically active therapeutic substance insolubilized on at least the surface facing the liquid to be dialyzed, pump means mounted on said cover means for pumping dialysate from said dialysate container to said dialysis container, a second fluid circuit means connecting said pump means with said dialysate container and said dialysis container, and at least one dosimeter means on said dialysate container for metering fluid into said dialysate container.

4,192,749
SCREENS FOR WATER INTAKES

Philip Jackson, Paris, France, assignor to E. Beaudry & Cie, Societe Anonyme, Paris, France
Filed Jun. 27, 1978, Ser. No. 919,605
Int. Cl.^{2} B01D *33/02*
U.S. Cl. 210—107 **10 Claims**



1. A water screen for a water intake, said water screen comprising an endless filter element having a surface constructed and arranged for movement about an axis and for the general radial flow of water therethrough, means defining a water flow zone with an inlet thereinto in which water being filtered may flow through said filter element surface, and safeguarding means associated with said filter element surface for safeguarding living matter particularly fish in water to be screened, said safeguarding means including a recuperation channel having an open end located adjacent said filter element surface remote from said water flow zone inlet and generally facing said filter element surface with said open end being located below said axis at a height relative to said filter element surface so as to be immersed during the operation of said water screen, suction means attached to said recuperation channel for effecting water flow through said filter element surface into said recuperation channel in a direction through said filter element reverse to the intended direction of flow of water to be filtered through said filter element, a shield member extending upwardly from said recuperation channel open end adjacent to said filter element surface, said shield member being of a configuration complimentary to the shape and path of movement of said filter element surface and being generally uniformly spaced from said filter element surface, whereby living matter entrained against said filter element surface is directed into said recuperation channel open end without being directed up and around said filter element surface.

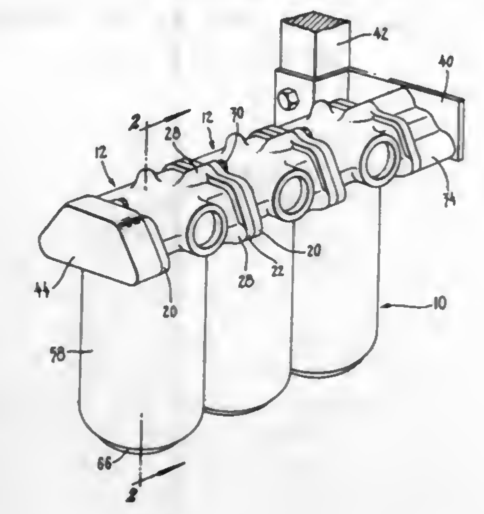
4,192,750
STACKABLE FILTER HEAD UNIT

Lee E. Elfes, Bloomfield Hills, and Dale A. Wood, Canton, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Continuation of Ser. No. 712,986, Aug. 9, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,424
Int. Cl.^{2} B01D *27/10, 35/14*
U.S. Cl. 210—133 **2 Claims**

1. A stackable filter head unit (12) of use with a filter element (56) having a cylindrical outer surface and a chamber (72) within the filter element, the chamber being concentric with

the cylindrical outer surface, and a filter bowl (**58**) adapted to be disposed concentrically about the filter element (**56**) to define a second chamber therebetween; the filter head unit (**12**) including:

- a member (**14**) having first and second opposed generally planar end surfaces (**16, 18**) interconnectable with corresponding surfaces of like filter head units to permit stacking of the filter head units, spaced apart generally parallel inlet and outlet passageways (**36, 38**) so dimensioned that die cast mold cores may be withdrawn therefrom, the passageways lying in a common first plane and extending between the first and second end surfaces and generally normal thereto, laterally offset annular side surfaces (**50, 52**) generally parallel to the first plane, the side surfaces being adapted to receive one end each of a filter element (**56**) and a filter bowl (**58**) in generally concentric fluid tight relationships, a first cylindrical port (**76**) so dimensioned that a die cast mold core may be withdrawn therefrom, the first port extending between the outlet passageway (**38**) and the center of the side surfaces (**50, 52**) and placing said outlet passageway in communication with the chamber (**72**) within the filter element (**56**), and a second port (**78**) so dimensioned that a die cast mold core may be withdrawn therefrom, the second port extending between the inlet passageway (**36**) and the side surfaces (**50, 52**) and placing the inlet passageway in communication with the chamber surrounding the filter element, the centerline of cylindrical port (**76**) being concentric with the centerline of the chamber (**72**) and defining a common second plane with the centerline of the outlet passageway, the passageways and ports being so oriented with respect to each other as to facilitate die casting of the member.



4,192,751
BI-DIRECTIONAL FILTER DRIER

Paul V. Henton, St. Louis, and Roger J. Fait, Manchester, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 806,755, Jun. 15, 1977, Pat. No. 4,125,469. This application Aug. 25, 1978, Ser. No. 936,762

Int. Cl.² B01D *27/08, 35/02*

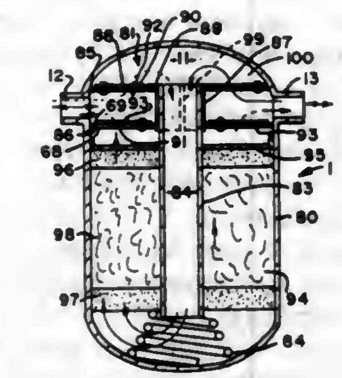
U.S. Cl. 210—136 **7 Claims**

1. A bi-flow filter drier comprising:

a shell, said shell defining a chamber, said shell having a first port and a second port;

filter means mounted in said shell between said ports; and

first valve means associated with said first port, and second valve means associated with said second port, said first and second valve means being operable independently of one another, each of said valve means including a one-way valve between said filter means and a respective port for admitting fluid from said respective port to said filter means and for being responsive to high pressure at said other port for blocking the flow of fluid from said filter means to said respective port, and another one-way valve between said filter means and its respective port responsive to high pressure at said other port for admitting fluid from said filter means to said respective port and being further responsive to high pressure at said respective port for blocking the flow of fluid from said filter means to said respective port.



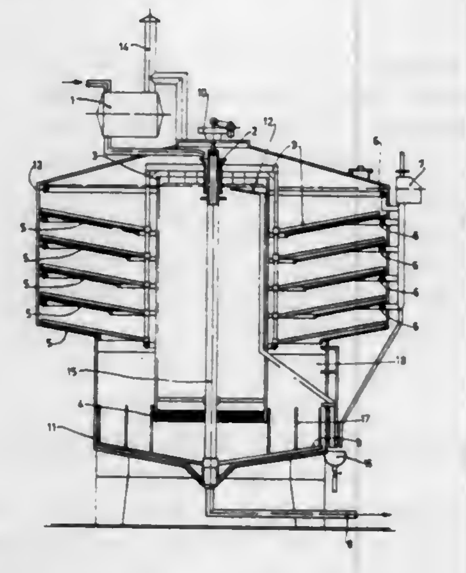
4,192,752
CONTINUOUS DECANTATION CLARIFIER FOR LIQUIDS CONTAINING SUSPENDED SOLIDS

Luiz A. C. de Mello Ribeiro Pinto, Bandeirantes Ave. 384, 14100 Ribeirao Preto, Sao Paulo, Brazil

Filed Feb. 14, 1978, Ser. No. 877,967

Int. Cl.² B01D *21/14*

U.S. Cl. 210—298 **7 Claims**



1. A continuous decantation clarifier, comprising means for defining a vertically extending first zone for directing liquid to be clarified downwardly so that the liquid is subjected to homogenization and flocculation, means for defining a vertically extending second zone adjacent to said first zone which receives the liquid from the lower end of said first zone and for directing the same in a vertically upward direction, said second zone being arranged adjacent to a third zone for receiving mud particles separated from the liquid in said third zone which mud particles are directed downwardly in the second zone to collide and coalesce with flakes and solids in suspension in the liquid in said second zone, said flakes and solids precipitating toward the bottom of the apparatus and means for defining said third zone including at least one frustoconical surface arranged adjacent to said second zone for receiving the liquid from the second zone and directing the liquid radially outwardly in a substantially horizontal direction, the mud particles being separated from the liquid in said third zone whereupon said mud particles are directed into said second zone where said particles are directed downwardly to collide and coalesce with the flakes and solids in suspension in the liquid in the second zone, the clarification liquid being collected close to the outer pheripheries of said at least one surface.

4,192,753
WELL COMPLETION AND WORKOVER FLUID HAVING LOW FLUID LOSS

David S. Pye, Brea; Julius P. Gallus, Anaheim, and Paul W. Fischer, Whittier, all of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Mar. 7, 1978, Ser. No. 884,128

Int. Cl.² C09K *7/02;* **E21B** *43/25*

U.S. Cl. 252—8.5 A **28 Claims**

1. An aqueous well drilling, completion or workover fluid comprising a mixture of:

- (1) about 8 to 60 pounds per barrel of a microemulsion comprising:
  - (a) about 45 to 85 parts by weight of water,
  - (b) about 15 to 55 parts by weight of solids comprising
    - (A) about 12 to 30 percent by weight of an oil-soluble surface active agent,
    - (B) about 20 to 38 percent by weight of a water-dispersible surface active agent,
    - (C) about 8 to 30 percent by weight of wax,
    - (D) about 20 to 50 percent by weight of a relatively low softening point resin having a softening point of about 90° to 134° C., selected from the group consisting of rosin acids, rosin esters, coumarone-indene resins, petroleum resins, polymers derived from one or more terpenes and condensation products of aromatic hydrocarbons with formaldehyde,
- (2) about 270 to 400 pounds per barrel of water,
- (3) about 14 to 91 pounds per barrel of a water-soluble inorganic salt, and
- (4) about 1 to 8 pounds per barrel of a particulate relatively high softening point resin having a softening point of 135° C. or above selected from the group consisting of rosin acids, rosin esters, coumarone-indene resins, petroleum resins, polymers derived from one or more terpenes and condensation products of aromatic hydrocarbons with formaldehyde.

4,192,754
SOIL RESISTANT YARN FINISH COMPOSITION FOR SYNTHETIC ORGANIC POLYMER YARN

Robert M. Marshall, Chester, and Kimon C. Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 28, 1978, Ser. No. 974,203

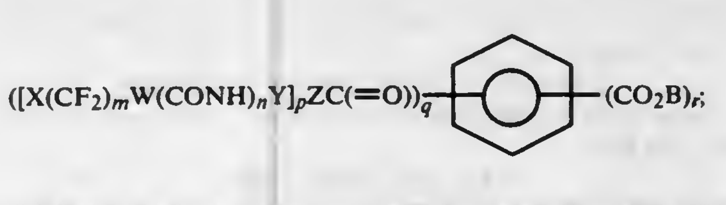
Int. Cl.² D06M *13/34*

U.S. Cl. 252—8.8 **38 Claims**

1. A yarn finish composition comprising:

a. about 15 to 80 weight percent of a solution of a salt of dioctyl sulfosuccinate, propylene glycol and water; and

b. about 20 to 85 weight percent of a fluorochemical compound having the formula



wherein the attachment of the fluorinated radicals and the radicals CO_2B to the nucleus is in asymmetrical positions with respect to rotation about the axis through the center of the nucleus; wherein "X" is fluorine, or perfluoroalkoxy of 1 to 6 carbon atoms, and m has arithmetic mean between 2 and 20; n is zero or unity; "W" and "Y" are alkylene, cycloalkylene or alkyleneoxy radicals of combined chain length from 2 to 20 atoms; $(CF_2)_m$ and "Y" have each at least 2 carbon atoms in the main chain; "Z" is oxygen and p is 1, or "Z" is nitrogen and p is 2; q is an integer of at least 2 but not greater than 5; "B" is CH_2RCHOH or is $CH_2RCHOCH_2RCHOH$ where "R" is hydrogen or methyl, or "B" is $CH_2CH(OH)CH_2Q$ where Q is halogen, hydroxy, or nitrile; or "B" is $CH_2CH(OH)CH_2OCH_2CH(OH)CH_2Q$; and r is an integer of at least 1 but not greater than q; and $X(CF_2)_m$, W and Y are straight chains, branched chains or cyclic; and wherein the substituent chains of the above general formulas are the same or different.

4,192,755
PROCESS FOR RECOVERING HYDROCARBONS FROM A HYDROCARBON-BEARING FORMATION

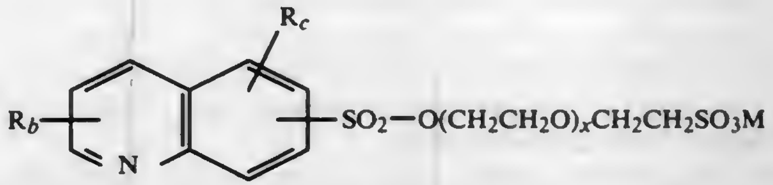
Kenoth H. Flournoy, Kingsville; Robert B. Alston, Missouri City, and William B. Braden, Jr., Houston, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 802,146, May 31, 1977, Pat. No. 4,134,415, and a continuation-in-part of Ser. No. 664,740, May 8, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,328

Int. Cl.² E21B *43/22*

U.S. Cl. 252—8.55 D **5 Claims**

1. A process for recovering hydrocarbons from a hydrocarbon-bearing formation having at least one injection well and at least one production well penetrating the said formation and in fluid communication, which comprises displacing through the formation a composition comprising an aqueous solution and recovering hydrocarbons through the production well, the said aqueous solution comprising about 0.01 to about 2.0 percent weight of surfactant of the formula:



wherein R_b is selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, R_c is selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, x is an integer of from 1 to 20 and M is a monovalent cation selected from the group consisting of sodium, potassium, lithium and ammonium, and about 0.01 to about 1.8 percent by weight of a soap selected from the group consisting of rosin soaps and naphthenic acid soaps and mixtures thereof.

4,192,756
ANTICAKING OF SODIUM CHLORIDE AND POTASSIUM CHLORIDE

Thomas C. Mondshine, Houston, Tex., assignor to Texas Brine Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 871,682, Jan. 23, 1978, abandoned. This application Nov. 13, 1978, Ser. No. 960,057

Int. Cl.² C01D *3/26*

U.S. Cl. 252—8.55 R **4 Claims**

1. As a composition of matter having resistance to caking:

a. one or both of the group consisting of sodium chloride and potassium chloride having a particle size of 20 mesh and finer in an amount by weight of about 80% to about 99%; and

b. one or more metal lignosulfonate salts in an amount by weight of about 1% to about 20% said metal being selected from the group consisting of calcium, iron, ferrochrome, chromium, zinc, copper and magnesium .

4,192,757
ALKYL PHENOL SOLUTIONS OF ORGANO MOLYBDENUM COMPLEXES AS FRICTION REDUCTING ANTIWEAR ADDITIVES

Philip W. Brewster, Camlachie, Canada, assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 21, 1978, Ser. No. 898,769

Int. Cl.² C10M *1/38, 1/48, 1/54*

U.S. Cl. 252—32.7 E **15 Claims**

1. In a concentrate consisting essentially of one part by weight of an organo molybdenum complex obtained from a solution reaction of 1–2 moles of a C_1 to C_{50} hydrocarbyl

substituted thio-bis-phenol, 1-2 moles of an amine containing from 1 to 5 nitrogens and from 2 to 20 carbons and 1 molar equivalent of a source of molybdenum of the class consisting of molybdic trioxide, ammonium thiomolybdate, ammonium bismolybdate molybdenum halides and ammonium tetrahydrate, the improvement of using from 0.25 to 5 parts by weight of an alkyl substituted phenol wherein said alkyl group contains from 5 to 50 carbons for said reaction solvent which is carried out at a temperature of from 135° C. to 225° C. whereby a more readily filterable reaction product is obtained.

4,192,758
OVERBASED MAGNESIUM SULFONATE PROCESS
Charles R. Dickey, Covina, and Paul M. Williamson, Garden Grove, both of Calif., assignors to Bray Oil Company, Inc., El Monte, Calif.
Filed May 1, 1978, Ser. No. 901,612
Int. Cl.^{2} C10M *1/40*
U.S. Cl. 252—33 **22 Claims**

1. In the process of preparing overbased magnesium additive by the reaction of commercial grades of magnesium oxide with carbon dioxide and water in the presence of an oil-soluble dispersing agent, the improvement comprising:

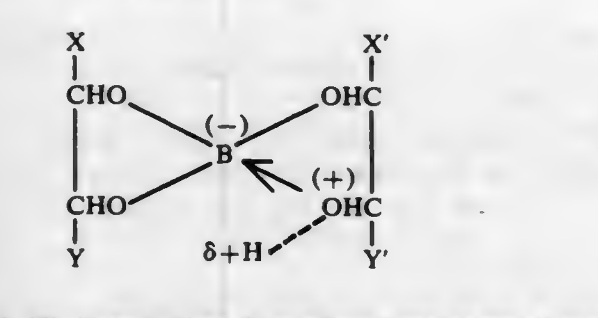
(1) forming a mixture of oil-soluble dispersing agent, low boiling hydrocarbon solvent, diluent oil, water, and a commercial magnesium oxide in excess of the amount theoretically required to produce an overbased magnesium additive product of the desired alkali value;

(2) adding thereto carbon dioxide, at the critical carbonation rate, said critical carbonation rate being defined as that rate of carbon dioxide addition necessary to maintain such a CO_2 concentration in the system that the rate of conversion of magnesium oxide to colloidally dispersed magnesium carbonate is at a maximum relative to the rate of conversion of magnesium oxide to undispersed reaction products, and continuing said carbon dioxide addition until the reaction of carbon dioxide and magnesium oxide is substantially completed;

(3) removing from the carbonated reaction mixture water, low boiling hydrocarbon solvent, and undispersed solids, thereby recovering the overbased magnesium additive product in the form of a clear submicronic colloidal dispersion in the diluent oil.

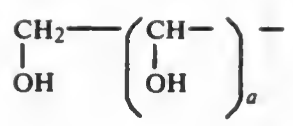
4,192,759
AUTOMOTIVE BRAKE FLUID COMPOSITIONS INCLUDING SEMIPOLAR BORATES AND HETEROBORATES
Hiroyoshi Hamanaka, Yachiyo, Japan, assignor to Toho Chemical Industry Co., Ltd., Tokyo, Japan
Filed Jul. 17, 1978, Ser. No. 925,600
Int. Cl.^{2} C10M *3/48*
U.S. Cl. 252—78.1 **9 Claims**

1. A brake fluid composition for automobiles comprising a mixture of 1-10% by weight of at least one semipolar borate represented by the general formula,



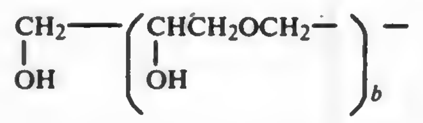
(I)

wherein X, X', Y and Y' each are hydrogen atom, a group of the formula,



$$\underset{OH}{\underset{|}{CH_2}}-\left(\underset{OH}{\underset{|}{CH}}-\right)_a-$$

wherein a is 0, 1, 2 or 3, or a group of the formula,

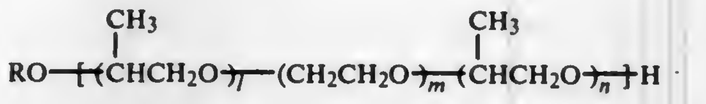


$$\underset{OH}{\underset{|}{CH_2}}-\left(\underset{OH}{\underset{|}{CH}}CH_2OCH_2-\right)_b-$$

wherein b is 1 or 2 provided that at least two hydroxyl groups are present in X+X'+Y+Y'; 9–50% by weight of at least one heteroborate represented by the general formula,

$$[\{C_4H_9O-(CH_2CH_2-O-)_k-\}_p\{CH_3O-(CH_2CH_2O-)_j\}_q]B \qquad (II)$$

wherein p is a positive number of 1 to 3/2, q is a positive number of 3/2 to 2 and p+q is 3, k is a positive number of 1 to 3, and j is a positive number of 3 to 5; and 40–90% by weight of at least one polyalkylene glycol monoalkyl ether represented by the general formula,



$$RO-\left[\left(\overset{CH_3}{\overset{|}{C}}HCH_2O\right)_l-(CH_2CH_2O)_m-\left(\overset{CH_3}{\overset{|}{C}}HCH_2O\right)_n\right]-H \qquad (III)$$

wherein R is a C_1–C_4 alkyl, l is 0 or a positive number of 3/2 or less, n is 0 or a positive number or 3/2 or less, and m is a positive number of 3 to 5 provided that there are the following relationships between l, m and n;

$$3 \leqq (l+m+n) \leqq 5$$

and

$$0 \leqq l+n/(l+m+n) \leqq \tfrac{1}{3}.$$

4,192,760
COOLING AGENT MIXTURE CONTAINING ETHYLENE GLYCOL MONOACETATE, ETHYLENE GLYCOL DIACETATE, AND GLYCOL MONOMETHYL ETHER FOR LOW-TEMPERATURE FREEZING PROCESSES
Rudolf Jünger, Kreuzau, and Hans-Joachim Maulhardt, Duren, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.
Filed Jun. 12, 1978, Ser. No. 914,480
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733313
Int. Cl.^{2} C09K *5/00*
U.S. Cl. 252—79 **4 Claims**

1. A cooling agent mixture consisting essentially of, based on the total weight of the mixture,

(a) from about 15 to about 35 percent ethylene glycol monoacetate and ethylene glycol diacetate, the ratio of the monoacetate to the diacetate being from about 1:9 to about 9:1,

(b) from about 35 to about 65 percent glycol monomethyl ether,

(c) from about 0 to about 17 percent monovalent, short-chained alcohols,

(d) from about 0 to about 3 percent of a corrosion inhibitor, and

(e) from about 0 to about 40 percent water.

4,192,761
DETERGENT COMPOSITIONS CONTAINING A SUDS REGULATING SYSTEM
Philippe Peltre, Paris, and Alain Lafleur, Bretigny-sur-Orger, both of France, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 20, 1978, Ser. No. 917,444
Claims priority, application United Kingdom, Jun. 23, 1977, 26323/77
Int. Cl.^{2} C11D *7/26, 7/18*
U.S. Cl. 252—99 **17 Claims**

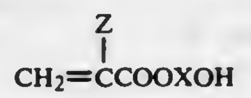
1. A granular detergent composition having superior suds regulating capacity over a broad range of usage conditions comprising: from about 2% to about 70% by weight of an organic surface-active agent; and from 0.01% to about 5% by weight of a suds regulating system comprising:

A. from 99.9% to about 75% by weight of the suds regulating system of a mixture consisting of
  i. from about 30% to about 98% by weight of a substantially water-insoluble liquid, at room temperature and atmospheric pressure, hydrocarbon; and
  ii. from about 70% to about 2% by weight of an adjunct material selected from the group of:
    1. a substantially water-insoluble solid hydrocarbon having a melting point in the range from about 35° C. to about 110° C.;
    2. a fatty ester of mono- or polyhydric alcohols having from 1 to about 40 carbon atoms in the hydrocarbon chain, and mono- or polycarboxylic acids having from 1 to about 40 carbon atoms in the hydrocarbon chain with the provisos that the total number of carbon atoms in the ester is equal to or greater than 16 and that at least one of the hydrocarbon radicals in the ester has 12 or more carbon atoms; and
    3. mixtures thereof.

B. from 0.1% to about 25% by weight of the suds regulating system of a hydrophobic silica suds regulating agent.

4,192,762
RADIATION CURABLE URETHANE COMPOSITIONS
Claiborn L. Osborn, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed Apr. 20, 1978, Ser. No. 898,102
Int. Cl.^{2} C08G *18/12;* **C08L** *75/04*
U.S. Cl. 252—182 **5 Claims**

1. A radiation curable urethane composition comprising the reaction product of (I) an organic polyisocyanate, (II) an hydroxyalkyl acrylate of the formula



$$CH_2=\overset{Z}{\overset{|}{C}}COOXOH$$

wherein Z is hydrogen or methyl and K is a divalent alkylene group of from 2 to 5 carbon atoms and (III) an hydroxyl compound of the formula:

$$R(OC_nH_{2n})_mOH$$

wherein R is a member of the group of alkyl having from 1 to 25 carbon atoms, alkaryl or aralkyl having from 7 to carbon atoms, aryl having from 6 to 10 carbon atoms, or cycloalkyl having from 5 to 10 ring carbon atoms; n is an integer having a value of from 2 to 4; and m is an integer having a value of from 1 to 70; and wherein the mole percent of (II):(III) is from 50 to 98:50 to 2.

4,192,763
CHLORINE TABLET AND THE PREPARATION THEREOF
Pieter W. W. Buchan, 2 Nicolyn Ave., Ruiterhof, Randburg, South Africa
Filed Feb. 3, 1978, Ser. No. 874,864
Claims priority, application South Africa, Feb. 16, 1977, 77/0938
Int. Cl.^{2} C11D *3/48;* **C01B** *11/06;* **C02B** *1/18*
U.S. Cl. 252—187 H **13 Claims**

1. A method of forming a chlorine tablet, which includes the step of admixing calcium hypochlorite with chloride of lime and pressing said mixture into a tablet.

4,192,764
STABILIZING COMPOSITION FOR A METAL DEPOSITION PROCESS
Bruce S. Madsen, Tinicum Township, Upper Bucks County, Pa., assignor to Western Electric Company, Inc., New York, N.Y.
Division of Ser. No. 848,001, Nov. 3, 1977, Pat. No. 4,133,908. This application Oct. 16, 1978, Ser. No. 951,805
Int. Cl.^{2} C23C *3/02*
U.S. Cl. 430—455 **13 Claims**

1. A stabilizing composition for a real image comprising a non-noble metal catalytic species, said composition consisting essentially of:

(a) a reducing agent for said non-noble metal catalytic species,

(b) a complexing agent for said non-noble metal catalytic species, and

(c) an accelerator comprising a cyanide complex of a Group VIII metal.

4,192,765
CONTAINER FOR RADIOACTIVE NUCLEAR WASTE MATERIALS
John M. Bird, 681 Synder Hill Rd., Ithaca, N.Y. 14850, and Alfred E. Ringwood, Canberra, Australia, assignors to John N. Bird, Ithaca, N.Y.
Filed Feb. 15, 1978, Ser. No. 878,113
Int. Cl.^{2} G21F *1/08, 5/00, 9/00*
U.S. Cl. 252—301.1 W **10 Claims**

1. A container for radioactive nuclear waste materials which are ultimately to be buried underground, said container being composed of a native nickel-iron alloy produced under thermodynamically stable conditions within serpentinite-type rocks and possessing a composition in the range exhibited by the natural materials awaruite and josephinite.

4,192,766
COMPOSITION FOR DECREASING WATER RESISTANCE TO MOVEMENT
Jon S. VanCleave, West Des Moines, Iowa, assignor to United Chemical Corporation, Des Moines, Iowa
Division of Ser. No. 571,610, Apr. 25, 1975, Pat. No. 4,073,983. This application Nov. 11, 1977, Ser. No. 850,736
Int. Cl.^{2} C08L *91/00;* **C09K** *3/30*
U.S. Cl. 252—305 **7 Claims**

1. A composition for decreasing the interfacial surface tension as well as the contact angle between an object moving through a moisture laden environment and the moisture, thereby allowing the object to move at an increased speed with the same applied moving force or at the usual speed with less applied moving force, said composition consisting essentially of from about 5% to about 20% by weight of a non-ionic surface active agent or mixtures thereof which is water insoluble, said agent or blends of agents having an HLB of from about 7 to about 9, and from 80% to about 95% by weight of a pressurized nonflammable propellant.

4,192,767

AQUEOUS SURFACTANT SOLUTIONS AND OIL-IN-WATER EMULSIONS

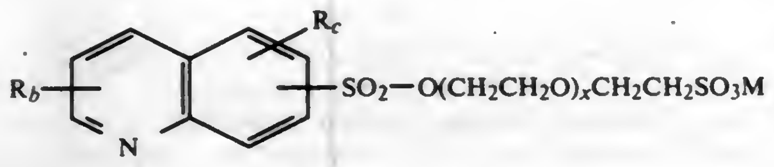
Kenoth H. Flournoy, Kingsville; Robert B. Alston, Missouri City, and William B. Braden, Jr., Houston, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 802,146, May 31, 1977, Pat. No. 4,134,415, and a continuation-in-part of Ser. No. 664,740, Mar. 8, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,326

Int. Cl.² B01F *17/42, 3/10*

U.S. Cl. 252—312 **11 Claims**

1. An oil-in-water emulsion comprising a hydrocarbon phase and as the aqueous phase an aqueous solution comprising about 0.01 to about 2.0 percent weight of surfactant of the formula:



wherein

R_b is selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms,

R_c is selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, x is an integer of from 1 to 20 and

M is a monovalent cation selected from the group consisting of sodium, potassium, lithium and ammonium, and from about 0.01 to about 1.8 percent by weight of a soap selected from the group consisting of rosin soaps and naphthenic acid soaps and mixtures thereof.

4,192,768

ELECTRICAL TERMINAL CORROSION PREVENTATIVE AND METHOD FOR USING SAME

Stanley F. Budnick, 1072 E.Broadway, Winona, Minn. 55987

Filed Feb. 23, 1978, Ser. No. 880,337

Int. Cl.² C23F *11/04, 11/12, 11/18*

U.S. Cl. 252—389 R **22 Claims**

1. An electrical terminal corrosion preventative, comprising:

a major proportion of a paste-like, heat resistant lubricating grease having a Dropping Point of at least 250 degrees Fahrenheit;

a water soluble inorganic acid neutralizing agent;

water;

an emulsifying agent capable when combined with said water and said neutralizing agent of facilitating substantially uniform dispersion of said combined water and neutralizing agent in said grease, said neutralizing agent being active to neutralize an acid when said neutralizing agent is dispersed in said grease.

4,192,769

RUST INHIBITOR ADDITIVE COMPOSITIONS, METHOD OF MAKING, AND AQUEOUS FLUIDS CONTAINING THE SAME

Richard W. Jahnke, Mentor-On-The-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed May 12, 1978, Ser. No. 905,502

Int. Cl.² C23F *11/14, 11/12*

U.S. Cl. 252—389 R **49 Claims**

1. A stably water-dispersible rust inhibiting composition prepared by the process which comprises reacting

(A) at least one aliphatic polycarboxylic acid acylating agent characterized by the presence within its structure of an aliphatic hydrocarbyl-substituent with

(B) at least one hydroxy-substituted aliphatic amine, and

(C) at least one basically reacting alkali metal compound.

4,192,770

CRACKING CATALYST RESTORATION WITH BORON COMPOUNDS

David M. Singleton, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 24, 1978, Ser. No. 909,234

Int. Cl.² B01J *29/38, 21/10, 21/02;* **C10G** *11/04*

U.S. Cl. 252—414 **8 Claims**

1. A process for restoring the selectivity of a zeolite-containing cracking catalyst which has become contaminated with at least one metal from the group consisting of nickel, vanadium and iron which comprises contacting said catalyst with a sole treating agent consisting essentially of at least one boron compound for a time sufficient to apply less than 1%w of boron to the cracking catalyst and to restore the selectivity of said catalyst.

4,192,771

PROCESS FOR DISPERSAL AND REDISPERSAL OF PLATINUM GROUP METALS COMPRISING SULPHIDING IN A STREAM OF INERT GAS

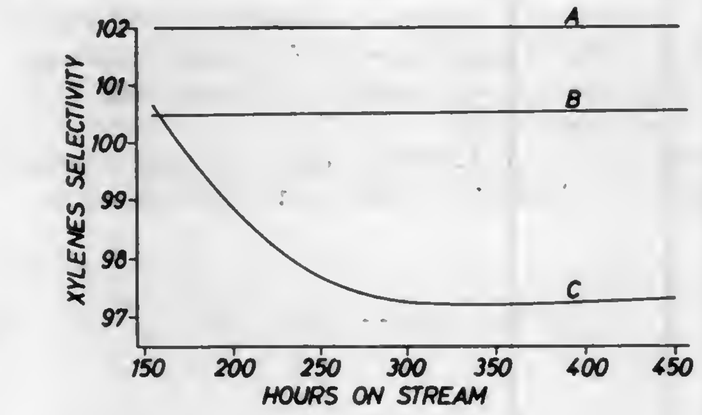
Bernard W. Burbidge, Leatherhead, England, and David M. Rees, Swansea, Wales, assignors to The British Petroleum Company Limited, Sunbury-on-Thames, England

Filed May 1, 1978, Ser. No. 901,789

Claims priority, application United Kingdom, May 4, 1977, 18648/77

Int. Cl.² B01J *37/20, 37/24, 23/40, 23/96*

U.S. Cl. 252—415 **10 Claims**



1. A method for the redispersal or dispersal of a platinum group metal on a catalyst comprising an oxidised platinum group metal component and a refractory inorganic support, which method comprises the steps of treating the oxidised catalyst with a stream of inert gas containing a sulphiding agent to deposit sulphide on the catalyst in the range of 0.1 to 1% by weight of the catalyst, and reducing the sulphided catalyst in a stream of hydrogen-containing gas at a temperature in the range 200° to 600° C. to give a maximum catalyst temperature of 550° C. at a gas hourly space velocity of 200 to 6000 v/v/hr. to produce a catalyst having an average platinum group metal crystalline size of less than 20A.

4,192,772

SOLID CATALYST AND PROCESS FOR THE PREPARATION THEREOF

Eugene Berger, Brussels, and Charles Bienfait, Keerbergen, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Division of Ser. No. 675,320, Apr. 9, 1976, Pat. No. 4,109,071. This application Apr. 4, 1978, Ser. No. 893,517

Claims priority, application Luxembourg, Apr. 14, 1975, 72278

Int. Cl.² C08F *4/64*

U.S. Cl. 252—429 C **20 Claims**

1. In a solid catalyst complex comprising the reaction product formed from reacting together

(1) at least one magnesium compound (M) selected from oxygen-containing organic compounds of magnesium and halogen containing compounds of magnesium; with

(2) at least one titanium compound (T) selected from oxygen-containing organic compounds of titanium and halogen containing compounds of titanium; with

(3) at least one zirconium compound (Z) selected from oxygen-containing organic compounds of zirconium and halogen containing compounds of zirconium; and with

(4) at least one aluminum halide (A) of the formula AlR'_nX_{3-n} wherein R′ is a C_1–C_{20} hydrocarbon, X is a halogen and n is a number such that $O \leqq n \leqq 3$:

said oxygen containing organic compounds of magnesium, titanium and zirconium contain at least one metal-oxygen-organic radical sequence and the organic radicals contain from 1 to 20 carbon atoms; said halogen-containing compounds of magnesium, titanium, and zirconium contain at least one halogen to metal bond sequence; the improvement wherein said compounds (M), (T), (Z) and (A) are used in amounts that satisfies the equation

$$(Zr/Ti).(X/Mg+Zr+Ti)>3$$

where Mg, Zr, Ti and X represent the amounts, in gram-equivalents, of magnesium, zirconium, titanium and halogen of said compounds.

4,192,773

OXYGEN ABSORBENT

Yoshio Yoshikawa, Ushiku; Takanari Nawata, Tokyo; Akira Amemiya, Tokyo; Toshio Komatsu, Tokyo; Yoshiaki Inoue, Tokyo, and Megumu Yuyama, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 17, 1978, Ser. No. 934,489

Claims priority, application Japan, Aug. 24, 1977, 52/101452

Int. Cl.² B01J *31/26, 27/08*

U.S. Cl. 252—429 R **23 Claims**

1. An oxygen absorbent comprising (a) metal halide-coated metal powder having at least one metal halide coated on the surface of at least one metal powder, the amount of metal halide coated being in the range of from about 0.001 part to about 10 parts by weight per 100 parts by weight of the metal powder, and the water content of the metal halide-coated metal powder being less than 1% by weight on the basis of total weight of the metal halide-coated metal powder, and (b) a water-containing particulate material having a water content of more than 1% by weight obtained by impregnating the particulate material with a water-containing humidity controlling agent.

13. A process for producing an oxygen absorbent which comprises packing (a) metal halide-coated metal powder having at least one metal halide coated on the surface of at least one metal powder, the amount of metal halide coated being in the range of from about 0.001 part to about 10 parts by weight per 100 parts by weight of the metal powder, and the water content of the metal halide-coated metal powder being less than 1% by weight on the basis of total weight of the metal halide-coated metal powder, and (b) a water-containing material in an air-permeable bag so that the metal halide-coated metal powder does not contact the water-containing material before packing them, said water-containing material being water-containing particulate material having a water content of more than 1% by weight obtained by impregnating the particulate material with a water-containing humidity controlling agent.

4,192,774

PREPARATION OF AN ACTIVE TICL₃ CATALYST

Andras G. T. G. Kortbeek, and Adrianus A. van der Nat, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 18, 1979, Ser. No. 4,435

Claims priority, application United Kingdom, Jan. 27, 1978, 3377/78

Int. Cl.² C08F *4/64*

U.S. Cl. 252—429 B **4 Claims**

1. In the preparation of an active $TiCl_3$ olefin polymerization catalyst component by reducing $TiCl_4$ with an organo-aluminum compound which comprises:

(a) premixing $TiCl_4$ with a complexing agent in an inert organic solvent, the molar ratio complexing agent: $TiCl_4$ being within the range from 0.3:1 to 2:1;

(b) premixing the organo-aluminum compound with a complexing agent in an inert organic solvent, the molar ratio complexing agent: organo-aluminum compound being at least 0.25:1;

(c) carrying out the reduction to $TiCl_3$ and precipitation of $TiCl_3$ in a single step by combining at least one stoichiometric equivalent of $TiCl_4$ in the premixed composition of step (a) with one stoichiometric equivalent of the organo-aluminum compound in the premixed composition of step (b) over a period of less than one hour at a temperature within the range 60° to 110° C.,

resulting in a reaction mixture having a concentration of at least 0.2 moles/liter of $TiCl_3$ particles having an average particle size of 50–500 millimicrons, the improvement which comprises subjecting said $TiCl_3$ particles to size reduction treatment to reduce the average particle size to less than 50 millimicrons and classifying the resulting $TiCl_3$ particles to recover a fraction having an average particle size of about 0.1–30 millimicrons.

4,192,775

OLEFIN POLYMERIZATION CATALYST

Louis J. Rekers, Wyoming; Stanley J. Katzen, and Jerome H. Krekeler, both of Cincinnati, all of Ohio, assignors to National Petro Chemicals Corporation, New York, N.Y.

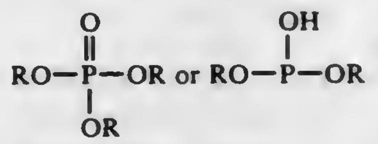
Continuation-in-part of Ser. No. 724,484, Sep. 20, 1976, which is a continuation-in-part of Ser. No. 558,504, Mar. 15, 1975, Pat. No. 3,984,351. This application Jul. 17, 1978, Ser. No. 925,510

Int. Cl.² C08F *4/78*

U.S. Cl. 252—430 **12 Claims**

1. A process for preparing an olefin polymerization catalyst system which comprises:

(a) depositing an organophosphoryl chromium reaction product of chromium trioxide and a phosphorus compound having the formula



$$RO-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle OR}{|}}{P}}-OR \text{ or } RO-\overset{\overset{\displaystyle OH}{|}}{P}-OR$$

wherein R is alkyl, aralkyl, aryl, cycloalkyl, or hydrogen but at least one R is other than hydrogen, upon a solid inorganic support material;

(b) depositing aluminum acetylacetonate upon said support material; and,

(c) heat-activating said supported organophosphoryl chromium reaction product and aluminum acetylacetonate in a non-reducing atmosphere at a temperature above about 300° C. up to the decomposition temperature of the support material.

4,192,776

CATALYSTS AND PROCESS FOR THE AMMOXIDATION OF OLEFINS

Robert K. Grasselli, Chagrin Falls; Arthur F. Miller, and Harley F. Hardman, both of Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 735,859, Oct. 27, 1976, which is a continuation-in-part of Ser. No. 426,175, Dec. 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 85,722, Oct. 30, 1970, abandoned. This application Jan. 3, 1978, Ser. No. 866,203

Int. Cl.^{2} B01J *21/02, 27/14, 23/10, 23/84*

U.S. Cl. 252—432 **6 Claims**

1. A catalyst having the formula

$A_aD_gE_bG_cFe_dBi_3Mo_{12}O_x$

wherein

A is a rare earth metal or mixture thereof;
D is an alkali metal;
E is nickel, cobalt, magnesium, zinc, cadmium, calcium or mixture thereof;
G is phosphorus, boron, arsenic, or mixtue thereof;

and wherein

a is greater than zero to about 3;
b is about 0.1 to about 20;
c is 0 to about 3;
d is about 0.1 to about 8;
e is about 0.1 to about 6;
f is about 8 to about 16;
g is greater than zero to about 3; and
x is a number determined by the valence requirements of the other elements present.

4,192,777

PREPARATION AND USE OF SUPPORTED POTASSIUM (OR RUBIDIUM)-GROUP VIII-METAL CLUSTER CATALYSTS IN CO/H$_2$ FISCHER-TROPSCH SYNTHESIS REACTIONS

Gary B. McVicker, Westfield, N.J., and M. Albert Vannice, Boalsburg, Pa., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 1, 1978, Ser. No. 882,328

Int. Cl.^{2} B01J *21/18, 27/20, 23/78, 23/58*

U.S. Cl. 252—447 **40 Claims**

1. Supported, highly dispersed, high activity potassium or rubidium-Group VIII metal cluster catalysts demonstrating improved selectivity to olefinic and paraffinic hydrocarbons in CO/H_2 reactions prepared by the process which comprises depositing known, well-characterized potassium or rubidium-Group VIII metal carbonyl cluster complexes and mixtures thereof on a high surface area support material, drying the carbonyl cluster complex impregnated support in the absence of oxygen, and reducing the supported complex at elevated temperatures to effect the essentially complete reduction of the supported potassium or rubidium-Group VIII metal carbonyl cluster complexes to discrete potassium or rubidium-Group VIII clusters of metals on the support surface.

4,192,778

RARE EARTH EXCHANGE FAUJASITE ZEOLITE CATALYST CONTAINING SAME AND PROCESS FOR PRODUCING SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 808,268, Jun. 20, 1977, Pat. No. 4,164,483, which is a continuation-in-part of Ser. No. 718,166, Aug. 27, 1976, Pat. No. 4,085,069, and a continuation-in-part of Ser. No. 718,167, Sep. 8, 1976, Pat. No. 4,058,484. This application Jan. 16, 1978, Ser. No. 869,856

Int. Cl.^{2} B01J *29/06*

U.S. Cl. 252—455 Z **14 Claims**

1. A composition of matter comprising a zeolite of the faujasite type having in excess of 0.9 equivalents of rare earth cations per gram atom of aluminum in the zeolite and less than 0.1 equivalents of Na per gram atom of aluminum in the zeolite, the cation density composed of Na and rare earth being substantially equal to one equivalent per gram atom of the aluminum in the exchanged zeolite.

13. The process of exchanging a sodium faujasite type zeolite which comprises forming a water slurry of rare earth salts and a zeolite of the faujasite type having and a_o characteristic of zeolites of said type in which the ratio of the equivalents of rare earth cations per gram atom of aluminum in the zeolite being above about 1 and adjusting the pH of the mixture to be at a pH of about 5 to about 6 to form a reaction mixture and heating said adjusted mixture at a superatmospheric pressure and at a temperature of about 250 to 400 to introduce into the zeolite in excess of 0.9 equivalents of rare earth cation per gram atom of aluminum in the exchanged zeolite and washing the exchanged zeolite.

4,192,779

CATALYST SYSTEM AND METHOD FOR INCREASING THE SELECTIVITY OF A CATALYST

Haren S. Gandhi, Farmington Hills, Mich.; William L. Watkins, Toledo, Ohio, and Henryk K. Stepien, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 843,396, Oct. 19, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,415

Int. Cl.^{2} B01J *23/42, 23/44, 23/64*

U.S. Cl. 252—470 **7 Claims**

1. A method for increasing the selectivity of a catalyst in transforming oxides of nitrogen to nitrogen rather than ammonia in which a catalyst system based upon (a) platinum, or (b) palladium, or (c) combinations of platinum and palladium, or (d) combinations of (a), (b), or (c) with other metal catalysts which are selective in transforming oxides of nitrogen to nitrogen rather than ammonia, is deposited on a support media as discreet particles in a finely divided state, which method comprises the step of:

providing on the support media molybdenum in a finely divided state, said molybdenum being present in an amount from at least one-half percent to about 20 percent by weight of the support media, but, in any event, said molybdenum being present by weight in an amount at least about seven times the weight of said platinum and/or palladium present.

4,192,780

METHOD OF MAKING LEAD-RICH AND BISMUTH-RICH PYROCHLORE COMPOUNDS USING AN ALKALINE MEDIUM AND A REACTION ENHANCING ANODIC POTENTIAL

Harold S. Horowitz, Clark; John M. Longo, New Providence, and Joseph T. Lewandowski, Middlesex, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 856,648, Dec. 2, 1977, Pat. No. 4,129,525. This application Nov. 1, 1978, Ser. No. 956,743

Int. Cl.^{2} H01B *1/08*

U.S. Cl. 252—518 **21 Claims**

1. A method of preparing compounds having the formula:

$A_2[B_{2-x}A_x]O_{7-y}$

wherein A is selected from the group consisting of lead, bismuth and mixtures thereof, wherein B is selected from the group consisting of ruthenium, iridium and mixtures thereof, wherein x is a value such that $0<x\leqq 1.0$ and y is a value such that $0\leqq y\leqq 1$, comprising:

reacting A cations and B cations from an aqueous solution source of these cations in a liquid alkaline medium having a pH of at least about 10 in the presence of an oxygen source at a temperature below about 200° C., and in the presence of an anodic potential of at least about 1.0 volts vs. reversible hydrogen, for a sufficient time for reaction to occur.

4,192,781

PERFUMED ARTICLES CONTAINING CIS-OCT-6-EN-1-AL

Ferdinand Näf, Geneva, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 765,056, Feb. 2, 1977, Pat. No. 4,132,675. This application Aug. 10, 1978, Ser. No. 932,700

Claims priority, application Switzerland, Feb. 11, 1976, 164/576

Int. Cl.^{2} A61K *7/46*

U.S. Cl. 252—522 R **2 Claims**

1. A process for enhancing, improving or modifying the fragrance properties of perfumed articles selected from a cosmetic or a detergent which comprises the the step of admixing from 0.01% to 2% by weight of cis-oct-6-en-1-al in said perfumed articles.

4,192,782

USE OF CERTAIN SPIROPYRAN DERIVATIVES FOR AUGMENTING, ENHANCING OR MODIFYING THE ORGANOLEPTIC PROPERTIES OF PERFUMES AND COLOGNES

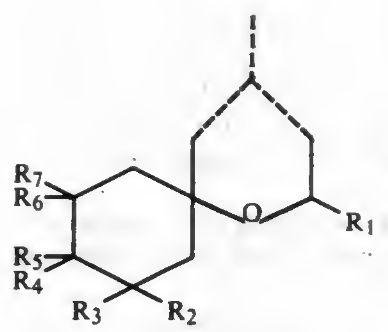
John B. Hall, Rumson; Denis E. Hruza, Sr., Brick Town, both of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Manfred H. Vock, Locust, and Joaquin F. Vinals, Red Bank, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 765,629, Feb. 4, 1977, which is a division of Ser. No. 701,249, Jun. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 547,057, Feb. 4, 1975, abandoned. This application Apr. 6, 1979, Ser. No. 27,790

Int. Cl.^{2} A61K *7/16;* **C11B** *9/00*

U.S. Cl. 252—522 R **11 Claims**

1. A perfume composition comprising (i) a perfume aroma augmenting or enhancing quantity of spiropyran derivative having the structure:



wherein R_1 is hydrogen or methyl; wherein R_2, R_3, R_4, R_5, R_6 and R_7 represents hydrogen or C_1–C_5 lower alkyl; wherein when one of R_2, R_3, R_4, R_5, R_6 or R_7 is any of C_2–C_5 lower alkyl, each of the other of the R_2, R_3, R_4, R_5, R_6 and R_7 moieties is hydrogen; wherein each of the dashed lines represents a carbon-carbon single bond or a carbon-carbon double bond, with at least one of the dashed lines being a carbon-carbon single bond and intimately admixed therewith at least one alcohol, aldehyde, nitrile, ester, cyclic ester or natural oil.

4,192,783

VEGETABLE BASED, REMOISTENABLE ADHESIVE FOR PREGUMMED TAPE

William A. Bomball, and Thomas G. Swift, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation of Ser. No. 490,478, Jul. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 344,658, Mar. 26, 1973. This application May 26, 1978, Ser. No. 909,855

Int. Cl.^{2} C08L *89/00*

U.S. Cl. 260—8 **8 Claims**

1. A remoistenable adhesive composition suitable for use on pregummed substrates consisting essentially of a low viscosity starch-acrylamide graft copolymer, the starch of said copolymer being selected from the group consisting of waxy maize, waxy milo, tapioca and potato starches and having a cooked fluidity of 43–53 ml.; animal glue; and sufficient water to provide a solids content of 30–60%, and in which the weight ratio of said copolymer to animal glue is in the range of 9:1 to 1:9 dry substance basis.

3. An adhesive composition for remoistenable pregummed tape requiring open times greater than 20 seconds and tack times less than 2.5 seconds, consisting essentially of:

(a) at least 90% by weight of a derivatized, thinned, starch-acrylamide graft copolymer, the starch portion of said copolymer being selected from the group consisting of root and root-type starches and having a cooked fluidity in the range of 43–53 ml.;
(b) from 1–2.9% by weight of a hydrophilic substance for improving rewetting characteristics of said pregummed tape selected from the group consisting of carboxymethylcellulose, methyl ether of cellulose and hydroxyethyl cellulose; and
(c) from about 0.25–1.9% by weight of a partially hydroylzed polyvinyl alcohol for improving tack and rewet characteristics of said pregummed tape.

4,192,784

HYDROPHILIC COPOLYMERS, THEIR PREPARATION AND THEIR USE IN SEPARATION TECHNIQUES

Eric Brown, Le Mans; Egisto Boschetti, Chatou; Monique M. Corgier, Saint Quen, and Joél Touet, Le Mans, all of France, assignors to Mar-Pha Societe d'Etudes et d'Exploitation de Marques, Paris, France

Filed Jan. 27, 1978, Ser. No. 873,026

Claims priority, application France, Jan. 28, 1977, 77 02391

Int. Cl.^{2} C08L *89/00, 3/00;* **C08F** *20/54*

U.S. Cl. 260—8 **11 Claims**

1. Water-insoluble, tridimensional cross-linked random copolymers resulting from the free radical polymerization of a mixture of monomers containing:

(a) 25% to 98% by weight of N-[tris(hydroxymethyl)me-

thyl]acrylamide or N-[tris(hydroxymethyl)methyl]methacrylamide or a mixture of these two compounds;
- (b) 2% to 50% by weight of one or more monomers having two or several polymerizable ethylenic double bonds and one or more hydroxy groups, and free of NH_2 or COOH groups; and
- (c) 0% to 50% by weight of one or more monomers having one polymerizable ethylenic double bond and one or more amino or carboxy groups.

4,192,785
OSTOMY ADHESIVE

James L. Chen, East Brunswick; Rudolfo D. Cilento, North Brunswick; John A. Hill, New Brunswick, and Anthony L. La Via, East Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 8, 1977, Ser. No. 804,673
Int. Cl.^{2} C08L *3/02*

U.S. Cl. 260—17.4 GC **7 Claims**

1. An adhesive composition for medicinal purposes consisting essentially of a substantially homogenous mixture on a percent weight basis of from about 15% to about 40% of guar gum, locust bean gum, or mixtures thereof; from 0% to about 25% of pectin, gum karaya, or mixtures thereof provided that the total amount of guar gum, locust bean gum, gum karaya and pectin is from about 20% to about 55%; from about 40% to about 60% of a mixture of a low molecular weight polyisobutylene having a viscosity average molecular weight of from about 36,000 to about 58,000 on the Flory scale and butyl rubber having a viscosity average molecular weight of from about 300,000 to about 450,000 on the Flory scale, said polyisobutylene and said butyl rubber combined in a ratio of from about 3 to 1 to about 5 to 1 on a weight basis; and as a cohesive strengthening agent from about 2% to about 12% of an inert natural or synthetic fibrous material or from about 10% to about 30% of a finely divided cellulose, a finely divided substantially water insoluble cross-linked dextran, a finely divided substantially water insoluble cross-linked sodium carboxymethylcellulose, or a finely divided substantially water insoluble starch-acrylonitrile graft polymer.

4,192,786
EPOXY RESIN COMPOSITION CONTAINING GLYCIDYL ETHER-METAL CARBOXYLATE CATALYST

Kyoichi Shibayama; Kazuo Okahashi, and Osamu Hayashi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1978, Ser. No. 897,772
Claims priority, application Japan, Aug. 6, 1977, 52-94524
Int. Cl.^{2} C08G *59/68, 59/42*

U.S. Cl. 260—18 EP **10 Claims**

1. An epoxy resin composition which comprises a mixture of 40–90 parts by weight of an epoxy resin having at least two epoxy groups per molecule; 70–100 parts by weight of an acid anhydride curing agent; and 60–10 parts by weight of the reaction product of the glycidyl ether of a monoalcohol and a metal carboxylate selected from the group consisting of the zinc, manganese, cobalt and nickel salts of octanoic acid, stearic acid, palmitic acid, naphthenic acid, caproic acid, enanthic acid, capric acid, myristic acid and lauric acid.

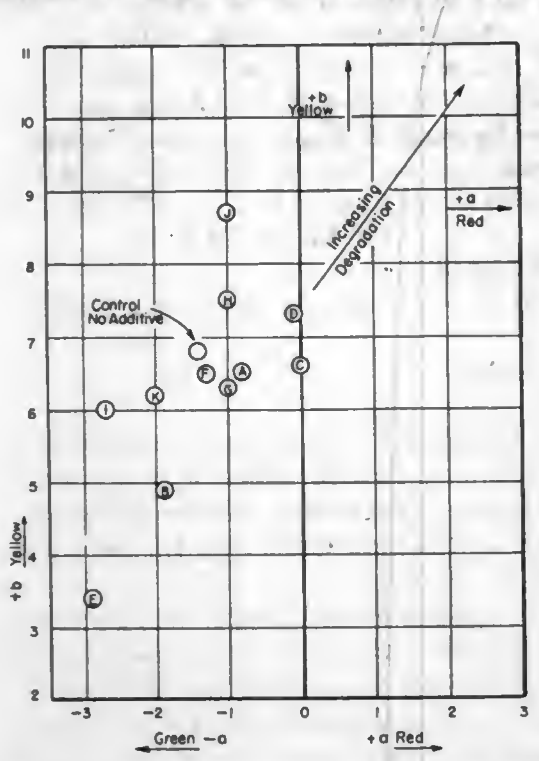
4,192,787
WATER BASED POLYVINYLCHLORIDE DISPERSION COATING COMPOSITION STABILIZED WITH IRON CARBOXYLATES

Howard J. Salmon, Cornwells Heights, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,348
Int. Cl.^{2} C08L *91/00, 61/24, 61/26*

U.S. Cl. 260—21 **5 Claims**

1. A water-based coating formulation comprising powdered polyvinyl chloride or copolymers of vinyl chloride with other well-known vinyl monomers dispersed in a solution of water-dilutable acrylic resin having functional carboxyl groups, water-solubilized with ammonia, NH_4OH, or amine solubilizer, in water, a mixture of water and a monohydric alcohol or an ether alcohol, or a mixture of water, a monohydric alcohol, and an ether alcohol, an aminoplast, and a minor amount of an iron carboxylate selected from the group consisting of iron naphthenate, iron neodecanoate, iron octoate, and iron tallate.



4,192,788
MODIFIED POLYETHYLENE CONTAINING HOT-MELT ADHESIVES USEFUL FOR CARPET TAPE

Daniel P. Dodson, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1978, Ser. No. 928,330
Int. Cl.^{2} C08L *93/00, 23/26*

U.S. Cl. 260—27 R **12 Claims**

1. An adhesive composition capable of being used as a hot melt adhesive comprising a blend of
- (a) about 55 to 90 percent by weight of at least one modified polyethylene,
- (b) about 5 to 25 percent by weight of at least one ethylene-lower alkyl acrylate copolymer, and
- (c) about 5 to 30 percent by weight of at least one tackifier resin selected from the group consisting of hydrocarbon resin, polyterpene resin and rosin ester resin.

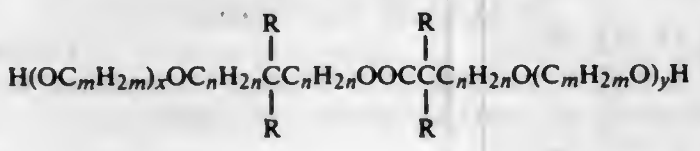
4,192,789
BLENDS OF ACRYLIC LATEXES AND DERIVATIVES OF ESTER DIOL ALKOXYLATES

Oliver W. Smith, South Charleston; Joseph V. Koleske, Charleston, and Robert J. Knopf, Saint Albans, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 837,720, Sep. 29, 1977. This application Jan. 4, 1979, Ser. No. 884
Int. Cl.^{2} C08J *3/00*

U.S. Cl. 260—29.2 E **6 Claims**

1. A high solids composition comprising a blend of an aqueous acrylic latex of from about 5 to about 50 weight percent, based on the total solids content of said latex, of an anhydride modified ester diol alkoxylate comprising the reaction product of (A) an ester diol alkoxylate of the general formula:



$$H(OC_mH_{2m})_xOC_nH_{2n}\underset{R}{\overset{R}{C}}C_nH_{2n}OOC\underset{R}{\overset{R}{C}}C_nH_{2n}O(C_mH_{2m}O)_yH$$

wherein m is an integer having a value of from 2 to 4, n is an integer having a value of from 1 to 5, x and y are integers each having a value of from 1 to 20 and R is an alkyl group having from 1 to 8 carbon atoms; and (B) an intramolecular anhydride of a polycarboxylic acid.

4,192,790
ELASTOMERIC COMPOSITION HAVING REDUCED MOONEY VISCOSITY

Paul H. McKinstry, and Robert R. Barnhart, both of Naugatuck, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Feb. 25, 1976, Ser. No. 655,609
Int. Cl.^{2} C08K *5/09*

U.S. Cl. 260—31.2 MR **4 Claims**

1. A compounded elastomeric composition characterized by reduced Mooney viscosity comprising, in admixture, (A) 100 parts by weight of elastomer, (B) from 40 to 140 parts by weight of particulate inorganic filler and (C), from 0.1 to 7 parts by weight of finely divided particulate basic zinc methacrylate as an adjuvant, whereby the Mooney viscosity of the compounded elastomeric composition is reduced compared to the Mooney viscosity of an otherwise similar composition not containing the said basic zinc methacrylate adjuvant (C), the said elastomer being selected from the group consisting of natural rubber, cis-polybutadiene rubber, butadiene-styrene copolymer rubber, butadiene-acrylonitrile copolymer rubber, isoprene-isobutylene copolymer rubber, and unsaturated terpolymer of ethylene, propylene and a copolymerizable nonconjugated diene, wherein the said particulate inorganic filler (B) is selected from the group consisting of (i) silica filler (ii) a silicate filler and (iii) calcium cabonate filler.

4,192,791
HIGHLY EXTENDED, UNSATURATED POLYESTER RESIN SYRUP COMPOSITION MIXTURE CONTAINING BASIC ALUMINUM CHLORIDE, A SHAPED ARTICLE COMPRISED OF THE CURED, CROSS-LINKED COMPOSITION AND A PROCESS OF PREPARING SUCH ARTICLE

James M. Self, Taylor, S.C., assignor to Tanner Chemical Company, Inc., Greenville, S.C.

Filed Jun. 2, 1978, Ser. No. 911,758
Int. Cl.^{2} C08K *3/22, 3/40*

U.S. Cl. 260—40 R **30 Claims**

1. A highly extended, unsaturated polyester resin syrup composition mixture comprising:
- (a) unsaturated polyester resin syrup composed of an unsaturated polyester resin and an ethylenically unsaturated copolymerizable monomer;
- (b) basic aluminum chloride having the formula

$$AL_2(OH)_xCL_{6-x}$$

wherein x is 3, 4 or 5; and

(c) non-reinforcing extender material,

wherein the dry weight ratio of the sum of the extender material and the basic aluminum chloride to the resin syrup is from about 2.0:1.0 to about 8.5:1.0 and wherein the dry weight ratio of extender material to basic aluminum chloride is less than about 7.5:1.0.

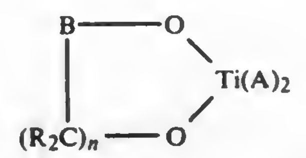
4,192,792
ATACTIC POLYPROPYLENE

Gerald Sugerman, Allendale, N.J., and Salvatore J. Monte, Staten Island, N.Y., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

Filed Jul. 20, 1978, Ser. No. 926,268
Int. Cl.^{2} C08K *9/00*

U.S. Cl. 260—42.14 **10 Claims**

1. A filled polymeric composition which comprises atactic polypropylene admixed with a comminuted inorganic material reacted with an organic, omega-alkylene titanate having the formula:



wherein A represents a non-hydrolyzable —OCOR′, —O-SO_2R'', $(R''O)_2P(O)OP(OH)(O)$—, or $)R''O)_2P(O)O$— group; B is an R_2C group or a carbonyl group; R is hydrogen or an alkyl group having from 1 to 6 carbon atoms; R′ and R″ are an alkyl, alkenyl, aryl, aralkyl or alkaryl group, or an alkyl, alkenyl, aryl, aralkyl, alkaryl, halo, ether, thioether, carbonyl or aromatic nitro substituted derivative thereof; and n is 1 or 2.

4,192,793
STABILIZERS FOR CHLORINE-CONTAINING RESINS

Katsuhiko Tanioka, Shiga; Toshihiko Matsuzawa; Noboru Iida, both of Otsu; Naoji Makino, and Itirow Hayasaka, both of Kawasaki, all of Japan, assignors to Sekisio Kagaku Kogyo Kabushiki Kaisha, Osaka and Shinagawa Chemical Industry Co., Ltd., Tokyo, both of, Japan

Division of Ser. No. 878,634, Feb. 17, 1978, Pat. No. 4,158,075, which is a continuation of Ser. No. 632,036, Nov. 14, 1975, abandoned. This application Dec. 5, 1978, Ser. No. 966,712
Int. Cl.^{2} C08K *9/00*

U.S. Cl. 260—42.14 **3 Claims**

1. A thermally stabilized chlorine-containing resin composition which comprises a chlorine-containing resin and a stabilizer which comprises calcium hydroxide coated with a calcium salt of an organic acid selected from the group consisting of saturated fatty acids having 10–22 carbon atoms and mixtures thereof.

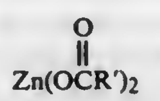
4,192,794
TITANIUM DIOXIDE-PIGMENTED POLYMER COMPOSITIONS HAVING IMPROVED VISIBLE AND ULTRAVIOLET LIGHT STABILITY

Richard H. S. Wang; Gether Irick, Jr., and James C. Ownby, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1978, Ser. No. 874,972
Int. Cl.^{2} C08K *5/09, 5/27*

U.S. Cl. 260—42.45 **8 Claims**

1. An ultraviolet light stabilized pigmented polyolefin polymeric composition comprising (1) a polyolefin polymeric composition normally susceptible to degradation due to visible or ultraviolet light, (2) titanium dioxide, (3) a phenolic ultraviolet stablizer and (4) 0.1 to 5 percent of a zinc salt of a carboxylic acid having the formula:



$$Zn(O\overset{O}{\overset{\|}{C}}R')_2$$

wherein R′ is an alkyl group having 1 to 20 carbon atoms or an aryl group.

4,192,795
BARIUM ALUMINUM SILICATE FILLER FOR U.V. CURABLE COMPOSITES

Narayanan Madhavan, Dearborn Heights, and Frank H. Freeman, Farmington, both of Mich., assignors to Sybron Corporation, Rochester, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,787
Int. Cl.^{2} C08K *3/40*

U.S. Cl. 260—42.52 **2 Claims**

1. A U.V. curable dental restorative composition which consists essentially of a blend of BisGMA resin and about 50 to

85 weight percent of an inorganic filler material which includes a barium-aluminum-silicate glass having the following composition in weight percent:
SiO_2: 25–40%
BaO: 35–55%
Al_2O_3: 15–30%.

4,192,796
POLYMERS STABILIZED WITH ORGANO-PHOSPHORUS COMPOUNDS

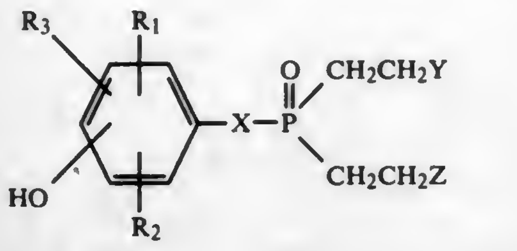
William L. Mosby, North Plainfield, and William B. Hardy, Bound Brook, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 26, 1979, Ser. No. 23,874

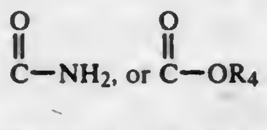
Int. Cl.^{2} **C08K** *5/53, 5/50;* **C07C** *121/75, 103/26, 69/76*

U.S. Cl. 260—45.85 S **20 Claims**

1. A compound represented by the formula:



wherein R_1 and R_2 are each alkyl having 1 to 18 carbon atoms, R_3 is hydrogen or alkyl having 1 to 18 carbon atoms, X is 0 or $(CH_2)_n$ wherein n is an integer from 1 to 4, and Y and Z are each selected from CN,



$$\overset{O}{\overset{\|}{C}}—NH_2, \text{ or } \overset{O}{\overset{\|}{C}}—OR_4$$

wherein R_4 is alkyl having 1 to 18 carbon atoms.

20. A composition comprising a polymer normally subject to degradation by heat or ultraviolet light and an effective amount of a compound of claim 1.

4,192,797
SUSPENSION POLYMERIZATION

Michael Lederer, Königstein, Fed. Rep. of Germany, and Antonius J. M. Bouman, Oosterhout, Netherlands, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 23, 1977, Ser. No. 809,433

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1976, 2628761

Int. Cl.^{2} **C08F** *2/20*

U.S. Cl. 525—243 **6 Claims**

1. A process for the production of bead polymers which consists of the steps of first polymerizing an organic monomer phase comprising an alkenyl-aromatic compound having a monomer-soluble initiator dissolved thereby by suspension polymerization in an aqueous reaction medium in the presence of only water-soluble dispersing agents, to form polymer beads suspended in a mixture of said aqueous reaction medium and said organic monomer phase, separating the polymer beads from said mixture, adding to the mixture from 0 to 60% by weight of fresh water, based on the weight of aqueous reaction medium, from 0 to 70% by weight of the amount of water-soluble dispersing agent used in said first polymerization step, from 0.05 to 5% by weight, based on the weight of the organic monomer phase, of monomer-soluble initiator, and from 2 to 200 ppm, based on the weight of organic monomer phase, of a water-soluble initiator, and using the thus modified mixture as a reaction medium for polymerization of a further quantity of said alkenyl-aromatic compound.

4,192,798
RAPID, LARGE SCALE, AUTOMATABLE HIGH PRESSURE PEPTIDE SYNTHESIS

Michael S. Verlander, Del Mar; William D. Fuller, Lakeside, and Murray Goodman, La Jolla, all of Calif., assignors to BioResearch, Inc., Farmingdale, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,334

Int. Cl.^{2} **C07C** *103/52*

U.S. Cl. 260—112.5 R **10 Claims**

1. In the continuous flow method for the synthesis of a polypeptide chain on an insoluble solid support wherein a protected amino acid is passed in a continuous flow through a flow reactor packed with an insoluble solid support containing substituent groups reactive with said protected amino acid, and coupled to said support by condensation reaction with said reactive substituent groups, a second similar or dissimilar protected amino acid is passed through said reactor in a continuous flow and coupled to said first amino acid and the process repeated until the desired polypeptide is obtained, the improvement comprising conducting the reaction in said flow reactor under a pressure of at least 200 psi.

4,192,799
CONJUGATES FORMED BY REACTING A PROSTAGLANDIN MIMIC COMPOUND WITH A CARRIER MOLECULE

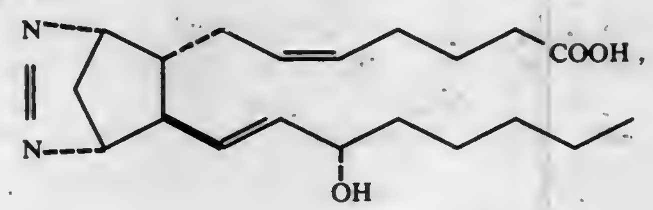
Francis A. Fitzpatrick, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 21, 1977, Ser. No. 835,352

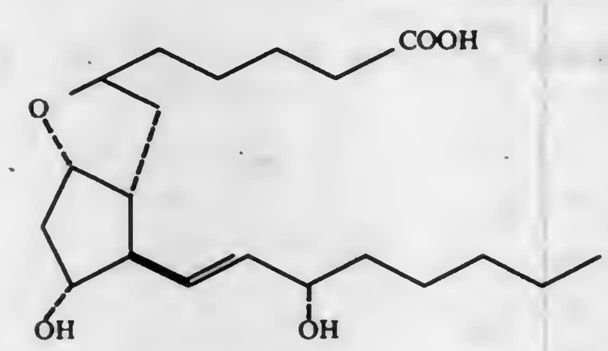
Int. Cl.^{2} **A61K** *37/02, 39/00*

U.S. Cl. 260—121 **18 Claims**

1. A conjugate formed by attaching to a carrier molecule which is a macromolecular immunogen of molecular weight greater than 2000 and less than 500,000, a compound selected from the group

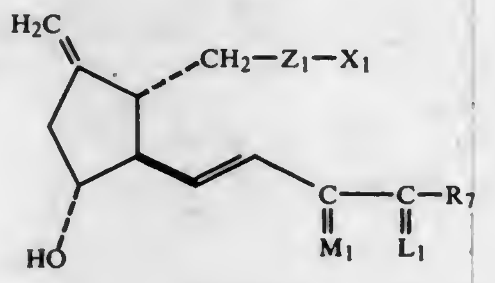


II



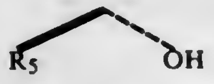
III

and

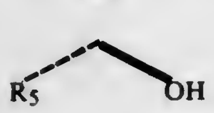


IV

wherein M_1 is

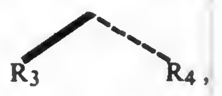


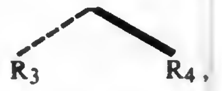
or



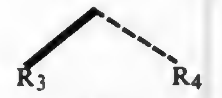
-continued

wherein R_5 is hydrogen or methyl; wherein L_1 is

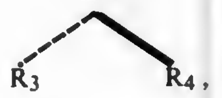




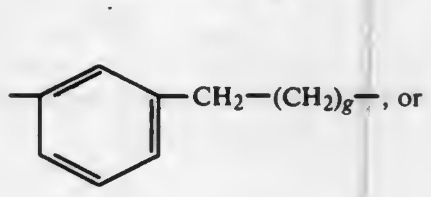
or a mixture of



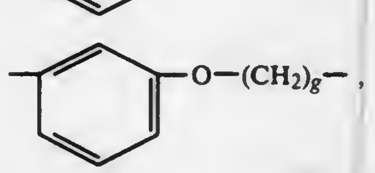
and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein Z_1 is
(1) cis—CH═CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH═CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH═CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —C≡C—CH_2—$(CH_2)_g$—CH_2—,
(8) —CH_2—C≡C—$(CH_2)_g$—CH_2—,

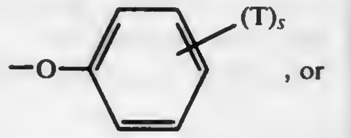


(9)

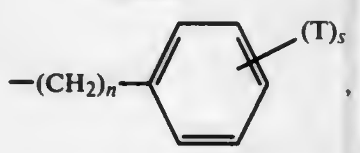


(10)

wherein g is one, 2, or 3;
wherein R_7 is
—$(CH_2)_m$—CH_3, (1)

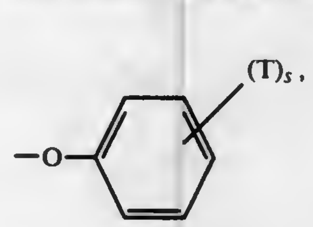


(2)



(3)

wherein m is one to 5, inclusive; n is zero or one; T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive; and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and s are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and wherein X_1 is —$COOR_1$ wherein R_1 is hydrogen or a pharmacologically acceptable cation.

4,192,800
PROCESS FOR THE MANUFACTURE OF AROMATIC NITRILES

Raymond Price, and Nigel Hall, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

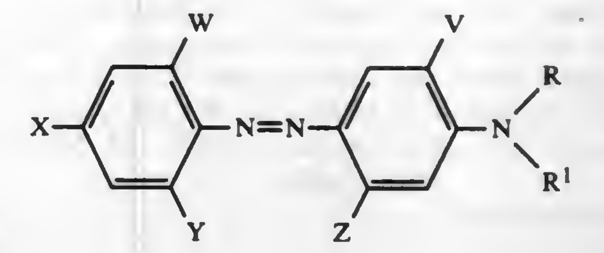
Filed Jul. 28, 1978, Ser. No. 929,198

Claims priority, application United Kingdom, Aug. 4, 1977, 32751/77

Int. Cl.^{2} **C07C** *120/00;* **C09B** *43/00*

U.S. Cl. 260—205 **5 Claims**

1. A process for the manufacture of an azo dyestuff having the formula:



wherein
W represents a cyano group,
X and Y each independently represent a hydrogen atom, a halogen atom or a lower alkyl, lower alkyoxy, cyano, nitro, methylsulphonyl, ethylsulphonyl, unsubstituted carbamoyl, N-methylaminocarbonyl, N,N-dimethulaminocarbonyl, N-ethylaminocarbonyl, N,N-diethylaminocarbonyl, unsubstituted sulphamoyl, N-methylaminosulphonyl, N,N-dimethylaminosulphonyl, N-ethylaminosulphonyl, N,N-diethylaminosulphonyl or lower alkoxycarbonyl group,
Z represents a hydrogen atom or a lower alkyl, lower alkoxy or NHCO.T group in which T represents a phenyl or lower alkyl radical, amino group or a group NHQ in which Q represents a phenyl or lower alkyl radical,
V represents a hydrogen atom, a halogen atom or a lower alkyl or lower alkoxy group, and R and R^1 each independently represent a lower alkyl, cyclohexyl, benzyl, β-phenylethyl, phenyl, 2-cyanoethyl, 2-hydroxyethyl, 2-acetoxyethyl, 2-methoxycarbonylethyl or 2-ethoxycarbonylethyl group, which process comprises reacting the compound corresponding to said dyestuff in which W represents a chlorine, bromine or iodine atom, with formaldoxime in the presence of a copper catalyst selected from the group consisting of cupric acetate, cupric benzoate, cuprous chloride and cuprous iodide, and in the presence of an acid-binding agent, the reaction being carried out in a solvent selected from the group consisting of nitrobenzene, 2-nitrotoluene, dimethylformaminde and ethylene glycol monomethylether and at a temperature from normal room temperature up to 95° C.

4,192,801
NOVEL PHOSPHORANE INTERMEDIATES FOR USE IN PREPARING PENEM ANTIBIOTICS

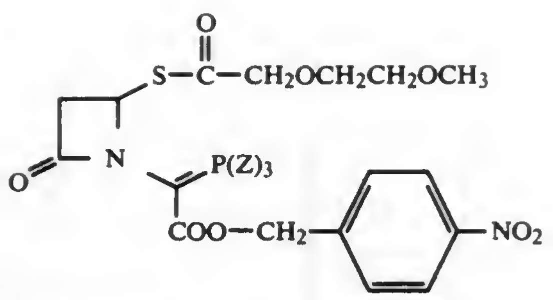
Yasutsugu Ueda, St. Lambert, Canada, assignor to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 900,466, Apr. 27, 1978. This application Nov. 16, 1978, Ser. No. 961,352

Int. Cl.^{2} **C07D** *205/08*

U.S. Cl. 260—239 A **2 Claims**

1. A compound having the formula



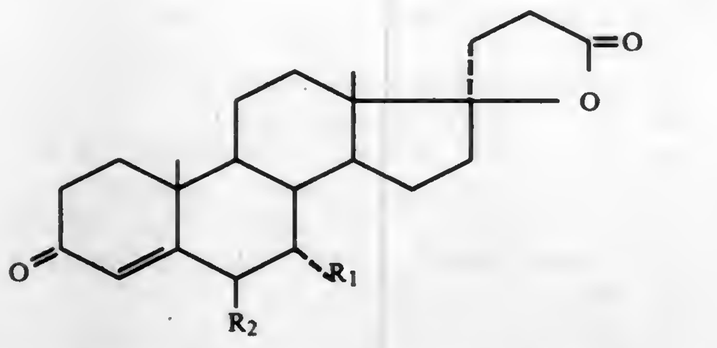
wherein Z is phenyl or C_1–C_6 alkyl.

4,192,802

PROCESS FOR THE MANUFACTURE OF STEROID CARBOXYLIC ACID LACTONES

Georg Anner, Basel, and Hansuli Wehrli, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 791,438, Apr. 27, 1977, abandoned, which is a continuation of Ser. No. 694,275, Jun. 9, 1976, abandoned. This application Jul. 20, 1978, Ser. No. 926,357
Int. Cl.² C07J *71/00*
U.S. Cl. 260—239.57 **20 Claims**

1. A process for the manufacture of compounds of the formula



(I)

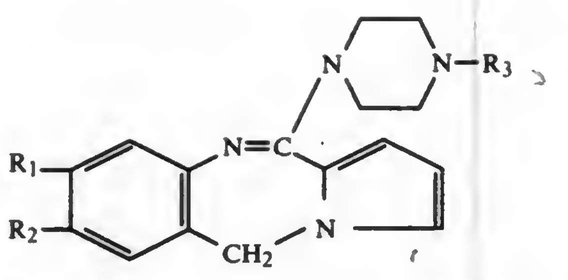
wherein R_1 and R_2 together represent a further 6,7—C—C bond, which comprises treating an acetal of 3β,17-dihydroxy-17α-pregn-5-en-21-carboxaldehyde in basic or neutral medium with a brominating agent selected from the group consisting of bromine and an organic bromine addition complex, oxidising the acetal of the 5,6-dibromo-3β,17-dihydroxy-17α-pregnan-21-carboxaldehyde obtained with a compound of hexavalent chromium under basic or neutral conditions, at temperatures between about −100 and about +30° C., treating the product so obtained with a member selected from the group consisting of a lithium halide in the presence of a basic alkali metal or alkaline earth metal salt and a nitrogen containing base of aromatic character at temperatures between about 0° and about +180° C., and subsequently treating the resultant acetal of 3-oxo-17β-hydroxy-17α-pregna-4,6-diene-21-carboxaldehyde in seccession or simultaneously with an acid and a compound of hexavalent chromium in acid solution.

4,192,803

5H-PYRROLO[2,1-c][1,4]BENZODIAZEPINE DERIVATIVES

William B. Wright, Jr., Woodcliff Lake, and Robert A. Hardy, Jr., Ridgewood, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Sep. 15, 1978, Ser. No. 942,588
Int. Cl.² C07D *487/04;* A61K *31/55*
U.S. Cl. 260—243.3 **9 Claims**

1. A compound selected from the group consisting of those of the formula:



(I)

wherein R_1 and R_2 are each individually selected from the group consisting of hydrogen, halogen, CF_3 and alkyl having from 1 to 4 carbon atoms and R_3 is selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms and β-hydroxyethyl; and the pharmacologically acceptable acid-addition salts thereof.

4,192,804

PROCESS FOR THE PURIFICATION OF MERCAPTOBENZOTHIAZOLE

Michel J. C. Alicot; René H. P. Rhode, both of Lannemezan, and Adrien P. N. Tignol, Montrejeau, all of France, assignors to Produits Chimiques Ugine Kuhlmann Service Propriete Industrielle, Paris, France
Filed Jul. 6, 1978, Ser. No. 922,417
Claims priority, application France, Jul. 12, 1977, 77 21437
Int. Cl.² C07D *277/72*
U.S. Cl. 548—177 **7 Claims**

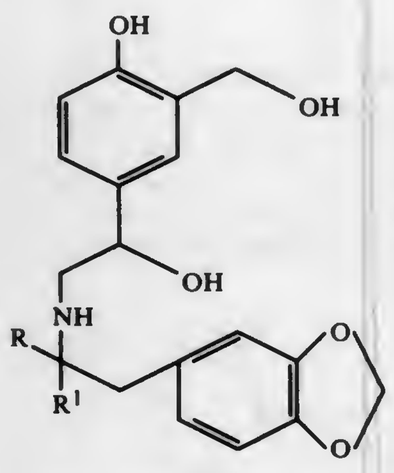
1. A process for the purification of mercaptobenzothiazole prepared according to known processes which comprises treating the crude product in the absence of water with carbon tetrachloride or with 1,1,2,2-tetrachloroethylene.

4,192,805

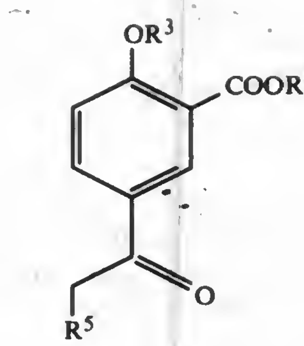
PROCESS OF PREPARING AMINO ETHANOLS

John T. Suh, Mequon, Wis., and Thomas M. Bare, West Chester, Pa., assignors to Nicholas International Limited, Melbourne, Australia
Continuation of Ser. No. 744,233, Nov. 23, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,710
Claims priority, application United Kingdom, Nov. 27, 1975, 48710/75
Int. Cl.² C07D *317/44*
U.S. Cl. 260—340.5 R **2 Claims**

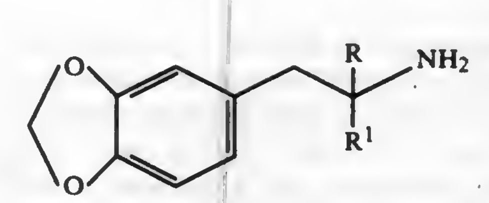
1. A process of preparing a compound of the formula



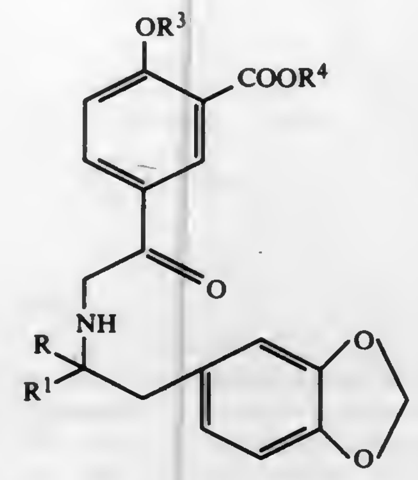
wherein R and R^1 each independently represent hydrogen or a C_1–C_4 alkyl group, which comprises (1) reacting a compound of the formula



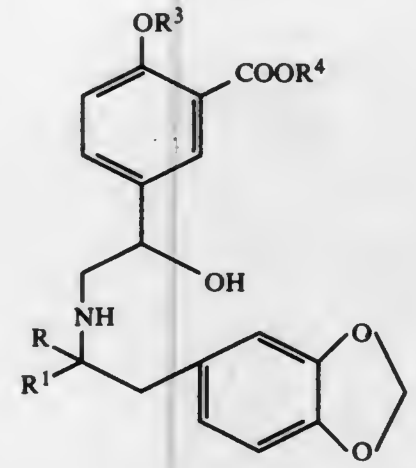
wherein R^3 represents a benzyl protecting group, R^4 represents an alkyl group, and R^5 represents a halogen atom in a solvent with a compound of formula



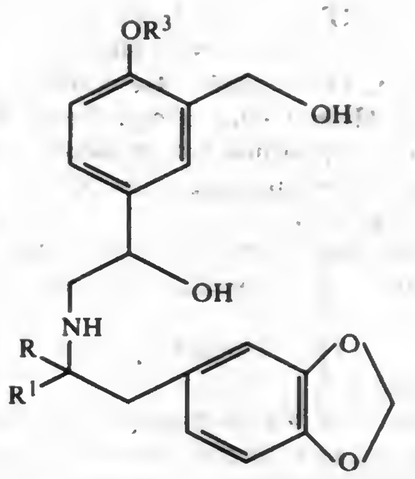
wherein R and R^1 have the meanings given above, to give a compound of formula



wherein R, R^1, R^3 and R^4 have the meanings given above, (2) reducing said latter compound with an alkali metal borohydride to obtain a compound of formula



wherein R, R^1, R^3 and R^4 have the meanings given above, (3) reducing said latter compound with a metal hydride to give a compound of formula



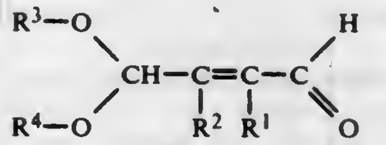
wherein R, R^1 and R^3 have the meanings given above, and (4) removing the protecting benzyl group by hydrogenation in the presence of a hydrogenation catalyst.

4,192,806

METHYL FUMARALDEHYDE MONOACETALS AND PROCESS

Joachim Paust, Neuhofen, and Horst Schumacher, Bobenheim am Berg, both of Fed. Rep. of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 363,615, May 24, 1973, abandoned. This application Mar. 30, 1978, Ser. No. 891,540
Claims priority, application Fed. Rep. of Germany, May 26, 1972, 2225612
Int. Cl.² C07D *319/04*
U.S. Cl. 260—340.7 **9 Claims**

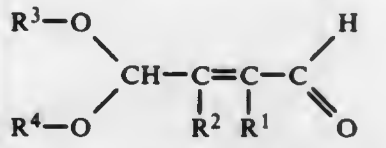
1. Cyclic methyl fumaraldehyde monoacetals of the formula I



$$\left.\begin{matrix} R^3-O \\ R^4-O \end{matrix}\right> CH-\underset{R^2}{\underset{|}{C}}=\underset{R^1}{\underset{|}{C}}-C\left<\begin{matrix} H \\ O \end{matrix}\right. \qquad \text{I}$$

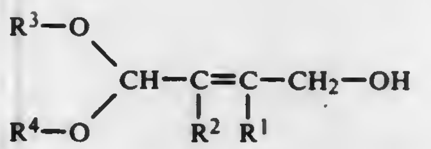
where R^1 and R^2 are different and denote hydrogen or methyl, and R^3 and R^4 together denote propylene or propylene having up to two C_{1-4} alkyl substituents.

7. A process for the production of methyl fumaraldehyde monoacetals of the formula I:



$$\left.\begin{matrix} R^3-O \\ R^4-O \end{matrix}\right> CH-\underset{R^2}{\underset{|}{C}}=\underset{R^1}{\underset{|}{C}}-C\left<\begin{matrix} H \\ O \end{matrix}\right. \qquad \text{I}$$

where R^1 and R^2 are different and denote hydrogen or methyl, and R^3 and R^4 together denote propylene or propylene having up to two C_{1-4} alkyl substituents, wherein a methyl derivative of the corresponding but-2-en-4-ol-1-al acetal of the formula II:



$$\left.\begin{matrix} R^3-O \\ R^4-O \end{matrix}\right> CH-\underset{R^2}{\underset{|}{C}}=\underset{R^1}{\underset{|}{C}}-CH_2-OH \qquad \text{II}$$

where R^1 to R^4 have the meanings given above is oxidized at temperatures of from −15° to +30° C. with a solution containing sulfuric acid and chromic acid in acetone.

4,192,807
MANUFACTURE OF γ-BUTYROLACTONE FROM MALEIC ANHYDRIDE

Franz J. Broecker, Ludwigshafen; Gerd Duembgen, Dannstadt-Schauernheim; Helmut Glietenberg; Ernest Miesen, both of Ludwigshafen, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 19, 1977, Ser. No. 834,780

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1976, 2642533

Int. Cl.^{2} C07D *307/32*

U.S. Cl. 260—343.6 **5 Claims**

1. In a process for the manufacture of butyrolactone by hydrogenating maleic anhydride in which water and, as byproducts, succinic anhydride and succinic acid are formed, the improvement which comprises:

(a) continuously maleic anhydride and recycled or unconverted succinic anhydride over a fixed catalyst bed at a temperature below 210° C.,
(b) feeding the hydrogenated reaction mixture as a liquid into the upper part of a thin film evaporator at a temperature of not less than 235° C., wherein succinic acid is substantially decomposed to succinic anhydride and water, and a liquid phase containing products of low volatility and a vapor phase containing butyrolactone, succinic anhydride, water and any undecomposed succinic acid are formed,
(c) separating the products of low volatility as a liquid,
(d) conducting the vapor phase to a condensing means,
(e) partially condensing the vapor phase, wherein succinic anhydride and unconverted succinic acid are separated and recycled,
(f) conducting the non-condensed portion of the vapor phase from step (e) to a distillating means, and
(g) fractionally distilling said non-condensed portion and isolating the butyrolactone.

4,192,808
ENLARGED-HETERO-RING PROSTACYCLIN ANALOGS

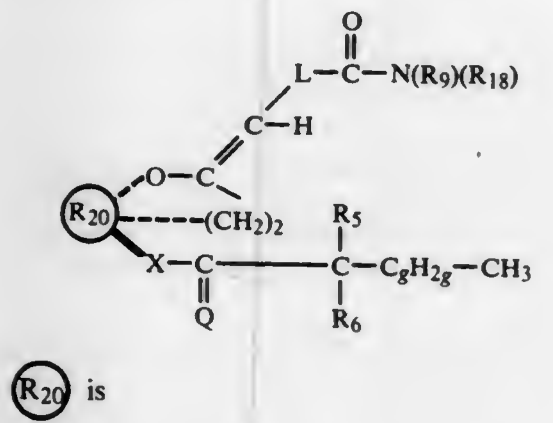
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,900

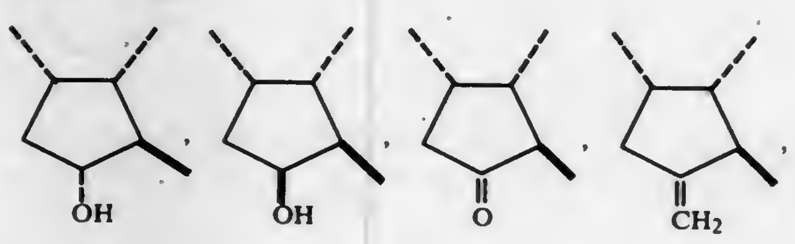
Int. Cl.^{2} C07D *311/02*

U.S. Cl. 260—345.2 **17 Claims**

1. A 4Z compound of the formula



wherein (R_{20}) is



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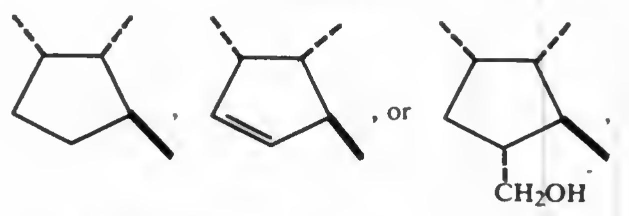
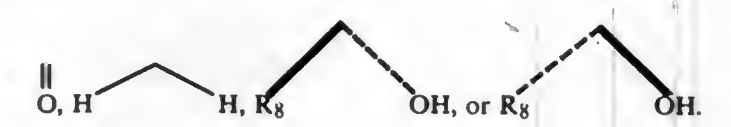


wherein L is —$(CH_2)_d$—$C(R_2)_2$—

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,

wherein Q is



wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_9 is hydrogen, methyl, or ethyl, and wherein R_{18} is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive, wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6— and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro; aand

wherein X is

(1) trans—CH═CH—
(2) cis—CH═CH—
(3) —C≡C— or
(4) —CH_2CH_2—;

including the lower alkanoates thereof.

4,192,809
CERTAIN 8-HALODIBENZOFURAN-3-ALKANOLS

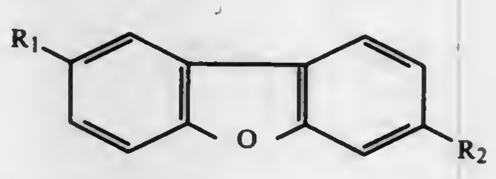
Leo Berger, Montclair, and Robert A. Schmidt, Wallington, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 763,446, Jan. 27, 1977, Pat. No. 4,097,497, which is a division of Ser. No. 548,658, Feb. 10, 1975, Pat. No. 4,022,805, which is a continuation-in-part of Ser. No. 448,853, Mar. 7, 1974, abandoned. This application Apr. 7, 1978, Ser. No. 894,282

Int. Cl.^{2} C07D *307/91*

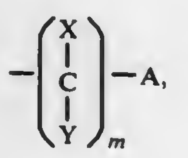
U.S. Cl. 260—346.71 **5 Claims**

1. A compound of the formula



I

wherein R_1 is halogen; R_2 is



$$-\left(\begin{array}{c} X \\ | \\ C \\ | \\ Y \end{array}\right)_m-A,$$

wherein A is hydroxy; X and Y, independently, are hydrogen or lower alkyl, and m is 1 to 7; or

when X and Y are different, its enantiomers.

4,192,810
PREPARATION OF VICINAL EPOXIDES

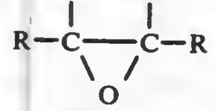
Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 845,183, Oct. 25, 1977, Pat. No. 4,111,965, which is a division of Ser. No. 459,628, Apr. 10, 1974, Pat. No. 4,069,234. This application Aug. 17, 1978, Ser. No. 934,667

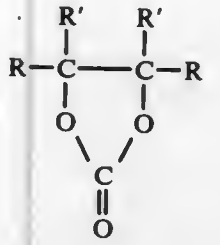
Int. Cl.^{2} C07D *301/02*

U.S. Cl. 260—348.16 **8 Claims**

1. A process for the preparation of a vicinal epoxide having 2 to 30 carbon atoms per molecule of the general formula



wherein each R and each R′ are individually selected from the group consisting of hydrogen and hydrocarbyl radical groups having 1 to 10 carbon atoms and wherein both R′ radicals in said epoxide can represent a divalent aliphatic hydrocarbon radical which together with the oxirane group in said epoxide can form a cycloaliphatic nucleus, which comprises heating the corresponding carbonate ester having the general formula



wherein R and R′ are as defined above, in the presence of a catalytic amount of a catalyst consisting essentially of zinc benzoate.

4,192,811
PROCESS FOR SEPARATING STIGMASTEROL-DERIVED PRODUCTS

Charles H. Foster, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,896

Int. Cl.^{2} C07J *9/00*

U.S. Cl. 260—397.25 **5 Claims**

1. A process which comprises treating a crude mixture of sterols containing stigmasterol to form the i-methyl ethers of said sterols, ozonizing the mixed phytosterol i-methyl ethers, reducing the phytosterol ozonide to form 6-β-methoxy-3α,5α-cyclodinorcholanaldehyde and the i-methyl ethers of stigmasterol and campesterol.

4,192,812
OXIDATION OF WAXES IN THE PRESENCE OF LONG CHAIN QUATERNARY AMMONIUM AND PHOSPHONIUM COMPOUNDS

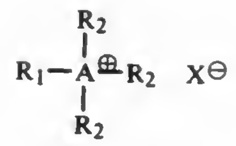
Donald D. Carlos, Grayson, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 22, 1978, Ser. No. 918,131

Int. Cl.^{2} C09F *7/02;* **C11C** *3/00*

U.S. Cl. 260—406 **7 Claims**

1. A process for oxidizing a liquid mixture of saturated paraffinic hydrocarbons having an average of about 20 to about 100 carbon atoms per molecule to a desired acid number comprising blowing an oxidizing gas through said liquid mixture in the presence of an oxidizing catalyst and a promoting amount of a quaternary salt having the formula:



$$\begin{array}{c} R_2 \\ | \\ R_1-\overset{\oplus}{A}-R_2 \quad X^{\ominus} \\ | \\ R_2 \end{array}$$

where R_1 is an aliphatic hydrocarbon radical of 12 or more carbon atoms, R_2 is an aliphatic hydrocarbon radical of 1–12 carbon atoms, A is nitrogen or phosphorus and $X^{\oplus}$ is chloride, bromide, iodide, sulfate or bisulfate.

4,192,813
OMEGA-HYDROXY ALKENOIC ACID

Francesco Siclari, Barlassina Milan, Italy, assignor to Snia Viscoas Societa Nazionale Industria Applicazioni Viscosa S.p.A., Italy

Division of Ser. No. 486,992, Jul. 10, 1974, Pat. No. 4,085,127. This application Mar. 13, 1978, Ser. No. 885,537

Claims priority, application Italy, Jul. 11, 1973, 26479 A/73

Int. Cl.^{2} C11C *3/02, 1/00*

U.S. Cl. 260—410.9 R **2 Claims**

1. Omega hydroxy alkenoic acids containing 8 and 12 carbon atoms, respectively, and selected from the group consisting of 12-hydroxy-dodecane-t,t-4,8-dienoic acid, 8-hydroxy-cis-4-octenoic acid and esters thereof.

2. An ester as defined in claim 1, comprising the methyl ester of said 12-hydroxy-dodecane-t,t-4,8-dienoic acid.

4,192,814
PROCESS FOR CATALYTIC CONVERSION OF THALLIUM (I) TO THALLIUM (III)

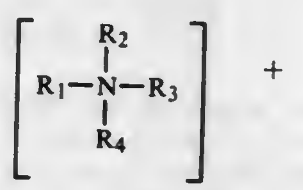
Richard A. Johnson, Midland Park, N.J., assignor to Halcon Research & Development Corporation, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,309

Int. Cl.^{2} C07F *5/00*

U.S. Cl. 260—429 R **9 Claims**

1. A process for converting a thallium (I) compound to a thallium (III) compound which comprises reacting the thallium (I) compound in a liquid medium with molecular oxygen in the presence of a Group VIII noble metal catalyst and in the presence of a promoter comprising at least one alkyl ammonium salt possessing a moiety having the formula:



$$\left[\begin{array}{c} R_2 \\ | \\ R_1-N-R_3 \\ | \\ R_4 \end{array}\right]^{+}$$

wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting hydrogen and alkyl of 1 to 20 carbon atoms, provided that at least 2 of R_1, R_2, R_3 and R_4 are alkyl.

4,192,815
METHOD OF PREPARING ISOCYANATES

Viktor D. Sheludyakov, ulitsa Metallurgov, 32, korpus 1, kv. 22, Moscow; Alexei D. Kirilin, VUGI, 9, kv. 23, Ljubertsy Moskovskoi; Vladimir F. Mironov, ulitsa Gubkina 4, kv. 13, Moscow; Sergei N. Glushakov, ulitsa Lenina 55, kv. 20, and Yakov S. Karpman, ulitsa Lenina 55, kv. 32, both of Moskovskaya, all of U.S.S.R.

Filed Jun. 22, 1978, Ser. No. 918,824

Int. Cl.^{2} C07C *118/00*

U.S. Cl. 260—453 P **7 Claims**

1. A method of preparing organic isocyanates comprising interaction of primary amines having 1 to 6 carbon atoms and carbon dioxide with hexamethyldisilazane in the presence of an acidic catalyst selected from mineral acids, organic acids or salts thereof, sulfocationites or phosphoric acid cationites, at a temperature within the range of from 40° to 200° C. and subse-

quent decomposition of the resulting silyl esters of carbamic acid in the presence of a dehydration agent at a temperature within the range of from 0° to 350° C.

4,192,816
MIXTURES OF 3-PENTENENITRILES AND 3-METHYLENE-PENTANENITRILES

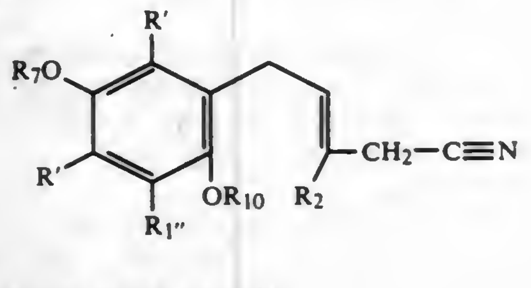
Noal Cohen, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 873,184, Jan. 30, 1978, abandoned. This application Dec. 15, 1978, Ser. No. 970,037

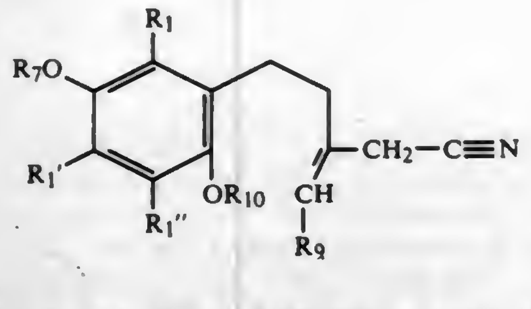
Int. Cl.^{2} C07C *121/70;* C07D *311/72*

U.S. Cl. 260—465 D **2 Claims**

1. A mixture of a compound of the formula



and a compound of the formula:



wherein R_1, R_1' and R'' are hydrogen or lower alkyl; R_7 is lower alkanoyl, benzoyl or toluoyl; R_2 is lower alkyl; R_9 is hydrogen or lower alkyl containing from 1 to 6 carbon atoms, and R_{10} is lower alkanoyl or benzoyl.

4,192,817
AMPHOTERIC SURFACTANTS

Saul Kaplan, Teaneck; John J. Merianos, Jersey City, both of N.J.; Harold A. Green, Havertown, Pa., and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Kewanee Industries, Inc., Bryn Mawr, Pa.

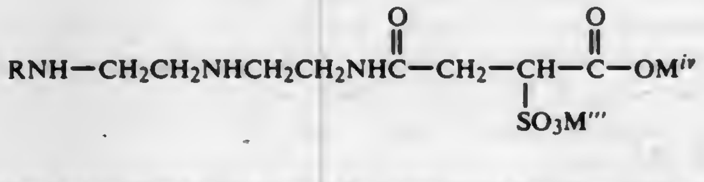
Continuation-in-part of Ser. No. 848,071, Nov. 23, 1977, Pat. No. 4,133,772, which is a division of Ser. No. 799,697, May 23, 1977, Pat. No. 4,076,744. This application Sep. 18, 1978, Ser. No. 943,376

The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.^{2} C07C *143/02;* A01N *9/20*

U.S. Cl. 260—513 N **4 Claims**

1. An antimicrobial compound made by reacting a compound of formula



$$RNH-CH_2CH_2NHCH_2CH_2NH\overset{\overset{O}{\|}}{C}-CH_2-\underset{\underset{SO_3M'''}{|}}{CH}-\overset{\overset{O}{\|}}{C}-OM^{iv}$$

with an approximately equimolar quantity of sodium chloroacetate while adding sodium hydroxide at a rate which keeps the pH of the reaction mixture approximately between 6.5 and 8.5 until the reaction is substantially complete, R being a normal alkyl group of from 8 to 18 carbon atoms and M''' and M^{IV} being the same or different and selected from the group consisting of hydrogen, alkalai metals, ammonium and ammonium substituted by from 1 to 3 lower alkyl groups, said lower alkyl groups being optionally substituted by one hydroxyl group.

4,192,818
COMPOUNDS HAVING PHARMACOLOGICAL PROPERTIES

Jan van Dijk, and Jenkin E. Davies, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Amsterdam, Netherlands

Division of Ser. No. 517,519, Oct. 24, 1974, Pat. No. 3,937,841, which is a division of Ser. No. 279,971, Aug. 11, 1972, abandoned, which is a division of Ser. No. 715,571, Mar. 25, 1968, Pat. No. 3,692,835. This application Dec. 10, 1975, Ser. No. 639,571

Claims priority, application Netherlands, Apr. 5, 1967, 6704810; Dec. 14, 1967, 6717001

Int. Cl.^{2} C07C *131/00*

U.S. Cl. 260—566 AE **3 Claims**

1. A compound selected from the group consisting of O-(2-amino-ethyl)-4'-methylthioacetophenone oxime and O-(2-amino-ethyl)-4'-methylthiohexanophenone oxime and the salts thereof with pharmaceutically acceptable acids.

4,192,819
METHOD FOR PRODUCING HYDRAZINES BY REACTING CHLORAMINE WITH AMMONIA OR AMINES

Robert E. Farncomb, Accokeek; Kurt F. Mueller, Oxon Hill, and Kerry L. Wagaman, Clinton, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 18, 1978, Ser. No. 934,782

Int. Cl.^{2} C07C *85/26, 109/02, 109/04*

U.S. Cl. 260—583 N **16 Claims**

1. In the method of producing hydrazines by generating chloramine, then reacting the chloramine with a nitrogen-containing compound selected from the group consisting of ammonia, monomethylamine, and dimethylamine, and finally isolating and purifying the hydrazine product, improved means for reacting the chloramine with the nitrogen containing compound comprising:

(1) preparing a two-phase system of;
  (a) an upper storage layer comprising a solution of the nitrogen-containing compound, and
  (b) a lower reaction layer comprising an aqueous caustic solution having a concentration which ranges from more than zero weight percent caustic up to saturated;
(2) dissolving the solution of nitrogen-containing compound into said reaction layer until equilibrium saturation is attained;
(3) introducing chloramine into the lower reaction layer of the two-phase system at a rate such that the chloroamine reacts with the nitrogen-containing compound which is available in the reaction layer so as to form the desired hydrazine before the chloramine can reach the storage layer;
(4) agitating the two-phase system so as to facilitate the transfer of the hydrazine product from the reaction layer to the storage layer, wherein this agitation is performed simultaneously with step (3), and provided that the agitation is gentle enough that the storage layer is not brought into contact with the chloramine.

4,192,820
PREPARATION OF 3-METHYL-2-BUTEN-1-AL

Bernd Meissner, Heidelberg; Werner Fliege, Otterstadt; Otto Woerz, Ludwigshafen; Christian Dudeck, Limburgerhof, and Hans Diehm, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 891,016

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1977, 2715208

Int. Cl.^{2} C07C *47/02*

U.S. Cl. 260—601 R **10 Claims**

1. A process for the preparation of 3-methyl-2-buten-1-al which comprises isomerizing the unsaturated compound 3-

methyl-3-buten-1-al at from 50° to 250° C. in the presence of an isomerization catalyst selected from the group consisting of strong acids having acid exponents (pKa) of from −7 to +2.16, and tertiary amines, alkaline earth metal compounds, alkali metal compounds, ammonium compounds and tertiary phosphines as basic compounds.

4,192,821
PURIFICATION OF CRUDE MONOCHLOROMETHANE GAS

Reinhold Gräser, Frankfurt am Main; Wilhelm Lendle, Bad Soden am Taunus, and Hendrik W. Post, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,382

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658132

Int. Cl.^{2} C07C *19/00*

U.S. Cl. 260—652 P **4 Claims**

1. A process for the elimination of dimethylether from crude monochloromethane, consisting essentially of monochloromethane and dimethylether which comprises washing the crude monochloromethane with aqueous hydrochloric acid of a concentration greater than 35%.

4,192,822
PROCESS FOR PRODUCING HALOGENATED HYDROCARBONS

Richard F. Sweeney, Elma, and Bernard F. Sukornick, Williamsville, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 843,759, Oct. 20, 1977, Pat. No. 4,145,368. This application Feb. 2, 1979, Ser. No. 8,898

Int. Cl.^{2} C07C *19/08*

U.S. Cl. 260—653 **13 Claims**

1. A process for producing halogenated hydrocarbons of 1 or 2 carbons which comprises reacting a chlorine-donating perhalogenated hydrocarbon selected from the group consisting of carbon tetrachloride, trichloromonofluoromethane, dichlorodifluoromethane, hexachloroethane, pentachloromonofluoroethane, tetrachlorodifluoroethane and trichlorotrifluoroethane with a hydrogen-donating halogenated hydrocarbon selected from the group consisting of trifluoromethane, difluoromethane, methyl fluoride, chlorodifluoromethane, dichloromonofluoromethane, methyl chloride, methylene chloride, chloroform, monochloromonofluoromethane, ethyl chloride, ethyl fluoride, monochloromonofluoroethane, dichloroethane, difluoroethane, trichloroethane, trifluoroethane, monochlorodifluoroethane, dichloromonofluoroethane, tetrachloroethane, trichloromonofluoroethane, dichlorodifluoroethane, monochlorotrifluoroethane and tetrafluoroethane in the presence of a catalyst selected from the group consisting of chromium oxides and oxyfluorides and activated carbon and recovering a first halogenated hydrocarbon product which is said hydrogen-donating halogenated hydrocarbon with one less hydrogen and one more chlorine and a second halogenated hydrocarbon product which is said chlorine-donating perhalogenated hydrocarbon with one more hydrogen and one less chlorine.

4,192,823
VAPOR PHASE CHLORINATION OF 1,1-DICHLOROETHANE

Walker H. Rideout, and John D. Mansell, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 6, 1978, Ser. No. 883,610

Int. Cl.^{2} C07C *17/00*

U.S. Cl. 260—658 R **4 Claims**

1. In a process for the production of methylchloroform wherein chlorine and 1,1-dichloroethane are reacted under conditions of temperature and pressure sufficient to maintain the reactants in the vapor phase, the improvement comprising conducting said vapor phase reaction between chlorine and 1,1-dichloroethane in the presence of a controlled quantity of carbon dioxide in an amount of from at least about 500 to about 10,000 parts per million parts of chlorine and 1,1-dichloroethane to obtain a reaction product having a higher mole percentage of methylchloroform than that obtained were the reaction conducted in the absence of carbon dioxide under the same conditions of temperature and pressure, and at the same reactants ratio.

4,192,824
AROMATIC HYDROCARBON RESINS

Joseph G. Robinson, Winchcombe, and David I. Barnes, Cheltenham, both of England, assignors to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 834,995, Sep. 20, 1977, abandoned. This application Jan. 9, 1979, Ser. No. 2,173

Claims priority, application United Kingdom, Sep. 23, 1976, 39707/76; May 10, 1977, 19552/77

Int. Cl.^{2} C07C *5/14, 15/28*

U.S. Cl. 585—409 **9 Claims**

1. A method or producing an aromatic hydrocarbon-carbonyl compound condensation product, consisting essentially of the step of reacting at a temperature of from 5 ° to 90° C. in the presence of aluminum chloride or bromide a mixture containing as reacting components only a mono- or bi-nuclear aromatic hydrocarbon selected from the group consisting of toluene, naphthalene, xylene, alkylbenzene, polyalkyl benzene, alkyl naphthalene and polyalkyl naphthalene wherein the alkyl group is not highly branched and contains up to six carbon atoms and a carbonyl compound having more than one carbon atom.

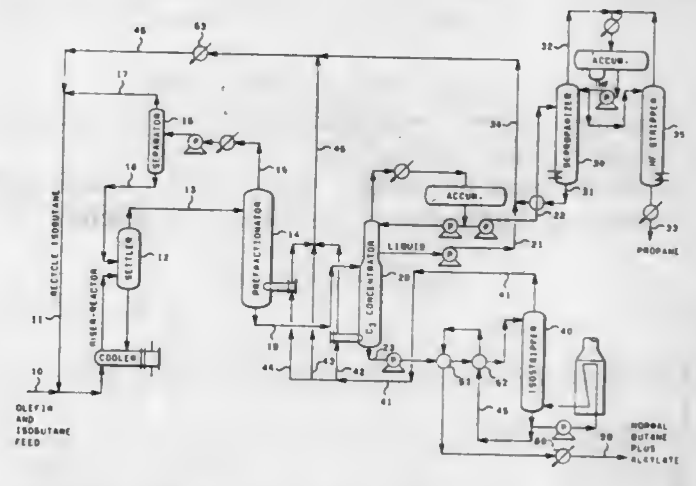
4,192,825
ENERGY EFFICIENT ALKYLATION PROCESS

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 7, 1978, Ser. No. 922,478

Int. Cl.^{2} C07C *3/54*

U.S. Cl. 585—719 **12 Claims**



1. An alkylation process which comprises:

contacting an olefin and isoparaffin in the presence of an HF acid-alkylation catalyst under alkylation conditions to form an alkylation effluent comprising alkylate, isoparaffin, and acid catalyst,

separating said effluent into an acid catalyst phase and hydrocarbon phase,

passing said hydrocarbon phase to a fractionator wherein said hydrocarbon phase is separated into at least two fractions with a first fraction being a substantially HF free fraction which is passed to a propane concentration zone to thereby increase the concentration of propane in the feed stream to be sent to a depropanizer and a second fraction being an acid-catalyst rich overhead fraction,

feeding the propane-rich fraction obtained from said propane concentration zone to a depropanizer from which purified propane is recovered,

feeding a bottom fraction from said propane concentration zone to an isostripper thereby yielding an overhead vapor stream and a bottoms stream,

passing in indirect heat exchange relationship at least one of said overhead vapor stream or said bottoms stream from the isostripper with at least one of said feed stream to said isostripper or as a heat source to said fractionation zone, thereby conserving energy by maximizing the use of available heat energy.

4,192,826

THERMOSETTING, ELECTROSTATICALLY SPRAYABLE COMPOSITIONS CONTAINING BLOCKED ACID CATALYST

Aleksander Beresniewicz, Wilmington, Del., and John P. Gallagher, Philadelphia, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 704,365, Jul. 12, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,363

Int. Cl.^{2} C08L *67/02*

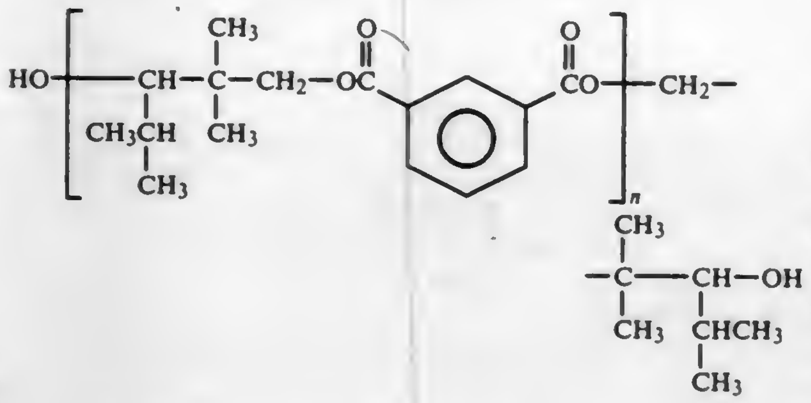
U.S. Cl. 525—425 **4 Claims**

1. A thermosetting liquid electrostatically sprayable composition consisting essentially of:

(A) film forming constituents consisting essentially of:

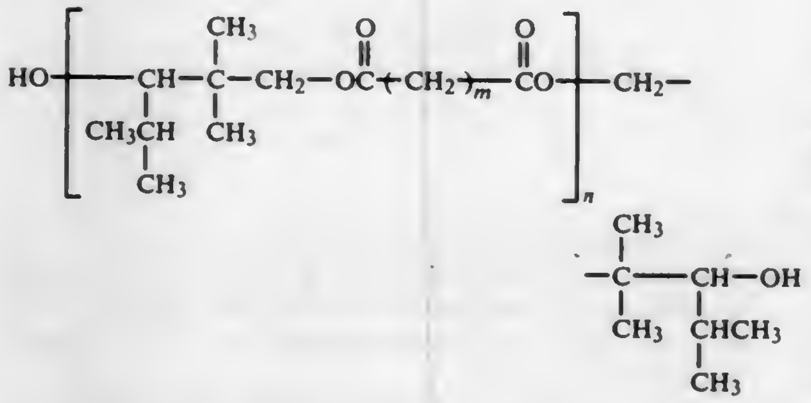
(1) 50–80 parts, by weight of the film formers, of an ester blend consisting essentially of:

(a) 40–80 parts by weight, based on the weight of the blend, of a polyester of the following structure:



its isomer through the secondary hydroxyl group of mixtures thereof, wherein n=0–10 and at least 65% by weight is n=3 or less; and

(b) 60–20 parts by weight, based on the weight of the blend, of a polyester of the following structure:



its isomer through the secondary hydroxyl group or mixtures thereof, wherein n=0–10 and at least 65% by weight is n=3 or less and wherein m=2–4; and

(2) 50–20 parts, by weight of the film formers, of peralkoxymethylmelamine; and

(B) sufficient blocked acid catalyst to contain 0.05–2 parts, by weight of the film formers, of potentially available sulfonic acid, wherein the blocked catalyst is the reaction product of a material containing at least one oxirane functionality and a sulfonic acid is an equivalent ratio of at least one; and

wherein the composition has a resistivity of at least 1 megohm and up to 3.5 megohms.

4,192,827

WATER-INSOLUBLE HYDROPHILIC COPOLYMERS

Karl F. Mueller, New York, and William R. Good, Yorktown Heights, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 581,065, May 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 483,743, Jun. 27, 1974, abandoned. This application Mar. 3, 1978, Ser. No. 883,022

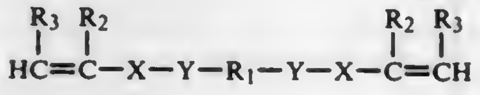
Int. Cl.^{2} C08L *75/00;* **C08G** *73/12*

U.S. Cl. 525—123 **17 Claims**

1. A water-insoluble hydrophilic gel comprising the crosslinked copolymerization product of

(A) about 30 to about 90% by weight of said gel of (a) a water-soluble monoolefinic monomer, or mixture of said monomers, or (b) a water-soluble monomer, or mixture of said monomers, with 1 to 50% by weight of total monomers of a water-insoluble monoolefinic monomer, or mixture of said water-insoluble monomers, with

(B) about 10 to about 70% by weight of said gel of a terminal diolefinic hydrophobic macromer having a molecular weight from about 400 to about 8000, said macromer having the formula



$$HC{=}\overset{R_3}{\overset{|}{}}\!\!\overset{R_2}{\overset{|}{C}}-X-Y-R_1-Y-X-\overset{R_2}{\overset{|}{C}}{=}\overset{R_3}{\overset{|}{CH}}$$

wherein R_1 is a polycondensate chain having a molecular weight from about 200 to about 8000, which is the residue of a poly(propylene oxide) or poly(tetramethylene oxide) glycol having ether linkages; R_2 is hydrogen, methyl or $—CH_2COOR_4$, wherein R_4 is hydrogen or an alkyl group with up to 10 carbon atoms; R_3 is hydrogen or $COOR_4$, with the proviso that at least one of R_2 and R_3 is hydrogen; X is oxa, —COO—, or $—CONR_5—$ is hydrogen or alkyl with up to 5 carbon atoms and Y is a direct bond or the radical $—R_6—Z_1—CO—NH—R_7—NH—CO—Z_2—$, wherein R_6 is linked to X and represents branched or linear alkylene with up to 7 carbon atoms; Z_1 and Z_2 is oxa or NR_5 and R_7 is the diradical of an aliphatic or aromatic diisocyanate, with the proviso that in case X is oxa, Y is different from a direct bond, and R_2 and R_3 are hydrogen.

4,192,828

POLYMER COMPOSITIONS HAVING ENHANCED LOW TEMPRATURE IMPACT RESISTANCE ON AGEING

Gilbert Witschard, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 881,949, Feb. 28, 1978. This application Mar. 31, 1978, Ser. No. 892,226

Int. Cl.^{2} C08L *53/02, 57/08*

U.S. Cl. 525—83 **15 Claims**

1. In a vinyl halide-graft-hydrocarbon polyolefin polymer composition capable of being molded to an impact resistant article, the improvement wherein the composition comprises a block thermoplastic elastomer wherein the major proportion of the monomer units are residues of a mono-alkenyl arene of the benzene or naphthalene series of 8 to 20 carbon atoms and a conjugated alkadiene hydrocarbon of 4 to 10 carbon atoms, the proportion of block elastomer being about 1% to 20% based on the combined weight of the graft polymer and the block elastomer.

4,192,829

UNSYMMETRICAL O-ALKYL S′-BUTYL S-ALKYLTHIOALKYL DITHIOPHOSPHATES AND OXIDIZED DERIVATIVES THEREOF

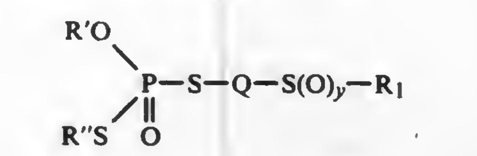
Alexis A. Oswald, Mountainside, and Paul L. Valint, Jr., Woodbridge, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 677,719, Apr. 16, 1976, Pat. No. 4,075,332, which is a continuation of Ser. No. 505,109, Jul. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 210,229, Dec. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 173,267, Aug. 19, 1971, abandoned, and Ser. No. 821,117, May 1, 1969, abandoned. This application Feb. 17, 1978, Ser. No. 878,879

Int. Cl.^{2} C07F *9/165*

U.S. Cl. 260—948 **16 Claims**

1. A compound of the general formula:



wherein R′ is methyl or ethyl; R″ is isobutyl; R_1 to C_1 to C_4 alkyl or C_1 to C_4 substituted alkyl; Q is a C_1 to C_4 alkylene radical; and y is 0 to 2.

4,192,830

HALOGENATED PHOSPHONITRILIC ESTERS

Rainer Wolf, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Jul. 3, 1978, Ser. No. 921,551

Claims priority, application Switzerland, Jul. 7, 1977, 8421/77; Jul. 7, 1977, 8422/77

Int. Cl.^{2} C07F *9/02*

U.S. Cl. 260—973 **10 Claims**

1. In a process for producing halogenated phosphonitrilic esters comprising reacting one or more phosphonitrilic halides of formula II,

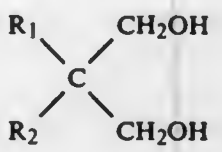
$$P_qN_qHal_{2q} \qquad \text{II}$$

in which

q is an integer 3 to 12, and

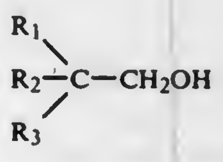
Hal is fluorine, chlorine or bromine,

with one or more alcohols selected from the group consisting of those of formula III,



III

and those of formula IV,



IV

in which each of

R_1, R_2 and R_3, independently, is halogenated lower alkyl, in the presence of an acid binding agent, the improvement wherein the acid binding agent comprises one or more alkaline earth metal oxides or a mixture of one or more alkaline earth metal oxides and up to 80% by weight of said mixture, of one or more alkali metal hydroxides, the total number of mols of said alkaline earth metal oxides and alkali metal hydroxides being equal to at least half the number of hydroxyl groups present in said alcohol(s).

4,192,831

MANUFACTURE OF SALTS OF O,S-DITHIOPHOSPHORIC ACIDS

Karl Kiehs, Lampertheim, and Hans Theobald, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

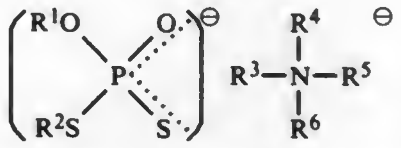
Continuation-in-part of Ser. No. 655,457, Feb. 5, 1976, abandoned. This application Sep. 23, 1977, Ser. No. 836,062

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1975, 2506618

Int. Cl.^{2} C07F *9/165*

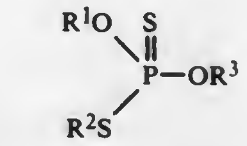
U.S. Cl. 260—987 **7 Claims**

1. A process for the manufacture of a salt of an O,S-dithiophosphoric acid diester of the formula:



where R^1, R^2 and R^6 independently of one another denote an organic radical, R^3, R^4 and R^5 independently of one another denote hydrogen or an organic radical, and R^5 and R^6 together with the nitrogen atom whose substituents they are may form a heterocyclic ring, which process comprises:

reacting an O,O,S-dithiophosphoric acid derivative of the formula:



where R^1 and R^2 have the above meanings and R^3 denotes an organic radical,

with an amine of the formula:

$$NR^4R^5R^6$$

where R^4, R^5 and R^6 have the above meanings, said reaction being carried out in a solvent medium consisting essentially of water or water and an organic solvent which both dissolves in water and also dissolves the amine reactant.

4,192,832

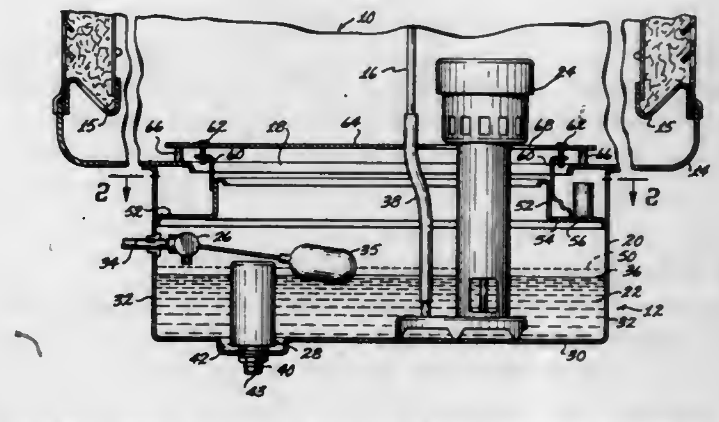
AUTOMATIC FLUSHING AND DRAINING RESERVOIR APPARATUS FOR EVAPORATIVE COOLERS

Adam D. Goettl, 4960 E. Palomino Rd., Phoenix, Ariz. 85018

Filed Jan. 29, 1979, Ser. No. 7,027

Int. Cl.^{2} B01F *3/04*

U.S. Cl. 261—36 R **11 Claims**



1. An automatic flushing and draining reservoir for an evaporative cooler comprising:

(a) an evaporative cooler including a water distribution plumbing system for carrying water to the upper portion of said cooler and a floor pan for receiving unevaporated water draining by gravity from the upper portion of said cooler, the floor pan of said cooler having an opening formed therethrough;

(b) a tank mounted on the bottom of said cooler below the opening of the floor pan thereof for receiving the unevaporated water from the floor pan;

(c) means for supplying water from an external source to said tank and maintaining it at a predetermined operating level therein;

(d) pump means for pumping water from said tank into the distribution plumbing system of said cooler and allowing the pumped water in the distribution plumbing system to drain back by gravity into said tank upon interruption of the operation of said pump means so that this returning pumped water in conjunction with the unevaporated water received from the floor pan of said cooler will cause the water level in said tank to raise from the operating level to a flooded level;

(e) a siphon drain valve mounted in said tank with its inlet adjacent the bottom thereof and having an elevated water passage zone located between the water operating level and the flooded water level of said tank so that its siphoning action will be initiated upon the water level in said tank reaching the flooded level, said siphon drain valve including,

I. a standpipe mounted in the bottom of said tank and having an open upper end, and

II. a cylindrical cap having a closed upper end and an inside diameter which is larger than the outside diameter of said standpipe, said cap mounted coaxially on said standpipe with the closed upper end of said cap spaced above the upper end of said standpipe to define the elevated water passage; and

(f) said tank being sized to contain said means for supplying water, said pump means, said siphon drain valve and hold a sufficient amount of water for proper operation of said evaporative cooler as determined by the size of said evaporative cooler.

4,192,833
LIQUID-GAS CONTACTOR AND LIQUID-GAS CONTACT PROCESS

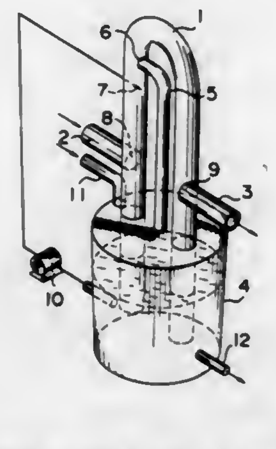
Noboru Hashimoto; Hideo Fukuda, and Setsuo Shibata, all of Yokohama, Japan, assignors to JGC Corporation, Tokyo, Japan

Filed Jan. 9, 1978, Ser. No. 867,966

Claims priority, application Japan, Jan. 17, 1977, 52/2917

Int. Cl.² B01D *47/02, 47/06*

U.S. Cl. 261—36 R **21 Claims**



1. A liquid-gas contactor, which comprises:

an absorption column having wall means defining a first upright conduit, a second upright conduit and a connecting conduit connected directly to and extending directly between the upper ends of said first and second conduits, said first upright conduit, said second upright conduit and said connecting conduit collectively defining an inverted U-shape flow path;

gas inlet means communicating with said first upright conduit and located thereon at a position close to the lower end thereof whereby gas to be treated is fed into said first upright conduit;

treating liquid inlet means communicating with said first upright conduit and located thereon at a position which is upwardly spaced from said gas inlet means whereby treating liquid is fed into said first upright conduit for contact with the gas fed in through said gas inlet means;

a closed tank which is partially filled with a bath of said treating liquid, said tank having an upper wall, the space between the upper surface of said treating liquid in said tank and said upper wall defining a gas chamber, the lower end of said first upright conduit communicating with said tank below the upper surface of said bath of treating liquid and opening into said bath so that treating liquid that flows downwardly through said first upright conduit flows into said bath of treating liquid, the lower end of said second upright conduit extending into said tank and opening thereinto;

a pump connected to said treating liquid inlet means and said tank for feeding a stream of said treating liquid from said tank to said treating liquid inlet means; and

a gas outlet for discharging gas from said contactor, said gas outlet being connected to said second upright conduit adjacent the lower end thereof above the upper surface of the treating liquid in said tank.

10. A liquid-gas contact process, which consists essentially of the steps of:

feeding a gas into the lower portion of a first upright conduit so that the gas flows upwardly at a gas superficial velocity in said first upright conduit in the range of from 5 to 20 m/sec and simultaneously flowing a treating liquid into the upper portion of said first upright conduit so that the liquid flows downwardly at a liquid mass velocity of at least about 40000 $kg/m^2.hr$ in said first upright conduit whereby said gas rising in said first upright conduit contacts said liquid falling in said first upright conduit in countercurrent flow relationship in a contacting region between the locations at which said gas and said liquid are fed into said first upright conduit so that a part of said gas is drawn into a part of said liquid and flows downwardly from said contacting region and the remainder of said gas and the remainder of said liquid flow upwardly from said contacting region;

flowing said part of said gas and said part of said liquid downwardly through said first upright conduit and discharging same into a bath of said treating liquid below the upper surface of said bath wherein said bath is contained in a closed tank whereby said part of said gas rises above said bath;

feeding said remainder of the gas and said remainder of the liquid in concurrent flow relationship upwardly through said first upright conduit, thence through a reversely curved flow path and thence downwardly through a second upright conduit;

discharging said remainder of said liquid from the lower end of said second upright conduit into said bath and discharging said remainder of said gas separately from said remainder of said liquid.

4,192,834
CARBURETOR

Kenneth A. Berkbigler, Fenton, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,324

Int. Cl.² F02M *7/22*

U.S. Cl. 261—52 **8 Claims**

1. A carburetor for an internal combustion engine comprising;

a carburetor body in which an induction passage is formed for air to be drawn into said engine;

a throttle valve positioned in said induction passage and mounted on a rotatable shaft for movement between a closed and an open position to control the quantity of air drawn into said engine;

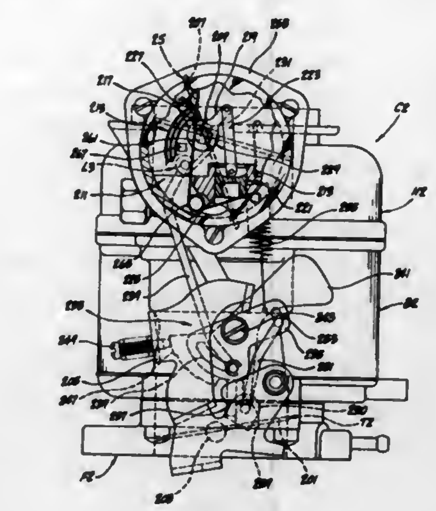
a throttle lever secured to said throttle valve shaft for rotation therewith;

a staging valve positioned in said induction passage and mounted on a rotatable shaft for movement between a closed and an open position, said staging valve being substantially closed during cranking of the engine whereby a suitable rich air-fuel mixture is supplied to the engine to start it;

means for moving said staging valve to a first open position when said engine starts and toward its fully open position as said engine warms up;

means including a lever secured to said staging valve shaft and rotatable therewith for limiting the opening movement of said staging valve to a second open position which is intermediate its first open position and its fully open position, the limiting of said staging valve to this second and less than fully open position limiting the usable air capacity of said carburetor; and

staging means for increasing the usable air capacity of said carburetor, said staging means being responsive to the movement of said throttle valve past a predetermined open position for enabling said staging valve to move freely between its second open position and a more fully open position solely in response to the demand for air by said engine, the more fully open position to which said staging valve is moved being determined by the position past the predetermined open position to which said throttle valve is moved, said staging valve being freely movable to its fully open position when said throttle valve is fully opened, the movement of said staging valve to its fully open position increasing the usable air capacity of said carburetor to its maximum capacity and said staging means comprising a staging lever rotatable about a pivot and having a slot therein and a link connecting the first said lever with said staging lever, one end of said link being received in said slot and movable therein, said end of said link being at one end of said slot when said staging valve is substantially closed and traveling along the length of said slot as said staging valve is moved to its first open position and then toward its fully open position, and the movement of said staging valve being arrested when said one end of said link reaches the other end of said slot, the open position attained by said staging valve when its movement is arrested being said second open position thereof, and said staging means further comprising a staging link connecting said throttle lever and said staging lever, rotation of said throttle lever as said throttle valve opens producing rotation of said staging lever about its pivot and movement of said slot therein relative to said one end of the first said link whereby said staging valve is freely movable between its second open position and its fully open position in response to the demand for air by said engine.



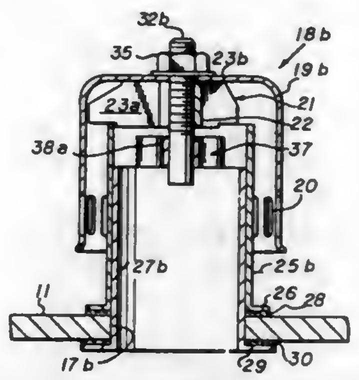
4,192,835
TRIPLE SEAL BUBBLE CAP ASSEMBLY WITH KIDNEY SHAPED INNER TUBULAR SLEEVE FOR A GAS AND LIQUID CONTACT APPARATUS

John R. Powers, Port Arthur, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 712,452, Aug. 6, 1976, abandoned, and a continuation-in-part of Ser. No. 845,200, Oct. 25, 1977, Pat. No. 4,146,950. This application Jan. 23, 1978, Ser. No. 871,315

Int. Cl.² B01D *3/20*

U.S. Cl. 261—114 A **9 Claims**



9. A bubble cap assembly comprising,

(a) a tubular sleeve with a tubular riser therearound supporting a bubble cap, said inner tubular sleeve having two opposite sides of the upper portion thereof cut inwardly a distance to include 120° of the circumference of each of said two opposite sides,

(b) said two cup portions of said inner tubular sleeve being bent kidney shaped forming two side portions of substantial length axially of an upright hold-down stud therein and contiguous with said upright hold-down stud supported therein, and

(c) said two kidney bent shaped side portions of substantial length being rigidly secured to said upright hold-down stud along the length thereof for providing a bubble cap assembly of reduced number of pieces requiring a reduced number of fabrication steps for lowering fabrication costs of the complete bubble cap assembly.

4,192,836
RESPIRATORY GAS HUMIDIFIER

Wolfgang Bartscher, Langen; Jürgen Sachtler, and Roland Schultner, both of Lübeck, all of Fed. Rep. of Germany, assignors to Dragerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,037

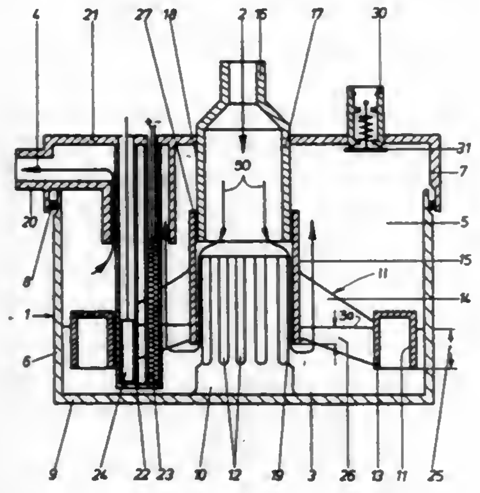
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747488

Int. Cl.² B01F *3/04;* **A61M** *15/00*

U.S. Cl. 261—142 **7 Claims**

1. A respiratory gas humidifier, comprising, a closed water reservoir having a water level therein, a predetermined level which may vary during operation, means for heating the water to a predetermined temperature, an outlet for the respiratory air extending out of the reservoir above the level of the liquid and inlet conduit means extending into the reservoir and including a float floating on the water having a sleeve portion defining a conduit within the sleeve portion for the flow of the respiratory air which is maintained by the float at a constant depth below the level of the liquid and opens into the liquid at the depth below the liquid level, whereby, the respiratory air which is delivered through said inlet conduit means exits into the water for upward bubbling therethrough at a constant bubbling height through the water, said float including an annular float portion surrounding said sleeve, said inlet conduit

means including a tubular conduit portion extending downwardly into the reservoir from the top thereof, said sleeve being guided on said downwardly extending portion in substantially sealing engagement therewith.



4,192,837

CASELESS PROPELLANT CHARGE

Heinz Gawlick, Furth; Günter Marondel, Erlangen-Bruck, and Werner Siegelin, Nuremberg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 3, 1974, Ser. No. 457,609

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1973, 2316548

Int. Cl.² G21C *21/00*

U.S. Cl. 264—3 E **7 Claims**

1. A process for the manufacture of caseless propellant charges containing a priming material, which comprises impregnating a preselected outer portion of a prefabricated charge formed into a shaped body with a solution of priming material in a solvent, and thereafter, vaporizing the solvent from said propellant charge to provide said priming material as a primer charge within said propellant charge.

4,192,838

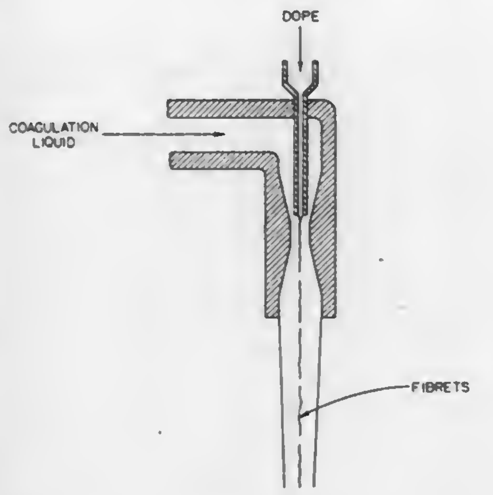
PROCESS FOR PRODUCING FILTER MATERIAL

Charles H. Keith, Charlotte, and Richard O. Tucker, Locust, both of N.C., assignors to Celanese Corporation, Charlotte, N.C.

Division of Ser. No. 730,039, Oct. 6, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,236

Int. Cl.² B29C *6/00;* B22D *23/08*

U.S. Cl. 264—10 **4 Claims**



1. A process for the production of an opaque, voidy, fibrillar structure which comprises the steps of preparing a dope formulation containing a cellulose ester dissolved in a solvent which consists essentially of non-solvent liquid which is miscible with the solvent for said cellulose ester and a co-miscible organic solvent for said cellulose ester; passing the cellulose ester dope through a capillary needle situated in or above the throat of a venturi through which a coagulation liquid is passed, at a velocity sufficient to attenuate the extrudate issuing from said capillary needle, said coagulation liquid being a non-solvent for said cellulose ester, whereby a precipitate is obtained in the form of a cellulose ester fibret.

4,192,839

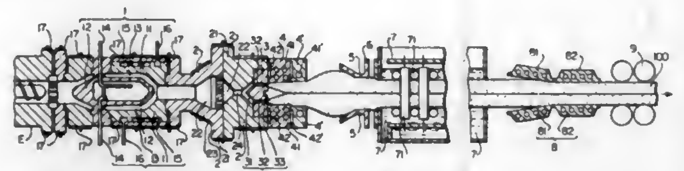
PROCESS FOR PRODUCING EXPANDED ARTICLE OF THERMOPLASTIC RESIN

Motoshige Hayashi, and Toshiro Kobayashi, both of Nara, Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 3, 1978, Ser. No. 866,225

Int. Cl.² B29D *27/00*

U.S. Cl. 264—45.5 **8 Claims**



1. A process for producing an expanded article of a crystalline thermoplastic resin having a sensitively temperature-dependent melt viscosity by extruding and expanding a foamable resin mixture using an extruder equipped, on the forward end thereof with a die having a resin channel therein a nozzle having a plurality of apertures therein and a frame for expansion, which comprises conveying said foamable resin mixture stream through said resin channel while maintaining the resin mixture at a temperature above the melting point thereof, dividing the resin mixture stream into a plurality of substantially parallel separate streams in said nozzle, the cross-sectional area occupied by the streams at the entrance of the extrusion area being reduced to the extent that the cross-sectional area occupied by said streams is from about 5 to about 30% of the total cross-sectional area at the exit of the extrusion area, exiting said streams from said extrusion zone in a common plane perpendicular to the axes of the streams directly into a confined zone defined by said frame and maintained at a temperature at least about 30° C. lower than the temperature of the resin streams prior to the exiting, thereby forming a plurality of soft expanded resin strands corresponding in number to the number of strands, bringing the strands into surface contact with each other to fuse and bond them together to form a bonded expanded resin mass while simultaneously removing gases generated in the course of extrusion and expansion, passing the bonded mass into an unconfined zone to permit the mass to further expand while still in a softened condition, passing the further expanded mass into a confined receiving zone defined by a tapered receiving frame and of a smaller cross-sectional area than the further expanded mass, and cooling the mass to form an expanded article.

4,192,840

METHOD FOR PRODUCING A CAPACITOR DIELECTRIC WITH INNER BLOCKING LAYERS

Helmut Schmelz, Prien, and Werner Schwaen, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 815,579, Jul. 14, 1977, Pat. No. 4,131,903. This application May 23, 1978, Ser. No. 908,665

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1976, 2634896

Int. Cl.² C04B *19/04;* G04B *33/32*

U.S. Cl. 264—61 **9 Claims**

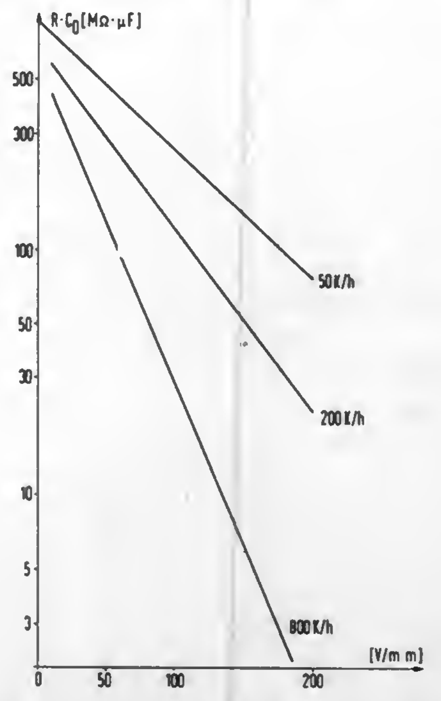
1. A method for producing a capacitor dielectric with inner blocking layers formed of polycrystalline ceramic bodies made of a material with a perovskite structure on the basis of barium titanate and containing at least two different doping substances, one of the substances causing n-type conduction inside crystallites of the crystalline bodies and the other causing p-type conduction in a titanate intermediate phase disposed between grains of the crystallites, comprising the steps of:

(a) mixing starting components needed to make the bodies;

(b) grinding the components and reacting said components to produce a solid reaction product at 950° C. to 1100° C.;

(c) again grinding down the reaction product to a powder of desired particle size;

(d) forming the bodies from the powder and an inorganic binder by pressing and then subjecting the bodies to sintering in a sintering oven at 1250° to 1450° C.;



(e) promoting the influence of p-type doping substances by separting the p-type doping substances in the intermediate phase in the vicinity of the surfaces of the crystallite grains and at least partially recrystallizing by conducting said sintering of step (d) such that the bodies are first heated up to the sintering temperature at a heat-up rate of 200° K./h (°C./h) to 800° K./h at least in the temperature range from 1000° C. to the sintering temperature, maintaining the bodies at the sintering temperature for one to four hours, then slowly cooling the bodies down from the sintering temperature to at least 100° K. and some 350° K. below the sintering temperature at a rate of between 10° K./h and 100° K./h, after which remaining cooling to normal temperature is effected related to actual cooling conditions peculiar to the sintering oven being employed.

4,192,841

PROCESS FOR MAKING DUSTLESS, READILY-DISPENSIBLE PIGMENT GRANULES

George H. Robertson, Cincinnati, Ohio; Robert L. Rooney, Beith, and Robert B. Todd, Paisley, both of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 24, 1978, Ser. No. 889,680

Claims priority, application United Kingdom, Nov. 18, 1977, 48062/77

Int. Cl.² C09B *67/00;* C09C *1/58*

U.S. Cl. 264—117 **10 Claims**

1. A process for producing an organic pigment or dyestuff composition in the form of dustless readily-dispersible granules which consists of contacting with agitation, an aqueous dispersion of a pigment and an aniline or a mono- or di-alkylaniline in which each alkyl group has 1 to 8 carbon atoms which is liquid at temperatures below 100° C., insoluble in water at pH values above 7, and soluble in water at pH values below 7, the pH being first above 7, maintaining the temperature above the melting point of the aniline, stirring at least until the pigment has migrated from the aqueous phase to the organic phase consisting of the aniline, and then reducing the pH to below 7 to render the aniline soluble in water, and recovering the resulting granules in a solvent-free condition.

4,192,842

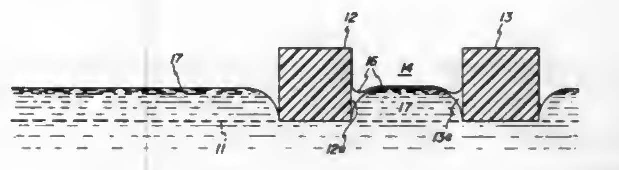
METHOD FOR CASTING ULTRATHIN METHYLPENTENE POLYMER MEMBRANES

Shiro G. Kimura, Schenectady; Raymond G. Lavigne, Waterford, and Warella R. Browall, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 817,828, Jul. 21, 1977, Pat. No. 4,132,824. This application Oct. 10, 1978, Ser. No. 949,641

Int. Cl.² B29C *5/00;* B29D *7/02*

U.S. Cl. 264—298 **21 Claims**



1. A process of casting a thin solid film of a methylpentene polymeric composition which comprises:

(a) depositing onto the surface of a liquid casting substrate a quantity of a casting solution comprising a solvent system and dissolved therein a methylpentene polymer and from zero to about 100 parts by weight of an organopolysiloxane-polycarbonate copolymer per 100 parts by weight of said methylpentene polymer, said casting solution being able to spontaneously spread over said substrate, and

(b) allowing the deposited solution to both spontaneously spread over said substrate and desolvate to effect formation of a thin solid film comprising methylpentene polymeric composition.

4,192,843

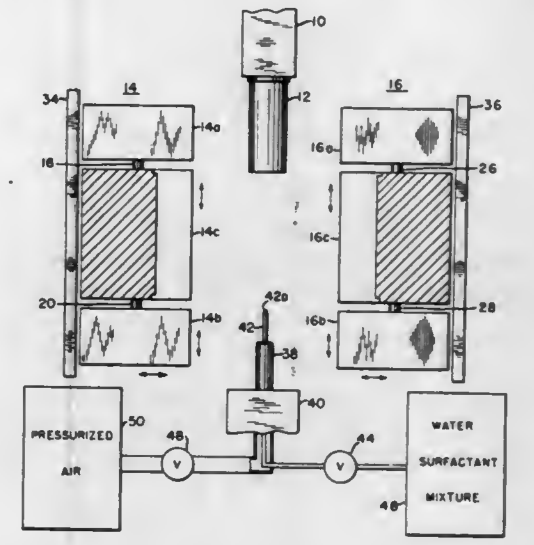
METHOD FOR BLOW MOLDING OF THERMOPLASTIC ARTICLES

George E. Trieschock, Plainfield, and George H. Dunbeker, Hightstown, both of N.J., assignors to Rheem Manufacturing Company, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,854

Int. Cl.² B29C *17/07*

U.S. Cl. 264—528 **2 Claims**



1. In a method comprising the step of introducing pressurized air interiorly of a parison of thermoplastic material at a sufficient pressure to transform the parison into a hollow article, the improvement comprising the steps of:

(a) providing a mixture of water and surface active matter, said mixture including said surface active matter in percentage of from 0.023 percent to 0.36 percent of the liquid volume of said mixture; and

(b) introducing said mixture into the interior surface of said parison in the course of air pressurization of said parison.

4,192,844

METHOXYPROPYLAMINE AND HYDRAZINE STEAM CONDENSATE CORROSION INHIBITOR COMPOSITIONS AND METHODS

William L. Trace, Pittsburgh, and Jerry L. Walker, Coraopolis, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 908,334, May 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 859,342, Dec. 12, 1977, abandoned. This application Aug. 23, 1978, Ser. No. 936,294
Int. Cl.² C23F *11/02, 11/04, 11/14*
U.S. Cl. 422—11 4 Claims

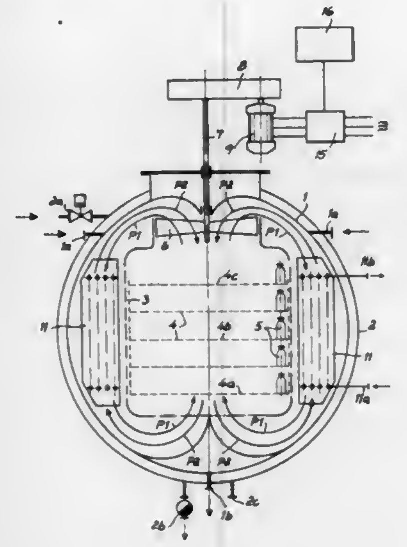
1. A steam condensate corrosion inhibiting composition consisting essentially of methoxypropylamine and from 1 to 15% by weight hydrazine.

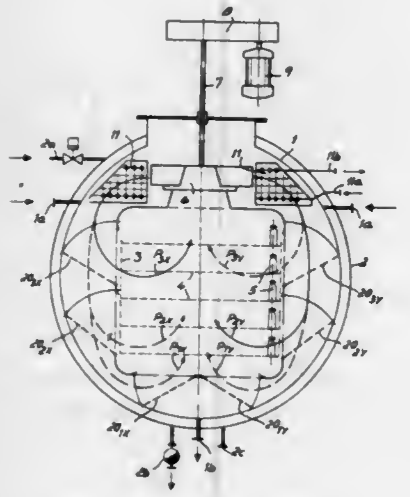
3. A method of inhibiting corrosion in steam condensate systems which comprises maintaining in said systems an effective amount of a composition consisting essentially of methoxypropylamine and from 1 to 15% by weight hydrazine.

4,192,845

STERILIZATION PROCESS AND APPARATUS FOR INFUSION SOLUTIONS AND THE LIKE FILLED IN CONTAINERS

Karl Kalasek, Vienna, Austria, assignor to Firma Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria
Filed Mar. 27, 1978, Ser. No. 890,202
Claims priority, application Austria, Apr. 1, 1977, 2301/77
Int. Cl.² A61L *1/00, 3/00*
U.S. Cl. 422—25 11 Claims





1. In a process of sterilizing articles stacked on different levels in a closed chamber for a sterilization cycle, said sterilization cycle including heating-up and cooling-down periods, wherein the improvement comprises the steps of:

introducing a stream of a heated sterilization fluid into said chamber;

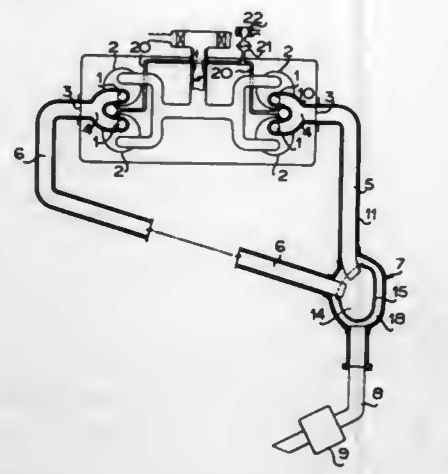
moving said fluid around said articles; and

periodically changing the direction of said stream for time periods that are short relative to the heating-up and cooling-down periods of the sterilization cycle.

4,192,846

EXHAUST GAS PURIFICATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hiroo Ōya, and Masakazu Tatejima, both of Ohta, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 9, 1977, Ser. No. 859,165
Claims priority, application Japan, Dec. 13, 1976, 51-149622
Int. Cl.² F01N *3/10*
U.S. Cl. 422—168 8 Claims



1. Exhaust gas purification system for an internal combustion engine having at least two cylinders with corresponding ports and exhaust valves, comprising

a pair of first exhaust pipes, each of said exhaust pipes communicating with a port passage from the exhaust valve of the engine,

a thermal reactor communicating with said first exhaust pipes,

a second exhaust pipe communicating said thermal reactor to atmosphere,

insulation means for maintaining the exhaust gases at a high temperature, and

means for introducing secondary air into said first exhaust pipes,

said thermal reactor comprising an inner shell for defining a reaction chamber therein, an outer shell provided for covering said insulation means, a core shell supported in said inner shell spaced therefrom, and a space being provided between said inner shell and said core shell communicating with said second exhaust pipe,

said core shell having an egg-shaped body portion, a spherical back side and one opening at a front end of said body portion opposite the back side,

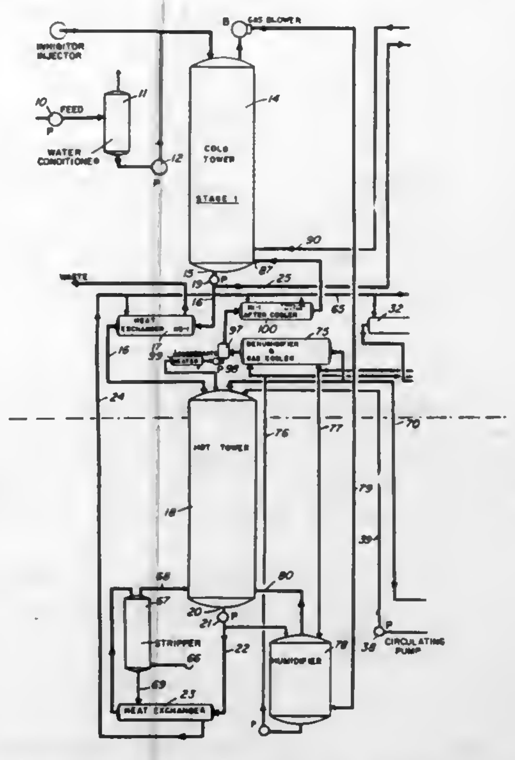
said opening being narrowed to prevent a high temperature zone of gases from moving out of said core shell,

said first exhaust pipes having end portions being inserted into said core shell through said opening such that exhaust gases discharging from both said first exhaust pipes flow together to said back side with swirling and are turned over on said back side.

4,192,847

THERMAL CONTROL IN DUAL TEMPERATURE SYSTEMS

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, New Rochelle, N.Y.
Continuation of Ser. No. 201,238, Nov. 22, 1971, abandoned, which is a division of Ser. No. 587,365, Sep. 26, 1966, which is a continuation of Ser. No. 822,973, Jun. 25, 1959, abandoned, which is a division of Ser. No. 188,925, Sep. 29, 1950, Pat. No. 2,895,803. This application Apr. 12, 1976, Ser. No. 676,217
The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.
Int. Cl.² B01D *11/04;* **C01B** *5/02;* **B01D** *19/00;* **C01B** *4/00*
U.S. Cl. 422—198 14 Claims



1. Apparatus for the thermal processing at different temperatures of carried and carrier fluids comprising, in series connection,

(a) a first means (78) for heating a flow of carrier gas and vaporizing thereinto a liquid to form carried vapor therein, said first means comprising an inlet thereto and an outlet therefrom for said flow and liquid inlet means,

(b) a second means (18, 68) for treating the so heated flow and further heating the same and adding further vapor of said liquid thereto to be carried thereby, said second means having a gas inlet end with a gas inlet thereto and a gas outlet end with a gas outlet therefrom and having its gas inlet connected to the outlet from said first means to receive said flow therefrom,

(c) a third means (75, 97) for cooling the so further heated flow and condensing carried vapor of such liquid therefrom, said third means having an inlet thereto connected to the gas outlet from said second means for receiving said flow therefrom, and having gas and liquid outlet means for discharging flows of the cooled gas and liquid condensate therefrom,

(d) fourth (79) and fifth (100, 87) means connected respectively to the gas inlet to said first means and to the gas outlet of said third means for delivering to said first means and from said third means said flow of carrier gas, and

(e) a sixth means (98) connected to the liquid outlet means of said third means for delivering therefrom, separate from said gas flow, liquid condensed from the carried vapor therein,

and further comprising

(f) seventh means (from 21 to 78) connected to the liquid inlet means of said first means for delivering into direct contact with the flow of gas therein liquid to be vaporized therein, and

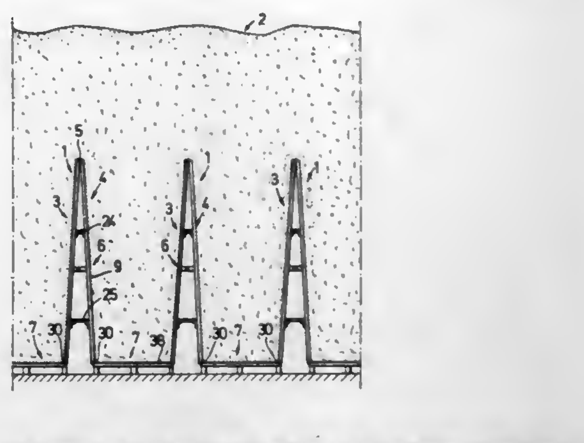
(g) said first and third means (78 and 75) having heat transfer means (76, 75, 77) interconnecting the same for extracting heat from said further heated flow in the third means to effect the cooling and condensing referred to in clause (c) and for transferring the so extracted heat to said first means to effect the heating and vaporizing referred to in clause (a),

(h) said heat transfer means comprising an indirect contact heat exchanger (75) for maintaining the gas and condensate in said third means out of contact with the gas and liquid in said first means.

4,192,848

DEVICE FOR PREPARATION AND HYGIENIZATION OF REFUSE OR REFUSE-CLARIFIED SLUDGE MIXTURES BY MEANS OF COMPOSTING

Hannes Willisch, Scheurenhof, 5025 Stommeln bei Koln, Fed. Rep. of Germany
Filed Mar. 17, 1978, Ser. No. 887,836
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711863; Mar. 18, 1977, 2711907
Int. Cl.² C05F *3/06, 9/02*
U.S. Cl. 422—239 20 Claims



1. A device for forming a clamp of refuse or refuse-clarified sludge mixtures in reduced and prepared form for composting by thermal rotting comprising a pair of movable transversely spaced upstanding wall means defining a space therebetween for receiving refuse, at least one of said pair of upstanding wall means being defined by a pair of upstanding elongated at least partially transversely spaced members having upper and lower end portions, support means disposed between said pair of movable upstanding wall means for receiving thereupon and supporting the received refuse, said support means including means for passing air therethrough whereby the refuse can be aerated thereby, and means for facilitating the removal of said movable upstanding wall means by moving the same sidewise away from said support means whereby refuse received upon said support means remains supported upon the latter in the absence of said movable upstanding wall means.

4,192,849

PRESSURE DIGESTER

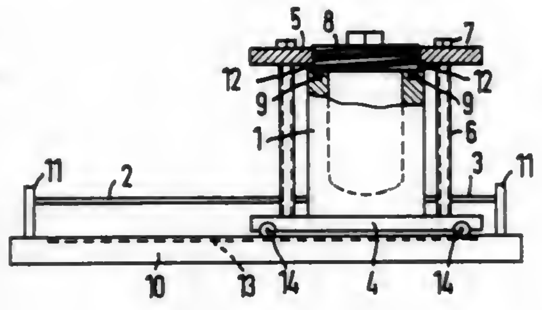
Egmont Scheubeck, and Johann Gehring, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Nov. 15, 1978, Ser. No. 960,790
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1977, 2753019
Int. Cl.² B01J *3/04;* **B65D** *41/04, 45/02*
U.S. Cl. 422—242 11 Claims

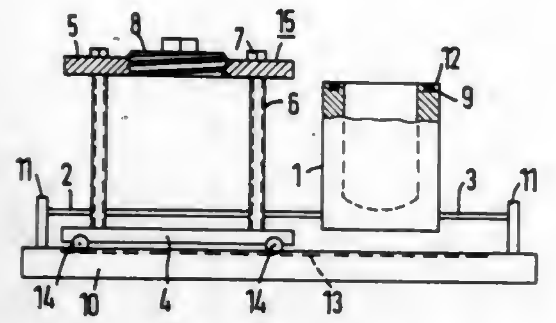
1. A pressure digester with a fast action closure for digesting biomaterials, comprising:

(a) a base;

(b) a pressure digesting vessel firmly mounted to said base; and

(c) a cover carriage movable on said base between a position wherein it is in alignment with said vessel and a position where it is laterally spaced from said vessel and comprising a lower pressure take up plate, an upper pressure take up plate, necked-down bolts and spacer sleeves connecting said take up plates, and a closure in the form of a threaded plug disposed in one of said cover plates, whereby said cover carriage may be moved into alignment with said vessel with said lower take up plate below and said upper take up plate above said vessel and said threaded plug turned to close said vessel in a pressure tight manner.





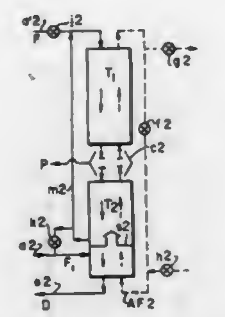
4,192,850
DUAL TEMPERATURE EXCHANGE SYSTEMS

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, New Rochelle, N.Y.

Division of Ser. No. 492,186, Jul. 26, 1974, which is a division of Ser. No. 126,692, Mar. 22, 1971, Pat. No. 3,860,698. This application Jun. 28, 1976, Ser. No. 700,296

Int. Cl.^{2} B01D *11/04, 19/00;* **C01B** *4/00, 5/04*

U.S. Cl. 422—255 **17 Claims**



1. Improved apparatus for producing a fluid containing a first material concentrated therein, by exchanging at two different temperatures said first material with a second material between chemically different first and second fluid phases which are physically separable from each other and which are each capable of containing each of said materials, said apparatus being of the type which comprises

- (a) a pair of exchange units and means connected thereto for passing said second fluid phase through each of the second and first units of said pair in that order, and for also passing flows of said first fluid phase in countercurrent contact with said second fluid phase in said first and second units of said pair,
- (b) means for maintaining said first and second units at different temperatures to cause said second fluid phase to become enriched in said first material in passing through said second unit, and to become impoverished in said first material in passing through said first unit, of said pair, and to cause the first fluid phase to become enriched in said first material in passing through said first unit and to become impoverished in said first material in passing through said second unit of said pair of units, and
- (c) means connected to said units for passing enriched first fluid and second fluid between said units and for withdrawing a part of at least one of said enriched fluids;

and the improvement comprising, in combination with the foregoing:

- (d) first means, including conduits, connected to said second unit for delivering thereto a first flow of said first fluid phase containing said materials from a source external to said pair of units, for discharging said first flow therefrom, and for passing said first flow in countercurrent contact with said impoverished second fluid in a first delivery-to-discharge path through a portion only of said second unit proximate to its end at which said fluid phases are most impoverished in said first material, and
- (e) second means comprising delivery and discharge conduits connected to said units for passing a second flow of first fluid phase in a second delivery-to-discharge path in said units exclusive of said first path in countercurrent contact with said second fluid phase therein and as said enriched flow of first fluid between said units.

4,192,851
LEACHING OF METAL SULPHIDES

Horst E. Hirsch; John F. Higginson, both of Trail; Ernest G. Parker, and Godefridus M. Swinkels, both of Rossland, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Mar. 14, 1978, Ser. No. 886,368

Claims priority, application United Kingdom, Mar. 15, 1977, 10800/77

Int. Cl.^{2} C01G *3/10, 9/06, 1/00*

U.S. Cl. 423—28 **4 Claims**

1. In a process for extracting metals from ores and concentrates containing metal sulfides and for separate recovery of elemental sulfur which comprises leaching said ores and concentrates with lixiviant capable of dissolving metals with concurrent oxidation of sulfide sulfur to elemental sulfur at a temperature in the range of from ambient to 175° C., said leaching resulting in the formation of a reaction slurry comprising dissolved metals, elemental sulfur and unreacted sulfides and at least one material chosen from the group consisting of gangue materials and precipitated compounds, and separating molten sulfur and unreacted sulfides from dissolved metals and said at least one material chosen from gangue materials and precipitated compounds, the improvement which comprises continuously directing a flow of said reaction slurry containing solids of which at least 80% has particle sizes smaller than 74μ at a temperature at which sulfur is present in the liquid state in the range of about 110° to 160° C. and at a pressure in the range of from the vapour pressure of the reaction mixture at the temperature at which S is present in the liquid state to 3000 kPa such that flashing of vapour is avoided into a separating step comprising a relatively quiescent zone free of turbulence; coalescing said elemental sulfur in the relatively quiescent zone; settling coalesced sulfur together with unreacted sulfides from said quiescent zone; maintaining a velocity in said flow in said relatively quiescent zone to cause separation of said slurry into a first and a second fraction, said velocity having an upward velocity component in the range of 1 to 100 cm/min., said first fraction containing dissolved metals and at least one material chosen from gangue materials and precipitated compounds, said at least one material having a terminal settling velocity less than said upward velocity component, and said second fraction containing coalesced liquid elemental sulfur and unreacted sulfides; stirring said coalescing elemental sulfur, settled coalesced sulfur and unreacted sulfides at a rotational speed in the range of 1 to 150 rpm and at a peripheral velocity in the range of 5 to 150 cm/sec.; separately discharging said first and second fractions from said separating step; flashing the discharged first fraction in one or more stages; recovering solution containing dissolved metal; and subjecting the discharged second fraction to hot filtration to yield a filtercake of unreacted sulfides and a filtrate of liquid sulfur.

4,192,852
PROCESS FOR PRECIPITATING IRON AS JAROSITE WITH A LOW NON-FERROUS METAL CONTENT

Robert V. Pammenter, and Curzon J. Haigh, both of Lindisfarne, Australia, assignors to Electrolytic Zinc Co. of Australasia Limited, Melbourne, Australia

Filed May 8, 1978, Ser. No. 903,524

Claims priority, application Australia, May 9, 1977, PD0030

Int. Cl.^{2} C01G *3/00, 49/14*

U.S. Cl. 423—42 **15 Claims**

1. A process for precipitating iron as a jarosite from a sulphate solution containing ferric iron, free acid, and valuable non ferrous metals, characterised by treating the said solution in a stepwise process comprising:

- (1) adjusting the composition of the solution so that the concentration of sulphuric acid lies in the range 0.1 to 40 grams per liter, and the ferric iron concentration lies in the range 5 to 35 grams per liter by
  - (a) cooling the solution to a temperature in the range 30° to 80° C. and sufficient to avoid substantial precipitation of dissolved ferric iron as a jarosite due to premature hydrolysis, partially neutralizing the free acid and then clarifying the solution, or by (a) and
  - (b) diluting the solution with an aqueous diluent containing 0 to 30 grams of sulphuric acid per liter
- (2) heating the clarified solution so adjusted in one or more stages to a temperature in the range 80° C. to the boiling point of the solution at atmospheric pressure, in the presence of at least one ion chosen from the group consisting of sodium, potassium and ammonium ions, the mole ratio of the said ions to dissolved ferric iron lying in the range 0.1 to 10, and in the presence of recycled jarosite, and without addition of any further neutralizing agent other than any which may be added as a source of the aforesaid ions, so that substantially all of the ferric iron is precipitated as a jarosite. and
- (3) separating the jarosite precipitated in step (2) from the solution by thickening, filtration and washing;

thereby producing a jarosite contaminated with only minor amounts of non-ferrous metals, and a solution containing dissolved valuable non-ferrous metals.

4,192,853
METHOD FOR PROCESSING WASTES RESULTING FROM PRODUCTION OF PHOSPHORUS

Vasily B. Chernogorenko, ulitsa Ezhena Potie, 11, kv. 86, Kiev; Tleubai M. Alzhanov, ulitsa Poltoratskaya, 18a, kv. 4, Chimkent; Kima A. Lynchak, ulitsa Kaunasskaya, 4, kv. 55; Simon V. Muchnik, Yaroslavov val, 17, kv. 12, both of Kiev; Evgeny S. Ishkhanov, ulitsa Dzhangildina, 8, kv. 22; Vladimir Y. Sergienko, ulitsa Gagarina, 84, kv. 5, both of Chimkent; Vladimir G. Sapian, ulitsa Dekabristov, 37, kv. 30, Vasilkov Kievskoi oblasti; Vladimir M. Koverya, ulitsa Bocharova, 8b, kv. 114, Zaporozhie; Mendel E. Pobortsev, ulitsa Vodopyanova, 7, kv. 1, Chimkent; Evgeny A. Markovsky, ulitsa Semashko, 21, kv. 58, Kiev; Valentina V. Dmitrenko, ulitsa 40 let Sovetskoi Ukrainy, 2, kv. 186, Zaporozhie; Vladimir I. Bykov, ulitsa Zaitseva, 22, kv. 83, Leningrad; Alexandr D. Kipchakbaev, ulitsa Uritskogo, 186, kv. 33, and Alexandr N. Vopilov, ulitsa Uritskogo, 219, kv. 34, both of Chimkent, all of U.S.S.R.

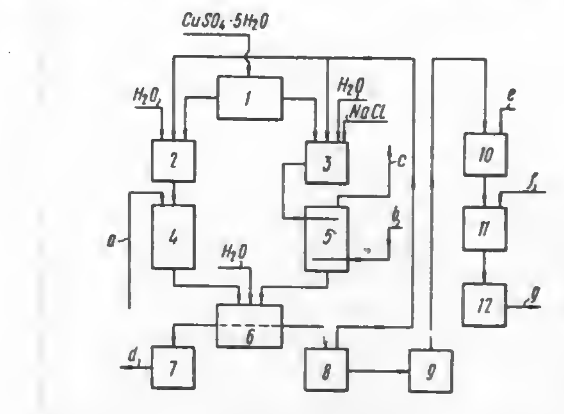
Filed Apr. 21, 1978, Ser. No. 898,973

Int. Cl.^{2} C01D *3/02, 3/08;* **C01G** *3/00*

U.S. Cl. 423—122 **7 Claims**

1. Method of processing off-gases resulting from the production of phosphorus, which comprises treating said off-gases with an aqueous solution of copper sulphate of 15–20% by weight concentration and separating the resulting solid product containing mainly copper phosphide, chlorides and fluorides of alkali metals and silicon and silicates of calcium and aluminium, from the liquid product containing sulphuric acid, phosphoric acid and copper sulphate.

6. Method of processing slime wastes resulting from the production of phosphorus, which comprises treating said slime with an aqueous solution of copper sulphate of 30–50% by weight concentration and separating the resulting solid product containing mainly copper phosphide, chlorides and fluorides of alkali metals and silicon and silicates of calcium and aluminium, from the liquid product containing sulphuric acid, phosphoric acid and copper sulphate.



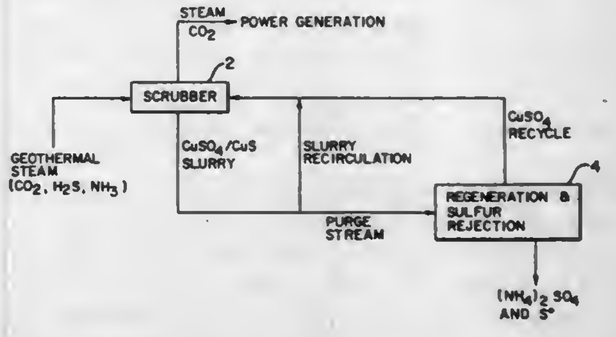
4,192,854
PROCESS FOR REMOVING HYDROGEN SULFIDE AND AMMONIA FROM GASEOUS STREAMS

Walter W. Harvey, Bedford, and Alkis C. Makrides, New Center, both of Mass., assignors to EIC Corporation, Newton, Mass.

Continuation-in-part of Ser. No. 720,345, Sep. 3, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 886,282

Int. Cl.^{2} C01B *17/16;* **C01C** *3/00, 1/244*

U.S. Cl. 423—220 **11 Claims**



1. A process for removing hydrogen sulfide from a gas stream also containing ammonia, comprising

- establishing a recirculating liquid stream comprising a liquid solution of a scrubbing agent consisting essentially of copper sulfate, said stream being buffered to an acidic pH with ammonium sulfate, said pH being sufficiently acidic to prevent the precipitation of copper as hydroxide or basic hydrated oxides at the operating conditions,
- contacting said liquid stream with said gas stream to react said copper sulfate with said hydrogen sulfide to precipitate copper sulfide, and
- removing copper sulfide precipitate from said recirculating liquid stream.

4,192,855
PROCESS FOR THE SIMULTANEOUS SEPARATION OF SULFUR AND NITROGEN OXIDES FROM A GASEOUS MIXTURE

Edward A. Ginger, Northbrook, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 10, 1978, Ser. No. 894,963

Int. Cl.^{2} B01D *53/34*

U.S. Cl. 423—239 **7 Claims**

1. A process for the simultaneous separation of oxides of sulfur and nitrogen from a gaseous mixture containing said

oxides and oxygen which comprises contacting said mixture and ammonia with a solid sulfur oxides acceptor at a temperature of from about 150° to about 450° C., said solid acceptor comprising copper, copper oxide, or a mixture thereof dispersed on a carrier material in combination with a nitrogen oxides conversion catalyst consisting of cerium metal, cerium oxide, or a mixture thereof, said nitrogen oxides conversion catalyst being present in the range of from about 0.01 to about 2.0 wt. % of said solid sulfur oxides acceptor.

4,192,856

MANUFACTURE OF HYDROXYLAMMONIUM SALTS

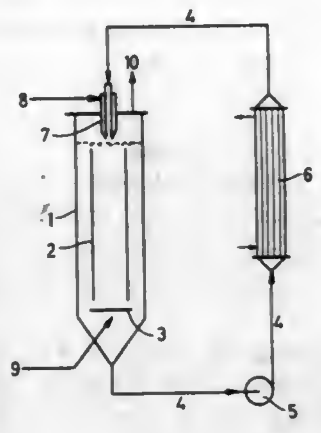
Güenther Rapp, Ludwigshafen; Erwin Thomas, Freinsheim; Dieter Wolf, Gruenstadt; Küerten, Heribert, Neustadt, and Peter Zehner, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,636

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736872

Int. Cl.^{2} C01B *21/14*

U.S. Cl. 423—387 **6 Claims**



1. In a process for the manufacture of hydroxylammonium salts wherein nitric oxide is reduced with hydrogen in a dilute aqueous solution of a mineral acid at elevated temperatures in the presence of a suspended platinum catalyst and wherein the reaction mixture is recycled, the improvement which comprises:

maintaining a gaseous mixture of nitric oxide and hydrogen above a reaction zone containing liquid reaction mixture; introducing the gas mixture into the liquid reaction mixture by passing at least one jet of recycled liquid reaction mixture through said gas mixture and into at least one circulation zone containing liquid reaction mixture whereby said gases are finely distributed in the reaction mixture; deflecting the jet of reaction mixture and unconverted gases upwardly in an annular zone surrounding the circulation zone; and recycling reaction mixture of low gas content to the circulation zone from a separation zone located under the reaction zone.

4,192,857

SULPHUR PRODUCTION

Jacques Tellier, Pau; André Philippe; Pierre Mathieu, both of Orthez, and Robert Voirin, Mourenx, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Continuation of Ser. No. 733,116, Oct. 18, 1976, abandoned.

This application Nov. 14, 1977, Ser. No. 851,509

Claims priority, application France, Oct. 17, 1975, 75 31769

Int. Cl.^{2} C01B *17/04*

U.S. Cl. 423—576 **11 Claims**

1. A Claus process for the production of sulphur by the action of H_2S on SO_2 in the presence of an oxide catalyst which comprises contacting a gas containing H_2S and SO_2 and 50–5000 vpm O_2 in at least one catalytic reaction zone containing a deoxidation catalyst and a Claus oxide catalyst such that said gas encounters for 0.1–3 seconds NTP the deoxidation catalyst prior to encountering the Claus oxide catalyst, said deoxidation catalyst consisting of a supported metal compound of at least one metal selected from the group consisting of iron, nickel, cobalt, copper and zinc, the support having a surface area of at least 100 m^2/g and a porosity of at least 0.2 ml/g, said deoxidation catalyst containing about 0.5–10% by weight of metal relative to the Claus oxide catalyst, whereby the magnitude of said Claus catalyst activity degradation with time is retarded by use of said deoxidation catalyst.

4,192,858

PRODUCTION OF RADIOIODINATED T_3 AND T_4

Max G. Reese, Salt Lake City, and Richard H. Hales, West Jordan, both of Utah, assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Feb. 21, 1978, Ser. No. 879,800

Int. Cl.^{2} A61K *43/00;* **G21H** *5/02*

U.S. Cl. 424—1 **8 Claims**

1. In a process for producing radioiodinated T_4 of high specific activity by radioiodination of T_3, the improvement comprising:

after a period of at least 10 days further purifying said radioiodinated T_4 to remove radioactive non-antigenic contamination and provide radioiodinated T_4 of high specific activity having long term stability.

4,192,859

CONTRAST MEDIA CONTAINING LIPOSOMES AS CARRIERS

George B. Mackaness, Princeton, and Joseph P. Hou, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sep. 29, 1978, Ser. No. 946,976

Int. Cl.^{2} A61K *29/02*

U.S. Cl. 424—5 **22 Claims**

1. An X-ray contrast medium comprising an X-ray contrast agent and a liposome as a carrier therefor, said liposome comprising a lecithin and a sterol, said X-ray contrast agent being present in an amount within the range of from about 20 to about 60% by weight of said contrast medium.

4,192,860

METHODS FOR TREATING DISEASE CONDITIONS

Alan J. Griffiths, Haveringham, England, assignor to Fisons Limited, London, England

Filed Apr. 27, 1978, Ser. No. 900,709

Claims priority, application United Kingdom, May 6, 1977, 18995/77; May 26, 1977, 22186/77

Int. Cl.^{2} A61K *9/14, 9/00, 31/35*

U.S. Cl. 424—43 **12 Claims**

1. A method for curative treatment of a disease condition in cats, dogs horses or cattle as follows:

(a) in horses: broken wind, heaves, chronic pulmonary disease, laminitis or sweat itch;
(b) in cattle: fog fever, husk, acute bovine pulmonary emphysema, bovine farmer's lung and respiratory diseases due to Respiratory Syncytial Bovine Virus;
(c) in cats or dogs: allergic condition produced in response to allergens present in foods or food additives, in therapeutic agents, in parasitic fungi, produced by bacterial or fungal infection, or as a response to inhaled or contact antigens;

which method comprises administering an effective amount of an active ingredient having sodium cromoglycate like activity to cattle or to a horse, pig, cat or dog suffering from such a condition.

4,192,861

HYDROCARBON PROPELLED AEROSOL HAIR SPRAY COMPOSITIONS

Albert L. Micchelli, Middletown; Frank A. Nowak, Jr., Somerville, and Stuart H. Ganslaw, Morristown, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 5, 1978, Ser. No. 903,441

Int. Cl.^{2} A61K *7/00, 9/00*

U.S. Cl. 424—47 **8 Claims**

1. Aerosol hair spray compositions in aerosol containers, said compositions comprising 0.5 to 5% by weight of a resin consisting of a copolymer of at least one unsaturated monocarboxylic acid and at least one vinyl or vinylidene monomer, 5–60% hydrocarbon propellent, with solvent comprising the remainder of said composition (to 100%), wherein 7 to 100% of the available carboxyl groups of said resin are neutralized, depending on the type of resin employed, with at least 50% of the carboxyl groups which are to be neutralized being neutralized with a long chain primary, secondary or tertiary amine, wherein the longest chain of the amine contains 8 to 20 carbon atoms, the amount of neutralization being such that the solubility of the resin is substantially increased.

4,192,862

HAIRSPRAY CONTAINING A HAIRSPRAY RESIN AND A DRAG REDUCING AGENT

Roger W. Pengilly, Worcester Park, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Jul. 26, 1978, Ser. No. 928,227

Claims priority, application United Kingdom, Jul. 28, 1977, 31780/77

Int. Cl.^{2} A61K *7/11*

U.S. Cl. 424—47 **13 Claims**

1. A hairspray product consisting of a hairspray composition within a container for spraying the composition onto the hair, wherein the hairspray composition consists essentially of

(A) about 0.4% to about 7.5% by weight of a hairspray resin;
(B) about 5% to about 99.5% by weight of a solvent for the hairspray resin;
(C) a drag reducing agent, dissolved in said solvent, in an amount effective to enhance the holding power of the hairspray composition, the weight ratio of the hairspray resin to the drag reducing agent being about 10,000:1 to about 2:1 and the amount of the drag reducing agent being less than about 0.3% by weight of the hairspray composition, said drag reducing agent being a polymer soluble in said solvent and of such a high molecular weight that it has a drag reduction efficiency of at least 2%; and
(D) 0% to about 90% by weight of a propellant.

4,192,863

COMPLETELY ONE-STEP PERMANENT WAVE SOLUTION AND A METHOD FOR USING THE SAME

Tokuzo Kondo, 92, Nishi-Koiso, Ohisomachi, Kanagawa Prefecture, Japan

Continuation-in-part of Ser. No. 363,735, May 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 735,203, Jun. 7, 1968, abandoned, which is a continuation-in-part of Ser. No. 459,879, May 28, 1965, abandoned, which is a continuation-in-part of Ser. No. 80,758, Jan. 5, 1961, abandoned.

This application Jun. 17, 1975, Ser. No. 587,623

Claims priority, application Japan, Jun. 12, 1964, 39-33015

Int. Cl.^{2} A61K *7/09*

U.S. Cl. 424—72 **6 Claims**

1. A permanent wave solution which consists of in percent by weight; ammonium thioglycolate 2.0 to 5.0%; tartaric acid or citric acid 0.10 to 0.40%; ethyl alcohol 1.0 to 10.0%; caustic potash or caustic soda 0.02 to 0.10%; 28% ammonia water 1.0 to 2.4%; monoethanolamine, diethanolamine, triethanolamine or mixtures thereof 0.01 to 1.0%; and distilled water as the remainder, said solution being adjusted to a pH of 7.0 to 9.6.

4,192,864

METHOD FOR THE TREATMENT OF DYSLIPIDAEMIA AND ARTERIOSCLEROSIS

Tiberio Bruzzese, and Lorenzo Ferrari, both of Milan, Italy, assignors to Prospa N.V., Curacao, Netherlands Antilles

Filed May 30, 1978, Ser. No. 910,951

Claims priority, application United Kingdom, May 30, 1977, 22736/77

Int. Cl.^{2} A61K *35/00*

U.S. Cl. 424—122 **2 Claims**

1. A method for the treatment of dyslipidaemia and arteriosclerosis in human beings, comprising administering methyl partricin to a human being in need of said treatment in an amount sufficient to effectively alleviate dyslipidaemia or arteriosclerosis.

4,192,865

SEDATIVE PREPARATION FOR ANIMALS AND METHOD

Joachim Helbig, Tutzing, Fed. Rep. of Germany, assignor to Verlapharm von Ehrlich A.G., Emmenbrucke, Switzerland

Filed Apr. 27, 1978, Ser. No. 900,568

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720288

Int. Cl.^{2} A61K *33/14, 31/195*

U.S. Cl. 424—153 **9 Claims**

1. A method of sedating a warm-blooded animal other than human, selected from the group consisting of horses, cattle, pigs, sheep and poultry, comprising the step of administering to such a warm-blooded animal which it is desired to sedate, a magnesium aminodicarboxylic acid chloride, or a magnesium salt of an aminodicarboxylic acid in combination with magnesium chloride, at a dosage sufficient to sedate said warm-blooded animal and said aminodicarboxylic acid in each instance being selected from the group consisting of glutamic acid and aspartic acid.

4,192,866

ANORECTAL MEDICATION

Ralph Anderson, 6218 Freeman, Kansas City, Kans. 66104

Filed Oct. 10, 1978, Ser. No. 949,819

Int. Cl.^{2} A61K *33/06, 33/04, 35/78*

U.S. Cl. 424—154 **3 Claims**

1. A preparation for relief of the swelling sympton of hemmorrhoids by topical application thereto, said preparation comprising:

(a) fragments of ripe berries of the plant *Solanum carolinense;* combined with
(b) an application medium comprising polyglycerides; said polyglycerides being compatible for use with human tissue;
(c) in the nature of about 250 milliters of said polyglycerides being included in said preparation for each 26 to 30 grams of said berry fragments.

3. A method for treating hemorrhoid swelling in a human including the step of:

(a) applying a dosage in the nature of 5 grams of a preparation during about a 24 to 48 hour period for at least 3 consecutive such periods to the anorectal region wherein hemorrhoids are present; and wherein
(b) said preparation comprises the following composition proportions:
  (1) from about 26 grams to about 30 grams of fragmatized ripe berries of the plant *Solanum carolinense;*
  (2) about 250 milliliters of polyglycerides compatible for use with human tissue;
  (3) about 5.3 grams of sulfur;
  (4) about 4.4 grams of aluminum ammonium sulfate; and
  (5) about 8 milliliters of turpentine.

4,192,867
2-DEOXYFORTIMICIN A, 4-N-ALKYL AND 4-N-ACYL-2-DEOXYFORTIMICIN B DERIVATIVES

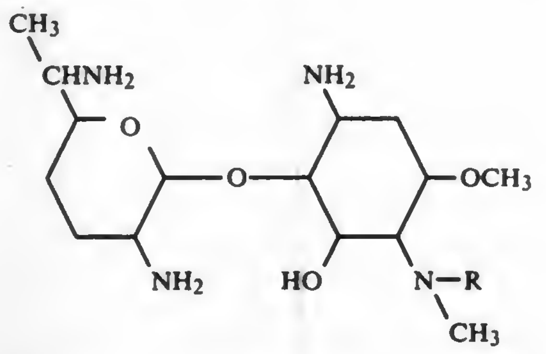
Jerry R. Martin; John S. Tadanier, both of Waukegan, and Paulette Collum, Zion, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 21, 1977, Ser. No. 863,006

Int. Cl.^{2} A61K *31/71;* **C07H** *15/22*

U.S. Cl. 424—180 **10 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of acyl, an amino acid residue, loweralkyl, aminoloweralkyl, N-monoloweralkylaminoloweralkyl, hydroxyloweralkyl, N,N-diloweralkylaminoloweralkyl, and hydroxy-substituted aminoloweralkyl, and the pharmaceutically acceptable salts thereof.

6. A pharmaceutical composition comprising an anti-bacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

4,192,868
NOVEL ARYL-HEXAFURANOSIDES AND PROCESSES FOR THEIR PREPARATION

Jean M. J. Tronchet, Grilly, France; Bruno Baehler, Troinex, Switzerland; Alberto Rossi, Oberwil, Switzerland; Gerhard Baschang, Bettingen, Switzerland, and Alex Sele, Muttenz, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

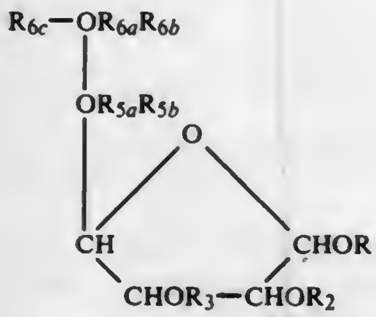
Filed Feb. 22, 1978, Ser. No. 880,255

Claims priority, application Switzerland, Feb. 25, 1977, 2396/77

Int. Cl.^{2} A61K *31/70;* **C07H** *15/00*

U.S. Cl. 424—180 **42 Claims**

1. A compound of the formula I



(I)

in which R_1 is lower alkyl or cycloalkyl having 5–8 carbon atoms and R_2 is hydrogen, lower alkyl or acyl, or R_1 and R_2 together are lower alkylidene or cycloalkylidene having 4 to 7 carbon atoms, R_3 is hydrogen, lower alkyl, lower alkenyl or aryl lower alkyl, R_{5a} and R_{6a} independently of one another are hydrogen or lower alkyl, R_{5b} and R_{6b} independently of one another are hydrogen, hydroxy, lower alkoxy, amino, lower alkylamino or diloweralkylamino or R_{5b} and R_{6b} together are a C-C bond, epoxy, lower alkylidene, or mono- or dihalogenlower alkylidene and R_{6c} is 1- or 2-naphthyl, diphenyl, phenyl, halogenophenyl trifluoromethyl-phenyl, lower alkyl-phenyl, lower alkoxy-phenyl, cyano-phenyl, nitro-phenyl, amino-phenyl, lower alkylamino-phenyl or dilower alkylamino-phenyl.

41. An anti-inflammatory or an analgesic pharmaceutical composition which comprises a therapeutically effective amount of a compound of claim 1 together with a pharmaceutically acceptable carrier.

42. A method for the treatment of inflammation which comprises administeration of a therapeutical effective amount of a compound of claim 1.

4,192,869
CONTROLLED IMPROVEMENT OF THE O_2RELEASE BY INTACT ERYTHROCYTES WITH LIPID VESICLES

Yves-Claude Nicolau, Mulheim-Ruhr, and Klaus Gersonde, Aachen, both of Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH., Mulheim-Ruhr, Fed. Rep. of Germany

Division of Ser. No. 909,081, May 24, 1978, which is a continuation-in-part of Ser. No. 832,867, Sep. 13, 1977, abandoned. This application Oct. 17, 1978, Ser. No. 952,224

Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2740053

Int. Cl.^{2} A61K *31/685, 31/045*

U.S. Cl. 424—199 **4 Claims**

1. Lipid vesicles containing inositol hexaphosphate in which the lipid consists essentially of phosphatidylcholine:phosphatidylserine:cholesterol in the mole ratio 10 to 5:4 to 1:10 to 3.

4,192,870
NOVEL ZOOTECHNICAL COMPOSITIONS

Jean A. Grandadam, Saint-Maur des Fosses; Alain Jobard, Le Blanc-Mesnil, and Jean-Pierre Scheld, Bondy, all of France, assignors to Roussel Uclaf, Paris, France

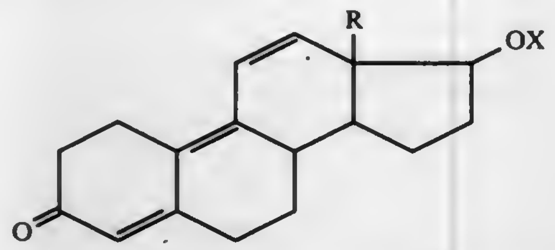
Filed Apr. 21, 1978, Ser. No. 898,872

Claims priority, application France, Apr. 27, 1977, 77 12731

Int. Cl.^{2} A61K *31/56*

U.S. Cl. 424—240 **18 Claims**

1. Novel zootechnical composition for increasing the weight of farm animals comprising a mixture of zeranol and an anabolisant steroid of the formula



wherein R is alkyl of 1 to 3 carbon atoms and X is selected from the group consisting of hydrogen, lower alkyl of 1 to 6 carbon atoms, lower alkenyl and lower alkynyl of 2 to 6 carbon atoms in which one of the carbon atoms may be replaced with an oxygen atom and acyl of an organic carboxylic acid of 1 to 18 carbon atoms.

10. A method of increasing the weight of farm animals comprising administering to farm animals an amount of a composition of claim 1 sufficient to increase the weight gain of the animals.

4,192,871
CHEMICAL COMPOUNDS

Gordon H. Phillipps, Wembley; Peter J. May, North Harrow, and Barry E. Ayres, Ickenham, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Continuation of Ser. No. 752,513, Dec. 20, 1976, abandoned. This application May 22, 1978, Ser. No. 907,915

Claims priority, application United Kingdom, Jan. 6, 1976, 357/76

Int. Cl.^{2} C07J *41/00*

U.S. Cl. 424—241 **23 Claims**

1. Steroids of the pregnane and androstane series and their 19-nor analogues having a 3α-hydroxy group; a 5α-hydrogen atom or a 4,5- or 5,6-double bond; a 17α-hydrogen atom; and at

the 11β-position a group of the formula R^1COO- where R^1 is a C_{1-6}alkyl group or a monocyclic aralkyl group having a C_{1-6}alkyl portion, the alkyl group or alkyl portion being substituted by an amino group of the formula -NR^aR^b, in which R^a and R^b, which may be the same or different, are hydrogen atoms, alkyl, alkenyl, cycloalkyl, cycloalkenyl or phenalkyl groups, provided that at least one of R^a and R^b is other than hydrogen and that R^a and R^b together contain up to 14 carbon atoms, or in which R^a and R^b, together with the nitrogen atom, represent a saturated or ethylenically unsaturated non-aromatic monocyclic heterocyclic group having 3–10 ring members or a saturated or unsaturated bicyclic heterocyclic group having up to 10 ring carbon atoms, the ring containing the nitrogen atom being non-aromatic and either saturated or ethylenically unsaturated, which heterocyclic groups may be unsubstituted or substituted by C_{1-4}alkyl; the 17aα-hydrogen D-homo analogues thereof; and the acid addition salts thereof.

16. Pharmaceutical compositions comprising a compound as claimed in claim 1, together with a pharmaceutical carrier or excipient.

21. A compound as claimed in claim 1, wherein said compound is 11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one, 11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one phosphate, 11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one citrate, 11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one tricarballylate, 11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one hydrochloride, 11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one hemisulphate, 11β-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one tartrate, 11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one lactate and 11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one glutarate, 11β-piperidinoacetoxy-3α-hydroxy-5α-pregnan-20-one, 11β-piperidinoacetoxy-3α-hydroxy-5α-pregnan-20-one citrate, 11β-piperidinoacetoxy-3α-hydroxy-5α-pregnan-20-one hydrochloride, 11β-(3-methylpiperidinoacetoxy)-3α-hydroxy-5α-pregnan-20-one, 11β-(3-methylpiperidinoacetoxy)-3α-hydroxy-5α-pregnan-20-one citrate, 11β-(4-methylpiperidinoacetoxy)-3α-hydroxy-5α-pregnan-20-one, 11β-(4-methylpiperidinoacetoxy)-3α-hydroxy-5α-pregnan-20-one citrate, 11β-(2-methylpiperidinoacetoxy)-3α-hydroxy-5α-pregnan-20-one, 11β-(2-methylpiperidinoacetoxy)-3α-hydroxy-5α-pregnan-20-one citrate, 11β-hexamethyleniminoacetoxy-3α-hydroxy-5α-pregnan-20-one, 11β-hexamethyleniminoacetoxy-3α-hydroxy-5α-pregnan-20-one citrate; 2β-ethoxy-11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one, 2β-ethoxy-11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one citrate, 2β-ethoxy-11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one tricarballylate, 2β-methyl-11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one, 2β-methyl-11β-N,N-dipropylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one citrate, 2β-ethoxy-11β-N-methyl-N-butylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one, 2β-ethoxy-11β-N-methyl-N-butylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one citrate, 2β-propoxy-11β-N,N-diethylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one, 2β-propoxy-11β-N,N-diethylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one citrate; 3α-hydroxy-3β-methyl-11β-piperidinoacetoxy-5α-pregnan-20-one, 3α-hydroxy-3β-methyl-11β-piperidinoacetoxy-5α-pregnan-20-one citrate; 17β-cyano-3α-hydroxy-11β-N,N-dipropylaminoacetoxy-5α-androstane, 17β-cyano-3α-hydroxy-11β-N,N-dipropylaminoacetoxy-5α-androstane citrate; 3α-hydroxy-11β-N-methyl-N-1′,3′-dimethylbutylaminoacetoxy-5α-pregnan-20-one, 3α-hydroxy-11β-N-methyl-N-1′,3′-dimethylbutylaminoacetoxy-5α-pregnan-20-one citrate; 11β-N,N-diethylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one, 11β-N,N-diethylaminoacetoxy-3α-hydroxy-5α-pregnan-20-one citrate; 2β-bromo-3α-hydroxy-11β-N-butyl-N-methylaminoacetoxy-5α-pregnan-20-one, 2β-bromo-3α-hydroxy-11β-N-butyl-N-methylaminoacetoxy-5α-pregnan-20-one citrate; 11β-N-butyl-N-methylaminoacetoxy-17β-cyano-3α-hydroxy-5α-androstane or 11β-N-butyl-N-methylaminoacetoxy-17β-cyano-3α-hydroxy-5α-androstane citrate.

4,192,872
6-HALO-3-LOWER ALKYL-7,8-DIHYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

Joseph Weinstock, Phoenixville, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

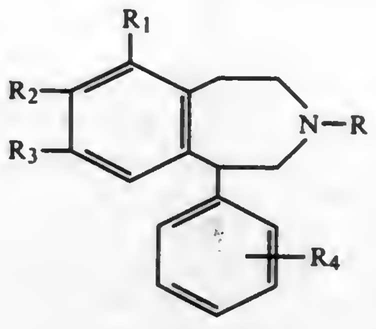
Continuation-in-part of Ser. No. 742,965, Nov. 17, 1976, Pat. No. 4,160,765. This application Mar. 31, 1978, Ser. No. 892,063

Claims priority, application South Africa, Oct. 4, 1977, 77/5910

Int. Cl.^{2} A61K *31/55;* **C07D** *223/16*

U.S. Cl. 424—244 **14 Claims**

1. A chemical compound of the structural formula:



in which:

R is methyl, ethyl or allyl;

R_1 is halo or trifluoromethyl;

R_2 and R_3 are hydroxy or lower alkanoyloxy of 2–7 carbons; and

R_4 is hydrogen, methyl, halo, methoxy or trifluoromethyl; or a nontoxic, pharmaceutically acceptable salt thereof.

3. A compound of claim 1 in which R_4 is hydrogen and R_1 is chloro.

6. The compound of claim 1 being 6-chloro-3-methyl-7,8-dihydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepine and its hydrohalide or methane sulfonate salt.

10. The method of producing central nervous system dopaminergic activity in a subject in need thereof comprising administering to said subject orally or by injection a nontoxic dopaminergic quantity of a compound of claims 1, 3 or 6.

4,192,873
ANTI-INFLAMMATORY 2-SULPHONYL- (OR -SULPHINYL)-2-AMINOACETOPHENONES

Pier G. Ferrini, Binningen; Richard Goschke; Alfred Sallmann, both of Bottmingen, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

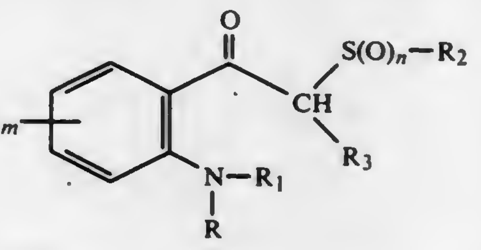
Filed Oct. 28, 1977, Ser. No. 846,305

Claims priority, application Switzerland, Nov. 25, 1976, 14845/76

Int. Cl.^{2} A61K *31/135, 31/44;* **C07C** *87/50, 87/60*

U.S. Cl. 424—246 **13 Claims**

1. An ortho-aminoacetophenone of the formula I



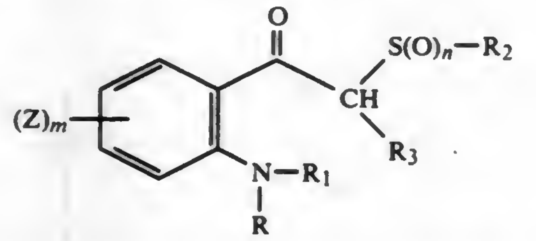
(I)

and its tautomers, in which Z is hydrogen, halogen, lower alkyl, cycloalkyl, lower alkoxy, trifluoromethyl, nitro or substituted or unsubstituted sulphamoyl, m is 1 or 2, R is aryl, R_1 is hydrogen or lower alkyl, R_2 is lower alkyl, cycloalkyl, aryl, cycloalkyl-lower alkyl, aryl-lower alkyl or substituted or unsubstituted pyridyl, R_3 is hydrogen or lower alkyl and n is 1 or 2, with the exception of 2'-[N-(p-methoxyphenyl)-amino]-2-(methyl-sulphinyl)-acetophenone, or its salts.

12. A fibrinolytic and antiinflammatory pharmaceutical formulation containing a correspondingly effective amount of an orthoaminoacetophenone as claimed in claim 1, together with a pharmaceutical, solid or liquid excipient.

13. A fibrinolythic and antiinflammatory pharmaceutical formulation containing a correspondingly effective amount of an ortho-aminoacetophenone of the formula I

(I)



and its tautomers, in which Z is hydrogen, halogen, lower alkyl, cycloalkyl, lower alkoxy, trifluoromethyl, nitro or substituted or unsubstituted sulphamoyl, m is 1 or 2, R is lower alkyl, R_1 is hydrogen or lower alkyl, R_2 is lower alkyl, cycloalkyl, aryl, cycloalkyl-lower alkyl, aryl-lower alkyl or substituted or unsubstituted pyridyl, R_3 is hydrogen or lower alkyl and n is 1 or 2, or its salts, with the exception of 2'-methylamino-2-(methylsulphinyl)-acetophenone, together with a pharmaceutical, solid or liquid excipient.

4,192,874

SUBSTITUTED 1,2,6,7-TETRAHYDROINDOLO[1,7-AB][1,5]BENZODIAZEPINES

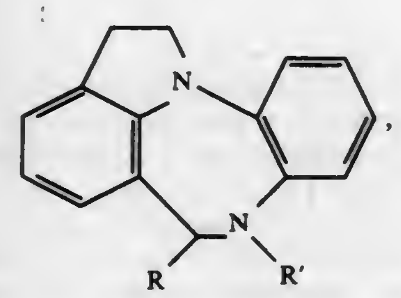
Edward J. Glamkowski, Warren, and James M. Fortunato, Somerville, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Nov. 2, 1978, Ser. No. 956,903

Int. Cl.² A61K *31/55;* **C07D** *487/04*

U.S. Cl. 424—248.54 **31 Claims**

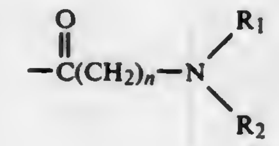
1. A compound of the formula:

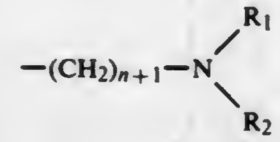


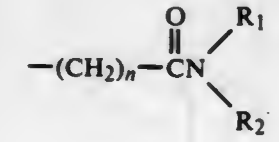
or a pharmaceutically acceptable acid addition salt thereof wherein

R is hydrogen, loweralkyl, or cycloalkyl;

R' is







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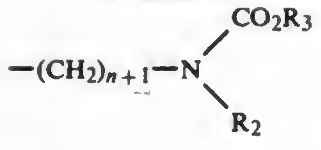


n is an integer from 1 to 3;

R_1 taken alone is hydrogen, loweralkyl or phenylloweralkyl;

R_2 taken alone is hydrogen or loweralkyl;

or R_1 and R_2, taken together with the nitrogen to which they are attached, are pyrrolidinyl, piperidino, morpholino or phenylpiperazinyl; and

R_3 is loweralkyl.

4,192,875

CYCLIC HEXAPEPTIDE

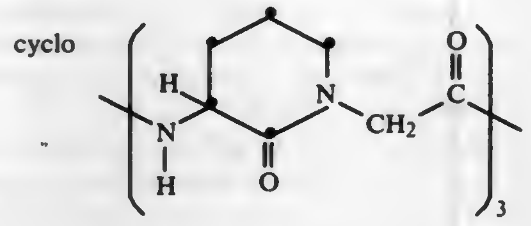
Daniel F. Veber, Ambler, and Roger M. Freidinger, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 2, 1979, Ser. No. 8,904

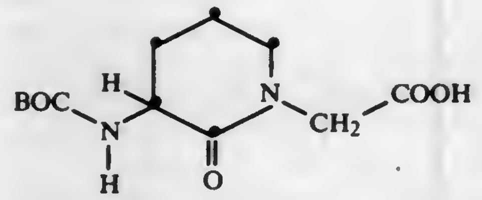
Int. Cl.² A61K *31/365, 41/435;* **C07D** *210/00*

U.S. Cl. 424—256 **7 Claims**

1. The cyclic hexapeptide having the structure:



and the dipeptide



4,192,876

4-HYDROXY-3-NITRO-QUINOLINE-2(1H)-ONES

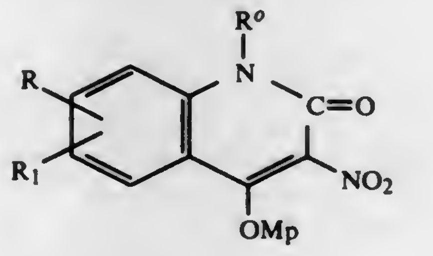
Goetz E. Hardtmann, Morristown, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 707,266, Jul. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 598,539, Jul. 23, 1975, abandoned. This application Jun. 20, 1977, Ser. No. 808,345

Int. Cl.² A61K *31/47;* **C07D** *215/22, 491/04*

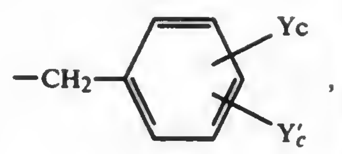
U.S. Cl. 424—258 **22 Claims**

1. A compound of the formula



wherein

R^O is alkenyl of 3 to 6 carbon atoms, or



R and R' are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro, or trifluoromethyl, or R and R' together form 6,7-methylenedioxy, with proviso that only one of R and R' can be from the group of nitro and trifluoromethyl,

Mp is hydrogen or a pharmaceutically acceptable cation,

Yc is hydrogen, fluoro or chloro, and

Yc' is fluoro, chloro, bromo or trifluoromethyl, with the further proviso that the unsaturation in said alkenyl is on other than the alpha carbon atom.

2. A pharmaceutical composition comprising an inert pharmaceutically acceptable carrier and an allergy treating effective amount of a compound of claim 1.

4,192,877

NEUROMUSCULAR BLOCKING AGENTS

John J. Savarese, Boxford; Richard J. Kitz, Dover, both of Mass., and Sara Ginsburg, New York, N.Y., assignors to Massachusetts General Hospital, Boston, Mass.

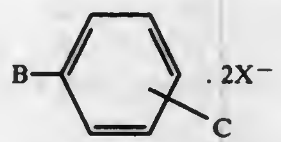
Continuation-in-part of Ser. No. 820,794, Aug. 1, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,713

Int. Cl.² A61K *31/47;* **C07D** *217/10, 217/20*

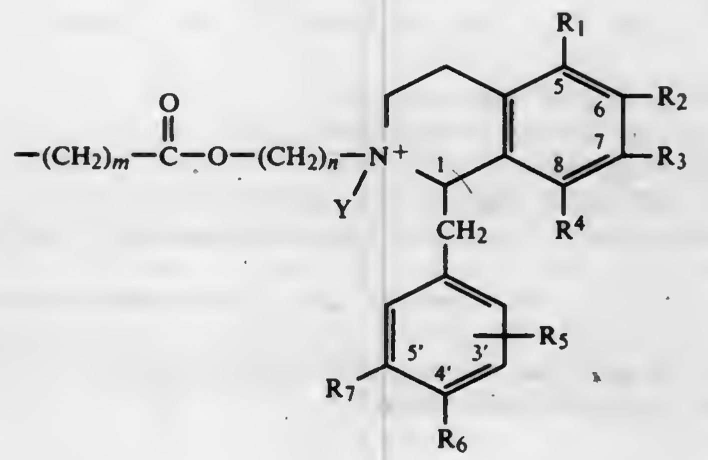
U.S. Cl. 424—258 **54 Claims**

1. A compound of the formula (I)

(I)



where B and C are each



where

m is 2, 3 or 4,

C is para or meta to B,

n is 2, 3 or 4

R_1, R_2, R_3, R_4, R_5, R_6 and R_7 are the same or different and are each hydrogen or lower alkoxy of 1 to 4 carbon atoms,

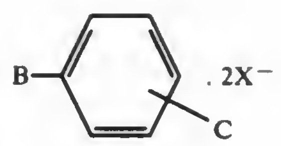
Y is lower alkyl of 1 to 4 carbon atoms, and

X is a pharmaceutically acceptable anion, provided that at least one of R_1 and R_4 is lower alkoxy and at least one of R_5 and R_7 is lower alkoxy.

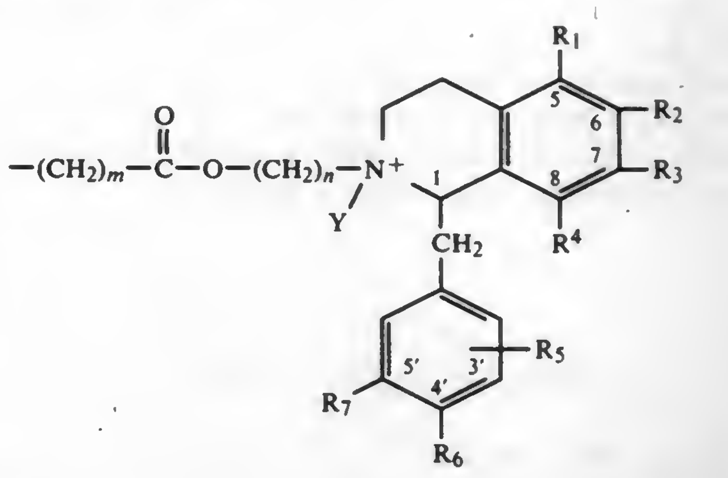
11. The compound of claim 7 in which X is mesylate, or chloride.

32. A pharmaceutical preparation for the parenteral administration comprising an effective neuromuscular blocking amount of the compound of the formula (I)

(I)



where B and C are each



where

m is, 2, 3 or 4,

C is para or meta to B,

n is 2, 3 or 4,

R_1, R_2, R_3, R_4, R_5, R_6 and R_7 are the same or different and are each hydrogen or lower alkoxyl of 1 to 4 carbon atoms, Y is lower alkyl of 1 to 4 carbon atoms,

X is a pharmaceutically acceptable anion, provided that at least one or R_1 to R_4 is lower alkoxyl and at least one of R_5 to R_7 is lower alkoxyl, and a pharmaceutically acceptable liquid carrier therefore.

4,192,878

DERIVATIVES OF THIAZOLIDINECARBOXYLIC ACIDS AND RELATED ACIDS

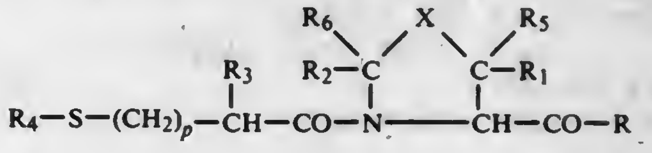
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 836,107, Sep. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 747,281, Dec. 3, 1976, abandoned. This application May 22, 1978, Ser. No. 907,452

Int. Cl.² A61K *31/425, 31/54;* **C07D** *277/04, 277/06*

U.S. Cl. 424—270 **23 Claims**

1. A compound of the formula



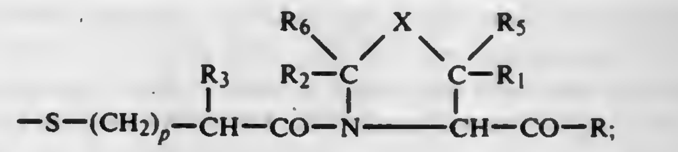
wherein

R is hydroxy or lower alkoxy;

R_1, R_2, R_5 and R_6 each is hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl or mercapto-lower alkylene;

R_4 is hydrogen, lower alkanoyl, benzoyl or

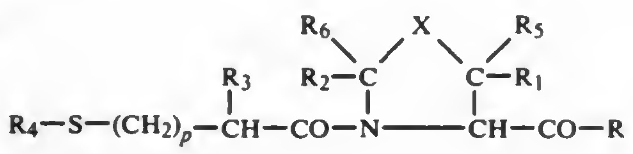


X is S, SO, or SO_2; and

p is 0 or 1;

and basic salts thereof; wherein the terms lower alkyl, lower alkoxy and lower alkylene refer to groups having 1 to 7 carbon atoms and the term lower alkanoyl refers to groups having up to 7 carbon atoms.

20. A method for reducing blood pressure which comprises administering a composition comprising a compound of the formula



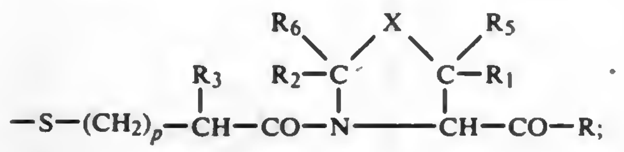
wherein

R is hydroxy or lower alkoxy;

R_1, R_2, R_5 and R_6 each is hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl or mercapto-lower alkylene;

R_4 is hydrogen, lower alkanoyl, benzoyl or



X is S, SO, or SO_2; and

p is 0 or 1;

or a basic salt thereof; wherein the terms lower alkyl, lower alkoxy and lower alkylene refer to groups having 1 to 7 carbon atoms and the term lower alkanoyl refers to groups having up to 7 carbon atoms; and a pharmaceutically acceptable vehicle therefor.

4,192,879
IMIDAZOLYL ALKYLAMINO NITROETHYLENE COMPOUNDS

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City; Geoffrey R. Owen, High Wycombe, and Rodney C. Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

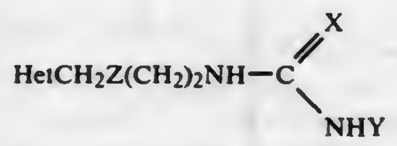
Division of Ser. No. 686,185, May 13, 1976, Pat. No. 4,098,898. This application Mar. 31, 1978, Ser. No. 892,232

Claims priority, application United Kingdom, May 21, 1975, 21817/75; Nov. 20, 1975, 47728/75

Int. Cl.² C07D *233/64;* A61K *31/415*

U.S. Cl. 424—273 R **10 Claims**

1. A compound of the formula:



wherein X is $CHNO_2$; Y is amino, lower alkylamino, di(lower alkyl)amino, lower alkoxy, phenylethyl, imidazolylethyl, allyl, 2,2,2-trifluoroethyl, or $(CH_2)_nR$; Z is sulphur or methylene; Het is an imidazole ring which is attached at a ring carbon and which ring is optionally substituted by lower alkyl or halogen; n is an integer from 1 to 12; and R is hydroxy, lower alkoxy, amino or lower alkylamino; or a pharmaceutically acceptable acid addition salt thereof.

10. A method of blocking histamine H_2-receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

4,192,880
2-SUBSTITUTED BENZIMIDAZOLE COMPOUNDS

Goro Tsukamoto, Toyonaka; Koichiro Yoshino, Settsu; Toshihiko Kohno, Sakai; Masahiro Taguchi, Settsu; Katsumi Dezawa, Settsu; Hajime Kagaya, Settsu; Keizo Ito, Osaka, and Takashi Nose, Suita, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

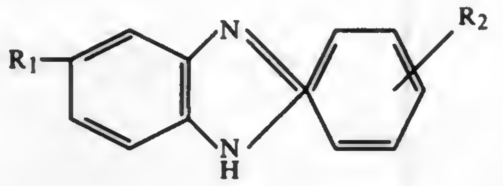
Division of Ser. No. 856,969, Dec. 2, 1977. This application Oct. 10, 1978, Ser. No. 949,429

Claims priority, application Japan, Apr. 7, 1977, 52-40072

Int. Cl.² A61K *31/415;* C07D *235/08*

U.S. Cl. 424—273 R **12 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy and R_2 is ethyl or tert-butyl.

7. A pharmaceutical composition for use in treating inflammation comprising an anti-inflammatory effective amount of a compound according to claim 1 in admixture with a pharmaceutically acceptable carrier.

4,192,881
CARBOXYALKYLACYL SUBSTITUTED IMIDAZOLYLAMINO ACIDS

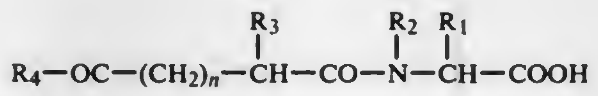
Miguel A. Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 903,288, May 4, 1978, which is a division of Ser. No. 684,605, May 10, 1976, Pat. No. 4,105,789. This application Nov. 20, 1978, Ser. No. 962,533

Int. Cl.² C07D *233/64;* A61K *31/415*

U.S. Cl. 424—273 R **14 Claims**

1. A compound of the formula



$$R_4-OC-(CH_2)_n-\overset{\overset{R_3}{|}}{CH}-CO-\overset{\overset{R_2}{|}}{N}-\overset{\overset{R_1}{|}}{CH}-COOH$$

and salts thereof, wherein

R_1 is imidazolyl-lower alkylene

R_2 is hydrogen or lower alkyl;

R_3 is lower alkyl or phenyl-lower alkylene;

R_4 is hydroxy, lower alkoxy or hydroxyamino; and n is 1 or 2.

14. A composition useful in reducing or relieving angiotensin related hypertension in a mammalian specie comprising about 10 to 500 mg. of a compound of claim 1 and a physiologically acceptable vehicle therefor.

4,192,882
CARBOXYALKYLACYLAMINO ACIDS

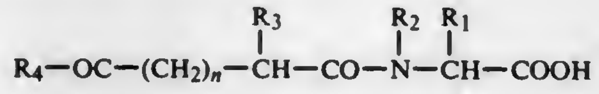
Miguel A. Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 684,605, May 10, 1976, Pat. No. 4,105,789. This application May 4, 1978, Ser. No. 903,340

Int. Cl.² A61K *31/405;* C07D *209/20*

U.S. Cl. 424—274 **12 Claims**

1. A compound of the formula



$$R_4-OC-(CH_2)_n-\overset{\overset{R_3}{|}}{CH}-CO-\overset{\overset{R_2}{|}}{N}-\overset{\overset{R_1}{|}}{CH}-COOH$$

and physiologically acceptable salts thereof, wherein

R_1 is 3-indolyl-lower alkylene;

R_2 is hydrogen or lower alkyl;

R_3 is lower alkyl or phenyl-lower alkylene;

R_4 is hydroxy, lower alkoxy or hydroxyamino; and

n is 1 or 2.

12. A composition for relieving angiotensin related hypertension in mammalian species suffering therefrom having 10 to 500 mg. of a compound of claim 1 and a physiologically acceptable vehicle therefor.

4,192,883
AMIDES OF PYRROLIDINOETHYLAMINE WHICH CAN BE USED IN LUNG THERAPY

Henri Cousse; Bernard Bonnaud; Jean-Pierre Tarayre, and Silvano Casadio, all of Castres, France, assignors to Pierre Fabre, S.A., France

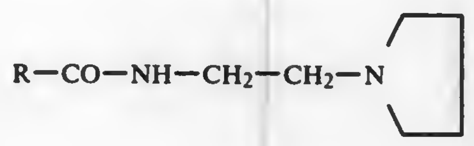
Division of Ser. No. 714,764, Aug. 16, 1976, Pat. No. 4,122,199. This application Aug. 7, 1978, Ser. No. 931,489

Claims priority, application France, Apr. 9, 1976, 76 10754

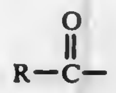
Int. Cl.² A61K *31/40;* C07D *295/14*

U.S. Cl. 424—274 **9 Claims**

1. A compound selected from the group consisting of (a) a pyrrolidinoethylamine amide of the formula:



wherein



$$R-\overset{\overset{O}{\|}}{C}-$$

is an acyl radical of 9-fluorenecarboxylic acid, and (b) a pharmaceutically acceptable acid addition salt thereof.

7. Method for the treatment of a patient suffering from cough, comprising administering to the patient a compound of claim 1 in an amount effective for the alleviation of said condition.

4,192,884
SUBSTITUTED
4-(((THIENYL)METHYL)-AMINO)BENZOIC ACIDS AND A METHOD FOR TREATING HYPOLIPIDEMIA

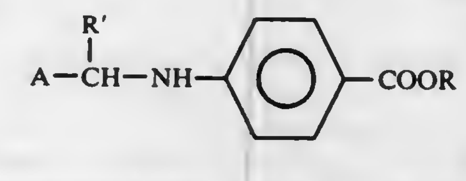
Eugene R. Wagner, Carmel, and Donald P. Matthews, Indianapolis, both of Ind., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 785,467, Apr. 7, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 915,049

Int. Cl.² C07D *333/20;* A61K *31/38*

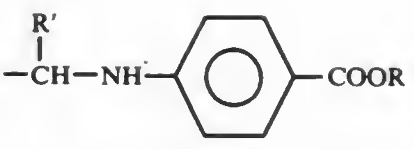
U.S. Cl. 424—275 **27 Claims**

1. A compound of the formula:



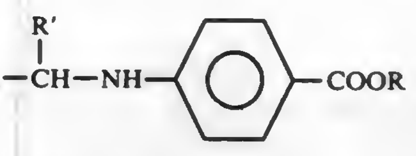
wherein R represents hydrogen or a lower alkyl having from one to about three carbon atoms; R′ represents hydrogen or methyl; and A represents halo-substituted thienyl with 1, 2 or 3 halo substitutions being present on the thienyl ring and further including the pharmaceutically-acceptable salts thereof.

10. A method for lowering serum lipid levels in a mammal which comprises administering internally to the mammal an effective hypolipidemic amount of a compound having the formula:



wherein R represents hydrogen or a lower alkyl having from one to about three carbon atoms; R′ represents hydrogen or methyl; and A represents halo-substituted thienyl with 1, 2 or 3 halo substitutions being present on the thienyl ring and further including the pharmaceutically-acceptable salts thereof.

20. A hypolipidemic composition comprising a suitable pharmaceutical carrier and an effective hypolipidemic amount of a compound having the formula:



wherein R represents hydrogen or a lower alkyl having from one to about three carbon atoms; R′ represents hydrogen or methyl; and A represents halo-substituted thienyl with 1, 2 or 3 halo substitutions being present on the thienyl ring and further including the pharmaceutically-acceptable salts thereof.

4,192,885
ANALGESIC N-{2-[N′-(2-FURYLMETHYL AND 2-THIENYL-METHYL)-N′-ALKYLAMINO]CYCLOALIPHATIC}CYANOBENZAMIDES

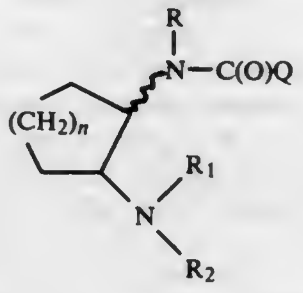
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 904,477, May 10, 1978, Pat. No. 4,148,914, which is a division of Ser. No. 741,467, Nov. 12, 1976, Pat. No. 4,098,904. This application Mar. 8, 1979, Ser. No. 18,550

Int. Cl.² A61K *31/34, 31/38;* C07D *307/54, 333/24*

U.S. Cl. 424—275 **6 Claims**

1. A compound of the formula



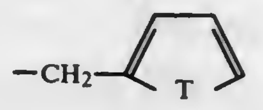
wherein the wavy line (~) at the 1-position of the cycloaliphatic ring denotes trans-stereoconfiguration of the 1-position substituent with respect to the substituent in position 2 of the same cycloaliphatic ring;

n is 1 to 8;

R is hydrogen or C_1 to C_3-alkyl;

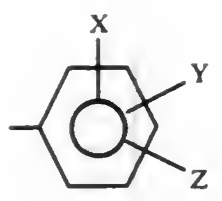
R_1 is C_1 to C_3-alkyl;

R_2 is a group of the formula



wherein T is —O— or —S—;

Q is the radical



wherein one of X, Y and Z is cyano and the remaining members of X, Y and Z are hydrogen, and the pharmaceutically acceptable salts thereof.

5. A method for alleviating pain in a warm blooded animal which comprises administering to the warm blooded animal suffering pain a compound of claim **1** in an amount effective to relieve the pain.

4,192,886
METHODS FOR TREATING GASTROINTESTINAL DISEASE

Richard G. Towlerton, Burton Joyce, England, and Michel Lapras, Ecully, France, assignors to Fisons Limited, London, England

Filed May 19, 1978, Ser. No. 907,558

Claims priority, application United Kingdom, Jun. 1, 1977, 23067/77; Aug. 12, 1977, 33847/77

Int. Cl.^{2} A61K *31/52, 31/42, 31/35*

U.S. Cl. 424—283 **17 Claims**

1. A method for curative treatment of a disease condition of the gastrointestinal tract, which condition has an infective, viral, or hypersensitive aetiology, in cattle or pigs, which comprises administering an active ingredient having sodium cromoglycate like activity to cattle or a pig suffering, from such a condition.

4,192,887
RUMINANT COCCIDIOSTATS

Grover D. Cloyd; Robert L. Miller, and Donald M. Lucas, all of Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Jun. 8, 1978, Ser. No. 913,767

Int. Cl.^{2} A61K *31/35*

U.S. Cl. 424—283 **4 Claims**

1. A method for combatting and controlling coccidiosis in ruminant animals which have been infected with coccidia parasites while at the same time improving the rate of weight gain per day of said animals which comprises orally administering to said animals in need thereof an effective amount of an agent selected from the group consisting of salinomycin, 4-methylsalinomycin, salts and esters thereof.

4,192,888
PHARMACEUTICAL COMPOSITIONS AND METHOD OF INHIBITING PHENYLETHANOLAMINE N-METHYLTRANSFERASE

William E. Bondinell, Cherry Hill, N.J., and Robert G. Pendleton, Philadelphia, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

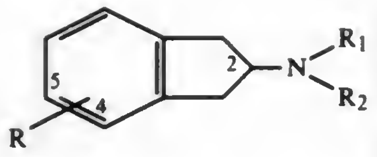
Filed Apr. 10, 1978, Ser. No. 894,664

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.^{2} A61K *31/18, 31/135*

U.S. Cl. 424—321 **5 Claims**

1. A method of inhibiting phenylethanolamine N-methyltransferase which comprises administering to an animal requiring said treatment an amount sufficient to produce said inhibition of a chemical compound of the formula:



in which:

- R is chloro, bromo, fluoro, iodo, trifluoromethyl, nitro, sulfamyl or methylthio with R being in either the 4 or 5 position; and
- R_1 and R_2 are hydrogen, methyl or ethyl.

4,192,889
RUMINANT FEEDS CONTAINING TRICHLOROETHYL ESTERS OF ESSENTIAL AMINO ACIDS

Frederic P. Hauck, Bridgewater, N.J.; Venkatachala L. Narayanan, Bethesda, Md.; Jeremiah J. O'Connor, Flemington, and Raymond R. Pilote, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 907,516, May 19, 1978. This application Jan. 8, 1979, Ser. No. 1,988

Int. Cl.^{2} A61K *31/24*

U.S. Cl. 424—309 **8 Claims**

1. An animal feed composition comprising a conventional basic animal feed and a growth promoting amount in the range of about 0.001% to 0.06% by weight of total feed of the trichloroethyl ester of phenylalanine or an acid addition salt thereof.

4,192,890
NOVEL BENZOYLPHENYLACETIC ACID ESTERS

André Allais, Les Lilas; Jean Meier, Coeuilly-Champigny, and Jacques Dube, Eaubonne, all of France, assignors to Roussel Uclaf, Paris, France

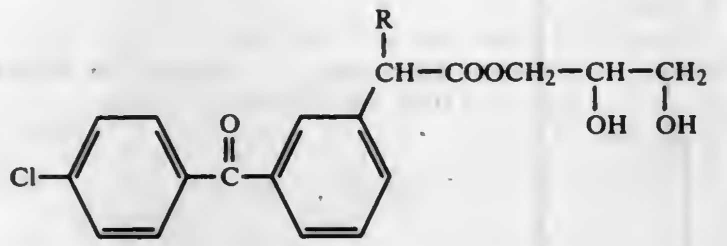
Continuation of Ser. No. 621,162, Oct. 9, 1975, abandoned, which is a continuation of Ser. No. 299,636, Oct. 20, 1972, abandoned, which is a division of Ser. No. 133,429, Apr. 12, 1971, Pat. No. 3,741,988. This application Feb. 28, 1979, Ser. No. 15,786

Claims priority, application France, Apr. 15, 1970, 70.13579; Sep. 24, 1970, 70.34591

Int. Cl.^{2} A61K *31/215;* **C07C** *69/95*

U.S. Cl. 424—308 **6 Claims**

1. A member of the group consisting of racemates and optically active isomers of benzoylphenylacetic acid esters of the formula



wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 7 carbon atoms, and each of the two benzene rings may be optionally substituted with a member of the group consisting of chlorine, fluorine, bromine, trifluoromethyl and alkyl and alkoxy and alkylthio of 1 to 7 carbon atoms in the alkyl portion.

5. An anti-inflammatory and analgesic composition comprising an effective amount of a compound of claim **1** and a pharmaceutical carrier.

6. A method of relieving pain and inflammation in warm-blooded animals which comprises administering to warm-blooded animals a safe and effective amount of a compound of claim **1**.

4,192,891
PROSTACYCLIN ANALOGS AND THEIR USE IN INHIBITION OF ARACHIDONIC ACID-INDUCED PLATELET AGGREGATION AND BRONCHOCONSTRICTION

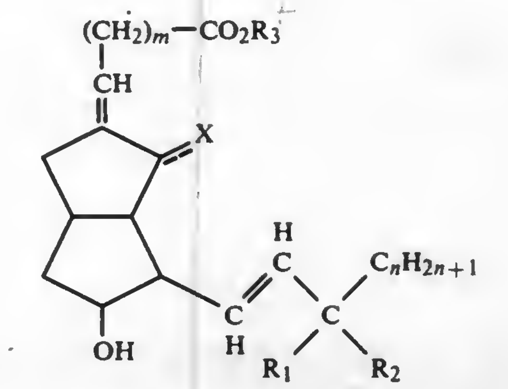
Martin F. Haslanger, Lambertville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 25, 1979, Ser. No. 33,368

Int. Cl.^{2} C07C *177/00, 69/38, 69/74*

U.S. Cl. 424—305 **22 Claims**

1. A compound of the structure



wherein==X represents =O or —OH, R_1 and R_2 are OH or H, provided at least one of R_1 and R_2 is other than hydroxyl, R_3 is hydrogen or lower alkyl containing 1 to 4 carbons, m is an integer of from 2 to 5, and n is an integer of from 2 to 10, and pharmaceutically acceptable salts thereof, and isomers thereof.

4,192,892
AROMATIC α-HYDROXYAMIDES WITH INSECT REPELLENT PROPERTIES

Walborg Thorsell, 45 Karlskronavagen, Johanneshov, Sweden (S-121 52); Maarja Mikiver, 46 Hagalundsgatan, Solna, Sweden (S-171 50); Elisabeth Malm, 8 Gaddvagen, Järfälla, Sweden (S-175 47), and Lennart Wennberg, 51 Rankhusvägen, Kungsängen, Sweden (S-196 31)

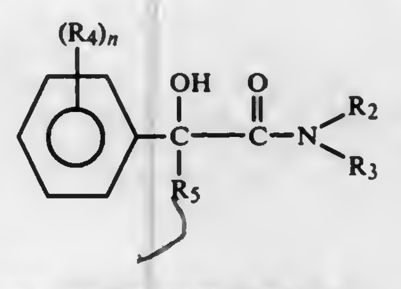
Continuation of Ser. No. 784,563, Apr. 4, 1977, abandoned. This application Jul. 19, 1978, Ser. No. 925,975

Claims priority, application Sweden, Apr. 6, 1976, 7604030

Int. Cl.^{2} A01N *9/20*

U.S. Cl. 424—324 **8 Claims**

1. An insect repellent composition comprising an effective amount of a compound present in the D-, L-, or DL-forms, having the general formula



(I)

wherein,

- n is an integer in the range from 0 to 3;
- R_2 and R_3 independently are selected from the group consisting of hydrogen, alkyl having from 1 to about 10 carbon atoms, and alkenyl having from two to about 10 carbon atoms;
- R_4 is selected from the group consisting of hydroxy, lower alkyl having from 1 to about 5 carbon atoms, and lower alkoxy having from 1 to about 5 carbon atoms; and,
- R_5 is selected from the group consisting of hydrogen, lower alkyl having from 1 to about 5 carbon atoms, and lower alkoxy having from 1 to about 5 carbon atoms.

4,192,893
ANTI-DEPRESSIVE COMPOUNDS

Hendricus B. A. Welle, Utrecht, and Volkert Claassen, Weesp, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

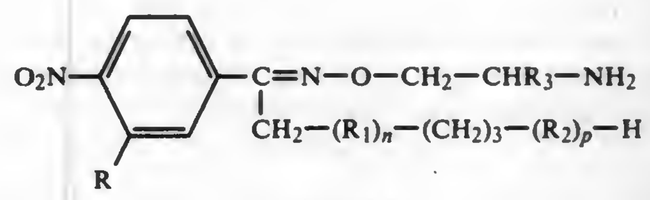
Continuation of Ser. No. 668,492, Mar. 19, 1976, abandoned. This application Dec. 12, 1977, Ser. No. 859,603

Claims priority, application Netherlands, Mar. 20, 1975, 7503307

Int. Cl.^{2} A61K *31/15;* **C07C** *131/00*

U.S. Cl. 424—327 **14 Claims**

1. Compounds of formula



and salts thereof with pharmaceutically acceptable acids, in which formula R is hydrogen, chlorine or methyl, R_1 is oxygen or sulphur, R_2 is OCH_2, CH_2OCH_2 or $OC_2H_4OCH_2$, R_3 is hydrgen or methyl, n and p have the value 0 or 1 and n+p is 0 or 1.

4,192,894
COMPOUND WITH DISINFECTANT ACTIVITY AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Claudio Botré; Franco Bolasco; Adriana Memoli, all of Rome, and Luigi Molteni, Malnate, all of Italy, assignors to Dr. L. Zambeletti S.p.A., Baranzate, Italy

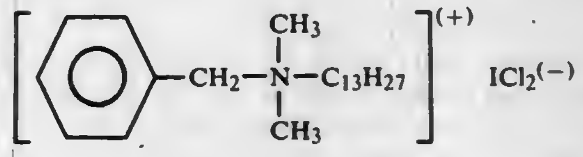
Filed Aug. 31, 1977, Ser. No. 829,586

Claims priority, application Italy, Aug. 7, 1977, 41006 A/77

Int. Cl.^{2} C07C *87/68;* **A01N** *9/16*

U.S. Cl. 424—329 **2 Claims**

1. Benzalkonium chloroiodite, a compound of the formula:



4,192,895
ANTIRHINOVIRUS AGENTS

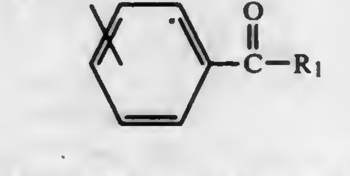
Roger A. Parker, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 751,140, Dec. 20, 1976, Pat. No. 4,122,191. This application Jul. 31, 1978, Ser. No. 929,256

Int. Cl.^{2} A61K *31/12, 31/11*

U.S. Cl. 424—331 **12 Claims**

1. A method for prophylaxis or treatment of a rhinovirus infection which comprises administering to a host susceptible to rhinovirus infection an antirhinovirus effective amount of a compound of the formula



wherein Y is a bond; R_1 is hydrogen or straight or branched lower alkyl having from 1 to 4 carbon atoms; and R is straight or branched saturated hydrocarbon having from 6 to 20 carbon atoms or straight or branched unsaturated hydrocarbon having from 6 to 20 carbon atoms and from 1 to 4 double bonds when

R has from 10 to 20 carbon atoms and 1 or 2 double bonds when R has from 6 to 9 carbon atoms.

4,192,896

METHOD OF USING DIALKYLPHENOLS IN THE TREATMENT OF MYCOPLASMA DISEASES

Byron E. Leach, deceased, late of Memphis, Tenn., and by Ellanor L. Leach, executrix, 1550 N. Parkway #115, Memphis, Tenn. 38112

Filed Mar. 23, 1979, Ser. No. 23,254

Int. Cl.^{2} A61K *31/05*

U.S. Cl. 424—346 **2 Claims**

1. A method of inhibiting the growth of *Mycoplasma pneumoniae* in an animal suffering therefrom, consisting essentially of administering to said animal to 2,4-dimethylphenol in a molar concentration in the range of about 10^{-5} to about 10^{-11}.

4,192,897

HEAT TREATMENT FOR SINGLE-CELL MATERIALS AND RESULTANT PRODUCTS

Shingo Kajinami, Naperville; Elmer J. Saunders, Downers Grove, and Philip G. Schnell, Wheaton, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 725,021, Sep. 20, 1976, abandoned. This application Apr. 29, 1977, Ser. No. 792,321

Int. Cl.^{2} C12B *1/00;* **A23J** *1/18*

U.S. Cl. 426—60 **26 Claims**

1. A process for treating whole single-cell protein cells consisting essentially of heating an aqueous slurry of the cells to a temperature of from about 215° to about 300° F. for a period of time of from about 30 seconds to about 25 minutes to deactivate invertase whereby heat treated whole cells are obtained having improved functional properties.

4,192,898

STABLE CLEAR LIQUID RELEASE AGENT AND METHOD FOR PREPARATION

Harold W. Hanson, Sr., Los Angeles, Calif., assignor to Par-Way Mfg Co., Los Angeles, Calif.

Continuation-in-part of Ser. No. 532,850, Dec. 16, 1974, abandoned, and a continuation of Ser. No. 621,309, Oct. 10, 1975, abandoned, and a continuation-in-part of Ser. No. 772,929, Feb. 28, 1977, Pat. No. 4,096,258. This application Jun. 16, 1978, Ser. No. 916,116

Int. Cl.^{2} A23D *5/00*

U.S. Cl. 426—250 **14 Claims**

1. A method for preparing a stable clear liquid release agent comprising a uniform liquid blend of fatty oils and Polysorbate 80, the method comprising the steps of heating and blending at a temperature of between about 65° C. and about 260° C. at least two fatty oils, said oils including a first oil selected from a group consisting of palm oil, coconut oil and palm kernel oil and mixtures thereof, said first oil being present in an amount of from about 15 to about 41 percent by weight of said blend, and a second oil selected from the group consisting of olive oil, cottonseed oil, peanut oil, sunflower seed oil, corn oil, herring oil, manhaden oil, pilchard oil, and fish liver oil and mixtures thereof, said second oil being present in an amount of from about 58 to about 84 percent by weight of said blend; further blending Polysorbate 80 at a temperature of between about 74° C. and 85° C. with said blend of first and second oils said Polysorbate 80 being present in an amount of from about 0.25 to about 2.0 percent by weight of said blend; chilling said blend of the first and second oils and said Polysorbate 80 to uniformly cool said blend to a temperature of between about 20° C. and about 25° C., working said chilled blend by high speed agitation to provide a clear liquid release agent and packaging said release agent with a CO_2 propellant in an amount of from about 3.0 to about 5.0 percent by weight of said blend.

4,192,899

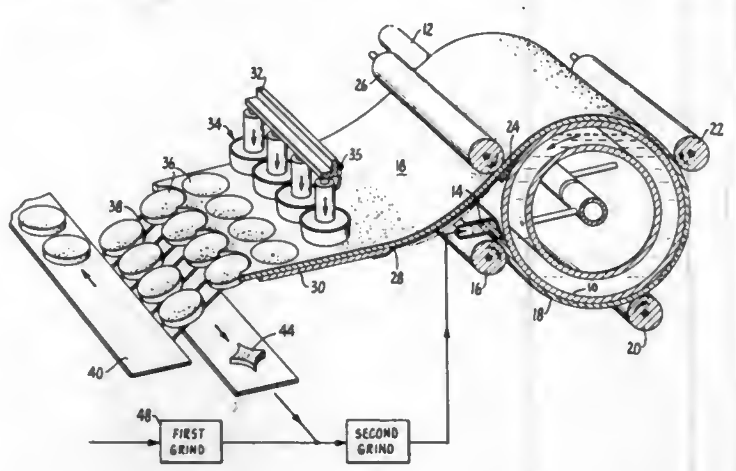
METHOD FOR FORMING FROZEN MEAT PATTIES

Eldon N. Roth, 1025 Tennessee St., San Francisco, Calif. 94107

Division of Ser. No. 778,492, Mar. 17, 1977, Pat. No. 4,138,768. This application Sep. 11, 1978, Ser. No. 941,304

Int. Cl.^{2} A23P *1/00*

U.S. Cl. 426—513 **7 Claims**



1. A method for forming a frozen patty of a ground meat product comprising the steps of:
- mixing together the components of the desired meat product;
- applying said product to the outer surface of a rotating refrigerated drum;
- compressing said applied product with at least one compression roll mounted on an axis parallel with the axis of said drum and spaced from the surface by a distance corresponding to the desired thickness of the patty to be formed;
- stripping the sheet of frozen meat product from the drum surface with a scraper bar mounted adjacent said surface;
- passing said sheet to a patty-forming table by continuously sliding said sheet to said table from the drum as the product is stripped from the drum; and,
- forming patties from the sheet of frozen meat product by actuating at least one bank of reciprocating cutters positioned across the path of said sheet and arranged to punch through the frozen meat product in said sheet.

4,192,900

TEXTURIZED STARCH PRODUCTS

Hsiung Cheng, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 12, 1978, Ser. No. 950,634

Int. Cl.^{2} A32L *1/187*

U.S. Cl. 426—579 **18 Claims**

1. In a retorted or aseptically packaged, tapioca-style pudding, the improvement comprising uniform starch particles obtained by

(a) preparing a dry homogeneous mixture of one or more starches selected from tapioca, corn, waxy maize, potato, sago, arrowroot and cereal; and one or more gelling hydrocolloids selected from sodium alginate, sodium pectate, hydroxypropylcellulose, methylcellulose, methylhydroxypropylcellulose, methylethylcellulose, carrageenan, furcellaran, agar, gelatin, a mixture of xanthan gum and locust bean gum, and curdlan;
(b) adding water and mixing until smooth;
(c) cool extruding the mixture through a 1/32 to ¼ inch hole die and cutting to produce starch particles;
(d) where the gelling hydrocolloid selected is sodium alginate or sodium pectate, soaking the starch particles in a solution of calcium, barium, or magnesium ions;
(e) drying the starch particles to a moisture content of from 1 to 12%; and
(f) screening the starch particles to pass No. 10 and be retained by No. 14, U.S. Standard Sieve Series;

said starch particles having heat and shear stability during processing for retorting or aseptic packaging, yet swelling without dissolving during said processing to produce a tapioca-style pudding of improved tapioca-like appearance and texture.

4,192,901

MILK-CONTAINING ACID SYRUP

Mutsuo Yasumatsu; Shinichi Shoji; Koichi Sakamoto; Takao Kurihara, all of Tokyo; Takeshi Terabayashi, Misato, and Kasutaka Ohmura, Kashiwa, all of Japan, assignors to Calpis Shokuhin Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1977, Ser. No. 864,874

Int. Cl.^{2} A23C *3/02, 9/10, 9/12*

U.S. Cl. 426—580 **20 Claims**

1. A method for the manufacture of a milk-containing acid syrup, which method comprises adding sugar in the amount of from 20 to 52 w/w% to an acidified milk satisfying the conditions:

$$0.85 \leqq x \leqq 2.55$$

$$y \leqq -0.27x + 4.15$$

(wherein, x stands for the casein content in said acidified milk (w/w%) and y for the pH value of the acidified milk) and subjecting the sugar-added acidified milk to an ultra-high temperature heating at 100° C. to 160° C.

4,192,902

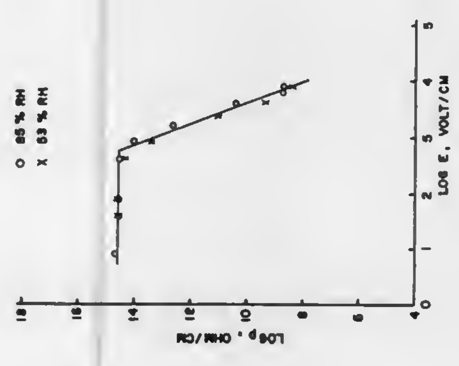
IN SITU COATING THEN SPRAY DRYING OF MAGNETIC TONER

Chin H. Lu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1977, Ser. No. 792,635

Int. Cl.^{2} B05D *5/12*

U.S. Cl. 427—127 **26 Claims**



1. A process of making a field dependent toner having a resistivity greater than 10^{12} ohm-cm at fields less than 100 volts/cm and less than 10^{12} ohm-cm at fields greater than 100 volts/cm comprising applying a surfactant to magnetic pigment particles, the surfactant being present on the magnetic pigment in an amount of from about 0.1 to 10 percent by weight of the magnetic pigment, spray drying a dispersion of the thus coated magnetic pigment particle in a solution of a resin in a solvent and recovering the toner particles thus formed.

7. A process of making a field dependent toner having a resistivity greater than 10^{12} ohm-cm at fields less than 100 volt/cm and less than 10^{12} ohm-cm at fields greater than 100 volt/cm comprising forming a dispersion of surfactant and magnetic particles in a solvent, heating to reflux, adding a solution of resin and solvent, spray drying and recovering toner particles, the surfactant being present as a coating on the magnetic pigment in the amount of from between about 0.1 and 10 percent by weight based on the weight of the magnetic pigment.

4,192,903

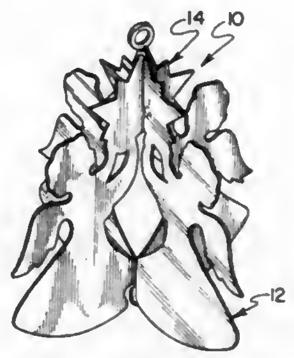
TWO PIECE ORNAMENT

Joseph A. Tremblay, Riverside, R.I., assignor to The Lorac Company, Providence, R.I.

Filed Oct. 2, 1978, Ser. No. 948,769

Int. Cl.^{2} A47G *33/08*

U.S. Cl. 428—8 **10 Claims**



1. An ornament comprising first and second sheets having opposed substantially planar surfaces, each said sheet having a peripherally defined ornamental outline, said first sheet including a vertically orientated continuous slot disposed relative thereto so as to divide said first sheet into laterally opposite sides, said slot further respectively terminating at upper and lower ends thereof in upper and lower connecting bridges each in turn including a lower edge, said bridges in turn connecting said opposite sides of said first sheet together, said second sheet also having laterally opposite sides disposed to both sides of a vertically orientated second sheet portion in turn respectively terminating at upper and lower opposite ends thereof in upper and lower pockets, an adjacent portion of said lower pocket of said second sheet being a hook or finger extension means, each of said pockets having a lead-in opening and a base seat disposed vertically below at least the uppermost surface portions of its corresponding lead-in opening, at least one of said base seats adapted to receive and support the lower edge of said corresponding bridge of said first sheet, the length of said slot being greater than the distance between the uppermost surfaces of said lead in openings and the distance between said base seats being equal to or greater than the distance between the lower edges of said first sheet bridges, said sheets adapted for disposition substantially at right angles to each other along a juncture line formed by the intersection of said slot and said second sheet portion such that said respective opposite sides of said sheets radiate outwardly from said juncture line when said sheets are interconnected with said first sheet supported by said second sheet.

4,192,904

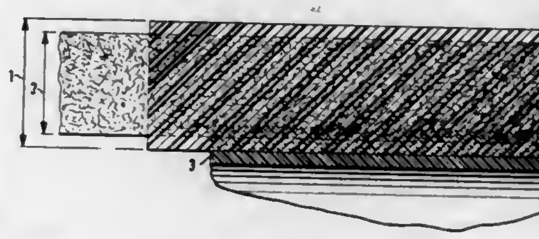
TUBULAR PACKAGING MATERIAL

Günter Gerigk, Oberursel; Wolfgang Klendauer, Wiesbaden; Horst Pietruck, Schwabenheim, and Klaus-Dieter Hammer, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 669,811, Mar. 24, 1976, abandoned. This application Jan. 26, 1978, Ser. No. 872,696

Int. Cl.^{2} B32B *27/06, 23/04*

U.S. Cl. 428—36 **3 Claims**



1. A tube based on regenerated cellulose containing a portion of water and plasticizer and having on its surface a coating composed of a mixture of a first and a second copolymer in a ratio of 1:1 to 4:1, the first copolymer consisting of 90 percent

by weight of vinylidene chloride, 1 percent by weight of acrylic acid, and 9 percent by weight of acrylic acid methyl ester, and the second copolymer consisting of 85 percent by weight of vinylidene chloride, 2 percent by weight of acrylic acid, 6 percent by weight of acrylic acid methyl ester, and 7 percent by weight of acrylic acid butyl ester.

4,192,905
IMITATION BEVEL EDGING

Thomas P. Scheibal, 407 Francisco St., San Francisco, Calif. 94133

Filed Aug. 5, 1977, Ser. No. 822,314
Int. Cl.^{2} B29D *11/00;* **B32B** *7/12, 17/10*
U.S. Cl. 428—80 **18 Claims**

1. A simulated bevel edge for the surface of a sheet body and the like, comprising:
- a transparent elongated strip of polymeric material having a surface adapted for mounting on a sheet body adjacent the periphery of a designated area thereof, and adhesion means for securing said strip in place,
- said strip having an opposite surface disposed at an acute angle to said first named surface,
- whereby incident or transmitted light is reflected or refracted in such manner that the area of said sheet body covered by said strip appears to be beveled with respect to the inward adjacent area of said sheet body.

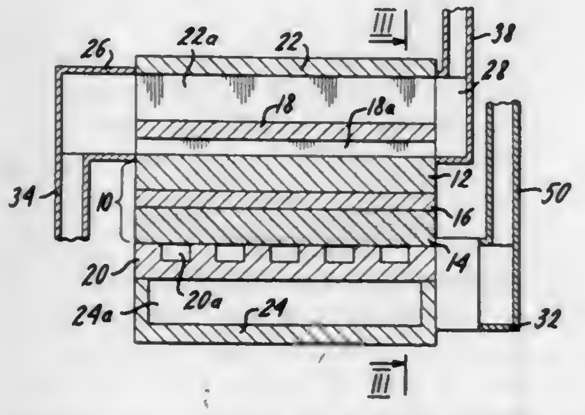
3. A simulated bevel edge as claimed in claim 1, and wherein said sheet body is a mirror.

4. A simulated bevel edge as claimed in claim 3, and wherein said opposite surface of said strip is reflective to a degree approximating the reflectivity of said mirror.

4,192,906
ELECTROCHEMICAL CELL OPERATION AND SYSTEM

Hansraj C. Maru, Brookfield Center, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Jul. 10, 1978, Ser. No. 923,368
Int. Cl.^{2} H01M *8/04*
U.S. Cl. 429—13 **17 Claims**



1. A method for operating an electrochemical cell to produce electrical energy from an electrochemical reaction wherein a gas is supplied from a gas supply to a flow passage in said cell in communication with the cell electrolyte, including the steps of:
- (a) setting a gas flow level through said cell for gas conducted through such electrolyte-communicative passage in accordance with predetermined electrical energy to be produced by said cell;
- (b) establishing a further flow passage for gas from said supply through said cell isolated from said electrolyte and in thermal communication with a heat-generating surface of said cell; and
- (c) setting a gas flow level through said cell for gas conducted through such electrolyte-isolated passage to obtain a predetermined operating temperature range for said cell.

4,192,907
ELECTROCHEMICAL CELL ELECTRODES INCORPORATING NOBLE METAL-BASE METAL ALLOY CATALYSTS

Vinod M. Jalan, Manchester; Douglas A. Landsman, and John M. Lee, both of West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

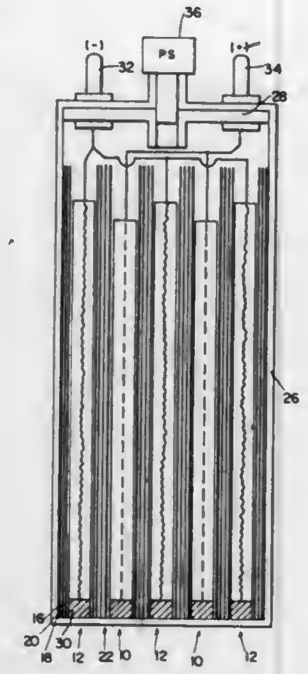
Filed Jul. 3, 1978, Ser. No. 922,003
Int. Cl.^{2} H01M *8/08*
U.S. Cl. 429—40 **10 Claims**

1. A fuel cell including phosphoric acid electrolyte and a cathode electrode, said electrode comprising an electrically conductive substrate and a layer of catalyst disposed on said substrate, said catalyst comprising a finely divided platinum-base metal alloy supported on conductive particles, said alloy having a catalytic activity for the reduction of oxygen greater than the catalytic activity of supported platinum in unalloyed form, and a surface area of at least 30 m^2/g of platinum in the alloy.

4,192,908
MASS-TRANSPORT SEPARATOR FOR ALKALINE NICKEL-ZINC CELLS AND CELL

Albert Himy, University Park, Md., and Otto C. Wagner, Long Branch, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 15, 1979, Ser. No. 48,878
Int. Cl.^{2} H01M *2/12*
U.S. Cl. 429—53 **27 Claims**



1. A mass-transport separator for fully vented alkaline nickelzinc cells comprising
- (1) a barrier layer comprising a microporous polyolifin membrane which is coated with a layer of from 50 Å to 1000 Å of a low hydrogen overpotential material having a hydrogen overpotential in alkaline solution lower than that of zinc;
- (2) two protective layers comprising microporous polyolifin membranes;
- the barrier layer being sandwiched between and in contact with the two protective layers.

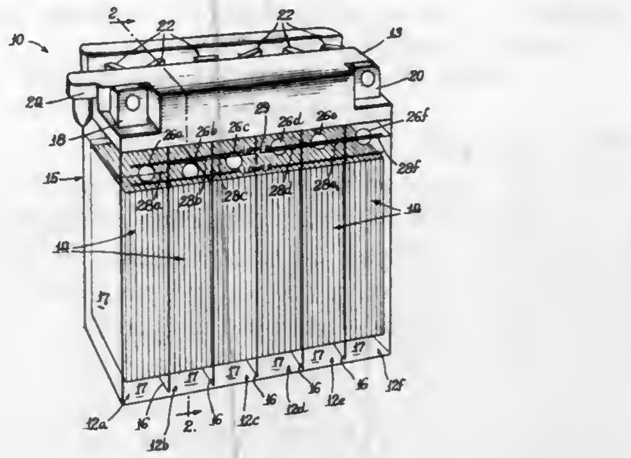
19. A sealed alkaline nickel-zinc cell which comprises:
- A. a nickel-nickel hydroxide cathode;
- B. a zinc-zinc oxide anode;
- C. a mass-transport separator comprising:
  - (1) a barrier layer comprising:
    - (a) a microporous polyolifin membrane which is coated with a layer of from 50 Å to 1000 Å of low hydrogen overpotential material having a hydrogen overpotential in alkaline solution lower than that of zinc, and
    - (b) a semipermeable active layer of hydroxyl-containing polymer covering the layer of low hydrogen overpotential material;

  - (2) two protective layers comprising microporous polyolifin membranes,
  - the barrier layer being sandwiched between the two protective layers;
- D. an alkaline electrolyte;
- E. means for terminating the charging of the cell when the internal gas pressure of the cell reaches a preselected value; and
- F. means for venting the cell if the internal gas pressure reaches a preselected value above that at which the charging of the cell is terminated.

4,192,909
MOTORCYCLE BATTERY INDICATOR

Kenneth W. McElroy, 611 Bradley Dr., Bloomington, Ill. 61701

Filed Jun. 16, 1978, Ser. No. 916,142
Int. Cl.^{2} H01M *10/48*
U.S. Cl. 429—91 **8 Claims**



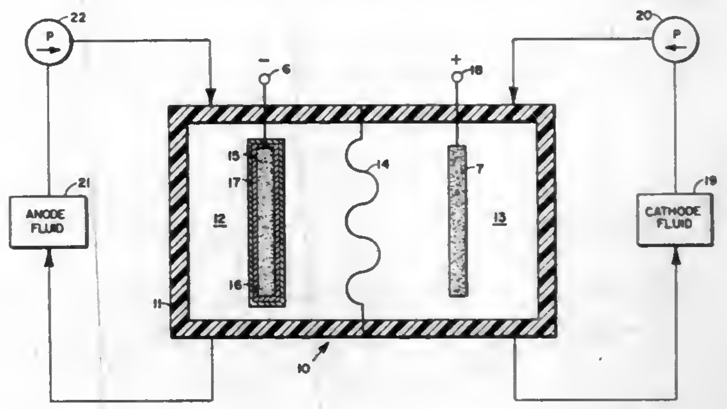
1. A storage battery for motorcycles comprising a plurality of storage cells, each of said cells containing an electrolyte having a specific gravity dependent upon the charge level of the associated cell, each of said cells having a solid, visible and movable mass, with a specific gravity greater than the specific gravity of said electrolyte when said cell is fully discharged, for floating in said electrolyte so that the mass floats toward the bottom of the cell as either the cell charge level or electrolyte level drops; said battery having a lower casing and a top portion attached to said lower casing and each of said cells having a plurality of plates; said lower casing having a transparent wall portion so that the location of said mass within the cell may be visually inspected; said plurality of masses being physically confined only by said top portion, said lower casing transparent portion and said plates so that each movable mass feely moves within a cell so that as the charge level or electrolyte level of a cell drops, the mass associated with the cell floats down toward the plates of that cell; each of said masses being of a sufficient size to rest on said plates without falling therebetween.

4,192,910
CATALYST SURFACES FOR THE CHROMOUS/CHROMIC REDOX COUPLE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Jose D. Giner, and Kathleen J. Cahill, both of Waltham, Mass.

Filed Nov. 29, 1978, Ser. No. 964,754
Int. Cl.^{2} H01M *8/18*
U.S. Cl. 429—101 **14 Claims**

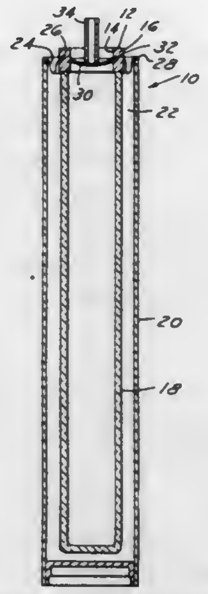
1. A REDOX cell having first and second chambers separated by an ion permeable membrane; an anode fluid in the first chamber; and
- a cathode fluid in the second chamber;
- an anode electrode in said first chamber, said electrode being electrically conductive but inert with respect to the anode fluid;
- a cathode electrode in said second chamber, said electrode being electrically conductive but inert with respect to the cathode fluid, said anode fluid having lead chloride salt dissolved therein whereby lead is plated onto the anode electrode when the cell is initially charged.



4,192,911
SODIUM SULFUR BATTERY SEAL

Armenag Topouzian, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 1, 1978, Ser. No. 956,758
Int. Cl.^{2} H01M *2/00*
U.S. Cl. 429—104 **4 Claims**



1. In a sodium sulfur battery an improved seal for sealing against a ceramic member which acts as a separator between an anode compartment and a cathode compartment, which improved seal includes the following structure:
- an outer metal can member of circular cross section having an open end;
- a ring-shaped flexible diaphragm seal having an inner circumferential edge and an outer circumferential edge, said flexible diaphragm seal having a generally "U" shaped cross section between its circumferential edges to provide resiliency thereto, said outer circumferential edge of said flexible diaphragm being bonded in a gas tight relationship to said open end of said outer can member;
- a ring-shaped ceramic member having a smooth, inner facing surface and a smooth, outer facing surface, said inner circumferential edge of said flexible diaphragm seal being slightly less in diameter than the diameter of said outer facing surface of said ring-shaped ceramic member whereby said inner circumferential edge of said flexible diaphragm forms an interference fit with said smooth, outer facing surface of said ring-shaped ceramic member to provide a gas tight seal therebetween; and
- a disc-shaped inner flexible diaphragm seal having a curved

cross section and an outer diameter slightly greater in diameter than the diameter of said smooth, inner facing surface of said ring-shaped ceramic member whereby said outer circumferential edge of said inner flexible diaphragm forms an interference fit with said smooth, inner facing surface of said ring-shaped ceramic member to provide a gas tight seal therebetween.

4,192,912

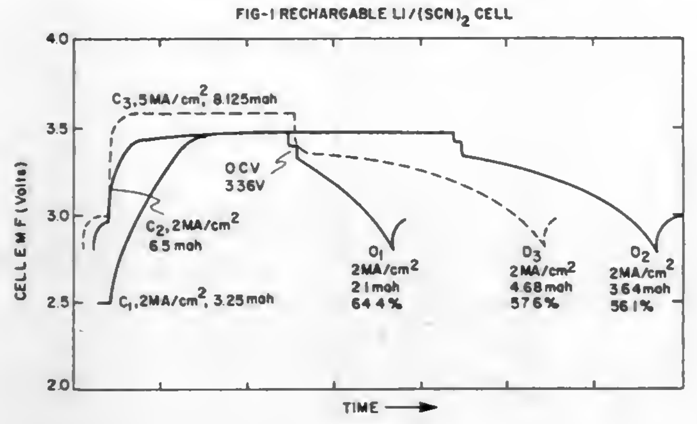
CELLS HAVING CATHODES WITH THIOCYANOGEN-CONTAINING CATHODE-ACTIVE MATERIALS

Bhaskara M. L. Rao, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 1, 1979, Ser. No. 16,503

Int. Cl.^{2} H01M *6/16*

U.S. Cl. 429—105 **10 Claims**



1. An electric current-producing cell, comprising:

(a) an anode having as its anode-active material one or more metals higher than hydrogen in the electromotive series and having an atomic number no greater than 30;

(b) a cathode having as its cathode-active material one or more materials containing thiocyanogen, said materials being selected from the group consisting of:

(i) thiocyanogen of the formula:

$(SCN)_2$;

(ii) parathiocyanogen of the formula:

$(SCN)_x$

wherein x is greater than 2;

(iii) halothiocyanogen of the formula:

YSCN

wherein Y is a halogen selected from the group consisting of F, Cl, Br and I;

(iv) parahalothiocyanogen of the formula:

$(YSCN)_y$

wherein Y is as described above and wherein y is equal to or greater than 2;

(v) perthiocyanogen complex of an amine;

(vi) perthiocyanogen complex of ammonium cation;

(vii) thiocyanogen complex of a metal cation which is the same as the metal cation in the anode;

(viii) thiocyanogen complex of a metal cation which is higher in the electromotive series than the metal cation in the anode;

(ix) cathode intercalated material having halothiocyanogen of paragraph (iii) above intercalated therein;

(x) cathode intercalated material having parahalothiocyanogen of paragraph (iv) above intercalated therein;

(xi) polymeric thiocyanogen-containing material obtained from oxidation of a polyvinyl thiocyanate;

(xii) ammonium thiocyanate salt complex of thiocyanogen of paragraph (i) above;

(xiii) ammonium thiocyanate salt complex of parathiocyanogen of paragraph (ii) above;

(xiv) ammonium thiocyanate salt complex of halothiocyanogen of paragraph (iii) above; and

(xv) ammonium thiocyanate salt complex of parahalothiocyanogen of paragraph (iv) above; and

(c) an electrolyte which is chemically inert with respect to said anode and said cathode and which permits the migration of ions between anode and said cathode.

4,192,913

DEFERRED ACTION BATTERY HAVING AN IMPROVED DEPOLARIZER

Ralph F. Koontz, and Lloyd E. Klein, both of Fort Wayne, Ind., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Nov. 27, 1978, Ser. No. 963,718

Int. Cl.^{2} H01M *4/36*

U.S. Cl. 429—119 **11 Claims**

1. A deferred action seawater activated battery having an anode selected from the group consisting essentially of magnesium, aluminum and zinc, the improvement comprising a cathode depolarizer having a conductive metal grid and coated with cuprous thiocyanate, sulphur and carbon.

4,192,914

LONG-LIFE ALKALINE PRIMARY BATTERY

Paul Rüetschi, Yverdon, Switzerland, assignor to Leclanche S.A., Yverdon, Switzerland

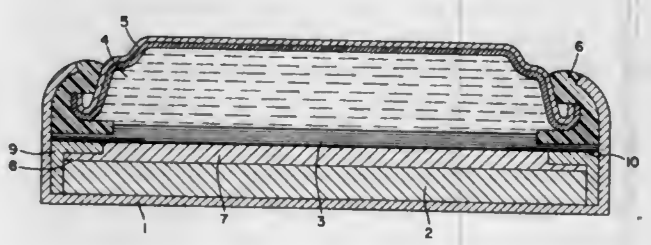
Filed Oct. 25, 1978, Ser. No. 954,577

Claims priority, application Switzerland, Apr. 30, 1976, 5477/76

The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.

Int. Cl.^{2} H01M *6/04*

U.S. Cl. 429—206 **6 Claims**



1. In an alkaline primary battery of the type having a negative electrode containing cadmium or amalgamated zinc and a positive electrode containing an oxide of the group monovalent silver oxide, mercuric oxide and mixtures of these oxides with manganese dioxide, the positive electrode having an electrochemically active surface area facing said negative electrode, comprising at least one electrically conductive, microporous, electrolyte-saturated, optically opaque filter electrode which is designed such as to hinder effectively the diffusion of dissolved silver oxide and mercuric oxide in the electrolyte and has for this purpose a thickness of 0.1 to 2.00 mm, said filter electrode containing electrically conductive material which is not corroded, oxidized, nor dissolved in alkali electrolytes at the given potential of said positive electrode and is in electrical contact with said positive electrode.

4,192,915

ANTHRACYCLINE GLYCOSIDES FROM STREPTOMYCES

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Masa Hamada, Hoya; Masaaki Ishizuka; Hiroshi Naganawa, both of Tokyo; Toshikazu Oki, Kamakura, and Taiji Inui, Chigasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 823,052, Aug. 9, 1977, Pat. No. 4,127,714. This application Apr. 20, 1978, Ser. No. 898,065

Claims priority, application Japan, Aug. 16, 1976, 51/98113

Int. Cl.^{2} C12D *9/14*

U.S. Cl. 435—78 **2 Claims**

1. A process for producing rhodirubin A which comprises cultivating a rhodirubin A producing strain of Streptomyces selected from the group consisting of *Streptomyces sp.* ME 505-HEI (ATCC 31273, FERM P-3667), *Streptomyces galilaeus* MA 144-M(ATCC 31133, FERM P-3667), (ATCC 14969), *Streptomyces cinereoruber* (ATCC 19740), *Streptomyces niveoruber* (ATCC 14971), *Streptomyces antibiotics* (ATCC 8663) and *Streptomyces purpurascens* (ATCC 25489) in an aqueous nutrient medium under submerged aerobic conditions until a substantial amount of rhodirubin A is produced by said organism in said culture medium and recovering the rhodirubin A from the culture medium substantially free of substances co-produced therewith.

2. A process for producing rhodirubin B which comprises cultivating a rhodirubin B-producing strain of Streptomyces selected from the group consisting of *Streptomyces sp.* ME 505-HEI (ATCC 31273, FERM P-3667), *Streptomyces galilaeus* MA 144-M (ATCC 31133, FERM P-3667), *Streptomyces galilaeus* (ATCC 14969), *Streptomyces cinereoruber* (ATCC 19740), *Streptomyces niveoruber* (ATCC 14971), *Streptomyces antibioticus* (ATCC 8663) and *Streptomyces purpurascens* (ATCC 25489) in an aqueous nutrient medium under submerged aerobic conditions until a substantial amount of rhodirubin B is produced by said organism in said culture medium and recovering the rhodirubin B from the culture medium substantially free of substances co-produced therewith.

4,192,916

PROCESS FOR PRODUCING DEFATTED HEPARIN TISSUE FOR HEPARIN PRODUCTION

William E. Melby; Charles E. Isdale, Sr., and Vernon K. Collins, all of Champaign, Ill., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 743,385, Nov. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 627,625, Oct. 31, 1975, abandoned. This application Apr. 5, 1978, Ser. No. 893,651

The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.

Int. Cl.^{2} C12B *1/00;* C08B *37/10*

U.S. Cl. 435—274 **11 Claims**

1. A process for producing a defatted heparin tissue from frozen heparin-bearing animal lung tissue without addition of water, preservatives or enzymes in preparation for isolation of heparin and to maximize heparin availability which comprises the steps of

(1) particulating the frozen tissue,

(2) thawing the particulated tissue from step 1 in a heat exchanger and warming said tissue without added water or preservative to 60°-85° F. within 2 to 30 minutes using heat exchanger surfaces which do not exceed 140° F.,

(3) fermenting the warmed tissue from step 2 without added water or preservatives by spontaneous action of enzymes and bacteria endogenous to the tissue, no additonal enzymes or bacteria being added, by holding said tissue at a controlled temperature of 60°-85° F. for a period of time of 5-12 hours to substantially effect conditioning of said tissue to improve heparin availability, endogenous bacteria being allowed to grow without inhibition during said period of time, and

(4) subjecting the fermented tissue from step 3 to azeotropic distillation processing with a suitable solvent to substantially dehydrate and defat said fermented tissue.

4,192,917

PROCESS FOR ROSETTING HUMAN B LYMPHOCYTES WITH RHESUS MONKEY ERYTHROCYTE

Vincent R. Zurawski, Jr., North Reading, Mass., assignor to Massachusetts General Hospital, Boston, Mass.

Filed Apr. 5, 1979, Ser. No. 27,307

Int. Cl.^{2} C12N *7/04;* A61K *39/00*

U.S. Cl. 435—236 **11 Claims**

1. The process for separating activated animal B lymphocytes that produce immunoglobulin from immunologically inactivate animal cells which comprises:

(a) exposing animal lymphocyte cells to a stimulation agent selected from the group consisting of a polyclonal activator, an antigen and T cell products induced by an antigen or a polyclonal activator which products normally induce B-cells to produce an antibody;

(b) incubating said cells exposed to said stimulation agent in order to induce at least some of the B lymophocyte cells of said stimulated cells to form a surface marker that binds with Rhesus monkey erythrocytes;

(c) contacting said stimulated cells with Rhesus monkey erythrocytes to effect binding thereof with said cells having said surface marker; and

(d) separating said cells bound to said erythrocytes from cells not bound with said erythrocyte.

4,192,918

PRODUCTION OF BAKER'S YEAST FROM ACID WHEY

Thomas L. Stineman; Jeffrey D. Edwards, both of Cincinnati, Ohio, and Jack C. Grosskopf, Wheaton, Ill., assignors to The Kroger Co., Cincinnati, Ohio

Filed Nov. 30, 1978, Ser. No. 964,990

Int. Cl.^{2} C12N *1/18;* C12C *11/08*

U.S. Cl. 435—256 **9 Claims**

1. A process for treating acid whey liquid which contains suspended solids, proteins, lactose and water from the manufacture of fresh cheeses to reduce the organic nutrient content thereof, said process comprising the steps of:

(a) clarifying acid whey liquid to remove any suspended cheese particles contained therein and separating the thus-removed particles;

(b) filtering the clarified liquid and separating any remaining protein, leaving an acid whey substantially completely devoid of proteins and suspended solids;

(c) subjecting the acid whey liquid from step (b) to hydrolysis conditions thereby converting the lactose disaccharide present in the whey liquid into the corresponding glucose and galactose monosaccharides;

(d) sterilizing the acid whey liquid of step (c);

(e) adjusting the pH of the sterile liquid to about pH 5 then inoculating the sterile liquid with a culture of *Saccharomyces cerevisiae* yeast and maintaining the thus-inoculated liquid under yeast growth conditions at a temperature of about 28° C. to about 32° C. for a period of time until the glucose and galactose are substantially completely consumed by the yeast growth; and

(f) separating and removing the yeast produced in step (e) and discharging the remaining liquid.

4,192,919

BLOOD SAMPLING AND CULTURING KIT

Srinivas T. Raghavachari, Chicago, Ill., assignor to MPL, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 797,841, May 17, 1977, abandoned. This application Jul. 18, 1977, Ser. No. 816,371

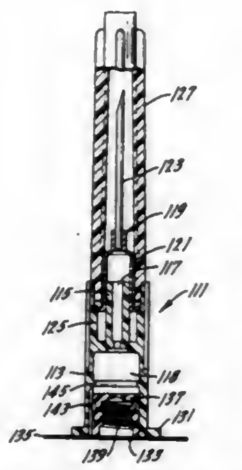
Int. Cl.^{2} A61M *5/315*

U.S. Cl. 435—292 **7 Claims**

1. A vent control device for use with a blood culture bottle

containing a culture medium and having a pierceable stopper sealing the bottle through which a blood sample may be injected, the vent control device including:

- a tubular housing having a central bore with an opening at each end thereof,
- a cannula connected to one end of the housing and projecting outwardly of the housing, for connecting the vent control device to the interior of the bottle by piercing the bottle stopper without exposing the bottle contents to atmospheric contamination, and
- a vent control element closing the opening at the opposite end of the housing, the vent control element including a thin sheet of an air permeable sterile filter material releasably adhered to the housing to permit removal thereof for subsequent subculturing.



4,192,920
UNIFORM POLYMER BEADS AND ION EXCHANGE RESINS THEREFROM PREPARED BY POST-CROSSLINKING OF LIGHTLY CROSSLINKED BEADS

David R. Amick, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 24, 1978, Ser. No. 927,195

Int. Cl.^{2} B01J *1/22;* **C08F** *212/36;* **C08J** *3/24;* **C08F** *212/10*

U.S. Cl. 521—31 **12 Claims**

1. A strong base anion exchange resin produced by lightly crosslinking vinylaromatic polymer beads containing about 0.8–2.0 chloromethyl groups per aromatic nucleus, swelling the beads in an organic solvent post-crosslinking said lightly crosslinked swollen beads by reactive contact with a Friedel-Crafts catalyst, and aminating with a tertiary amine, wherein said lightly crosslinked polymer beads are formed by hydrolyzing said vinylaromatic polymer beads and heating said hydrolyzed beads in aqueous dispersion in the presence of a free radical initiator to obtain up to about 20% crosslinking.

4,192,921
CROSSLINKED GEL ION EXCHANGE RESIN BEADS CHARACTERIZED BY STRAIN BIREFRINGENCE PATTERNS

Mark J. Dales, Southampton, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

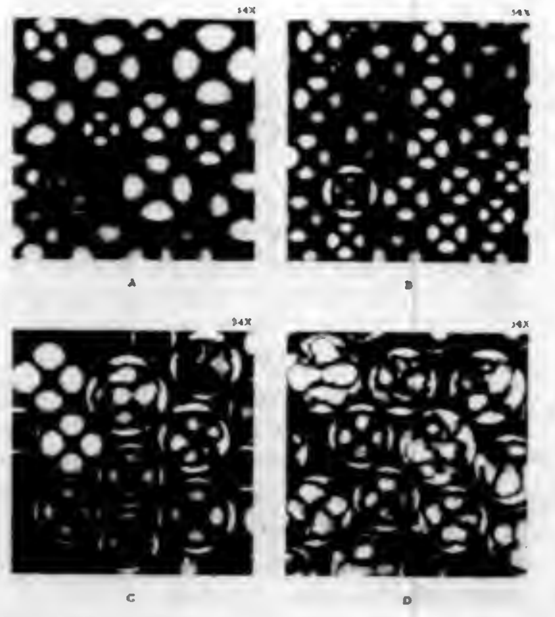
Filed Dec. 28, 1977, Ser. No. 865,273

Int. Cl.^{2} C08F *00/00;* **B01D** *15/04*

U.S. Cl. 521—38 **33 Claims**

1. Ion exchange resin bead having high perfect bead count, improved mechanical strength and resistance to swelling pressures comprising functionalized crosslinked gel copolymer beads of a minor amount of a polyvinyl aromatic hydrocarbon monomer, up to 5 mole percent of a non-aromatic monomer and the remainder a monovinyl aromatic hydrocarbon monomer, said beads having a birefringence pattern corresponding substantially to at least one of FIG. IA, B, C or D when the beads are cationic and swollen in water and corresponding substantially to at least one of FIGS. IIIA, B or C when the beads are anionic and swollen to equilibrium in ethanol, said beads further having a Chatillon value of greater than 900 g/bead in the case of a cationic resin and greater than 600 g/bead in the case of an anionic resin.

18. In the process of preparing hard, crosslinked, discrete copolymer beads by the free-radical polymerization in an aqueous dispersion of a monomer mixture comprised of about 80–99% by weight of the mixture of monovinyl aromatic monomer and about 1–20% by weight of the mixture of a crosslinking monomer having at least two active vinyl groups, the improvement which comprises conducting the polymerization reaction at a temperature within the range of about 30°–95° C. with oxygen in contact with or dissolved in the monomer mixture, or a combination of both.



4,192,922
FINELY DIVIDED EXPANDABLE STYRENE POLYMERS

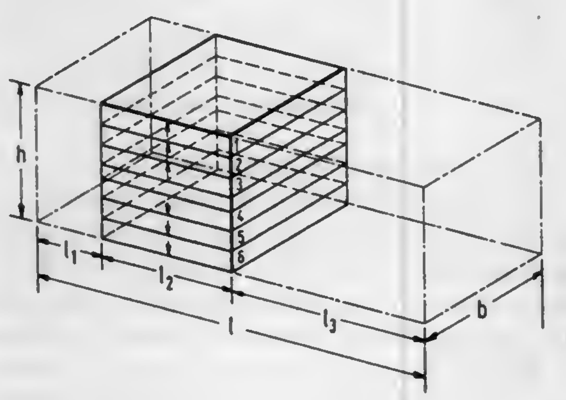
Johann Mixich, and Horst Jastrow, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,275

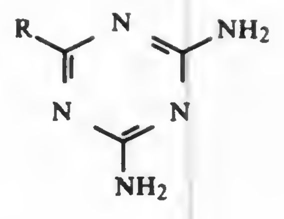
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807710

Int. Cl.^{2} C08J *9/18, 9/20*

U.S. Cl. 521—56 **2 Claims**



1. Foamable particles of a styrene homo- or copolymer containing an expanding agent and a flameproofing organic halogen compound, which comprise in addition from 0.0001 to 0.1, preferably 0.001 to 0.05, % by weight, relative to the polymer, of a 2,4-diamino-1,3,5-triazine derivative of the formula



in which

R is an alkyl radical having from 1 to 20, preferably 4 to 15, carbon atoms, where optionally a H atom in ω-position is substituted by a 2,4-diamino-1,3,5-triazine-6-yl radical; or a cycloalkyl radical having from 5 to 12 carbon atoms, or a cycloalkyl-alkyl or alkyl-cycloalkyl radical having from 6 to 13 carbon atoms, or an aryl radical having from 5 to 12, preferably 6 to 12, carbon atoms; or an alkylaryl or aralkyl radical having from 6 to 13, preferably 7 to 13, carbon atoms.

4,192,923
AMINO RESIN FOAM, ONE-PHASE SOLUTION FOAM PRECURSOR AND METHOD OF PRODUCING FOAM

Edward G. Tajkowski, Williamsville, N.Y., assignor to Allied Chemical Corporation, Morristown, N.J.

Filed Oct. 27, 1978, Ser. No. 955,439

Int. Cl.^{2} C08J *9/30*

U.S. Cl. 521—117 **14 Claims**

1. A one-phase solution capable of exothermic reaction to form an amino resin foam consisting essentially of:

(a) from about 2 to about 20% by methylene chloride by weight of resin solids;
(b) from about 10 to about 40% propylene glycol by weight of resin solids;
(c) from about 30 to about 56% formaldehyde by weight of resin solids;
(d) from about 35 to about 59% by weight urea by weight of resin solids;
(e) from 0 to about 14% melamine by weight of resin solids;
(f) from 0 to about 25% water by weight of composition; and
(g) an acidic catalyst which promotes the reaction of urea and formaldehyde and which is soluble in said solution in an amount sufficient to lower the pH of the solution to below about 3.

4,192,924
METHOD OF FOAMING CURABLE ORGANIC RESIN COMPOSITIONS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 962,997, Nov. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 861,127, Dec. 16, 1977. This application Apr. 30, 1979, Ser. No. 34,372

Int. Cl.^{2} C08J *9/14*

U.S. Cl. 521—126 **3 Claims**

1. A foaming method which comprises

(1) agitating a curable composition comprising,
  (E) a cationically polymerizable organic material,
  (F) 1% to 35% by weight of the curable composition of a mixture of
    (vii) a diaryliodonium salt of the formula,

$$[(R)_a(R^1)_bI]^+[Y]^-,$$

    (viii) 0.5 part to 10 parts, per part of (vii), of a member selected from the class consisting of ascorbic acid, an ascorbic acid derivative, an Sn^{+2} salt and an activated α-hydroxy compound, and
  (G) 1% to 30% by weight of (E), (F), & (G) of a volatile inert organic solvent and
(2) allowing the ingredients of the resulting mixture to react resinting in the production of exothermic heat and the simultaneous vaporization of the organic solvent and the cure of the cationically curable organic resin,

where R is a monovalent aromatic organic radical, R^1 is a divalent aromatic organic radical, Y is a non-nucleophilic anion, a is a whole number equal to 0 or 2, and b is a whole number equal to 0 or 1.

4,192,925
POLYHYDROXYL COMPOUNDS CONTAINING GUANIDINE GROUPS

Walter Schafer, Cologne; Kuno Wagner, Leverkusen, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 889,463, Mar. 23, 1978. This application Apr. 16, 1979, Ser. No. 30,491

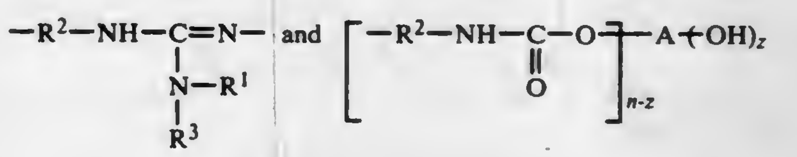
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 2714292

Int. Cl.^{2} C08G *18/06*

U.S. Cl. 521—163 **1 Claim**

1. A process for the preparation of optionally cellular polyurethane plastics comprising reacting:

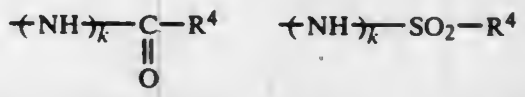
(a) polyisocyanates, with
(b) polyhydroxyl compounds; and, optionally,
(c) other compounds containing isocyanate-reactive groups; optionally in the presence of
(d) blowing agents; catalysts and other known agents; wherein component (b) comprises compounds
  containing at least two terminal hydroxyl groups and having a molecular weight of from 400 to 15,000, which compounds comprise segments in their molecular structure corresponding to the following general formulae:



$$-R^2-NH-\underset{\substack{|\\ N-R^1\\ |\\ R^3}}{C}=N- \quad \text{and} \quad \left[-R^2-NH-\underset{\substack{\|\\ O}}{C}-O\right]_{n-z}A(OH)_z$$

wherein

R^1 represents hydrogen or C_1–C_{18} aliphatic, C_4–C_{15} cycloaliphatic or C_6–C_{15} aromatic or araliphatic radical which may optionally contain a double bond and/or be branched and which may optionally contain one or two substituents selected from the group consisting of hydroxyl, mercapto, secondary amino, sulphonic acid ester, phosphonic acid ester, carboxylic ester, siloxane, trifluoromethyl or nitrile groups, fluorine, chlorine, bromine or iodine or R^1 represents one of the radicals:

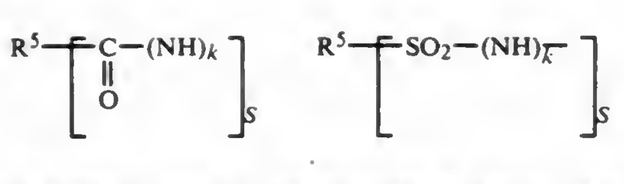


$$(NH)_k-\underset{\substack{\|\\ O}}{C}-R^4 \qquad (NH)_k-SO_2-R^4$$

or R^1 together with R^3 and the nitrogen atom forms a 5- or 6 membered heterocyclic ring optionally containing as additional hetero atoms an oxygen atom or up to two nitrogen atoms;

R^2 represents a divalent aliphatic, cycloaliphatic, aromatic or araliphatic radical containing from 4 to 25 carbon atoms obtained by removing the isocyanate groups from a diisocyanate;

R^3 represents a monovalent or—in the form of a bridge to other guanidine groups—divalent or trivalent C_1–C_{18} aliphatic, C_4–C_{15} cycloaliphatic or C_6–C_{15} aromatic or araliphatic radical which may optionally contain a double bond and/or be branched and which may optionally contain one or two substituents selected from the group of hydroxyl, alkoxyl, mercapto, secondary amino, sulphonic acid ester, phosphonic acid ester, carboxylic ester, siloxane, trifluoromethyl or nitrile groups, fluorine, chlorine, bromine or iodine; or one of the radicals:



$$R^5\left[-\underset{\underset{O}{\|}}{C}-(NH)_k-\right]_s \qquad R^5\left[-SO_2-(NH)_k-\right]_s$$

or together with R^1, the nitrogen atom and, optionally, the nitrogen atom of another guanidine group forms a 5-or 6-membered heterocyclic ring optionally containing as an additional hetero atom an oxygen or nitrogen atom;

R^4 represents an aliphatic, cycloaliphatic, araliphatic or aromatic radical containing from 1 to 15 carbon atoms;

R^5 represents an s-valent aliphatic cycloaliphatic, araliphatic or aromatic radical containing from 1 to 15 carbon atoms;

A represents an n-valent radical of the type obtained by removing the hydroxyl groups from a polyhydroxyl compound having a molecular weight of from 62 to 6000;

n represents an integer of from 2 to 8

s represents an integer of from 1 to 3;

z represents an integer having a value of from 0 to (n−1); and

k represents 0 or 1.

4,192,926

POLYHYDROXYL COMPOUNDS CONTAINING ACYL UREA GROUPS

Walter Schäfer, Cologne; Kuno Wagner, Leverkusen, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 889,464, Mar. 23, 1978. This application Apr. 16, 1979, Ser. No. 30,495

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 2714923

Int. Cl.^{2} C08G *18/06*

U.S. Cl. 521—163 **1 Claim**

1. A process for the preparation of optionally cellular polyurethane plastics comprising reacting:

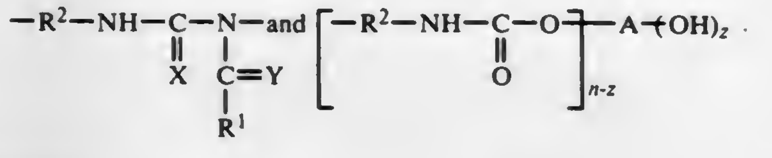
(a) polyisocyanates, with

(b) polyhydroxyl compounds; and, optionally,

(c) other compounds containing isocyanate-reactive groups; optionally in the presence of

(d) blowing agents, catalysts and other known agents;

wherein component (b) comprises compounds containing at least two terminal hydroxyl groups and having a molecular weight of from 400 to 20,000 which compounds comprise segments in their molecular structure corresponding to the following general formulae:



$$-R^2-NH-\underset{\underset{X}{\|}}{C}-\underset{\underset{\underset{R^1}{|}}{C=Y}}{\underset{|}{N}}-\text{and}\left[-R^2-NH-\underset{\underset{O}{\|}}{C}-O-\right]_{n-z}A\left(OH\right)_z$$

wherein

X and Y, which may be the same or different, each represents oxygen or sulphur;

R^1 represents hydrogen or a monofunctional or—in the form of a bridge to further acyl groups—a di-or trifunctional C_1–C_{18} aliphatic, C_4–C_{15} cycloaliphatic, C_6–C_{15} araliphatic or aromatic radical which may contain one or two double bonds and/or be branched and which may optionally contain one or two substituents selected from the group consisting of hydroxyl, mercapto, secondary amino, sulphonic acid ester, phosphonic acid ester, carboxylic ester, siloxane or trifluromethyl groups, fluorine, chlorine, bromine or iodine;

R^2 represents a difunctional aliphatic, cycloaliphatic, aromatic or araliphatic radical containing from 4 to 25 carbon atoms obtained by removing the isocyanate groups from a diisocyanate;

A represents an n-functional radical obtained by removing the hydroxyl groups from a polyhydroxyl compound having a molecular weight of from 62 to 6000;

n represents an integer of from 2 to 8; and

z represents an integer having a value of from 0 to (n−1).

4,192,927

POLYHYDROXYL COMPOUNDS CONTAINING PHOSPHONORMAMIDINE GROUPS

Walter Schäfer, Cologne; Kuno Wagner, Leverkusen, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 889,329, Mar. 23, 1978. This application Apr. 16, 1979, Ser. No. 30,494

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 2714289

Int. Cl.^{2} C08G *18/06*

U.S. Cl. 521—165 **1 Claim**

1. A process for the preparation of optionally cellular polyurethane plastics comprising reacting:

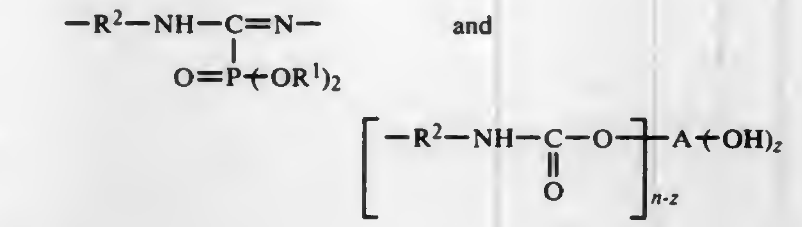
(a) polyisocyanates, with

(b) polyhydroxyl compounds; and, optionally,

(c) other compounds containing isocyanate-reactive groups; optionally in the presence of

(d) blowing agents, catalysts and other known agents;

wherein compounds (b) comprise compounds containing at least two terminal hydroxyl groups and having a molecular weight of from 400 to 15,000, which compounds comprise segments in their molecular structure corresponding to the following general formulae:



$$-R^2-NH-\underset{\underset{O=P\left(OR^1\right)_2}{|}}{C}=N- \quad \text{and} \quad \left[-R^2-NH-\underset{\underset{O}{\|}}{C}-O-\right]_{n-z}A\left(OH\right)_z$$

wherein

R^1 represents a C_1–C_{18} aliphatic, C_4–C_{15} cycloaliphatic or C_6–C_{15} aromatic or araliphatic radical which may optionally contain a double bond and/or be branched and which may optionally contain a substituent selected from the group consisting of hydroxyl or trifluoromethyl groups, fluorine, chlorine, bromine or iodine;

R^2 represents a divalent aliphatic, cycloaliphatic, aromatic or araliphatic radical having from 4 to 25 carbon atoms obtained by removing the isocyanate groups from a diisocyanate;

A represents an n-valent radical of the type obtained by removing the hydroxyl groups from a polyhydroxyl compound having a molecular weight of from 62 to 6000;

n represents an integer of from 2 to 8; and

z represents an integer having a value of from 0 to (n−1).

4,192,928

THERMOPLASTIC POLYURETHANE AND PROCESS FOR THE PREPARATION THEREOF

Atsushi Tanaka, Iwakuni; Toshihiko Shinoda, and Masahisa Mimura, both of Mihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 861,088, Dec. 15, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,288

Claims priority, application Japan, Dec. 30, 1976, 51-159807; Mar. 23, 1977, 52-31122

Int. Cl.^{2} C08G *18/14, 18/32, 18/65*

U.S. Cl. 521—177 **17 Claims**

1. A linear thermoplastic polyurethane useful for forming a

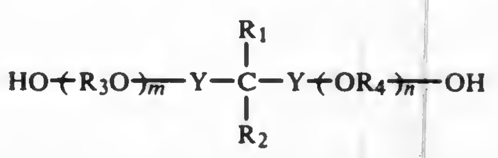
microporous artificial leather of moderate elasticity consisting essentially of the polymerization product of:

(A) a long-chain diol having a molecular weight of from about 800 to about 4,000;

(B) a difunctional active hydrogen-containing chain-extender having a molecular weight of from about 50 to about 150;

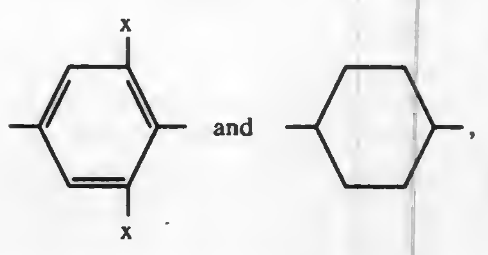
(C) an organic diisocyanate; and

(D) a diol compound represented by formula (I):

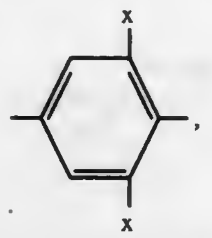


$$HO\left(R_3O\right)_m-Y-\underset{\underset{R_2}{|}}{\overset{\overset{R_1}{|}}{C}}-Y\left(OR_4\right)_n-OH \qquad (I)$$

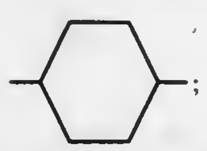
wherein R_1 and R_2, which may be the same or different, are hydrogen or an alkyl radical having from 1 to 3 carbon atoms, R_3 and R_4, which may be the same or different, are an alkylene radical having from 2 to 4 carbon atoms; Y is a bivalent radical selected from the group consisting of



wherein x is hydrogen, chlorine, bromine or a methyl radical; m and n are positive integers satisfying the formula $2 \leqq m+n \leqq 10$ when Y is



or m and n are zero or positive integers satisfying the formula $0 \leqq m+n \leqq 10$ when Y is



further wherein said component (D) comprises from about 5% to about 15% by weight of the polyurethane, and the nitrogen atoms derived from said component (C) comprise from about 3% to about 6% by weight of the polyurethane, wherein the thermoplastic polyurethane has a tensile stress at 5% elongation of from 0.1 to 0.5 kg/m^2, a tensile stress at 20% elongation of from 0.2 to 1.0 kg/m^2 and an elongation recovery at 50% elongation of from 50% to 87% at a temperature of 20° C., measured in the form of a polyurethane film.

4,192,929

CORROSION RESISTANT PRIMERS

Robert C. Wingfield, Jr., Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1978, Ser. No. 938,673

Int. Cl.^{2} C08L *63/00*

U.S. Cl. 525—110 **9 Claims**

1. An electrodepositable primer composition which comprises an intimate admixture of film forming ingredients which consist essentially of:

(A) A substantially gel free epoxy and amine reaction product, at least partially neutralized, made by reacting in non-aqueous medium:

1. A non-carboxy ester linked epoxy reactant that has an average of at least about two epoxy groups per molecule;
2. An amine reactant selected from mono and diamines that contain a primary or secondary amino group and up to about 20 carbon atoms per amino nitrogen and comprising at least about 50 mole percent hydroxy amine containing one or more primary hydroxy groups,

in an equivalent amount such that the reaction product (A) comprises tertiary amino and primary and secondary hydroxy groups and is substantially free of unreacted epoxy groups;

(B) An amine aldehyde resin crosslinking agent at about 5–60% by weight of the weight of (A);

(C) About 0.1–5% by weight of (A) of a flow control agent having a number average molecular weight of about 1000–20,000 and comprising a reactive copolymer made from:

(1) 5–95 mole percent any of epoxy, carboxy and hydroxy functional acrylic monomers, and

(2) 95–5 mole percent of other monomers, a major molar proportion of which contain aliphatic carbon chains of about 3–18 carbons.

4,192,930

ESTERIFIED OLEFIN-MALEIC ANHYDRIDE COPOLYMERS

Heinz Beck, Duren; Karl H. Frassek, Langerwehe; Werner Holtvoigt, Lohne-Riessel, and Ambar Mukerjee, Nideggen, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jun. 15, 1978, Ser. No. 915,859

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727329

Int. Cl.^{2} C08L *33/04, 33/20, 55/02, 69/00*

U.S. Cl. 525—227 **18 Claims**

1. A moldable thermoplastic composition comprising:

(a) A thermoplastic mold formable plastic, and

(b) A minor shaping processing improving amount of an esterified olefin-maleic anhydride copolymer comprising a copolymer of an olefin containing 2 to about 24 carbon atoms and maleic anhydride, esterified with a monoualent alcohol containing 2 to about 20 carbon atoms, in a molar ratio of maleic anhydride to alcohol of from about 1:0.5 to about 1:2.

13. In a method of shaping a thermoplastic mold formable polymer using heat and pressure the improvement comprising admixing the thermoplastic polymer with a minor shaping processing improving amount of an esterified olefin-maleic anhydride copolymer comprising a copolymer of an olefin containing 2 to about 24 carbon atoms and maleic anhydride, esterified with a monomualent alcohol containing 2 to about 20 carbon atoms, in a molar ratio of maleic anhydride to alcohol of from about 1:0.5 to about 1:2.

4,192,931

PROCESS FOR PRODUCING FURAN-EPOXY POWDER-LIKE BINDER

Gennady D. Varlamov, ulitsa Jubileinaya, 5 kv. 13; Juldash Mamatov, ulitsa Pushkina 50, kv. 60; Ildgam A. Bekbulatov, Kashkarskaya ulitsa 215, and Shavkat Madaliev, ulitsa Yarmazar 361, all of Fergana, U.S.S.R.

Filed Aug. 7, 1978, Ser. No. 931,313

Int. Cl.^{2} C08L *63/00*

U.S. Cl. 525—489 **2 Claims**

2. A process for producing a furan-epoxy powder-like binder comprising reaction (A) 100 parts by weight of an epoxy diane resin with (B) 40–500 parts by weight of a ketone of the furan series selected from the group consisting of monofurfurylideneacetone, difurfurylideneacetone, difurfurylidenecyclohexanone, a mixture of monofurfurylideneacetone and difurfurylideneacetone at a ratio therebetween, ex-

pressed in parts by weight, of from 1:1 to 1.4:1; 1,9-di-(α-furyl)-nonanetetraene-1,3,6,8-one-5 or 1,5-di-(αfuryl)-2,4-dimethyl-pentadiene-1,4-one-3; and (C) 60–500 parts by weight of a modifying agent selected from the group consisting of phenol-formaldehyde resin and anhydrides of dibasic carboxylic acids; at a temperature within the range of from 130° to 180° C. and in the presence of 10–30 parts by weight of trifurylborate; cooling the resulting product to a temperature of at most 30° C.; and disintegrating the cooled product to a powder-like condition.

4,192,932

ALKALINE RESISTANT ORGANIC COATINGS FOR CORROSION SUSCEPTIBLE SUBSTRATES IV

Ray A. Dickie, Birmingham; Joseph W. Holubka, and Mohinder S. Chattha, both of Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1978, Ser. No. 938,672

Int. Cl.^{2} C08L *63/00*

U.S. Cl. 525—511 **16 Claims**

1. In a crosslinking composition, especially suitable for use in primer compositions that retard corrosion of susceptible substrates and do not require chromate inhibiting pigments and which comprises an intimate mixture of film forming ingredients which consist essentially of:

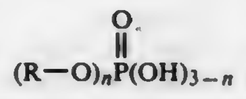
(A) A substantially gel free epoxy and amine reaction product, optionally at least partially neutralized, made by reacting in non-aqueous medium:
  1. A non-carboxy-ester linked epoxy reactant that has an average of at least about two epoxy groups per molecule;
  2. An amine reactant selected from the group consisting of secondary amines and primary and secondary amines having a total of up to about 20 carbons per amino nitrogen and comprising at least about 75 mole percent hydroxy amine containing one or more primary hydroxy groups removed at least one carbon from any amino nitrogen,

in an equivalent amount such that the reaction product (A) comprises tertiary amino and primary and secondary hydroxy groups and is substantially free of unreacted epoxy groups;

(B) Optionally, a di- or polyhydroxy compound;

(C) An amine-aldehyde resin crosslinking agent at about 5–35% by weight of the combined weight of (A) and (B), the improvement which comprises

(D) About 0.1–5% by weight of the combined weight of (A) and (B) of one or more hydroxy organophosphate esters corresponding to the formula:



$$(R-O)_n\overset{\overset{\displaystyle O}{\|}}{P}(OH)_{3-n}$$

wherein n is 1 to 2 and R is independently mono- or dihydroxy substituted hydrocarbon having up to about 10 carbons.

4,192,933

NON-PULVERULENT SOLID POLYMERIC STRUCTURE

Leonard E. Edelman, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 727,481, Sep. 28, 1976, abandoned. This application May 31, 1978, Ser. No. 911,253

Int. Cl.^{2} C08F *8/30, 8/32*

U.S. Cl. 525—377 **9 Claims**

1. A method of making a non-pulverulent solid polymeric structure, of acrylonitrile or a copolymer thereof, which has at least one pendant diaminotriazine ring comprising immersing a non-pulverulent solid polymeric structure of acryllonitrile or a copolymer thereof which has at least one pendant nitrile group into a basic organic solution of cyanoguanidine at a pH of about 8 to about 10 without permitting said polymeric structure to dissolve therein.

4,192,934

EQUIPMENT FOR POLYMERIZATION OF VINYL CHLORIDE MONOMERS AND POLYMERIZATION PROCESS USING THE SAME

Tsukasa Takahashi; Takeshi Sekihara; Tomoyuki Emura, and Masayoshi Miki, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 28, 1978, Ser. No. 928,970

Claims priority, application Japan, Aug. 9, 1977, 52-95869; Sep. 22, 1977, 52-11439

Int. Cl.^{2} B01J *8/00;* **C08F** *2/16, 14/06*

U.S. Cl. 526—62 **4 Claims**

4. A process for polymerization of vinyl chloride monomers which comprises subjecting vinyl chloride monomer alone or mixtures comprising vinyl chloride monomer as a main component and a monomer copolymerizable therewith to radical polymerization in the presence of a radical-generating catalyst in an aqueous medium using equipments for polymerization of vinyl chloride monomers in which the inside wall of the polymerization vessel and/or the surface of attachments to the vessel which are brought into contact with said monomers are wholly or partially made of mirror-polished ferritic stainless steel containing 15 to 40% by weight of chromium, 0.5 to 5% by weight of molybdenum, not more than 0.5% by weight of nickel, not more than 0.05% by weight of carbon and not more than 0.05% by weight of nitrogen, or mirror-polished duplex phase stainless steel comprising a ferritic phase and an austenitic phase containing 17 to 35% by weight of chromium and 2 to 8% by weight of nickel.

4,192,935

ETHYLENE POLYMERS OF HIGH MELT INDEX

Peter J. Lovell, Kingston, and Ian C. B. Saunders, Sarnia, both of Canada, assignors to DuPont of Canada Limited, Montreal, Canada

Filed Jan. 2, 1979, Ser. No. 170

Claims priority, application United Kingdom, Jan. 6, 1978, 00517/78

Int. Cl.^{2} C08F *210/02, 210/16*

U.S. Cl. 526—348.6 **5 Claims**

1. An ethylene polymer having a density in the range of about 0.940–0.960, a melt index in the range 100–200 and a ratio of weight-average molecular weight to number-average molecular weight of less than 5, said polymer being a copolymer of ethylene and at least one α-olefin having 4–10 carbon atoms, the α-olefin being an aliphatic hydrocarbon.

4,192,936

PREPARATION OF POLYISOCYANATES CONTAINING BIURET GROUPS

Edgar Mohring, Bergisch-Gladbach; Kuno Wagner, and Hanns P. Muller, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 850,888, Nov. 14, 1977, Pat. No. 4,152,350. This application Feb. 2, 1979, Ser. No. 8,727

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654745

Int. Cl.^{2} C08G *18/78, 18/14*

U.S. Cl. 528—59 **2 Claims**

1. In the isocyanate polyaddition process for the production of polyurethane resins, the improvement comprising reacting polyhydroxyl compounds with polyisocyanate mixtures containing biuret groups prepared by the reaction of excess quantities of organic polyisocyanates with compounds which react with isocyanate groups to form biuret groups, characterized in that the organic polyisocyanates are reacted with a mixture which contains:

(A) at least one monohydric primary or secondary aliphatic or cycloaliphatic alcohol;

(B) at least one monoamine or polyamine having at least one aliphatically, cycloaliphatically or araliphatically bound primary amino group; and, optionally,

(C) water or a compound which splits off water.

4,192,937

PROCESS FOR THE PREPARATION OF ISOCYANATE POLYADDITION PRODUCTS WHICH HAVE HYDROXYL GROUPS IN SIDE CHAINS

Klaus Noll, Cologne; Klaus Nachtkamp, Bergisch-Gladbach, and Josef Pedain, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 3, 1978, Ser. No. 921,285

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2732131

Int. Cl.^{2} C08G *18/10, 18/38;* **C08L** *75/12*

U.S. Cl. 528—59 **10 Claims**

1. A process for the preparation of substantially linear isocyanate polyaddition products containing hydroxyl groups derived from oxazolidine groups in sidechains by the reaction of reactive systems which contain free isocyanate groups and oxazolidine groups with water, characterized in that

(a) substantially linear prepolymers which have both isocyanate end groups and oxazolidine end groups or

(b) a mixture containing substantially linear isocyanate prepolymers and bis-oxazolidines are chain lengthened by mixing with water, using a quantity of water calculated to provide at least about 1 mol of water per mol of oxazolidine groups present in the reaction mixture.

4,192,938

MODIFIED POLYISOCYANATES CONTAINING SULFONIC ACID ESTER GROUPS

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,815

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801130

Int. Cl.^{2} C08G *18/77, 18/14;* **C07C** *143/68*

U.S. Cl. 528—67 **12 Claims**

1. A process for the preparation of modified polyisocyanates which contain sulfonic acid alkyl ester groups and in which the isocyanate groups may be at least partly in the dimerized form, comprising: racting isocyanatoaryl sulfonic acids having at least two isocyanate groups and wherein the isocyanate groups may be at least partly in the dimerized form, optionally as mixtures with mono and/or polyisocyanates which are free from sulfonic acid groups with lactones at 0° to 190° C., wherein at least one of said lactones is a 6 to 9 membered ring lactone and the equivalent ratio of isocyanate groups, including any isocyanate groups present in the dimerized form, to sulfonic acid groups is greater than 1 and the equivalent ratio of lactone groups to sulfonic acid groups is from 0.1:1 to 10:1.

11. Polyisocyanate mixtures, comprising:

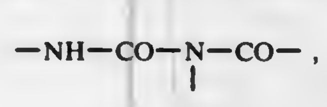
(a) 4 to 48% by weight of isocyanate groups optionally present partly in the dimerized form,

(b) 0.3 to 38% by weight of groups of the formula —SO-$_2$—O— forming part of an aryl sulfonic acid alkyl ester group,

(c) 0 to 36% by weight of —SO_3H groups,

(d) 0 to 25% by weight of amide groups —NH—CO— and

(e) 0 to 28% by weight of acyl urea groups



$$-NH-CO-\underset{|}{N}-CO-,$$

the groups mentioned under (d) and (e) together amounting to at least 0.4% by weight and no more than 28% by weight and the groups mentioned under (b) and (c) together amounting to not more than 38% by weight.

12. In a process for the production of urethane groups containing products comprising reacting an isocyanate with an isocyanate reactive group containing compound, the improvement wherein the isocyanate is a polyisocyanate mixture comprising:

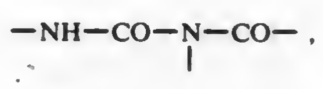
(a) 4 to 48% by weight of isocyanate groups optionally present partly in the dimerized form,

(b) 0.3 to 38% by weight of groups of the formula —SO-$_2$—O— forming part of an aryl sulfonic acid alkyl ester group,

(c) 0 to 36% by weight of —SO_3H groups,

(d) 0 to 25% by weight of amide groups —NH—CO— and

(e) 0 to 28% by weight of acyl urea groups



$$-NH-CO-\underset{|}{N}-CO-,$$

the groups mentioned under (d) and (e) together amounting to at least 0.4% by weight and no more than 28% by weight and the groups mentioned under (b) and (c) together amounting to not more than 38% by weight.

4,192,939

PHOSPHONIUM CATALYST SYSTEM FOR THE POLYMERIZATION OF 2-PYRROLIDONE

Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 724,802, Sep. 20, 1976, Pat. No. 4,100,146. This application May 8, 1978, Ser. No. 903,419

Int. Cl.^{2} C08G *69/20*

U.S. Cl. 528—313 **2 Claims**

1. The process of polymerizing a 2-pyrrolidone composition by contacting an alkali metal pyrrolidonate, a tetraalkyl phosphonium halide and carbon dioxide in a mol ratio 1:0.1–2:0-.1–0.5, respectively, and additionally 0.01–0.5 mol percent of N-acyl pyrrolidone or N-acylcaprolactam or acetic anhydride, with 2-pyrrolidone monomer to yield a poly- 2-pyrrolidone polymer capable of being formed into filaments, films, or shaped articles.

4,192,940

POLYESTERS WHICH CAN BE PREPARED BY REACTING A CARBONIC ACID ARYL ESTER WITH A POLYESTER PREPARED FROM A POLYHYDRIC ALCOHOL AND A POLYBASIC CARBOXYLIC ACID WHICH IS ALIPHATIC

Christian Lindner, Cologne; Carlhans Suling; Herbert Bartl, both of Odenthal, and Dietrich Hardt, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

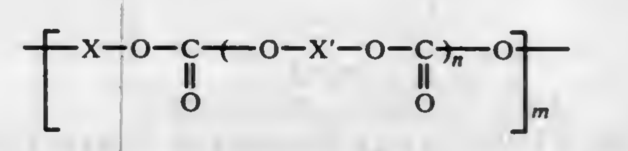
Filed Jul. 14, 1978, Ser. No. 924,708

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732718

Int. Cl.^{2} C08L *67/02*

U.S. Cl. 528—370 **7 Claims**

1. A polyester containing carbonate groups and consisting of repeating structural units corresponding to the general formula (I):



$$\left[X-O-\underset{\underset{\displaystyle O}{\|}}{C}\left(O-X'-O-\underset{\underset{\displaystyle O}{\|}}{C}\right)_n O\right]_m \qquad (I)$$

in which

X is the residue of a hydroxy terminated reaction product of at least one polyhydric alcohol with a polybasic, aliphatic carboxylic acid having a molecular weight of from 800 to 3500 or with an anhydride or ester of the acid, or a mixture thereof

X′ has the same meaning as X or X′ is the residue of an hydroxy terminated aliphatic polyether having a molecular weight of from 800 to 3500,

n=0 or 1 to 10 and

m is a number >20,

having an intrinsic viscosity in tetrahydrofuran of from 0.8 to 2.5 (dl/g).

4,192,941
CURED POLYSULFIDE POLYMERS SUITABLE FOR HOT MELT APPLICATIONS

Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Corporation, Newtown, Pa.

Filed Jun. 8, 1978, Ser. No. 913,630

Int. Cl.^{2} C08G *75/04*

U.S. Cl. 528—374 **2 Claims**

1. A process for the preparation of a cured polysulfide rubber based on a thiol terminated liquid polysulfide polymer, said cured rubber being capable of extrusion under heat and pressure with recovery of substantially its original physical properties, which comprises:

(a) blending a thiol terminated liquid polysulfide polymer, zinc oxide and substantially anhydrous acetic acid; and

(b) allowing the blend prepared in step (a) to cure to a solid.

4,192,942
EMULSIFIABLE ETHYLENE/CARBON MONOXIDE COPOLYMER WAXES

Kenneth R. Mainord, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 30, 1978, Ser. No. 938,121

Int. Cl.^{2} C08F *10/02*

U.S. Cl. 260—597 R **20 Claims**

1. A process for the production of emulsifiable ethylene/carbon monoxide copolymer wax which comprises oxidizing an ethylene/carbon monoxide copolymer having a melt index of about 0.1 to about 500 and a density of about 0.92 to about 0.98 in the solid phase at a temperature of about 75° C. to about 95° C. until said emulsifiable copolymer wax has an acid number of at least 10.

4,192,943
METHOD FOR REDUCING OLIGOMERIC CYCLIC ETHER CONTENT OF A POLYMERIZATE

Ivan M. Robinson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 915,190, Jun. 13, 1978, abandoned. This application Dec. 21, 1978, Ser. No. 970,733

Int. Cl.^{2} C08G *65/30*

U.S. Cl. 528—417 **6 Claims**

1. A method for reducing the oligomeric cyclic ether content of a substantially monomer-free THF/alkylene oxide polymerizate, the method comprising bringing the polymerizate into contact, at a temperature of 70°-150° C., with 1-50%, by weight of the polymerizate, of an acid-activated sodium or calcium montmorillonite clay, for a time sufficient to significantly reduce the oligomeric cyclic ether content of the polymerizate.

4,192,944
OPTIONALLY SUBSTITUTED 4-OXO-4H-PYRIDO[1,2-a]PYRIMIDINE-3-N-(1H-TETRAZOL-4-YL)CARBOXAMIDES AND THEIR USE AS ANTIALLERGY AGENTS

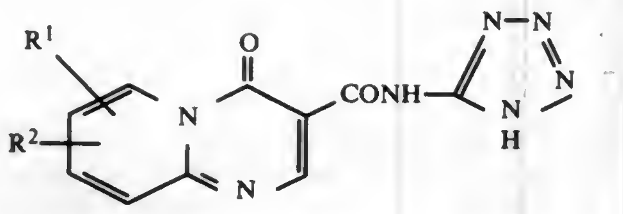
Peter F. Juby, Jamesville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,714

Int. Cl.^{2} C07D *403/12;* **A61K** *31/505*

U.S. Cl. 544—282 **27 Claims**

1. A compound of the formula



wherein R^1 and R^2 which may be the same or different are each hydrogen, halogen, (lower)alkyl, (lower)alkenyl, (lower)alkynyl, (lower)alkoxy, CF_3, hydroxy, (lower)alkylthio, amino, nitro, (lower)alkylamino, di(lower)alkylamino, carboxyl, phenyl, or (lower)alkylsulfinyl, or a pharmaceutically acceptable salt thereof, with the proviso that when R^1 and R^2 are tertiary alkyl or tertiary alkoxy groups, they are located on non-adjacent positions.

4,192,945
PROCESS FOR PREPARING PROLINE AND HOMOPROLINE DERIVATIVES

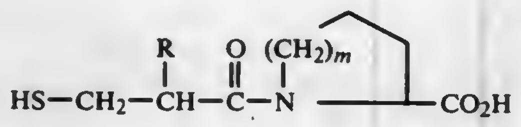
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 967,335, Dec. 7, 1978. This application Mar. 15, 1979, Ser. No. 20,580

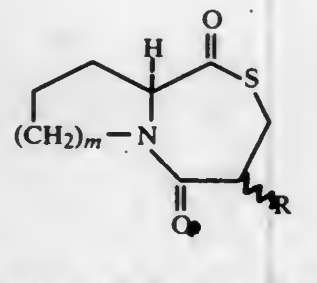
Int. Cl.^{2} C07D *207/16, 211/60*

U.S. Cl. 546—245 **6 Claims**

1. A process for preparing a compound having the formula



which comprises hydrolyzing the corresponding compound having the formula



wherein R is hydrogen or alkyl of 1 to 7 carbon atoms and m is 1 or 2.

3. A process in accordance with claim 1 wherein m is 2.

4,192,946
PROCESS FOR PRODUCING 3-HYDROXY-5-HALOPYRIDINES

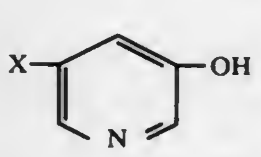
Niels Clauson-Kaas, Farum, Denmark; Gunter Mattern, Liestal, and Walter Traber, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 29, 1978, Ser. No. 920,425

Int. Cl.^{2} C07D *213/02*

U.S. Cl. 546—249 **9 Claims**

1. Process for producing 3-hydroxy-5-halopyridines of the formula



(I)

wherein

X represents chlorine or bromine,

which process comprises reacting 2-furfurylamine in aqueous mineral-acid solution at −20° to +5° C. with 1.90 to 2.25 mols of halogen per mole of 2-furfurylamine, neutralising the hydrohalic acid formed, heating the reaction mixture at reflux temperature, cooling it, and isolating the formed 3-hydroxy-5-halopyridine of the formula I.

4,192,947
PROCESS FOR THE PRODUCTION OF AMINOPHENYLAMINOBENZIMIDAZOLES

Wolfgang Bauer, Maintal, and Joachim Ribka, Offenbach (Main)-Bürgel, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

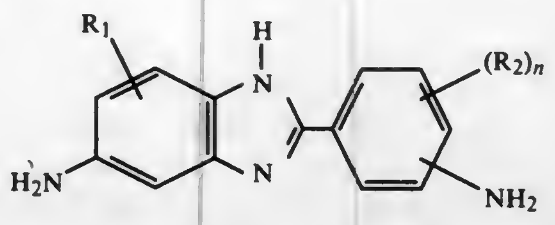
Filed Sep. 12, 1978, Ser. No. 941,462

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742093

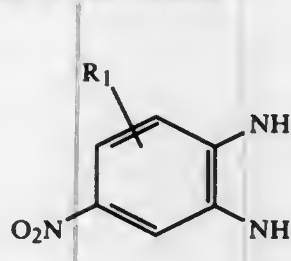
Int. Cl.^{2} C07D *235/18*

U.S. Cl. 548—334 **9 Claims**

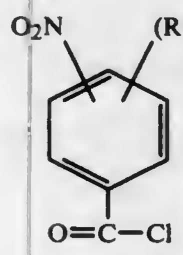
1. In the process for the production of compounds of the formula



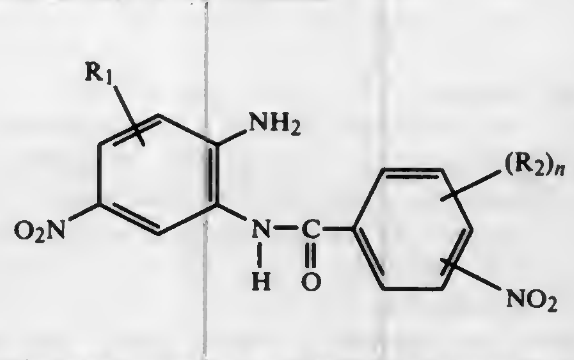
wherein R_1 and R_2 are the same or different and each is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, chlorine or bromine, and n is 1 or 2, comprising reacting a compound of the formula



with a compound of the formula



to form the anilide of the formula



and cyclizing and reducing said anilide wherein the improvement comprises cyclizing the anilide in an aqueous alkaline medium and reducing the nitro moieties with a sulfide reductant.

4,192,948
TRANS-2,3-DIDEHYDRO-9-DEOXY-9-METHYLENE-ω-ARYL-PGF COMPOUNDS

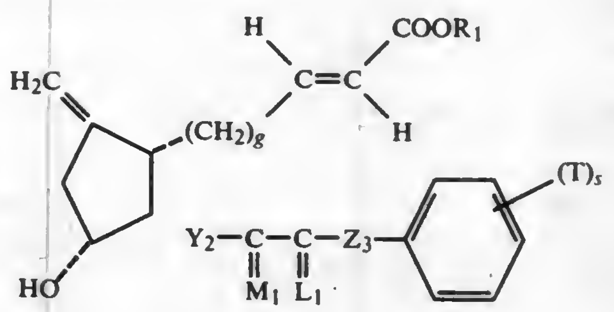
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 893,771, Apr. 5, 1978, Pat. No. 5,165,436. This application Aug. 11, 1978, Ser. No. 932,999

Int. Cl.^{2} C07C *177/00*

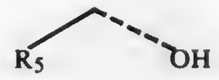
U.S. Cl. 560—55 **17 Claims**

1. A prostaglandin analog of the formula

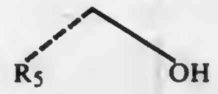


wherein Y_2 is trans—CH=CH—, —CH_2CH_2—, or cis—CH=CH—;

wherein M_1 is

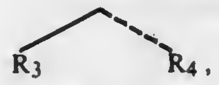


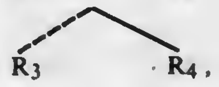
or



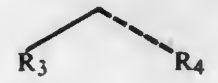
wherein R_5 is hydrogen or methyl;

wherein L_1 is

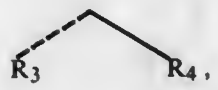




or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein g is 4, 5, or 6,

wherein Z_3 is oxa or —$(CH_2)_h$—,

wherein h is zero, one, two, or three; wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that Z_3 is oxa only when R_3 and R_4 are hydrogen or methyl, being the same or different; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,192,949

PREPARATION OF ARALKYL PHENYL ETHERS AND ALKYL PHENYL ETHERS

Franz Merger, Frankenthal; Friedrich Towae, Ludwigshafen, both of Fed. Rep. of Germany, and Ludwig Schroff, deceased, late of Ludwigshafen, Fed. Rep. of Germany (by Meinie T. Schroff, heiress-at-law), assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

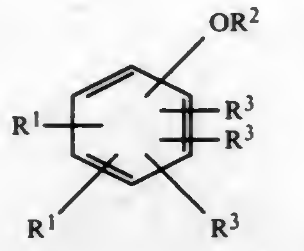
Filed Jun. 15, 1978, Ser. No. 915,716

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2729031; Feb. 28, 1978, 2807762

Int. Cl.² C07C *43/20, 43/22, 43/25, 43/24*

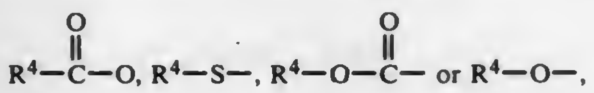
U.S. Cl. 560—67 **10 Claims**

1. A process for the manufacture of an aralkyl phenyl ether or alkyl phenyl ether of the formula



I

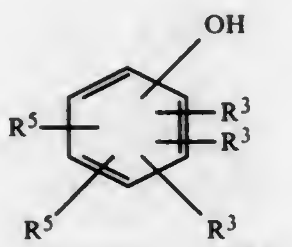
where the radicals R^1 are identical or different and each is hydrogen, hydroxyl or —OR^2, or the two radicals R^1 together with two mutually adjoining carbon atoms of the benzene ring are a fused phenylene radical, the radicals R^2 are identical or different and each is aralkyl of 7 to 12 carbon atoms or alkyl of 1 to 7 carbon atoms, the radicals R^3 are identical or different and each is phenyl or aralkyl of 7 to 12 carbons or alkyl of 1 to 12 carbon atoms or alkenyl of 2 to 12 carbon atoms, or alkyl of 1 to 12 carbon atoms, substituted by 2 oxo groups or one oxo group, hydrogen, bromine, chlorine, cyano, nitro,



$$R^4-\overset{O}{\overset{\|}{C}}-O,\ R^4-S-,\ R^4-O-\overset{O}{\overset{\|}{C}}-\text{ or }R^4-O-,$$

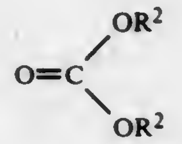
where R^4 is alkyl of 1 to 12 carbon atoms or is phenyl, whereby the above radicals may in addition be substituted by alkyl or alkoxy each of 1 to 4 carbon atoms,

wherein a phenol of the formula



II

where R^3 has the above meanings and R^5 has the meanings of R^1 or, if R^1 is —OR^2, may also be hydroxyl, is reacted with a diaralkyl carbonate or a dialkyl carbonate of the formula



III

where the radicals R^2 are identical or different and have the above meanings, in the presence of a tertiary amine or of a tertiary phosphine or of both at from above 100° C. to 350° C.

4,192,950

15-DEOXY-16-HYDROXY-16-SUBSTITUTED PROSTANOIC ACIDS AND CONGENERS

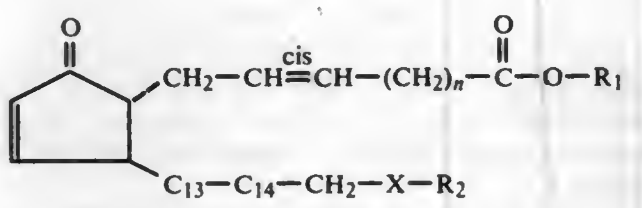
Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; Charles V. Grudzinskas, Garnerville, N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 706,343, Jul. 14, 1976, Pat. No. 4,061,670. This application Sep. 22, 1977, Ser. No. 835,614

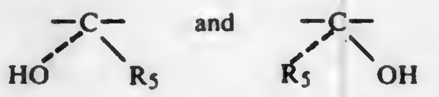
Int. Cl.² C07C *177/00*

U.S. Cl. 562—500 **17 Claims**

1. An optically active compound of the formula:


O
O
cis
CH$_2$—CH=CH—(CH$_2$)$_n$—C—O—R$_1$
C$_{13}$—C$_{14}$—CH$_2$—X—R$_2$

or a racemic mixture of that formula and the mirror image thereof and the mirror image thereof wherein R$_1$ is selected from the group consisting of hydrogen and alkyl having from 1 to 12 carbon atoms; R$_2$ is selected from the group consisting of alkyl having from 3 to 7 carbon atoms; X is a divalent moiety selected from the group consisting of those of the formulae:



wherein R$_5$ is selected from the group consisting of vinyl and cyclopropyl; n is an integer from 3 to 5 inclusive; the moiety —C$_{13}$—C$_{14}$— is trans-vinylene or ethylene; and the pharmacologically acceptable cationic salts thereof when R$_1$ is hydrogen.

4,192,951

HYDROCARBON OXIDATION PROCESS

William E. Slinkard, and Anthony B. Baylis, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 603,979, Aug. 11, 1975, abandoned. This application Aug. 1, 1977, Ser. No. 820,663

Int. Cl.² C07C *51/20, 57/14*

U.S. Cl. 562—549 **13 Claims**

1. The process for producing maleic acid and acetic acid which comprises contacting n-butane and molecular oxygen in the vapor phase at about 180° C. to about 350° C., optionally in the presence of from about 0.05 to about 1.0 mol of water per mol of said n-butane with a heteropolymolybdic acid catalyst consisting essentially of the acids of a class of heteropolyelectrolytes containing 2 to 18 hexavalent molybdenum atoms wherein at least one of said molybdenum atoms can be replaced by an atom selected from the group consisting of tungsten, vanadium, tantalum and niobium, said molybdenum atoms and replacements, if available, being around at least one central heteroatom selected from the group consisting of boron, aluminum, gallium, silicon, germanium, tin, phosphorus, arsenic, antimony, bismuth, selenium, tellurium, iodine, niobium, platinum, cerium, thorium and the first row transition elements from titanium to zinc.

4,192,952

CUMENE OXIDATION USING 'ONIUM CATALYSTS

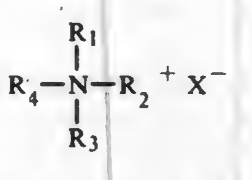
Kenneth C. Stueben, Bridgewater, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,694

Int. Cl.² C07C *179/04*

U.S. Cl. 568—574 **6 Claims**

1. A process for the production of cumene hydroperoxide which comprises the oxidation at from about 85° C. to about 135° C. of cumene in contact with oxygen and from 1 ppm to 900 ppm based on the total weight of the reaction mixture of a substituted ammonium halide catalyst of the general formula:



$$\left.R_4-\underset{R_3}{\underset{|}{\overset{R_1}{\overset{|}{N}}}}-R_2\right.^{+}X^{-}$$

where X is a halide and where R$_1$, R$_2$ and R$_3$ taken singly can be:

(a) alkyl, linear or branched, substituted or unsubstituted, having from one to forty carbon atoms; or

(b) aryl, substituted or unsubstituted; or

(c) aralkyl, substituted or unsubstituted, having from seven to twenty carbon atoms; or

(d) hydrogen;

and where R$_4$ can be:

(a) alkyl, linear or branched, substituted or unsubstituted, having from one to forty carbon atoms: or

(b) aryl, substituted or unsubstituted; or

(c) aralkyl, substituted or unsubstituted, having from seven to twenty carbon atoms; and where R$_2$, R$_3$ and R$_4$ taken together with the nitrogen atom can form a heterocyclic ring containing from four to eight ring carbon atoms.

4,192,953

POLYPRENYL DERIVATIVES

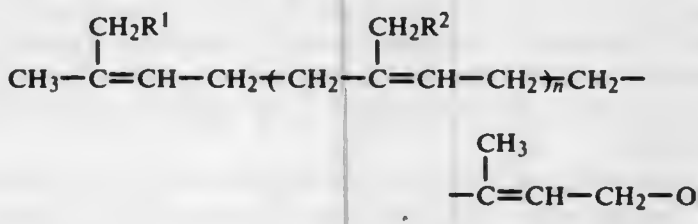
Hiroshi Mishima; Akira Ogiso, and Shinsaku Kobayashi, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 807,913, Jun. 20, 1977, abandoned, which is a division of Ser. No. 633,097, Nov. 18, 1975, Pat. No. 4,059,641. This application Jan. 4, 1979, Ser. No. 1,162

Int. Cl.² C07C *43/00, 43/02;* **A61K** *31/08, 31/07*

U.S. Cl. 568—673 **6 Claims**

1. A compound having the formula



$$CH_3-\overset{CH_2R^1}{\overset{|}{C}}=CH-CH_2\!\left(CH_2-\overset{CH_2R^2}{\overset{|}{C}}=CH-CH_2\right)_{\!n}CH_2-\overset{CH_3}{\overset{|}{C}}=CH-CH_2-OR^3$$

in which R^1 and R^2 may be the same or different and each represents a hydrogen atom, hydroxyl, alkoxy having from 1 to 8 carbon atoms, aliphatic acyloxy having from 2 to 18 carbon atoms, aromatic acyloxy or araliphatic acyloxy having from 2 to 3 carbon atoms in the aliphatic acyl moiety, R^3 represents alkyl having from 1 to 8 carbon atoms, n is an integer of from 1 to 4 and, when n is an integer of from 2 to 4, the R^2's may be the same or different; provided that, when n is 1 or 2, at least one of R^1 and R^2 is hydroxyl, alkoxy, aliphatic acyloxy, aromatic acyloxy or araliphatic acyloxy.

4,192,954

PROCESS FOR PREPARING 2,2-BIS(4-HYDROXY-PHENYL) PROPANE FROM DISTILLATION BY-PRODUCTS THEREOF

Henry P. Barker, Lock Haven, Pa., and Lawrence C. Mitchell, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 23, 1977, Ser. No. 863,666

Int. Cl.² C07C *37/44, 37/24*

U.S. Cl. 568—723 **5 Claims**

1. A process for the production of 2,2-bis(4-hydroxyphenyl) propane from by-products which contain products isomerizable to 2,2-bis(4-hydroxyphenyl) propane and which remain after purification distillation of 2,2-bis(4-hydroxyphenyl) propane produced by the condensation of phenol and acetone, said process comprising:

(i) mixing said by-products with phenol;

(ii) adding anhydrous hydrogen chloride under superatmospheric pressure to the resulting mixture and isomerizing said by-products to 2,2-bis(4-hydroxyphenyl) propane; and

(iii) subsequently recovering said 2,2-bis(4-hydroxyphenyl) propane.

4,192,955

PROCESS FOR THE RECOVERY OF 2,2-BIS(4-HYDROXYPHENYL) PROPANE

Clayton W. Reinitz, Mt Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 18, 1977, Ser. No. 865,297

Int. Cl.² C07C *37/44, 37/24*

U.S. Cl. 568—724 **11 Claims**

1. A process to recover 2,2-bis(4-hydroxyphenyl) propane from an equimolar adduct of 2,2-bis(4-hydroxyphenyl) propane and phenol, the process comprising dissolving the adduct in a solvent in which the adduct is soluble and which is miscible with water, mixing the resulting adduct-solvent solution with water at a temperature at which the adduct is soluble therein, cooling the resulting mixture to a temperature where substantially all of the 2,2-bis(4-hydroxyphenyl) propane precipitates substantially without co-precipitation of the phenol and physically recovering said precipitated 2,2-bis(4-hydroxyphenyl) propane.

4,192,956

DEHYDROHALOGENATION OF A DIPHENYL TRICHLOROETHANE

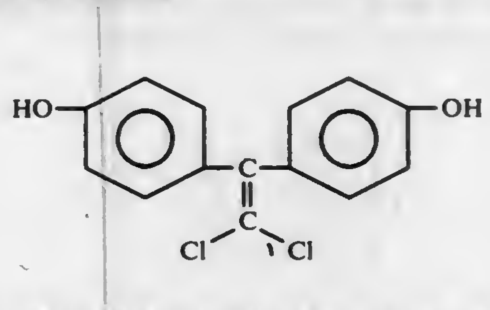
Michael R. MacLaury, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,103

Int. Cl.² C07C *37/00*

U.S. Cl. 568—726 **8 Claims**

1. In the process for dehydrohalogenating the trichloride, 1,1,1-trichloro-2,2-bis(4-hydroxyphenyl) ethane, to form the dichloride of the formula



by treating the aforesaid trichloride with anhydrous liquid ammonia in an amount sufficient to act as both a dehydrohalogenating agent and solvent, the improvement which comprises adding to the liquid ammonia an amount of an inorganic halide effective to accelerate the dehydrohalogenation reaction of the ammonia, wherein said inorganic halide is selected from the class consisting of ammonium chloride and bromide, lithium chloride and bromide, and sodium chloride and bromide.

4,192,957
DEHYDROHALOGENATION OF A DIPHENYL TRICHLOROETHANE

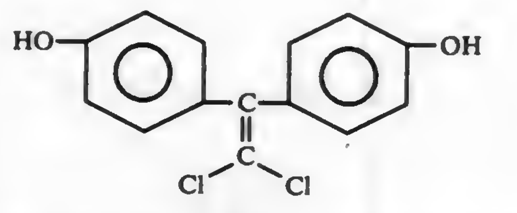
Michael R. MacLaury, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,104

Int. Cl.² C07C *37/00*

U.S. Cl. 568—726 **7 Claims**

1. In a process for dehydrohalogenating the trichloride, 1,1,1-trichloro-2,2-bis-(4-hydroxyphenyl) ethane, to form the dichloride of the formula



which process comprises (1) treating the aforesaid trichloride with anhydrous liquid ammonia in an amount sufficient to act as both a dehydrohalogenating agent and solvent, the improvement comprising the said liquid ammonia containing an amount of an alkyl amine effective to accelerate the dehydrohalogenation reaction, wherein said alkyl amine is selected from the class consisting of methylamine hydrochloride and bromide, ethylamine hydrochloride and bromide, and dimethylamine hydrochloride and bromide, thereby to form a substantially pure dichloroethylene compound of the above formula, and (2) removing the unreacted ammonia and alkyl amine thereby isolating the desired dichloride.

4,192,958
METHOD FOR RECOVERING RESORCINOL

Isao Hashimoto, Waki; Hiroaki Nakagawa, Iwakuni, and Hirohiko Nambu, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

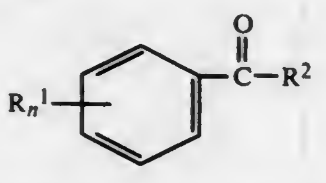
Filed Sep. 26, 1978, Ser. No. 945,883

Claims priority, application Japan, Sep. 30, 1977, 52/116887

Int. Cl.² C07C *39/10*

U.S. Cl. 568—763 **4 Claims**

1. A method for recovering resorcinol by thermally cracking high-boiling by-products contained in the acid-cleavage product of m-diisopropylbenzene dihydroperoxide at a temperature of about 170° to about 400° C., wherein the thermal cracking is effected in the presence of at least 7 parts by weight, per 100 parts by weight of the high-boiling by-products, of an aromatic ketone of the formula



wherein R^1 represents a member selected from the group consisting of hydrogen, saturated alkyl groups having 1 to 6 carbon atoms, hydroxyl, acetyl and chlorine, R^2 represents a member selected from the group consisting of saturated alkyl groups having 1 to 6 carbon atoms, cyclohexyl and phenyl, and n represents 1, 2 or 3, and when there are two or more R^1 groups, they are identical or different.

4,192,959
PROCESS FOR THE PREPARATION OF PURE 2-HYDROXYBENZYL ALCOHOL, PURE 4-HYDROXYBENZYL ALCOHOL OR A MIXTURE OF BOTH HYDROXY-BENZYL ALCOHOLS

Kurt Bauer; Alfred Krempel, both of Holzminden; Reiner Mölleken, Golmbach-Warbsen; Karlfried Wedemeyer, Cologne, and Helmut Fiege, Leverkusen, all of Fed. Rep. of Germany, assignors to Haarmann & Reimer, Leverkusen, Fed. Rep. of Germany

Filed Jun. 14, 1978, Ser. No. 915,489

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2729075

Int. Cl.² C07C *37/26, 39/16*

U.S. Cl. 568—764 **15 Claims**

1. A process for the preparation of pure 2-hydroxybenzyl alcohol and pure 4-hydroxybenzyl alcohol or a mixture of both compounds, which comprises reacting phenol with formaldehyde in the presence of about 0.05 to 0.0001 mol of a basic catalyst per mol of phenol at about 25° to 120° C. for about 0.5 to 5 hours to form a reaction mixture containing unreacted phenol, 2-hydroxybenzyl alcohol, 4-hydroxybenzyl alcohol, dihydroxydiphenylmethanes and polyhydroxymethylphenols, subjecting the resulting reaction mixture to countercurrent extraction in a solvent system of water/organic solvent, the organic solvent comprising an alkylaromatic compound with 7 or 8 C atoms, a cycloaliphatic hydrocarbon with 6 to 8 C atoms or an aliphatic ether with 6 to 8 C atoms, the system containing sufficient water to form an aqueous phase containing the 2- and 4-hydroxybenzyl alcohols and an organic phase comprising phenol and the dihydroxydiphenylmethanes, separating the organic phase, and in a second stage subjecting the aqueous phase to countercurrent extraction with an organic solvent to form an organic phase containing at least the 2-hydroxybenzyl alcohol and an aqueous phase containing the polyhydroxymethylphenols.

4,192,960
PROCESS FOR MANUFACTURING DICYCLOHEXANOL PROPANE BY HYDROGENATION OF DIPHENOL PROPANE

Gérard Hillion, Herblay, and Christian Lassau, Villepreux, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Mar. 10, 1978, Ser. No. 885,223

Claims priority, application France, Mar. 10, 1977, 77 07444

Int. Cl.² C07C *35/21*

U.S. Cl. 568—816 **16 Claims**

1. In a process for producing a dicyclohexanolpropane by hydrogenation of diphenolpropane, which comprises the steps of contacting diphenolpropane with molecular hydrogen in the presence of a homogeneous hydrogenation catalyst consisting essentially of the reaction product of at least one transition metal compound with a compound of the formula AlR_3, where each radical R is selected from hydrogen, hydrocarbyl and hydrocarbyloxy, at least one being hydrogen or hydrocarbyl, thereby forming dicyclohexanolpropane; and recovering the resultant dicyclohexanolpropane, the improvement of which comprises:

- (a) effecting the catalytic hydrogenation to form dicyclohexanolpropane in the absence of a solvent for the diphenolpropane until at least 80% of the theoretical amount of hydrogen has been absorbed; and only then
- (b) adding at least 0.05 part by weight of an alcohol having 1–12 carbon atoms and at least 0.005 part by weight of water for each part by weight of starting diphenolpropane, thereby forming (1) a solution of the alcohol and dicyclohexanolpropane and (2) an insoluble catalyst phase; wherein the amount of water added is sufficient to effect the formation of an insoluble catalyst phase but insufficient to cause separation of the alcohol from the solution of alcohol and dicyclohexanolpropane;

- (c) separating the catalyst phase from the solution of alcohol and dicyclohexanolpropane; and
- (d) recovering dicyclohexanolpropane from the separated solution of the alcohol and dicyclohexanolpropane.

4,192,961
METHOD AND CATALYST FOR PREPARING STYRENE

Sergei A. Polyakov, 3 Sovetskaya ulitsa, 16, kv. 9; Aron L. Shapiro, ulitsa Lensoveta, 50, kv. 29, and Viktor J. Gankin, ulitsa Khalturina, 20, kv. 6, all of Leningrad, U.S.S.R.

Filed Oct. 4, 1977, Ser. No. 839,348

Int. Cl.² C07C *15/00*

U.S. Cl. 585—319 **1 Claim**

1. A method for preparing styrene which comprises dehydrodimerization of toluene with a subsequent catalytic conversion of the resulting dehydrodimerization products to styrene at a temperature ranging from 300° to 600° C. in the presence of ethylene using a catalyst consisting of the following components, percent by weight:

chromium oxide	1.5 to 5.2
tungsten oxide	4.0 to 6.1
an oxide of an alkali metal	0.1 to 0.7

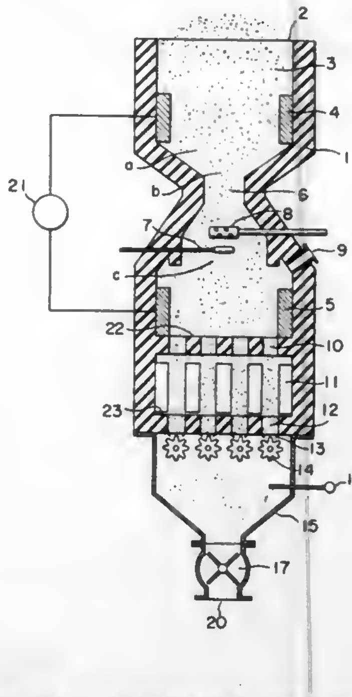
a carrier selected from the group consisting of silica and alumosilicate the balance.

4,192,962

METHOD AND APPARATUS FOR REGENERATING USED ACTIVATED CARBON

Kozaburo Nakao, Tokyo, and Toru Miyajima, Chigasaki, both of Japan, assignors to Kabushiki Kaisha Kyoritsu Yuki Kogyo Kenkyusho, Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,752
Int. Cl.² F27B *1/08;* E27D *11/04*
U.S. Cl. 13—7 **2 Claims**



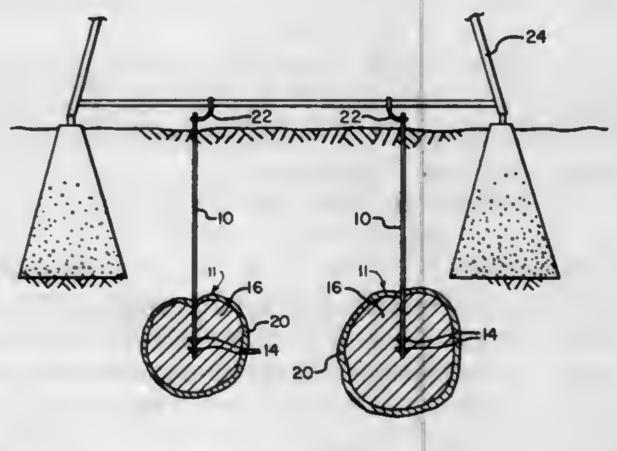
1. Apparatus for regenerating used activated carbon comprising a vertical electric furnace provided with an upper opening for charging used activated carbon to be generated, a bottom opening for discharging regenerated activated carbon, upper and lower generally annular electrodes mounted on the inner wall of said electric furnace said electrodes being spaced apart in the vertical direction, a horizontal plate located below said lower electrode and provided with slots for passing regenerated activated carbon, cooling tubes located beneath said slots and on the opposite sides of said slots for defining passages for regenerated activated carbon, and rotary discharge means located below said passages respectively, the inner cross-sectional area of said furnace gradually decreasing and then gradually increasing between said upper and lower electrodes thus forming a passage of said activated carbon, and a source of electric power for applying operating voltage across said electrodes.

4,192,963

GROUNDING ELECTRODE AND METHOD OF REDUCING THE ELECTRICAL RESISTANCE OF SOILS

Paul L. Koehmstedt, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Filed Jan. 2, 1979, Ser. No. 488
Int. Cl.² H01R *3/06*
U.S. Cl. 174—6 **18 Claims**



1. A soil treating method comprising:

enhancing the electrical conductivity of a volume of soil in contact with additional soil; and

enclosing the volume of soil with a water repellant electrically conductive shell bonded to the additional soil.

3. A method of forming an underground grounding electrode comprising:

injecting a first solution into a volume of soil so as to lower the electrical resistance of the volume; and then

injecting an electrically conductive second solution into the volume which diffuses through the volume and forms a water repellant electrically conductive layer bonded with soil outside of the volume.

14. A grounding electrode comprising:

a volume of soil containing an electrolyte; and

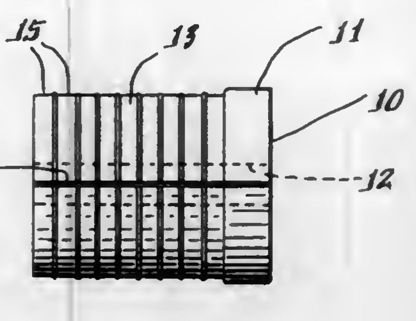
an electrically conductive asphalt emulsion layer at least partially enclosing the volume of soil.

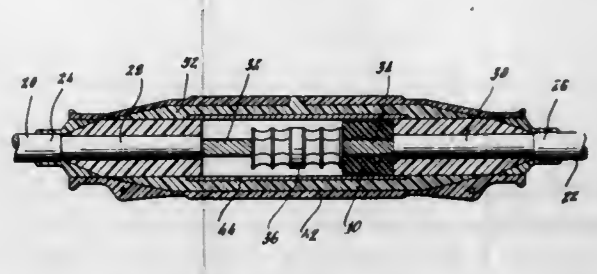
4,192,964

MODIFIABLE STOP ELEMENT FOR CABLE CONNECTOR ASSEMBLIES

Norman M. Sacks, Westport, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed May 11, 1978, Ser. No. 905,079
Int. Cl.² H02G *15/08*
U.S. Cl: 174—73 R **10 Claims**





1. A splice connector assembly for electrically coupling the conductors of a pair of cables, said connector assembly comprising:

(a) a connector for coupling the exposed ends of the conductors of said cables;

(b) an outer sleeve, having an inner conductive surface, for surrounding said connector and the ends of said cables coupled thereby;

(c) bushings, each of which have a central opening for receiving therethrough one of said cables at a position spaced from said connector, for creating a seal between said cables and said outer sleeve when said connector assembly is assembled to said cables; and,

(d) a bushing stop sleeve of resilient material, having a central opening of sufficient diameter for receiving and resiliently engaging the outer surface of the exposed end of the conductor of at least one of said cables, said bushing stop sleeve abutting at one end thereof said connector and at the other end thereof the end of a bushing facing said connector in order to maintain the spacing of said bushing from said connector,

said bushing stop sleeve further having at least one outer portion, the dimension of which is such as to engage the inner conductive surface of said outer sleeve when said connector is assembled to said cables, and having at least a conductive portion for establishing a conductive path between said conductor and the inner conductive surface of said outer sleeve, the material of said bushing stop sleeve being subject to cutting with any suitable sharp instrument to reduce the axial length thereof for fitting and maintaining a desired axial spacing between said connector and the end of said bushing facing said connector.

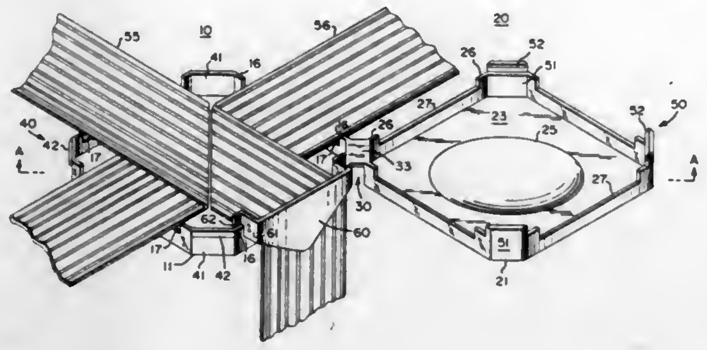
4,192,965
FLAT RIBBON CABLE RETAINER

Henry K. Baum, Franklin Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 29, 1977, Ser. No. 865,760

Int. Cl.² H02G *3/00*

U.S. Cl. 174—135 **10 Claims**



1. In combination a flat ribbon cable retainer carrying and angularly routing at least one of a plurality of flat ribbon cables, said retainer comprising:

first and second planar panels, said first panel including a plurality of first edges of a first length arranged in equidistant and spaced relationship to one another along the perimeter on said first panel, and said second panel including a plurality of first edges of a second length arranged in an equidistant and spaced relationship to one another along the perimeter of said second panel;

hinging means integrally joining said first panel to said second panel at one of said plurality of first panel first edges, and a corresponding one of said plurality of second panel first edges;

first and second latching means, each mounted on a different one of said plurality of first panel first edges and third and fourth latching means each mounted on a different one of said plurality of second panel first edges and arranged in a mutual relationship with said first and second latching means;

at least one flat ribbon cable positioned on said first panel between said hinging means and said first latching means, said cable folded upon itself and exiting said first panel between said hinging means and said second latching means, and alternatively, said cable folded upon itself and exiting said first panel between said first latching means and said second latching means, whereby said flat ribbon cable is retained in position when said second panel is rotated about said hinging means and positioned over said first panel, and said second panel third and fourth latching means interlockingly engaging said first and second latching means of said first panel.

4,192,966
CIRCUIT ARRANGEMENT FOR DETERMINING SPECIFIC CHARACTERS OCCURRING DIRECTLY CONSECUTIVELY IN A SEQUENCE OF CHARACTERS, IN PARTICULAR FOR TELEPRINTER EXCHANGE SYSTEMS

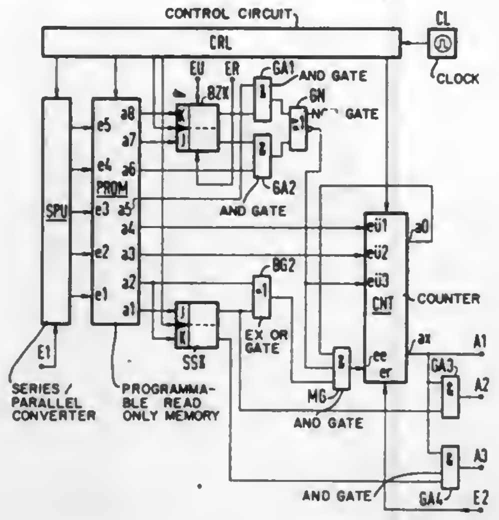
Max Mayer, Unterpfaffenhofen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 938,986

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742476

Int. Cl.² G06F *7/02;* **H04L** *15/00*

U.S. Cl. 178—3 **12 Claims**



1. An arrangement for determining specific characters which occur consecutively in a sequence of characters, a sequence comprising at least one established sequence of characters in a predetermined number, and for emitting a message signal which can be used for triggering control processes only in response to the receipt of characters comprising an established sequence of character elements in the predetermined number, comprising:

a memory adapted to receive character elements in parallel and emit corresponding parallel first control signals indicative of the sequence of character elements;

an evaluation circuit connected to said memory and responsive to specific ones of said first control signals to provide second control signals; and

counting means connected to said memory and to said evaluation circuit, said counting means responsive to said specific control signals and identical control signals previously supplied from said memory to execute a counting process and supply a count output representative of the received character elements and responsive to said specific control signals and differing previously-supplied control signals to reset to a predetermined count.

4,192,967
TELETYPE MIXER APPARATUS FOR CODING AND DECODING

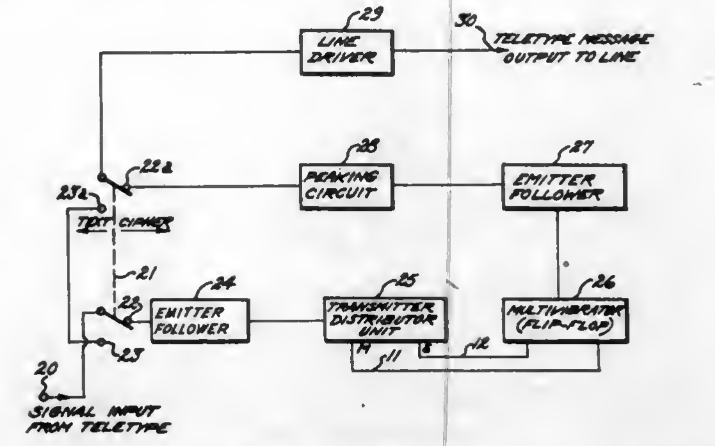
Martin J. Prucha, Mountain View, Calif.; Willis L. Donaldson, and Douglas N. Travers, both of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1966, Ser. No. 554,286

Int. Cl.² H04L *9/02*

U.S. Cl. 178—22 **4 Claims**

1. In a teletype communication system, apparatus to cipher input teletype signals prior to their transmission wherein the input teletype signal represents a single character by a predetermined multiple unit pulse code inserted between an associated start and stop pulse of preselected widths comprising first switch means receiving said input teletype signals, said first switch means having two positions, and first being a cipher position and the second a text position, with said first switch means in said first position, a resistive attenuator interconnecting a first emitter follower transistor with said first switch means, said resistive attenuator also providing bias to said first emitter follower transistor, enciphering means having a single input and a first and second output, with said input being connected to the output of said first emitter follower transistor, said means mixing in a preselected random manner said predetermined multiple unit pulse code while retaining their associated start and stop pulse in their original position, a bistable multivibrator having first and second inputs and a single output, said first and second inputs being connected to said first and second outputs, respectively, of said enciphering means, a peaking circuit interconnecting said output of said bistable multivibrator with a second emitter follower transistor, and a common emitter connected transistor operating as a driver and receiving the output signal from said peaking circuit for delivery to an output terminal for further transmission.


29
LINE DRIVER
30
TELETYPE MESSAGE OUTPUT TO LINE
28
PEAKING CIRCUIT
27
EMITTER FOLLOWER
22a
23a
TEXT
CIPHER
21
22
24
EMITTER FOLLOWER
25
TRANSMITTER DISTRIBUTOR UNIT
26
MULTIVIBRATOR (FLIP-FLOP)
23
11
12
20
SIGNAL INPUT FROM TELETYPE

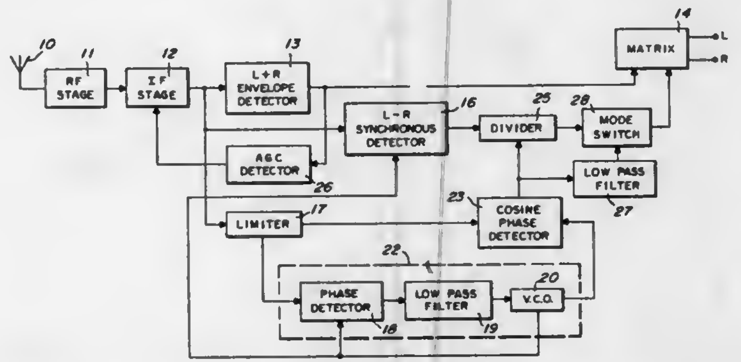
4,192,968
RECEIVER FOR COMPATIBLE AM STEREO SIGNALS

Francis H. Hilbert, Addison, and Norman W. Parker, Wheaton, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 27, 1977, Ser. No. 837,258

Int. Cl.² H04H *5/00*

U.S. Cl. 179—1 GS **15 Claims**



13. A receiver for receiving a broadcast carrier wave which is amplitude modulated with signal information proportional to the sum of first (A) and second (B) intelligence signals, and which is phase modulated with a signal proportional to an angle ϕ having the form $\phi = \arctan\{c_1(A-B)/(C_2+A+B)\}$- where C_1 and C_2 are constants, the receiver comprising in combination:

input means for receiving and amplifying the broadcast carrier wave;

means coupled to the input means for translating the broadcast carrier wave to one of an intermediate frequency;

envelope detector means coupled to the translating means for providing a sum signal proportional to the amplitude modulation in the received AM stereo signal;

synchronous detector means coupled to the translating means for providing a first signal proportional to $(A-B)\cos\phi$;

corrector means for providing a second signal proportional to $\cos\phi$.

means for dividing the first signal by the second signal; and

matrix means for processing the outputs of the divider means and the envelope detector means to provide separate outputs proportional to A and B.

4,192,969
STAGE-EXPANDED STEREOPHONIC SOUND REPRODUCTION

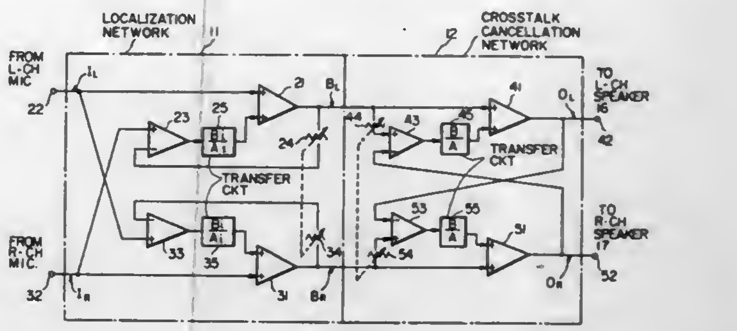
Makoto Iwahara, c/o Victor Company of Japan, Limited, No. 3-12, Moriya-cho, Kanagawa-ku, Yokohama City, Japan

Filed Sep. 7, 1978, Ser. No. 940,461

Claims priority, application Japan, Sep. 10, 1977, 52-109174

Int. Cl.² H04R *5/04*

U.S. Cl. 179—1 G **5 Claims**

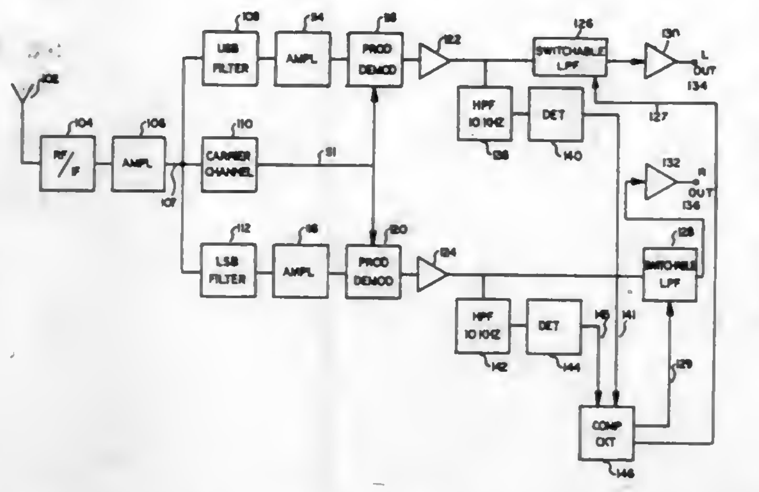


1. Apparatus adapted to receive input stereophonic signals for deriving output signals to be applied to loudspeakers in spaced relation with respect to a listener to give him a sense of an expanded stage width, comprising in each of right and left channels: first additive circuit means having a first input terminal in receipt of said input signal applied to one of the channels, a first transfer circuit means having a transfer function representative of the ratio of the accoustic transfer function of crosstalk paths to the acoustic transfer function of direct paths between hypothetical sound sources and listener's respective ears, first subtractive circuit means having a positive input terminal in receipt of the input signal applied to the other channel and a negative input terminal in receipt of a signal from the output of said first additive circuit means of said one channel to provide an output signal to a second input terminal of said first additive circuit means through said first transfer circuit means, second additive circuit means having a first input terminal in receipt of a signal from the output of said first additive circuit means, second transfer circuit means having a transfer function representative of the ratio of the acoustic transfer function of crosstalk paths to the acoustic transfer function of direct paths between said loudspeakers and the listener's respective ears, second subtractive circuit means having a positive input terminal in receipt of a signal from the output of said first additive circuit means of said one channel and a negative input terminal in receipt of a signal from the output of the second additive circuit means of the other channel to provide an output signal to a second input terminal of said second additive circuit means through said second transfer circuit means, and means for varying the magnitude of the signals supplied to the negative input terminal of the first subtractive circuit means and to the positive input terminal of the second subtractive circuit means, the signals from the output of said second additive circuit means of said channels being the signals applied to said loudspeakers.

4,192,970

REDUCTION OF ADJACENT CHANNEL INTERFERENCE

Leonard R. Kahn, 137 E. 36th St., New York, N.Y. 10016
Continuation of Ser. No. 764,476, Jan. 31, 1977, abandoned. This application Apr. 18, 1978, Ser. No. 897,305
Int. Cl.^{2} H04H *5/00*
U.S. Cl. 179—1 GS **13 Claims**

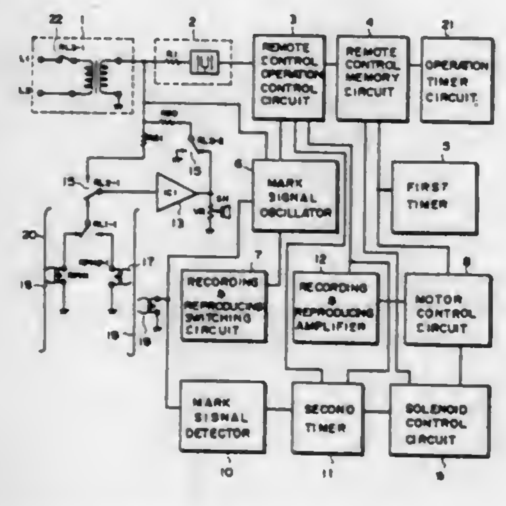


1. The method of reducing adjacent channel interference in the reception of an independent sideband type AM stereo signal, comprising:
   (a) measuring the amplitude of a selected portion of the demodulated upper sideband of said received stereo signal that is representative of the level of adjacent channel interference in said upper sideband;
   (b) measuring the amplitude of a selected portion of the demodulated lower sideband of said received stereo signal that is representative of the level of adjacent channel interference in said sideband;
   (c) comparing said measurements to develop an indication of which sideband has the greater level of adjacent channel interference; and
   (d) in response to said indication, automatically reducing the audio frequency response of the stereo channel corresponding to the sideband having the greater level of adjacent channel interference.

4,192,971

REMOTE-CONTROLLABLE AUTOMATIC TELEPHONE ANSWERING DEVICE

Eiji Morigami, Yachiyo, and Motoharu Inahara, Tokyo, both of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Japan
Filed Mar. 23, 1978, Ser. No. 889,437
Claims priority, application Japan, Mar. 25, 1977, 52-32064; Mar. 25, 1977, 52-32065
Int. Cl.^{2} H04M *1/64, 11/10*
U.S. Cl. 179—6 E **6 Claims**

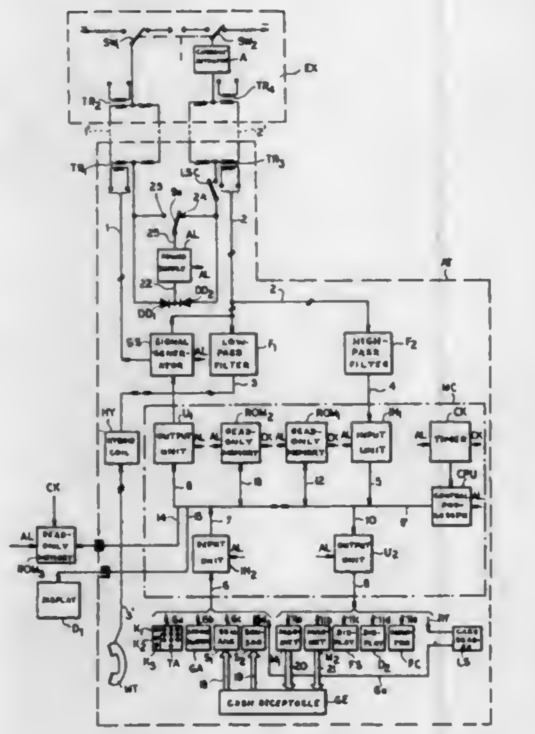

REMOTE CONTROL OPERATION CONTROL CIRCUIT
REMOTE CONTROL MEMORY CIRCUIT
OPERATION TIMER CIRCUIT
MARK SIGNAL OSCILLATOR
FIRST TIMER
RECORDING & REPRODUCING SWITCHING CIRCUIT
RECORDING & REPRODUCING AMPLIFIER
MOTOR CONTROL CIRCUIT
MARK SIGNAL DETECTOR
SECOND TIMER
SOLENOID CONTROL CIRCUIT

1. In an automatic telephone answering device which sends out the contents of at least one recorded message to a calling party at a remote place upon arrival of a remote control signal from said calling party after the detection of a ringing signal sent over a communication circuit, the improvement comprising: an oscillator for generating a low-frequency signal; means responsive to a first-received remote control signal to record the low-frequency signal, in a second channel developed on the same recording tape as a first channel for recording messages, in a forward direction for a predetermined period of time; a plurality of magnetic heads respectively corresponding to said first and second channels on said recording tape; a recording tape rewinding mechanism; and control means for controlling said recording tape rewinding mechanism of said device after completion of the recording of the low-frequency signal to rewind the recording tape so that said magnetic heads corresponding to said first channel and said second channel are opposite a position on said recording tape beyond the recorded position of said low-frequency signal but short of the end of a last recorded message.

4,192,972

PAY-TELEPHONE STATION WITH DEFERRED COLLECTION

Ottavio Bertoglio; Aurelio Caccia; Riccardo Fidanza, all of Turin, and Wouter M. D. VanVeen, San Maurizio Canavese, all of Italy, assignors to Cselt-Centro Studi e Laboratori Telecomunicazioni S.p.A, Turin, Italy
Continuation-in-part of Ser. No. 788,757, Apr. 19, 1977, abandoned. This application Nov. 28, 1978, Ser. No. 964,339
Claims priority, application Italy, Apr. 27, 1976, 68016 A/76
Int. Cl.^{2} H04M *17/02*
U.S. Cl. 179—6.3 R **12 Claims**

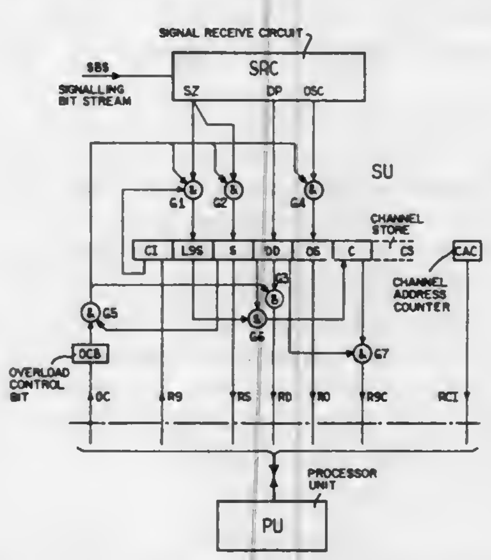


1. In a telephone pay station provided with voice-communication equipment and with selection means for transmitting call-number digits to an associated exchange preparatorily to the establishment of a talking connection via said voice-communication equipment, in combination:
   payment-accepting means accommodating deposits of monetary media including payment items of different denominations;
   sensing means at said payment-accepting means for detecting the number of deposited payment items of each denomination;
   money-handling means at said payment-accepting means for selectively collecting payment items of any denomination and refunding uncollected deposited payment items to a user; and
   computing means including a processor for controlling the collection of deposited payment items in response to metering pulses from the exchange and for refunding any remaining balance to the user upon the termination of a talking connection, said processor comprising first register means for storing a debt accumulated from charges based on said metering pulses, second register means controlled by said sensing means for storing the number of deposited payment items of any denomination, disconnect means for cutting off a talking connection upon said debt reaching the sum of the monetary values of the deposited payment items, logical circuitry operative upon a termination of a talking connection other than through cutoff by said disconnect means for establishing different subcombinations of the contents of said second register means, arithmetic means connected to said logical circuitry for calculating the difference between said debt and the total value of the payment items represented by any of said subcombinations, and signaling means controlled by said arithmetic means for actuating said money-handling means to collect payment items corresponding to an optimum subcombination for which said total value exceeds said debt by a nonrefundable surplus ranging from zero to the smallest surplus obtained with any other subcombination established by said logical circuitry.

4,192,973

PROCESSOR OVERLOAD ARRANGEMENT IN TIME DIVISION MULTIPLEX EXCHANGES

Roger M. Williams, Maidenhead, England, and Alan J. Lawrence, Stamford, Conn., assignors to Plessey Handel und Investments AG, 6300 Zug, Switzerland
Filed Jan. 13, 1978, Ser. No. 869,152
Claims priority, application United Kingdom, Jan. 18, 1977, 1875/77
Int. Cl.^{2} H04Q *1/22, 11/04*
U.S. Cl. 370—53 **9 Claims**

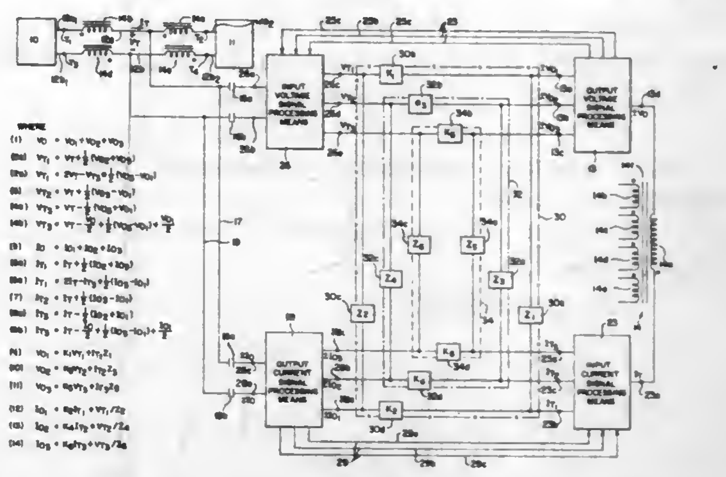


1. A signalling unit for use in a time division multiplex processor-controlled telecommunication exchange comprising in combination;
   storage means for each channel in a time division multiplex highway for storing ordinary and emergency call signalling information preparatory to being transmitted to the processor;
   processor overload detection means, further comprising in combination;
   means for transmitting signalling information to the processor and;
   means for receiving signals from the processor; whereby when a processor-overload condition occurs, a signal is transmitted by way of the means for receiving signals to activate the processor overload detection means whereupon the transmission of signalling information from the storage means by way of the means for transmitting signalling information is inhibited except in respect of signalling information for emergency calls.

4,192,974

MULTI-SECTION APPARATUS FOR IMPROVING SIGNAL TRANSMISSION THROUGH TELEPHONE TRANSMISSION LINES

Frederick J. Kiko, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio
Filed Mar. 20, 1978, Ser. No. 888,501
Int. Cl.^{2} H04B *3/36*
U.S. Cl. 179—16 F **47 Claims**


INPUT VOLTAGE SIGNAL PROCESSING MEANS
OUTPUT VOLTAGE SIGNAL PROCESSING MEANS
OUTPUT CURRENT SIGNAL PROCESSING MEANS
INPUT CURRENT SIGNAL PROCESSING MEANS
WHERE

1. In an apparatus for producing simultaneously a multiplicity of independent non-interactive effects in the transmission characteristics of a transmission line, the combination of:
   (a) output voltage signal processing means for generating an output voltage, said output voltage being applied in series with said transmission line, and for generating a plurality of feedback signals, the signal processing means having a plurality of inputs, a first output associated with said output voltage and a plurality of second outputs each associated with a respective feedback signal, each of said feedback signals being dependent upon the signal at a respective input;
   (b) output current signal processing means for generating an output current, said output current being applied in shunt with said transmission line, and for generating a plurality of feedback signals, the signal processing means having a plurality of inputs, a first output associated with said output current and a plurality of second outputs each associated with a respective feedback signal, each of said feedback signals being dependent upon the signal at a respective input;
   (c) input voltage signal processing means responsive to the signal voltage across said line and to said output voltage processing means feedback signals for generating a plurality of output signals, each of said output signals being dependent upon said signal voltage and upon predetermined ones of said feedback signals, the signal processing means having a plurality of feedback inputs each associated with a respective one of said feedback signals and a plurality of outputs each associated with a respective one of said output signals;
   (d) input current signal processing means responsive to the signal current through said line and to said output current processing means feedback signals for generating a plurality of output signals, each of said output signals being dependent upon said signal current and upon predetermined ones of said feedback signals, the signal processing means having a plurality of feedback inputs each associated with a respective one of said feedback signals and a plurality of outputs each associated with a respective one of said output signals;
   (e) a plurality of line conditioning control means responsive to the output signals of said input voltage processing means and to the output signals of said input current processing means, each of said conditioning control means having at least one input associated with a respective one

of the outputs of one of said input processing means, and at least one output associated with a respective one of the inputs of one of said output processing means;

(f) means for connecting said inputs of said line conditioning control means to said outputs of said input processing means; and

(g) means for connecting said outputs of said line conditioning control means to said inputs of said output processing means, whereby said multiplicity of independent non-interactive simultaneous effects in the transmission characteristics are produced.

4,192,975

SUPPLY-ARRANGEMENT FOR A LINE CIRCUIT

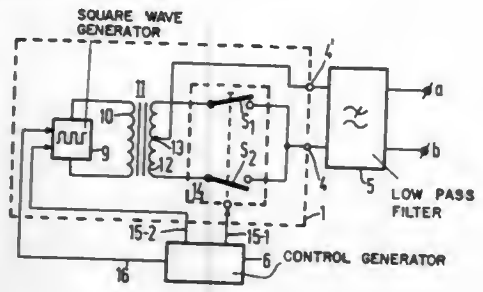
Klaus-Dieter K. Brockmann, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1978, Ser. No. 912,454

Claims priority, application Netherlands, Feb. 6, 1978, 7802423

Int. Cl.^{2} H04M *19/00*

U.S. Cl. 179—77 **8 Claims**



1. A supply arrangement for a line circuit of a telephone system, comprising a high frequency pulse source including bipolarity switching means and an output at which high frequency pulses of either positive or negative polarity are produced, means coupling said output to a two-wire subscriber's line via a low-pass filter having a cut-off frequency that is low relative to the frequency of the pulse source, and a control signal generator having an output coupled to said switching means for supplying control signals to the switching means for controlling the mark-space ratio of the pulses produced by the high frequency pulse source.

4,192,976

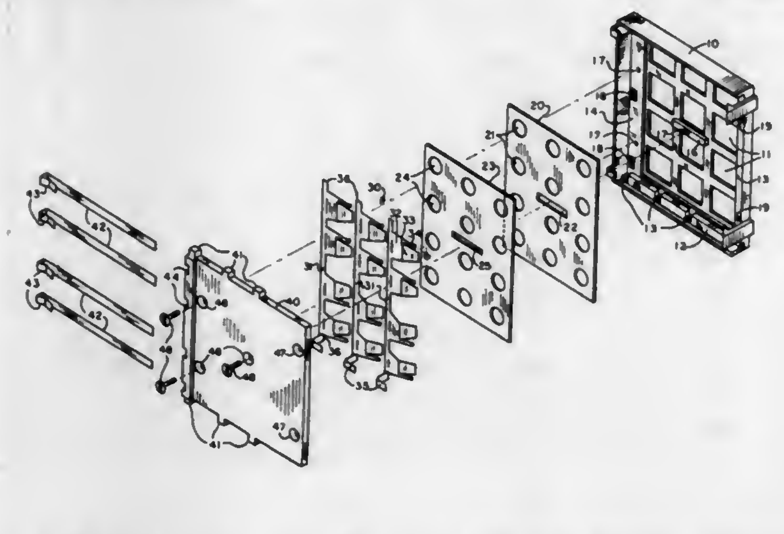
PUSHBUTTON CALL TRANSMITTER

James Scott, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 29, 1978, Ser. No. 974,398

Int. Cl.^{2} H04M *1/50*

U.S. Cl. 179—90 K **13 Claims**



1. A pushbutton controlled switching mechanism comprising: a frame having a plurality of apertures therein arranged in an array of longitudinal columns and transverse rows, said frame including inner and outer surfaces and a pair of rectangular members, each of said members transversely oriented and integrally mounted on opposite ends of said frame inner surface, each of said transverse members including a planar bottom surface and a inner side wall, said inner side walls including a plurality of vertically oriented contact spring receiving channels;

a bearing guide mounted to said frame inner surface intermediate said transverse members, including a plurality of apertures arranged in longitudinal columns and transverse rows, each of said bearing guide apertures in central alignment with each of said frame apertures;

a plurality of pushbuttons, each of said pushbuttons adapted to be positioned within a different one of said frame apertures and each including an actuating section positioned within a different one of said bearing guide apertures;

a plurality of contact spring members, each of said contact spring members including a conductor strip portion with first and second ends and a plurality of pushbutton spring means and electrical contact means integrally joined to and coactive with said pushbutton spring means intermediate said conductor portion first and second ends, said conductors second end further including an angularly displaced wiper contact end, each of said contact spring members adapted to be longitudinally mounted intermediate said frame transverse members with said first and second ends inserted within opposite and respective transverse member receiving channels, each of said spring means in general alignment with a respective one of said bearing guide apertures, and associative with one of said pushbutton actuating members, and said wiper contact ends extending inward and over said transverse member bottom surface;

a backplate including an inner and outer surface, said inner surface including a plurality of transversely oriented parallel and spaced apart contact strips, each contact strip further including a formed wiper contact end, each of said wiper contact ends terminating over said backplate outer surface, said backplate adapted to be mounted to said frame intermediate said transverse members with said contact strips in general alignment with said contact means;

a printed circuit board including a face having a plurality of contact areas adapted to be mounted to said frame with said contact areas communicating with said contact spring wiper ends and said contact strips wiper ends;

said pushbuttons each normally biased upwardly by said pushbutton spring means, and an individual one of said contact means operated upon application of manual pressure to one of said pushbuttons causing said included actuating section to displace said associated pushbutton spring means and urge said contact means into contact with said respective contact strip.

4,192,977

HIGHLY DIRECTIONAL ULTRASONIC ELECTRET TRANSDUCER

Kurt Stamm, Vienna, Austria, assignor to AKG Akustische u. Kino-Geräte Gesellschaft m.b.H., Austria

Filed Dec. 16, 1977, Ser. No. 861,342

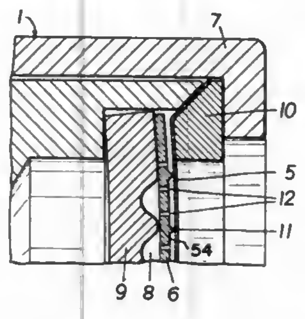
Claims priority, application Austria, Dec. 20, 1976, 9440/76

Int. Cl.^{2} H04R *1/34, 19/00*

U.S. Cl. 179—111 E **7 Claims**

1. An ultrasonic converter having single side, focused, substantially secondary radiation free directional characterstic, comprising a horn-like directional element with an inner end and an outer opened end and walls extending outwardly toward the outer opened end preferably according to an exponential function, a capacitive transducer located in said horn-like directional element adjacent to and closing off its inner end and having an electret diaphragm facing toward the outer end of said horn-like element with a diaphragm edge, said diaphragm including means for producing an approximately bell curved velocity distribution thereon tapering off toward the diaphragm edge, said means for producing an approximately bell-curved velocity distribution comprising a distribution of the electret charge on said diaphragm corresponding to an approximately bell-curved diaphragm velocity distribution tapering off toward the edge of the diaphragm.

5. An ultrasonic converter having a single side, focused, substantially directional characteristic free from secondary maxima, comprising a tubular horn-like element having a tubular wall with an inner end and an outer open end and a wall between said outer and inner ends tapering outwardly to said outer end in a curve according to an exponential function, an electret converter in said horn-like element adjacent said inner end and having a housing with a diaphragm on a side of said housing facing toward said outer end, a diaphragm support member in said housing behind said diaphragm with a support face having projecting portions and hollow portions between the projecting portions, a counterelectrode disc having an inner face engaged on said support projecting portions and having an outer face with electrode disc projections urged against said diaphragm.



4,192,978

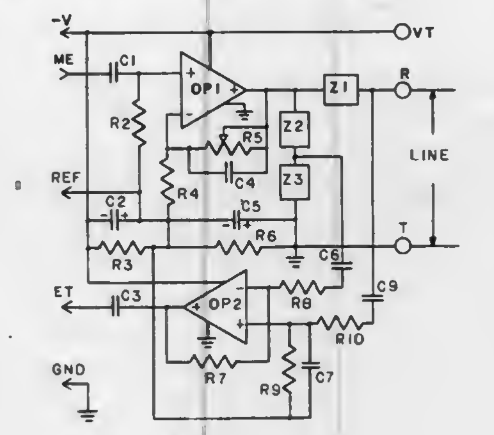
OPERATIONAL AMPLIFIER HYBRID SYSTEM

Ogden W. Vincent, 2166 La Miel Way, Campbell, Calif. 95008

Filed Feb. 27, 1978, Ser. No. 882,057

Int. Cl.^{2} H04B *1/58*

U.S. Cl. 179—170 NC **13 Claims**



1. A hybrid circuit comprising:

a first operational amplifier having an input and an output which has a very low impedance, the input of said first operational amplifier being connected to a first line, the output of said first operational amplifier being connected to an impedance bridge for sending outgoing signals to a two-wire transmission line, said first amplifier having a single ended output with an amplifier return path to a common point,

a second operational amplifier having a differential input with high impedances, said second operational amplifier having a non-inverting input and an inverting input, the output of said second amplifier being connected to a second line, said inputs of said second amplifier being connected to said impedance bridge for receiving incoming signals from said two-wire transmission line wherein said inputs are balanced with respect to said bridge and to said common point, said second amplifier having a single ended output with an amplifier return path to said common point, and

said impedance bridge having a first branch and a second branch, the top of said first branch and the top of said second branch each being connected to the output of said first amplifier, the bottom of said first branch and the bottom of said second branch each being connected to said common point, said first branch including a first impedance in series with the first wire of said two-wire transmission line, said bridge being capable of interfacing said two-wire line, the second wire of said two-wire line being connected to said common point, said second branch including a second impedance in series with a third impedance wherein said second and third impedances are equal, said non-inverting input being connected to said first wire, said inverting input being connected to the junction of said second and third impedances, said first impedance matching the impedance of said two-wire line, and said second and third impedances being selected to balance said bridge for producing equal first amplifier signals at said non-inverting and inverting inputs.

4,192,979

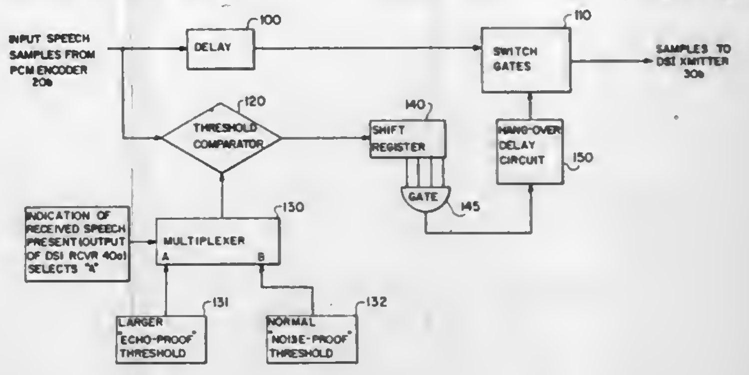
APPARATUS FOR CONTROLLING ECHO IN COMMUNICATION SYSTEMS UTILIZING A VOICE-ACTIVATED SWITCH

Joseph Jankowski, Jr., Silver Spring, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jun. 27, 1978, Ser. No. 919,520

Int. Cl.^{2} H04B *3/20*

U.S. Cl. 179—170.2 **12 Claims**


INPUT SPEECH SAMPLES FROM PCM ENCODER 20b
DELAY
100
SWITCH GATES
110
SAMPLES TO DSI XMITTER 30b
THRESHOLD COMPARATOR
120
SHIFT REGISTER
140
HANG-OVER DELAY CIRCUIT
150
GATE
145
INDICATION OF RECEIVED SPEECH PRESENT (OUTPUT OF DSI RCVR 40a) SELECTS "A"
MULTIPLEXER
A
B
130
LARGER "ECHO-PROOF" THRESHOLD
131
NORMAL "NOISE-PROOF" THRESHOLD
132

1. Apparatus for blocking echo signals in a telephone communications circuit comprised of individual channels for transmission and reception of voice signals between telephone terminals, said apparatus comprising:

(a) means for sensing the presence of received voice signals in the receive channel of a circuit at one terminal;

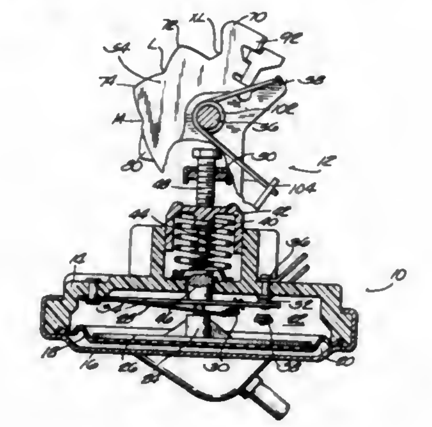
(b) comparison means for comparing signals to be transmitted from said terminal to a selectable threshold level and indicating if said transmitted signal exceeds the selectable threshold level;

(c) means responsive to said sensing means for selecting either a first threshold level or a second threshold level, said first threshold level being greater in magnitude than the level of noise in said transmission channel and said second threshold level being higher in amplitude than said first level and greater than that of said echo signals said second level being selected upon the detection by said sensing means of the presence of received voice signals in said receive channel at said terminal; and

(d) inhibiting means responsive to said comparison means for inhibiting transmission of said voice signals to be transmitted in the transmit channel of said circuit at said terminal unless said comparison means indicates that said voice signals to be transmitted exceed said selected threshold level.

4,192,980
AUTOMATIC RE-SET PRESSURE SWITCH

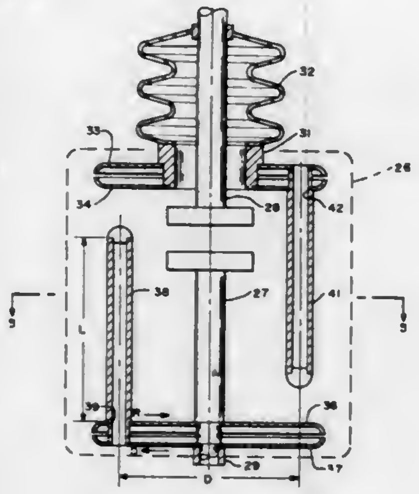
Erich Kothe, Schaumburg, Ill., assignor to The Singer Company, New York, N.Y.
Filed Oct. 2, 1978, Ser. No. 947,997
Int. Cl.^{2} H01H ***35/34***
U.S. Cl. 200—83 WM **10 Claims**



1. In combination with a pressure switch having a switch actuated by a diaphragm moved by pressure against the preload force of a spring which is seated against a member positioned by means of manually actuateable and settable cam means to provide for various pre-load forces on the spring corresponding to values above and below a medium value, the improvement of, means biasing the cam means back to the medium setting from settings above medium, and providing means operative to prevent movement of the cam means under influence of the biasing means and moveable to a position allowing the cam means to move back to the medium setting, and means for moving the preventing means to said position.

4,192,981
STRUCTURALLY IMPROVED ROD ARRAY VACUUM INTERRUPTER

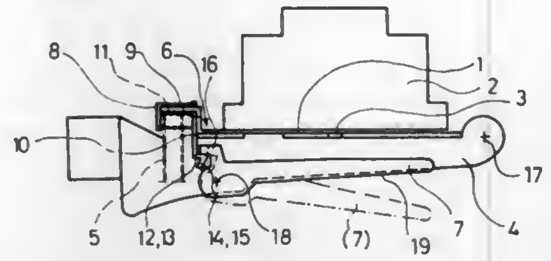
Philip Barkan, Media, and Imdad Imam, Secane, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Nov. 4, 1977, Ser. No. 848,512
Int. Cl.^{2} H01H ***33/66***
U.S. Cl. 200—144 B **6 Claims**



1. A high current rod array interrupter, comprising
a sealed enclosure having opposite ends,
a first pair of thin spaced rod mounting plates disposed toward one end of said sealed enclosure,
a second pair of thin spaced rod mounting plates disposed toward the other end of said sealed enclosure,
a stationary contact extending through said one end in electrical contact with said first pair of mounting plates,
a moving contact sealably extending through said other end in electrical contact with said second pair of mounting plates and movable between position in contact with and remote from said stationary contact,
a plurality of elongate rods mounted in each of said first and second pairs of thin spaced mounting plates extending toward the opposite end of said sealed enclosure therefrom,
said first and second pairs of plates being spaced sufficiently so that lateral force exerted at the free end of said rods produces substantially only compressive and tensile stress in said thin plates.

4,192,982
DEADMAN'S SWITCH

Albrecht Schnizler, Jr., Nuertingen, and Hermann Kieser, Nuertingen-Oberensingen, both of Fed. Rep. of Germany, assignors to Metabowerke GmbH & Co., Nurtingen, Fed. Rep. of Germany
Filed Aug. 2, 1978, Ser. No. 930,546
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736613
Int. Cl.^{2} H01H ***3/20***
U.S. Cl. 200—157 **23 Claims**

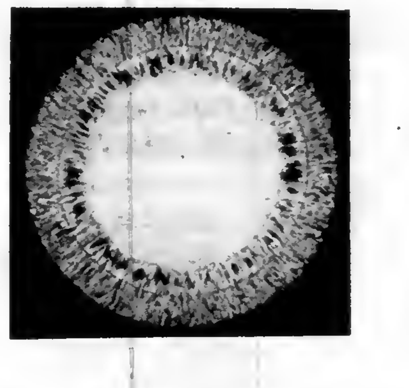


1. A switch, particularly a deadman's switch, comprising an actuating element movable against a biasing force from a rest position in which the switch is open to a working position in which the switch is closed; a member engageable with said element and movable under a force of a predetermined magnitude applied thereto between a first position corresponding to said rest position of said element and a second position in which it displaces said element into said working position; first resilient means for normally urging said member against the applied force into said first position so as to release the actuating element and open the switch, said member tending to prematurely move into said first position in response to a slight decrease of the applied force to a level below said predetermined magnitude: and means for maintaining said member in said second position when the applied force decreases above said level and allowing said member to move into said first position once the applied force decreases below said level.

4,192,983
METHODS OF HARD FACING

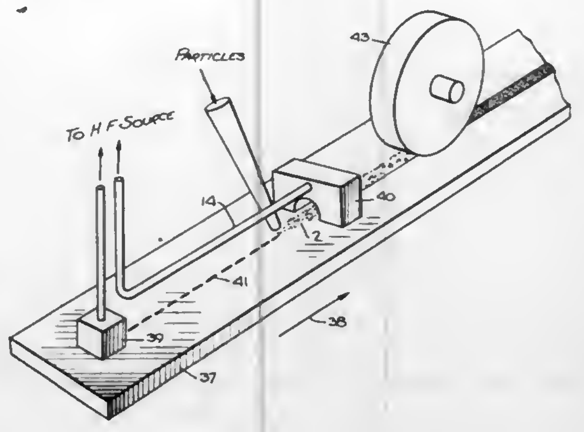
Alfred J. Paoletti, Willingboro, N.J., assignor to Cabot Corporation, Kokomo, Ind.
Filed May 2, 1978, Ser. No. 902,069
Int. Cl.^{2} B23K ***35/30***
U.S. Cl. 219—76.1 **6 Claims**

1. A method of hard surfacing a metal article comprising the steps of:
a. forming a metal boride layer in situ on an electrode wire; and
b. forming at least one layer of weldment on a surface of an article to be coated by depositing said electrode wire onto said surface by a welding technique simultaneously to melt the wire and metal boride into an alloy coating of substantially uniform boron containing composition and fuse the same to said surface.



4,192,984
EMBEDMENT OF HARD PARTICLES IN A METAL SURFACE

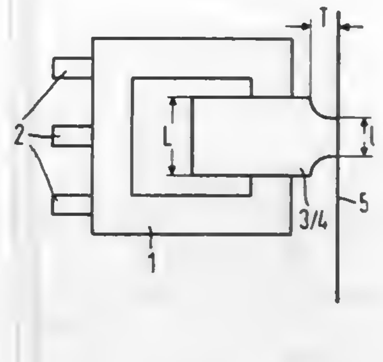
Wallace C. Rudd, New Canaan, Conn., assignor to Thermatool Corporation, Stamford, Mass.
Filed Jul. 12, 1978, Ser. No. 923,777
Int. Cl.^{2} B23K ***9/04, 11/00***
U.S. Cl. 219—76.17 **34 Claims**



1. A method of embedding a plurality of discrete particles in a surface area of a structurally continuous metal part, said particles being particles of a material having a melting point higher than, and mechanical properties different from, the metal of said part, said method comprising:
contacting said metal part with a first contact means at one end of said area and with a second contact means at the opposite end of said area thereby to define the length of said area, the dimension of said area in the plane of said surface and perpendicular to the length of the area being the width dimension of said area;
rapidly heating the metal of said area at least to the melting temperature thereof by supplying electric current having a frequency of at least 3000 Hz to both said contact means, and hence, to said metal part, the current being supplied to at least one of said contact means through relatively long and narrow proximity conductor means which overlies substantially the length of said area between said contacts with the length thereof extending parallel to the length of said area, which is spaced from the surface of said area by not more than five times the width of said proximity conductor means in the direction substantially parallel to the surface of said area and perpendicular to said length of said area and which is connected to said contact means so that the current therein, at any instant, flows oppositely to the flow of current in said metal part to cause the current to concentrate in said area as close as possible to said conductor and thereby melt metal in said area having a width approximating the width of said conductor without melting metal of the part outside of such melted metal;
inserting said particles of said material into the metal of said area while it is molten; and
cooling said metal to thereby form an area at the surface of said metal part which comprises discrete particles of said material embedded in a solid matrix of said metal, said cooling being caused before most of said particles can completely melt and so that at least most of the added particles continue to exist even though surface portions thereof may have melted.

4,192,985
METHOD FOR THE PRODUCTION OF INTEGRATED MAGNETIC HEAD STRUCTURES

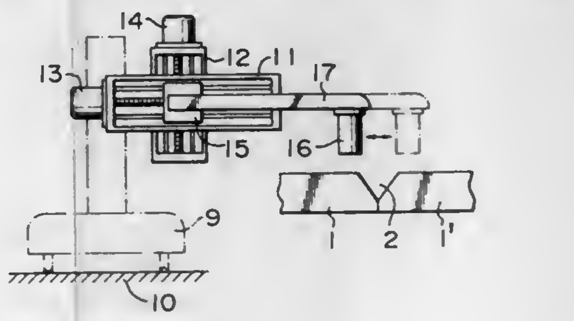
Winfried Berghof, Taufkirchen, and Alfred Pichler, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Sep. 15, 1977, Ser. No. 833,487
Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721201
Int. Cl.^{2} B23K ***9/00***
U.S. Cl. 219—121 EM **2 Claims**



1. In a process of producing a magnetic head structure in which a magnetic pole piece of alternate magnetic and nonmagnetic layers has an end face milled by ion bombardment at right angles to the face, from an original breadth to a smaller breadth which determines the track breadth, the improvement for definitive fixing of the smaller breadth comprising the steps of:
masking the head structure perpendicular to the end face and parallel to the planes of the layers to expose areas to be removed; and
bombarding the exposed areas through the mask at right angles to the planes of the layers.

4,192,986
METHOD AND APPARATUS FOR AUTOMATIC WELD LINE TRACING

Tsugio Udagawa, Tomobemachi; Takeshi Araya, Shimoinayoshi, and Takashi Yoshida, Minorimachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Seiko, Ltd., both of, Japan
Filed Aug. 9, 1977, Ser. No. 823,196
Claims priority, application Japan, Aug. 18, 1976, 51/97718
Int. Cl.^{2} B23K ***9/12***
U.S. Cl. 219—137 R **8 Claims**



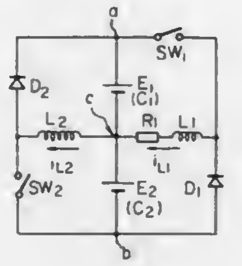
1. In a method for automatic weld line tracing wherein the welding torch traces a groove formed between two base metals

which are to be welded in accordance with the output voltages E of a sensor reciprocating back and forth in a contactless way over the base metals across the groove thereof, wherein the magnitude of the output voltage E varies inversely with the distance of the sensor from the base metal which the sensor is passing over, said method comprising detecting output voltages E_1 and E_2 of the sensor which are the output voltages at the respective ends of said groove each time the sensor passes over the groove, thereby indicating the distance of the sensor above each of the ends of the groove, comparing the output voltages E_1 and E_2 with each other to determine which voltage is lower, setting a voltage equal to the difference of the lower of said two voltages E_1 and E_2 and a reference voltage δ i.e., $E_1-\delta$ or $E_2-\delta$, determining an output voltage Ps equivalent to the center of said groove from said voltage value $E_1-\delta$ or $E_2-\delta$, producing the difference between said voltage Ps representing the center of said groove and a predetermined voltage representing the center of sensor reciprocation, and tracing said groove in such a manner as to eliminate said difference thereby to align the welding torch with the groove.

4,192,987
HIGH FREQUENCY ARC WELDING METHOD AND APPARATUS

Hitoshi Kawano; Kiyoshi Ikemura, and Mithuhilo Hayashi, all of c/o Shinko Electric Co., Ltd., Ise Factory, 100, Takehana-cho, Ise-shi, Mie, Japan

Filed Sep. 22, 1977, Ser. No. 835,528
Claims priority, application Japan, Nov. 1, 1976, 51/132172
Int. Cl.^{2} B23K *9/10*
U.S. Cl. 219—137 PS **7 Claims**



1. A high-frequency arc welding method comprising the steps of

applying a voltage from a D.C. electrical source E1 of an arc welding machine across an electrode of the machine and a workpiece to establish an arc welding current between the electrode and workpiece;

intermittently disconnecting the electrical source E1 thereby effecting temporary storage of magnetic energy in the inevitable inductance L1 inherent in the arc welding machine and its torch cable;

transferring the temporarily stored magnetic energy from the inevitable inductance L1 to a second D.C. electrical source E2 in the form of electrical energy to effect temporary storage of the transferred energy in the second source E2;

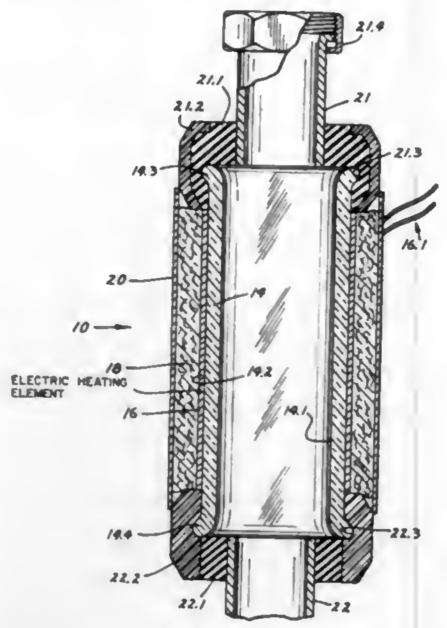
discharging the electrical energy temporarily stored in the second source E2 into an inductance L2 to effect temporary storage of the discharged electrical energy in inductance L2 in the form of magnetic energy; and

effecting conversion of the magnetic energy temporarily stored in inductance L2 into electrical energy and regenerative transfer of the thusly converted energy back into the first D.C. electrical source E1.

4,192,988
ELECTRICALLY HEATED THERMAL MICROBIAL DRAIN BARRIER

Paul D. Pederson, Jr., Minnetonka; Keith A. Ufford, Osseo, and Lawrence V. Nelson, Anoka, all of Minn., assignors to Foto-Mark, Inc., Egan, Minn.

Filed Jul. 11, 1977, Ser. No. 814,644
Int. Cl.^{2} H05B *1/00;* **A61L** *1/00;* **E03C** *1/28*
U.S. Cl. 219—201 **3 Claims**



1. In combination with a sink or the like having a drain pipe, a thermal microbial drain barrier for preventing microorganisms from reentering the sink through the drain pipe and comprising a length of thin-walled, heat-resistant, electrically nonconductive tubing having a heat conductivity in the axial direction of not more than about 3 Btu/hr/ft^2/°F./ft;

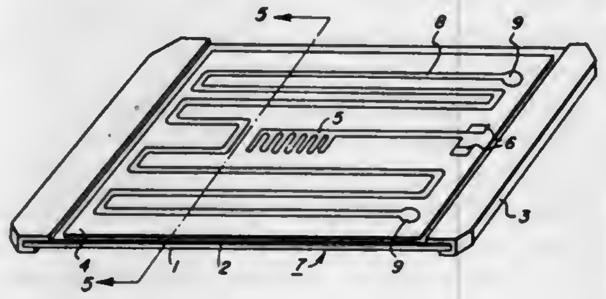
electric heating means positioned exteriorly of and in circumferential heating proximity to the tubing for heating the tubing, in the absence of drainage flow, to an inner surface temperature sufficient to prevent growth of microorganisms thereon, the tubing electrically insulating the electric heating means from the inner surface of the tubing; and

mounting means mounting the tubing in the drain pipe in a manner requiring drainage from the sink or the like to pass through the tubing, the mounting means comprising connector pipes extending axially outwardly from the tubing and connecting the latter into the drain pipe of the sink or the like, and means joining the connector pipes to the tubing including insulating means electrically insulating the pipes from the electric heating means and thermally insulating said tubing from the connector pipes.

4,192,989
BLANKET HEATED PHOTORECEPTOR

Lothar S. Jeromin, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 5, 1977, Ser. No. 813,037
Int. Cl.^{2} H05B *1/00*
U.S. Cl. 219—216 **4 Claims**



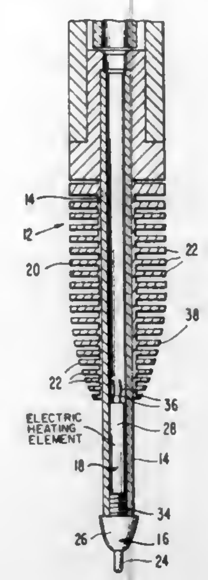
1. An improved xeroradiographic plate having a heating member attached thereto for relaxing xeroradiographic plates, each xeroradiographic plate comprising a substrate and a photoreceptor layer overlying said substrate comprising:

a thermofoil type heating member which is attached to said substrate and in thermal contact therewith, said thermofoil member comprising a current resistive layer which upon electrical energization converts electrical energy into thermal energy and first and second layers disposed on opposite sides of said current resistive layer, said first and second layers comprising a high dielectric strength, high temperature resistant sheet material.

4,192,990
TIP ASSEMBLY FOR USE WITH A THERMAL PRESS

Theodore Ziaylek, Jr., Yardley, Pa., assignor to Yardley Products, Inc., Yardley, Pa.

Filed Jul. 11, 1977, Ser. No. 814,361
Int. Cl.^{2} H05B *3/02;* **B30B** *15/34*
U.S. Cl. 219—243 **8 Claims**



1. A tip assembly for use with a thermal press comprising:

(a) a longitudinally extending core member formed of thermally conductive material and being of an approximately constant lateral diameter longitudinally therealong;

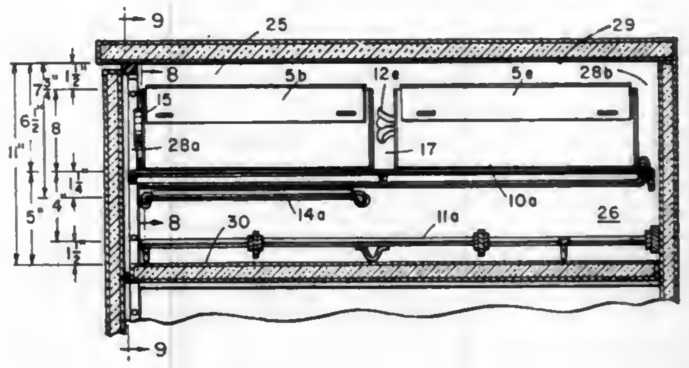
(b) a tip element adapted to be securely held at one end of said core member to be heated by a heating means associated with said core member, said tip element including a protruding finger member of a lateral diameter less than the lateral diameter of said core member, the remaining portion of said tip element entirely comprising a paraboloidal section adjacent to said finger member to facilitate the concentration of heat flow from the heating means to said finger member, said paraboloidal section having a gradually increasing diameter from the location adjacent said protruding finger member to the location of termination thereof adjacent said core member, the diameter of said paraboloidal section adjacent said protruding finger member starting at a diameter approximately equal to the diameter of said protruding finger member and gradually increasing parabolically to the point of termination thereof adjacent said core member where the diameter of said paraboloidal section is greater than the diameter of said core member:

(c) a heating means held by said core member and positioned thermally adjacent said tip element to selectively cause heating thereof; and heat dissipation means positioned around said core member to facilitate dissipation of heat from said tip element and said core member, said heat dissipation means including a plurality of spaced outwardly extending, disks forming an upwardly extending envelope of generally paraboloidal overall outer configuration to facilitate dissipation of heat from said tip assembly.

4,192,991
OVEN FOR COOKING MEAT ROASTS

Leo Peters, 750 Plymouth Rd. SE., Grand Rapids, Mich. 49506, and Richard O. Klemm, 4312 Valley View Rd., Crystal Lake, Ill. 60014

Filed Apr. 7, 1978, Ser. No. 894,407
Int. Cl.^{2} A21B *1/00*
U.S. Cl. 219—413 **5 Claims**



1. A radiant heat oven for cooking three or more meat roasts within a single cavity, the oven including a heat sensor positioned within the oven cavity, for controlling a low power density heating element a single shelf mounted within the oven cavity between the sensor and the top of the oven cavity so that meat roasts supported by the shelf are approximately midway between the sensor and the top of the oven cavity, the distance between the bottom and the top of the oven cavity being about 11 inches, said shelf being located about 6½ inches from said top of the oven cavity, said heat sensor being located underneath said shelf at a distance of about 1¼ inches from said shelf, the distance between said sensor to the top of the oven cavity being about 7¾ inches, and said low power density heating element having a wattage emission of 10 watts or less per square inch of element surface located adjacent to, and spread substantially across, the bottom of said oven cavity at a distance from said shelf of about 4 inches.

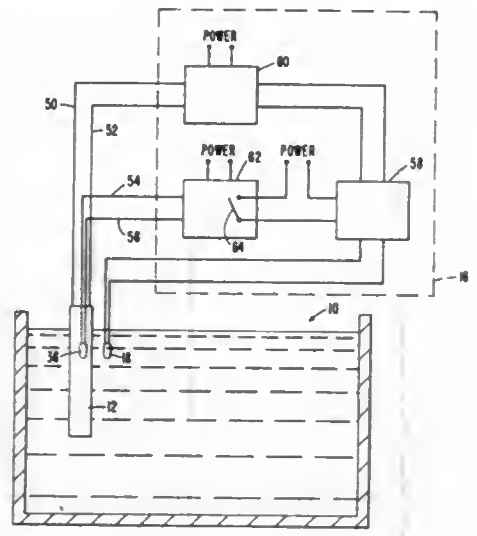
4,192,992
ELECTRIC HEATING ASSEMBLY FOR A FUSED BATH

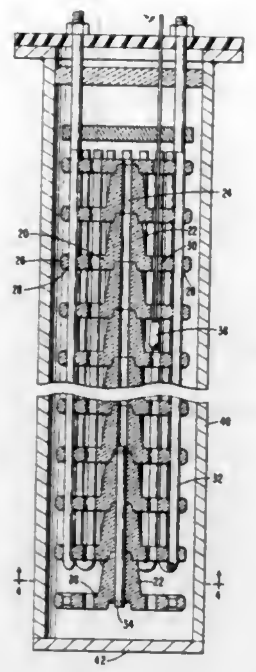
John M. Stevens, Detroit; Grant W. Allen, Northville; John M. Cole, Redford, all of Mich., and Timothy K. Mousseau, Sante Fe Springs, Calif., assignors to Kolene Corporation, Detroit, Mich.

Filed Jun. 29, 1978, Ser. No. 920,486
Int. Cl.^{2} H05B *1/02*
U.S. Cl. 219—494 **3 Claims**

1. In an electrical heating assembly for heating a fused salt bath in an enclosure wherein electrical heating elements are supported on electrically insulating ceramic spacer means within sealed heat conductive enclosure means, and supplied through leads with power from a power source through electrical insulating means in said enclosure means, and which enclosure means is disposed within the salt bath, and means for mounting said assembly in the bath, the improvement which comprises, first thermocouple disposed within the salt bath, second thermocuple disposed within said enclosure means supported by said spacer means and exposed to the direct radiation from electrical heating elements,

and electrical control operatively connected to each of said thermocouples and to said power source through electrical leads, said control means being arranged to control the power supplied to the electrical heating elements responsive to the temperature sensed by said first thermocouple and to remove the power supplied to the electrical heating elements and thereby over-ride the control of said first thermocouple and prevent excessive heating of the electrical heating elements irrespective of the bath temperature responsive to a given temperature sensed by said second thermocouple.





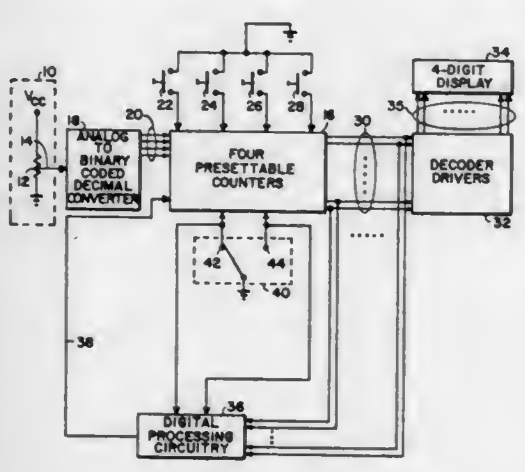
4,192,993
STATIC DIGITAL DATA ENTRY METHOD AND APPARATUS FOR A TIMER OR CLOCK

Reuben Wechsler, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 763,399, Jan. 28, 1977, abandoned. This application Jan. 31, 1979, Ser. No. 8,201

Int. Cl.^{2} H03K *21/36*

U.S. Cl. 235—92 DE **11 Claims**


10
Vcc
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18
ANALOG TO BINARY CODED DECIMAL CONVERTER
20
22
24
26
28
16
FOUR PRESETTABLE COUNTERS
30
34
4-DIGIT DISPLAY
35
DECODER DRIVERS
32
42
44
40
38
36
DIGITAL PROCESSING CIRCUITRY

1. A digital data entry method for visually displaying a digital representation of an operator desired number which comprises:
   (a) positioning manually and approximately a first mechanical member for converting a mechanical position into a steady state electrical analog signal having a first magnitude;
   (b) converting said steady state electrical analog signal to a binary coded representation having a second magnitude, said second magnitude being in a predetermined relationship with said first magnitude;
   (c) displaying digitally a first representation of said binary coded representation to the operator for identification; and
   (d) repositioning said mechanical member and repeating steps (b) and (c) until said digital representation corresponds to the operator desired number.

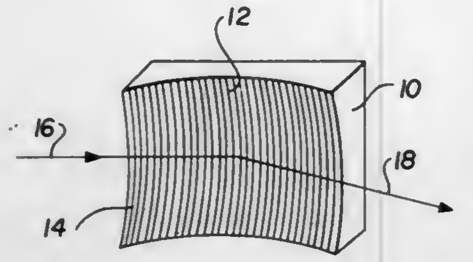
4,192,994
DIFFRACTOID GRATING CONFIGURATION FOR X-RAY AND ULTRAVIOLET FOCUSING

Sidney O. Kastner, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 18, 1978, Ser. No. 943,089

Int. Cl.^{2} G01N *23/20;* **G21K** *1/06*

U.S. Cl. 250—280 **13 Claims**



1. A diffractord grating means for obtaining stigmatic imaging of a soft X-ray and extreme ultraviolet emitting object at a focal point, comprising;
   a support block;
   a concave surface formed on a portion of said support block, said concave surface having a non-constant radius of curvature over the entirety thereof, and said non-constant radius of curvature surface having a surface of revolution about a coordinate axis defined by a diffractoidal curve specified in terms of cartesian coordinates x and z having a characteristic such that for a selected grating parameter (A) defined in terms of diffraction order (m), wavelength (λ) and ruling interval (σ), all emitted radiation of a specified wavelength from a point source directed substantially parallel to said axis will be deflected to a sharp point at said focal point and conversely, all emitted radiation of said specified wavelength directed from said sharp point at said focal point located at the origin of said cartesian coordinates will be deflected substantially parallel to said axis; and
   diffraction rulings formed on said non-constant radius of curvature surface having a ruling interval (σ);
   wherein said diffractoidal curve is defined by a solution of a non-linear differential equation expressed in the form

$$m\lambda/\sigma=[1+(dx/dz)^2]^{-\frac{1}{2}}[\cos\theta_r+\sin\theta_r(dx/dz)-1]$$

where dx/dz is the derivative of x with respect to z, θ_r is the angle a ray (r) from the origin to a point on said curve makes with the z coordinate axis.

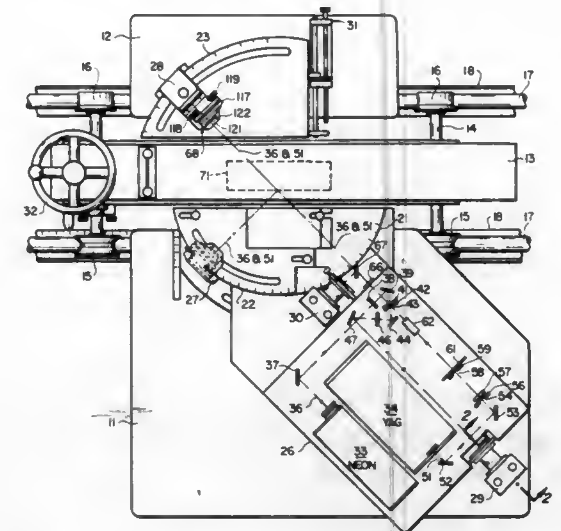
4,192,995
PHOTOMETRIC TESTING APPARATUS USING SHAPED DIFFUSER AND LIGHT BEAM HAVING A SPATIALLY ILL-DEFINED ENERGY DISTRIBUTION

Erik W. Anthon, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Feb. 21, 1978, Ser. No. 879,149

Int. Cl.^{2} G01J *1/00;* **G01N** *21/00;* **G02B** *13/20*

U.S. Cl. 250—338 **16 Claims**



9. In a testing apparatus for making photometric measurements on a test part, means for producing an invisible light beam, means for producing a visible light beam, means for combining the visible and invisible light beams so that they are coaxial, a reference detector characterized in that its sensitivity varies spatially over its sensitive area, means for aiming the combined visible and invisible light beams before they impinge upon the test part onto the reference detector, a signal detector characterized in that its sensitivity varies spatially over its sensitive area, means for aiming the combined visible and invisible beams so that they impinge upon the test part and means for directing the visible and invisible beams onto the signal detector after they have impinged upon said test part so that a comparision can be made from the output from the reference detector and the output from the signal detector to determine the manner in which the invisible beam is affected by impingement of the test part and diffuser means interposed in the path of the combined beams so that the combined beams pass through the diffuser means before impinging upon the reference and signl detectors, said diffuser means being formed with differing thicknesses in a direction parallel to the direction of passage of the combined beams through the diffuser means to compensate for the spatial variation in sensitivity of the reference and signal detectors.

4,192,996
MEASUREMENT OF OXYGEN BY DIFFERENTIAL ABSORPTION OF UV RADIATION

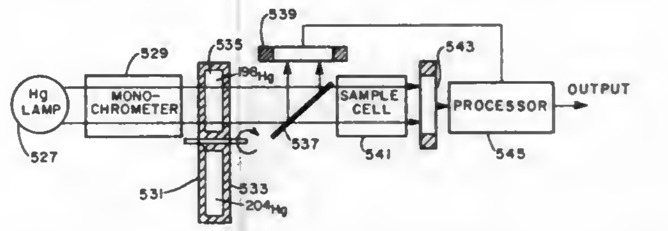
Melvyn N. Kronick; Charles E. Bryson, III; John A. Bridgham, all of Palo Alto, and Sam H. Eletr, Berkeley, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 12, 1978, Ser. No. 923,844

Int. Cl.^{2} G01J *1/42*

U.S. Cl. 250—373 **23 Claims**

1. A device for measuring the concentration of O_2 in a sample comprising:
   source means for providing a primary UV radiation beam from an atomic transition of an element at a nominal wavelength in a spectral region where the transmissivity of oxygen is rapidly varying, said beam including at least one transition line of a first isotope of said element at a wavelength higher than said nominal wavelength, and at least one transition line of a second isotope of said element at a wavelength lower than said nominal wavelength;
   shifting means for producing from said primary radiation beam a short-shifted radiation beam having an intensity distribution weighted toward said isotope line of wavelength lower than said nominal wavelength, and producing a long-shifted radiation beam having an intensity distribution weighted toward said isotope line of wavelength higher than said nominal wavelength;
   beam directing means for directing said long-shifted and short-shifted radiation beams through said sample;



   detection means for detecting the intensities of said long-shifted and short-shifted radiation beams having been transmitted through said sample; and
   processing means for calculating from said intensities an indication of the concentration of oxygen in said sample.

4,192,997
TOMOGRAPH FOR PRODUCING TRANSVERSE LAYER IMAGES

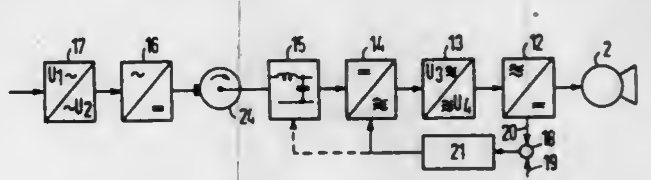
Heinz Baumann, Buckenhof, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,427

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750633

Int. Cl.^{2} A61B *6/00;* **H05G** *1/08, 1/20*

U.S. Cl. 250—445 T **5 Claims**

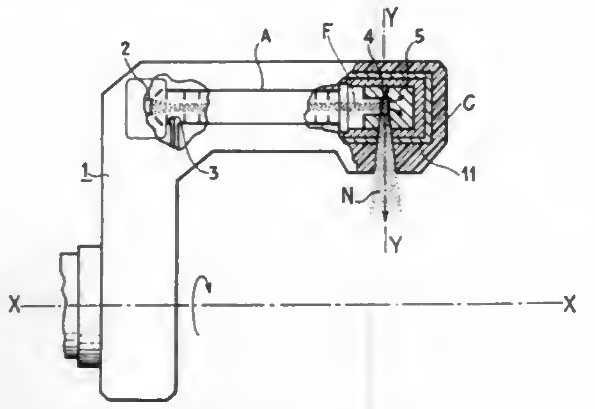


1. Tomographic apparatus for producing transverse layer images of an exposure subject, with an X-ray source, and X-ray generator including a high voltage transformer supplying the X-ray source to produce an X-ray beam penetrating the exposure subject, of which the cross-sectional extent perpendicular to the layer plane is the same as the layer thickness, with a radiation receiver which determines the radiation intensity behind the subject by scanning the projected X-ray beam, with a rotating frame for rotating the X-ray source in the layer plane to scan the exposure subject in different directions and with a measured value converter to transform the signals supplied by the radiation receiver into a layer image, characterized in that a medium frequency generator (**14**) supplies the high voltage transformer with a medium frequency which is higher than the mains frequency, that at least the structural elements on the high voltage side (**12, 13, 18, 21**) of the X-ray generator (**12** to **21**) are fixed along with the medium frequency generator (**14**) on the rotating frame (**4**) and that a rotating current coupling (**24**) is provided to transfer the energy between the rotating frame (**4**) and a stationary energy supply apparatus (**16, 17**, FIG. **5**; or **17**, FIG. **6**).

4,192,998

NEUTRONTHERAPY APPARATUS USING A LINEAR ACCELERATOR OF ELECTRONS

Guy Azam, Paris, France, assignor to C.G.R.MeV, Buc, France
Filed Feb. 6, 1978, Ser. No. 875,576
Claims priority, application France, Feb. 8, 1977, 77 03478
Int. Cl.^{2} G21G *4/02*
U.S. Cl. 250—502 7 Claims



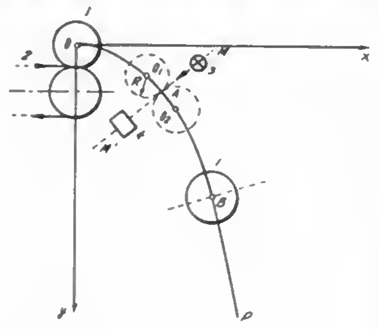
1. A neutrontherapy apparatus comprising a linear accelerator for accelerating electrons emitted by an electron source, a target intended to be bombarded by said beam of accelerated electrons for emitting neutrons under the impact of said accelerated electron beam, means for cooling said target, means for eliminating the parasitic radiations produced by the bombardment of said target, a collimation system for the useful beam of neutrons and control means for controlling the characteristics of the useful beam of neutrons, the useful beam of neutrons and control means for controlling the characteristics of the useful beam of neutrons, said target being accommodated in a block of a highly heat-conductive material, said block being provided with a circulation system for a cooling fluid, said block comprising a first passageway for the passage of said accelerated electron beam and a second passageway for the passage of said useful beam of neutrons, said block being arranged inside an assembly of protective shields which are capable of stopping the parasitic photons and which are accommodated in a protective block capable of arresting the parasitic neutrons, said protective block being made of a material of high hydrogen content, said shields and said protective block being provided with orifices providing respectively for the passage of the beam of accelerated electrons and the passage of the useful beam of neutrons.

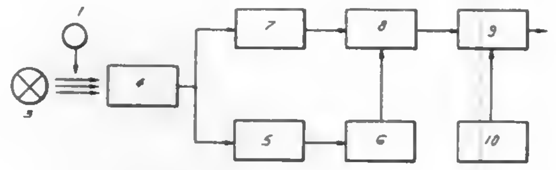
4,192,999

CONTROL DEVICE FOR AUTOMATIC COLOR-SORTING APPARATUS

Georgi P. Krivoshiev, Sofia, Bulgaria, assignor to DSO "Bulgarplod", Sofia, Bulgaria
Filed Jul. 18, 1978, Ser. No. 925,647
Int. Cl.^{2} G01N *21/30*
U.S. Cl. 250—561 3 Claims

1. A control device adapted for use with an automatic color-sorting machine wherein a plurality of different objects move sequentially along a path which includes a testing area, said control device insuring the synchronization of the testing operations performed by the machine with coincidence between the geometric center of each object and the center of the testing area, said control device including a light source and a photorelay spaced from each other on opposite sides of the path of the objects, the light beam from the light source being directed toward the photorelay and interrupted by the passage of each object, and a computing circuit coupled to the photorelay, said computing circuit comprising a first linear-voltage generator, a second linear-voltage generator, circuit means coupling the output of the photorelay to the respective inputs of the first and second generators, a memory device, circuit means coupling the output of the first generator to the memory device, an adder, circuit means coupling the adder to the outputs of the memory device and the second generator, a reference voltage source, a zero reader, and circuit means connecting the outputs of the adder and of the reference voltage source to the zero reader, the second linear-voltage generator having a speed of voltage-increase which is twice that of the first linear-voltage generator.

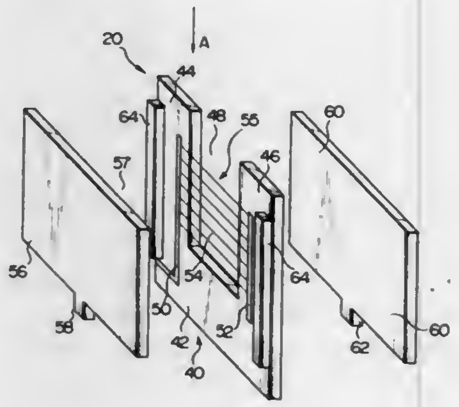




4,193,000

RADIATION DETECTOR ADAPTED FOR USE WITH A SCANNER

Shimpey Shirayama; Chikara Konagai; Michitaka Terasawa, all of Yokohama, and Hironobu Kimura, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
Filed Nov. 23, 1977, Ser. No. 854,255
Claims priority, application Japan, Nov. 25, 1976, 51-140674
Int. Cl.^{2} G01T *1/18*
U.S. Cl. 250—385 11 Claims

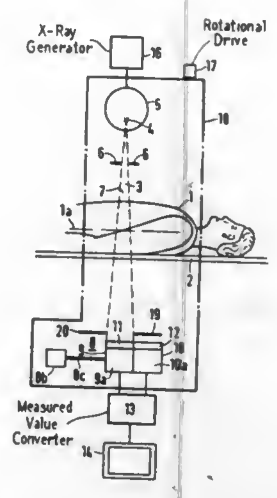


1. A radiation detector which comprises an electric charge-collecting electrode constructed by arranging a plurality of fine metal wires in substantially the same plane; a pair of high voltage electrodes disposed substantially parallel with both sides of the electric charge-collecting electrode; and a case designed to receive the electric charge-collecting electrode and paired high voltage electrodes, filled with a gaseous element substantially impervious to radiation and provided with a radiation supply section enabling radiation to be introduced substantially parallel with said plane of the electric charge-collecting electrode.

4,193,001

TOMOGRAPHIC APPARATUS FOR PRODUCING TRANSVERSE LAYER IMAGES

Reiner Liebetruth, and Norbert Mika, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Aug. 16, 1978, Ser. No. 934,167
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741732
Int. Cl.^{2} A61B *6/02*
U.S. Cl. 250—445 T 5 Claims



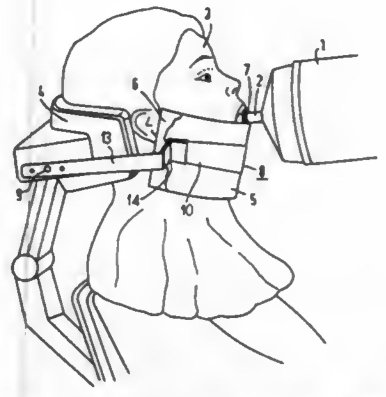
1. Tomographic apparatus for producing transverse layer images of a radiography subject, having a radiation measuring arrangement comprising a source of radiation producing a fan-shaped radiation beam which penetrates the radiography subject, whose cross-sectional extent perpendicular to the layer plane equals the layer thickness and in the layer plane is so great that the whole radiography subject is penetrated, and also a radiation receiver which determines the intensity of radiation behind the subject, and also having a rotating device for the measuring arrangement for the purpose of irradiating the radiography subject from different directions, and having a measured value converter for transforming the signals supplied by the radiation receiver into a layer image, where the radiation receiver consists of a number of individual detectors, characterized in that the radiation receiver (8) has two or more rows of detectors (9, 10), each of which is assigned to a specific area of the body, the length of each row of detectors (9, 10) corresponding to the associated area of the body, in that the number of detectors per unit of length of said rows of detectors (9, 10) is greater the shorter the length of the row of detectors (9, 10), and in that there is a control device (8*b, c*) for the radiation receiver (9) which enables the x-ray beam to be detected selectively by one of said rows of detectors (9, 10) respectively.

4,193,002

DENTAL X-RAY DIAGNOSTIC INSTALLATION

Manfred Muether; Tilman Phleps, and Ernst Schmitt, all of Bensheim, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed May 15, 1978, Ser. No. 905,792
Claims priority, application Fed. Rep. of Germany, May 23, 1977, 2723243
Int. Cl.^{2} G03B *41/16*
U.S. Cl. 250—479 12 Claims

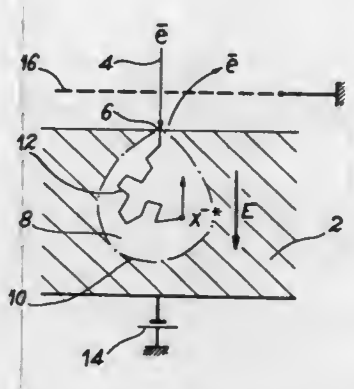
1. A dental x-ray diagnostic installation of the type where x-rays are to originate exclusively from interiorly of the oral cavity, and comprising an applicator assembly including a housing and an applicator capable of insertion into the mouth of the patient which applicator exhibits an exit window from which x-radiation can issue and expose an x-ray film applied externally of the patient's mouth, characterized in a flexible x-ray film cassette (5) having first and second means (7; 8, 13) for removably holding the x-ray film (6) in a defined position relative to the applicator (2) and the patient's mouth, said first means (7) holding the x-ray film (6) in place by engagement with the applicator (2), and comprising a part having applicator-engaging means (7) in the form of a loop or hook configuration for at least partly encircling the applicator and for embracing opposite sides of the applicator to locate the x-ray film (6) relative to the applicator while conforming of the cassette to the patient both adjacent the applicator-engaging means and remote therefrom, and said second means comprising a support part (8) fixing the cassette (5) with the x-ray film (6) securely in place on the patient's mouth.



4,193,003

METHOD FOR CONTROLLING THE MIGRATION OF A CHEMICAL SPECIES WITHIN A SOLID SUBSTRATE

Bruno Blanchard, Grenoble; Claude Legressus, Fontenay le Fleury; Daniel Massignon, Paris; Rene Sopizet, Chevilly la Rue, and René Stefani, Meylan, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Apr. 11, 1978, Ser. No. 895,382
Claims priority, application France, Apr. 18, 1977, 11569
Int. Cl.^{2} H01J *37/06*
U.S. Cl. 250—492 A 16 Claims



1. A method for controlling the migration of an electronegative chemical species within a solid substrate which exhibits ionic conduction, wherein said method comprises irradiating said substrate with electrons which have sufficient energy to penetrate into said substrate and produce therein metastable excited negative ions of said species and applying to said substrate an electric field having a direction opposite to the desired direction of migration.

4,193,004

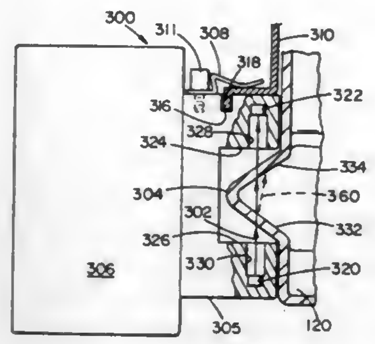
FLUID LEVEL MONITORING THROUGH FLUID CELL PROTRUSION

Donn D. Lobdell, Golden; Stephen J. Herman, Evergreen; Robert L. Anderson, Boulder, and Thomas E. Goyne, Denver, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.
Filed Jun. 22, 1978, Ser. No. 917,850
Int. Cl.^{2} G01N *21/26*
U.S. Cl. 250—577 17 Claims

1. Apparatus for monitoring the level of a liquid in a reservoir, comprising:

an integrally-formed transparent monitoring portion of said reservoir, said monitoring portion including

a first transparent wall portion and
a second transparent wall portion,
a light source positioned outside of said reservoir for directing a beam of light toward said first wall portion along a first linear path,
  said first linear path passing through said wall portions and defining a monitoring line segment as that portion of said first linear path inside said wall portions,
  said monitoring line segment being a small fraction of the largest interior dimension of a monitoring cross section taken through said reservoir along a plane defined by said first linear path and an intersecting line normal to said first transparent wall portion, and



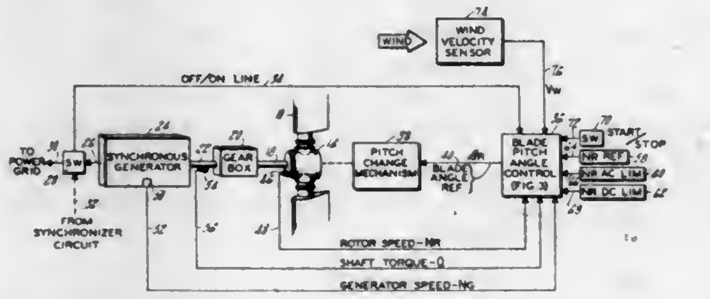
a light sensor positioned outside said reservoir and directed at said second transparent wall portion along a second linear path,
  said second linear path being the path said beam of light takes upon exiting from said second wall portion when said monitoring portion is not occupied by liquid,
  said first and second wall portions being adapted when said monitoring portion is occupied by liquid to cause said beam of light transmitted by said source to be refracted within said monitoring portion and to emerge from said second wall portion along a third linear path not striking said sensor.

4,193,005

MULTI-MODE CONTROL SYSTEM FOR WIND TURBINES

Joseph M. Kos, Holyoke, Mass.; John P. Patrick, South Windsor, and Kermit I. Harner, Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 17, 1978, Ser. No. 934,658
Int. Cl.² F03D *9/00*
U.S. Cl. 290—44 **18 Claims**



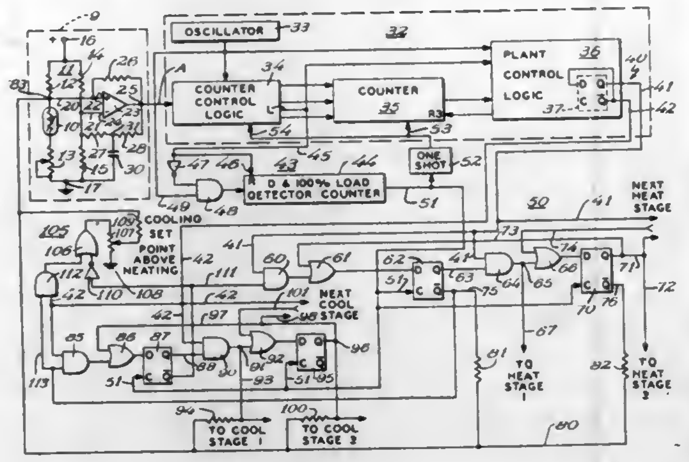
1. In a power generating system including a wind turbine driven generator adapted to be selectively connected to a load to supply power thereto, said wind turbine having a wind driven rotor with a plurality of variable pitch angle blades, a control for adjusting the pitch angle of said blades comprising:
  speed control means adapted to produce a first signal indicative of rate of change of blade pitch angle when said generator is not supplying power to said load,
  acceleration control means adapted to produce a second signal indicative of rate of change of blade pitch angle during start up of said wind turbine,
  deceleration control means adapted to produce a third signal indicative of rate of change of blade pitch angle during shut down of said wind turbine,
power control means adapted to produce a fourth signal indicative of rate of change of blade pitch angle when said generator is supplying power to said load,
means for selecting one of said blade pitch angle rate signals,
integrator means receiving said selected blade pitch angle rate signal and producing therefrom a desired blade pitch angle signal,
and actuator means receiving said desired blade pitch angle signal and controlling the pitch angle of said blades in response thereto.

4,193,006

MULTI-STAGE CONTROLLER

John L. Kabat, Bloomington, and Arlon D. Kompelien, Richfield, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 11, 1978, Ser. No. 941,441
Int. Cl.² G05D *23/24;* H05B *1/02;* G05B *11/16*
U.S. Cl. 307—117 **13 Claims**



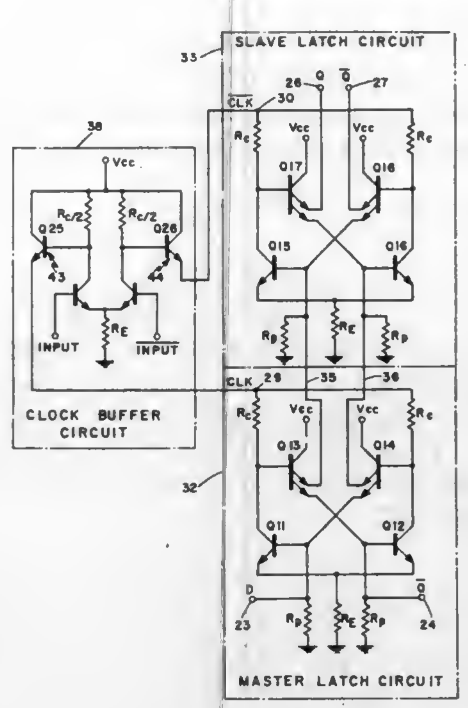
1. A condition control system, including: condition responsive time proportional control means having switched output means; said switched output means providing repetitively switched output signals at a rate representative of a time constant of said time proportional control means when said condition responsive means senses a condition which is within a selected range; said switched output means providing constant output signals when said condition is outside of said selected range; counting means having input means responsive to said switched output signals; said counting means including pulse generating means; said pulse generating means having output means connected to said counting means and providing signals thereto; said counting means combining said condition responsive repetitively switched output signals and said pulse generating output signals to expand a time constant of said condition responsive time proportional control means at an output means of said counting means; count detection means connected to said counting means; said count detection means including second counting means which counts when said first counting means is not counting, and which is reset when said first counting means is counting; said count detection means including output means having an output pulse when said second counting means counts to its capacity; condition control operating means connected to said count detection means output means to receive said output pulse and further being connected to said first counting means output means; said two counting means outputs arranged to operate said condition control operating means; said condition control operating means further including feedback circuit means to said condition responsive time proportional means; and said feedback means altering an input of said condition responsive control means when said condition control operating means is operated by the outputs from said first counting means and said count detection means.

4,193,007

EMITTER COUPLED LOGIC MASTER-SLAVE FLIP-FLOP WITH EMITTER-FOLLOWER CLOCK ENTRY

Gary W. Tietz, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 12, 1978, Ser. No. 914,524
Int. Cl.² H03K *3/286*
U.S. Cl. 307—291 **1 Claim**



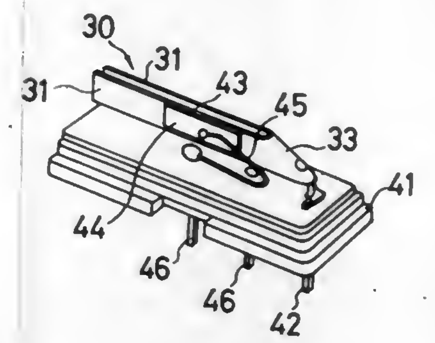
1. A master-slave flip-flop, comprising
first and second complementary data input terminals for receiving complementary data input signals;
first and second complementary output terminals;
first and second complementary clock input terminals for receiving complementary clock input signals;
a master latch circuit, including
a differential pair of first and second single-emitter bipolar transistors having their bases respectively coupled to the first and second complementary data input terminals, and their collectors coupled to the first clock input terminal; and
a pair of first and second dual-emitter bipolar emitter-follower transistors having their bases respectively coupled to the collectors of the first and second single-emitter transistors, and their first emitters respectively cross-coupled to the bases of the second and first single emitter transistors; and
a slave latch circuit, including
a pair of third and fourth single-emitter bipolar transistors having their bases respectively coupled to the second emitters of the first and second dual-emitter transistors, and their collectors coupled to the second clock input terminal; and
a pair of third and fourth dual-emitter bipolar emitter-follower transistors having their bases respectively coupled to the collectors of the third and fourth single-emitter transistors, their first emitters respectively cross-coupled to the bases of the fourth and third single-emitter transistors, and their second emitters respectively coupled to the first and second complementary output terminals.

4,193,008

TUNING FORK FORMED OF ROLLED INVARIABLE ELASTICITY MATERIAL

Takeshi Nakamura, Uji, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Apr. 3, 1978, Ser. No. 892,946
Claims priority, application Japan, Apr. 18, 1977, 52-49029[U]
Int. Cl.² H01L *41/10*
U.S. Cl. 310—321 **9 Claims**



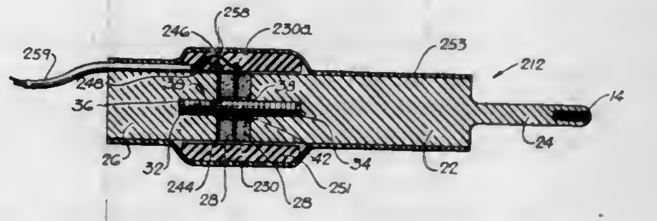
1. A tuning fork made of a folded blank of a bifurcate shape having a single linking portion and two finger portions extending from said single linking portion in bifurcate directions, said blank cut from a plate material of invariable elasticity formed through a rolling operation resulting in a residual stress in the rolling direction in said plate material, said blank being folded along a single folding line corresponding to said single linking portion of said blank along a central line at an angle between both said two finger portions of said blank, so that both said two finger portions may be folded to face each other to extend in parallel with each other, said folding line of said blank being selected to cross said rolling direction in said plate material at a given angle.

4,193,009

ULTRASONIC PIEZOELECTRIC TRANSDUCER USING A RUBBER MOUNTING

Benton A. Durley, III, Rte. 45, Druce Lake, P.O. Box 304, Grayslake, Ill. 60030

Continuation-in-part of Ser. No. 652,227, Jan. 26, 1976, abandoned, which is a division of Ser. No. 525,487, Nov. 20, 1974, abandoned. This application Nov. 7, 1977, Ser. No. 848,787
Int. Cl.² H01L *41/10*
U.S. Cl. 310—323 **27 Claims**



1. An ultrasonic transducer, comprising
an elongated front end mass,
an elongated tail mass,
a pair of piezoelectric elements disposed between said front end mass and said tail mass,
an electrode plate disposed between said piezoelectric elements,
means for clamping said front end mass and said tail mass together with said piezoelectric elements and said electrode plate clamped therebetween,
and an electrically insulating mounting member surrounding and slidably receiving said piezoelectric elements and adjacent portions of said front end mass and said tail mass in an opening in said mounting member,
said mounting member having an internal slot within said opening and slidably receiving and retaining said electrode plate,

said opening and said slot having a sufficiently loose fit with said piezoelectric elements, said masses and said electrode plate to obviate any substantial damping of ultrasonic vibrations.

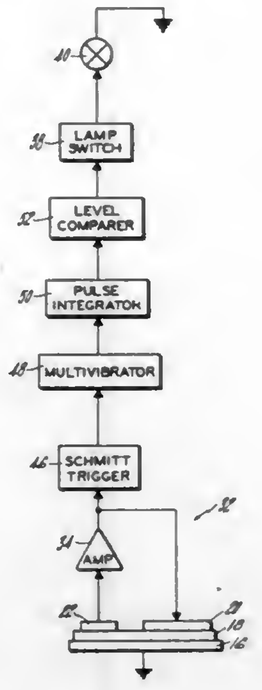
4,193,010
SENSOR DEVICE USING PIEZOELECTRIC COATING SUBJECTED TO BENDING

Harry W. Kompanek, Santa Barbara, Calif., assignor to Essex Transducers Corporation, Carpinteria, Calif.

Continuation-in-part of Ser. No. 749,132, Dec. 9, 1976, abandoned. This application Mar. 24, 1978, Ser. No. 889,997

Int. Cl.^{2} H01L *41/10*

U.S. Cl. 310—330 **6 Claims**



1. A sensor device comprising:

a base having means for attaching the device to an object;

a sandwich element supported by the base, capable of bending in response to an electrical input and capable of providing an electrical output in response to the bending, including:

- an electrically conductive material which forms a substrate,
- piezoelectric material, including an interbonded mixture containing phosphorous, zirconium, titanium and chromium, chemically bonded to one side of the substrate by the attachment of phosphate ions in the mixture to the substrate due to ionic bonding,
- a drive electrode attached to the piezoelectric material, and
- a pickup electrode attached to the piezoelectric material;

a first electrical conductor attached to the drive electrode; and

a second electrode attached to the pickup electrode.

4,193,011
THIN ANTIREFLECTION COATING FOR ELECTRO-OPTICAL DEVICE

Herbert K. Pollehn, Alexandria, and Jerry L. Bratton, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

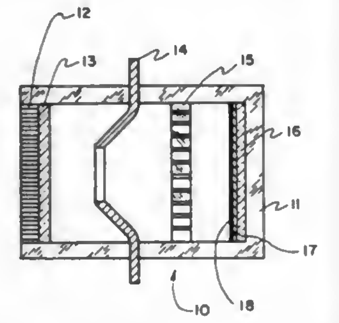
Filed May 17, 1978, Ser. No. 906,711

Int. Cl.^{2} H01J *29/28, 1/70*

U.S. Cl. 313—94 **10 Claims**

1. An electro-optical device having at least a photocathode capable of producing an electron image from an electromagnetic energy image in a band impinging thereon, and having a phosphor screen juxtaposed to said photocathode and with an aluminum layer on the side of the screen toward said photocathode, whereby an electron image on said photocathode is focussed through said aluminum layer onto said screen to induce a photoimage thereon, the improvement comprising:

a thin dielectric layer on said aluminum layer; and



a thin metallic layer on said dielectric layer, whereby the combination of layers is transparent to electrons from said photocathode and absorbent to electromagnetic energy in the band of said electromagnetic energy image.

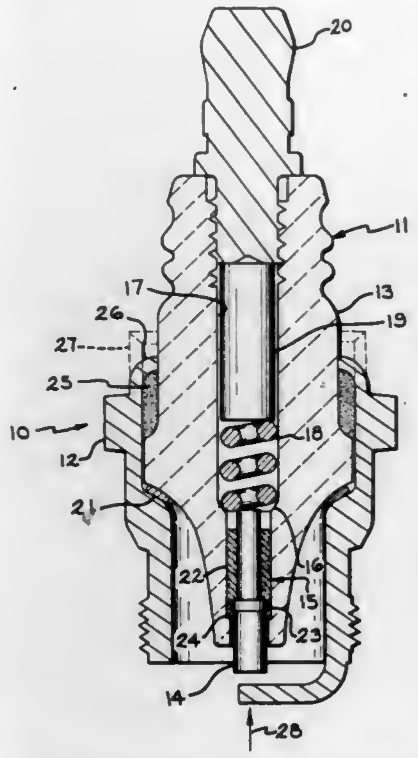
4,193,012
SPARK PLUG SEAL

Richard S. Podiak, Maumee; LeRoy H. Houghton, Toledo, both of Ohio, and Paul E. Rempes, Jr., Royal Oak, Mich., assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Oct. 10, 1978, Ser. No. 949,572

Int. Cl.^{2} H01T *13/00, 13/20;* **C04B** *35/20*

U.S. Cl. 313—137 **3 Claims**



1. A spark plug sealing material consisting essentially of a mixture of from about 15 to 30 percent of silicon metal with from about 85 to 70 percent of talc.

4,193,013
CATHODE FOR AN ELECTRON SOURCE AND A METHOD OF PRODUCING THE SAME

Masaaki Futamoto, Tsukui; Ushio Kawabe, Hamuramachi; Shigeyuki Hosoki, Hachioji; Tsutomu Komoda, Hinodemachi, and Shigehiko Yamamoto, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Japan

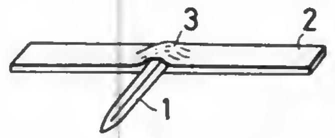
Filed Apr. 18, 1978, Ser. No. 897,406

Claims priority, application Japan, Apr. 18, 1977, 52-43548

Int. Cl.^{2} H01J *1/15, 9/18*

U.S. Cl. 313—341 **14 Claims**

1. In a cathode having an emitter tip made of an electron emissive material, a filament for holding the emitter tip, and a binder for bonding the emitter tip and the filament, a cathode characterized in that said filament is made of glassy carbon and said binder is made of glassy carbon containing at least one of carbide powder and boride powder.



4,193,014
DISPLAY ARRANGEMENTS

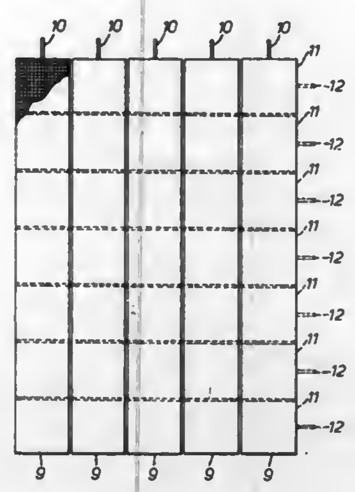
Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed Jun. 9, 1977, Ser. No. 805,035

Claims priority, application United Kingdom, Jul. 10, 1976, 28793/76; Fed. Rep. of Germany, Sep. 9, 1976, 2640632

Int. Cl.^{2} H01J *31/66, 29/80*

U.S. Cl. 313—396 **5 Claims**



1. A display arrangement comprising a cathode ray tube, said cathode ray tube including an electron flood gun comprising a cathode, an anode and an accelerating grid disposed between said cathode and said anode whereby said flood gun emits a wide solid cone of electrons, a fluorescent screen and an electrode for controlling the passage of electrons from the electron flood gun to the fluorescent screen, two adjacent and superposed segmented mesh electrodes mounted adjacent to said fluorescent screen, each segmented mesh electrode comprising a set of adjacent parallel co-planar open mesh stripes electrically insulated from each other, each stripe being individually addressable and the open mesh of each stripe presenting a pattern of interstices which are closely spaced both transversely across and longitudinally along each such stripe to permit electrons to pass through the interstices with little physical interruption, and the stripes of one segmented mesh electrode being in crossing relationship to the stripes of the other segmented mesh electrode, whereby an addressed stripe of said one electrode and an addressed stripe of said other electrode in combination control the passage of electrons through said two segmented mesh electrodes onto said screen at and throughout a region of their common crossing.

4,193,015
COLOR TELEVISION DISPLAY TUBE

Piet G. J. Barten, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

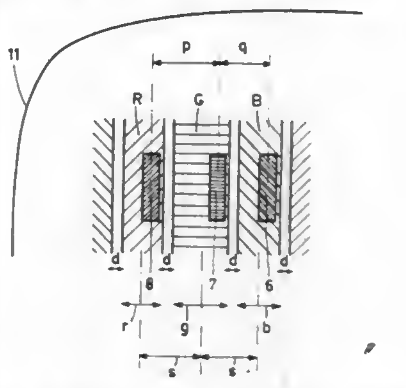
Filed Aug. 18, 1978, Ser. No. 935,030

Claims priority, application Netherlands, Sep. 1, 1977, 7709617

Int. Cl.^{2} H01J *29/07, 29/32, 31/20*

U.S. Cl. 313—408 **2 Claims**

1. A colour television display tube comprising, in an evacuated envelope, a display screen having a plurality of triplets of parallel phosphor stripes spaced from each other and each luminescing in one of three different colors when struck by electrons, means for generating three electron beams directed onto said screen and a shadow mask having a plurality of apertures for assigning each beam to phosphor stripes of one color so that said beams impinge on said screen and form three spaced electron spots each on a respective one of said phosphor stripes, wherein the distances between the centers of adjacent phosphor stripes of a triplet are equal, the widths of the two outermost phosphor stripes of a triplet are equal and the difference between the widths of the central phosphor stripe and an outermost phosphor stripe of a triplet is equal to the difference of the center-to-center distances between the central electron spot and the two outermost electron spots which cause the triplet to luminesce.



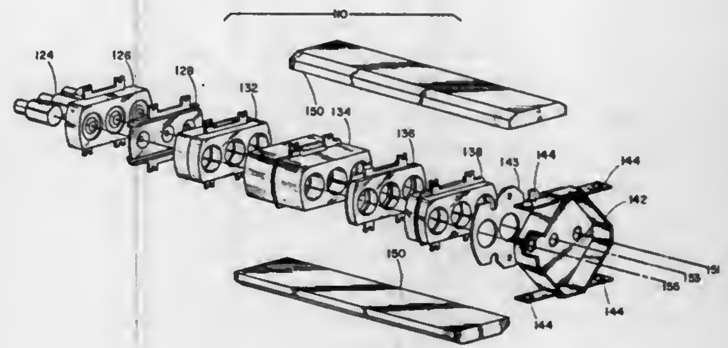
4,193,016
ELECTRON GUN SHIELD CUP PROVIDING TUBE EVACUATION BYPASS VENTS

H. Rudolf Zeidler, Highland Park, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 4, 1977, Ser. No. 839,461

Int. Cl.^{2} H01J *1/96*

U.S. Cl. 313—449 **4 Claims**



1. In a television picture tube having a bulb with a neck at the rear end thereof, an electron gun located in closely confined relationship in said neck, said gun having at least one cathode having an electron-emissive coating, apertured substantially diamond-shaped shield cup with truncated corners having one or more tangentially directed contact springs attached to selected opposite ones of said corners, said springs being located in the plane of said shield cup and being capable of being deflected in a radially inward direction, said gun further including a plurality of electrodes interspaced between said cathode and said shield cup nad having apertures in alignment with said cathode and with said apertures in said shield cup to form coaxial beam passageways, said tube being characterized by said shield cup having one or more inward formations corresponding to the flats on the said diamond shape and located adjacent to said contact springs for providing augmented deflection space for said springs and for defining one or more openings between said shield cup and the inner wall of said neck, said openings acting as vents to bypass a flow of high-velocity gas around said gun and away from said aperture to prevent said beam passageways from forming said conduits for said exhaust gas during tube evacuation whereby damage to said electron-emissive coating from said high-velocity gas is prevented.

4,193,017
GAS DISCHARGE DISPLAY PANEL

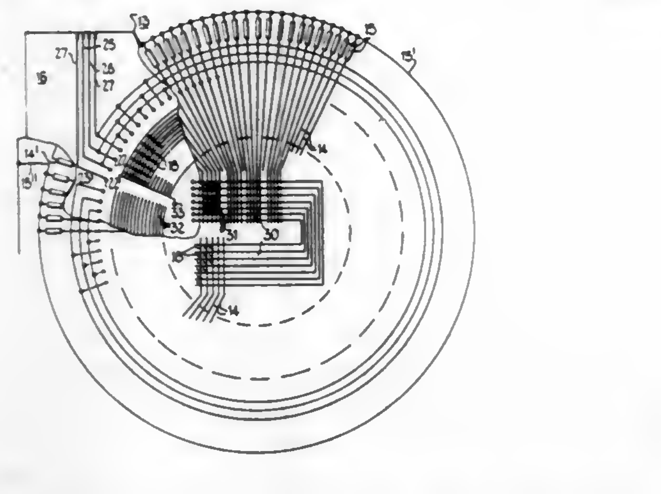
Frank Walters, Bury, England, assignor to Ferranti Limited, Hollinwood, England

Filed Jan. 16, 1979, Ser. No. 3,914

Claims priority, application United Kingdom, Jan. 18, 1978, 01929/78

Int. Cl.² H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169.4 **7 Claims**



1. A direct current gas discharge display panel comprising a block of electrically insulating material having a plurality of gas filled cells arranged in a rectangular first array surrounded by a plurality of cavities arranged in a second array of concentric circles, each of the cells of the first array having an electrode at one end thereof connected by an individual resistor to one of a set of first conductors extending along one co-ordinate of the first array and each cell of the second array having an electrode at said one end connected by an individual resistor to one of a set of concentric second conductors, a set of third conductors extending across the other ends of the cells of the second array orthogonally to the second conductors to form second electrodes for the cells of the second array, at least some of the third conductors extending across the first array orthogonally to the first set of conductors to connect to, or form, second electrodes for the cells of the first array, said third conductors being joined by way of resistors to a common conductor, and a glow transfer device comprising a further concentric circle of gas filled cells each having a pair of transfer electrodes in contact with the discharge gas, the first transfer electrode of the pair for each cell being connected to, or comprising, one of the third conductors, and the second transfer electrode being connected to other second transfer electrodes to form groups of equal numbers, corresponding electrodes in each group being connected to a transfer conductor extending concentrically of the cells such that repetitive energisation of each transfer conductor in turn causes a discharge formed in one glow transfer cell to move around the circle by the mechanism of glow transfer changing the potential of each third conductor in turn to cause striking or extinguishing of discharges in cells of the first or second array addressed contemporaneously by way of the first or second conductors respectively.

4,193,018
DEFLECTION CIRCUIT

Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 20, 1978, Ser. No. 944,012

Int. Cl.² H01J *29/70*

U.S. Cl. 315—408 **15 Claims**

9. A horizontal deflection circuit, comprising:

a deflection winding;

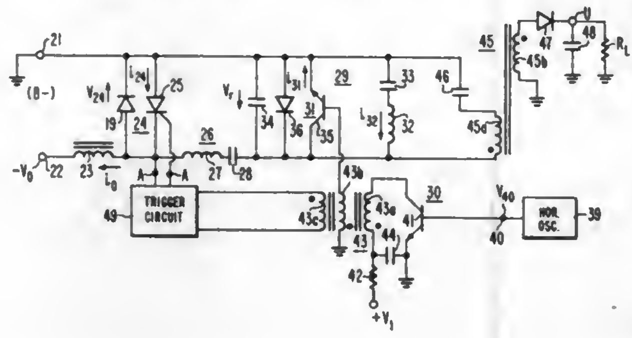
a retrace capacitor coupled to said deflection winding for forming a resonant retrace circuit;

a resonant energy storage circuit coupled to said resonant retrace circuit;

an energy supply coupled to said resonant energy storage circuit for transferring energy from said energy supply to said resonant energy storage circuit;

a horizontal output device coupled to said deflection winding;

control means coupled to a control electrode of said horizontal output device for providing a turn-off bias signal to said device for generating a resonant retrace oscillation in said resonant retrace circuit; and



switching means coupled to said resonant energy storage circuit for disconnecting said resonant energy storage circuit from said energy supply during said resonant retrace interval, said resonant energy storage circuit transferring energy to said resonant retrace circuit when said turn-off bias signal causes said horizontal output device to become nonconductive.

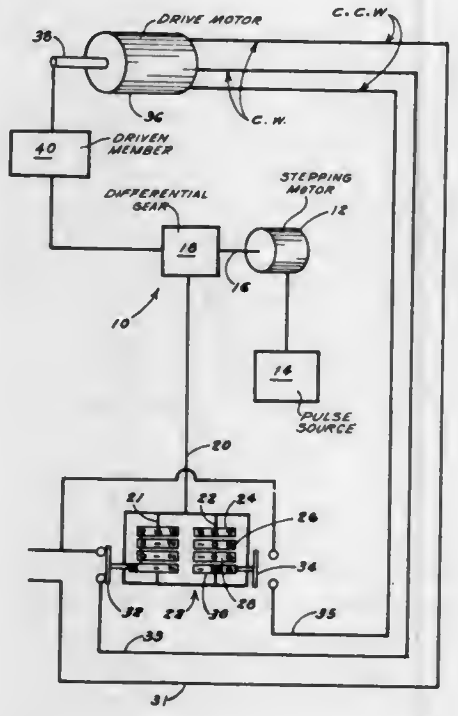
4,193,019
DIRECT DIGITAL CONTROL DEVICE

Henry R. Killian, 915 Longview Dr., Sugarland, Tex. 77478

Continuation-in-part of Ser. No. 574,294, May 5, 1975, abandoned. This application Sep. 29, 1977, Ser. No. 837,681

Int. Cl.² H02K *7/10*

U.S. Cl. 318—13 **11 Claims**



1. A digital control system comprising:

a differential gear device;

an incremental rotational, bi-directional input drive connected to drive said differential gear device to a selected rotary position;

a bi-directional output drive adapted to move a member to a selected position determined by the rotary position selected by the input drive;

a feedback drive means activated in response to operation of said output drive and connected to drive said differential gear device in opposition to said input drive;

first and second multi-stage progressive intermittent drive devices wherein in each said device, a complete revolution of each stage produces a partial revolution, incremental movement of the next succeeding stage;

said differential gear device being connected to drive said first and second progressive intermittent drive devices in opposite advancing and receding directions;

first and second activators, each operative when engaged to activate said output drive in one of two opposite directions; and

first and second actuating means, each on an actuating stage of one of said intermittent drives other than the first stage thereof, positioned to engage respectively said first and second activators upon a single advancing incremental movement of said actuating stage and to disengage said activator upon reversal of said incremental movement;

said progressive intermittent drive devices each being initially set in a null position wherein a partial revolution of said first stage thereof in an advancing direction only will produce an incremental movements of subsequent stages thereof, including said actuating stage.

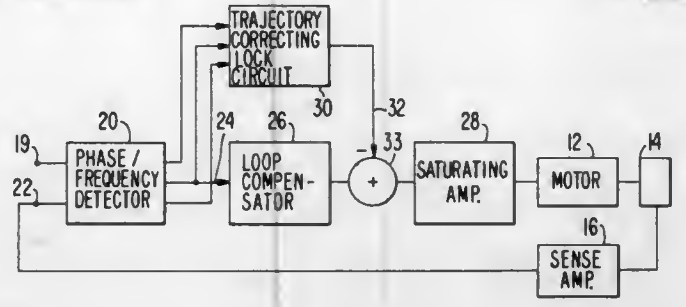
4,193,020
PHASE LOCK CONTROL SYSTEM WITH TRAJECTORY CORRECTION

Hubert Song, Sunnyvale, Calif., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 22, 1978, Ser. No. 908,038

Int. Cl.² H02P *5/16*

U.S. Cl. 318—314 **7 Claims**



1. A phase lock control system for locking output pulses from a variable frequency pulse generator in phase with a series of reference pulses that recur at regular intervals comprising a comparator for receiving said output pulses and said reference pulses and producing a phase error signal representative of the phase difference therebetween, means responsive to said error signal for driving the variable frequency pulse generator in a sense to reduce said phase error signal, means coupled to the comparator for deriving from the phase error signal an error rate signal indicative of the rate of change of

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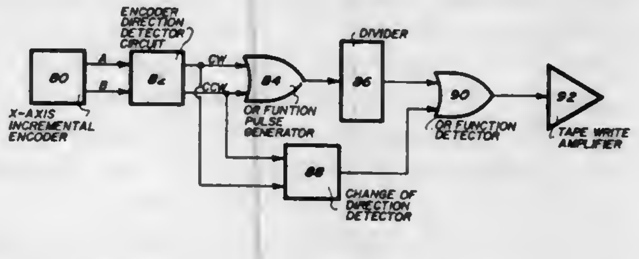
4,193,021
APPARATUS FOR GENERATING AND USING A MAGNETIC TAPE TO CONTROL MOVEMENT OF A CO-ORDINATE DRIVE TOOL CARRIAGE

Paul E. Gale, Lancaster, Ohio, and Endre L. Toth, Danbury, Conn., assignors to Arcair Company, Lancaster, Ohio

Filed Dec. 5, 1977, Ser. No. 857,169

Int. Cl.² G05B *19/42*

U.S. Cl. 318—568 **10 Claims**


ENCODER DIRECTION DETECTOR CIRCUIT
80
A
B
82
CW
CCW
84
DIVIDER
86
90
92
X-AXIS INCREMENTAL ENCODER
OR FUNTION PULSE GENERATOR
OR FUNCTION DETECTOR
TAPE WRITE AMPLIFIER
88
CHANGE OF DIRECTION DETECTOR

1. In a co-ordinate drive positioning system adapted for use in oxy-fuel, laser, electron beam, plasma, water, or mechanical tool working of a metal or non-metallic workpiece the improvement comprising in combination:

a first track adapted for mounting on a pattern holding surface;

a second track movably mounted at right angles to said first track and adapted to move along said pattern holding surface at right angles to said first track;

a tracing control assembly including an optical tracing unit with integral drive means movably mounted on said second track to follow a line pattern on said pattern holding surface and move said second track and said tracing control assembly;

means on said first and second track to generate signals responsive to movement of the second track and tracing control; said signal generating means includes encoders to generate proportional pulse trains corresponding to displacement of the tracing control and second track movement relative to said pattern;

a magnetic tape recorder for generating a tape based upon said generated signals said tape recorder including means to scale said recording so that a pattern of different size than that traced by said co-ordinate drive positioning system can be utilized in generating said tape; and

a separate co-ordinate drive positioning system having means to play back said tape and generate signals to move said co-ordinate drive positioning system along an associated workpiece in accord with the pattern used to generate said taped signals.

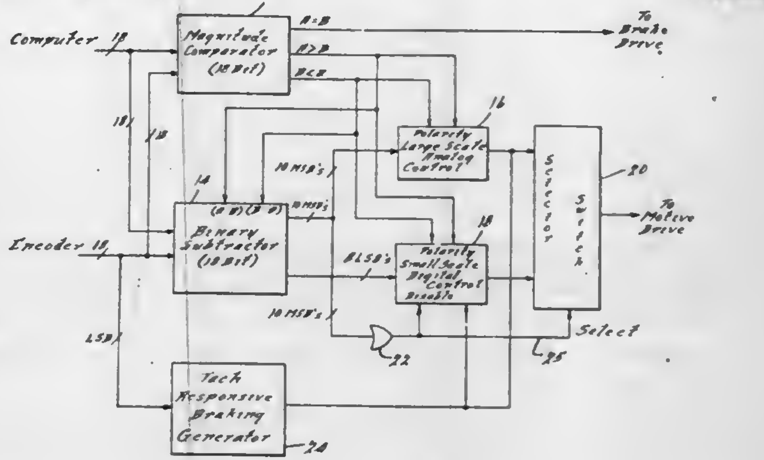
4,193,022
ANALOG/DIGITAL NUMERICAL CONTROL SYSTEM

Robert B. Bertolasi, Rockford, Ill., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Mar. 22, 1978, Ser. No. 889,069

Int. Cl.² G05B *11/18*

U.S. Cl. 318—592 **31 Claims**


12
Computer
Magnitude Comparator (18 Bit)
A=B
A>B
B<A
To Brake Drive
16
Polarity Large Scale Analog Control
20
Selector Switch
To Motive Drive
14
Binary Subtractor (18 Bit)
10 MSB's
8 LSB's
18
Polarity Small Scale Digital Control Disable
Encoder
LSB
22
Select
25
Tach Responsive Braking Generator
24

1. In a closed-loop numerical control system for controlling the movement of a machine assembly including motive drive means, computing means for producing a digital output signal indicative of the desired position of said machine assembly, and encoder means for producing a digital output signal indicative of the actual position of said machine assembly; control circuit means for controlling said motive drive means comprising:

subtractor means responsive to said digital output signals for digitally determining the difference between said desired position and said actual position and producing a digital difference signal in accordance therewith:

analog control means for producing a first control signal in accordance with a predetermined number of the most significant bits in said difference signal that is used to control said motive drive means for large scale differences between said desired position and said actual position;

digital control means for producing a second control signal in accordance with a predetermined number of the least significant bits in said difference signal that is used to control said motive drive means for small scale differences between said desired position and said actual position, said digital control means including a voltage divider network comprising a plurality of parallel connected resistance elements each associated with one of said predetermined number of least significant bits; and

selector means for transferring the control of said motive drive means from said analog control means to said digital control means when the value of said difference signal falls below a preselected value.

4,193,023

ELECTRONIC MONITORING SYSTEM WITH LOW ENERGY CONSUMPTION IN QUIESCENT STATE

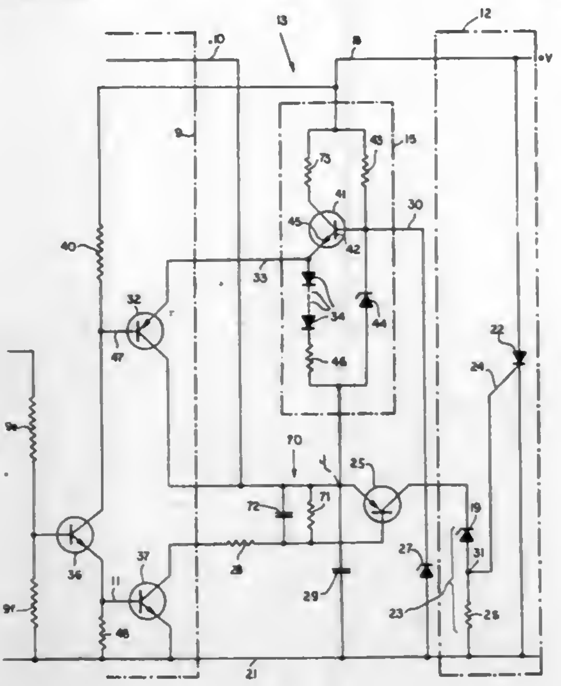
Robert Buck, Kirchbuhlweg 128, Neukirch, Fed. Rep. of Germany (7995), and Gerd Marhofer, Beckmannsbusch 67, Essen-Bredeney, Fed. Rep. of Germany (4300)

Filed Mar. 17, 1978, Ser. No. 887,832

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711877

Int. Cl.² H01H *36/00*

U.S. Cl. 323—19 **10 Claims**



1. An electronic monitoring system comprising:

detector means sensitive to an ambient condition for generating an output signal varying with a changeover in said condition, said detector means being provided with a pair of power-input terminals;

a voltage-generating network including a storage capacitor and current-limiting means in series therewith, said terminals being connected across said storage capacitor in an energizing circuit for said detector means;

a source of direct current with a pair of supply leads connected across said network for charging said storage capacitor via said current-limiting means, one of said supply leads having an extension included in said energizing circuit;

a current-responsive load in series with said source and said network;

a binary electronic control device connected in parallel with said network and provided with an operating circuit connected across said storage capacitor, said operating circuit including normally nonconductive electronic switch means between said storage capacitor and an input electrode of said control device for maintaining the latter in a high-impedance state prior to occurrence of said changeover, said electronic switch means comprising a Zener diode forming part of a voltage divider included in said operating circuit, said input electrode being connected to a tap on said voltage divider; and

trigger means responsive to said output signal operatively connected to said electronic switch means for rendering same conductive upon the occurrence of said changeover, thereby converting said control device to a low-impedance state short-circuiting said network.

4,193,024

PULSED NUCLEAR MAGNETIC RESONANCE SPECTROMETERS

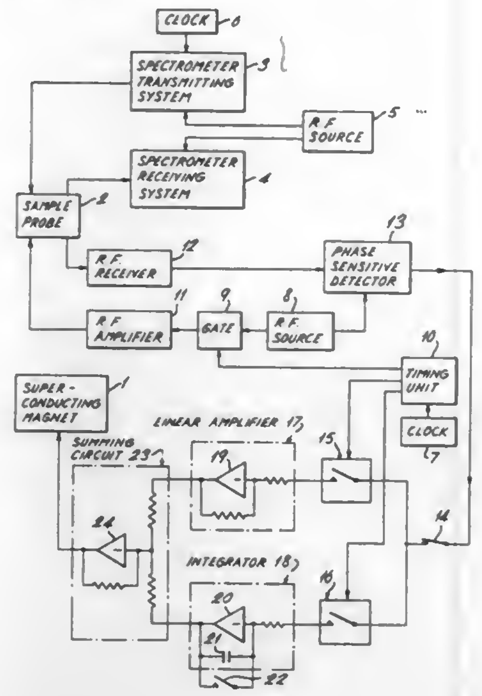
David I. Hoult, Silver Spring, Md., and Peter Styles, Oxford, England, assignors to National Research Development Corporation, London, England

Filed Jul. 13, 1978, Ser. No. 924,437

Claims priority, application United Kingdom, Feb. 15, 1978, 06007/78

Int. Cl.² G01R *33/08*

U.S. Cl. 324—313 **1 Claim**



1. A stabilisation system for a magnet employed in a pulsed nuclear magnetic resonance spectrometer, said system comprising:

means for exciting magnetic resonance of a given nuclear species in a reference sample subjected to the magnetic field generated by said magnet, by irradiating said sample with pulses of radio frequency energy spaced apart by intervals substantially greater than the time constant for free induction decay of said magnetic resonance;

means for receiving resonance signals emanating from said sample during said intervals as a result of the excitation of said magnetic resonance;

a detection system for effecting phase-sensitive detection of said resonance signals with reference to said radio frequency energy;

means for deriving a first control signal which is proportional to the output of said detection system;

means for causing said deriving means to be operative only during periods which immediately follow said pulses and have a duration approximately equal to said time constant;

an integrator;

means for applying the output of said detection system to said integrator only during a portion of each of said periods, the start of said portion being later than the start of the relevant period;

means for deriving a second control signal which is proportional to the output of said integrator; and

means for adjusting the intensity of said magnetic field by the application to said magnet of said first and second control signals, the delay between the start of each of said periods and the start of said portion of that period being sufficiently long to ensure that during said delay the adjustment of said magnetic field by virtue of the application of said first control signal will bring about effective locking of the frequency of said resonance signals to the frequency of said radio frequency energy.

4,193,025

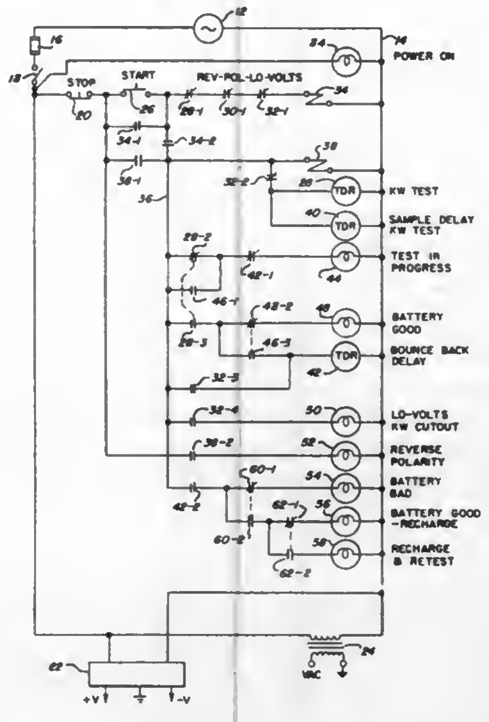
AUTOMATIC BATTERY ANALYZER

Charles E. Frailing, Milwaukee, and Thomas J. Dougherty, Waukesha, both of Wis., assignors to Globe-Union, Inc., Milwaukee, Wis.

Filed Dec. 23, 1977, Ser. No. 863,925

Int. Cl.² G01N *27/42*

U.S. Cl. 324—427 **19 Claims**



1. Apparatus for determining the acceptability of a storage battery under test and comprising:

first circuit means for coupling to the battery under test and performing a load test on said battery;

second circuit means for coupling to the battery under test and performing a voltage bounce back test on said battery;

third circuit means for coupling to the battery under test and performing a test of an internal circuit parameter of said battery; and

fourth circuit means coupled to said first, second, and third circuit means for controlling the sequence in which the tests of said first, second, and third circuit means are performed and providing a readout responsive to outputs of said first, second, and third testing means.

4,193,026

METHOD AND APPARATUS FOR MEASURING THE STATE OF CHARGE OF A BATTERY BY MONITORING REDUCTIONS IN VOLTAGE

Eugene P. Finger, Brewster, and Eugene A. Sands, Scarsdale, both of N.Y., assignors to Curtis Instruments, Inc., Mount Kisco, N.Y.

Continuation of Ser. No. 678,128, Apr. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,055, Jun. 27, 1975, Pat. No. 4,017,724, and Ser. No. 538,463, Jun. 14, 1975, abandoned. This application Aug. 25, 1978, Ser. No. 936,725

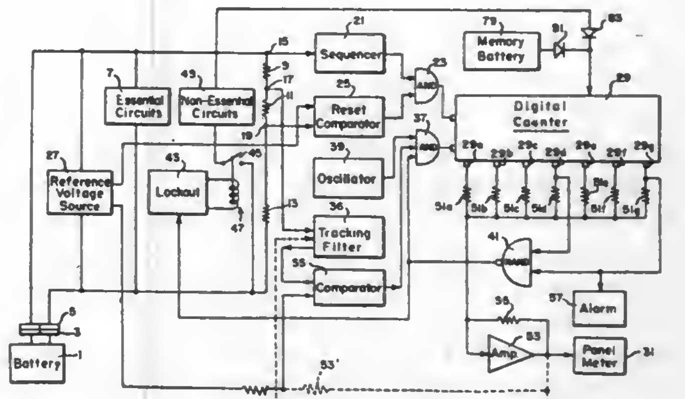
Int. Cl.² G01N *27/42*

U.S. Cl. 324—428 **129 Claims**

1. Apparatus for monitoring the condition of a battery during its discharge from a charged condition comprising:

means for monitoring the output terminal voltage of the battery and producing an intermediate output signal for at least some instances when the magnitude of the terminal voltage falls below a threshold value during said discharge;

means for integrating said intermediate output signal over a plurality of reductions in the magnitude of the terminal voltage which produce an intermediate output signal; and



means for producing a first output signal related to the integral formed by said integrating means.

4,193,027

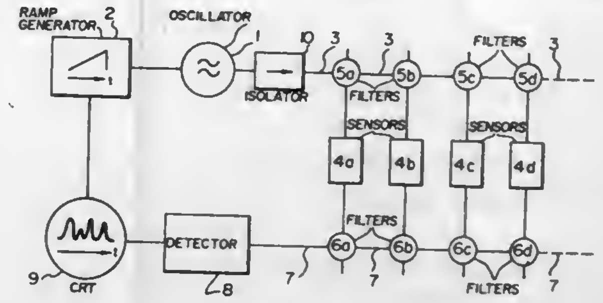
MICROWAVE MOISTURE-PROFILE GAUGE

Walter Wyslouzil, Carlsbad Springs, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Oct. 2, 1978, Ser. No. 947,889

Int. Cl.² G01R *27/04*

U.S. Cl. 324—58.5 R **3 Claims**



1. A scanning microwave detection apparatus for providing a moisture profile along the width of a predetermined sample, comprising:

a plurality of spaced moisture sensors, each of the sensors adapted to couple microwave energy with a finite area of the sample;

each sensor having a first filter coupled to its input and a second filter coupled to its output, the first and second filters forming a pair, the pair of filters coupled to each sensor being tuned to the same frequency and each of the pairs of filters being tuned to a different predetermined frequency within a selected frequency band thereby having a substantially non-overlapping frequency band-pass;

microwave source controlled to sweep through the frequencies within the selected frequency band, said source being coupled to the input filters; and

detector means coupled to the output filters for sequentially detecting energy outputs of the sensors which are a function of the moisture content of the sample.

4,193,028

EDDY CURRENT INSTRUMENTATION CIRCUITRY FOR DISTINGUISHING FLAW SIGNALS FROM SPURIOUS NOISE SIGNALS

Byron E. Downs, II, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 5, 1978, Ser. No. 903,268

Int. Cl.² G01R *33/00*

U.S. Cl. 324—237 **7 Claims**

1. In an apparatus for eddy current non-destructive testing of materials wherein means are provided for obtaining relative motion between the material and a probe capable of detecting a flaw in such material and in response to each such flaw generating an electrical output signal having a characteristic

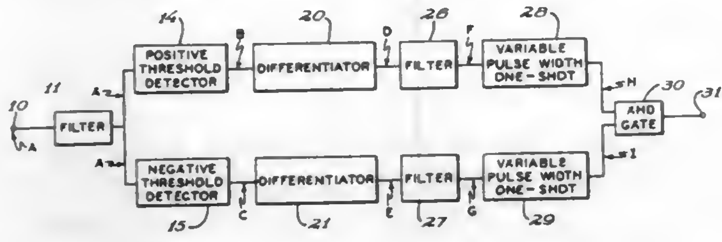
frequency and both first and second polarity excursions, means for improving apparatus signal detection sensitivity and its ability to reliably distinguish signals representing material flaws from spurious noise signals, the means comprising:

a first threshold detector having an input connected to receive signals from the probe and an output for providing an output signal whenever the amplitude of a signal at its input exceeds a predetermined threshold of first polarity;

a second threshold detector having an input connected to receive signals from the probe and an output for providing an output signal whenever the amplitude of a signal at its input exceeds a predetermined threshold of second polarity;

first and second pulse generating means with the first pulse generating means having an input connected to receive the output signal from the first threshold detector, the first pulse generating means further having an output for providing a pulse of a predetermined time duration in response to each signal received from the output of the first threshold detector, and with the second pulse generating means having an input connected to receive the output signal from the second threshold detector, the second pulse generating means further having an output for providing a pulse of a predetermined time duration in response to each signal received from the output of the second threshold detector where the pulses of predetermined time duration coexist at some point in time; and

comparison means having first and second inputs for receiving pulses from the outputs of the first and second pulse generating means respectively, the comparison means further having an output for providing a signal whenever pulses appear simultaneously at both of its inputs, the signal at the output of the comparison means being representative of a flaw in the material under test.


14
20
26
28
POSITIVE THRESHOLD DETECTOR
DIFFERENTIATOR
FILTER
VARIABLE PULSE WIDTH ONE-SHOT
B
D
F
H
30
31
AND GATE
10
11
A
FILTER
NEGATIVE THRESHOLD DETECTOR
DIFFERENTIATOR
FILTER
VARIABLE PULSE WIDTH ONE-SHOT
C
E
G
I
15
21
27
29

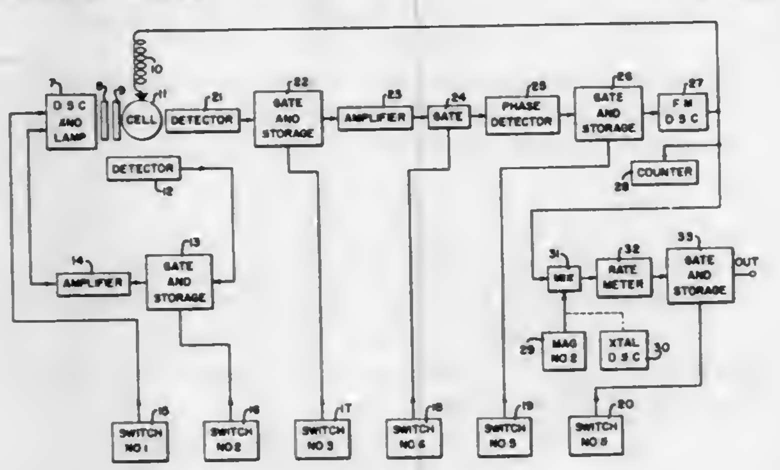
4,193,029
PULSED HELIUM MAGNETOMETER

Armand Cioccio, Silver Spring, and Walter C. Folz, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 4, 1963, Ser. No. 262,810

Int. Cl.^{2} H01S *1/06*

U.S. Cl. 324—301 **9 Claims**



1. A pulsed helium magnetometer comprising;

a cell containing metastable helium adapted to be placed in a magnetic field to be measured,

means including a helium lamp for optically pumping said metastable helium to produce atomic alignment of the helium atoms capable of undergoing magnetic resonance at a frequency dependent on said magnetic field,

means for pulsing said lamp to transmit high intensity light pulses to said cell,

detection means connected to receive light pulses radiated by said cell and to provide an output signal representative of variations in intensity of said radiated pulses,

variable frequency oscillator means for receiving said output signal means responsive to said oscillator means for establishing a continuously applied noninterrupted RF field to said helium atoms substantially at said magnetic resonance frequency,

phase detector means interconnecting said variable frequency oscillator means and said detection means for locking said variable frequency oscillator to said resonant frequency in response to said output signal,

means for coupling said RF field to said helium atoms in said cell,

and means for measuring the frequency of said variable frequency oscillator upon variation thereof in response to said output signal representative of variations in said radiated light pulses in accordance with changes in the background magnetic field incident upon said cell.

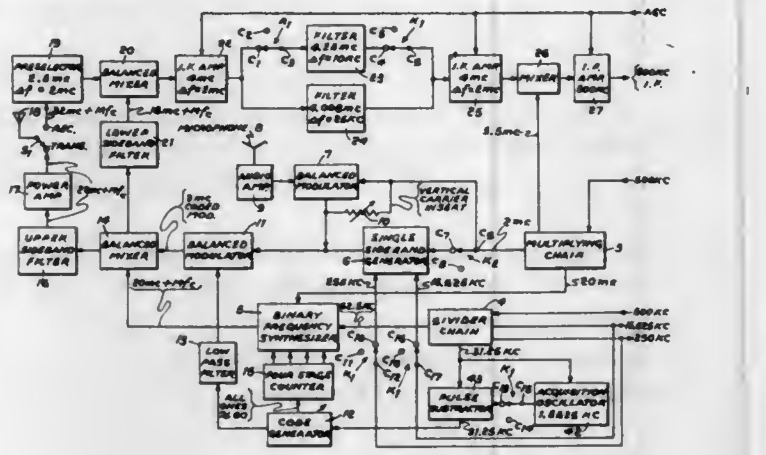
4,193,030
FREQUENCY HOPPING COMMUNICATION SYSTEM

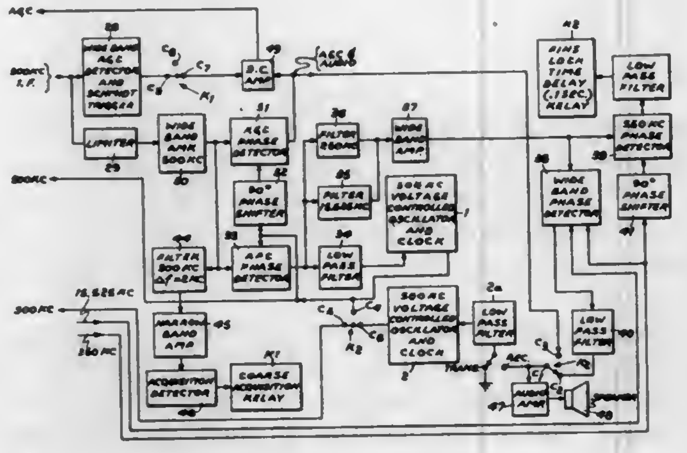
Gerald Rabow, Nutley, N.J., and Alvin E. Nashman, Falls Church, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 1, 1968, Ser. No. 749,338

Int. Cl.^{2} H04K *1/00*

U.S. Cl. 375—2 **10 Claims**





1. A communication system comprising:

first means to generate a selected code signal;

second means coupled to said first means to produce a first signal having a phase selected according to the code condition of said selected code signal;

third means coupled to said first means to produce a second signal having a frequency that hops to different ones of a plurality of discrete frequencies as determined by said selected code signal; and

a first intelligence signal coupled to one of said second and third means to modulate one of said first and second signals;

said second and third means being interconnected to provide a first propagation signal modulated by said first intelligence signal having a frequency hopping characteristic and a selected phase in each frequency hop interval.

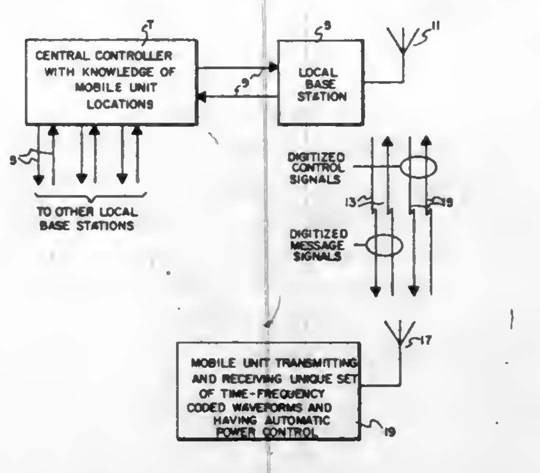
4,193,031
METHOD OF SIGNAL TRANSMISSION AND RECEPTION UTILIZING WIDEBAND SIGNALS

George R. Cooper, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Mar. 13, 1978, Ser. No. 886,100

Int. Cl.^{2} H04J *7/00*

U.S. Cl. 455—38 **11 Claims**


7
CENTRAL CONTROLLER WITH KNOWLEDGE OF MOBILE UNIT LOCATIONS
9
LOCAL BASE STATION
11
9
TO OTHER LOCAL BASE STATIONS
DIGITIZED CONTROL SIGNALS
13
15
DIGITIZED MESSAGE SIGNALS
17
MOBILE UNIT TRANSMITTING AND RECEIVING UNIQUE SET OF TIME-FREQUENCY CODED WAVEFORMS AND HAVING AUTOMATIC POWER CONTROL
19

1. A method for communication utilizing radiation of electromagnetic energy, said method comprising:

assigning a predetermined different set of time-frequency coded waveforms within a predetermined frequency spectrum to each of a plurality of users, each said set having pulses containing a multiplicity of frequencies with coding including changing the sequence of frequency occurrence;

transmitting electromagnetic energy in said predetermined frequency spectrum with said transmitted electromagnetic energy including a predetermined set of time-frequency coded waveforms for communication by and with the assigned user of said set of time-frequency coded waveforms; and

receiving transmitted electromagnetic energy that includes said set of time-frequency coded waveforms by and from the assigned user of said set of time-frequency coded waveforms whereby the user assigned said set of time-frequency coded waveforms can effect communication regardless of other users in the same frequency spectrum.

4,193,032
HIGH SPEED TRANSMITTER PULSER

Walter E. Milberger, Serverna Park, and Larry G. Wright, Pasadena, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 8, 1969, Ser. No. 826,057

Int. Cl.^{2} G01S *7/38*

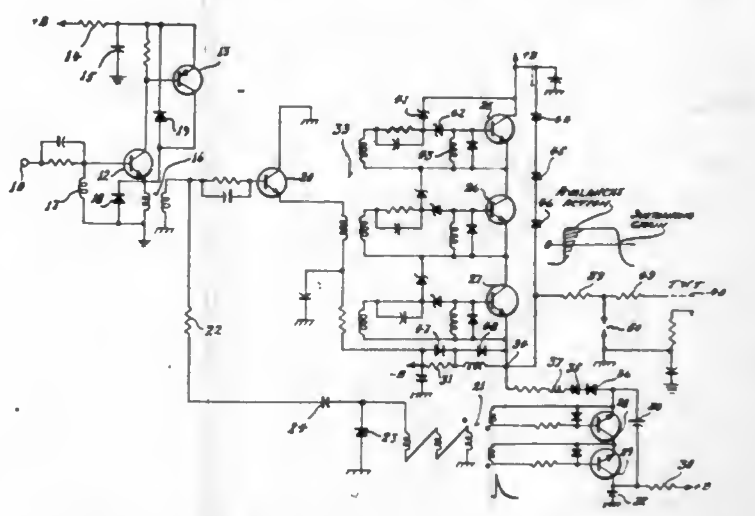
U.S. Cl. 178—116 **6 Claims**

1. In a high speed microwave transmitter apparatus having pulser delay times in the nanosecond range, a high speed pulser apparatus comprising in combination:

a compound emitter follower means having an input and output, said compound emitter follower means receiving at said input a low level positive pulse input signal and providing at said output a signal having a leading edge,

an avalanche control means normally biased at its first avalanche level, and upon receiving said outupt signal leading edge, providing a controlled second avalanche level,

a traveling wave tube transmission means having a control grid, said controlled second avalanche level providing a bias signal which is applied to said control grid of said traveling wave tube transmission means, said bias signal turning on said transmitter traveling wave tube, and



a sustaining chain means also receiving said output signal and providing a sustaining control voltage to said control grid of said traveling wave tube transmission means for the duration of said output signal.

4,193,033
QUADRATURE TRANSPOSITION STAGE

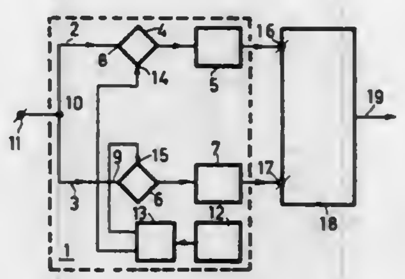
Johannes O. Voorman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 28, 1978, Ser. No. 900,918

Claims priority, application Netherlands, May 20, 1977, 7705552

Int. Cl.^{2} H04L *27/14*

U.S. Cl. 375—88 **4 Claims**



1. A quadrature transposition stage comprising first and second signal paths, each path having a modulator, a filter coupled to said modulator, said filter including at least a first resonant circuit and an output; an input means for coupling a first input of each of the modulators to a common input, a local oscillator means for producing an output signal, means for applying the output signal of said local oscillator with a selected phase to a second input of each of the modulators so that the output signal of the filter in the first signal path is in quadrature with the output signal of the filter in the second signal path, and an output circuit coupling the output of each of the filters to a common output, the resonant circuit in each of the two filters comprising an impedance element and an imaginary conductance, and first gyrator means for providing the imaginary conductances in the respective resonant circuits, said gyrator means having a first port which terminates in the impedance element belonging to the resonant circuit of one filter and a second port which terminates in the impedance element belonging to the resonant circuit of the other filter.

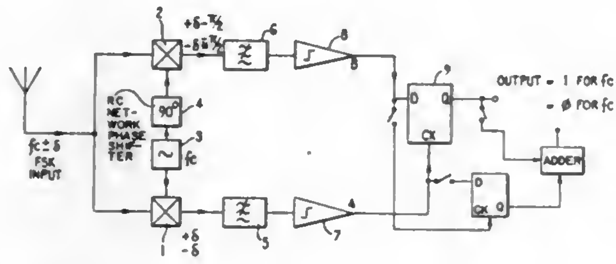
4,193,034
RADIO RECEIVER FOR FSK SIGNALS

Ian A. W. Vance, Newport, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 6, 1978, Ser. No. 922,245

Int. Cl.^{2} H04L *27/14*

U.S. Cl. 375—88 **3 Claims**



1. A radio receiver for frequency shift keyed (FSK) signals on an RF carrier comprising first and second signal paths to which the received radio signals are applied, each signal path including a mixer circuit followed by a low pass filter and a limiting amplifier stage, a local oscillator running at the carrier frequency, the local oscillator output being applied to one mixer circuit direct, means for applying the oscillator output to the other mixer circuit with 90° phase shift, and a D-type clocked flip-flop to the D input of which is applied the output of one of the limiting amplifier stages while the output of the other limiting amplifier stage is applied to the clock input of the flip-flop.

4,193,035
CIRCUIT ARRANGEMENT FOR RECEIVING ONE OF THE SIDEBANDS FROM A DOUBLE SIDEBAND SIGNAL

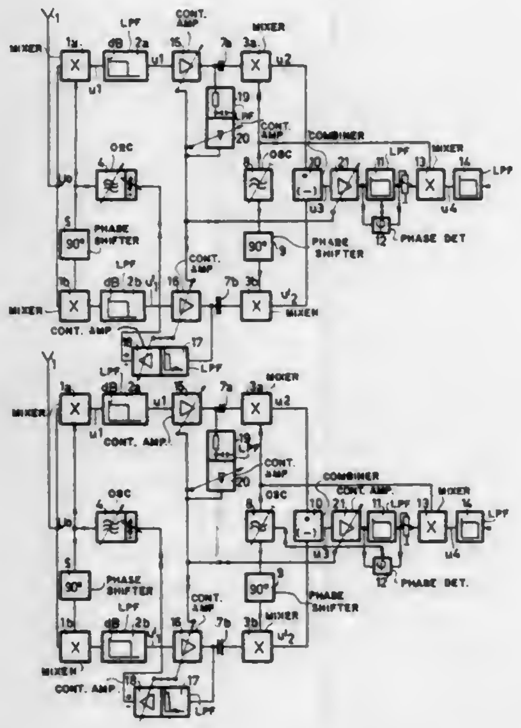
Hermann Berger, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,362

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657170

Int. Cl.^{2} H04B *1/16, 1/68*

U.S. Cl. 455—203 **13 Claims**



1. A circuit arrangement for receiving one of the sidebands of a double sideband signal, comprising two first mixing stages means for mixing the double sideband signal with each one of two locally produced radio frequency oscillations having the same frequency as the carrier frequency of said double sideband signal and phases shifted 90° relative to one another, first and second low pass filter means for filtering the output signals of the two mixing stages respectively, two second mixing stages means respectively coupled to said filters for mixing the filter output signals with either one of two locally produced low-frequency oscillations having the same frequency which is at least equal to the upper frequency of the baseband signal and shifted in phase 90° relative to one another, means for combining the output signals of the two second mixing stages, a third low-pass filter means coupled to said combining means for suppressing signals having a frequency above the frequency of the local low frequency oscillation, and a last mixing stage means for mixing the output signals of the third low-pass filter with one of the local low frequency oscillations.

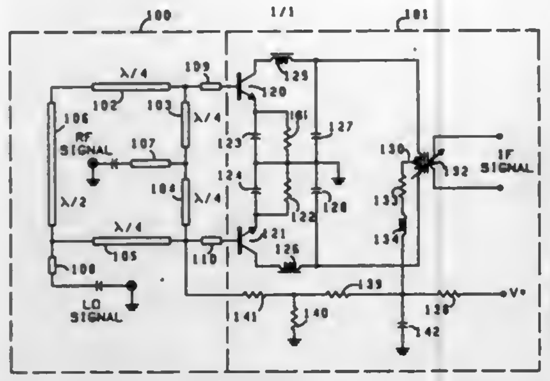
4,193,036
BALANCED ACTIVE MIXER CIRCUIT

Frank J. Cerny, Jr., North Riverside; George D. Helm, Cary, and Ronald G. Wesoloski, Glenview, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 3, 1978, Ser. No. 921,675

Int. Cl.^{2} H04B *1/16*

U.S. Cl. 455—327 **18 Claims**



1. A singly-balanced mixer circuit for developing an intermediate frequency (IF) signal for a radio transceiver operative on a plurality of radio channels, the radio transceiver having a receiving bandwidth approaching one-half of the IF frequency, said balanced mixer circuit combining a received radio frequency (RF) signal with a local oscillator (LO) signal to provide the IF signal, said mixer circuit comprising:

(a) a strip transmission line ring having a first input coupled to the RF signal and a second input coupled to the LO signal for providing first and second output signals, the first and second output signals comprised of substantially equal components of the LO signal and RF signal, the equal components of the LO signal phase shifted by 180° with respect to one another and the equal components of the RF signal in phase with each other; and

(b) an active singly-balanced mixer including:

(i) first and second active devices coupled to the first and second output signals of the transmission line ring for providing first and second mixer signals, respectively;

(ii) an output transformer having a tap at a predetermined location on the primary winding that is not bypassed at the RF and IF frequencies, the first and second mixer signals from the first and second active devices coupled to opposite ends of the primary winding, IF components of the first and second mixer signals adding in phase in the primary winding, and the composite IF signal provided across the secondary winding; and

(iii) a DC biasing network coupled to the tap of the primary winding of the output transformer for applying a predetermined bias voltage to the first and second active devices.

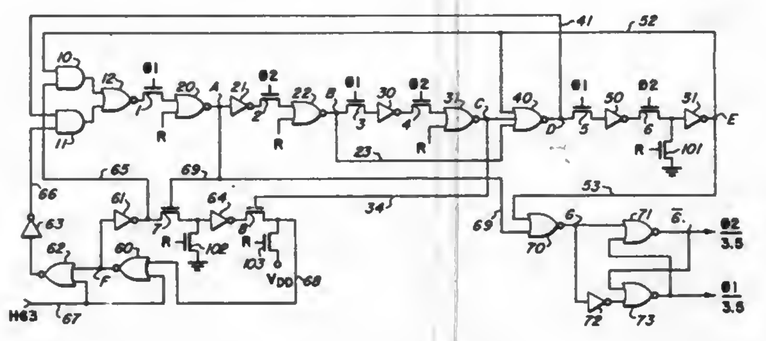
4,193,037
FREQUENCY DIVIDER CIRCUIT WITH SELECTABLE INTEGER/NON-INTEGER DIVISION

Shikun Kyu, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 20, 1978, Ser. No. 888,441

Int. Cl.^{2} H03K *21/36*

U.S. Cl. 328—46 **13 Claims**



7. A divide circuit comprising:

means responsive to an external clock signal of frequency N for generating an output signal of frequency N/(M+0.5), M being a positive integer; and

additional means responsive to an external control signal having first and second states, said divide circuit generating said output signal at frequency N/(M+0.5) when said control signal is in said first state and generating said output signal at frequency N/(M+1) when said control signal in said second state.

4,193,038
KEY INPUT APPARATUS

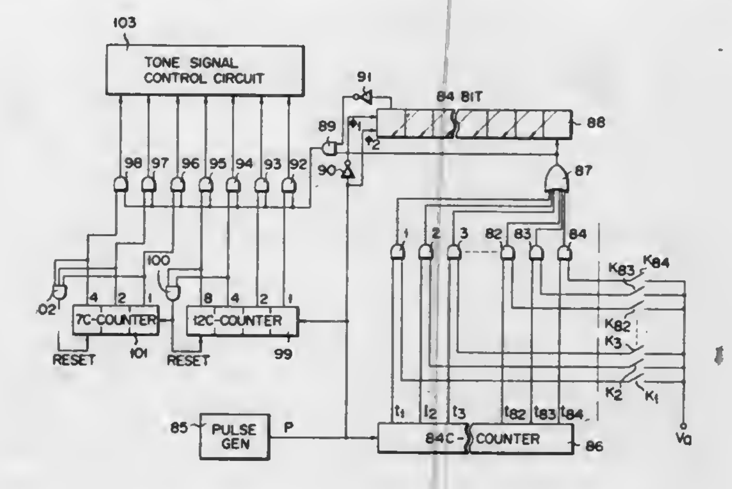
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1978, Ser. No. 892,177

Claims priority, application Japan, Apr. 11, 1977, 52/41100

Int. Cl.^{2} G10H *1/00;* **H03K** *19/24*

U.S. Cl. 328—104 **1 Claim**



1. A key input apparatus comprising:

a plurality of input keys which are manually operated;

a group of first AND gates corresponding in number to said input keys, each of said first AND gates having first and second input terminals;

first connecting means for connecting the respective output terminal of said input keys corresponding to the first input terminals of said first AND circuits;

a timing signal generating circuit which has output terminals corresponding to the number of said AND gates and produces successively different timing signals for successively scanning said first AND gates;

second connecting means for connecting the output terminals with the corresponding second input terminals of said first AND gates;

an OR gate for logically summing the output signals from said first AND gates;

a shift register which has bits corresponding in number to said first AND gates and receives the key input signals due to key depressions via said OR gate to successively shift them toward the output side of said shift register;

an inverting circuit which is connected to the output side of said shift register to invert an output signal from the final bit position of said shift register; and

a second AND gate for obtaining a logical product of the outputs of said inverting circuit and said OR gate, thereby producing the key input signals from said input keys depressed.

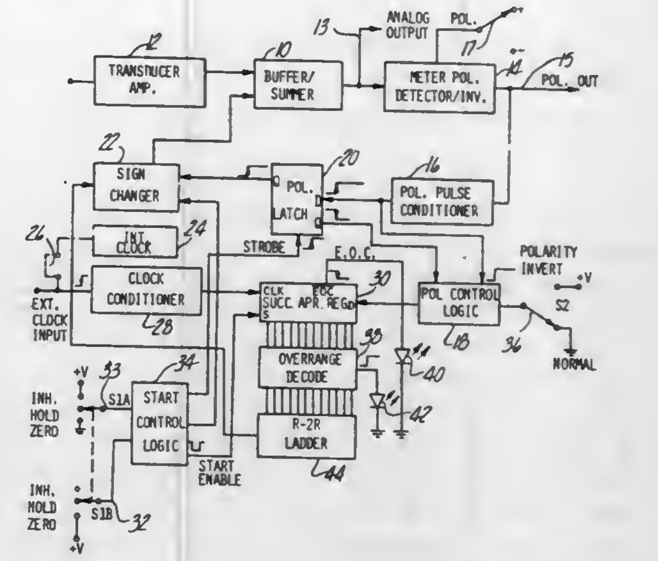
4,193,039
AUTOMATIC ZEROING SYSTEM

Richard L. Massa, Sterling Heights, and Kenneth J. Cook, Troy, both of Mich., assignors to The Valeron Corporation, Oak Park, Mich.

Filed Feb. 10, 1978, Ser. No. 876,918

Int. Cl.^{2} H03K *13/02*

U.S. Cl. 328—162 **16 Claims**



1. Apparatus for automatically producing an analog zeroing voltage for nulling an offset voltage of either positive or negative polarity, said apparatus comprising:

polarity sensing means for sensing the polarity of a signal associated with the offset signal;

latch means coupled to the sensing means for providing a control signal whose state depends upon the polarity of the offset signal as determined by the sensing means;

voltage generator means for producing an output voltage of a magnitude substantially the same as the offset voltage;

inverter means for inverting the output voltage from the voltage generator;

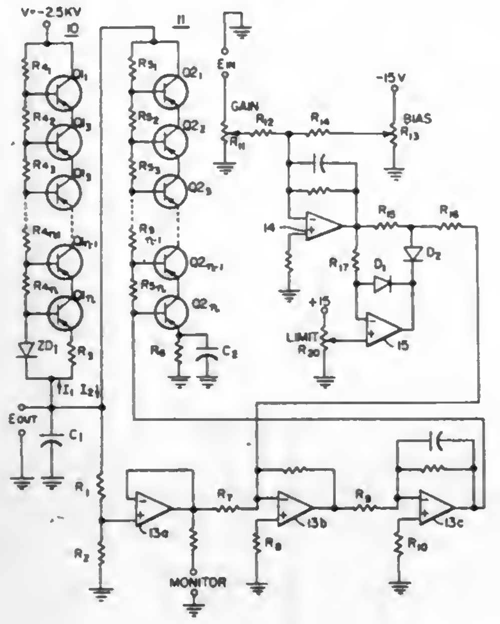
switch means having two inputs, a control input and an output, one input being coupled to the unchanged output of the voltage generator means, with the other input being coupled to the output of the inverter means, and the control input being coupled to the output of said latch means, operative to couple one of its inputs to its output depending on the state of the control signal from the latch means whereby a zeroing voltage is provided of the same magnitude yet of opposite polarity to that of the offset voltage; and

summing means coupled to the output of said switch means for summing the zeroing voltage with the offset voltage.

4,193,040
HIGH-VOLTAGE AMPLIFIER WITH LOW OUTPUT IMPEDANCE

Barry Weissman, West Windsor Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 2, 1978, Ser. No. 956,942
Int. Cl.^{2} H03F *1/34, 3/04*
U.S. Cl. 330—293 2 Claims



1. A high-voltage amplifier for use with capacitive loads, which comprises:

(a) a capacitor across which the output of the amplifier is developed;
(b) a controllable current generator for discharging said capacitor;
(c) a constant current generator for charging said capacitor towards the potential of an external power source, said constant current generator comprising:
  (1) n transistors each having a base, an emitter and a collector electrode, the collector-emitter paths of each of said n transistors being connected in series between said external power source and said capacitor;
  (2) a voltage-divider for biasing said n transistors, said divider comprising n resistors connected in series between said external power source and said capacitor, to base of the first through (n−1)th transistor, being connected to a corresponding juncture of two adjacent resistors in said voltage divider
  (3) a current limiting resistor connected between the emitter of said nth transistor and said capacitor; and
  (4) a reverse-biased Zener diode connected between the base of said nth transistor and said capacitor; and
(d) means, responsive to the input signal to be amplified, for altering the rate at which said controllable current generator discharges said capacitor.

4,193,041
CONDITION RESPONSIVE INDUCTANCE TO FREQUENCY CONVERTER WITH TEMPERATURE COMPENSATION

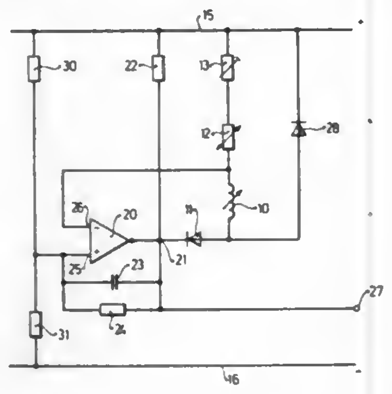
Ernst-Olav Pagel, Böhmfeld, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,611
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1977, 2726894
Int. Cl.^{2} G01L *9/10;* H03K *3/02*
U.S. Cl. 331—65 8 Claims

1. A circuit arrangement for converting an inductance value into a specific frequency especially for producing a pressure-dependent frequency for injection systems in internal combustion engines, comprising:

a comparator, a series circuit including at least one coil with a variable inductance, a diode, and a temperature-dependent resistor coupled between the output of said comparator and a positive current supply line, the end of the coil on the side opposite the comparator output being connected to a first input to the comparator and the second input to the comparator being connected to a source of positive potential, and

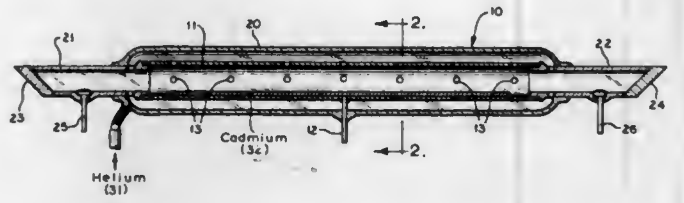
a freewheeling diode connected between the output of the comparator and the positive current supply line and bridging the coil.



4,193,042
SELF-CONFINED HOLLOW CATHODE LASER

Shing C. Wang, Temple City, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1976, Ser. No. 701,474
Int. Cl.^{2} H01S *3/00*
U.S. Cl. 331—945 PE 9 Claims



1. Apparatus for promoting the emission of radiation comprising:

a first cylindrical cathode electrode;

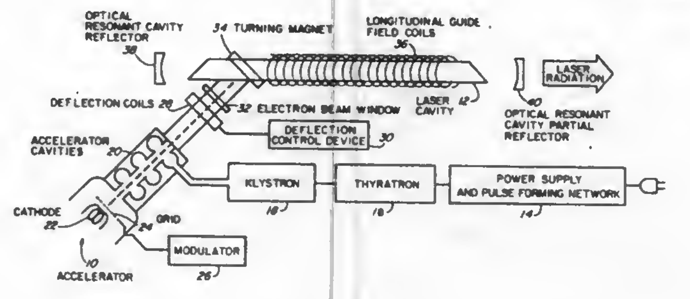
an insulating envelope, substantially surrounding said first electrode, having a pair of end sections, each of said end sections terminating in means for transmitting radiation; said envelope substantially enclosing a quantity of material, said material, at standard temperature and pressure conditions, including both a host material and a doping material, said doping material being cadmium and said host material being helium; and

combination excitation and cataphoretic means, disposed in advance of said radiation transmission means at each of said end sections, for promoting passage of electrical energy to said first electrode to cause at least some of said material to be raised from an initial state to an excited state and to further urge said some of said material away from the nearest of said radiation transmission means, said combination excitation and cataphoretic means including anode electrode means having no more than two second electrodes, one of said second electrodes being disposed along one of said end sections in advance of one of said radiation transmission means, and the other of said second electrodes being disposed along the other of said end sections in advance of the other of said radiation transmission means.

4,193,043
MICROWAVE ACCELERATOR E-BEAM PUMPED LASER

Charles A. Brau; William E. Stein, and Stephen D. Rockwood, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 12, 1977, Ser. No. 832,489
Int. Cl.^{2} H01S *3/09*
U.S. Cl. 331—94.5 PE 27 Claims


OPTICAL RESONANT CAVITY REFLECTOR 38
34 TURNING MAGNET
LONGITUDINAL GUIDE FIELD COILS 36
LASER RADIATION
DEFLECTION COILS 28
32 ELECTRON BEAM WINDOW
LASER CAVITY 12
40 OPTICAL RESONANT CAVITY PARTIAL REFLECTOR
DEFLECTION CONTROL DEVICE 30
ACCELERATOR CAVITIES 20
CATHODE 22
GRID 24
KLYSTRON 18
THYRATRON 16
POWER SUPPLY AND PULSE FORMING NETWORK 14
MODULATOR 26
10 ACCELERATOR

1. A device for pumping gaseous lasers comprising:

microwave linear accelerator means for generating a relativistic electron beam having energy sufficient to ionize and excite a gaseous laser medium;

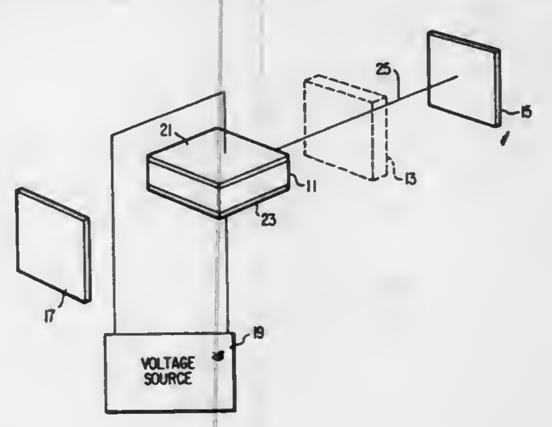
means for modulating said accelerator means to produce a modulated relativistic electron beam; and,

means for applying said modulated relativistic electron beam to said laser medium.

4,193,044
RARE EARTH SEMICONDUCTOR LASER

Clyde A. Morrison, Wheaton; Nick Karayianis, and Donald E. Wortman, both of Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 26, 1978, Ser. No. 872,516
Int. Cl.^{2} H01S *3/18*
U.S. Cl. 331—94.5 F 9 Claims



1. A solid state laser device comprising:

a semiconductor material constituting a single crystal containing optically active ions with given energy levels; said semiconductor material having the formula Ln_2TX_5, where Ln is a rare earth element, T is zirconium or hafnium, and X is sulfur or selenium;

regeneration means exhibiting high reflectance at given wavelengths optically coupled to opposite end portions of the crystal for stimulating coherent emission of light from the crystal; and

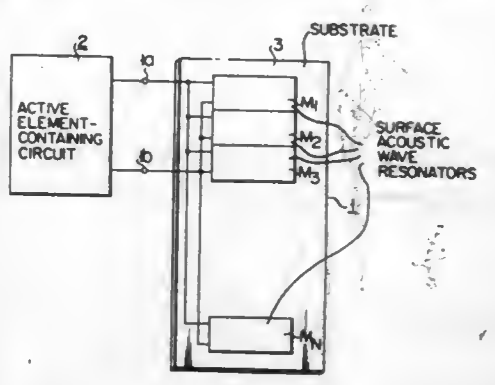
electrical pumping means coupled to the crystal for effecting an inverted population state of the optically active ions between certain ones of the given energy levels by impact excitation,

whereby stimulated emission is emitted from the crystal at a frequency corresponding to the energy difference between the certain ones of the given energy levels and at wavelengths corresponding to the given wavelengths.

4,193,045
TEMPERATURE COMPENSATED SURFACE ACOUSTIC WAVE OSCILLATORS

Kouji Houkawa, Kodaira; Yoshiki Yamauchi, Musashino, and Shokichiro Yoshikawa, Mitaki, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,556
Claims priority, application Japan, May 25, 1977, 52-61575
Int. Cl.^{2} H03B *5/32*
U.S. Cl. 331—107 A 10 Claims


2
10
3
SUBSTRATE
ACTIVE ELEMENT-CONTAINING CIRCUIT
M1
M2
M3
Mn
SURFACE ACOUSTIC WAVE RESONATORS

1. A surface acoustic wave oscillator which comprises a resonator circuit formed of a plurality of parallel-connected surface acoustic wave resonators indicating turnover temperatures on different curves denoting frequency deviations relative to ambient temperature, each said surface acoustic wave resonator being formed of a pair of interdigital electrodes which are mounted on a substrate for propagating a surface acoustic wave, and whose electrode elements are arranged alternately adjacent to each other; and an active element-containing circuit connected to the resonator circuit, wherein the plurality of surface acoustic wave resonators are so constructed that the relationship between the different frequencies of said resonators and the frequency deviations thereof and the relationship between the different turnover temperatures satisfy the following formulas:

$$f_H - f_L \leqq \Delta fa$$

$$T_{p1} < \ldots < T_{pn}$$

where

f_H: a maximum frequency among those frequencies of a plurality of resonators collectively connected to the active element-containing circuit which are produced at turnover temperatures on a temperature curve;

f_L: a minimum frequency among those of said plurality of resonators;

Δfa: allowable frequency deviation of the surface acoustic wave oscillator;

T_{p1} to T_{pn}: turnover temperatures corresponding to the respective surface acoustic wave resonators.

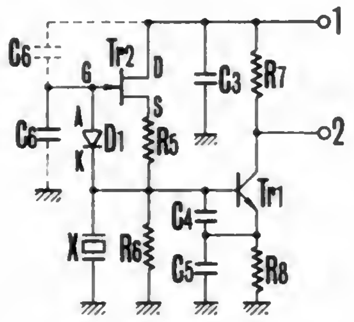
4,193,046
PIEZO-ELECTRIC OSCILLATORS WITH AUTOMATIC GAIN CONTROL

Tadataka Chiba, Tokyo, Japan, assignor to Kinsekisha Laboratory, Ltd., Tokyo, Japan

Filed Nov. 6, 1978, Ser. No. 957,951
Claims priority, application Japan, Nov. 8, 1977, 52-133997
Int. Cl.^{2} H03B *3/02, 5/36*
U.S. Cl. 331—109 12 Claims

1. In a piezo-electric oscillator of the type comprising a piezo-electric oscillator element, an oscillation transistor connected to control the oscillation of said oscillator element, and base bias circuit means for driving said oscillation transistor, the improvement wherein said base bias circuit means comprises a field effect transistor having a drain connected to a

power source and a gate and source connected in common to the base of said oscillation transistor, and a diode connected

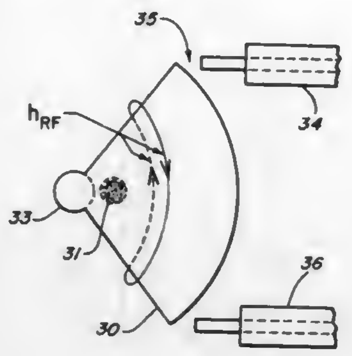


between said gate and said base to rectify the oscillation signal being passed to the gate of said field effect transistor.

4,193,047
FREQUENCY SELECTIVE FERRIMAGNETIC POWER LIMITER

Philip S. Carter, Palo Alto, Calif.; Steven N. Stitzer, Ellicott City, and Harry Goldie, Randallstown, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 2, 1978, Ser. No. 902,130
Int. Cl.^{2} H01P *1/22*
U.S. Cl. 333—17 L **1 Claim**



1. A frequency selective ferrimagnetic power limiter comprising:

a. a sectorial, radial, radio frequency transmission line resonator having an inner radius and an outer radius cooperating with a ground plane, with the included angle of the said resonant sector being from approximately 90 degrees to approximately 100 degrees;
b. a shorting post supporting the said resonant sector and grounding the said resonant sector substantially at its inner radius to the said ground plane;
c. a sphere of ferrimagnetic material positioned between the said radial resonator and the said ground plane adjacent the said inner radius;
d. means for coupling a signal into the said radial resonator;
e. means for coupling a signal out of the said radial resonator; and
f. means for providing a magnetic bias field substantially perpendicular the said radial resonator.

4,193,048
BALUN TRANSFORMER

Orville K. Nyhus, Melbourne, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 22, 1978, Ser. No. 918,175
Int. Cl.^{2} H01P *5/10*
U.S. Cl. 333—26 **4 Claims**

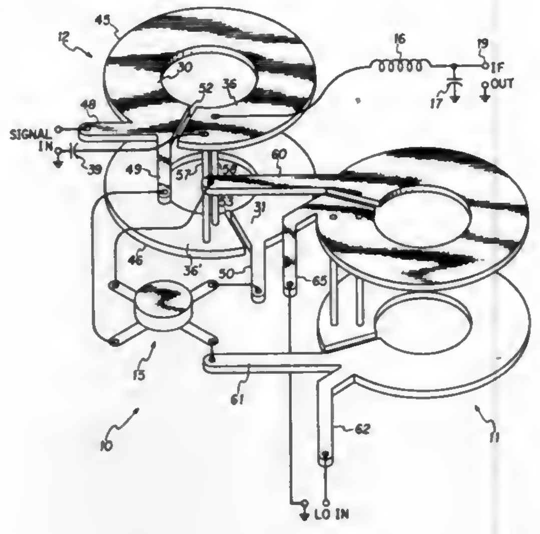
1. A balun transformer, comprising:

a printed circuit board having top and bottom surfaces,

a pair of similarly configured electrical conductors, each having first and second ends,

each of said conductors being arranged with its first end adjacent its second end,

said pair of conductors also being carried by and aligned on opposite sides of said printed circuit board with the first end of one conductor opposite the first end of the other conductor to facilitate interconnection thereof through said printed circuit board,



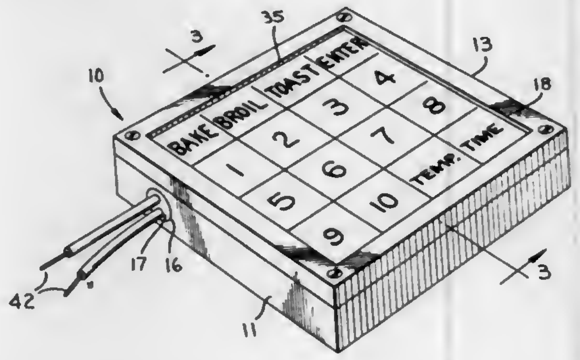
and means extending through said printed circuit board electrically interconnecting the first ends of said conductors,

said balun transformer providing an unbalanced condition between one of said first ends of said conductors and a second end of one of said conductors, and a balanced connection between the second ends of said conductors.

4,193,049
ULTRASONIC TOUCH CONTROL PANEL

Robert J. Salem, Danbury, Conn., assignor to Deere & Company, Moline, Ill.

Filed Jun. 12, 1978, Ser. No. 914,526
Int. Cl.^{2} G01D *21/00;* H01P *1/02;* H03H *7/30*
U.S. Cl. 333—141 **15 Claims**



1. A control device of the type subject to control by an operator including a housing and comprising:

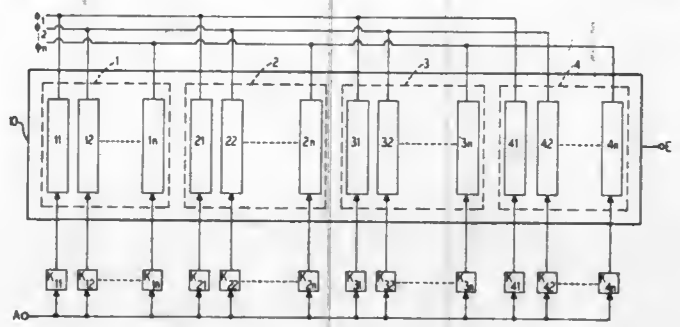
(a) an ultrasonic waveguide provided with a plurality of indicia means on said housing representative of positions along said waveguide;
(b) an ultrasonic transducer coupled to the waveguide, the transducer being capable of providing, in response to an applied electrical pulse, an ultrasonic wave pulse which ~~is~~ suitable for propagation along a propagation path in the waveguide; and
(c) a plurality of selectable means for reflecting at least part of an ultrasonic wave pulse propagating along the propagation path, each of the selectable means being associated with an indicia means and located for reflecting at least a part of said propagating ultrasonic wave pulse back to the transducer from a different position along the propagation path, the transducer being capable of responding to such a reflected ultrasonic wave pulse to provide a delayed electrical pulse;

whereby each delayed pulse occurs with a time delay, relative to an applied pulse, related to the position of a selected one of the selectable means relative to said transducer.

4,193,050
TRANSVERSAL FILTER

Karl Knauer, Gauting, and Hans J. Pfleiderer, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 25, 1978, Ser. No. 872,161
Int. Cl.^{2} H03H *7/28;* H03K *5/159;* G11C *19/18, 27/00*
U.S. Cl. 333—165 **2 Claims**



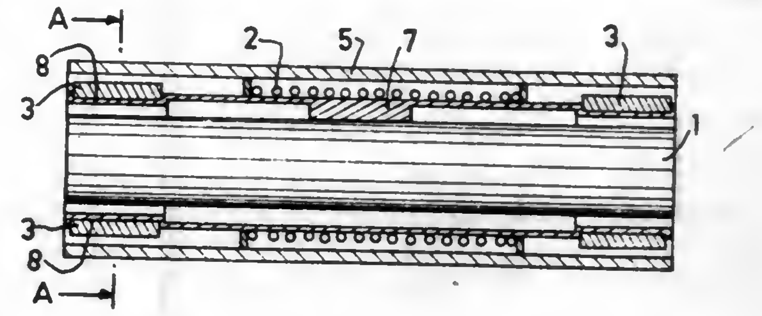
1. A transversal filter with a charge coupled device (CCD) for realizing a filter function, comprising: a substrate comprised of doped semiconductor material having arranged on one surface thereof a series of capacitors each comprising a surface electrode and the substrate below each surface electrode as a counter electrode; each surface electrode being spaced from said surface by an insulating layer; at least three shift pulse lines supplying shift pulses displaced in phase relative to one another; said at least three shift pulse lines being respectively connected to at least first, second, and third groups of surface electrodes, a serial input means at one end of the CCD for connection to a signal to be filtered; the surface electrodes from the first group each having a non-reactive amplifying output means connected thereto; the amplifying output means also connecting to a filter output from which a filtered signal can be obtained; an amplification factor of each of said amplifying outputs corresponding to an assigned value of a pulse response of the filter function to be realized by the filter; and at least one of the surface electrodes from the second group and at least one of the surface electrodes from the third group each having an additional non-reactive amplifying output means provided therefore which is connected to the filter output.

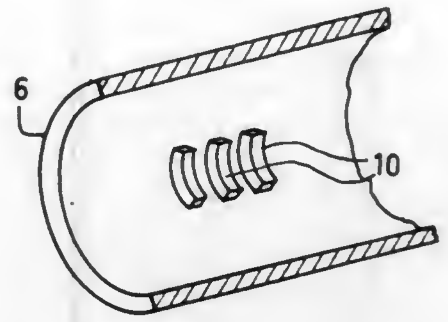
4,193,051
MAGNETOSTRICTIVE MECHANICAL FILTER

Didier M. Beaudet, Saint-Maur-des-Fosses, France, assignor to Societe Anonyme de Telecommunications, France

Filed May 19, 1978, Ser. No. 907,779
Claims priority, application France, May 26, 1977, 77 16140
Int. Cl.^{2} H03H *7/10*
U.S. Cl. 333—201 **4 Claims**

1. A magnetostrictive mechanical filter comprising at least one rod of a magnetostrictive material forming a resonance element, a spool surrounding the rod, a field coil the windings of which are wound around the spool, and magnets creating a continuous magnetic field, arranged respectively at the ends of the rod, the rod being held radially in at least three points disposed regularly about the rod in the vicinity of the middle portion thereof, a rib being provided at each fixation point, said rib extending parallel to the generatrices of the rod and being formed on the inner peripheral surface of the spool and integrally molded with said spool.

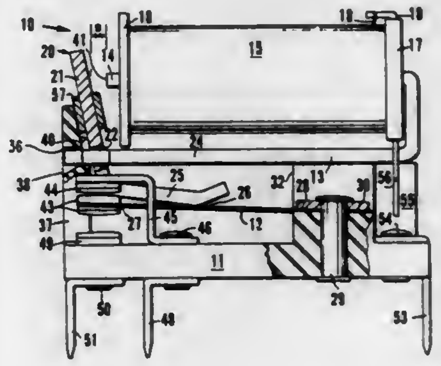




4,193,052
LOW CURRENT RELAY

Rodney Hayden, Stoney Creek, Canada, assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 20, 1978, Ser. No. 888,117
Int. Cl.^{2} H01H *67/02*
U.S. Cl. 335—128 **6 Claims**



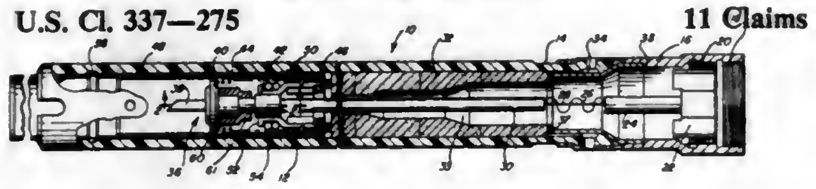
1. A relay capable of accurate assembly by automation techniques and comprising: an insulate base having laterally spaced apart abutment members rising therefrom to define therebetween an anchorage surface and equidistant and remotely therefrom a location post rising from said base and containing a core locating socket; a spring armature extending from said anchorage surface towards said post and presenting contact arm portions thereon; a magnetic flux conducting fixed core part in the form of a lower leg and an upper winding leg substantially parallel thereto said lower leg having a toe portion seatable in the socket of the locating post; means anchoring said lower core arm to said abutment of said base; a movable core part actuator pivoted on said lower arm and having a lever arm portion extending for engagement with said spring armature; and a free flange on said actuator located near an attracting face of a free end of said winding arm portion at a predetermined distance therefrom.

4,193,053
CIRCUIT INTERRUPTING DEVICE WITH ARCING ROD SPEED MODIFYING MEANS

Bruce A. Biller, Chicago; Hiram S. Jackson, Glenview, and Henry W. Scherer, Mt. Prospect, all of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Jan. 30, 1978, Ser. No. 873,626
Int. Cl.^{2} H01H *85/38*

U.S. Cl. 337—275 **11 Claims**



1. An improved high voltage fuse for interrupting fault currents of both low and high level ranges, the fuse being of the type having: an insulative housing carrying thereon a pair of opposed terminals connectable to opposed points of a circuit; an elongated body of a solid arc-extinguishing material within the housing, the body having a bore therethrough of a first diameter; an elongated arcing rod having a second diameter slightly smaller than the first diameter and being movable by a spring member through said bore upon fusing of a fusible element normally preventing such movement, so that an arc, terminated on one end of the arcing rod and on a stationary terminal away from which the arcing rod moves, is elongated by such movement to interact within said arc-extinguishing material to generate arc-extinguishing gases; the diameters, the mass of the arcing rod and the rate of the spring member being so related as to efficiently extinguish low fault current, but being so related as to inefficiently extinguish the high fault current levels; wherein the improvement comprises:

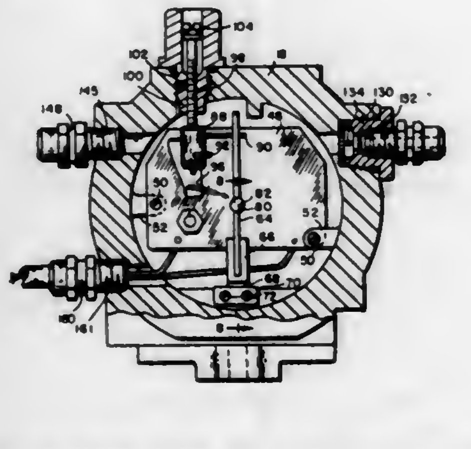
a member continuously and at all times attached to the arcing rod at a position so as to not interfere with its movement or to affect the relationship between the diameters, the member adding sufficient mass to the arcing rod so that the acceleration thereof through the bore is decreased from the acceleration the arcing rod would have without the member to render efficient the extinguishment of high fault current.

4,193,054
AIR FLOW TRANSDUCER

Robert D. Reis, Hingham, Mass., assignor to United Electric Controls Company, Watertown, Mass.

Filed Apr. 10, 1978, Ser. No. 895,261
Int. Cl.^{2} H01L *10/10*

U.S. Cl. 338—42 **27 Claims**



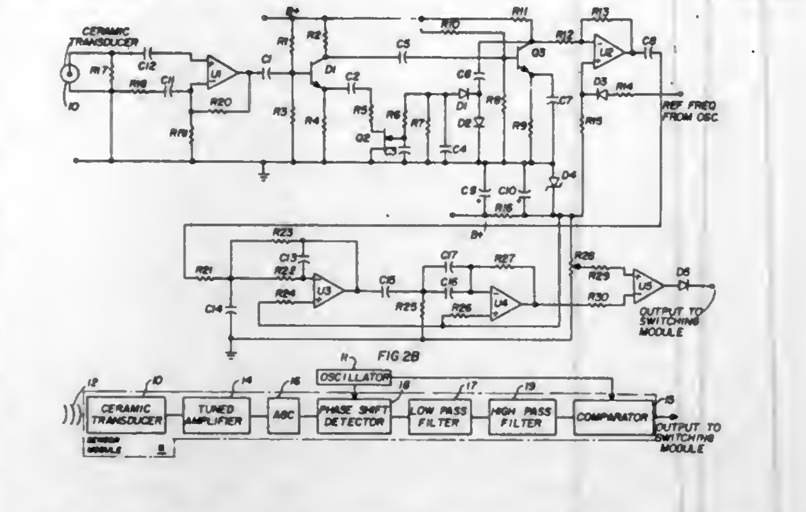
1. A device for measuring air flow comprising a housing defining a receptacle, displaceable means in the receptacle dividing the receptacle into a high pressure chamber at one side and a low pressure chamber at the other side, means defining an opening in the housing providing a port in communication with the high pressure chamber and a port in communication with the low pressure chamber, said port in communiwith the high pressure chamber being upstream of the port in communication with the low pressure chamber, means in said opening upstream of the port in communication with the low pressure chamber and downstream of the port in communication with the high pressure chamber for creating a pressure differential in the two chambers which is directly proportional to any change in pressure such that the displaceable member is displaced in an amount which is directly proportional to said change in pressure and kinematic means operable by the displacement of the displaceable member to produce a signal of predetermined magnitude.

4,193,055
AUTOMATIC SENSITIVITY LEVEL ADJUSTMENT

Charly Barnum, 160 Overlook Ave., Hackensack, N.J. 07601

Filed Mar. 11, 1977, Ser. No. 776,751
Int. Cl.^{2} G01S *9/66*

U.S. Cl. 367—94 **8 Claims**



1. A motion detection system for coupling a power circuit to a load upon receipt of a Doppler energized ultrasonic wave characteristic of human movement and for deactivating the power circuit after cessation of human movement, comprising:

a. a transmission means for producing ultrasonic waves of a generally constant carrier frequency and amplitude to be radiated into a space to be maintained under surveillance;

b. a sensor means for receiving and for producing a first electrical signal representative of said Doppler energized ultrasonic wave;

c. a device for receiving and amplifying said first electrical signal to produce a second electrical signal, said device including a gain control means for maintaining a generally constant amplitude of said second electrical signal within a predetermined range, said device further including a first delay means having a time period such that the gain control means does not begin to function until after the lapse of said time period whereby said second electrical signals having amplitudes outside said predetermined range and having a short term duration less than said time period are unaffected by said gain control means, said time period suitably chosen such that variations of said short term duration in Doppler signal amplitudes characteristic of human motion are unaffected by said gain control means while variations in Doppler signal amplitudes characteristic of background noise and having durations greater than said time period are eliminated by said gain control means;

d. a detector means for processing said second electrical signal to produce an output signal representative of human movement in said space maintained under surveillance;

e. a switching means for producing a power circuit activation signal upon receipt of said output signal, and for producing a power circuit deactivation signal in the absence of said output signal; and

f. a connecting means responsive to said power circuit activation and deactivation signals to respectively couple and decouple the power circuit and the load.

4,193,056
OCR FOR READING A CONSTRAINT FREE HAND-WRITTEN CHARACTER OR THE LIKE

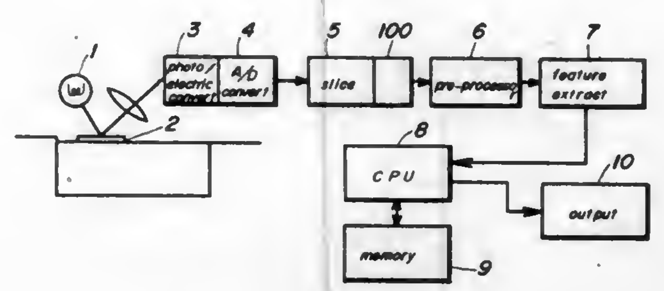
Toshiaki Morita, Nara; Hironari Takatori, Kobe; Fusao Makino, Yamatokoriyama; Syoichi Yasuda, Ikoma, and Yoshiki Nishioka, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 23, 1978, Ser. No. 908,657

Claims priority, application Japan, May 23, 1977, 52-59589; May 24, 1977, 52-60115; May 24, 1977, 52-60116; May 24, 1977, 52-60117; May 25, 1977, 52-61433; May 25, 1977, 52-61434

Int. Cl.^{2} G06K *9/12*

U.S. Cl. 340—146.3 AC **2 Claims**



1. An optical character reader comprising:

memory means for storing a character pattern in addressable parallel segments, all of said segments extending in a common linear direction;

means for retrieving character pattern information from said addressable parallel segments;

classification means responsive to said means for retrieving for comparing character pattern information in retrieved adjacent segments two at a time and classifying the combined character pattern information of each two retrieved adjacent segments into a predetermined number of groups of predefined shapes without regard to specific address information within each of said segments; and

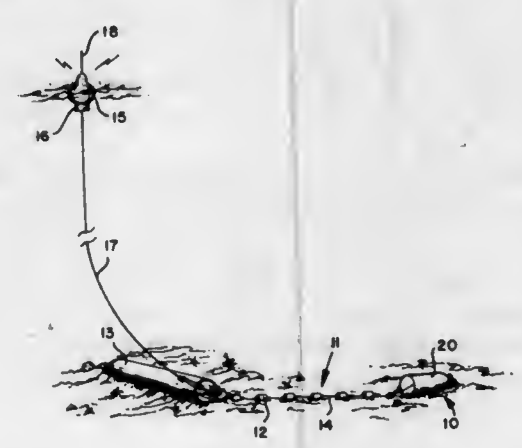
identification means for comparing the combinations of groups of predefined shapes of the respective adjacent segments with reference information to identify the character patterns, said reference information including predetermined combinations of said groups of predefined shapes for each character to be identified.

4,193,057
AUTOMATIC DEPLOYMENT OF HORIZONTAL LINEAR SENSOR ARRAY

Derek J. Bennett, and Daniel J. Hogan, both of Thousand Oaks, Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 20, 1978, Ser. No. 888,165
Int. Cl.^{2} H04R *1/46*

U.S. Cl. 367—153 **18 Claims**



1. A method for deploying a linear sensor array on the ocean floor comprising the steps of deploying a vertical array on a cable between an anchor and a float, and gradually decreasing the buoyancy of the float as the float is carried away from the anchor by ocean currents.

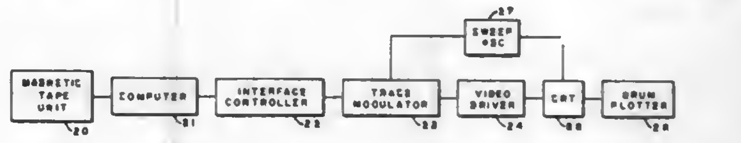
4,193,058
SYSTEM FOR DISPLAYING SEISMIC DATA ON A CATHODE-RAY TUBE

Clarence G. Smith, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 854,564, Nov. 25, 1977. This application Jan. 25, 1978, Ser. No. 872,271

Int. Cl.^{2} G01V *1/34;* **G01D** *1/00*

U.S. Cl. 367—71 **7 Claims**



1. A seismic data processing system comprising:

(a) a cathode-ray tube,

(b) a multiplexer for successively applying seismic data for each of a plurality of seismic channels to said cathode-ray tube to intensity modulate the electron beam one time during each sweep of the electron beam across the face of the cathode-ray tube for each of the seismic channels,

(c) means for producing a sweep signal,

(d) means for applying said sweep signal to the yoke of the cathode-ray tube to drive the electron beam across the face of the cathode-ray tube,

(e) means for generating a digital reference number representative of the value of the drive current through the yoke required for the display of a predetermined number of seismic traces per unit length of sweep,

(f) means for making a measurement representative of the amplitude of the drive current through said yoke by adding the sampled value of the drive current at two spaced-apart times between which seismic data is to be displayed on the face of the cathode-ray tube,

(g) an analog-to-digital converter for digitizing said drive current measurement,

(h) a digital comparator for comparing said digitized drive current measurement with said digital reference number, and

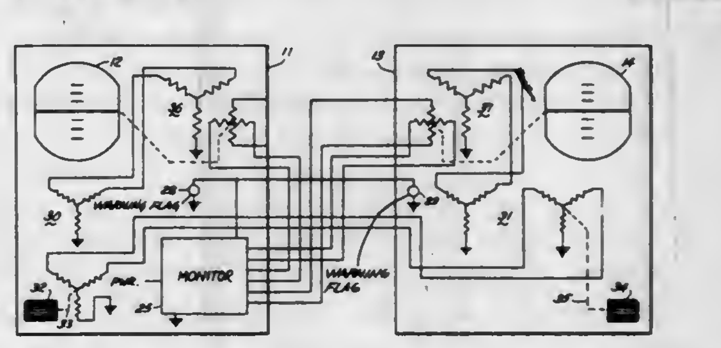
(i) means for automatically varying said sweep signal until said digitized drive current measurement and said digital reference number are the same.

4,193,059
ATTITUDE INDICATOR COMPARATOR WARNING SYSTEM

Richard L. Harris, Oklahoma City, Okla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 15, 1978, Ser. No. 915,708
Int. Cl.^{2} G08B *21/00;* **G08C** *19/46*

U.S. Cl. 340—27 AT **4 Claims**



2. An attitude indicator comparator warning system for a first attitude indicator and a second attitude indicator, the said first and second attitude indicators indicating the same parameter and having indicator drive motors energized from separate

sources and with each indicator having an electrically actuated flag indicator, the said warning system comprising:

a. a first transolver coupled to the said motor drive of the said first attitude indicator and having an electrical excitation input and an electrical output;

b. a second transolver coupled to the said motor drive of the said second attitude indicator and having an electrical input and a sine and cosine electrical output;

c. means for interconnecting the said electrical output of the first transolver with the electrical input of the said second transolver;

d. a comparator warning monitor having an excitation output, a sine input, a cosine input, and a flag excitation output;

e. means for connecting the said excitation output from the said monitor to the said excitation input of the said first transolver;

f. means for connecting the sine output from the said second transolver to the said sine input of the said monitor, and connecting the said cosine output from the said second transolver to the said cosine input of the said monitor; and

g. means for connecting the said flag excitation output of the said monitor to the said electrically actuated flag indicator of both the said first and said second attitude indicators whereby the said flag indication is responsive to the said sine output and the said cosine output from the said second transolver.

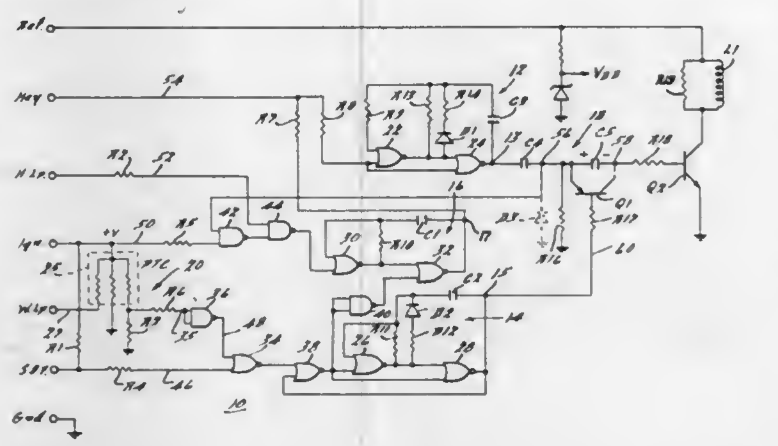
4,193,060
CONTROL CIRCUIT FOR A TONE GENERATOR

Michael Slavin, Troy, and Irvin B. Rea, Royal Oak, both of Mich., assignors to Lectron Products, Inc., Troy, Mich.

Filed Nov. 1, 1978, Ser. No. 956,606

Int. Cl.² G08B *19/00*

U.S. Cl. 340—52 D **21 Claims**



1. In a control circuit for a tone generator that is adapted to cause said tone generator to produce a chime sound including a first oscillator for producing a relatively high frequency signal and a second oscillator for producing a relatively low frequency signal, the improvement comprising:

modulating means for producing a pulse width modulated substantially square wave signal at the frequency of said high frequency signal and having a duty cycle that gradually diminishes from a high to a low percentage value during the period of each cycle of said low frequency signal; said modulating means including a first decay circuit connected to the output of said first oscillator and having associated therewith a relatively fast time constant, a second decay circuit having associated therewith a relatively slow time constant that determines the rate at which the percentage duty cycle of said pulse width modulated signal gradually diminishes, reset means for resetting said second decay circuit in accordance with said low frequency signal, and threshold means connected to the output of said second decay circuit for producing said pulse width modulated signal.

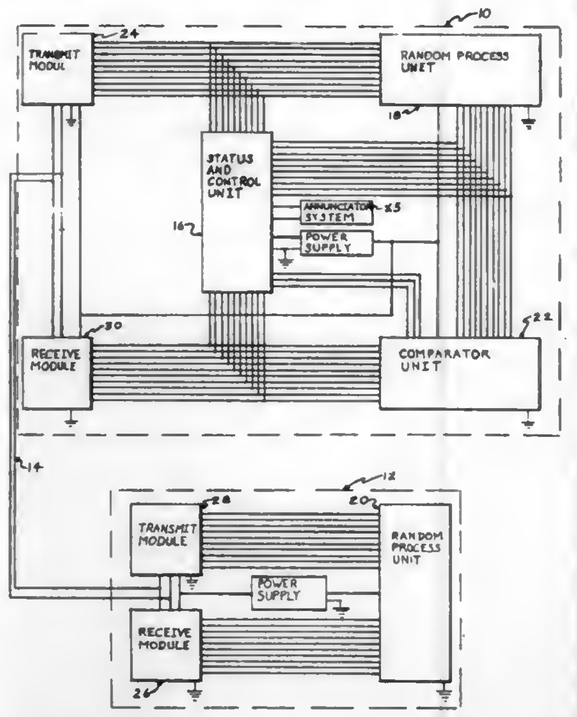
4,193,061
ELECTRONIC AUTHENTICATION SYSTEM

John T. Zoltai, P.O. Box 5463, Santa Fe, N. Mex. 87502

Filed Jul. 11, 1978, Ser. No. 923,749

Int. Cl.² H04Q *3/02*

U.S. Cl. 371—67 **7 Claims**



1. An electronic authentication system comprising in combination:

a remote unit comprising:

a random process unit to receive a random input pattern, said random process unit having a predetermined program configuration, said random process unit having a plurality of random process boards, each having a random output configuration respectively, said random process unit decoding said random input pattern to provide a remote random output pattern, said remote random output pattern varying in response to said random input pattern, and

a transmit/receive unit connected to said random process unit to transfer said random input pattern to said random process unit and to transmit said remote random output pattern from said random process unit; and

a control unit comprising:

a status/control means for generating a continuously varying random input pattern, said random input pattern containing a predetermined number of impulses and occurring at a predetermined interval, said random input pattern having a predetermined pattern length, said predetermined pattern length being variable,

a control random process unit connected to said status/control means to receive said random input pattern, said control random process unit having a predetermined wiring configuration, said random process unit having a plurality of random process boards, each having a random output configuration respectively, said random process unit decoding said random input pattern to provide a control random output pattern, said control random output pattern varying in response to said random input pattern,

a control transmit/receive unit connected to said status/control means and said control random process unit, said control transmit/receive unit being connected to said remote transmit/receive unit to transmit said random input pattern to said remote unit and to receive said remote random output pattern therefrom, and,

a comparator means connected to said control random process unit, said status/control means and said control transmit/receive unit, said comparator means receiving and comparing said control random output pattern and said remote random output pattern to provide a control signal to said status/control means, said comparator generating said control signal whenever a mismatch or error occurs in received random output patterns, said control signal activating said status/control means to generate an alarm.

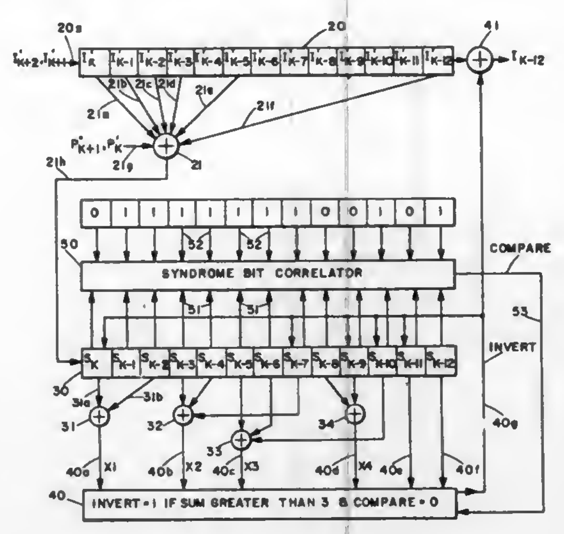
4,193,062
TRIPLE RANDOM ERROR CORRECTING CONVOLUTIONAL CODE

John En, San Diego, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Jun. 29, 1978, Ser. No. 920,173

Int. Cl.² G06F *11/12*

U.S. Cl. 371—43 **15 Claims**



3. A method of decoding transmitted information bits I_K from received information bits I_K' and received parity bits P_K' where I_K' equals I_K plus a random error bit e_K^i, P_K' equals transmitted parity bit P_K plus a random error bit e_K^p, and $K=1, 2, \ldots$ comprised of the steps of:

generating a syndrome bit S_K for each of said received bits I_K', where S_K is the modulo 2 sum of received bits P_K', I_K', I_{K-}', I_{K-2}', I_{K-3}', I_{K-5}', and I_{K-12}',

forming the modulo 2 sums $X1=S_K+S_{K-2}$, $X2=S_{K-3}+S_{K-4}+S_{K-7}$, $X3=S_{K-5}+S_{K-6}+S_{K-10}$, $X4=S_{K-8}+S_{K-9}$ and,

inverting bit I_{K-12}' on the condition that more than three of said modulo 2 sums X1, X2, X3, X4, S_{K-11} and S_{K-12} equal one. .

4,193,063
DIFFERENTIAL CAPACITANCE MEASURING CIRCUIT

James J. Hitt, Willow Grove, and George C. Mergner, Glenside, both of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed May 15, 1978, Ser. No. 905,688

Int. Cl.² G08C *19/00;* **G01R** *27/26*

U.S. Cl. 340—200 **10 Claims**

6. A transmitter for producing an output current varying linearly in magnitude in accordance with the displacement of the central plate of a differential capacitor with respect to the side plates of said differential capacitor comprising

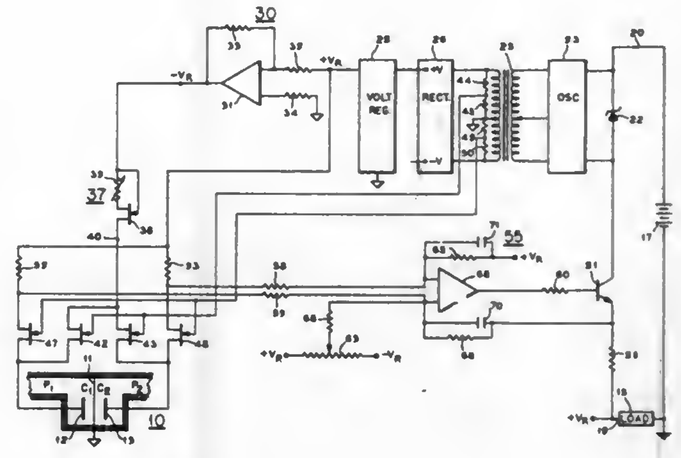
a source of constant direct current,

capacitance discharge means,

first means for periodically connecting the capacitances between said central plate and said side plates to said source of constant direct current for a predetermined time interval and for connecting said capacitances to said capacitance discharge means between said periodic connections,

integrating means having an input and an output, said input being connected by said first means to said side plates of said differential capacitor during the time said capacitances are connected to said capacitance discharge means, and

current control means connected to said output of said integrating means to produce an output current varying as said displacement of said central plate.



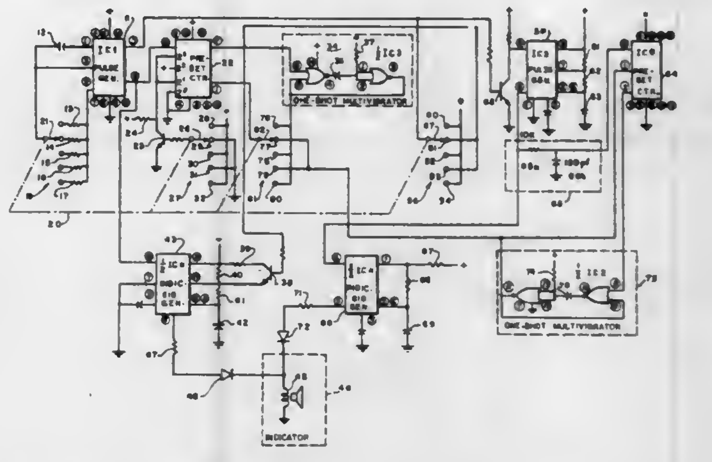
4,193,064
MULTIPLE PULSE TIMER

Michael D. Snyder, 4 Fairway Ct., Bridgewater, N.J. 08807

Filed Sep. 7, 1978, Ser. No. 940,319

Int. Cl.² G08B *7/00*

U.S. Cl. 340—309.4 **11 Claims**



1. A timer comprising:

first pulse generating means to generate a first series of pulses at a first selectable repetition rate;

second pulse generating means to generate a second series of pulses at a second repetition rate;

connection means to connect the first pulse generating means to the second pulse generating means to initiate the operation of the second pulse generating means after a selected number of pulses of the first series; and

indicator means connected to the first and second pulse generating means to indicate separately the occurrence of pulses in each of the first and second series of pulses.

4,193,065
GOLF SWING CONTROL ALARM

Louis M. Bittner, 1144 W. River Dr., Margate, Fla. 33063

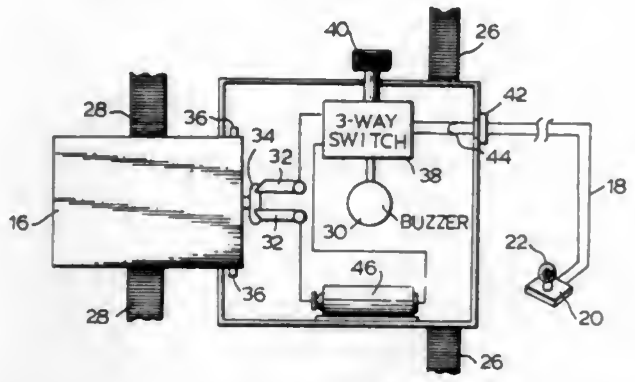
Filed Oct. 20, 1978, Ser. No. 953,084

Int. Cl.² A63B *69/36;* **G08B** *21/00*

U.S. Cl. 340—323 R **3 Claims**

1. A device for providing an indication to a golfer during a golf swing that one of the golfer's arms has moved from a substantially straight in line position to a bent position at the elbow comprising:

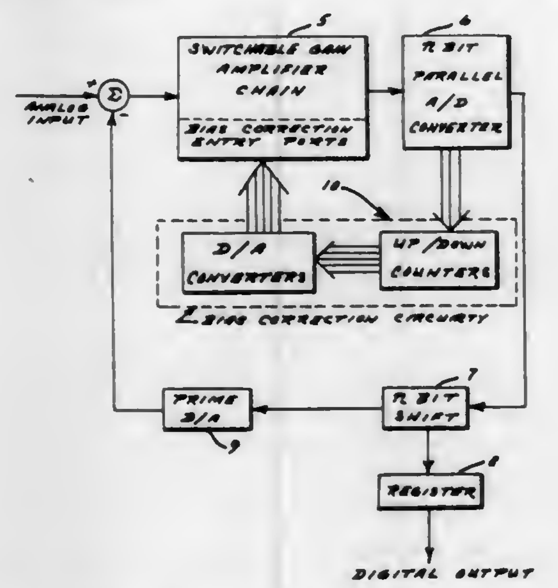
a housing;
a moveable member pivotally mounted at one end of said housing, said one lower surface of said member lying in the same plane as the surface of said housing in a first position;
an electrical contact connected at one end of said member within said housing;
an indicating means connected to said housing;
a power supply connected to said housing;



a means for completing the circuit between said power supply and said indicating means connected in said housing and disposed relative to said contact mounted on said member whereby in a first position said contact means does not engage said contact member when said member is in the same plane as the lower surface of said housing and which in a second position engages the contact to complete the circuit when said moveable member is in an angular position relative to the plane of the housing.

4,193,066
AUTOMATIC BIAS ADJUSTMENT CIRCUIT FOR A SUCCESSIVE RANGED ANALOG/DIGITAL CONVERTER

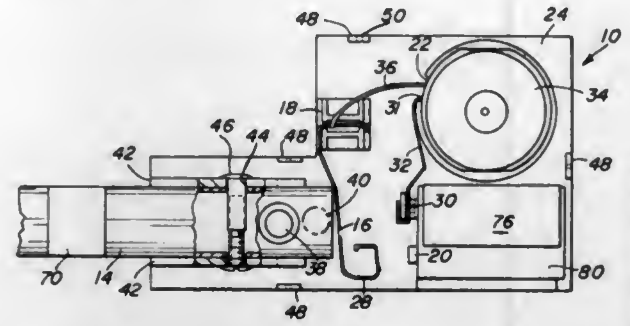
Steven Morrison; Thomas K. Lisle, Jr., and Clarence C. Glover, all of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Apr. 20, 1978, Ser. No. 898,047
Int. Cl.^{2} H03K *13/02*
U.S. Cl. 340—347 CC **2 Claims**


5
6
SWITCHABLE GAIN AMPLIFIER CHAIN
BIAS CORRECTION ENTRY PORTS
n BIT PARALLEL A/D CONVERTER
ANALOG INPUT
Σ
+
-
10
D/A CONVERTERS
UP/DOWN COUNTERS
BIAS CORRECTION CIRCUITRY
7
PRIME D/A
9
n BIT SHIFT
8
REGISTER
DIGITAL OUTPUT

1. In a successive ranged analog/digital converter having a switchable gain amplifier chain and an n bit parallel analog/-digital converter, the improvement of an automatic bias adjustment circuit, said automatic bias adjustment circuit comprising up/down counter means,
digital/analog converter means driven by said up/down counter means and providing bias correction signals in response thereto, said bias correction signals being fed to said switchable gain amplifier chain,
a logic circuit for developing from said n bit parallel analog/digital converter first and second logic functions, said logic functions defining a given sub-range,
up/down counter actuating means receiving said first and second logic functions and clock signals, said actuating means enabling said up/down counter means in response to said first logic function and effecting counting thereby in a direction dictated by the state of said second logic function,
disabling means for disabling said up/down counter actuating means in response to logic functions defining the first sub-range of said successive ranged analog/digital converter,
said disabling means comprising a dual input OR gate connected to receive logic function inputs from said n bit parallel analog/digital converter, and a flip flop circuit receiving the output of said OR gate and a clock signal and providing an output disabling signal in response thereto.

4,193,067
CLOSURE OPERATED BURGLAR ALARM

Gary Hawkins, Pontiac, Mich., assignor to Harry Belcastro, Sr., Birmingham, Mich., a part interest
Filed Nov. 6, 1978, Ser. No. 958,194
Int. Cl.^{2} G08B *13/08*
U.S. Cl. 340—546 **10 Claims**



1. A burglar alarm for closures, such as doors and windows, having a bottom member and a cover comprising:
an alarm responsive to an electrical signal;
a switch means including a leaf spring means for interconnecting the alarm to a power source;
a longitudinally translatable rod movable from a first position, whereby the switch means is open, said rod adjacent an edge of said closure when the closure is near a closed position, and to a second position wherein the switch means is maintained closed, sounding the alarm;
said leaf spring means having one end spacedly fixed relative to the rod and biasing an end of the rod in the first position;
means for releasably holding the rod latched in the second position when the second position has been reached;
means for guiding the rod from the first position to the second position; and
means for adjusting the length of the rod to extend from a fixed surface to a movable surface of a door or window whereby an attempt to open the door or window moves the rod to said second position to sound the alarm.

4,193,068
HEMORRHAGE ALARMS

John J. Ziccardi, R.D. #1, Evans City, Pa. 16033
Continuation-in-part of Ser. No. 667,390, Mar. 16, 1976, abandoned. This application Apr. 4, 1977, Ser. No. 784,147
Int. Cl.^{2} G08B *21/00*; H01H *35/00*
U.S. Cl. 340—604 **5 Claims**

1. A hemorrhage alarm system comprising an electrically operated signal device, a source of electrical current, a circuit connecting said source of electrical current and said signal device, mechanical switch means in said circuit having two separate elongate switch members, one of said switch members

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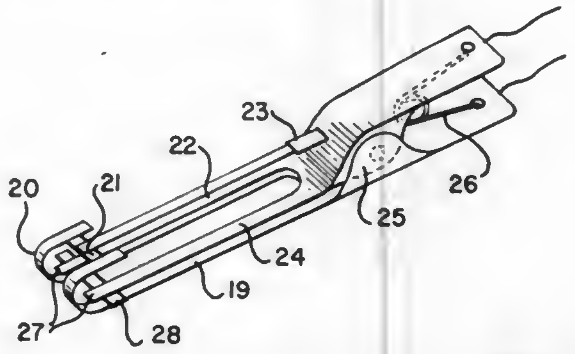
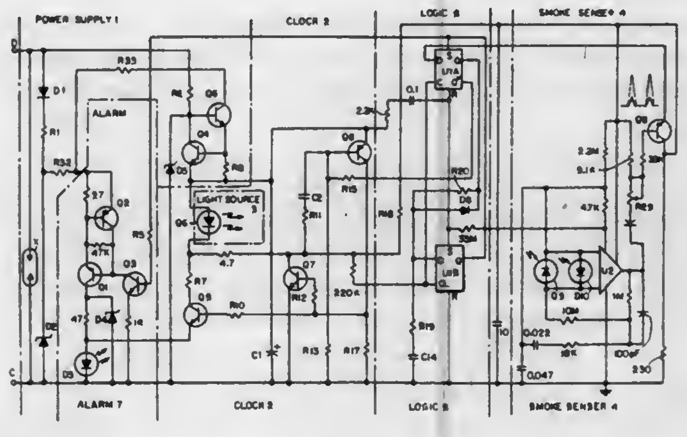
generally surrounding the other on at least two sides opposite of the other switch member in its direction of movement whereby a wound dressing cannot interfere with the function of the switch, contact means on one end of said other switch member, corresponding contact means on one side of said other switch member, said other switch member being pivotally connected to said one switch member intermediate their lengths and movable only between said at least two sides within the surrounding one switch member between an open spaced apart position in which said contact means on the other



switch member is spaced from the contacts on said one of said two sides of the one switch member and a closed position in which the two contacts are engaged, resilient means normally holding said contacts on said switch members apart, and means between said other switch member and the other side of said two sides of said one switch member swelling on contact with blood and body fluid acting on said switch mechanically to close the two normally spaced apart contacts by moving said other switch member toward said one switch member and overcoming the resilient means on contact with sufficient blood and body fluid to swell the same.

4,193,069
LATCHING ALARM SMOKE DETECTOR

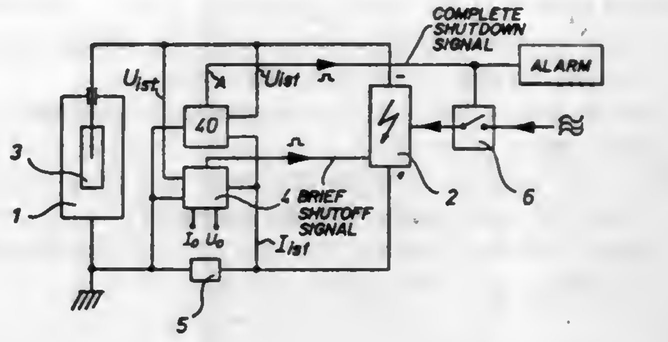
Glenn F. Cooper, Hingham, and Robert B. Enemark, Duxbury, both of Mass., assignors to American District Telegraph Company, Jersey City, N.J.
Filed Mar. 13, 1978, Ser. No. 885,370
Int. Cl.^{2} G08B *17/10*; G01N *21/28*
U.S. Cl. 340—630 **5 Claims**



1. Electrical apparatus for detecting an alarm condition comprising:
means for sensing a physical condition;
clock means controlling supply of periodically recurring power pulses to the sensing means such that the sensing means produces signal pulses at the clock rate upon sensing a predetermined physical condition; and
logic means coupled to the clock and sensing means and responsive to substantially synchronous clock and signal pulses therefrom to produce an alarm signal;
wherein the logic means includes means timing a delay interval for a plurality of clock pulse periods, a two condition device responsive to substantially synchronous clock and signal pulses to activate the timing means independently of signal pulses, and means responsive to uninterrupted recurrence of condition signal pulses during the delay interval to latch the logic means in alarm signal condition.

4,193,070
METHOD AND ARRANGEMENT FOR CONTROLLING THE ELECTRICAL RELATIONSHIPS OF A CURRENT-INTENSIVE GLOW DISCHARGE

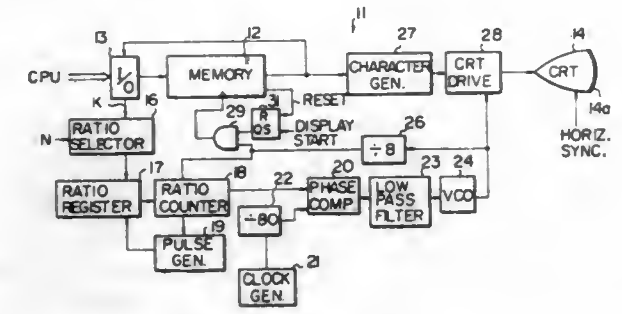
Werner Oppel, Cologne, Fed. Rep. of Germany, assignor to Klockner Ionon GmbH, Cologne, Fed. Rep. of Germany
Filed Feb. 16, 1977, Ser. No. 769,163
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606395
Int. Cl.^{2} G08B *21/00*
U.S. Cl. 340—650 **9 Claims**



1. An improved control method for controlling a glow-discharge treatment,
the glow-discharge treatment being of the type in which a workpiece is accommodated in a treatment container and subjected to a glow-discharge field established between the workpiece and the treatment chamber,
the control method being of the type comprising:
continually generating a voltage-indicating signal U_{ist} whose value indicates the potential difference between the workpiece and the container,
continually generating a current-indicating signal I_{ist} whose value indicates the current flowing between the workpiece and the container, and
applying the voltage- and current-indicating signals U_{ist} and I_{ist} to a discharge-disturbance-responsive switching device operative for briefly interrupting the glow-discharge treatment for a limited predetermined time interval when the voltage- and current-indicating signals in conjunction assume values indicating the development of an arc discharge,
the improvement comprising
furthermore detecting the existence of a short-circuit between the workpiece and treatment container, this comprising using comparators to compare the voltage-indicating signal U_{ist} against a predetermined threshold voltage level U_O and to compare the current-indicating signal I_{ist} against a predetermined threshold current level I_O, and generating a shutdown signal effecting persisting complete shutdown of the glow-discharge treatment when U_{ist} is below U_O and concurrently I_{ist} is above I_O,
whereby the detection of a short-circuit and the resultant generation of the shutdown signal prevent the discharge-disturbance-responsive switching device from effecting protractedly repeated brief interruption and resumption of the glow-discharge treatment in the case of a short-circuit between the workpiece and the container.

4,193,071
CHARACTER DISPLAY APPARATUS

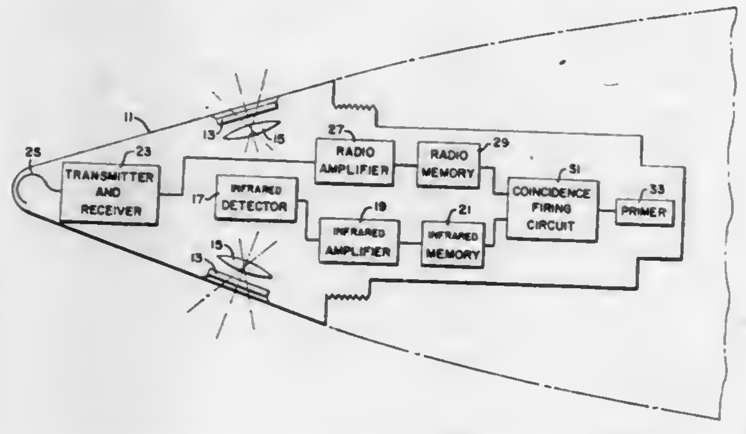
Keiji Hasegawa, and Yoshikuni Tatara, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 19, 1977, Ser. No. 843,546
Claims priority, application Japan, Oct. 21, 1976, 51/126639
Int. Cl.^{2} G06K *15/20*
U.S. Cl. 340—723 **10 Claims**



1. A display apparatus comprising:
memory means for storing data representing a line of characters;
display means for displaying the line of characters;
pulse generator means for generating pulses to transfer the data from the memory means to the display means for displaying the line of characters;
selector means for selecting a number of characters in the line; and
frequency variation means for varying a frequency of the pulses in accordance with the number of characters in the line in such a manner that the line of characters fills a display area of the display means.

4,193,072
COMBINATION INFRARED RADIO FUZE

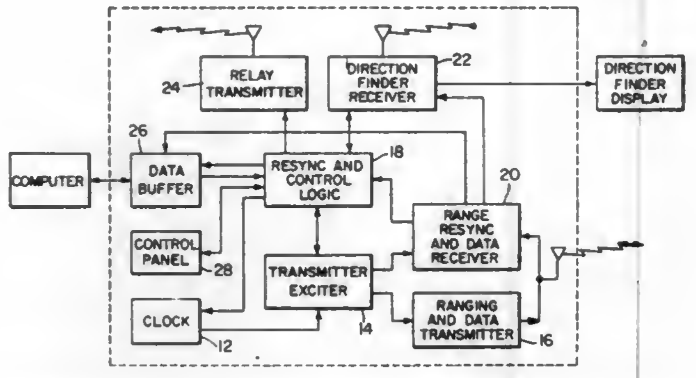
Wayne L. McKusick, Rochester, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 13, 1962, Ser. No. 177,617
Int. Cl.^{2} F42C *13/02, 13/04;* **G01S** *9/02*
U.S. Cl. 343—6 ND **3 Claims**



2. A combination proximity fuze comprising a radio circuit and an infrared circuit, said radio circuit operative to produce a first voltage impulse when a reflected electromagnetic wave is received from a target, said infrared circuit operative to produce a second voltage impulse when a heat source from a target is detected, a first memory circuit connected to said radio circuit for storing said first voltage impulse for a first predetermined time interval, a second memory circuit connected to said infrared circuit for storing said second voltage impulse for a second predetermined time interval, a coincidence firing circuit connected to said first memory circuit and to said second memory circuit whereby a primer may be ignited when said first and second voltage pulses are applied to said coincidence firing circuit simultaneously within said first and second predetermined time intervals.

4,193,073
METHOD AND APPARATUS FOR POSITION DETERMINATION

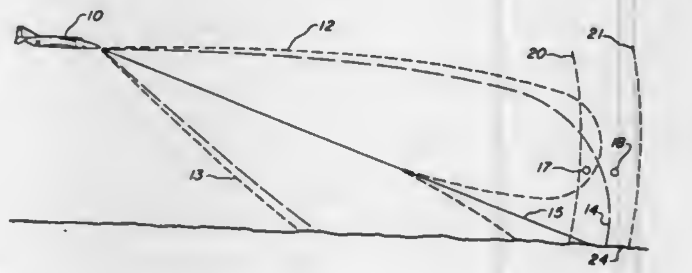
Hubert Kohnen, 1928-B Sparrow Dr., Point Mugu, Calif. 93041
Filed Jan. 16, 1968, Ser. No. 699,758
Int. Cl.^{2} G01S *9/06*
U.S. Cl. 343—6 R **6 Claims**



3. Apparatus for determining the position with respect to one another of a plurality of geographically-separated units, said apparatus comprising:
a timing device forming part of each unit;
means for synchronizing the operation of all such timing devices;
means incorporated into each unit and controlled by the timing device at such unit for transmitting a ranging signal during the initial portion of a pre-assigned time slot, the time slot pre-assigned to any one unit being distinct from the time slots pre-assigned to all other units, and the ranging signals so transmitted occurring in cyclic sequence with respect to one another;
means incorporated into each unit for receiving in cyclic sequence the ranging signals transmitted from said other units wherever such signals are detectable and for ascertaining the range from itself to the unit transmitting a particular detected ranging signal as a function of the signal propagation interval;
means incorporated into each unit for relaying to a central point during a terminal portion of each particular time slot the range data so ascertained from the ranging signal transmitted during the initial portion of that particular time slot; and
means at such central point for receiving and correlating the range data so relayed by said units to determine the relative position of said units with respect to one another.

4,193,074
ENHANCING RADAR RETURNS FROM TARGETS HAVING A SMALL RADAR CROSS SECTION

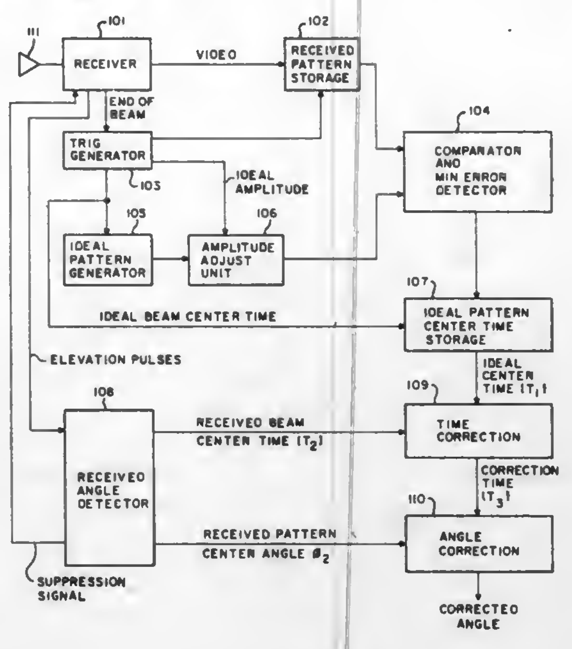
Edward C. Schwartz, Buffalo, and Thomas F. Leney, Elma, both of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.
Filed Dec. 3, 1974, Ser. No. 530,566
Int. Cl.^{2} G01S *9/22*
U.S. Cl. 343—16 M **4 Claims**



4. A method for locating one target in the presence of a second target in the same pulse packet by separating said targets in the monopulse plane including the steps of:
directing a radar antenna boresight at said second target;
transmitting a radar signal in difference pattern; and
processing return signals, whereby if said one target is present in any pulse packet and located in one of the lobes of the difference pattern transmission, return signals from said one target will be maintained while return signals from said second target will be suppressed and thereby the presence of said one target will be identified and said one target located.

4,193,075
LOW ANGLE ELEVATION GUIDANCE SYSTEM

Gustav Blazek, and Arthur Charych, both of Stony Brook, N.Y., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jun. 29, 1978, Ser. No. 920,479
Int. Cl.^{2} G01S *1/16, 1/54*
U.S. Cl. 343—108 M **7 Claims**

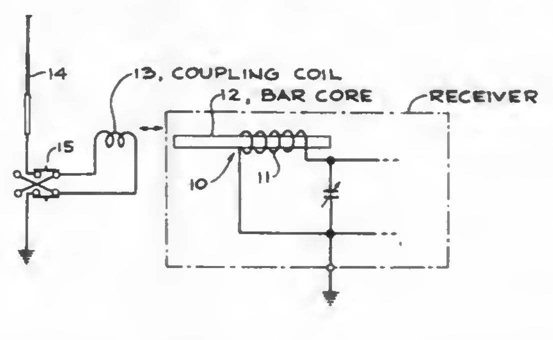


6. A method for improving the accuracy of aircraft guidance systems in which a ground station transmitting system transmits a sweeping beam and beam angle information to an airborne receiving system which determines the angle of the aircraft from the received beam pattern and the beam angle information, comprising the steps of:
(a) producing an ideal pattern within the receiving system,
(b) comparing said ideal pattern with the received pattern to determine the error between the two,
(c) shifting the received and ideal patterns in relative amplitude and phase to produce minimum error between the two, and
(d) substituting for the received pattern, in the portion of the receiver processing used to determine the correct angle information, the idealized pattern at the relative amplitude and phase which produced the minimum error in step (c).

4,193,076
COUPLING AN OUTER ANTENNA WITH A RADIO RECEIVER HAVING A BAR ANTENNA

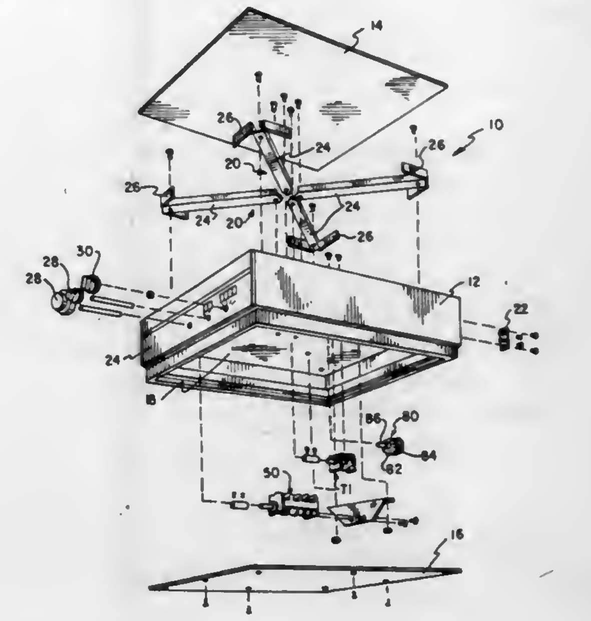
Ryosuke Ito, and Susumu Takahashi, both of Tokyo, Japan, assignors to Sansui Electric Co. Ltd., Tokyo, Japan
Filed Apr. 24, 1978, Ser. No. 899,224
Claims priority, application Japan, Apr. 26, 1977, 52-48070
Int. Cl.^{2} H01Q *1/24, 7/08*
U.S. Cl. 343—702 **9 Claims**

1. A method for coupling an outer antenna with a radio receiver having a bar antenna, which comprises:
preparing a coupling coil means which is able to be removably mounted on a bar core of the bar antenna and which is impedance-matched with the outer antenna;
connecting said coupling coil means between the outer antenna and ground; and
mounting said coupling coil means onto the bar core of the bar antenna to electromagnetically couple said coupling coil means with a loop antenna coil of the bar antenna by inserting the bar core in a hollow portion of said coupling coil means under control of axial orientation of said coupling coil means so that a signal received at the outer antenna may not cancel, but be added to a signal received at the bar antenna itself.



4,193,077
DIRECTIONAL ANTENNA SYSTEM WITH END LOADED CROSSED DIPOLES

Harry Greenberg, Kerhonkson, and Richard Auerbach, Southtown, both of N.Y., assignors to Avnet, Inc., Ellenville, N.Y.
Filed Oct. 11, 1977, Ser. No. 840,833
Int. Cl.^{2} H01Q *21/26*
U.S. Cl. 343—747 **9 Claims**



1. An elongated arm for use in a high frequency, directable antenna system for use with a receiver operating over a predefined reception band, said system having: a plurality of crossed dipole antenna components of substantially shorter length than a half wavelength of any frequency to be received, each of said dipole components being positioned to receive a signal from a different predetermined direction, each of said dipole components including a first and second of said elongated arms arranged in longitudinal alignment; selector means coupled to each of said dipole components and operable to produce a composite signal combining selected ones of the signals received by said dipole components; said elongated arm comprising
a portion in the form of a conductive channel member with a generally U-shaped cross-section, said channel member including substantially parallel sides and a bottom,
said bottom being removed over a section of said channel member near one end thereof,
the parallel sides of said section being folded toward the opposite end of said arm to form a generally wedge-shaped, flared front for said arm.

4,193,078

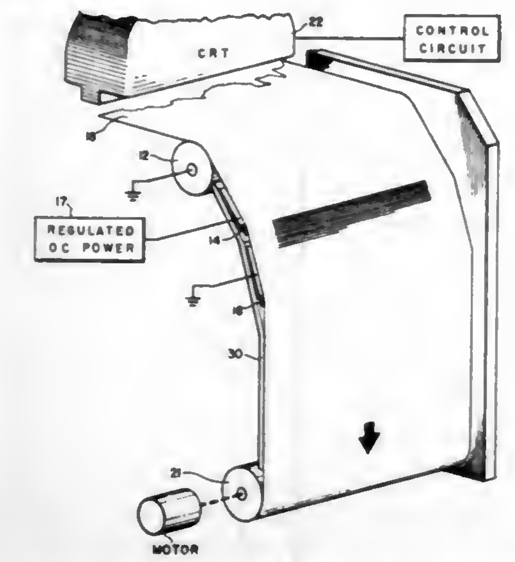
ELECTRICAL CONTACT FOR CONDUCTIVE-BACKED PAPER

Ralph H. Esposito, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 22, 1978, Ser. No. 888,921

Int. Cl.^{2} G01D *15/10;* **H05B** *1/00*

U.S. Cl. 346—76 R **4 Claims**



1. A recorder for recording information on a web of conductive-backed material in which a latent recorded image developed by heat generated by electricity passing through the conductive backing, comprising in combination:

- means for driving the conductive-backed web of recording material along a predetermined path;
- a first electrical contact extending across the width of said web and positioned to contact said web as it moves there across;
- a second electrical contact positioned downstream of said first contact in the direction of movement of said web and extending across the width of said web and positioned to contact said web as it moves there across;
- second contact comprising a particulate, resilient, electrical conductive member having a low thermal mass having a uniformly low electrical conductivity; and
- means for energizing said first and second contacts as said web moves across them.

4,193,079

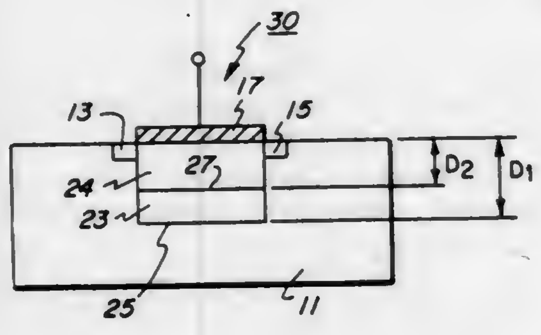
MESFET WITH NON-UNIFORM DOPING

Keming W. Yeh, Westchester, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 30, 1978, Ser. No. 873,331

Int. Cl.^{2} H01L *29/78*

U.S. Cl. 357—22 **1 Claim**



1. A high frequency FET having a channel region with a given dosage concentration and wherein said channel region contains an implant, said implant having a first dosage concentration at a first distance from a gate of said FET and a second dosage concentration at a second distance from the gate and wherein said first distance is larger than said second distance and said first dosage concentration is larger than said second dosage concentration, and said second dosage concentration is larger than the given dosage concentration of said channel region, said implant contains first and second implants, said first implant corresponding to said first dosage concentration and said second implant corresponding to said second dosage concentration in which each of the first and second implants is spatially arranged in a predetermined manner relative to the other, said first implant has a dosage N1 and said second implant has a dosage N2 and wherein said first implant is substantially spaced from said gate a first distance D_1 and said second implant is spaced from said gate a distance D_2 and wherein the capacitance of said FET varies inversely with said first distance D_1 and wherein the transconductance of said FET varies proportionally to the concentration of the said first dosage.

4,193,080

NON-VOLATILE MEMORY DEVICE

Susumu Koike, Ibaraki; Ginjiro Kambara, Ashiya, and Toshio Matsuda, Ootsu, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

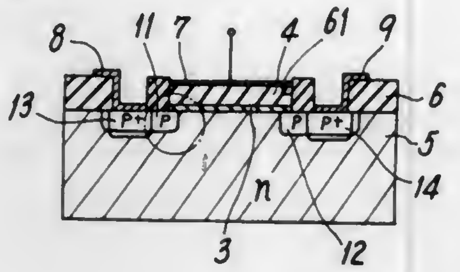
Continuation of Ser. No. 658,535, Feb. 17, 1976, abandoned.

This application Nov. 9, 1978, Ser. No. 960,450

Claims priority, application Japan, Feb. 20, 1975, 50/21636

Int. Cl.^{2} H01L *29/78*

U.S. Cl. 357—23 **4 Claims**



1. A non-volatile memory device comprising:

- a semiconductor substrate of a first conductivity type;
- a source region and a drain region which are formed having a predetermined space between each other in said semiconductor substrate, each region having a second conductivity type opposite to said first conductivity type;
- a first gate insulating layer formed on said substrate and having a uniform and very small thickness, said first gate insulating layer extending between said source region and said drain region;
- a second gate insulating layer formed on and coextensive with said first gate insulating layer and being substantially thicker than said first insulating layer;
- a gate electrode formed on said second gate insulating layer;
- a source electrode formed to make ohmic contact with said source region;
- a drain electrode formed to make ohmic contact with said drain region;

said substrate further comprising:

- a first region extending from said source region toward said drain region and having said second conductivity type and a lower impurity concentration than said source region;
- a second region extending from said drain region toward said source region and having said second conductivity type and a lower impurity concentration than said drain region, said first gate insulating layer having peripheral edges on at least one part of said first extended region and on at least one part of said second extended region, but not on said source region and said drain region.

4,193,081

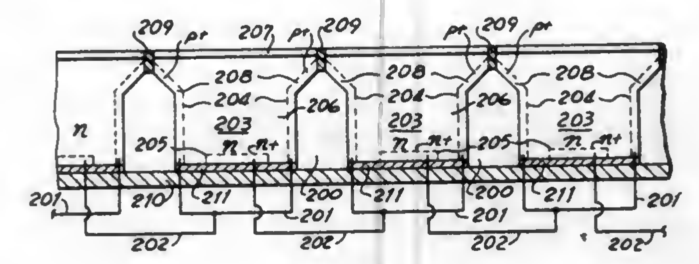
MEANS FOR EFFECTING COOLING WITHIN ELEMENTS FOR A SOLAR CELL ARRAY

Roy Kaplow, Newton, and Robert I. Frank, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 24, 1978, Ser. No. 889,952

Int. Cl.^{2} H01L *31/00, 27/14*

U.S. Cl. 357—30 **16 Claims**



1. A semiconductor solar cell comprising spaced elongate parallel units formed from a common substrate and comprised of a first conductivity type, the body material of each of said units having the same spaced relation to the body material of other of said units as existed in the original substrate from which they are formed, each unit having upstanding sidewalls and having therebetween an upper surface adapted for exposure to receive incident radiation, and a lower surface, adjacent sidewalls of adjoining units having therebetween a first elongate passage adapted for the transmission of a heat transfer medium, each unit sidewall comprised of a localized region of a second conductivity type and ohmic connections extending between the second conductivity type region of one unit and the first conductivity type region of an adjacent unit, whereby the transmission of a heat transfer medium between the adjacent sidewalls of adjoining units maintains the temperature at said localized region of a second conductivity type less than the upper surface temperature of the semiconductor solar cell.

4,193,082

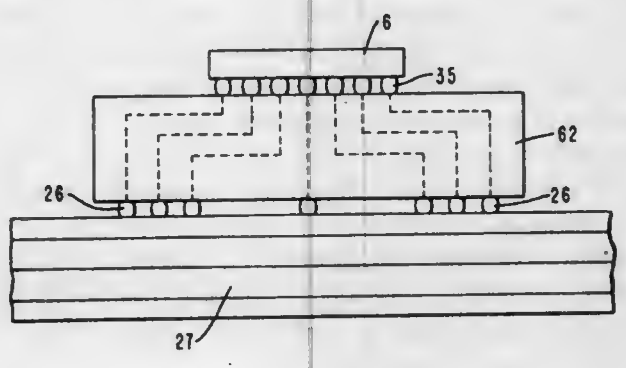
MULTI-LAYER DIELECTRIC STRUCTURE

William E. Dougherty, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,214

Int. Cl.^{2} H01L *39/02*

U.S. Cl. 357—80 **11 Claims**



1. A planar semiconductor structure comprised of a unitized dielectric body formed of a plurality of dielectric planar layers, a plurality of conductor leads extending between original adjacent layers of said body and substantially coextensive with the planes of said layers and each having exposed terminations at the edge surfaces of said layers with said edge surfaces disposed at the ends of the original interfaces of said layers, and a semiconductor device mounted on a said edge surface in electrical connection to said terminations with said device mounted along lines coextensive with said interfaces of said layers.

4,193,083

PACKAGE FOR PUSH-PULL SEMICONDUCTOR DEVICES

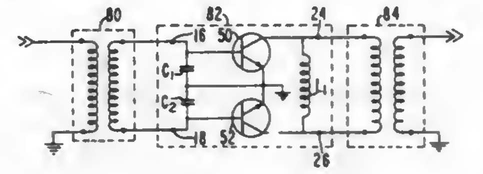
Lee B. Max, Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

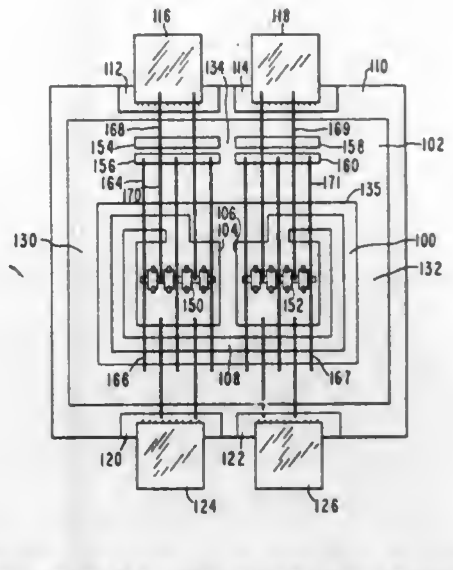
Division of Ser. No. 757,716, Jan. 7, 1977, Pat. No. 4,107,728.

This application Aug. 14, 1978, Ser. No. 934,133

Int. Cl.^{2} H01L *39/02, 23/02, 23/12*

U.S. Cl. 357—80 **14 Claims**





1. A common package for at least two active semiconductor devices comprising:

- at least one dielectric member;
- a pair of mutually electrically isolated input area portions comprised of a first conductive input area portion on said one dielectric member and a second conductive input area portion in the same package as said first input area portion;
- a pair of mutually electrically isolated output area portions comprised of a first conductive output area portion and a second conductive output area portion in the same package as said first output area portion and said pair of input area portions;
- inductive means for coupling said first and second output area portions; and
- a common conductive ground area disposed proximate said pairs of input and output area portions;
- whereby each of said first and second input area portions and each of said first and second output area portions are in such a spatial relationship with said ground so as to form a portion of an electrical circuit in cooperation with said semiconductor devices.

4,193,084

VIDEO RECORDER HAVING MEANS FOR MAINTAINING CONSTANT THE AMPLITUDE OF THE FREQUENCY-MODULATED SIGNAL

Kazuo Yamagiwa, Tokyo; Kaneo Saito, Yokohama, and Toshihiko Numakura, Kamakura, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 13, 1977, Ser. No. 841,793

Claims priority, application Japan, Oct. 20, 1976, 51-125829

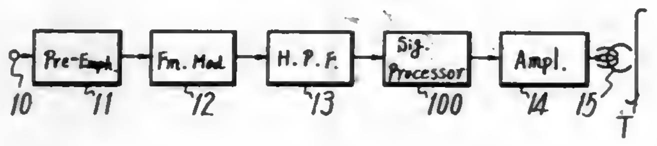
Int. Cl.^{2} H04N *5/785;* **G11B** *5/04*

U.S. Cl. 358—4 **25 Claims**

1. Apparatus for processing a video signal to be recorded, comprising

- pre-emphasis means for pre-emphasizing a frequency signal in said video signal to produce a pre-emphasized video signal;
- modulating means for frequency modulating a carrier with the pre-emphasized video signal to be recorded;

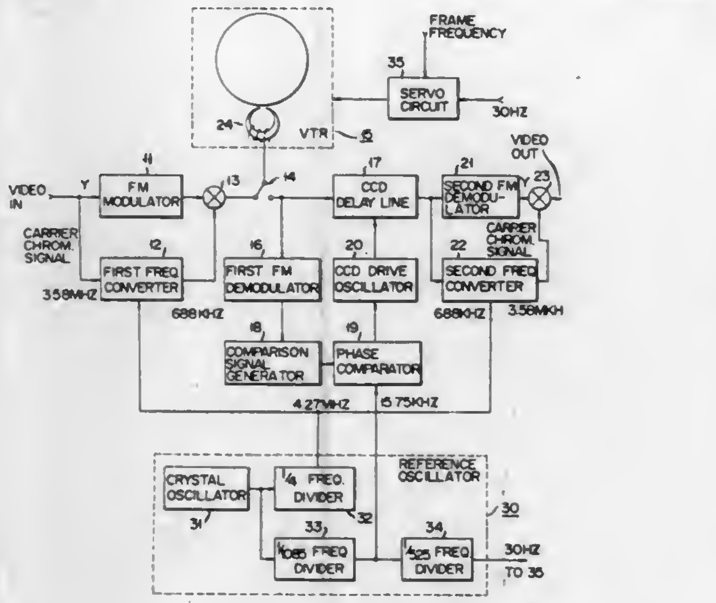
high pass filter means for limiting the frequency band of the frequency modulated signal from said modulating means, in which said high pass filter is an active filter adapted to have its cut-off frequency varied; and



means for maintaining a constant amplitude of said frequency modulated signal as derived from said filter means for recording on a record medium, wherein said maintaining means is operative to decrease said cut-off frequency in correspondence with the pre-emphasis of the video signal.

4,193,085
APPARATUS FOR REMOVING JITTER IN COLOR TELEVISION SIGNAL

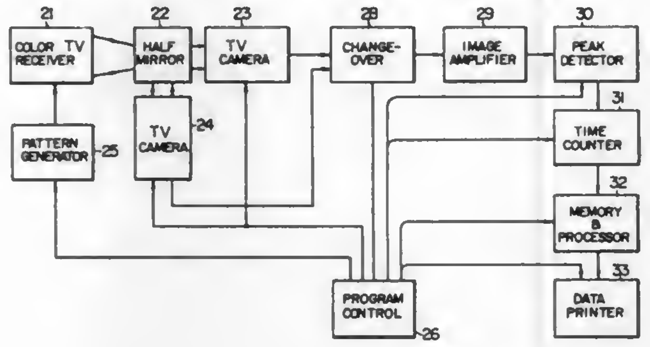
Makoto Imamura, Machida, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
Filed May 5, 1978, Ser. No. 903,135
Claims priority, application Japan, May 17, 1977, 52-56801; May 17, 1977, 52-56802
Int. Cl.^{2} H04N *5/795, 5/08*
U.S. Cl. 358—8 **15 Claims**



1. An apparatus for removing jitter in a color signal comprising: means for modulating a luminance signal; first frequency converting means for converting a chrominance signal into a low frequency signal on the basis of a first reference signal; video signal record/play-back means in which signals outputted from said modulating means and frequency converting means are summed in an adder and the summed signal is recorded on a recording medium on the basis of a second reference signal; jitter detection means for detecting a comparing signal from a color signal played back by said record/play-back means; jitter correction means in which said comparing signal and a third reference signal are phase-compared and said play-back color signal is time-delayed on the basis of the result of the comparison; means for demodulating the luminance signal of said play-back color signal jitter-corrected by said jitter correction means; second frequency converting means converting the chrominance signal of said play-back color signal jitter corrected into a high frequency signal on the basis of said first reference signal; and means for generating first, second and third reference signals.

4,193,086
CONVERGENCE DETECTING DEVICE FOR COLOR PICTURE TUBE

Ikuo Kawaguchi, Yokohama, Japan, assignor to Hitachi, Ltd., Japan
Filed Jan. 23, 1978, Ser. No. 871,253
Claims priority, application Japan, Jan. 24, 1977, 52-5894
Int. Cl.^{2} H04N *9/62*
U.S. Cl. 358—10 **5 Claims**



1. A convergence detecting device for a color picture tube which is provided with beam deflection adjusting means and which is to be subjected to convergence alignment, comprising:

(a) pattern display signal generating means for supplying to said color picture tube a pattern display signal for displaying at least one red line, green line and blue line or portions thereof in each of the horizontal and vertical directions on a CRT display screen of said color picture tube, said display signal being capable of displaying said red, green and blue lines or portions thereof at the same position on the CRT display screen when supplied to a color picture tube having been subjected normally to convergence alignment;

(b) first image pickup means for picking up an image from the CRT display screen by a line scan having a direction which is in accordance with the horizontal direction of the CRT display screen to produce image output signals representing the horizontal positions of the vertical lines displayed on the CRT display screen;

(c) second image pickup means for picking up an image from the CRT display screen by a line scan having a direction which is in accordance with the vertical direction of the CRT display screen to produce image output signals representing the vertical positions of the horizontal lines displayed on the CRT display screen;

(d) light-dividing optical means for directing light from the CRT display screen toward said first and second image pickup means;

(e) selective change-over means for selectively permitting passage of either said image output signals of said first image pickup means or said image output signals of said second image pickup means;

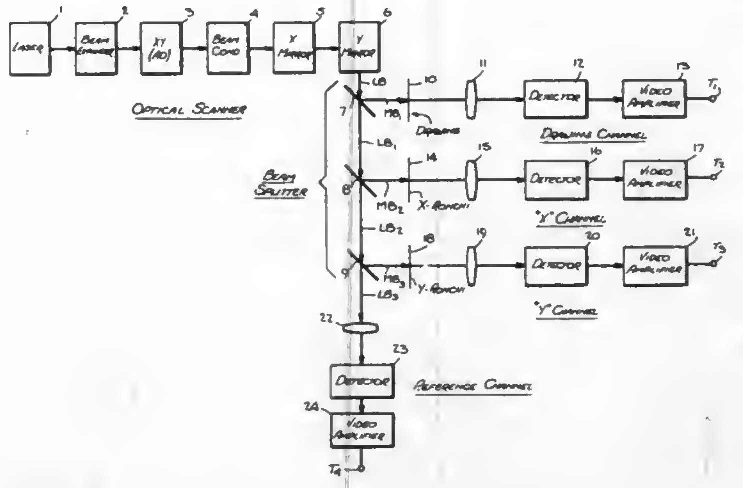
(f) line period specifying means for specifying a predetermined line period of said image output signals selectively appearing from said change-over means; and

(g) single detecting means for detecting the differences between the displayed positions represented by said image output signals corresponding to said red, green and blue lines,

whereby misalignment of the positions of said red, green and blue lines in said predetermined line period in both the horizontal and vertical directions can be detected by said single detecting means connected to said first and second image pickup means through said change-over means.

4,193,087
SYSTEM FOR AUTOMATICALLY DIGITIZING ENGINEERING DRAWINGS

Norman G. Altman, Stamford, Conn., assignor to Altman Associates, Inc., Stamford, Conn.
Filed May 22, 1978, Ser. No. 908,374
Int. Cl.^{2} H04N *1/10*
U.S. Cl. 358—93 **12 Claims**



1. An electro-optical computer-controlled scanning system adapted to accurately and rapidly digitize an original engineering or other line drawing having a horizontal X dimension and a vertical Y dimension and to store the resultant digital data, making it possible to reassemble a stored drawing with virtually the same fidelity as the original drawing, said system comprising:

A a laser beam scanner having a wide-angle deflector to sweep the beam in X and Y directions to a degree sufficient to traverse the entire X and Y dimensions of the drawing being digitized and a narrow-angle deflector whose operation is independent of the wide-angle deflector for sweeping the beam in the X and Y directions to a degree sufficient to examine any selected, relatively small region of the drawing; and

B computer means associated with said scanner and including a digital memory to extract digital information from the line drawing and to store this information to ensure the capture of virtually all information thereon, said means operating in a two-mode procedure, in the first of which the wide-angle deflector operates to make a survey along a narrow stripe extending in the X direction across the entire drawing to determine whether any drawing information is contained therein, the scanner skipping one stripe width in the Y direction if no information is found to carry out a like survey of the next stripe; and if information is then found, only the X coordinate thereof is noted and stored in said memory, the survey being completed when the scanner has skipped to traverse the entire drawing in the Y direction, an automatic switch-over to the second mode being made when a survey on a given stripe results in a finding, the second mode being a line follower operation in which the narrow-angle deflector of the scanner operates to examine each drawing line to determine its radius of curvature and singularities, each line then being thereby defined as a vector, this two-mode procedure being repeated until the entire drawing is examined and digitized.

4,193,088
OPTICAL HETERODYNE SYSTEM FOR IMAGING IN A DYNAMIC DIFFUSIVE MEDIUM

Steven E. Moran, Lakeside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 2, 1978, Ser. No. 930,283
Int. Cl.^{2} H04N *7/18*
U.S. Cl. 358—95 **11 Claims**

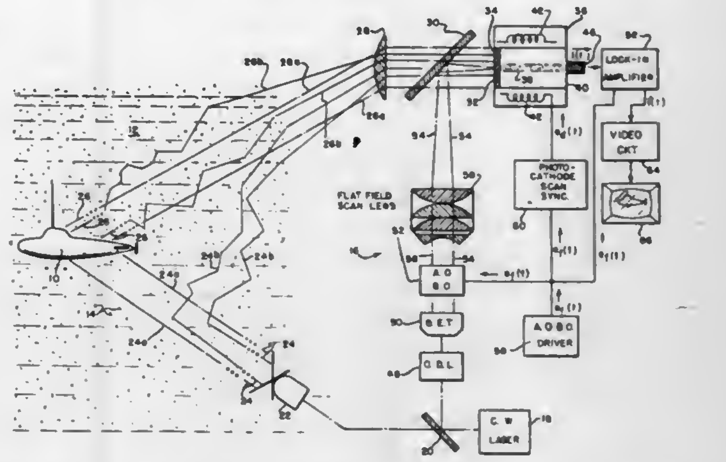
1. Optical heterodyne apparatus for extending the range at which a diffusive object may be viewed through a dynamic diffusive medium, said apparatus comprising:

an array of discrete light responsive elements, each of said light responsive elements having a light sensitive surface and comprising means for generating an electric signal that represents the light impinging upon its light sensitive surface;

lens means receiving a first coherent light signal transmitted from said object through said dynamic diffusive medium, an image of said object being carried upon the wavefront of said first coherent light signal, said first coherent light signal comprising frequency components which are included in a first frequency range of selected bandwidth which is centered at a first optical frequency, said lens means comprising means for focusing said first coherent light signal on said array of light responsive elements so that each picture element in an array of discrete picture elements comprising said carried image impinges upon the light sensitive surface of a different one of said discrete light responsive elements;

means for providing a second coherent light signal of a second optical frequency, said first and second optical frequencies being different, said frequency difference being equal to an intermediate frequency;

focusing means for focusing said second coherent light signal within an Airy disc upon the light sensitive surface of each of said discrete light responsive elements in a preselected sequence, each light responsive element generating a discrete heterodyne signal when said second coherent light signal is focused upon its light sensitive surface, each of said discrete heterodyne signals comprising an information component and a scatter interference component, the information component of the heterodyne signal generated by a given one of said light responsive elements representing the picture element of said image which impinges upon the light sensitive surface of said given light responsive element;



means receiving said heterodyne signals for filtering said scatter interference components out of said heterodyne signals;

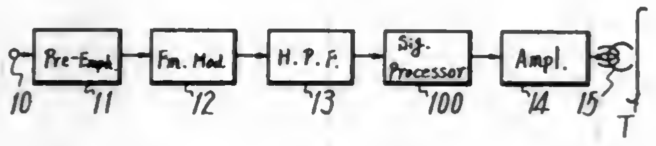
means for directing the heterodyne signal generated by each of said light responsive elements to said filter means in said pre-selected order;

means for synchronously operating said focusing means and said directing means so that said focusing means focuses said second coherent light signal within an Airy disc upon the light sensitive surface of a particular light responsive element when the heterodyne signal generated by said particular light responsive element is directed to said filter means by said directing means;

signal exclusion means positioned between said array of light responsive elements and said filter means for preventing said filter means from receiving signals generated by any of said light responsive elements except the light responsive element upon which said second coherent light signal is focused; and

means receiving filtered heterodyne signals from said filter high pass filter means for limiting the frequency band of the frequency modulated signal from said modulating means, in which said high pass filter is an active filter adapted to have its cut-off frequency varied; and

means for maintaining a constant amplitude of said frequency modulated signal as derived from said filter means for recording on a record medium, wherein said maintaining means is operative to decrease said cut-off frequency in correspondence with the pre-emphasis of the video signal.



4,193,085
APPARATUS FOR REMOVING JITTER IN COLOR TELEVISION SIGNAL

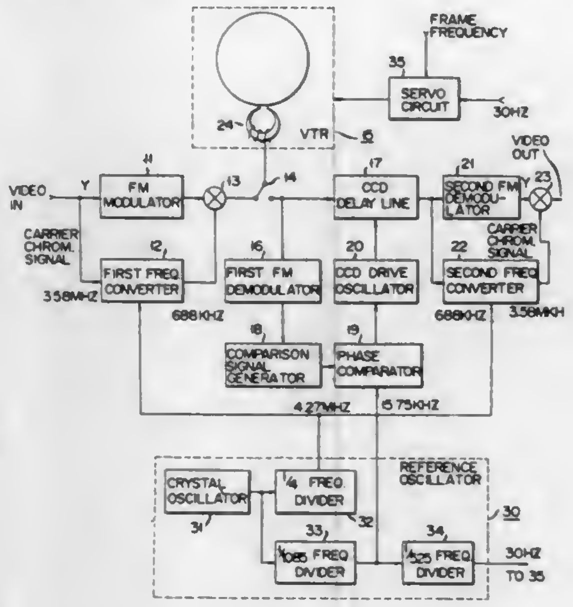
Makoto Imamura, Machida, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 5, 1978, Ser. No. 903,135

Claims priority, application Japan, May 17, 1977, 52-56801; May 17, 1977, 52-56802

Int. Cl.^{2} H04N *5/795, 5/08*

U.S. Cl. 358—8 **15 Claims**



1. An apparatus for removing jitter in a color signal comprising: means for modulating a luminance signal; first frequency converting means for converting a chrominance signal into a low frequency signal on the basis of a first reference signal; video signal record/play-back means in which signals outputted from said modulating means and frequency converting means are summed in an adder and the summed signal is recorded on a recording medium on the basis of a second reference signal; jitter detection means for detecting a comparing signal from a color signal played back by said record/play-back means; jitter correction means in which said comparing signal and a third reference signal are phase-compared and said play-back color signal is time-delayed on the basis of the result of the comparison; means for demodulating the luminance signal of said play-back color signal jitter-corrected by said jitter correction means; second frequency converting means converting the chrominance signal of said play-back color signal jitter corrected into a high frequency signal on the basis of said first reference signal; and means for generating first, second and third reference signals.

4,193,086
CONVERGENCE DETECTING DEVICE FOR COLOR PICTURE TUBE

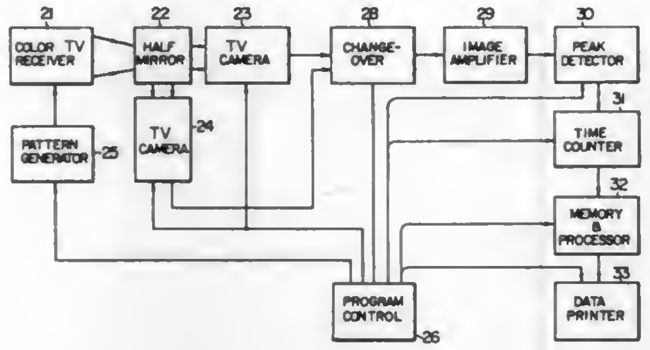
Ikuo Kawaguchi, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 23, 1978, Ser. No. 871,253

Claims priority, application Japan, Jan. 24, 1977, 52-5894

Int. Cl.^{2} H04N *9/62*

U.S. Cl. 358—10 **5 Claims**



1. A convergence detecting device for a color picture tube which is provided with beam deflection adjusting means and which is to be subjected to convergence alignment, comprising:

(a) pattern display signal generating means for supplying to said color picture tube a pattern display signal for displaying at least one red line, green line and blue line or portions thereof in each of the horizontal and vertical directions on a CRT display screen of said color picture tube, said display signal being capable of displaying said red, green and blue lines or portions thereof at the same position on the CRT display screen when supplied to a color picture tube having been subjected normally to convergence alignment;

(b) first image pickup means for picking up an image from the CRT display screen by a line scan having a direction which is in accordance with the horizontal direction of the CRT display screen to produce image output signals representing the horizontal positions of the vertical lines displayed on the CRT display screen;

(c) second image pickup means for picking up an image from the CRT display screen by a line scan having a direction which is in accordance with the vertical direction of the CRT display screen to produce image output signals representing the vertical positions of the horizontal lines displayed on the CRT display screen;

(d) light-dividing optical means for directing light from the CRT display screen toward said first and second image pickup means;

(e) selective change-over means for selectively permitting passage of either said image output signals of said first image pickup means or said image output signals of said second image pickup means;

(f) line period specifying means for specifying a predetermined line period of said image output signals selectively appearing from said change-over means; and

(g) single detecting means for detecting the differences between the displayed positions represented by said image output signals corresponding to said red, green and blue lines,

whereby misalignment of the positions of said red, green and blue lines in said predetermined line period in both the horizontal and vertical directions can be detected by said single detecting means connected to said first and second image pickup means through said change-over means.

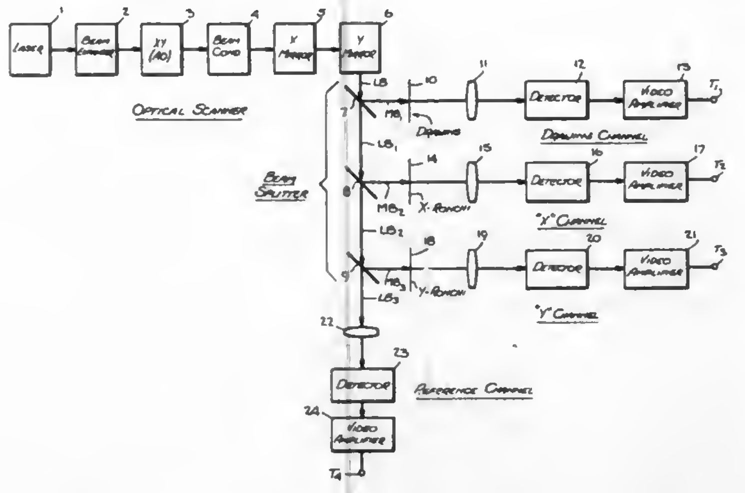
4,193,087
SYSTEM FOR AUTOMATICALLY DIGITIZING ENGINEERING DRAWINGS

Norman G. Altman, Stamford, Conn., assignor to Altman Associates, Inc., Stamford, Conn.

Filed May 22, 1978, Ser. No. 908,374

Int. Cl.^{2} H04N *1/10*

U.S. Cl. 358—93 **12 Claims**



1. An electro-optical computer-controlled scanning system adapted to accurately and rapidly digitize an original engineering or other line drawing having a horizontal X dimension and a vertical Y dimension and to store the resultant digital data, making it possible to reassemble a stored drawing with virtually the same fidelity as the original drawing, said system comprising:

A a laser beam scanner having a wide-angle deflector to sweep the beam in X and Y directions to a degree sufficient to traverse the entire X and Y dimensions of the drawing being digitized and a narrow-angle deflector whose operation is independent of the wide-angle deflector for sweeping the beam in the X and Y directions to a degree sufficient to examine any selected, relatively small region of the drawing; and

B computer means associated with said scanner and including a digital memory to extract digital information from the line drawing and to store this information to ensure the capture of virtually all information thereon, said means operating in a two-mode procedure, in the first of which the wide-angle deflector operates to make a survey along a narrow stripe extending in the X direction across the entire drawing to determine whether any drawing information is contained therein, the scanner skipping one stripe width in the Y direction if no information is found to carry out a like survey of the next stripe; and if information is then found, only the X coordinate thereof is noted and stored in said memory, the survey being completed when the scanner has skipped to traverse the entire drawing in the Y direction, an automatic switch-over to the second mode being made when a survey on a given stripe results in a finding, the second mode being a line follower operation in which the narrow-angle deflector of the scanner operates to examine each drawing line to determine its radius of curvature and singularities, each line then being thereby defined as a vector, this two-mode procedure being repeated until the entire drawing is examined and digitized.

4,193,088
OPTICAL HETERODYNE SYSTEM FOR IMAGING IN A DYNAMIC DIFFUSIVE MEDIUM

Steven E. Moran, Lakeside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1978, Ser. No. 930,283

Int. Cl.^{2} H04N *7/18*

U.S. Cl. 358—95 **11 Claims**

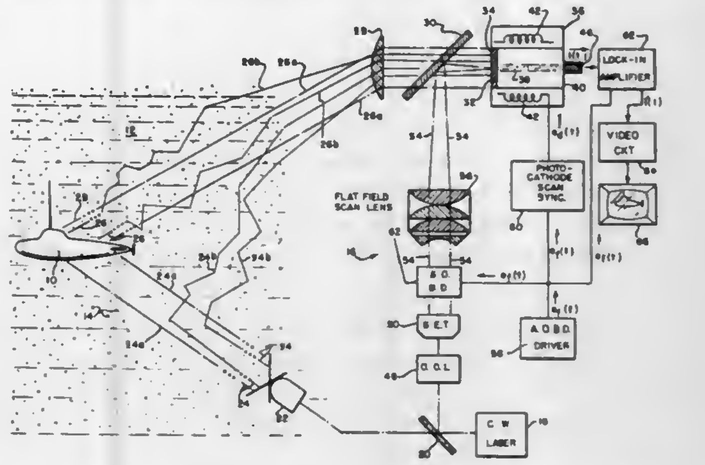
1. Optical heterodyne apparatus for extending the range at which a diffusive object may be viewed through a dynamic diffusive medium, said apparatus comprising:

an array of discrete light responsive elements, each of said light responsive elements having a light sensitive surface and comprising means for generating an electric signal that represents the light impinging upon its light sensitive surface;

lens means receiving a first coherent light signal transmitted from said object through said dynamic diffusive medium, an image of said object being carried upon the wavefront of said first coherent light signal, said first coherent light signal comprising frequency components which are included in a first frequency range of selected bandwidth which is centered at a first optical frequency, said lens means comprising means for focusing said first coherent light signal on said array of light responsive elements so that each picture element in an array of discrete picture elements comprising said carried image impinges upon the light sensitive surface of a different one of said discrete light responsive elements;

means for providing a second coherent light signal of a second optical frequency, said first and second optical frequencies being different, said frequency difference being equal to an intermediate frequency;

focusing means for focusing said second coherent light signal within an Airy disc upon the light sensitive surface of each of said discrete light responsive elements in a preselected sequence, each light responsive element generating a discrete heterodyne signal when said second coherent light signal is focused upon its light sensitive surface, each of said discrete heterodyne signals comprising an information component and a scatter interference component, the information component of the heterodyne signal generated by a given one of said light responsive elements representing the picture element of said image which impinges upon the light sensitive surface of said given light responsive element;



means receiving said heterodyne signals for filtering said scatter interference components out of said heterodyne signals;

means for directing the heterodyne signal generated by each of said light responsive elements to said filter means in said pre-selected order;

means for synchronously operating said focusing means and said directing means so that said focusing means focuses said second coherent light signal within an Airy disc upon the light sensitive surface of a particular light responsive element when the heterodyne signal generated by said particular light responsive element is directed to said filter means by said directing means;

signal exclusion means positioned between said array of light responsive elements and said filter means for preventing said filter means from receiving signals generated by any of said light responsive elements except the light responsive element upon which said second coherent light signal is focused; and

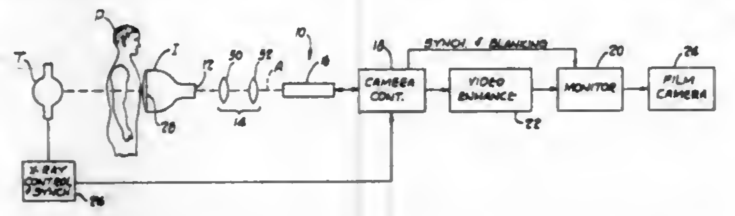
means receiving filtered heterodyne signals from said filter means in said pre-selected order for enabling a viewable representation of said diffusive object to be provided.

4,193,089
TELEVISION RADIATION IMAGING SYSTEM AND METHOD
Robert W. Brougham, Chesterland, Ohio, and Paul Mitchell, New York, N.Y., assignors to Picker Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 788,084, Apr. 15, 1977, abandoned, which is a continuation of Ser. No. 664,368, Mar. 5, 1976, abandoned. This application Jan. 18, 1978, Ser. No. 870,440

Int. Cl.^{2} H04N *7/18*

U.S. Cl. 358—111 **32 Claims**



1. A medical diagnostic system for producing an image of a pattern of penetrative radiation emergent from a subject, said system comprising:

(a) means for directing pulsed penetrative radiation through the subject;

(b) an image tube for converting the radiation pattern to a corresponding first visual image, the image tube having an input face and an output phosphor having a substantially circular configuration and a diameter substantially greater than 25 millimeters;

(c) electrical apparatus including a lead oxide vidicon television pickup tube and control circuitry for the pick up tube for converting the first visual image to image representing electrical signals;

(d) video enhancement circuitry for disproportionately amplifying said electrical signals having a frequency in a range of approximately 1 megahertz to 20 megahertz for producing enhanced electrical signals, and

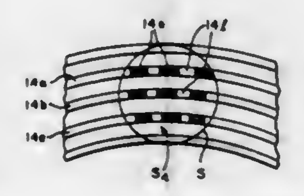
(e) apparatus responsive to the enhanced electrical signals for producing an enhanced visual image corresponding to said first visual image.

4,193,090
OPTICAL DETECTION SYSTEM FOR SIMULTANEOUSLY INTERROGATING A PLURALITY OF TRACKS
Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Aug. 15, 1977, Ser. No. 824,681

Int. Cl.^{2} H04N *5/76*

U.S. Cl. 358—128.5 **5 Claims**



1. In an optical playback apparatus, an optical detection system for deriving a baseband signal comprising a time-varying information signal which baseband signal had been employed to modulate a carrier that was recorded upon a record disc in the form of a single plane elongated spiral track, which track comprises a sequence of light scattering elements arranged in a predetermined distribution along said track so that said elements collectively constitute a spatial counterpart of the modulated carrier, said optical detection system comprising:

means for supporting said record disc in a reading plane;

means for developing an optical read beam;

means, including an objective lens, disposed in the path of said beam for focusing said read beam into a reading spot of an area sufficient to interrogate, simultaneously, a plurality of said light scattering elements in at least two adjacent co-planar segments of said spiral track, said adjacent segments extending parallel in the direction of said elongated track,

said reading spot further having a dimension in the longitudinal direction of said track such that such said spot is incapable of resolving said recorded carrier;

drive means for displacing said record support means at a predetermined velocity relative to said reading spot to effect interrogation of said light scattering elements of said track segments by said spot so as to cause to be developed a diffraction pattern of said spot,

said diffraction pattern comprising a time-varying distribution of scattered and non-scattered light, said non-scattered light being representative of said baseband signal;

and light responsive means, disposed adjacent said disc and in the center of the far field of said reading spot for intercepting the non-scattered portion of said time-varying diffraction pattern and for averaging the light content of said intercepted portion to derive an electrical signal representative of the stored information in said baseband signal.

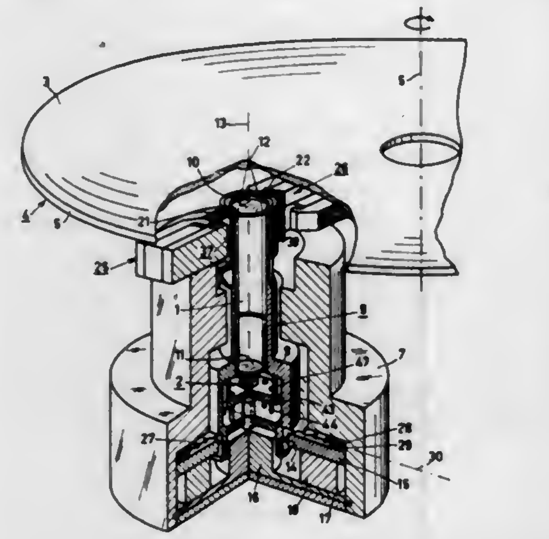
4,193,091
OPTICAL VIDEODISC READ UNIT WITH TRACKING AND FOCUSSING WOBBLERS
Wilhelm J. Kleuters; Gerard E. Van Rosmalen; Martinus P. M. Bierhoff, and Kornelis A. Immink, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1978, Ser. No. 905,890

Claims priority, application Netherlands, Dec. 12, 1977, 7713711

Int. Cl.^{2} G11B *7/12, 7/08*

U.S. Cl. 358—128.5 **9 Claims**



1. An optical read unit for optionally reading radiation-reflecting information tracks disposed in an information plane of an information carrier, which moves relative to the read unit, of the type wherein a radiation beam is focussed to a read spot in a focussing plane, which read unit comprises

a low-mass radiation source for producing the radiation beam,

a lens system for focussing the radiation beam to a read spot in the focussing plane,

optical and electronic means for receiving a radiation beam which has been reflected by the information tracks and modulated by the information in the information track and comprising a radiation-sensitive electronic detector for the conversion of the radiation-beam modulation into an electrical modulation,

a scan wobbler for an automatic tracking system and comprising electromechanical drive means for periodically moving the radiation source so as to cause the read spot in the focussing plane to move periodically about a global position with low amplitude in a direction transverse to the information track being read,

a focussing wobbler for an automatic focussing system and comprising electromechanical drive means for periodically moving the radiation source so as to cause the focussing plane to move periodically about a global position with low amplitude in a direction normal to the information plane at the location of the read spot, and

an electrical power supply circuit for supplying a supply voltage to the electromechanical drive means,

the improvement wherein at least one of the wobblers comprises:

a metal resilient rod-shaped radiation source carrier with an end to which the radiation source is secured in a satisfactory heat-conducting manner,

a metal heat sink whose thermal capacity and surface area are several times greater than those of the radiation source and to which the radiation source carrier is connected in a satisfactory heat-conducting manner at some distance from the radiation source so as to carry off heat produced at the location of the radiation source with a low temperature gradient to locations where it can be released to the environment over a sufficiently large surface area, and

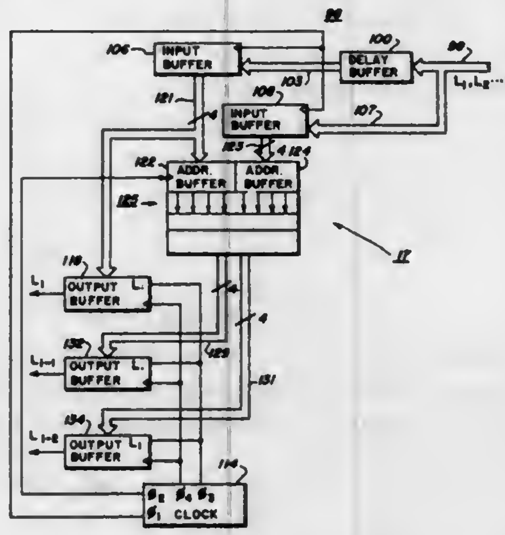
piezo-electric drive means rigidly connected to the said radiation source carrier and to parts of the read unit which are stationary relative thereto.

4,193,092
IMAGE INTERPOLATION SYSTEM
James C. Stoffel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 21, 1978, Ser. No. 917,613

Int. Cl.^{2} H04N *3/14*

U.S. Cl. 358—136 **13 Claims**



8. In the method of interpolating at least one intermediate line of image data from each pair of adjoining lines of image data, the steps comprising:

(a) buffering at least one binary image pixel from each of said pairs of adjoining lines of image data to provide an address;

(b) addressing a memory having discrete image pixel patterns therewithin with said address to obtain the preset image pixel pattern corresponding to said address;

(c) outputting the preset image pixel pattern addressed from said memory to provide a portion of said intermediate line; and

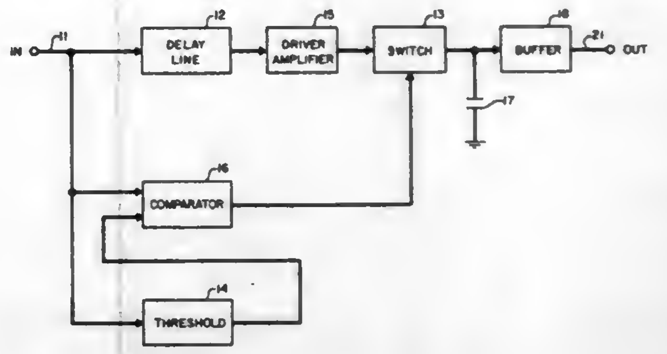
(d) repeating steps a, b, and c using additional image pixels from said pairs of adjoining lines of image data to complete said intermediate line.

4,193,093
CCD CAMERA INTERFACE CIRCUIT
Richard C. St. Clair, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 3, 1978, Ser. No. 930,835

Int. Cl.^{2} H04N *5/14, 5/21, 3/14, 5/34*

U.S. Cl. 358—160 **9 Claims**



1. A charge coupled device video camera interface circuit having a circuit input terminal and a video output terminal, comprising:

delay means connected to said circuit input for delaying a signal applied thereto;

a driver amplifier connected to said delay means for amplifying a signal received therefrom;

an adaptive threshold circuit connected to said circuit input;

a comparator having first and second inputs, said first input of said comparator connected to said circuit input, said second input of said comparator connected to said threshold circuit said comparator configured to produce an output signal when the signal applied to said first input of said comparator exceeds the signal applied to said second input of said comparator by a predetermined amount;

a switch having a signal input terminal, an activator input terminal, and an output terminal, said signal input terminal connected to said driver amplifier to receive a signal therefrom, said activator input terminal connected to the output of said comparator, said switch configured to open when said switch receives a signal from said comparator a buffer amplifier connected to the output of said switch;

signal storage means for storing signals connected to the output terminal of said switch and to said buffer amplifier such that when said switch to said buffer amplifier connected such that when said switch is opened, a stored signal is applied to said buffer amplifier.

a buffer amplifier connected to the output of said switch.

4,193,094
BIAS BOOST CIRCUIT FOR TELEVISION RECEIVER
William H. Counts, Lombard, Ill., assignor to Admiral Corporation, Schaumburg, Ill.

Filed Jun. 2, 1978, Ser. No. 911,948

Int. Cl.^{2} H04N *3/18*

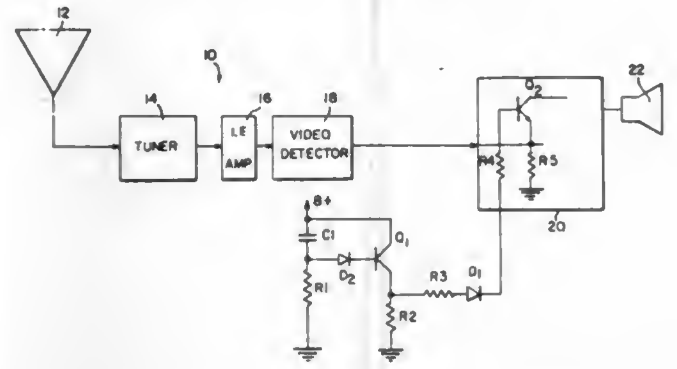
U.S. Cl. 358—190 **5 Claims**

1. In a television receiver having a cathode ray tube (CRT) with a cathode element for emitting an electron beam to be scanned in raster fashion to provide an image, an image-processing circuit comprising:

(a) a source of an image representative video signal;

(b) video signal processing means for providing a processed video signal from its output to said cathode element of said CRT;

(c) means responsive to the energization of said television receiver for providing a bias boost signal for a selected inital period of time to said processing means whereby its output is increased in accordance with the bias boost signal, said period selected dependent upon the time required for said cathode element of said CRT to emit an electron beam of steady state current density and for said processing means to reach a steady state amplifying condition; said bias boost signal decreasing from an initially high level to a steady state level at the end of said selected period, whereby the brightness of the TV images is enhanced for the selected period; and



(d) said bias boost providing means comprises a timing circuit for initiating the timing upon energization of said television receiver for the selected period and for discontinuing the providing of the bias boost signal upon the completion of said selected period, said timing circuit comprises a first resistor and a capacitor, the impedance of said resistor and said capacitor being selected to establish said selected period; a power supply circuit, and said capicitor being coupled to said supply circuit so that upon energization of said television receiver said timing circuit initiates its timing operation; a transistor having a base connected to the point of interconnection between said first resistor and said capacitor; and means for preventing the rapid discharge of said capacitor when said television receiver is de-energized.

4,193,095
DRIVER SYSTEM OF MEMORY TYPE GRAY-SCALE DISPLAY PANEL

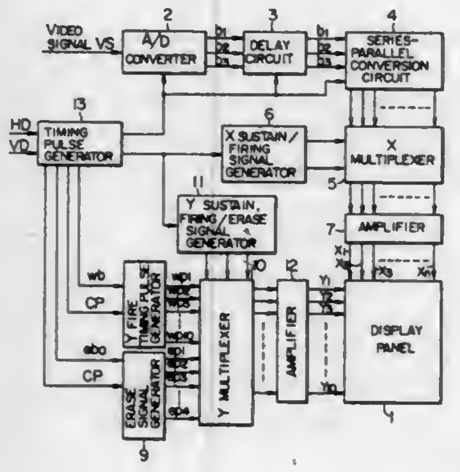
Masashi Mizushima, Hachioji, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 7, 1978, Ser. No. 875,798

Claims priority, application Japan, Feb. 25, 1977, 52-19245

Int. Cl.^{2} H04N *5/70*

U.S. Cl. 358—241 **13 Claims**



1. In a driver system of a memory type display panel including a matrix of luminescent elements each having a bi-stable operation condition of lighting and non-lighting states with the lighting states beginning when a firing pulse is applied to the luminescent elements and continuing until an erase pulse is applied to the luminescent elements, in which a gray-scale luminance is provided to the display panel by the combination of a plurality of divided lighting periods, the lighting periods being provided in the lighting states of the luminescent elements, the improvement comprising circuit means for increasing or decreasing the respective widths of the divided lighting periods in correlation with each other to control the gray-scale luminance of the display panel.

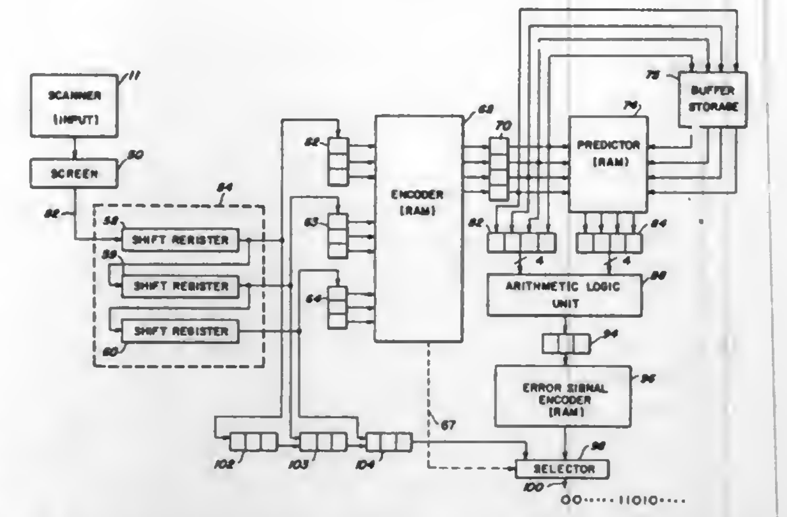
4,193,096
HALF TONE ENCODER/DECODER

James C. Stoffel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 4, 1977, Ser. No. 784,206

Int. Cl.^{2} H04N *1/00*

U.S. Cl. 358—260 **10 Claims**



4. A method of compressing a stream of digital data representative of an image, the steps comprising:

scanning an original document to produce a pixel pattern representative of the image on the document;

screening the image pixel pattern to convert the image pixel pattern from an analog pixel pattern to a binary pixel pattern;

subdividing the binary pixel pattern into a succession of discrete areas each containing a preset number of digital bits;

establishing an image value for the discrete areas;

predicting the image value for the discrete areas from the established image value of at least one adjoining area;

comparing the predicted image value of each discrete area with the established image value of that area;

generating an error signal representative of the size of the error between predicted and established image values; and

encoding the error signals to provide a stream of digital signals representative of the image.

4,193,097
FACSIMILE APPARATUS

Sadasuke Kurahayashi, Tokyo; Yuzo Kato, Yokohama; Shin Tsuda, Hasuda; Hakaru Muto, Kamakura, and Asao Watanabe, Higashi Kurume, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1978, Ser. No. 899,724

Claims priority, application Japan, Apr. 30, 1977, 52-50241; Jun. 21, 1977, 52-73514

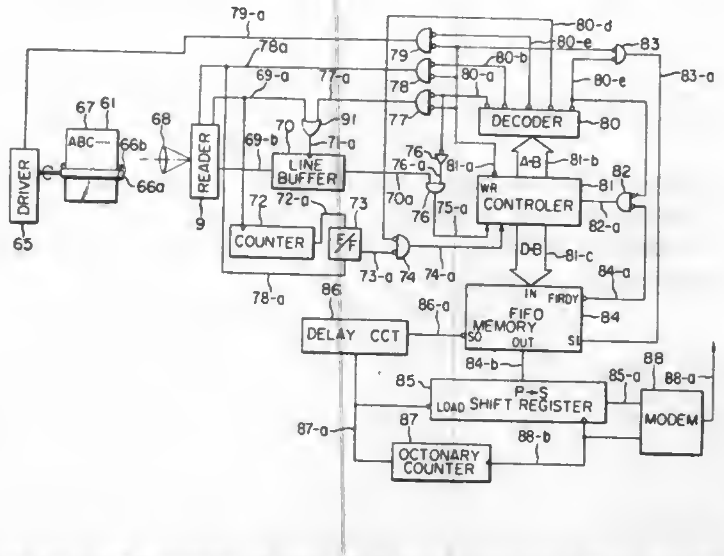
Int. Cl.^{2} H04N *7/12*

U.S. Cl. 358—261 **9 Claims**

1. A facsimile apparatus comprising:

reader means for converting contrast signals, representative of image information recorded on an original and obtained by scanning of the original, into a two-level binary image signal sequence wherein first and second levels of binary image signals alternately appear corresponding to the contrast signals;

compression processing means for processing the binary image signal sequence from said reader means in such manner that a first level binary image signal having a number of bits "R", which is less than a predetermined value "N", is treated as a reference signal; first level binary image signals having a number of bits "X", less than "N" and different from "R", are identified; quantities of (X-R) bit(s) related to first level binary image signals having the number of bits "X" are converted into second level binary image signals and added to either one of the adjacent second level binary image signals between which the first level binary image signal having the number of bits "X" is located; and all first level binary signals having the number of bits "R" and the remainder bits {X-(X-R)} are eliminated from said two levels of binary image signals; and



transmitting means for transmitting the signals from said compression processing means.

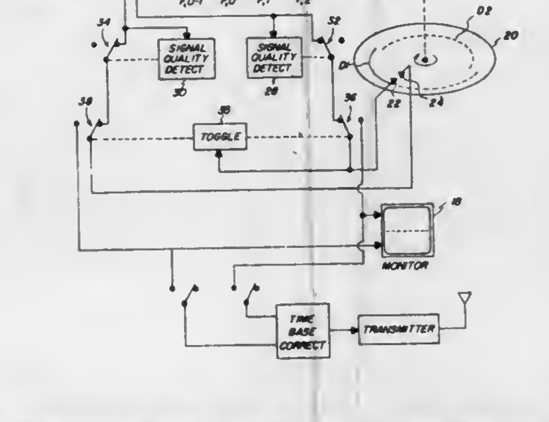
4,193,098
SEGMENTED VIDEO PLAYBACK APPARATUS WITH ANCILLARY RECORDING MEDIUM

James A. Bixby, San Diego; James U. Lemke, Del Mar, and Robert A. Lentz, Rancho Santa Fe, all of Calif., assignors to Spin Physics, Inc., San Diego, Calif.

Filed Mar. 24, 1977, Ser. No. 780,945

Int. Cl.^{2} H04N *5/19;* G11B *5/012, 15/06*

U.S. Cl. 360—10 **10 Claims**



1. For use with a machine adapted for the playback of segmented field video information recorded on magnetic tape in the form of discrete signal tracks corresponding to the video field segments, each said signal track having recorded therein segment identifier signal information, and each video field being comprised of N segments per field, said machine having a rotary assembly of magnetic heads adapted to scan said discrete signal tracks and produce signals therefrom, apparatus comprising:

(a) ancillary magnetic recording medium;

(b) means for slaving said ancillary medium to the motion of said rotary assembly;

(c) magnetic head means for recording N tracks on said magnetic medium;

(d) means, cooperative with the magnetic heads of said scanning assembly and with said magnetic head means, responsive to segment identifier signal information produced by said scanning assembly heads, for selectively recording the field segment signals in respective tracks of said ancillary recording medium; and

(e) means for precluding the recording of signal information on said ancillary recording medium when said signal information has less than a predetermined quality.

4,193,099
DEVICE FOR REPRODUCING THE RECORDED CONTENT OF A MAGNETIC CARD

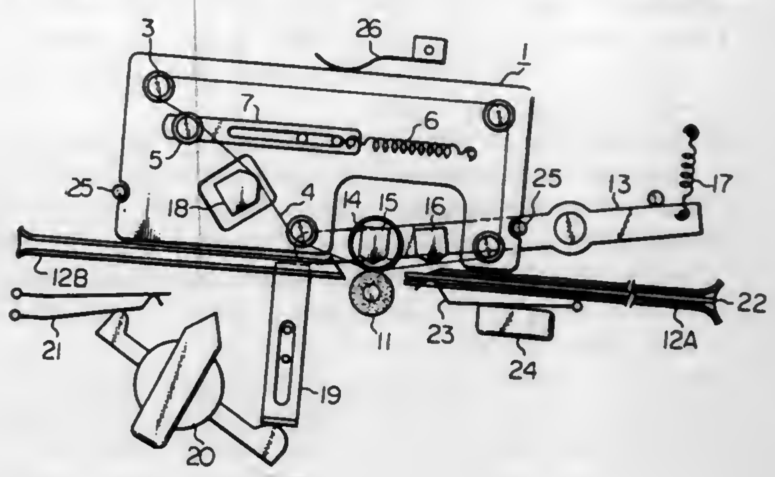
Hideaki Hayashi, Tokyo, Japan, assignor to Tokyo Magnetic Printing Company Ltd., Tokyo, Japan

Filed Apr. 4, 1977, Ser. No. 784,645

Claims priority, application Japan, Apr. 14, 1976, 51/41994; May 4, 1976, 51/49898; Jun. 19, 1976, 51/72570

Int. Cl.^{2} G11B *5/86*

U.S. Cl. 360—17 **4 Claims**



1. A reproducing device for a magnetic card for transferring data from said card to a tape loop comprising

an endless loop of magnetic recording tape mounted in a tape pack having a continuous path and being removably mounted in the device,

means for transporting a recorded magnetic card in its own flat plane adjacent said magnetic recording tape for minimizing distortion of said card, said magnetic card having a higher coercive force than said magnetic tape, said transporting means including a capstan and a pinch roller,

a magnetic printing head positioned within said magnetic recording tape loop, means for translating said pinch roller into contact with said capstan to establish an operative arrangement with said tape and card juxtaposed therebetween thereby to form a single line of tape-to-card contact transverse of said tape and adjacent said magnetic printing head,

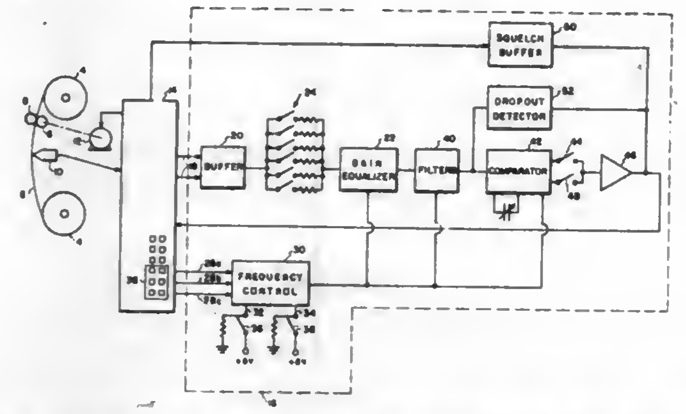
a reproducing head mounted along the path of said magnetic recording tape, and

power means including first and second switch means, drive actuator means (1) for actuating said first switch means thereby to energize said capstan for rotation thereof and (2) for operating said translating means to establish said operative arrangement with said tape and card juxtaposed between said capstan and said pinch roller, a leading edge of said magnetic card contacting said second switch means thereby to energize said magnetic printing head.

4,193,100
CONTROL CIRCUIT

James S. Bagley, Littleton, and Gary J. Van Norden, Denver, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 3, 1978, Ser. No. 948,255
Int. Cl.² G11B *15/46*
U.S. Cl. 360—73 **12 Claims**

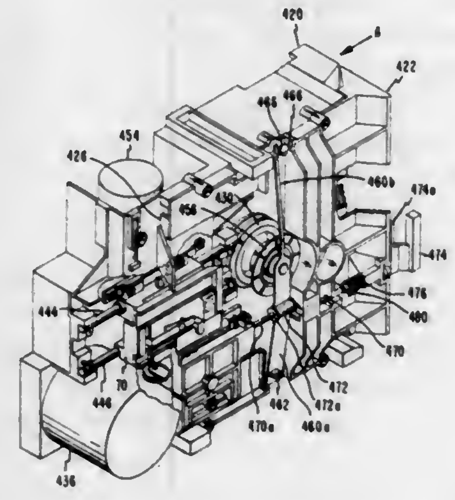


1. A signal conditioning circuit means for servo signals magnetically recorded on a magnetic tape wherein reproduced signals of different frequencies correspond with correlated selectively different speeds of operation of said tape, said signal conditioning circuit means comprising:
- means for establishing a speed selection digital code signal,
- means responsive to said recorded signals to produce an analog sine wave signal of a frequency commensurate with said recorded signal,
- normalizing circuit means connected to receive said analog signal and responsive to said digital code signal to normalize said analog signals to a predetermined voltage level,
- selective filter means connected to receive said normalized analog signals and responsive to said digital code signal to be selectively responsive to pass a particular frequency of said analog signals,
- comparator means responsive to the filtered signals to produce a square wave pulse train of a frequency determined by said frequency of said filtered analog signal, and
- means responsive to said square wave pulse train for controlling the speed of operation of said tape.

4,193,101
COLLET LOADING APPARATUS

John A. Carlson; Kenneth D. Rusch, and David L. Sippel, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,756
Int. Cl.² G11B *5/012, 21/22, 5/54, 3/62*
U.S. Cl. 360—97 **10 Claims**

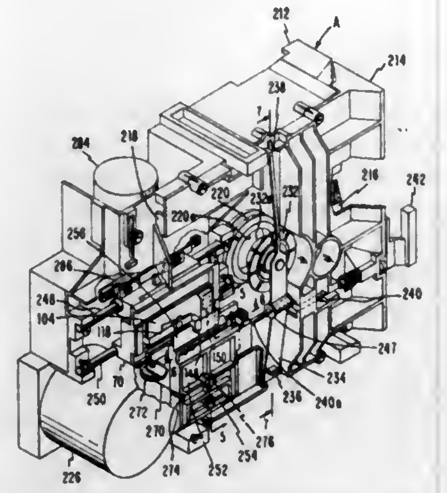


1. Apparatus for gripping and rotatably driving a magnetic disk having a central hole through it including:
- a machine frame,
- a drive hub rotatably disposed with respect to said frame,
- a collet for moving toward said hub for thereby gripping the disk about its central hole between the collet and the hub,
- a leaf spring supported by said frame adjacent the two ends of said spring and carrying said collet at a place intermediate the ends of the spring, and
- means for applying a force on said spring between its ends to longitudinally bend the spring and move said collet toward said hub to engage the disk between the collet and hub.

4,193,102
DISK FILE MACHINE WITH CABLE CONNECTION TO TRANSDUCERS

Wallace E. Beuch, Pine Island; George J. O'Konski; Kenneth D. Rusch, both of Rochester, and Thomas A. Wytaski, Pine Island, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,886
Int. Cl.² G11B *5/54, 5/016, 21/22*
U.S. Cl. 360—105 **16 Claims**



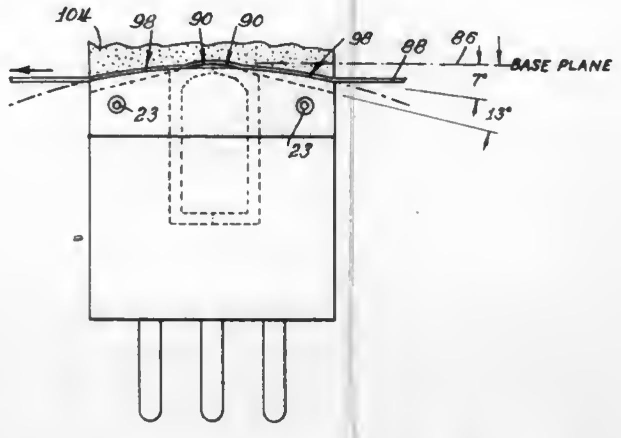
1. A magnetic disk drive machine including:
- means for gripping and rotatably driving a magnetic disk,
- a carriage embracing the disk with a pair of opposite parts of the carriage on opposite sides of the disk, one of said parts constituting a magnetic transducer,
- a yielding connection of one of said parts to the remainder of said carriage making the latter part a movable part and allowing it to be moved away from the other one of said parts to allow the disk to freely move with respect to said parts,
- means for moving said movable part between an original position in which it is substantially spaced from said other part and an intermediate position in which it is closer to but still spaced from said other part and including an oscillatable shaft carrying an eccentric portion which is so effective when the shaft is oscillated, and
- means for moving said movable part between its said intermediate position and a final position in which said movable part is in contact with said other part except for the thickness of said disk therebetween and including an electric solenoid mechanically connected with said movable part.

4,193,103
MAGNETIC TRANSDUCER HEAD

John C. Fesler, Mackinaw, and Dennis M. Bell, Hudson, both of Ill., assignors to International Tapetronics Corporation, Bloomington, Ill.

Filed Oct. 2, 1978, Ser. No. 947,447
Int. Cl.² G11B *5/22, 5/10*
U.S. Cl. 360—122 **8 Claims**

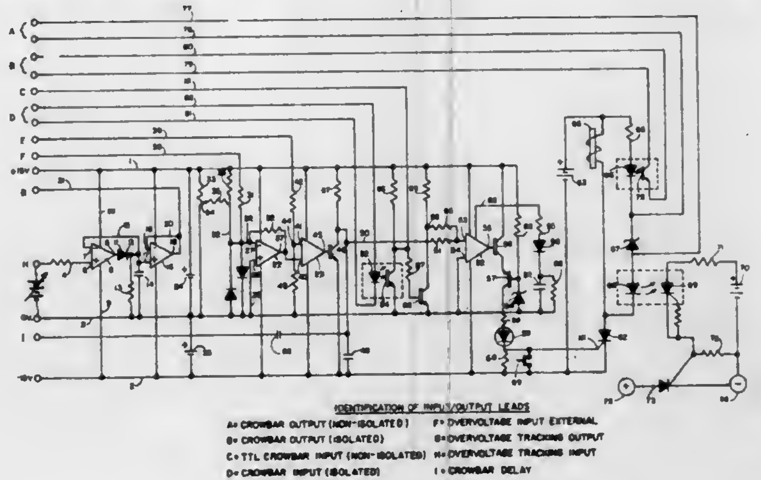
1. A magnetic transducer head, cooperable with a moving magnetic tape to play back signals on a record track along the tape, comprising:
- a casing having a front wall across which the tape is moveable;
- core means within said casing having a pair of pole pieces extending in the direction of movement of the tape and having spaced inner abutting ends forming a transducing gap which projects outside said front wall of said casing for direct contact with said tape, said pole pieces having outer ends remote from the gap connected respectively to a pair of side legs;
- each of said pole pieces having a front face extending smoothly and without abrupt discontinuity between the inner and outer ends thereof, each said front face being inclined at one predetermined angle relative to a base plane parallel to the general direction of movement of the tape so that the spacing therebetween increases with distance from the gap; and
- said casing having guide surface means training a tape for movement across each pole piece at a second predetermined angle less than said one predetermined angle relative to said base plane;
- whereby the spacing between the tape and the front faces of the pole pieces increases smoothly and without abrupt discontinuity between the gap and the inner and outer ends of each of the respective front faces.



4,193,104
PROGRAMMABLE OVERVOLTAGE PROTECTOR

Sarkis Nercessian, Flushing, N.Y., assignor to Kepco, Inc., Flushing, N.Y.

Filed Dec. 28, 1977, Ser. No. 865,183
Int. Cl.² H02H *3/20*
U.S. Cl. 361—56 **11 Claims**

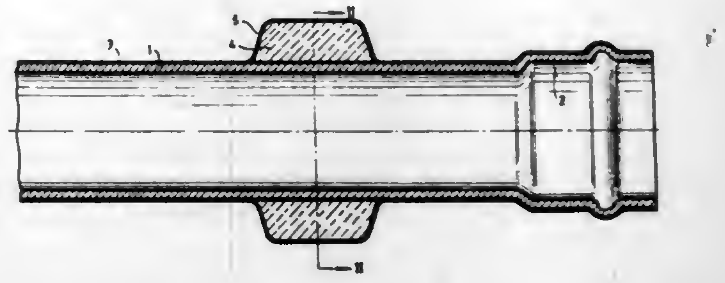

IDENTIFICATION OF INPUT/OUTPUT LEADS
A= CROWBAR OUTPUT (NON-ISOLATED)
B= CROWBAR OUTPUT (ISOLATED)
C= TTL CROWBAR INPUT (NON-ISOLATED)
D= CROWBAR INPUT (ISOLATED)
E= OUTPUT VOLTAGE FEEDBACK
F= OVERVOLTAGE INPUT EXTERNAL
G= OVERVOLTAGE TRACKING OUTPUT
H= OVERVOLTAGE TRACKING INPUT
I = CROWBAR DELAY

1. In a circuit adapted to crow-bar a power supply, the combination of;
- a silicon controlled rectifier for crow-barring a power supply;
- means for comparing the output voltage of the power supply to be crow-barred with a reference voltage and providing a crow-bar signal (in the presence of) responsive to an output voltage greater than said reference voltage by more than a predetermined (amount) voltage;
- means for automatically tracking said reference voltage to maintain said predetermined voltage substantially constant in the presence of programmed changes in said output voltage;
- and an opto-coupler responsive to said signal coupled to said silicon controlled rectifier for firing said silicon controlled rectifier and thereby crow-barring the power supply.

4,193,105
PIPE WITH AN EXTERNAL SEALING BODY

Jurgen Graafmann, Ibbenburen, Fed. Rep. of Germany, assignor to Wavin B.V., Zwolle, Netherlands

Filed May 17, 1977, Ser. No. 797,864
Claims priority, application Netherlands, May 21, 1976, 7605520; Fed. Rep. of Germany, Nov. 26, 1976, 2653698
Int. Cl.² H05F *3/02*
U.S. Cl. 361—215 **8 Claims**

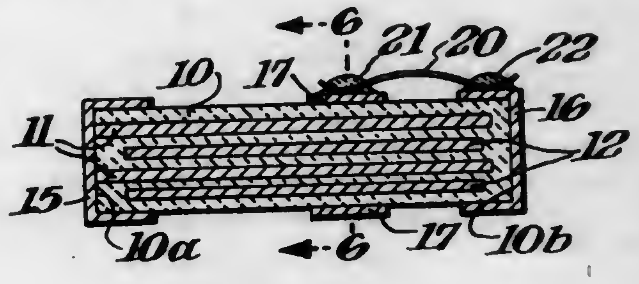


1. A thermoplastic pipe provided with an electrically conducting surface layer of thermosetting resin adhering to the thermoplastic pipe, and at least one resilient sealing body which has been foamed onto the electrically conducting surface layer, said sealing body containing electrically conducting particles.

4,193,106
MONOLITHIC CERAMIC CAPACITOR WITH FUSE LINK

James H. Coleman, Wichita Falls, Tex., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jan. 24, 1978, Ser. No. 871,903
The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.
Int. Cl.² H01G *1/11*
U.S. Cl. 361—275 **3 Claims**

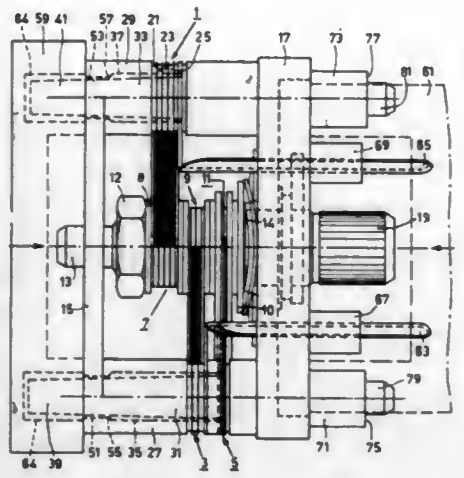


1. A Monolithic ceramic capacitor comprising a dielectric ceramic body; two alternate sets of interdigitated spaced parallel film electrodes buried in said body, mutually perpendicular X and Y axes of said capacitor defining a plane being parallel to said electrodes, one alternate set of said electrodes extending in one X axis direction to one end face of said body and being recessed within said body from the opposite end face, the other alternate set of said electrodes being recessed within said body from said two end faces and extending in at least one Y axis direction to at least one side face of said body in a region intermediate said end faces; a first termination layer being bonded to said one end face and contacting said one set of electrodes; a second termination layer being bonded to said side face and contacting said second set of electrodes, a third

termination being bonded to said opposite end face without contacting either of said electrode sets; two lead wires, one of said wires being connected to said first terminal layer and the other of said wires being connected to said third terminal layer; and a fuse link being connected between said second and third termination layers.

4,193,107
VARIABLE CAPACITOR

Adrianus J. Wagemakers; Johan C. J. A. Roozen, and Jozephus J. M. Smit, all of Tilburg, Netherlands, assignors to U.S. Phillps Corporation, New York, N.Y.
Filed Feb. 28, 1978, Ser. No. 882,272
Claims priority, application Netherlands, Mar. 8, 1977, 7702451
Int. Cl.² H01G *5/06*
U.S. Cl. 361—298 **12 Claims**



1. A variable capacitor comprising, a stator and a rotor which are clamped and arranged, respectively, between an upper plate composed of a synthetic material suitable for ultrasonic welding and a lower plate composed of a synthetic material suitable for ultrasonic welding, the upper plate and the lower plate being maintained at a distance from each other by a plurality of first and second spacer columns which are coaxially situated relative to each other and which extend transversely of the plane of the plates, said first and second spacer columns being formed to be integral with the upper and lower plates respectively, at least two of the spacer columns having an at least partly tubular construction for connection of the upper plate to the lower plate, a spacer column of one of the plates being inserted with clearance into the tubular part of one of the spacer columns connected to the other plate, an ultrasonic welded joint being present between the inner surface of the tubular column and the outer surface of the other column inserted therein with said joint being situated at a distance from an end face of the tubular column such that a part of the tubular column is subject to a compression force and a part of the other column projecting into the tubular column is subject to a tensile force.

4,193,108
APPARATUS FOR SECURELY FASTENING A CIRCUIT BOARD TO A CIRCUIT BOARD EDGE CONNECTOR

John V. Romano, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.
Filed Aug. 2, 1978, Ser. No. 930,470
Int. Cl.² H02B *1/02*
U.S. Cl. 361—399 **25 Claims**

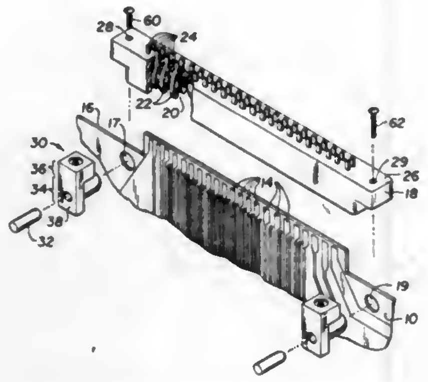
1. An apparatus for securing a circuit board edge connector to a circuit board, the circuit board having an opening proximate an edge thereof, said apparatus comprising:

a fastening member having a first portion, said first portion having a back surface, a mating surface adapted for engagement with the circuit board, and an aperture extending from said back surface to said mating surface; and an end portion having a wall oriented generally perpendicular to said mating surface;

means on said end portion for enabling said edge connector to be secured to said fastening member;

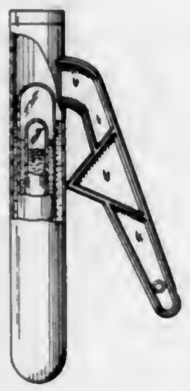
attaching means projecting from said mating surface of said first portion and insertable through the opening in the circuit board for enabling the fastening member to be loosely attached to the circuit board; and

means operable with said attaching means for expanding said attaching means when inserted in the opening so as to enable the previously loosely attached fastening member to be rigidly secured to the circuit board, said wall of said end portion and said attaching means being spaced apart a predetermined distance so that said wall overlaps the circuit board edge when said attaching means is inserted in said opening so that said wall and said attaching means generate orthogonal gripping forces to the circuit board when said attaching means is expanded by said expanding means.



4,193,109
PERSONNEL MARKER DEVICE

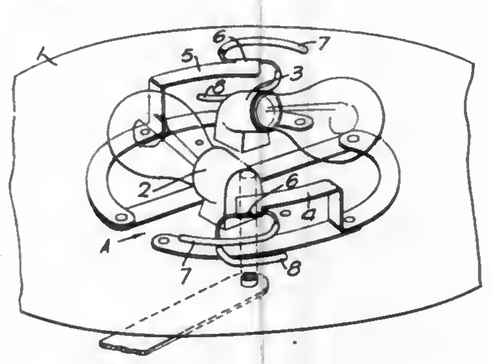
William R. Heffernan, Westfield; Mary-Louise Vega, Califon, both of N.J., and Edward T. Rockwell, Sr., Leominster, Mass., assignors to American Cyanamid Company, Stamford, Conn.
Filed Sep. 22, 1978, Ser. No. 926,989
Int. Cl.² F21K *2/00*
U.S. Cl. 362—34 **3 Claims**



1. A chemiluminescent lightstick and container therefor, comprising a unitary molded outer flexible translucent tube with attached lever and fulcram, the lever of which is joined by one of its ends to the outer wall of said tube at a joint near one end of said tube and, sealed inside said outer tubes, several components of a chemiluminescent mixture with separate components of said mixture sealed inside separate glass vials within said outer tube, an outer cylindrical sleeve open at one end and fitted snugly over the length of the outer wall of said tube by insertion of the free end of said tube through an open end of said sleeve, with a portion cut away from the wall of said sleeve at said open end, said cut away portion being of width only sufficient for said sleeve to pass said lever at said joint and of length only sufficient for said sleeve to slide past said joint to cover the full length of said tube except at said cut away portion.

4,193,110
LIGHT FIXTURES

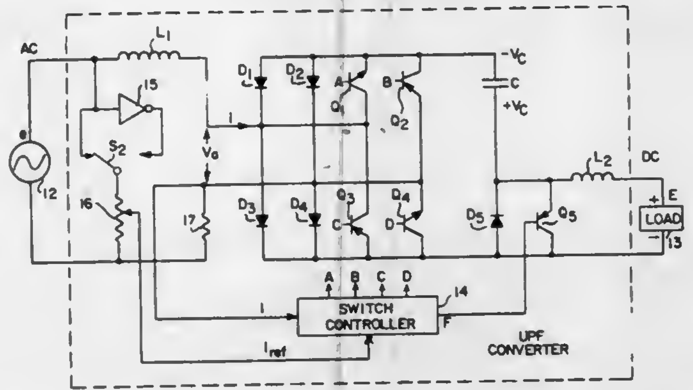
Kolbjorn Olsen, Harstad, Norway, assignor to Bjorn Kokvik, Oslo, Norway
Filed Jun. 22, 1978, Ser. No. 918,031
Int. Cl.² F21P *5/00*
U.S. Cl. 362—371 **10 Claims**



1. In a light fixture having securing means for a lamp globe, the improvement comprising at least two moveable members each having a first resilient arm which abuts the inside of the lamp globe in the area around an opening of the lamp globe, and a second resilient arm which abuts the inside of the opening of the lamp globe to releasably maintain the first arm in said abutment with the inside of the lamp globe whereby the lamp globe may be releasably secured to the light fixture.

4,193,111
UNITY POWER FACTOR CONVERTER

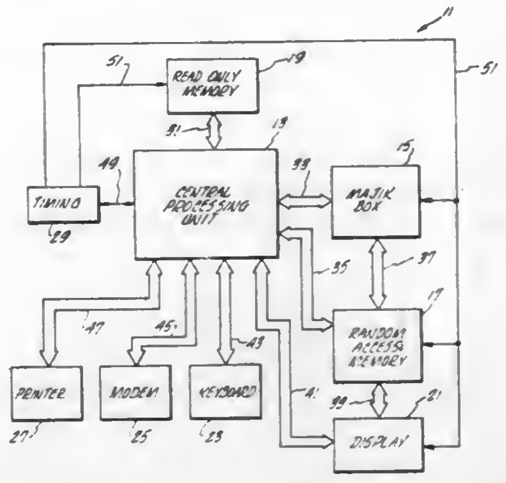
Gene W. Wester, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed Jun. 8, 1978, Ser. No. 913,888
Int. Cl.² H02M *7/70*
U.S. Cl. 363—84 **10 Claims**



1. A unity power factor conversion circuit, capable of effecting either dc-to-ac or ac-to-dc conversion, and capable of providing bilateral power control from a DC source, or load, at DC ports to an AC load, or source, at AC ports using a storage capacitor and a full wave rectifier to store energy in said capacitor from said AC ports, said circuit having a first inductor to couple said AC ports to said capacitor and a second inductor to couple said DC ports to said capacitor, means for selectively switching at high speed said first inductor to $+V_c$ at a positive terminal of said capacitor, $-V_c$ at a negative terminal of said capacitor, or to zero volts at a point on the current return path of said AC source, or load, and means responsive to a comparison of the current i through said first inductor with a reference current i_{ref} proportional to and in a predetermined in phase or antiphase relationship with the voltage e of said AC source, or load, for controlling said high speed switching means to connect said first inductor to the positive or negative terminal of said storage capacitor, or to zero volts, depending upon whether i is greater or less than i_{ref}, and depending upon whether the voltage e is positive or negative, such that when e is positive, said first inductor is connected to zero volts if $i < i_{ref}$ and to the positive terminal of said capacitor if $i > i_{ref}$, and when e is negative, said first inductor is connected to zero volts when $i < i_{ref}$ and to the negative terminal of said capacitor if i < ref, whereby the AC source, or load, current i is forced to follow the voltage e.

4,193,112
MICROCOMPUTER DATA DISPLAY COMMUNICATION SYSTEM WITH A HARDWIRE EDITING PROCESSOR

Judson T. Gilbert, Hialeah; George R. Harrison; Alan R. Holbrook, both of Miami; Michael Levy, Pembroke Pines; John B. Scott, Miami Springs, and Harris K. Swan, Miami, all of Fla., assignors to Racal-Milgo, Inc., Miami, Fla.
Filed Jan. 22, 1976, Ser. No. 651,249
Int. Cl.² G06F *3/14, 9/00, 13/00*
U.S. Cl. 364—200 **22 Claims**



1. In a data display terminal communication system having a keyboard input device communicating with a microprocessor means, a random access memory means communicating with the microprocessor means for storing character data to be displayed under control of said microprocessor means, and a display means for displaying characters represented by the character data in said random access memory means on a line-by-line basis in response to said microprocessor means transmitting a memory address and control signals to said display means, the improvement comprising: p1 means for removing character data from and inserting character data into said memory means in blocks of N characters, in between the times said microprocessor means transmits a memory address and control signals to said display means, the inserting and removing being in response to said microprocessor means transmitting a memory address and control signals to said character data removing and inserting means, said character data removing and inserting means including;

shift register means for storing character data removed from said memory means in a block of N characters, N being the number of characters capable of being displayed on one line of said display means;

means responsive to instruction codes and command signals from said microprocessor means for modifying the character data block in said shift register means as instructed by said microprocessor means; and

means responsive to control signals from said microprocessor means for inserting the character data block modified by the modifying means into said memory means at a location directed by the memory address transmitted to the display means by said microprocessor means.

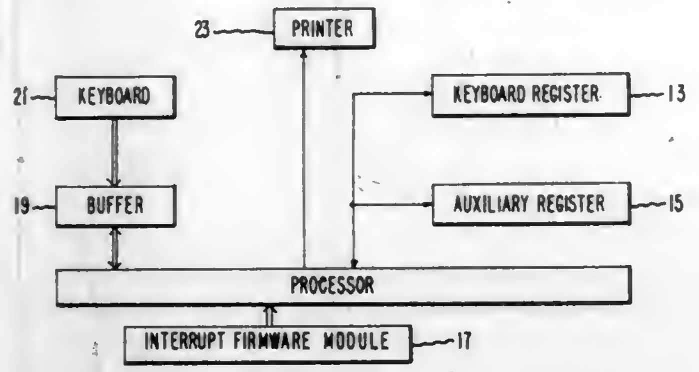
4,193,113
KEYBOARD INTERRUPT METHOD AND APPARATUS

Mark F. Cykowski, Birmingham, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Continuation of Ser. No. 582,272, May 30, 1975, abandoned. This application Dec. 13, 1978, Ser. No. 969,112
Int. Cl.² G06F *3/02, 9/18*
U.S. Cl. 364—200 **1 Claim**

1. In a data processing system comprising a central processor

for executing keyboard and non-keyboard macro-instructions under firmware control, a keyboard, a keyboard buffer coupling said keyboard to said central processor, a keyboard register having a set of register locations altered by the execution of both keyboard and non-keyboard macro-instructions, a plurality of auxiliary registers and a plurality of temporary registers, each of said registers being coupled to said central processor, a method of interrupting the performance of a keyboard macro-instruction to allow the processing of other non-keyboard macro-instructions by transferring between the keyboard register, the temporary registers and the auxiliary registers the contents of said set of register locations in said keyboard register which are altered by both keyboard and non-keyboard macro-instruction to insure the proper information is stored in said set of register locations during the execution of both keyboard and non-keyboard macro-instructions, said method comprising the steps of:

(1) testing said keyboard buffer to ascertain whether entered data is present in said keyboard buffer;
(2) processing said entered data and repreating step (1) if said testing indicates the presence of entered data;
(3) transferring the contents of said set of register locations in said keyboard register to said temporary registers;



(4) transferring the contents of said auxiliary registers to said set of register locations in said keyboard register;
(5) transferring the contents of said temporary registers to said auxiliary registers;
(6) interrupting the processing of a keyboard macro-instruction to execute a non-keyboard macro-instruction;
(7) testing said keyboard buffer to ascertain whether data is present in said buffer;
(8) executing a succeeding non-keyboard macro-instruction and repeating step (7) if the testing indicates no entered data in said keyboard buffer;
(9) transferring the contents of said set of register locations in said keyboard register from said keyboard register to said temporary registers;
(10) transferring the contents of said auxiliary registers to said set of register locations in said keyboard register;
(11) transferring the contents of said temporary registers to said auxiliary registers;
(12) processing said data entered into said keyboard buffer; and
(13) continually repeating steps (1) through (12).

4,193,114
TICKET-ISSUING SYSTEM

Fernando Benini, Zola Predosa, Italy, assignor to CIR- S.p.A.-Divisione Sasib, Bologna, Italy

Filed Jun. 22, 1978, Ser. No. 918,283

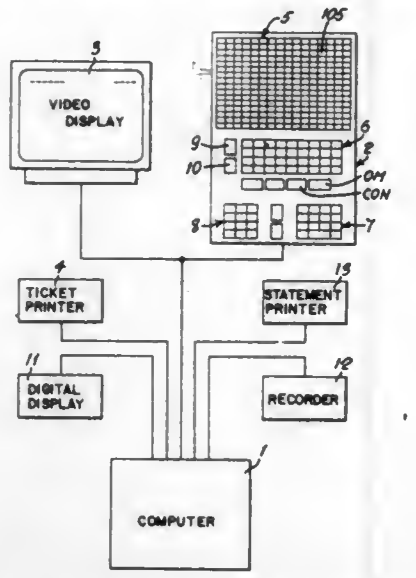
Claims priority, application Italy, Jun. 30, 1977, 12665 A/77

Int. Cl.² G06F *3/02, 3/12, 3/14*

U.S. Cl. 364—200 **6 Claims**

1. A system for issuing a ticket for travel to a selected destination having a name defined by a plurality of consecutive letters of the alphabet, comprising:

a programmed computer;
a ticket printer coupled to said computer;
a video display coupled to said computer for visually displaying at least the information required to define said selected destination; and
a keyboard panel coupled to said computer, said keyboard including an omission key and a set of alphabetical keys each representing a letter of the alphabet, the name of said selected destination being introduced into said computer by depressing alphabetical keys to represent certain of the letters in the name of said destination and depressing said omission key to represent the remainder of said letters.



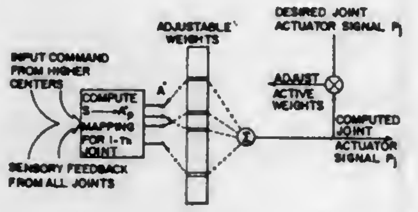
4,193,115
METHOD AND APPARATUS FOR IMPLEMENTATION OF THE CMAC MAPPING ALGORITHM

James S. Albus, Kensington, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Dec. 15, 1977, Ser. No. 860,799

Int. Cl.² G06F *9/06*

U.S. Cl. 364—300 **3 Claims**


INPUT COMMAND FROM HIGHER CENTERS
COMPUTE S → A*p MAPPING FOR I-Th JOINT
SENSORY FEEDBACK FROM ALL JOINTS
A*
ADJUSTABLE WEIGHTS
Σ
DESIRED JOINT ACTUATOR SIGNAL Pj
ADJUST ACTIVE WEIGHTS
COMPUTED JOINT ACTUATOR SIGNAL Pj

1. A machine implemented method of addressing, in dependence on an input signal comprising at least one variable S_i, a distributed storage memory in an adaptive control system wherein a set of control signal values is stored such that each of the stored values is distributed over a unique set A^*p of K physical memory locations, more than one stored value may share an individual memory location a_j, and the degree of overlap between sets A^*p corresponds to the degree of similarity between input signals, the method comprising the steps of: for each variable S_i:

(1) loading a first register having at least b+1 bits with the binary equivalent of the input variable S_i, where b represents the number of bits in the binary equivalent of the largest of the values which an input variable S_i may obtain;
(2) initializing a second register having q bits, where $q=\log_2K$, and the contents of the second register constitute the count of an index j;
(3) obtaining a value Q_{ij} by outputting the contents of the second register as the lowest order bits of the value Q_{ij}, and the contents of the $(b-q+1)$ bit locations of the first register as the highest order bits of the value Q_{ij};
(4) transferring all of the values Q_{ij} into a shift register having $N(b+1)$ bits such that the shift register contains the concatenation of the values Q_{ij};
(5) shifting the contents of the shift register into a cyclic shift register connected so as to produce a pseudorandom number as a result of the shifting of the contents thereof; thereby obtaining memory location a_j;
(6) changing the contents of the first and second registers by incrementing or decrementing the value thereof by by a factor of one;
(7) repeating for each variable S_i the sequence of steps (3)-(6) $(K-1)$ times, thereby obtaining all of the memory locations a in the set A^*p.

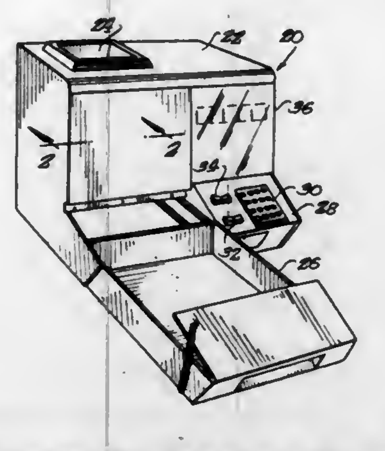
4,193,116
ANALYSIS INSTRUMENT

David B. Funk, Virden, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Continuation-in-part of Ser. No. 791,641, Apr. 27, 1977, abandoned. This application Mar. 29, 1978, Ser. No. 890,502

Int. Cl.² G01R *27/26*

U.S. Cl. 364—556 **35 Claims**



1. An analysis instrument for measuring the contents of a sample of a material comprising: a test cell for receiving said sample, said test cell comprising a capacitor whose electrical properties are modified in accordance with the dielectric constant of the sample, which dielectric constant is a function of the contents thereof, circuit means including means for applying two electrical signals of different predetermined frequencies to said test cell, means for applying said two electrical signals to said test cell when said test cell is empty and for again applying said two electrical signals to said test cell when said sample is received therein, test circuit means including said capacitor for receiving said applied signals and for producing test signals in response to said applied electrical signals, said test signals corresponding to said dielectric constant of said material, said circuit means further including measurement circuits for receiving said test signals and providing an indication corresponding to said contents of said material in accordance with said test signals.

4,193,117
ELECTRONIC CORRELATOR

Werner Marckwardt, Jena-Lobeda, German Democratic Rep., assignor to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed May 22, 1978, Ser. No. 908,363

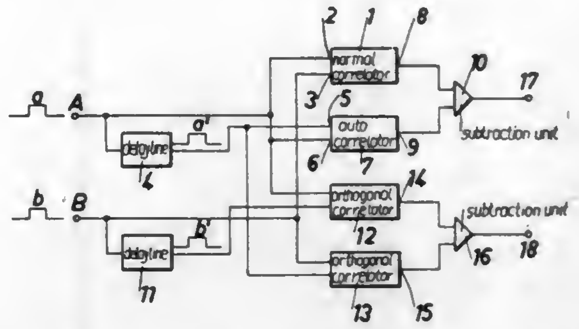
Claims priority, application German Democratic Rep., May 31, 1977, 199212

Int. Cl.² G06F *15/34;* **G06G** *7/19*

U.S. Cl. 364—728 **1 Claim**

1. An electronic correlator for correlating electric signals derived from homologous image points of stereo-couples of photographs, particularly for use in stereoplotters, comprising

a correlator unit having two inputs and one output,
an auto-correlator unit having two inputs and one output,
two orthogonal correlator units having two inputs and one output,
two delay-lines, and
two subtraction units,
said correlator unit receiving the non-delayed signals from one of said homologous image points of each photograph of said stereo-couple,
said auto-correlator unit receiving at one of its outputs a non-delayed signal from the first of said photographs of the stereo-couple, the output of said correlator unit and the output of said auto-correlator unit being connected to one of said two subtraction units,
the first of said orthogonal correlator units receiving at one of its inputs the non-delayed signal from the first photograph of said stereo-couple and being connected to the second of said delay lines via its other input for receiving the non-delayed signal from the second photograph of said stereo-couple,
the second of said orthogonal correlator units receiving the non-delayed signal from the second photograph of said stereo-couples at one of its inputs, and being connected to the first of said delay lines via the other input,
said other input receiving the delayed signal from the first photograph of said stereo-couple, the outputs of said two orthogonal correlator units being connected to the other of said two subtraction units.



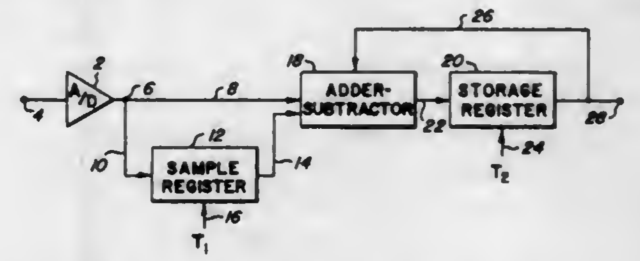
4,193,118
LOW PASS DIGITAL AVERAGING FILTER

Harold G. Nash, Tempe, Ariz., and John R. Linford, Broomfield, Colo., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 18, 1978, Ser. No. 925,719

Int. Cl.² G06F *7/38*

U.S. Cl. 364—734 **9 Claims**

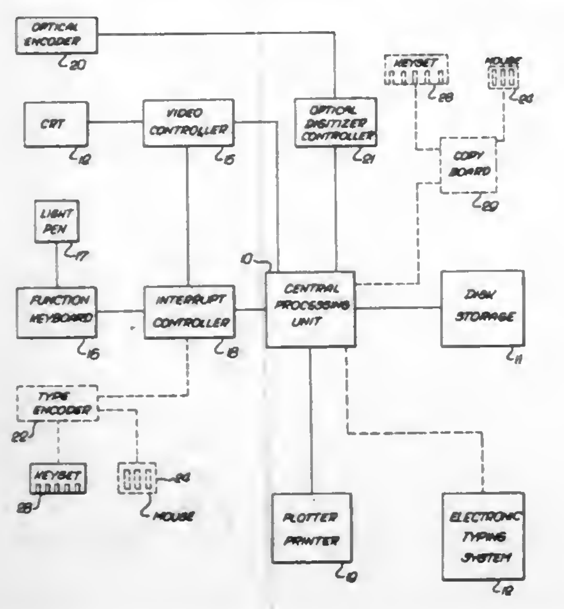


1. An apparatus for establishing a running average for a sequence of digital signals, comprising:

a. first means for receiving a plurality of input digital signals during a corresponding plurality of sequential sample periods;
b. second means coupled to said first means for storing a predetermined number N of the input digital signals, said second means also being for storing an input digital signal received during a present sample period and providing an output digital signal corresponding to an input digital signal received N sample periods prior to the present sample period;
c. third means for storing an average digital signal; and

d. an arithmetic means coupled to said first means, to said second means and to said third means for adding the input digital signal received during the present sample period to the average digital signal and for subtracting the output digital signal from the average digital signal for updating the average digital signal stored by said third means.

4,193,119
APPARATUS FOR ASSISTING IN THE TRANSPOSITION OF FOREIGN LANGUAGE TEXT
Shingo Arase, Monterey Park, Calif., and Roy J. Lahr, Fairfield, Conn., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 25, 1977, Ser. No. 781,266
Int. Cl.^{2} G06F *15/38*
U.S. Cl. 364—900 **21 Claims**



1. Apparatus for generating a text of information in a language form comprised of first and second sets of characters, wherein each character or group of characters of said first set bears a predetermined phonetic or semantic relationship to a character or group of characters of said second set, said apparatus comprising:

memory means for storing in a binary digital format each of the first and second sets of characters comprising said language form;

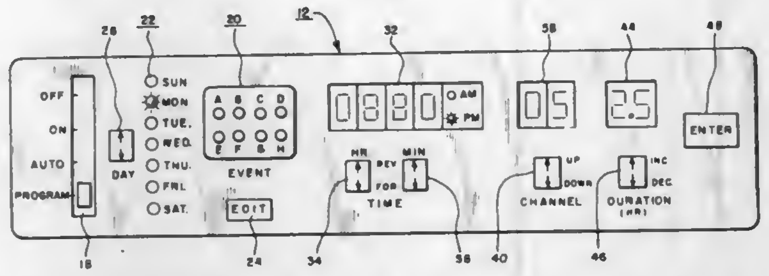
first selection means for selecting individual ones of said first set of characters for inclusion in the text of information being generated; display means including a first display area for displaying the text of information being generated and a second display aread for displaying predetermined ones of said second set of characters;

processing means coupled to said first selection means, to said memory means, and to said display means and including means responsive to the selection of each character of said first set by said first selection means for automatically accessing said selected character of said first set in binary digital format from said memory means, means for controlling said display means to display said accessed character of said first set in said first display area as part of said text of information, means responsive to the selection of each character or group of characters of said first set that bears said predetermined phonetic or semantic relationship to a character or group of characters of said second set for automatically accessing said character or group of characters of said second set in binary digital format from said memory means, and means for controlling said display means to display said accessed character or group of characters of said second set in said second display area;

second selection means for selecting a desired character or group of characters of said second set displayed in said second display area for substitution in said text of information in place of said selected character or group of characters of said first set that bears said predetermined phonetic or semantic relationship toward said selected character or group of characters of said second set; and

said processing means is coupled to said second selection means and further includes means responsive to the selected character or group of characters of said second set for automatically substituting said selected character or group of characters of said second set for the selected character or group of characters of said first set by controlling said display means to display said selected character or group of characters of said second set in place of said selected character or group of characters of said first set in said text of information displayed in said first display area.

4,193,120
ADDRESSABLE EVENT DISPLAY AND CONTROL SYSTEM
Joseph F. Yello, Wooddale, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.
Filed Sep. 13, 1978, Ser. No. 942,091
Int. Cl.^{2} H04N *5/76;* **G06F** *9/10*
U.S. Cl. 364—900 **9 Claims**



1. An addressable event display and control system for use with a clock controlled programmable memory having the capability of storing a multitude of time related program events, which events are utilized, chronologically, for controlling a video frequency recorder, the content of each said event comprising a plurality of pieces of information, said event display and control system comprising:

an array of light-emitting devices coupled to the memory, each of said devices constituting an event designator and signifying, when energized, storage of a programmed event in the memory;

a bank of light-emitting day-of-the-week indicators also coupled to the memory, as well as to said array, and selectively energizable to visually identify a particular day;

means for selecting a particular one of said day indicators;

means responsive to selection of said particular day indicator for interrogating said array of event designators to ascertain which of said designators have been programmed for said particular day;

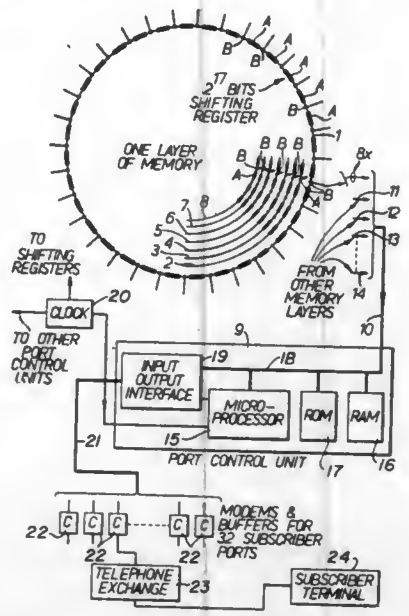
means for selecting a desired one of said event designators for said particular day to afford review of the program content of said selected event designator;

visual signaling means, responsive to said designator selecting means, for identifying said selected event designator;

programming means, including visual readout means, for selecting and visually displaying the time, channel and recording duration information that identifies an event to be associated with said selected event designator; and

means for entering said program information into the memory for subsequent retrieval upon said selected day to control the recorder.

4,193,121
INFORMATION HANDLING APPARATUS HAVING MULTIPLE PORTS DISTRIBUTED AROUND SHIFTING REGISTER RINGS
Samuel Fedida, and Desmond J. Sargent, both of Felixstowe, England, assignors to Post Office, London, England
Filed Jul. 12, 1977, Ser. No. 814,921
Claims priority, application United Kingdom, Jul. 16, 1976, 29739/76
Int. Cl.^{2} G06F *13/02, 3/00*
U.S. Cl. 364—900 **7 Claims**



1. An information handling apparatus including a plurality of ports, each for receiving input signals and transmitting corresponding output signals, a plurality of port control units, each of which is connected to at least one of said ports, and information storage means connected to all of the port control units, the information storage means including several pluralities of closed rings formed of groups of shifting register stages connected in series, each ring having the same number of stages and having a plurality of junctions at which the last stage of one group of shifting register stages is connected directly to the first stage of the next group of shifting register stages around the particular ring, the port control units being connected directly to respective corresponding junctions in each plurality of rings, and stepping means for synchronously and continuously recirculating information around the rings, the information consisting of groups of digits, the digits of each group being respectively stored in the rings of a plurality of rings and propagated in parallel by the stepping means so as to appear in parallel at corresponding junctions of the particular plurality of rings, and each port control unit being connected to the stepping means and to all of the rings and including means enabling it to read a selected group of digits in parallel by accessing the corresponding junctions on the rings at an instant associated with the selected group of digits, and by selecting one of the pluralities from among the several pluralities.

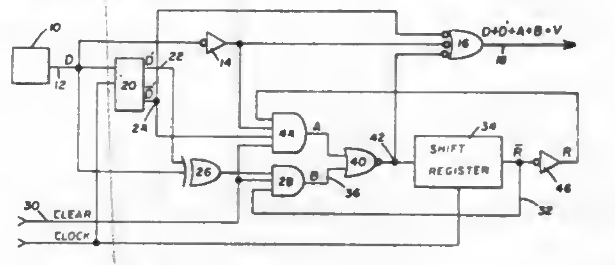
4,193,122
CONNECTING LINE GENERATOR
John J. Bowers, Medina, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.
Filed Nov. 28, 1977, Ser. No. 855,128
Int. Cl.^{2} G06F *3/14;* **G08B** *23/00*
U.S. Cl. 364—900 **8 Claims**

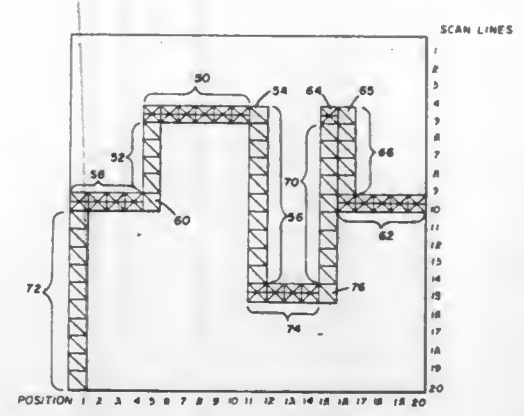
1. A system for interpolating data for use in display devices, said system comprising:

means for receiving a set of data comprising a plurality of scan lines one scan line at a time, wherein each scan line may include one or more lines of data;

means operatively connected to said receiving means for determining the ends of said lines of data within said scan lines and for producing signals indicative to said ends of said lines of data;

means operatively connected to the output of said determining means for storing said signals indicative of said ends of said lines of data, wherein the output of said storing means is operatively connected to said determining means to cause said determining means to repeatedly insert in the following scan lines signals indicative of said ends of data from preceding lines of data from preceding scan lines until a subsequent end of data signal is determined in a subsequent scan line;

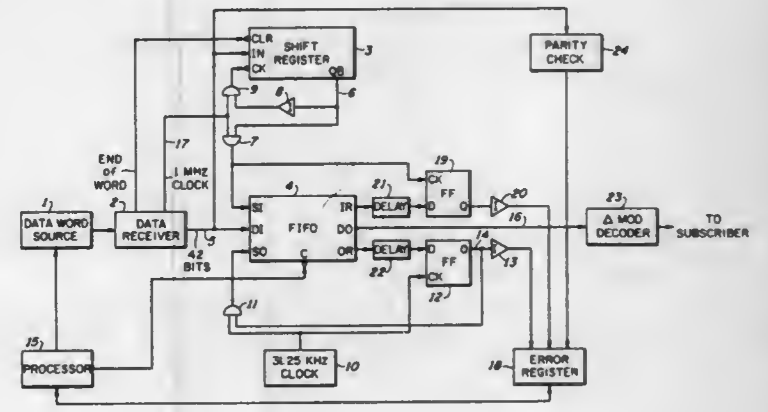




means operatively connected to both said receiving means and the output of said determining means for producing an output indicative of both said lines of data received and said inserted signals from said determining means such that at least one of said lines of data within one scan line is connected to at least one of said lines of data within a different scan line; and

display means connected to said producing means for displaying the output of said producing means.

4,193,123
FAULT DETECTION IN DATA RATE CONVERSION SYSTEMS USING A FIRST-IN, FIRST-OUT BUFFER
James M. Meinke, Lisle, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 20, 1978, Ser. No. 888,345
Int. Cl.^{2} G06F *11/00*
U.S. Cl. 364—900 **6 Claims**



1. A fault detection arrangement comprising:

a digital word source for generating n bit digital words at the rate of one such digital word every m microseconds;

a first-in, first-out buffer comprising means responsive to the storage condition of said first-in, first-out buffer for generating buffer-empty signals and alternatively buffer-not-empty signals;

means for storing digital words from said digital word source in said first-in, first-out buffer at the rate of one digital word every m microseconds;

means responsive to said buffer-not-empty signals for reading bits from said first-in, first-out buffer memory at the rate of one bit per m/n microseconds, said means for reading being activated a predetermined period of time after at least one bit has been stored in said first-in, first-out buffer; and

means responsive to said buffer empty signals for generating fault signals.

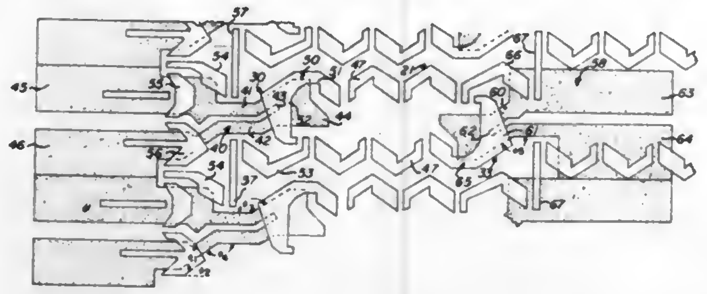
4,193,124
SWAP AND REPLICATE GATES FOR MAGNETIC BUBBLE MEMORY

David C. Bullock, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 20, 1978, Ser. No. 888,124

Int. Cl.² G11C *19/08*

U.S. Cl. 365—12 9 Claims



7. In a magnetic bubble memory arrangement having a planar layer of magnetic material in which magnetic bubbles can be moved and a plurality of bubble propagation elements of magnetically soft material disposed on said planar magnetic layer and defining a bubble propagation path in the form of a loop, a transfer/replicate bubble propagation path component of magnetically soft material disposed on said planar magnetic layer, said component comprising:

an asymmetric hook-like transfer/replicate element forming a bight at one end of the loop,

the opposite ends of said hook-like element being respectively disposed in the opposite courses of the loop,

said hook-like element including a wedge-shaped bight portion disposed between the opposite courses of the loop and tapering toward the leading end of said hook-like element so as to have a reduced width dimension at the leading end thereof, and an asymmetric chevron-shaped portion integral with said wedge-shaped bight portion and forming an extension of one course of the loop, and

the leading end of said hook-like element being disposed outwardly with respect to the end of said asymmetric chevron-shaped portion in relation to the loop at the end of the other course of the loop.

4,193,125
READ ONLY MEMORY

Yoshiaki Moriya, Inagi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 28, 1978, Ser. No. 964,430

Claims priority, application Japan, Dec. 2, 1977, 52/144871

Int. Cl.² G11C *11/40*

U.S. Cl. 365—104 9 Claims

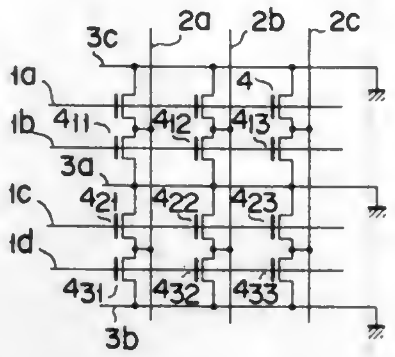
6. A read only memory having a semiconductor substrate of one conductivity type and a plurality of MOS transistor blocks formed on one major surface of the semiconductor substrate, each of said MOS transistor blocks comprising:

first, second, third and fourth regions of the opposite conductivity type which are formed at four corners of an imaginary rectangle;

a fifth region of the opposite conductivity type which is formed substantially at the center of the imaginary rectangle and spaced from the first, second, third and fourth regions;

a first gate conductor which is laid on a gate insulation layer and extends between the fifth region and the first and second regions aligned in the lateral direction of the substrate;

a second gate conductor which is laid on the gate insulation layer and extends between the fifth region and the third and fourth regions aligned in the lateral direction of the substrate;



a group of output-ground lines which are laid on an insulation layer and intersect with the first and second gate conductors, said group including a first output-ground line having first and third contacts connected to the first and third regions, respectively, a second output-ground line having second and fourth contacts connected to the second and fourth regions, respectively and a third output-ground line having a fifth contact connected to the fifth region; and

suppression layers of the same conductivity type as the substrate which are formed selectively on the surface portions of the substrate between the fifth region and the first, second, third and fourth regions.

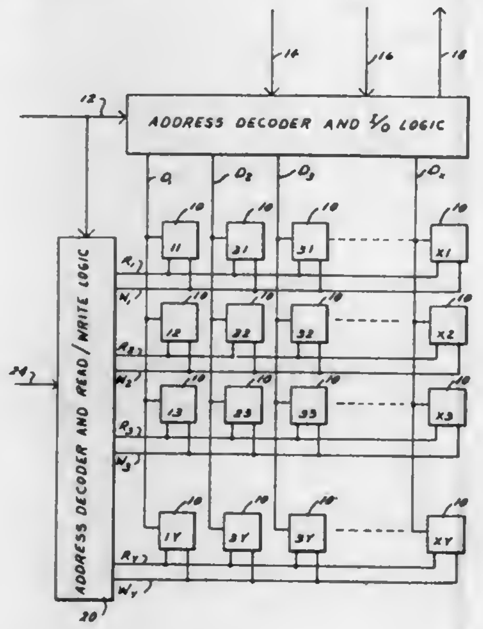
4,193,126
I²L RAM UNIT

Kent F. Smith, Salt Lake City, Utah, assignor to General Instrument Corporation, Clifton, N.J.

Filed Dec. 4, 1978, Ser. No. 966,020

Int. Cl.² G11C *11/40*

U.S. Cl. 365—174 13 Claims


ADDRESS DECODER AND I/O LOGIC
ADDRESS DECODER AND READ/WRITE LOGIC
12
14
16
18
20
24
11
21
31
X1
12
22
32
X2
13
23
33
X3
1Y
2Y
3Y
XY
10

1. A memory unit for use in a memory circuit of the type having a power source, a data input/output line, a read line and a write line, said unit comprising a given number of inverter transistors, each having a base terminal, an emitter terminal operably connected to ground, and one or more collector terminals and said given number of injector transistors, each having a base terminal operably connected to ground, an emitter terminal operably connected to the power source and a collector terminal operably connected to the base terminal of a different one of said inverter transistors, respectively, means for cross-coupling a first and a second of said inverter transistors to form a flip-flop configuration, the state of said flip-flop being determined by the data stored therein and means operably interposed between and operably connected to the read, write and data lines, on the one hand, and said cross-coupled first and second inverter transistors, on the other hand, to control data flow between the data line and said cross-coupled first and second inverter transistors in accordance with signals applied on the read and write lines.

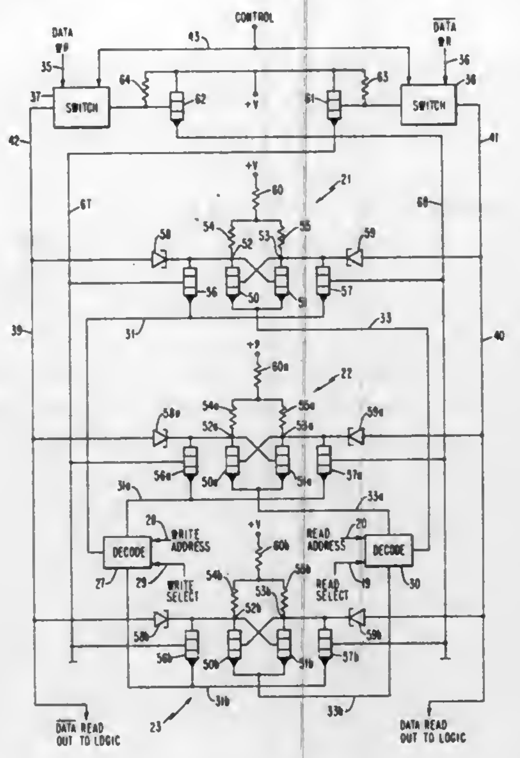
4,193,127
SIMULTANEOUS READ/WRITE CELL

John E. Gersbach, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1979, Ser. No. 58

Int. Cl.² G11C *11/40*

U.S. Cl. 365—174 12 Claims



2. A memory array of information storage cells having first and second orthogonal axis comprising,

a plurality of storage cells, each of said cells comprising a cross coupled transistor pair, read control circuit means, write control circuit means, read bit means and write bit means, each of said means being connected independently of the others to said cell,

said read control circuit means including a decoder for selecting a first set of cells along said first axis for the reading of information from said first set of cells,

said write control circuit means including a decoder for selecting a second set of cells along said first axis for the writing of information into said second set of cells,

said read bit means being coupled to a third set of cells along said second axis for retrieving information read from one cell of said first set of cells,

said third set of cells including one cell from said first set of cells and one cell from said second set of cells,

said write bit means being coupled to said third set of cells along said second axis for writing information into one cell of said second set of cells and

means coupling said read bit means to said write bit means whereby said information read from said one cell of said first set of cells is simultaneously written into said one cell of said second set of cells.

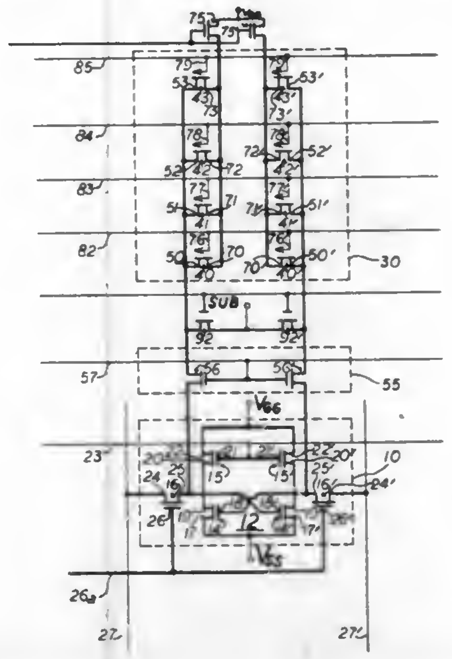
4,193,128
HIGH-DENSITY MEMORY WITH NON-VOLATILE STORAGE ARRAY

Joe E. Brewer, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1978, Ser. No. 911,266

Int. Cl.² G11C *11/40*

U.S. Cl. 365—228 8 Claims



1. A composite memory array for storing binary words in a volatile state in response to control signals on complementary bit lines and word lines and for selectively storing binary words in a non-volatile state in response to control signals on row lines, said composite memory array comprising:

a pair of access transistors that are respectively connected to the complementary bit lines and that are connected to a word line;

a flip-flop circuit connected to the access transistors for storing binary data signals from the complementary bit lines in a volatile state in response to control signals provided to the word lines; and

an array of non-volatile memory cells connected to the flip-flot circuit and to a plurality of row lines, said non-volatile array storing binary data signals from the flip-flop circuit at a selected non-volatile memory level in response to control signals selectively provided to the row lines.

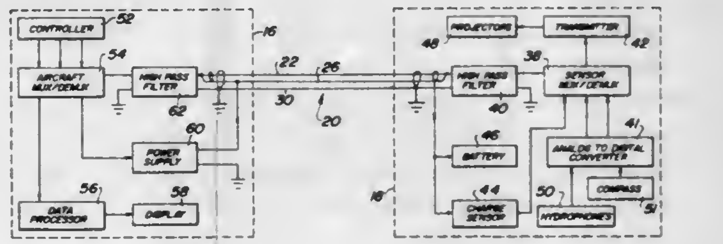
4,193,129
CHARGING CIRCUIT FOR SONAR SYSTEMS

Robert W. Wiggins, Hatboro, Pa.; Kurt L. Ettenhofer, Valencia, Calif., and Jack Bess, Willow Grove, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 5, 1976, Ser. No. 645,868

Int. Cl.² G01S *9/66*

U.S. Cl. 367—106 21 Claims



1. A rechargeable dipped sonar system for an above-water vehicle, comprising, in combination:

cable means formed to depend from the vehicle for immersion in the water; first bi-directional data transfer means formed to be mounted within the vehicle and electrically connected to one end of said cable means for receiving and transmitting data;

second bi-directional data transfer means electrically connected to the other end of said cable means for receiving and transmitting said data;

energy producing means formed to be mounted within the vehicle and electrically connected to said one end of said cable means for generating a charge current thereon; and

energy storage means electrically connected to said other end of said cable means for receiving and storing the charge current.

4,193,130

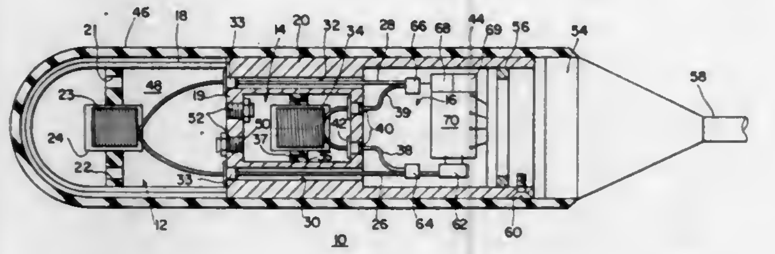
FIBER OPTIC HYDROPHONE FOR USE AS AN UNDERWATER ELECTROACOUSTIC STANDARD

A. Mark Young, Winter Park; Theodore A. Henriquez, and Allan C. Tims, both of Orlando, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 7, 1978, Ser. No. 940,550

Int. Cl.^{2} H04R *23/00*

U.S. Cl. 367—149 **7 Claims**



1. An acousto-optical, hydrostatic pressure and temperature-stable hydrophone comprising:

optical fiber, acoustical energy sensor means assembled within an acoustically transparent chamber;

optical fiber, acoustical energy reference means assembled within an acoustically isolated chamber in axial alignment with said acoustically transparent chamber,

said acoustically transparent chamber and said acoustically isolated chamber including a fluid medium filling the space therein and having an acoustic impedance substantially the same as that of a medium in which said hydrophone is to operate;

acoustically opaque wall means for separating said acoustically transparent chamber from said acoustically isolated chamber; and

means within said wall means for permitting fluid confined within and shared by said chambers to flow between said acoustically transparent chamber and said acoustically isolated chamber to maintain each of said chambers at the same operating pressure and temperature.

4,193,131

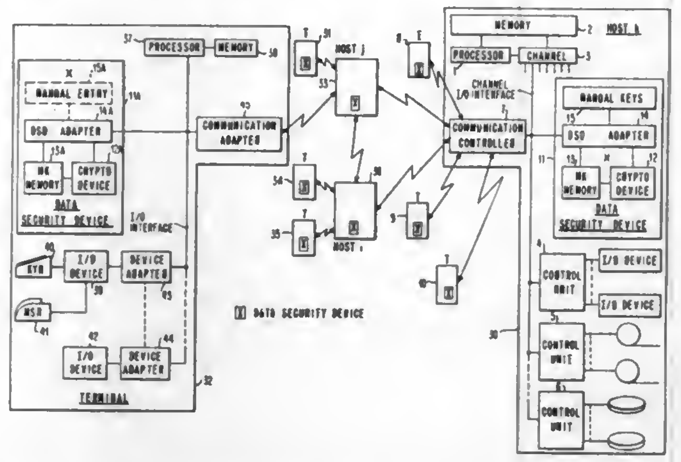
CRYPTOGRAPHIC VERIFICATION OF OPERATIONAL KEYS USED IN COMMUNICATION NETWORKS

Richard E. Lennon, Woodstock; Stephen M. Matyas, Poughkeepsie; Carl H. W. Meyer, Kingston; Jonathan Oseas, Hurley; Paul N. Prentice, Hyde Park, and Walter L. Tuchman, Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,546

Int. Cl.^{2} H04L *9/00*

U.S. Cl. 375—2 **11 Claims**



1. In a data communication network providing communication security for data communication sessions between a first station and a second station where each station has cryptographic apparatus provided with an operational key for cryptographic operations which key is different for each said communication session, a process for operational key verification for each said communication session comprising the steps of:

providing a first pseudo-random number at said first station representing said operational key in enciphered form,

performing a cryptographic operation at said first station to encipher said first pseudo-random number under control of said operational key to obtain a second pseudo-random number having a first portion and a second portion,

modifying one of said portions of said second pseudo-random number in an unpredictable manner to obtain a first verification number having a first portion and second portion with one of said portions being a modification of a corresponding portion of said second pseudo-random number and the other of said portions being identical to the other corresponding portion of said second pseudo-random number,

enciphering said first verification number under control of said operational key at said first station for transmission to said second station,

deciphering said enciphered first verification number under control of said operational key at said second station to provide a second verification number having a first portion and a second portion corresponding to said first and second portions of said first verification number,

inverting one of said portions of said second verification number at said second station to provide a modified second verification number,

enciphering said modified second verification number under control of said operational key at said second station for transmission to said first station, and

performing an operation at said first station in accordance with said first verification number and said enciphered modified second verification number to verify that said second station is the source of the cipher transmission to said first station only if said operational key at said first station is identical to said operational key at said second station.

DESIGNS

MARCH 11, 1980

254,396

FLAT FRANKFURTER

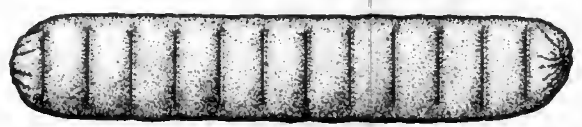
Arthur W. Carlson, 4321 S. Shirley La., Salt Lake City, Utah 84117

Filed Mar. 13, 1978, Ser. No. 886,175

Term of patent 3½ years

Int. Cl. D01—*04*

U.S. Cl. D1—26



254,397

OPEN TOE WEDGIE SNEAKER

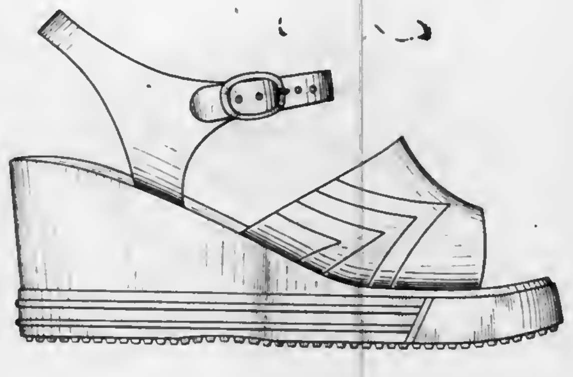
Norman H. Finn, Waban, Mass., assignor to The United States Shoe Corporation, Cincinnati, Ohio

Filed Nov. 2, 1977, Ser. No. 848,377

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—296



254,398

WEDGIE SNEAKER

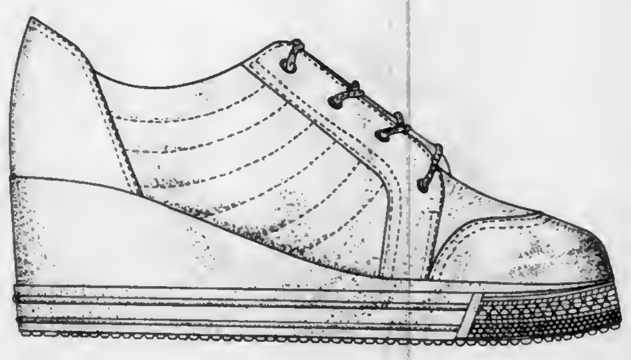
Norman H. Finn, Waban, Mass., assignor to The United States Shoe Corporation, Cincinnati, Ohio

Filed Feb. 7, 1978, Ser. No. 875,947

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—286



254,399

BELT BUCKLE

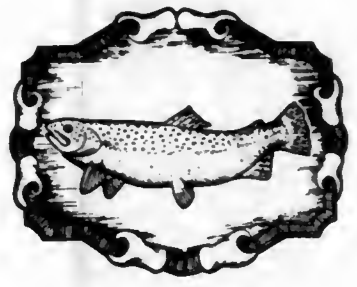
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.

Filed Oct. 28, 1977, Ser. No. 846,611

Term of patent 14 years

Int. Cl. D2—*07*

U.S. Cl. D2—431



254,400

BELT BUCKLE

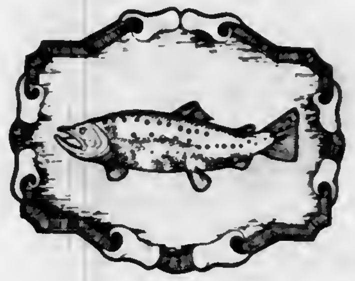
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.

Filed Oct. 28, 1977, Ser. No. 846,612

Term of patent 14 years

Int. Cl. D2—*07*

U.S. Cl. D2—431



254,401

BELT BUCKLE

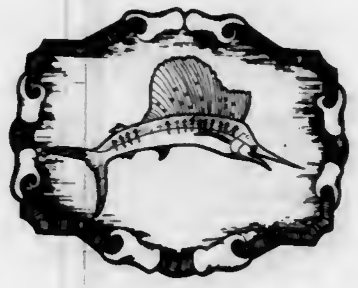
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.

Filed Oct. 28, 1977, Ser. No. 846,613

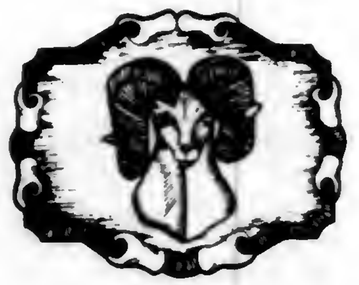
Term of patent 14 years

Int. Cl. D2—*07*

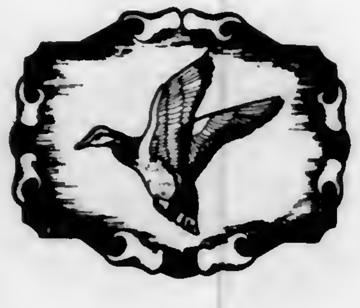
U.S. Cl. D2—431



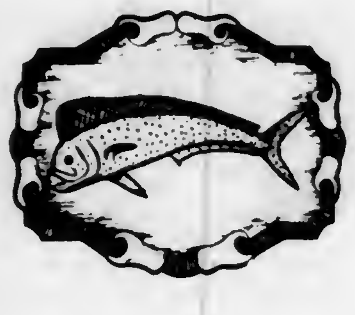
254,402
BELT BUCKLE
Ryk V. Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Oct. 28, 1977, Ser. No. 846,615
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—431



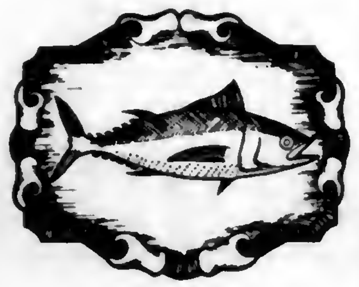
254,403
BELT BUCKLE
Ryk V. Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Oct. 28, 1977, Ser. No. 846,616
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—431



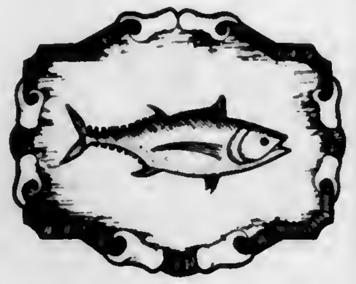
254,404
BELT BUCKLE
Ryk V. Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Oct. 28, 1977, Ser. No. 846,619
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—431



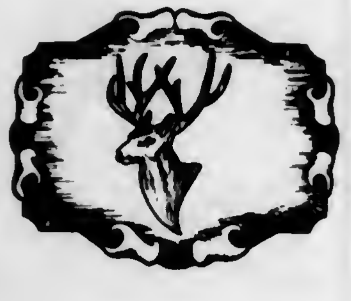
254,405
BELT BUCKLE
Ryk V. Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Oct. 28, 1977, Ser. No. 846,620
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—431



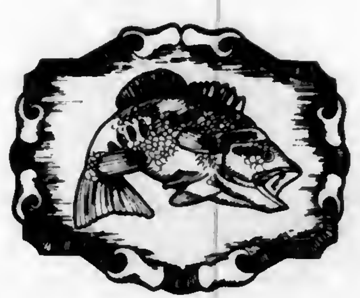
254,406
BELT BUCKLE
Ryk V. Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Oct. 28, 1977, Ser. No. 846,621
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—431



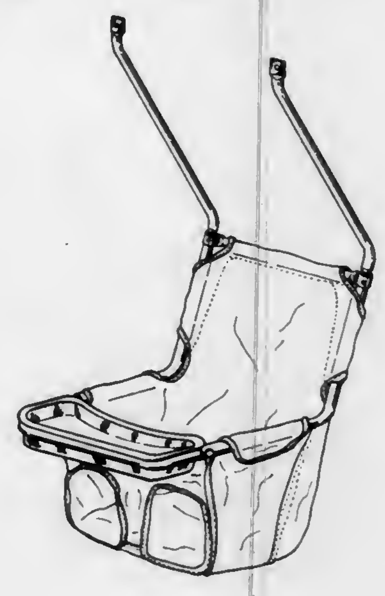
254,407
BELT BUCKLE
Ryk V. Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Oct. 28, 1977, Ser. No. 846,622
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—431



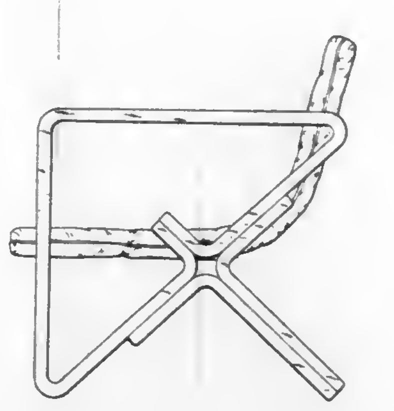
254,408
BELT BUCKLE
Ryk V. Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Oct. 28, 1977, Ser. No. 846,623
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—431



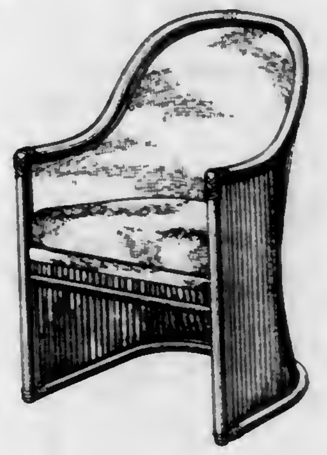
254,409
SEAT FOR BABY SWING
Robert L. Borucki, Jenkintown, Pa., assignor to Graco Metal Products, Inc., Elverson, Pa.
Filed Jan. 27, 1978, Ser. No. 872,897
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—10



254,410
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Division of Ser. No. 677,623, Apr. 16, 1976, which is a division of Ser. No. 677,622, Apr. 16, 1976, which is a division of Ser. No. 677,617, Apr. 16, 1976. This application Feb. 22, 1978, Ser. No. 889,512
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



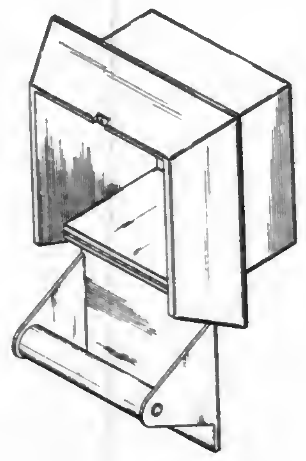
254,411
CHAIR
Henry Olko, Chicken Valley Rd., Locust Valley, N.Y. 11560
Filed Oct. 31, 1977, Ser. No. 847,117
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



254,412
CABINET FOR HOLDING A ROLL OF TOILET PAPER

Kenneth F. Knight, 3125 Glen Garden Dr., N., Ft. Worth, Tex. 76119

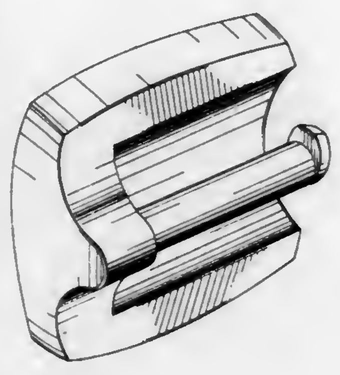
Filed Sep. 22, 1978, Ser. No. 944,925
Term of patent 14 years
Int. Cl. D23—*02;* D6—*04*
U.S. Cl. D6—97



254,413
HOLDER FOR ROLLED PAPER

Dan L. Pool, 5524 N. 39th Ave., Phoenix, Ariz. 85019

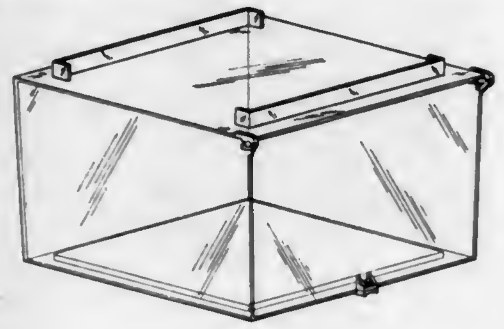
Filed Sep. 21, 1978, Ser. No. 944,627
Term of patent 14 years
Int. Cl. D20—*02*; D23—*02*
U.S. Cl. D6—97



254,414
DISPLAY CASE

Dennis A. Gajewski, West Bend, Wis., assignor to Amity Leather Products Co., West Bend, Wis.

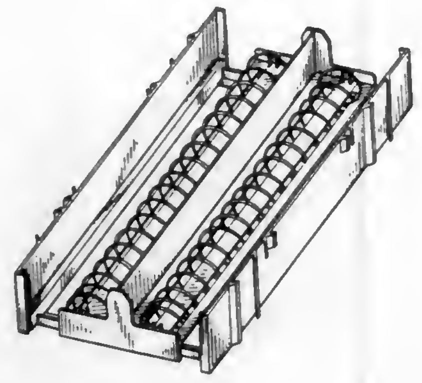
Filed Dec. 5, 1977, Ser. No. 857,376
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*; D9—*03*
U.S. Cl. D6—172



254,415
MODULAR WIDTH ADJUSTABLE, SPRING FED DISPLAY DISPENSING ELEMENT

Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

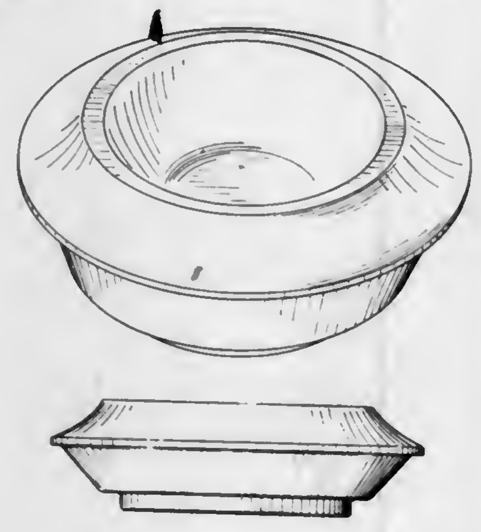
Filed Aug. 1, 1977, Ser. No. 821,050
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



254,416
INSULATED BOWL

Jack Abbate, Brooklyn, N.Y., assignor to Regency Service Carts, Inc., Brooklyn, N.Y.

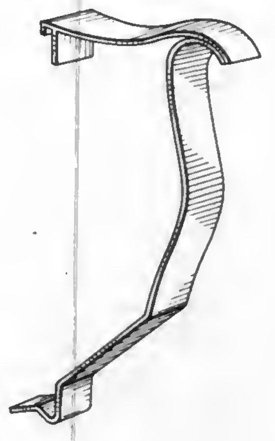
Filed Oct. 25, 1977, Ser. No. 844,697
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—22



254,417
DETACHABLE HANDLE FOR A BEVERAGE CAN OR THE LIKE

Robert A. DeMars, 7328 Alabama Ave., Canoga Park, Calif. 91308, and John D. Thor, 23944 Nomar St., Woodland Hills, Calif. 91367

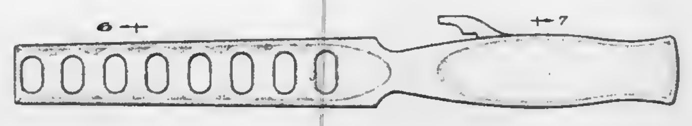
Filed Sep. 23, 1977, Ser. No. 836,226
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—70



254,418
PAINT STIRRING PADDLE

Lowell G. Norenberg, 12301 El Dorado Ave., Sylmar, Calif. 91342

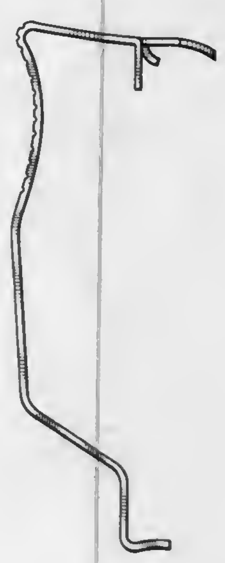
Filed Apr. 24, 1978, Ser. No. 899,367
Term of patent 14 years
Int. Cl. D7—*99;* D8—*05*
U.S. Cl. D7—102



254,419
COMBINED OPENER AND HANDLE FOR A BEVERAGE CAN

Robert A. DeMars, 7328 Alabama Ave., Canoga Park, Calif. 91303, and John D. Thor, 23944 Nomar St., Woodland Hills, Calif. 91367

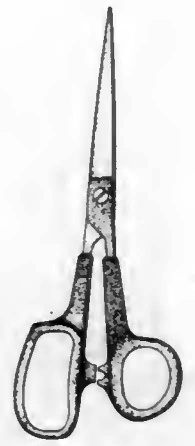
Filed Mar. 13, 1978, Ser. No. 885,689
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—34



254,420
HAIRDRESSER'S SCISSORS

Olof F. Bäckström, Tammisaari, Finland, assignor to Oy Fiskars AB, Helsinki, Finland

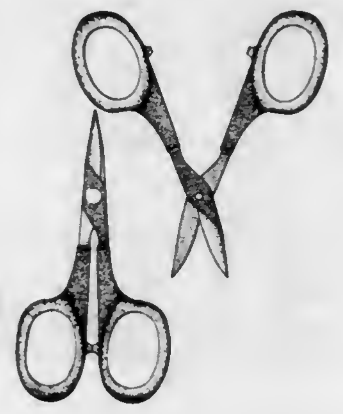
Filed Jun. 7, 1977, Ser. No. 804,406
Claims priority, application Finland, Dec. 9, 1976, 76701
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



254,421
NAIL SCISSORS

Olof F. Bäckström, Tammisaari, Finland, assignor to Oy Fiskars AB, Helsinki, Finland

Filed Jun. 7, 1977, Ser. No. 804,407
Claims priority, application Finland, Dec. 9, 1976, 76702
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57

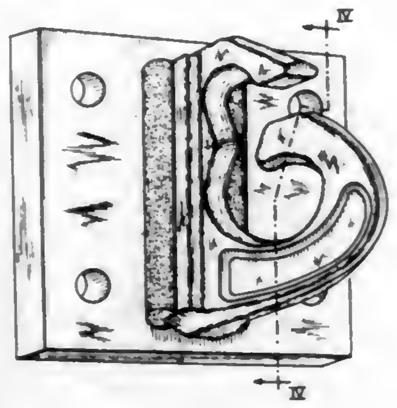


254,422

COMBINED HOOK AND ANCHORAGE PLATE

Lars O. A. Fredriksson, Växjö, Sweden, assignor to K A Bergs Smide AB, Gelma, Sweden

Filed Aug. 20, 1976, Ser. No. 716,192
Claims priority, application Sweden, Mar. 8, 1976, 760519
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367

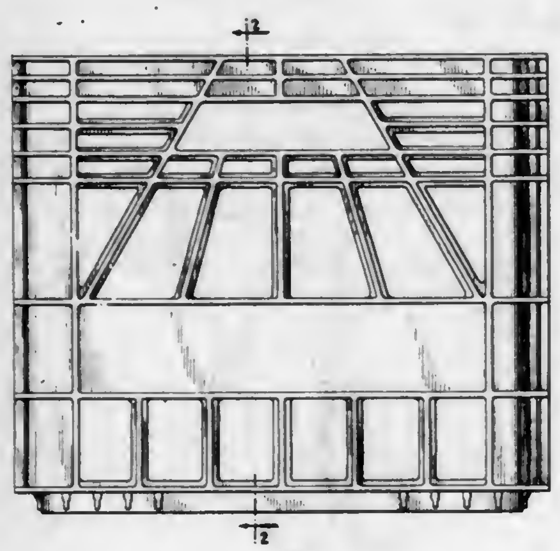


254,423

BOTTLE CRATE

John D. Van Geem, Erie, Pa., assignor to Erie Crate and Manufacturing Company, Erie, Pa.

Filed Apr. 22, 1977, Ser. No. 789,964
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—177

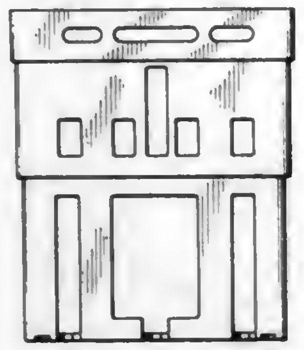


254,424

NESTABLE SHIPPING CONTAINER

William H. Fredrick, 10455 Camarillo, North Hollywood, Calif. 91602

Filed Aug. 22, 1977, Ser. No. 826,320
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—246

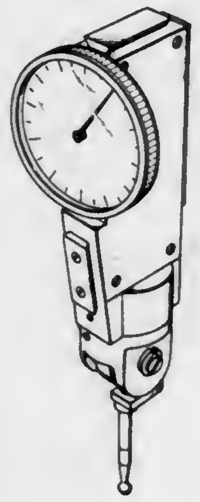


254,425

DIAL INDICATOR

Shingo Nishina, and Tokuzo Nakaoki, both of Kawasaki, Japan, assignors to Mitutoyo Mfg., Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1978, Ser. No. 874,544
Claims priority, application Japan, Aug. 3, 1977, 52-030578
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73

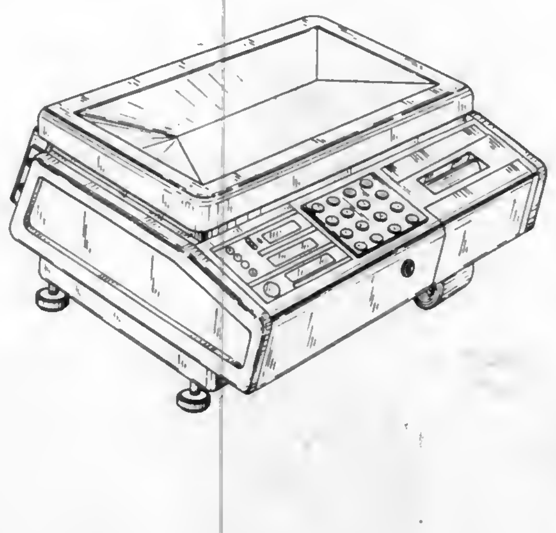


254,426

SCALE

Robert Perrier, Paris, France, assignor to Testut-Aequitas, Paris, France

Filed Jan. 3, 1978, Ser. No. 866,247
Claims priority, application France, Jul. 5, 1977, 77 75818
Term of patent 14 years
Int. Cl. D0—*04*
U.S. Cl. D10—91

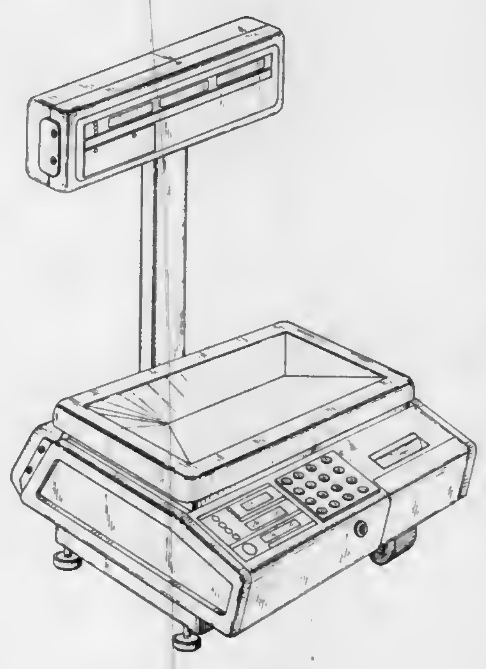


254,427

SCALE

Robert Perrier, Paris, France, assignor to Testut-Aequitas, Paris, France

Filed Jan. 3, 1978, Ser. No. 866,605
Claims priority, application France, Jul. 5, 1977, 77 75818
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91

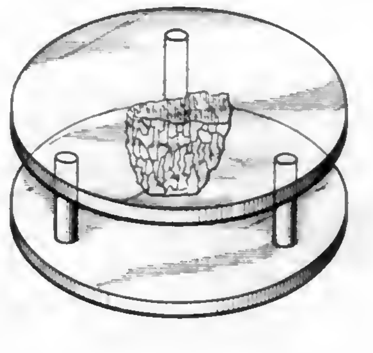


254,428

DESK ORNAMENT OR SIMILAR ARTICLE

Mark A. Lasowski, 14501 Torrence, Burnham, and Richard Lasowski, 13247 S. Commercial, Chicago, both of Ill. 60633

Filed Sep. 12, 1977, Ser. No. 832,545
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

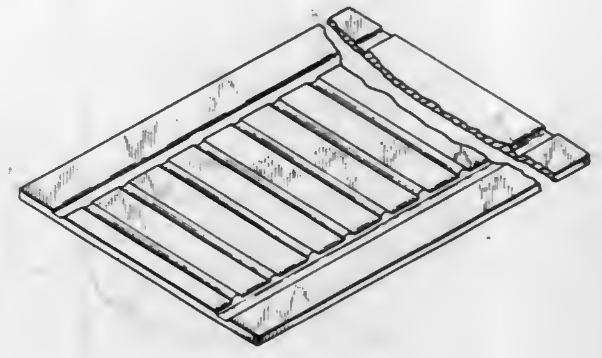


254,429

CONVEYOR BELT

Frank B. Summers, Jr., Marblehead, Mass., assignor to Fabreeka Products Company, Boston, Mass.

Filed Oct. 25, 1977, Ser. No. 844,705
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60

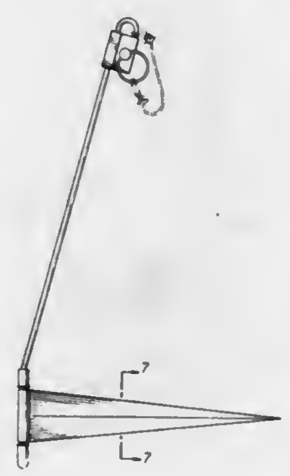


254,430

CATAMARAN WIND VANE

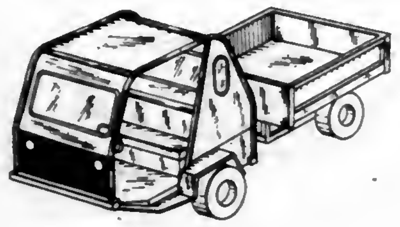
James M. Coffey, 320 E. Walnut Ave., El Segundo, Calif. 90245

Filed Feb. 24, 1978, Ser. No. 881,074
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—70



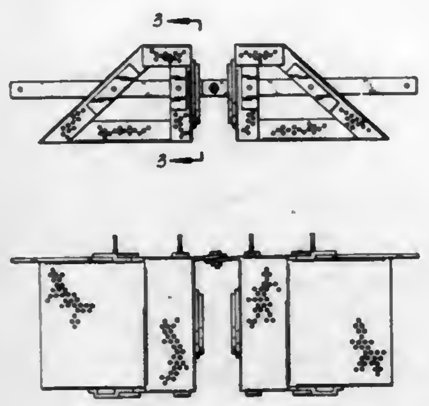
254,431
UTILITY VEHICLE

Roy F. Broyhill; James Parsons, both of Dakota City, Nebr.; Ralph Schroeder, Sioux City, Iowa, and Clarence E. Stewart, South Sioux City, Nebr., assignors to The Broyhill Manufacturing Company, Wayne, Nebr.
Filed Sep. 14, 1977, Ser. No. 833,236
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—97



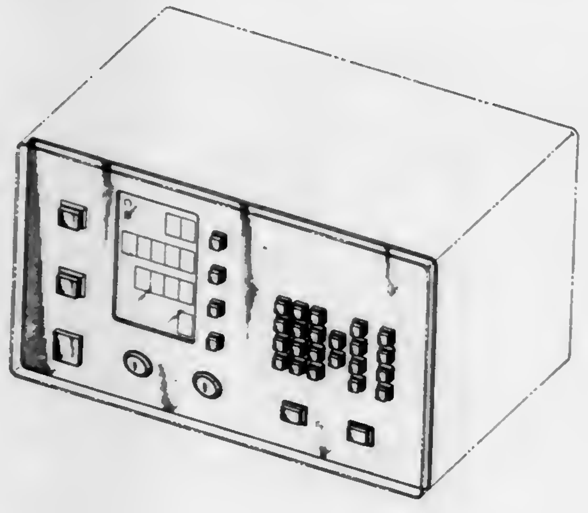
254,432
WHEEL CHOCK UNIT

Ronald G. Schessl, P.O. Box 1593, Edmond, Okla. 73034
Filed Feb. 6, 1978, Ser. No. 875,605
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—217



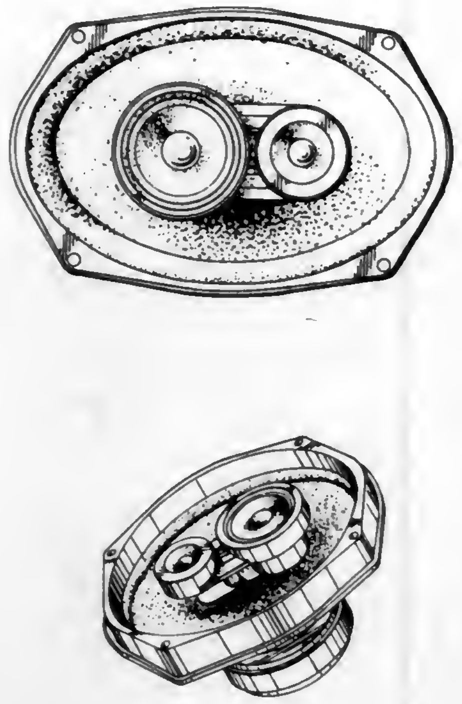
254,433
BENDING PRESS GAUGE CONTROL PANEL

Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.
Filed Feb. 27, 1978, Ser. No. 881,874
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12



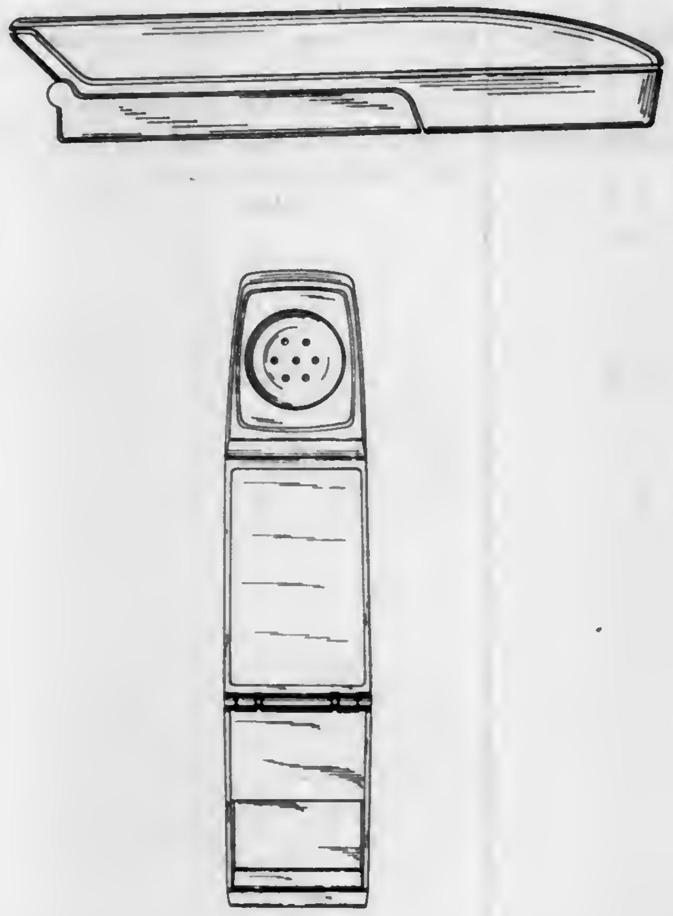
254,434
LOUDSPEAKER

Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 9, 1978, Ser. No. 959,200
Claims priority, application Japan, May 10, 1978, 53-19181
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30



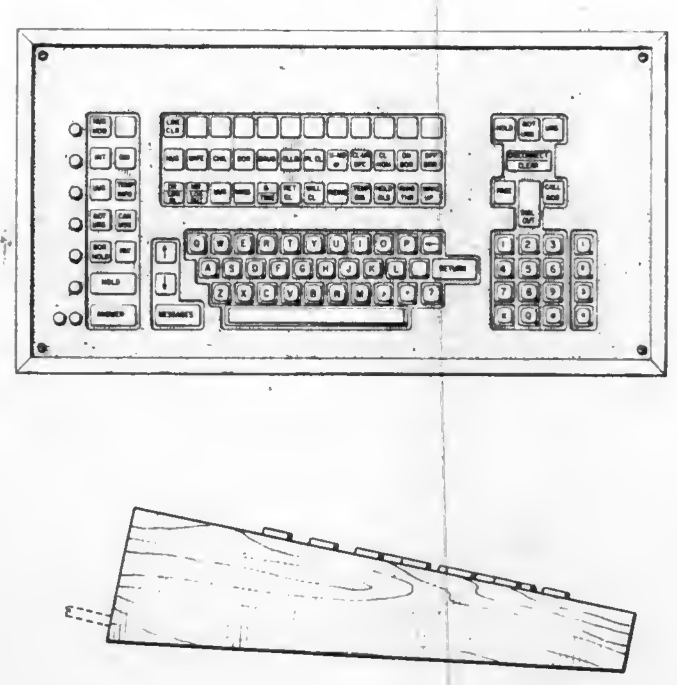
254,435
HOUSING FOR A TELEPHONE SET

James R. Ferron, Warsaw, N.Y., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Nov. 9, 1977, Ser. No. 849,832
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



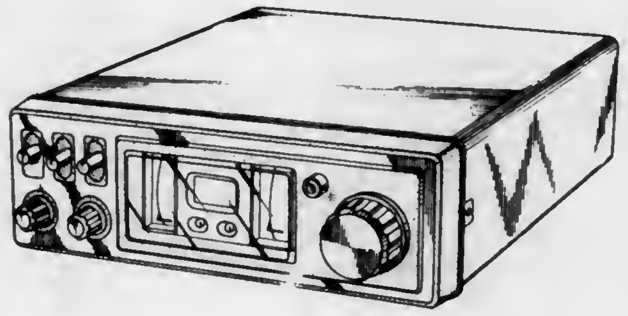
254,436
SWITCHBOARD CONSOLE FOR A TELECOMMUNICATIONS SYSTEM

Peter A. Bakal, 39 Wallace St., Scotia, N.Y. 12302
Filed Aug. 8, 1977, Ser. No. 822,757
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58



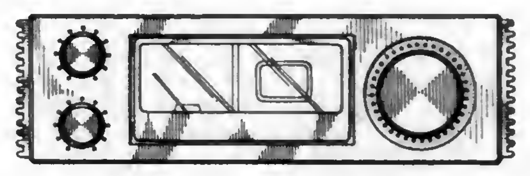
254,437
MOTOR VEHICULAR CITIZENS' BAND TRANSCEIVER

Kikuo Ohta, Katano; Kunio Hoshino, Kadoma, and Tsutomu Murakami, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza-Kadoma, Japan
Filed Jul. 20, 1977, Ser. No. 817,286
Claims priority, application Japan, Jan. 20, 1977, 52-1482
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



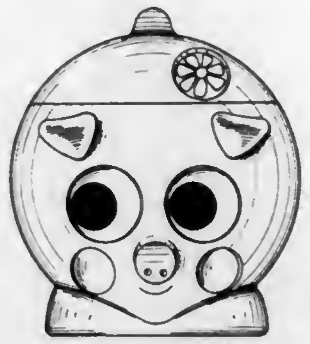
254,438
MOTOR VEHICULAR CITIZENS' BAND TRANSCEIVER

Kunio Hoshino, Kadoma, and Kikuo Ohta, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Inc., Kadoma, Japan
Filed Jul. 20, 1977, Ser. No. 817,291
Claims priority, application Japan, Jan. 20, 1977, 52-1480
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



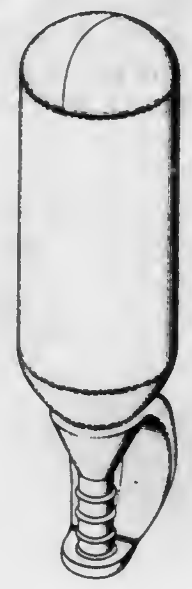
254,439
TOY CHEST

John R. Nottingham, 2997 Washington Blvd., Cleveland Heights, Ohio 44118, and John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106
Filed Aug. 22, 1977, Ser. No. 826,883
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—121



254,440
GAME CLUB WITH UNITARY HANDLE

Carl W. Reinhard, La Canada, Calif., assignor to Bataca, Inc., La Canada, Calif.
Filed Sep. 20, 1977, Ser. No. 835,040
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—211

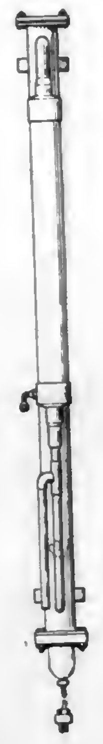


254,441

WATER DISTILLER

Kenneth D. Lemoine, Box 476, Gravette, Ark. 72736
Filed Jun. 2, 1977, Ser. No. 802,360
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—3

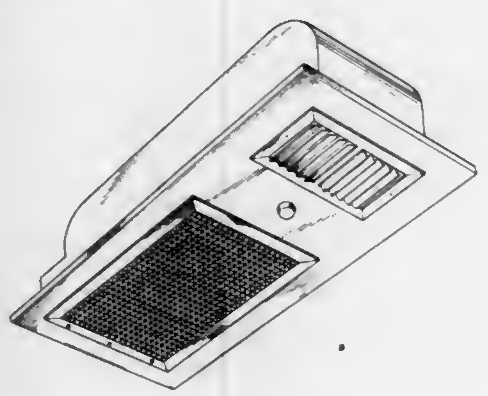


254,442

AIR CLEANER

David P. Cervone, 89 Indianola Rd., Youngstown, Ohio 44542
Filed Sep. 26, 1977, Ser. No. 836,548
Term of patent 14 years
Int. Cl. D23—*04*

U.S. Cl. D23—149

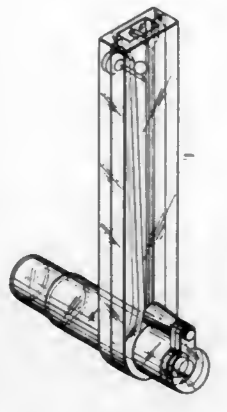


254,443

PEAK EXPIRATORY FLOW METER OR SIMILAR ARTICLE

Jim M. Adams, Mt. Pleasant, S.C., assignor to Projects in Health, Inc., Princeton, N.J.
Filed Jan. 26, 1978, Ser. No. 872,699
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—17

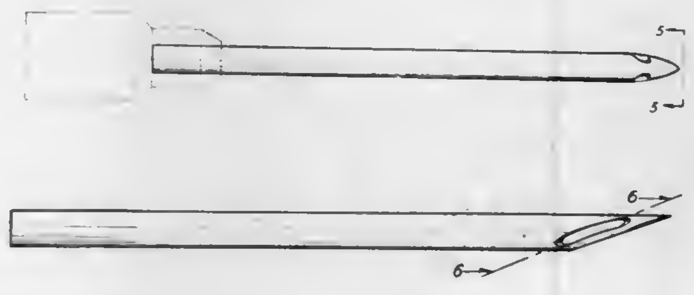


254,444

BLOOD SAMPLING NEEDLE

Robert A. Levine, 31 Pilgrim La., Guilford, Conn. 06437
Filed Sep. 1, 1977, Ser. No. 829,850
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—54

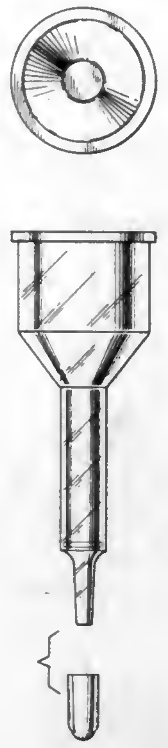


254,445

CHROMATOGRAPHY COLUMN

Robert A. Boghosian, Parsippany, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Aug. 25, 1977, Ser. No. 827,754
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D24—56

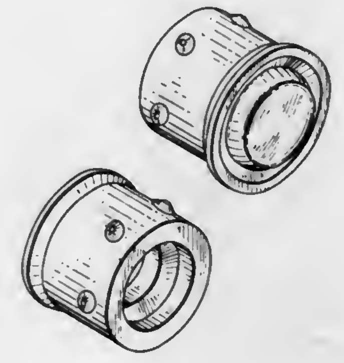


254,446

BLOOD GAS SYRINGE STOPPER

Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Keene, N.H.
Continuation-in-part of Ser. No. 701,609, Jul. 6, 1976, Pat. No. D. 248,873. This application Apr. 14, 1978, Ser. No. 896,328
The portion of the term of this patent subsequent to Aug. 8, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D24—*99*

U.S. Cl. D24—99

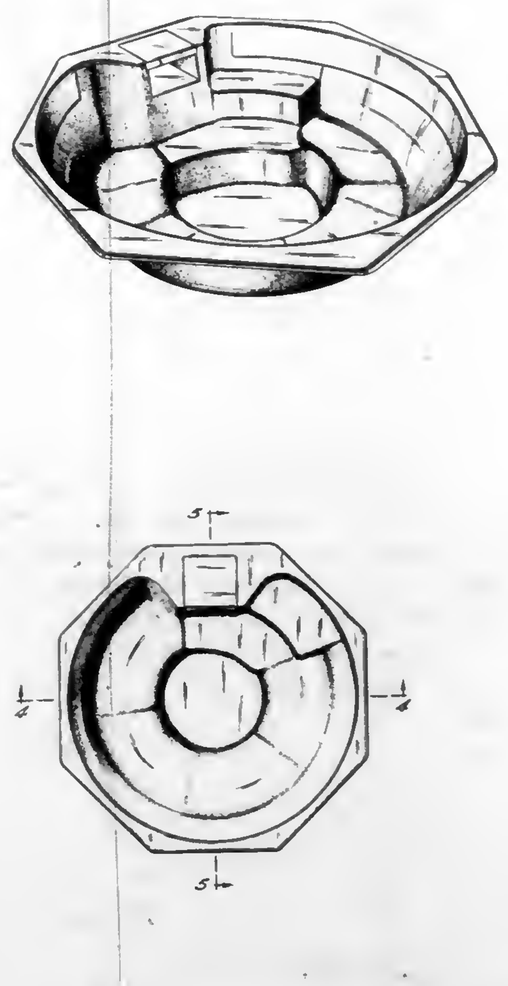


254,447

HYDROTHERAPY SPA

Richard G. Reineman, Newport Beach, Calif., assignor to Marlin Fiberglass, Huntington Beach, Calif.
Continuation-in-part of Ser. No. 5,911, Jan. 23, 1979, abandoned. This application Jun. 11, 1979, Ser. No. 47,274
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*

U.S. Cl. D24—38

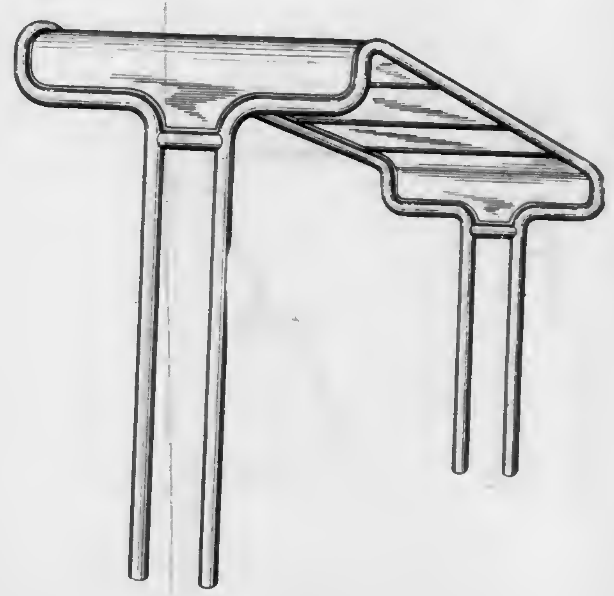


254,448

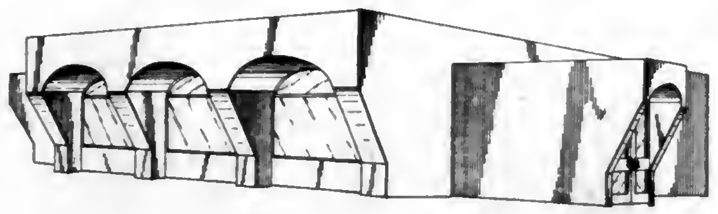
SHELTER

Richard Dattner, 180 Cabrini Blvd., New York, N.Y. 10033
Filed Jan. 13, 1978, Ser. No. 869,202
Term of patent 14 years
Int. Cl. D25—*99*

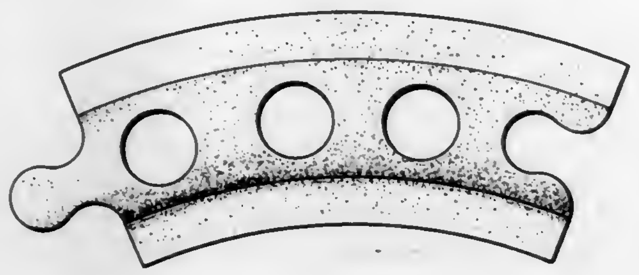
U.S. Cl. D25—18



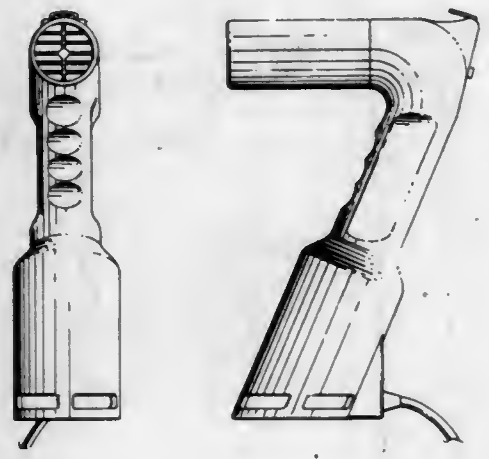
254,449
BUILDING
Peter J. Doukas, 2230 Harford Ct., Waldorf, Md. 20601
Filed Jun. 15, 1977, Ser. No. 806,662
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—33



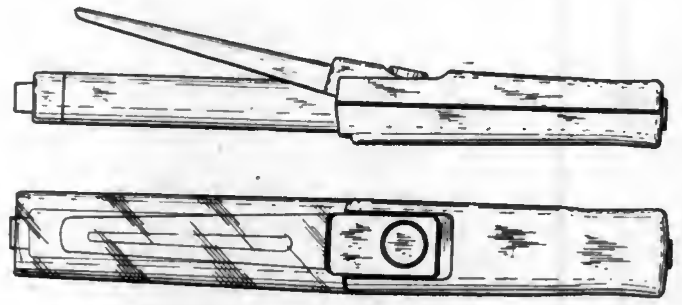
254,450
BUILDING BLOCK
Herschel F. Pulse, R.R. 2, Elwood, Ind. 46036; William F. McSherry, 810 Hillside Dr., Anderson, Ind. 46012, and Forrest E. McMahan, 1110 N. Anderson St., Elwood, Ind. 46036
Filed Nov. 7, 1977, Ser. No. 849,091
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—89



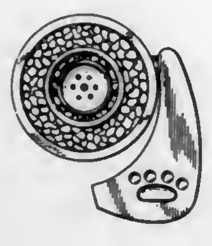
254,451
HAND HELD HAIR DRYER
Anthony Battaglia, 455 NW. 202nd Ter., Miami, Fla. 33100
Filed Sep. 16, 1977, Ser. No. 834,142
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13

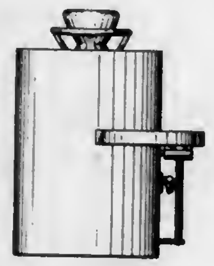


254,452
CURLING IRON
William J. Rakocy, Nutley, N.J., and Howard L. Rauch, Brooklyn, N.Y., assignors to North American Philips Corporation, New York, N.Y.
Filed Dec. 7, 1977, Ser. No. 858,367
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35

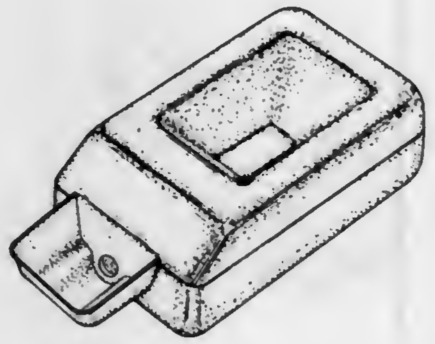


254,453
PET FOUNTAIN
Robert W. Strong, 219 Clinton Ave., Brooklyn, N.Y. 11205
Filed Aug. 23, 1978, Ser. No. 935,954
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

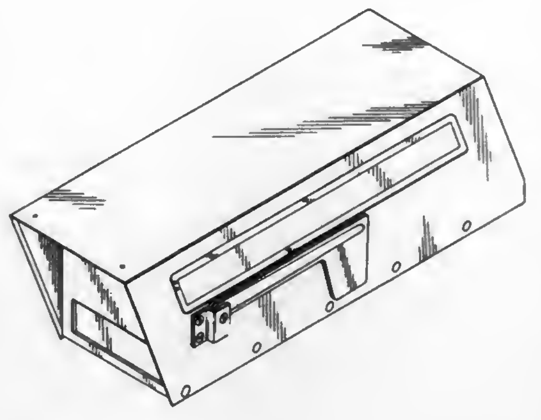




254,454
COMBINED FEEDER AND WATERER FOR PETS
George D. Clugston, R.R. #3, Box 203, Pittsburg, Kans. 66762
Filed Oct. 30, 1978, Ser. No. 956,255
Term of patent 14 years
Int. Cl.² D30—*03*
U.S. Cl. D30—16



254,455
MAILBOX
Alexander M. Cornwell, Jr., St. Louis, and Joseph N. Miller, Overland, both of Mo., assignors to Jackes-Evans Manufacturing Company, St. Louis, Mo.
Filed Nov. 14, 1977, Ser. No. 851,540
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—29



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF MARCH, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. E. Staley Manufacturing Company: *See—*
  - Bomball, William A.; and Swift, Thomas G., 4,192,783, Cl. 260-8.000.
- A. H. Robins Company, Incorporated: *See—*
  - Cloyd, Grover D.; Miller, Robert L.; and Lucas, Donald M., 4,192,887, Cl. 424-283.000.
  - Melby, William E.; Isdale, Charles E., Sr.; and Collins, Vernon K., 4,192,916, Cl. 435-274.000.
- A. L. Lee Corporation: *See—*
  - Lee, Arthur L.; and Coval, Arthur B., 4,192,405, Cl. 188-170.000.
- A-T-O Inc.: *See—*
  - Latina, Roland N., 4,192,018, Cl. 2-19.000.
- Ab Gothenburg Motor: *See—*
  - Barth, Aksel, 4,192,621, Cl. 403-15.000.
- Abbott Laboratories: *See—*
  - Genese, Joseph N., 4,192,306, Cl. 128-214.400.
  - Martin, Jerry R.; Tadanier, John S.; and Collum, Paulette, 4,192,867, Cl. 424-180.000.
  - Seberg, Charles H., 4,192,305, Cl. 128-214.400.
- Abe, Naoto: *See—*
  - Sakamoto, Eiichi; Ishihara, Masao; Nakazato, Kazuo; Yamada, Hiroshi; Terada, Sadatugu; Kitahara, Kenichi; Abe, Naoto; Komiya, Mamoru; and Kanbe, Masaru, 4,192,683, Cl. 430-536.000.
- ACF Industries, Incorporated: *See—*
  - Berkbigler, Kenneth A., 4,192,834, Cl. 261-52.000.
- Achen, John J. Paint mixing table. 4,192,362, Cl. 141-177.000.
- Adams, Donald L. Rod out valve. 4,192,342, Cl. 137-245.500.
- Adams, John B., Jr.; and Wommack, Joel B., Jr., to Du Pont de Nemours, E. I., and Company. Herbicidal ethers. 4,192,669, Cl. 71-108.000.
- Admiral Corporation: *See—*
  - Counts, William H., 4,193,094, Cl. 358-190.000.
- Aesculap-Werke Aktiengesellschaft vormals Jetter & Scheerer: *See—*
  - Hilzinger, Fritz; and Schwarz, Theodor, 4,192,315, Cl. 128-346.000.
- Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
  - Derouette, Jean-Jacques; Dartoy, Jacques; Fournier, Jacques; and Vollerin, Bernard, 4,192,371, Cl. 165-1.000.
- AGFA-Gevaert, A.G.: *See—*
  - Wagensonner, Eduard; Rieder, Alois; and von Fischern, Bernhard, 4,192,588, Cl. 354-43.000.
- AGFA-Gevert, A.G.: *See—*
  - Fergg, Berthold; Findeis, Gunter; and Zahn, Wolfgang, 4,192,605, Cl. 355-38.000.
- Aghishian, Noubar A.: *See—*
  - Khan, Mahboob; Godejahn, Jr. Gordan C.; Heimbigner, Gary L.; and Aghishian, Noubar A., 4,192,059, Cl. 29-571.000.
- Agostinelli, Agostino. Paper log roller. 4,192,226, Cl. 93-1.00C.
- Aichert, Hans; Stark, Friedrich; Stephan, Herbert; and Hoffmann, Otto-Horst, to Leybold-Hereaus GmbH. Vacuum coating apparatus. 4,192,253, Cl. 118-712.000.
- Air Preheater Company, Inc., The: *See—*
  - Bellows, Kenneth O., 4,192,372, Cl. 165-5.000.
- Aisin Seiki Co., Ltd.: *See—*
  - Hida, Takashi; Mitsui, Tsutomu; Hashiride, Tadaaki; and Kuwana, Kazutaka, 4,192,157, Cl. 66-76.000.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Fujii, Takashi; Ohmi, Atsushi; Nogami, Tomoyuki; and Ohta, Takaaki, 4,192,345, Cl. 137-572.000.
- Ajax Manufacturing Company, The: *See—*
  - Mersek, Leo D.; and Rettig, Peter P., 4,192,172, Cl. 72-420.000.
- AKG Akustische u. Kino-Gerate Gesellschaft m.b.H.: *See—*
  - Stamm, Kurt, 4,192,977, Cl. 179-111.00E.
- Akzona Incorporated: *See—*
  - Beck, Heinz; Frassek, Karl H.; Holtvoigt, Werner; and Mukerjee, Ambar, 4,192,930, Cl. 525-227.000.
  - Junger, Rudolf; and Maulhardt, Hans-Joachim, 4,192,760, Cl. 252-79.000.
- Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Rare earth exchange faujasite zeolite catalyst containing same and process for producing same. 4,192,778, Cl. 252-455.00Z.
- Albany International Corporation: *See—*
  - Davis, Robert B.; Skelton, John; Clark, Richard E.; and Swanson, Wilbur M., 4,192,020, Cl. 3-1.500.
- Albert Klein KG: *See—*
  - Bastgen, Wendel; Schreiber, Helmut; and Grumbel, Eugen, 4,192,743, Cl. 210-42.00R.
- Albus, James S., to United States of America, Commerce. Method and apparatus for implementation of the CMAC mapping algorithm. 4,193,115, Cl. 364-300.000.
- Alderson, Loren L.; and Truesdell, Delbert E., to Cessna Aircraft Company, The. Priority flow valve. 4,192,337, Cl. 137-101.000.
- Aldridge, Clyde L.; and Bearden, Roby, Jr., to Exxon Research & Engineering Co. Hydrocracking of hydrocarbons. 4,192,735, Cl. 208-112.000.
- Alicot, Michel J. C.; Rhode, Rene H. P.; and Tignol, Adrien P. N., to Produits Chimiques Ugine Kuhlmann Service Propriete Industrielle. Process for the purification of mercaptobenzothiazole. 4,192,804, Cl. 548-177.000.
- Allais, Andre; Meier, Jean; and Dube, Jacques, to Roussel Uclaf. Novel benzoylphenylacetic acid esters. 4,192,890, Cl. 424-308.000.
- Allely, Robert, to Massey-Ferguson Services N.V. Agricultural mower. 4,192,123, Cl. 56-13.600.
- Allen, Grant W.: *See—*
  - Stevens, John M.; Allen, Grant W.; Cole, John M.; and Mousseau, Timothy K., 4,192,992, Cl. 219-494.000.
- Allibert Exploitation, Societe Anonyme: *See—*
  - Cornou, Jean, 4,192,430, Cl. 220-1.500.
- Allied Chemical Corporation: *See—*
  - Cachia, Joseph M., 4,192,530, Cl. 280-802.000.
  - Marshall, Robert M.; and Dardoufas, Kimon C., 4,192,754, Cl. 252-8.800.
  - Sweeney, Richard F.; and Sukornick, Bernard F., 4,192,822, Cl. 260-653.000.
  - Tajkowski, Edward G., 4,192,923, Cl. 521-117.000.
- Allis-Chalmers Corporation: *See—*
  - Goldman, Holliday L.; and Winther, Svend E., 4,192,482, Cl. 251-56.000.
- Allison, Gaylord D.: *See—*
  - Blessing, Hubert; and Allison, Gaylord D., 4,192,243, Cl. 112-273.000.
- Allsop, Jon I. Shoe display apparatus. 4,192,424, Cl. 211-37.000.
- Alston, Robert B.: *See—*
  - Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., 4,192,755, Cl. 252-8.55D.
  - Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., 4,192,767, Cl. 252-312.000.
- Alternative Pioneering Systems, Inc.: *See—*
  - Erickson, Chad S.; and Dornbush, David A., 4,192,081, Cl. 34-225.000.
- Altman Associates, Inc.: *See—*
  - Altman, Norman G., 4,193,087, Cl. 358-93.000.
- Altman, Norman G., to Altman Associates, Inc. System for automatically digitizing engineering drawings. 4,193,087, Cl. 358-93.000.
- Aluminum Pechiney: *See—*
  - Volpeliere, Jacky, 4,192,435, Cl. 220-331.000.
- Alza Corporation: *See—*
  - Michaels, Alan S., 4,192,308, Cl. 128-260.000.
- Alzhanov, Tleubai M.: *See—*
  - Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.
- Amano, Masuo; and Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion promoting device of a multi-cylinder engine. 4,192,265, Cl. 123-119.00A.
- Amatangelo, Paul C.: *See—*
  - Perun, William D.; and Amatangelo, Paul C., 4,192,497, Cl. 271-18.000.
- AMBA Marketing Systems, Inc.: *See—*
  - Siegel, Milton I., 4,192,365, Cl. 150-35.000.
- Ambrosat, Ernest O.; and Weingartner, Arthur, to Victor Envelope Company. Multi-compartment envelope. 4,192,447, Cl. 229-72.000.
- Amemiya, Akira: *See—*
  - Yoshikawa, Yoshio; Nawata, Takanari; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, 4,192,773, Cl. 252-429.00R.
- Amerace Corporation: *See—*
  - Stanger, Robert J.; and Siebens, Larry N., 4,192,572, Cl. 339-111.000.
- American Cyanamid Company: *See—*
  - Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., 4,192,950, Cl. 562-500.000.
  - Heffernan, William R.; Vega, Mary-Louise; and Rockwell, Edward T., Sr., 4,193,109, Cl. 362-34.000.
  - Mosby, William L.; and Hardy, William B., 4,192,796, Cl. 260-45.85S.
  - Wang, Samuel S.; and Smith, Eugene L., Jr., 4,192,739, Cl. 209-166.000.
  - Wright, William B., Jr.; and Hardy, Robert A., Jr., 4,192,803, Cl. 260-243.300.

- American District Telegraph Company: *See—*
  - Cooper, Glenn F.; and Enemark, Robert B., 4,193,069, Cl. 340-630.000.
- American Hoechst Corporation: *See—*
  - Glamkowski, Edward J.; and Fortunato, James M., 4,192,874, Cl. 424-248.540.
- AMF Incorporated: *See—*
  - Knepper, William H., Jr., 4,192,034, Cl. 15-21.00A.
- Amick, David R., to Rohm and Haas Company. Uniform polymer beads and ion exchange resins therefrom prepared by post-crosslinking of lightly crosslinked beads. 4,192,920, Cl. 521-31.000.
- Amick, James A.: *See—*
  - Bucker, Edward R.; and Amick, James A., 4,192,720, Cl. 204-14.00N.
- AMP Incorporated: *See—*
  - Bickford, David E.; Southard, Robert K.; Sucheski, Matthew M.; and Wagner, Earl W., 4,192,207, Cl. 83-42.000.
  - Laudig, Ronald C.; and Morelli, John A., 4,192,566, Cl. 339-47.00R.
  - Marks, Richard L.; and Weidler, Charles H., 4,192,568, Cl. 339-91.00R.
- AMSTED Industries Incorporated: *See—*
  - Korpics, Frank J., 4,192,240, Cl. 105-225.000.
  - Wykoff, Richard H., 4,192,747, Cl. 210-83.000.
- Anamet Laboratories, Inc.: *See—*
  - Holt, Neil L., 4,192,194, Cl. 73-794.000.
- Anchor Hocking Corporation: *See—*
  - Oglesbee, Richard K., 4,192,421, Cl. 206-426.000.
- Anderson, Phillip R.: *See—*
  - Hodges, Frank P.; Fowler, Harold W.; and Anderson, Phillip R., 4,192,246, Cl. 114-23.000.
- Anderson, Ralph. Anorectal medication. 4,192,866, Cl. 424-154.000.
- Anderson, Robert L.: *See—*
  - Lobdell, Donn D.; Herman, Stephen J.; Anderson, Robert L.; and Goyne, Thomas E., 4,193,004, Cl. 250-577.000.
- Anner, Georg; and Wehrli, Hansuli, to Ciba-Geigy Corporation. Process for the manufacture of steroid carboxylic acid lactones. 4,192,802, Cl. 260-239.570.
- Anonima Castelli S.p.A.: *See—*
  - Hell, Hans, 4,192,106, Cl. 52-36.000.
- Anthon, Erik W., to Optical Coating Laboratory, Inc. Photometric testing apparatus using shaped diffuser and light beam having a spatially ill-defined energy distribution. 4,192,995, Cl. 250-338.000.
- Anthony, Andrew J., to Combustion Engineering Inc. Peripheral pin alignment system for fuel assemblies. 4,192,716, Cl. 176-78.000.
- Antoniuk, Andrew V.; Hankinson, Lawrence V.; Boulter, David M.; and McMillan, William R., to Celanese Canada Limited. Method to express liquid from wet fibrous material. 4,192,228, Cl. 100-37.000.
- Aoki, Eiichiro: *See—*
  - Yamaga, Eiichi; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichiro; Oya, Akiyoshi; and Uchiyama, Yasuji, 4,192,211, Cl. 84-1.010.
  - Yamaga, Eiichi; Aoki, Eiichiro; and Imamura, Akio, 4,192,212, Cl. 84-1.030.
- Aoki, Mitsugu; Konishi, Yoshikazu; and Ishihara, Taketoshi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Ophthalmometer. 4,192,582, Cl. 351-30.000.
- Apel, Richard L. Floatable bedding. 4,192,254, Cl. 119-1.000.
- Appenzeller, Valentin, to Kusters, Eduard. Method of making a helically grooved roller. 4,192,050, Cl. 29-148.40D.
- Application des Gaz: *See—*
  - Vache, Marcel, 4,192,284, Cl. 126-38.000.
- Applied Technologies Associates: *See—*
  - Van Steenwyk, Donald H.; Cash, John R.; and Ott, Paul W., 4,192,077, Cl. 33-313.000.
- Araki, Yoshitaka: *See—*
  - Sato, Akihiko; and Araki, Yoshitaka, 4,192,598, Cl. 354-153.000.
- Arase, Shingo; and Lahr, Roy J., to Xerox Corporation. Apparatus for assisting in the transposition of foreign language text. 4,193,119, Cl. 364-900.000.
- Araya, Takeshi: *See—*
  - Udagawa, Tsugio; Araya, Takeshi; and Yoshida, Takashi, 4,192,986, Cl. 219-137.00R.
- Arborg, Ole J. M. Propelling nozzle for means of transport in air or water. 4,192,461, Cl. 239-265.170.
- Arcair Company: *See—*
  - Gale, Paul E.; and Toth, Endre L., 4,193,021, Cl. 318-568.000.
- Archer, Henry W.: *See—*
  - Phillips, Clarence A. L.; and Archer, Henry W., 4,192,668, Cl. 71-70.000.
- ARCO Medical Products Company: *See—*
  - Walters, Robert A.; Johnson, William L.; and Bivins, Gary W., 4,192,316, Cl. 128-419.0PG.
- Arendt, Hans F. Device for sealing an aperture in a partition wall through which a rotating drum extends. 4,192,518, Cl. 277-27.000.
- Arent, Asa S. Solar water heater. 4,192,291, Cl. 126-439.000.
- Armanini, Louis, to Mearl Corporation, The. Metal oxide platelets as nacreous pigments. 4,192,691, Cl. 106-291.000.
- Armco Inc.: *See—*
  - Kirkland, Kerry G.; and Masciopinto, Anthony J., 4,192,383, Cl. 166-341.000.
  - Martin, Mulford, Jr., 4,192,113, Cl. 52-282.000.
- Armstrong, Allen E.; and McCullough, John E., to Arthur D. Little, Inc. Scroll-type fluid displacement apparatus with peripheral drive. 4,192,152, Cl. 62-402.000.
- Arnaud, Henry, to Regie Nationale des Usines Renault. Apparatus for the recirculation of the exhaust gases of internal combustion engines. 4,192,264, Cl. 123-119.00A.
- Arriaza, Ramon E.: *See—*
  - Ay, Leo E.; and Arriaza, Ramon E., 4,192,173, Cl. 73-11.000.
- Arthur D. Little, Inc.: *See—*
  - Armstrong, Allen E.; and McCullough, John E., 4,192,152, Cl. 62-402.000.
- Arvanitakis, Kostas S. Liquid clarification system. 4,192,746, Cl. 210-73.00S.
- Arvin Industries, Inc.: *See—*
  - Williams, Ronald S.; and Hill, Robert S., 4,192,531, Cl. 285-222.000.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
  - Gensho, Takahashi; Masamitsu, Yanai; Masakazu, Kurihara; Yoneharu, Tanaka; and Kazuhiro, Suzuoki, 4,192,684, Cl. 430-284.000.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Karikawa, Tohru, 4,192,600, Cl. 354-212.000.
  - Tokutomi, Seijiro, 4,192,589, Cl. 354-53.000.
- Asanuma, Katsumi: *See—*
  - Oidaira, Toshiaki; Asanuma, Katsumi; Yanagimoto, Takekazu; Yasui, Senzi; Saito, Kozo; and Hakamata, Yoshio, 4,192,594, Cl. 354-90.000.
- Ashland Oil, Inc.: *See—*
  - Carlos, Donald D., 4,192,812, Cl. 260-406.000.
- Aspro, Inc.: *See—*
  - Stoner, Larry L., 4,192,412, Cl. 192-105.0CD.
- Asrican, Manfred. Cardiac assist device. 4,192,293, Cl. 128-1.00D.
- Associated Engineering Limited: *See—*
  - Hunt, Norman, 4,192,398, Cl. 180-178.000.
- Atari, Inc.: *See—*
  - Rains, Lyle V.; Bristow, Stephen D.; and Patak, Richard J., 4,192,507, Cl. 273-311.000.
  - Romano, John V., 4,193,108, Cl. 361-399.000.
- Atlantic Richfield Company: *See—*
  - Smith, Robert H., 4,192,652, Cl. 44-10.00R.
  - Worrell, G. Richard; and McKay, Frank F., Jr., 4,192,656, Cl. 48-192.000.
  - Worrell, G. Richard, 4,192,657, Cl. 48-192.000.
  - Worrell, G. Richard, 4,192,658, Cl. 48-192.000.
- Atlas Products, Inc.: *See—*
  - Wyckoff, Frank K.; and Silver, Roger C., 4,192,626, Cl. 404-123.000.
- Atomic Products Corporation: *See—*
  - Foster, Edward H.; and Reiss, James M., 4,192,438, Cl. 222-5.000.
- Auerbach, Richard: *See—*
  - Greenberg, Harry; and Auerbach, Richard, 4,193,077, Cl. 343-747.000.
- Austermann, John F., Jr.; and Pack, Jerome E., to Lear Siegler, Inc. Vehicle axle including endways opening axle end. 4,192,396, Cl. 180-252.000.
- Automatic Tool Company, Inc.: *See—*
  - Hamilton, Jerry W., 4,192,171, Cl. 72-416.000.
- Automatik Apparate-Maschinenbau H. Hench GmbH: *See—*
  - Hunke, Friedrich; and Philipp, Heinz, 4,192,635, Cl. 425-71.000.
- Automation 2000 S.A.: *See—*
  - Lobermann, Claude; and Croitoriu, Jean-Claude, 4,192,174, Cl. 73-19.000.
- Automobiles Peugeot: *See—*
  - Poirier, Daniel, 4,192,410, Cl. 192-4.00A.
- Automotive Products Limited: *See—*
  - Rawlings, Dennis G., 4,192,413, Cl. 192-106.200.
- Autovox, S.p.A.: *See—*
  - Cicatelli, Rodolfo, 4,192,197, Cl. 74-380.000.
- Avellis, Cosmo L.; Pavone, Carlo; and Wolfkamp, Albertus, to Edcliff Instruments. Pressure ratio transducer system. 4,192,183, Cl. 73-182.000.
- Avery International Corporation: *See—*
  - Brown, Frank E., 4,192,703, Cl. 156-443.000.
- Avnet, Inc.: *See—*
  - Greenberg, Harry; and Auerbach, Richard, 4,193,077, Cl. 343-747.000.
- Ay, Leo E.; and Arriaza, Ramon E., to Pacific Scientific Company. Eccentric pin mounting system. 4,192,173, Cl. 73-11.000.
- Ayres, Barry E.: *See—*
  - Phillipps, Gordon H.; May, Peter J.; and Ayres, Barry E., 4,192,871, Cl. 424-241.000.
- Azam, Guy, to C.G.R.MeV. Neutrontherapy apparatus using a linear accelerator of electrons. 4,192,998, Cl. 250-502.000.
- B. F. Goodrich Company, The: *See—*
  - Fisher, John M., 4,192,339, Cl. 137-223.000.
- Baba, Kohzo; and Nagatomo, Itsuyoshi, to Hyuga Smelting Co., Ltd. Method of manufacturing granulated ferronickel. 4,192,673, Cl. 75-0.50C.
- Babcock, Clarence L.; Busdiecker, Robert A.; and Hagedorn, Erwin C., to Owens-Illinois, Inc. Product and process for forming same. 4,192,688, Cl. 106-39.700.
- Babich, Vladimir A.; Vitlin, Abram M.; Kolchanov, Arnold P.; and Sheveleva, Elena I. Control system for an installation utilizing pressure energy of outgoing blast-furnace gas. 4,192,489, Cl. 266-88.000.
- Bacskai, Robert, to Chevron Research Company. Phosphonium catalyst system for the polymerization of 2-pyrrolidone. 4,192,939, Cl. 528-313.000.
- Bade, Werner; Gelsdorf, Gunther; and Wieland, Gunther, to Didier-Werke AG; and Mannesmann AG. Lining materials. 4,192,687, Cl. 106-38.240.

- Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
  - Paust, Joachim; and Schumacher, Horst, 4,192,806, Cl. 260-340.700.
- Baehler, Bruno: *See—*
  - Tronchet, Jean M. J.; Baehler, Bruno; Rossi, Alberto; Baschang, Gerhard; and Sele, Alex, 4,192,868, Cl. 424-180.000.
- Baer, Alan R. Pacifier with sweets-dispensing nipple. 4,192,307, Cl. 128-252.000.
- Bagley, James S.; and Van Norden, Gary J., to Honeywell Inc. Control circuit. 4,193,100, Cl. 360-73.000.
- Baker, Eugene E.; and Carter, Ernest E., Jr., to Halliburton Company. Port valve isolation packer. 4,192,378, Cl. 166-186.000.
- Balde, John W.; Spencer, Robert A.; and Thompson, Richard K., Jr., to Western Electric Company, Inc.; and Bell Telephone Laboratories, Incorporated. Terminating flat flexible cables. 4,192,062, Cl. 29-857.000.
- Bales-McCoin Research, Inc.: *See—*
  - McCoin, Dan K., 4,192,200, Cl. 74-690.000.
  - McCoin, Dan K., 4,192,201, Cl. 74-690.000.
- Ballerini, Alberto. Connector and captive ball incorporating same. 4,192,044, Cl. 24-211.00R.
- Balthes Farm Equipment Manufacturing: *See—*
  - Balthes, Gary E., 4,192,124, Cl. 56-27.500.
- Balthes, Gary E., to Balthes Farm Equipment Manufacturing. Tobacco harvester. 4,192,124, Cl. 56-27.500.
- Baltschun, Horst, to SMG Suddeutsche Maschinenbau Gesellschaft mbH. Hydraulic press tool protection arrangement. 4,192,414, Cl. 192-129.00R.
- Baranski, Andrzej S.: *See—*
  - Fawcett, William R.; and Baranski, Andrzej S., 4,192,721, Cl. 204-14.00N.
- Barber, Gerald L. Amusement vehicle. 4,192,395, Cl. 180-6.500.
- Bare, Thomas M.: *See—*
  - Suh, John T.; and Bare, Thomas M., 4,192,805, Cl. 260-340.50R.
- Barkan, Philip; and Imam, Imdad, to Electric Power Research Institute, Inc. Structurally improved rod array vacuum interrupter. 4,192,981, Cl. 200-144.00B.
- Barker, Henry P.; and Mitchell, Lawrence C., to General Electric Company. Process for preparing 2,2-bis(4-hydroxy-phenyl) propane from distillation by-products thereof. 4,192,954, Cl. 568-723.000.
- Barkov, Leonid A.: *See—*
  - Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Dolgov, Sergei I.; and Sysoev, Vladimir S., 4,192,165, Cl. 72-238.000.
- Barnes, David I.: *See—*
  - Robinson, Joseph G.; and Barnes, David I., 4,192,824, Cl. 5855-409.000.
- Barnhart, Robert R.: *See—*
  - McKinstry, Paul H.; and Barnhart, Robert R., 4,192,790, Cl. 260-31.2MR.
- Barnum, Charly. Automatic sensitivity level adjustment. 4,193,055, Cl. 367-94.000.
- Barradas, George; and Hetherington, Michael W. Clamping arm mechanism for curling iron. 4,192,328, Cl. 132-37.00R.
- Barringer, Anthony R., to Barringer Research Limited. Detection of concealed metalliferous deposits, hydrocarbons and explosives. 4,192,176, Cl. 73-28.000.
- Barringer Research Limited: *See—*
  - Barringer, Anthony R., 4,192,176, Cl. 73-28.000.
- Barten, Piet G. J., to U.S. Philips Corporation. Color television display tube. 4,193,015, Cl. 313-408.000.
- Barth, Aksel, to Ab Gothenburg Motor. Method for interconnecting two shaft-ends and a shaft coupling made in accordance with said method. 4,192,621, Cl. 403-15.000.
- Bartl, Herbert: *See—*
  - Lindner, Christian; Suling, Carlhans; Bartl, Herbert; and Hardt, Dietrich, 4,192,940, Cl. 528-370.000.
- Bartscher, Wolfgang; Sachtler, Jurgen; and Schultner, Roland, to Dragerwerk Aktiengesellschaft. Respiratory gas humidifier. 4,192,836, Cl. 261-142.000.
- Baschang, Gerhard: *See—*
  - Tronchet, Jean M. J.; Baehler, Bruno; Rossi, Alberto; Baschang, Gerhard; and Sele, Alex, 4,192,868, Cl. 424-180.000.
- Baselice, Louis R.; Freakes, Anthony; Miller, Joseph A.; and Ventz, George A., to General Corrugated Machinery Co., Inc. Apparatus for feeding case blank sheets. 4,192,496, Cl. 271-10.000.
- BASF Aktiengesellschaft: *See—*
  - Broecker, Franz J.; Duembgen, Gerd; Glietenberg, Helmut; Miesen, Ernest; and Schwarzmann, Matthias, 4,192,807, Cl. 260-343.600.
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  - Lawrence, Allan K.; Bass, Merlyn D.; Black, Robert D.; and Krafka, Jerry L., 4,192,468, Cl. 241-101.700.
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  - Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G., 4,192,715, Cl. 176-30.000.
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  - Derouette, Jean-Jacques; Dartoy, Jacques; Fournier, Jacques; and Vollerin, Bernard, 4,192,371, Cl. 165-1.000.
  - Koehmstedt, Paul L., 4,192,963, Cl. 174-6.000.
- Batts, John H., to John Thomas Batts, Inc. Clamp construction for article hangers. 4,192,441, Cl. 223-96.000.
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  - Calhoun, Gregory L.; Kramer, Arthur W.; Bauer, Frank I.; and Bencloski, William A., 4,192,067, Cl. 30-379.000.
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- Baumann, Heinz, to Siemens Aktiengesellschaft. Tomograph for producing transverse layer images. 4,192,997, Cl. 250-445.00T.
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  - Jones, Horace T., 4,192,611, Cl. 356-320.000.
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  - Dieterich, Dieter, 4,192,938, Cl. 528-67.000.
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  - Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, 4,192,696, Cl. 148-101.000.
- Bearden, Roby, Jr.: *See—*
  - Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,192,735, Cl. 208-112.000.
- Beatrice Foods Co.: *See—*
  - Chow, Ho, 4,192,464, Cl. 239-373.000.
  - Kridler, Edward L.; Eisenhauer, Marvin W.; and Huson, Loyal A., 4,192,283, Cl. 126-25.0AA.
- Beaudet, Didier M., to Societe Anonyme de Telecommunications. Magnetostrictive mechanical filter. 4,193,051, Cl. 333-201.000.
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  - Megahed, Shenoda S., 4,192,320, Cl. 128-764.000.
  - Reese, Max G.; and Hales, Richard H., 4,192,858, Cl. 424-1.000.
  - Yerman, Arthur J., 4,192,429, Cl. 215-307.000.
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  - Laureano, Angel F., 4,192,536, Cl. 292-228.000.
- Belcastro, Harry, Sr.: *See—*
  - Hawkins, Gary, 4,193,067, Cl. 340-546.000.
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- Bell Telephone Laboratories, Incorporated: *See—*
  - Balde, John W.; Spencer, Robert A.; and Thompson, Richard K., Jr., 4,192,062, Cl. 29-857.000.
  - Meinke, James M., 4,193,123, Cl. 364-900.000.
  - Strautz, Michael G., 4,192,571, Cl. 339-103.00M.
  - Van Horn, Robert H., 4,192,570, Cl. 339-98.000.
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  - Dreher, George L., 4,192,712, Cl. 162-265.000.
- Beltrani, Gianni: *See—*
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  - Presley, Rex W., 4,192,189, Cl. 73-505.000.
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- Bennett, Derek J.; and Hogan, Daniel J., to Bunker Ramo Corporation. Automatic deployment of horizontal linear sensor array. 4,193,057, Cl. 367-153.000.
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  - Gilbert, Ghislain; Bentz, Gerard; and Galey, Jean, 4,192,147, Cl. 62-49.000.
- Beresniewicz, Aleksander; and Gallagher, John P., to Du Pont de Nemours, E. I., and Company. Thermosetting, electrostatically sprayable compositions containing blocked acid catalyst. 4,192,826, Cl. 525-425.000.
- Berg, Charles A., to Pyreflex Corporation. Heat conservation in workpieces. 4,192,646, Cl. 432-239.000.
- Berg, Josef, to Klockner-Humboldt-Deutz Aktiengesellschaft. Multicylinder reciprocating piston internal combustion engine. 4,192,261, Cl. 123-58.00B.
- Berger, Eugene; and Bienfait, Charles, to Solvay & Cie. Solid catalyst and process for the preparation thereof. 4,192,772, Cl. 252-429.00C.
- Berger, Hermann, to U.S. Philips Corporation. Circuit arrangement for receiving one of the sidebands from a double sideband signal. 4,193,035, Cl. 455-203.000.
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- Bergeron, Alfred. Method for manufacturing fully sealed piston ring. 4,192,051, Cl. 29-156.600.
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- Bergman, William D. Tow truck light support. 4,192,427, Cl. 212-8.00R.
- Bergquist, Lennart, to Volvo BM AB. Spring-suspended bogie with two or more wheel axles. 4,192,528, Cl. 280-677.000.
- Bergstrom, John R.; Hultman, Bengt G.; and Dalborg, Astrid T. P., to Mo och Domsjo Aktiebolag. Method for controlling the addition of active chemical for delignifying and/or bleaching cellulose pulp suspended in a liquor containing chemicals reactive with the delignifying and/or bleaching chemical. 4,192,708, Cl. 162-49.000.
- Berkbigler, Kenneth A., to ACF Industries, Incorporated. Carburetor. 4,192,834, Cl. 261-52.000.
- Bernard, Jacques; Bebin, Jean; and Hazard, Jean-Pierre, to Degremont S.A. Process and apparatus for the biological treatment of waste water. 4,192,742, Cl. 210-17.000.
- Bernatt, Joseph; and Steegmueller, Alfred, to S & C Electric Company. High voltage fuse having attached tubular members. 4,192,534, Cl. 285-382.200.
- Berry, Thomas: *See—*
  - Foster, Peter W.; Berry, Thomas; and Murenbeeld, Karel, 4,192,047, Cl. 28-220.000.
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- Bertolasi, Robert B., to Kelsey-Hayes Company. Analog/digital numerical control system. 4,193,022, Cl. 318-592.000.
- Bertozzi, Eugene R., to Thiokol Corporation. Cured polysulfide polymers suitable for hot melt applications. 4,192,941, Cl. 528-374.000.
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  - Wiggins, Robert W.; Ettenhofer, Kurt L.; and Bess, Jack, 4,193,129, Cl. 367-106.000.
- Bethlehem Steel Corporation: *See—*
  - Weimer, James C.; Locks, William S.; Wilson, Edwin B.; and Miller, Francis G., 4,192,551, Cl. 299-1.000.
- Beuch, Wallace E.; O'Konski, George J.; Rusch, Kenneth D.; and Wytaski, Thomas A., to International Business Machines Corporation. Disk file machine with cable connection to transducers. 4,193,102, Cl. 360-105.000.
- Bevins, John R.: *See—*
  - Bogema, Edward J.; Vandervoort, John R.; and Bevins, John R., 4,192,196, Cl. 74-339.000.
- Bickford, David E.; Southard, Robert K.; Sucheski, Matthew M.; and Wagner, Earl W., to AMP Incorporated. Method for feeding a plurality of wires. 4,192,207, Cl. 83-42.000.
- Bienfait, Charles: *See—*
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- BioResearch, Inc.: *See—*
  - Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, 4,192,798, Cl. 260-112.50R.
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  - Dam, Naim G.; and Landau, Monroe A., 4,192,318, Cl. 128-708.000.
- Bird, John M.; and Ringwood, Alfred E., to Bird, John N. Container for radioactive nuclear waste materials. 4,192,765, Cl. 252-301.10W.
- Bird, John N.: *See—*
  - Bird, John M.; and Ringwood, Alfred E., 4,192,765, Cl. 252-301.10W.
- Bishoff, Mark L.; and Bishoff, Theodore. Interfitting and removable modular, frame, storage units. 4,192,562, Cl. 312-108.000.
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  - Greten, Berndt, 4,192,417, Cl. 198-601.000.
- Bittner, Louis M. Golf swing control alarm. 4,193,065, Cl. 340-323.00R.
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  - Walters, Robert A.; Johnson, William L.; and Bivins, Gary W., 4,192,316, Cl. 128-419.0PG.
- Bixby, James A.; Lemke, James U.; and Lentz, Robert A., to Spin Physics, Inc. Segmented video playback apparatus with ancillary recording medium. 4,193,098, Cl. 360-10.000.
- Black, Robert D.: *See—*
  - Lawrence, Allan K.; Bass, Merlyn D.; Black, Robert D.; and Krafka, Jerry L., 4,192,468, Cl. 241-101.700.
- Blanchard, Bruno; Legressus, Claude; Massignon, Daniel; Sopizet, Rene; and Stefani, Rene, to Commissariat a l'Energie Atomique. Method for controlling the migration of a chemical species within a solid substrate. 4,193,003, Cl. 250-492.00A.
- Blanco, Rodney A.; and Massaro, Anthony A., Jr., to Westinghouse Electric Corp. Method for retubing a steam generator. 4,192,053, Cl. 29-157.400.
- Blazek, Gustav; and Charych, Arthur, to Eaton Corporation. Low angle elevation guidance system. 4,193,075, Cl. 343-108.00M.
- Blessing, Hubert; and Allison, Gaylord D., to Levi Strauss & Co. Sewing machine thread monitor. 4,192,243, Cl. 112-273.000.
- Blom, Nico; and Wor, Jan T., to U.S. Philips Corporation. Printer, provided with an impact device comprising a transducer. 4,192,230, Cl. 101-93.030.
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  - Kondur, Nicholas, Jr.; Blomquist, James E.; and Rucinski, Roland R., 4,192,618, Cl. 400-124.000.
- Blose, Thomas L., to Hydril Company. Dovetail connection for pin and box joints. 4,192,533, Cl. 285-334.000.
- Boddie, Arthur W. Hepatic isolation and perfusion circuit assembly. 4,192,302, Cl. 128-214.00R.
- Bodlaj, Viktor, to Siemens Aktiengesellschaft. Device for contact-free thickness measurement. 4,192,612, Cl. 356-381.000.
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  - Raman, Rune E. B., 4,192,389, Cl. 173-15.000.
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  - Falcioni, Joseph G., 4,192,058, Cl. 29-526.00A.
  - Farquhar, Bannister W.; and Sloan, Denis, 4,192,336, Cl. 137-15.100.
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  - Botre, Claudio; Bolasco, Franco; Memoli, Adriana; and Molteni, Luigi, 4,192,894, Cl. 424-329.000.
- Bomball, William A.; and Swift, Thomas G., to A. E. Staley Manufacturing Company. Vegetable based, remoistenable adhesive for pregummed tape. 4,192,783, Cl. 260-8.000.
- Bond, Helen I. Head and neck supportive device for hemiside reclining persons. 4,192,029, Cl. 5-441.000.
- Bondinell, William E.; and Pendleton, Robert G., to SmithKline Corporation. Pharmaceutical compositions and method of inhibiting phenylethanolamine N-methyltransferase. 4,192,888, Cl. 424-321.000.
- Bone, Arnold R., to Dennison Manufacturing Company. Air powered installation of fasteners. 4,192,358, Cl. 140-123.600.
- Bonnaud, Bernard: *See—*
  - Cousse, Henri; Bonnaud, Bernard; Tarayre, Jean-Pierre; and Casadio, Silvano, 4,192,883, Cl. 424-274.000.
- Bonorand, Simon, to Caviezel, Guido. Teaching aid device for teaching the basic principles of arithmetic. 4,192,085, Cl. 35-31.00E.
- Borelly, Wolfgang. Process and apparatus for the production of corrosion protection for cables made of parallel wire strands. 4,192,057, Cl. 29-458.000.
- Borg, Carl W. Adjustable joist hanger. 4,192,623, Cl. 403-232.100.
- Borg-Warner Corporation: *See—*
  - Fogelberg, Mark J., 4,192,411, Cl. 192-36.000.
- Borlinghaus, Hans J., to General Motors Corporation. Escutcheon and cover assembly for a lock cylinder. 4,192,161, Cl. 70-455.000.
- Borodin, Ivan V.: *See—*
  - Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G., 4,192,715, Cl. 176-30.000.
- Boschetti, Egisto: *See—*
  - Brown, Eric; Boschetti, Egisto; Corgier, Monique M.; and Touet, Joel, 4,192,784, Cl. 260-8.000.

- Botre, Claudio; Bolasco, Franco; Memoli, Adriana; and Molteni, Luigi, to Dr. L. Zambeletti S.p.A. Compound with disinfectant activity and pharmaceutical compositions containing the same. 4,192,894, Cl. 424-329.000.
- Boulter, David M.: *See—*
  - Antoniuk, Andrew V.; Hankinson, Lawrence V.; Boulter, David M.; and McMillan, William R., 4,192,228, Cl. 100-37.000.
- Bouman, Antonius J. M.: *See—*
  - Lederer, Michael; and Bouman, Antonius J. M., 4,192,797, Cl. 525-243.000.
- Bouvet, Jean-Victor: *See—*
  - Henry, Raymond; Resneau, Jean-Claude; and Bouvet, Jean-Victor, 4,192,574, Cl. 350-96.170.
- Bowers, John J., to Gould Inc. Connecting line generator. 4,193,122, Cl. 364-900.000.
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  - Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., 4,192,755, Cl. 252-8.55D.
  - Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., 4,192,767, Cl. 252-312.000.
- Bradley Corporation: *See—*
  - Williams, Frank N., 4,192,026, Cl. 4-203.000.
- Bralorne Resources Limited: *See—*
  - Gray, Gary D., 4,192,155, Cl. 64-23.000.
- Brass & Bronze Mfg. Co. Ltd.: *See—*
  - Simko, Paul; and Strasser, Albert, 4,192,099, Cl. 49-366.000.
- Bratton, Jerry L.: *See—*
  - Pollehn, Herbert K.; and Bratton, Jerry L., 4,193,011, Cl. 313-94.000.
- Brau, Charles A.; Stein, William E.; and Rockwood, Stephen D., to United States of America, Energy. Microwave accelerator E-beam pumped laser. 4,193,043, Cl. 331-94.5PE.
- Brauer, Hans, to Friedrich Kocks GmbH & Company. Rolling mills. 4,192,164, Cl. 72-234.000.
- Braun AG: *See—*
  - Wich, Robert, 4,192,719, Cl. 204-11.000.
- Bray Oil Company, Inc.: *See—*
  - Dickey, Charles R.; and Williamson, Paul M., 4,192,758, Cl. 252-33.000.
- Breslow, Jeffrey D.: *See—*
  - Erickson, Erick E.; and Breslow, Jeffrey D., 4,192,512, Cl. 273-243.000.
- Brewer, Joe E., to Westinghouse Electric Corp. High-density memory with non-volatile storage array. 4,193,128, Cl. 365-228.000.
- Brewster, Philip W. Alkyl phenol solutions of organo molybdenum complexes as friction reducing antiwear additives. 4,192,757, Cl. 252-32.70E.
- Bridgham, John A.: *See—*
  - Kronick, Melvyn N.; Bryson, Charles E., III; Bridgham, John A.; and Eletr, Sam H., 4,192,996, Cl. 250-373.000.
- Bristol-Myers Company: *See—*
  - Juby, Peter F., 4,192,944, Cl. 544-282.000.
  - Ueda, Yasutsugu, 4,192,801, Cl. 260-239.00A.
  - Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,192,915, Cl. 435-78.000.
- Bristow, Stephen D.: *See—*
  - Rains, Lyle V.; Bristow, Stephen D.; and Patak, Richard J., 4,192,507, Cl. 273-311.000.
- British Gas Corporation: *See—*
  - Brooks, Charles T., 4,192,654, Cl. 48-62.00R.
- British Petroleum Company Limited, The: *See—*
  - Burbidge, Bernard W.; and Rees, David M., 4,192,771, Cl. 252-415.000.
- Brockmann, Klaus-Dieter K., to U.S. Philips Corporation. Supply-arrangement for a line circuit. 4,192,975, Cl. 179-77.000.
- Brodin, Eric, to Etablissements Unicor. Device in flue gas dampers. 4,192,310, Cl. 126-286.000.
- Brodin, Henning: *See—*
  - Brodin, Nils H., 4,192,419, Cl. 198-750.000.
- Brodin, Nils H., to Brodin, Henning. Conveyor. 4,192,419, Cl. 198-750.000.
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- Brookhyser, Byron B.; and Pierson, Darrell E., to Weyerhaeuser Company. Veneer drying and handling. 4,192,079, Cl. 34-13.800.
- Brooks, Charles T., to British Gas Corporation. Coal gasification plant. 4,192,654, Cl. 48-62.00R.
- Brougham, Robert W.; and Mitchell, Paul, to Picker Corporation. Television radiation imaging system and method. 4,193,089, Cl. 358-111.000.
- Browall, Warella R.: *See—*
  - Kimura, Shiro G.; Lavigne, Raymond G.; and Browall, Warella R., 4,192,842, Cl. 264-298.000.
- Brown, Eric; Boschetti, Egisto; Corgier, Monique M.; and Touet, Joel, to Mar-Pha Societe d'Etudes et d'Exploitation de Marques. Hydrophilic copolymers, their preparation and their use in separation techniques. 4,192,784, Cl. 260-8.000.
- Brown, Frank E., to Avery International Corporation. Universal labeling apparatus. 4,192,703, Cl. 156-443.000.
- Brown, Ray B., Jr., to United States of America, Navy. Variable power attenuator for light beams. 4,192,573, Cl. 350-55.000.
- Brown, Richard C., to General Motors Corporation. Microwave oven single wall construction. 4,192,431, Cl. 220-62.000.
- Broyles, Marshall W.; and Schrader, Charles D. Stand-up trash retrieving and dumping device. 4,192,539, Cl. 294-19.00R.
- Bruckner, Dietrich: *See—*
  - Henkelmann, Kurt; and Bruckner, Dietrich, 4,192,585, Cl. 353-101.000.
- Brushaber, Larry R.: *See—*
  - Martin, Raymond H.; and Brushaber, Larry R., 4,192,701, Cl. 156-285.000.
- Bruzzese, Tiberio; and Ferrari, Lorenzo, to Prospa N.V. Method for the treatment of dyslipidaemia and arteriosclerosis. 4,192,864, Cl. 424-122.000.
- Bryson, Charles E., III: *See—*
  - Kronick, Melvyn N.; Bryson, Charles E., III; Bridgham, John A.; and Eletr, Sam H., 4,192,996, Cl. 250-373.000.
- Brzezinski, Donald E., to Johnson Controls Inc. Air damper apparatus particularly for heating, ventilating and air conditioning systems. 4,192,098, Cl. 49-91.000.
- Bubik, Alfred; Jox, Rainer; and Schultz, Hans-Joachim, to Escher Wyss GmbH. Method and apparatus for measuring the throughflow quantity of a liquid substance per unit of time in a papermaking machine. 4,192,710, Cl. 162-198.000.
- Bucci, Carlo G., to Repla Limited. Frame corner structure. 4,192,624, Cl. 403-295.000.
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  - Bennett, Derek J.; and Hogan, Daniel J., 4,193,057, Cl. 367-153.000.
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  - Maisch, Wolfgang; and Burkel, Rainer, 4,192,279, Cl. 123-198.00F.
- Burndy Corporation: *See—*
  - Sacks, Norman M., 4,192,964, Cl. 174-73.00R.
- Burroughs Corporation: *See—*
  - Cancelleri, Dan; and Thompson, Charles E., 4,192,729, Cl. 204-272.000.
  - Cykowski, Mark F., 4,193,113, Cl. 364-200.000.
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- Bykov, Vladimir I.: *See—*
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  - Azam, Guy, 4,192,998, Cl. 250-502.000.
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  - Paoletti, Alfred J., 4,192,983, Cl. 219-76.100.
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  - Bertoglio, Ottavio; Caccia, Aurelio; Fidanza, Riccardo; and VanVeen, Wouter M. D., 4,192,972, Cl. 179-6.30R.
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  Trace, William L.; and Walker, Jerry L., 4,192,844, Cl. 422-11.000.
Calhoun, Gregory L.; Kramer, Arthur W.; Bauer, Frank I.; and Bencloski, William A., to Westinghouse Electric Corp. Apparatus for cutting through a tube bundle. 4,192,067, Cl. 30-379.000.
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  von Linde, Robert, 4,192,655, Cl. 48-191.000.
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  Yasumatsu, Mutsuo; Shoji, Shinichi; Sakamoto, Koichi; Kurihara, Takao; Terabayashi, Takeshi; and Ohmura, Kasutaka, 4,192,901, Cl. 426-580.000.
Calspan Corporation: *See—*
  Schwartz, Edward C.; and Leney, Thomas F., 4,193,074, Cl. 343-16.00M.
Camera Plus, Inc.: *See—*
  Penick, Ib, 4,192,596, Cl. 354-142.000.
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  Chappell, Marcus S.; and Millar, Douglas A. J., 4,192,137, Cl. 60-39.16R.
  Wyslouzil, Walter, 4,193,027, Cl. 324-58.50R.
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  Kurahayashi, Sadasuke; Kato, Yuzo; Tsuda, Shin; Muto, Hakaru; and Watanabe, Asao, 4,193,097, Cl. 358-261.000.
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Capra, Uberto. Wheel-scrubbing mechanism for vehicle-washing apparatus. 4,192,037, Cl. 15-53.00B.
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Carlos, Donald D., to Ashland Oil, Inc. Oxidation of waxes in the presence of long chain quaternary ammonium and phosphonium compounds. 4,192,812, Cl. 260-406.000.
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  Ferraro, Lugi; Beltrani, Gianni; Gass, Jacques; and Trochon, Bernard, 4,192,298, Cl. 128-205.240.
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Carter, Philip S.; Stitzer, Steven N.; and Goldie, Harry, to United States of America, Air Force. Frequency selective ferrimagnetic power limiter. 4,193,047, Cl. 333-17.00L.
Casadei, Gianfranco. Automatic profile-copying device. 4,192,363, Cl. 144-145.00A.
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Casebow, Wilfred J. Apparatus for generating electrical power. 4,192,627, Cl. 405-76.000.
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  Van Steenwyk, Donald H.; Cash, John R.; and Ott, Paul W., 4,192,077, Cl. 33-313.000.
Casio Computer Co., Ltd.: *See—*
  Kashio, Toshio, 4,193,038, Cl. 328-104.000.
  Takeuchi, Eiichi, 4,192,130, Cl. 368-155.000.
Cassella Aktiengesellschaft: *See—*
  Bauer, Wolfgang; and Ribka, Joachim, 4,192,947, Cl. 548-334.000.
Casson, Alwin E. Camping accessory. 4,192,030, Cl. 5-420.000.
Caudle, Otis M., to Eggineers, Inc. Case packing apparatus. 4,192,121, Cl. 53-248.000.
Caviezel, Guido: *See—*
  Bonorand, Simon, 4,192,085, Cl. 35-31.00E.
Celanese Canada Limited: *See—*
  Antoniuk, Andrew V.; Hankinson, Lawrence V.; Boulter, David M.; and McMillan, William R., 4,192,228, Cl. 100-37.000.
Celanese Corporation: *See—*
  Keith, Charles H.; and Tucker, Richard O., 4,192,838, Cl. 264-10.000.
  Slinkard, William E.; and Baylis, Anthony B., 4,192,951, Cl. 562-549.000.
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  Rassieur, Charles L.; and Hesskamp, Richard R., 4,192,485, Cl. 254-187.500.
Centre Technique des Industries Mecaniques: *See—*
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Cessna Aircraft Company, The: *See—*
  Alderson, Loren L.; and Truesdell, Delbert E., 4,192,337, Cl. 137-101.000.
  Moyer, Laurence, 4,192,225, Cl. 92-169.000.
Cha, Chang Y., to Occidental Oil Shale, Inc. In situ retorting with high temperature oxygen supplying gas. 4,192,381, Cl. 166-261.000.
Cha, Chang Y. Method for establishing a combustion zone in an in situ oil shale retort having a pocket at the top. 4,192,552, Cl. 299-2.000.
Chabot, Ovila. Anti-skid wheel attachment device. 4,192,367, Cl. 152-225.00C.
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  Garmon, Ivan E., 4,192,444, Cl. 229-28.00R.
  McLaren, Edwin C., 4,192,443, Cl. 229-28.00R.
  Rekow, Vernon C., 4,192,423, Cl. 206-586.000.
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Chang, Andrew K., to FMC Corporation. On the fly run-out correction for vehicle alignment. 4,192,074, Cl. 33-228.000.
Chapman, Charles C., to Phillips Petroleum Company. Energy efficient alkylation process. 4,192,825, Cl. 585-719.000.
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  Blazek, Gustav; and Charych, Arthur, 4,193,075, Cl. 343-108.00M.
Chasman, Richard A.; and Erickson, Wayne F., to Eastman Kodak Company. N-alkyl- or N-aryl-benzisoxazolone scavenger compounds. 4,192,678, Cl. 430-214.000.
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  Rabinovich, Volf I.; Kriger, Jury N.; Svitenko, Igor A.; and Sapunov, Viktor E., 4,192,370, Cl. 164-252.000.
Chen, James L.; Cilento, Rudolfo D.; Hill, John A.; and La Via, Anthony L., to E. R. Squibb & Sons, Inc. Ostomy adhesive. 4,192,785, Cl. 260-17.4GC.
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  Bacskai, Robert, 4,192,939, Cl. 528-313.000.
  Kluksdahl, Harris E., 4,192,736, Cl. 208-251.00H.
Chia, E. Henry; and Schoerner, Roger J., to Southwire Company. Aluminum copper alloy electrical conductor and method. 4,192,693, Cl. 148-2.000.
Chiba, Tadataka, to Kinsekisha Laboratory, Ltd. Piezo-electric oscillators with automatic gain control. 4,193,046, Cl. 331-109.000.
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Chong, Antonio T., to USI Far East Corporation. Integrated system for forming sheets and films of synthetic resins. 4,192,637, Cl. 425-140.000.
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Chow, Ho, to Beatrice Foods Co. Compressed air sprayer. 4,192,464, Cl. 239-373.000.
Chrisman, Max G., to Owens-Corning Fiberglas Corporation. Platinum group metal layer on a refractory. 4,192,667, Cl. 65-374.0RM.
Chyung, Kenneth; and Megles, John E., Jr., to Corning Glass Works. Rapidly crystallized beta-spodumene glass-ceramic materials. 4,192,665, Cl. 65-33.000.
CH_2O, Inc.: *See—*
  Courtright, Burr, 4,192,340, Cl. 137-344.000.
Ciba-Geigy Corporation: *See—*
  Anner, Georg; and Wehrli, Hansuli, 4,192,802, Cl. 260-239.570.
  Clark, David R.; Marshall, Alan; and Finan, Michael A., 4,192,744, Cl. 210-54.000.
  Clauson-Kaas, Niels; Mattern, Gunter; and Traber, Walter, 4,192,946, Cl. 546-249.000.

  Ferrini, Pier G.; Goschke, Richard; Sallmann, Alfred; and Rossi, Alberto, 4,192,873, Cl. 424-246.000.
  Mueller, Karl F.; and Good, William R., 4,192,827, Cl. 525-123.000.
  Robertson, George H.; Rooney, Robert L.; and Todd, Robert B., 4,192,841, Cl. 264-117.000.
  Tronchet, Jean M. J.; Baehler, Bruno; Rossi, Alberto; Baschang, Gerhard; and Sele, Alex, 4,192,868, Cl. 424-180.000.
Cicatelli, Rodolfo, to Autovox, S.p.A. Disengageable transmission device. 4,192,197, Cl. 74-380.000.
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CIR- S.p.A.-Divisione Sasib: *See—*
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Citizen Watch Company Limited: *See—*
  Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,192,135, Cl. 368-62.000.
  Yoshida, Makoto, 4,192,134, Cl. 368-80.000.
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Clapham, Terrance N.: *See—*
  Munnerlyn, Charles R.; and Clapham, Terrance N., 4,192,317, Cl. 128-646.000.
Clark, David J. Solar heat collection system. 4,192,289, Cl. 126-425.000.
Clark, David R.; Marshall, Alan; and Finan, Michael A., to Ciba-Geigy Corporation. Treatment of aqueous systems. 4,192,744, Cl. 210-54.000.
Clark, John D., to Clarke-Gravely Corporation. Steering sulky for two-wheel tractors. 4,192,525, Cl. 280-443.000.
Clark, Richard E.: *See—*
  Davis, Robert B.; Skelton, John; Clark, Richard E.; and Swanson, Wilbur M., 4,192,020, Cl. 3-1.500.
Clarke-Gravely Corporation: *See—*
  Clark, John D., 4,192,525, Cl. 280-443.000.
Classic Corporation: *See—*
  Fogel, Isaac, 4,192,031, Cl. 5-451.000.
Clauson-Kaas, Niels; Mattern, Gunter; and Traber, Walter, to Ciba-Geigy Corporation. Process for producing 3-hydroxy-5-halopyridines. 4,192,946, Cl. 546-249.000.
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Clugage, Robert G. Method and apparatus for supporting a golf ball. 4,192,504, Cl. 273-33.000.
Clugston, George D. Combined feeding and watering device for pets, having integral means for carrying water. 4,192,256, Cl. 119-51.500.
Coal Industry (Patents) Limited: *See—*
  Robinson, Joseph G.; and Barnes, David I., 4,192,824, Cl. 5855-409.000.
Coaltex, Inc.: *See—*
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Cobb, John M., to Texaco Inc. Exhaust gas recycling in an internal combustion engine. 4,192,267, Cl. 123-119.00A.
Cobe Laboratories, Inc.: *See—*
  Lobdell, Donn D.; Herman, Stephen J.; Anderson, Robert L.; and Goyne, Thomas E., 4,193,004, Cl. 250-577.000.
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  Stevens, John M.; Allen, Grant W.; Cole, John M.; and Mousseau, Timothy K., 4,192,992, Cl. 219-494.000.
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Coleman, James H., to Sprague Electric Company. Monolithic ceramic capacitor with fuse link. 4,193,106, Cl. 361-275.000.
Collins, Marcus H.; and Smith, John K., to Eaton Corporation. Fluid expandable tire building drum with shoe means attached thereto to form a tire building surface. 4,192,702, Cl. 156-416.000.
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  Martin, Jerry R.; Tadanier, John S.; and Collum, Paulette, 4,192,867, Cl. 424-180.000.
Colombo, Arthur F.; and Hopstock, David M., to United States of America, Interior. Process for scavenging iron from tailings produced by flotation beneficiation and for increasing iron ore recovery. 4,192,738, Cl. 209-5.000.
Combes, Marvin G., to Grove Valve and Regulator Company. One piece seat ring with O-ring seal. 4,192,483, Cl. 251-172.000.
Combustion Engineering Inc.: *See—*
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  Michel, Dominique; and Noblanc, Alain G. N., 4,192,110, Cl. 52-111.000.
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  Morgan, Burton D., 4,192,105, Cl. 52-2.000.
Conoco, Inc.: *See—*
  Torres, Julio A., 4,192,517, Cl. 277-24.000.
Conroy, Michael F., to Federal Paper Board Company, Inc. Container closure assembly. 4,192,434, Cl. 220-306.000.
Cook, Kenneth J.: *See—*
  Massa, Richard L.; and Cook, Kenneth J., 4,193,039, Cl. 328-162.000.
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Cooper, Glenn F.; and Enemark, Robert B., to American District Telegraph Company. Latching alarm smoke detector. 4,193,069, Cl. 340-630.000.
Copal Company Limited: *See—*
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Corgier, Monique M.: *See—*
  Brown, Eric; Boschetti, Egisto; Corgier, Monique M.; and Touet, Joel, 4,192,784, Cl. 260-8.000.
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Cornou, Jean, to Allibert Exploitation, Societe Anonyme. Laterally openable storage and transport box. 4,192,430, Cl. 220-1.500.
Cory Food Services, Inc.: *See—*
  Petry, Stanton H., 4,192,227, Cl. 99-279.000.
Coules, Ronald A., to Richco Plastic Company. Quarter turn circuit board guide. 4,192,478, Cl. 248-222.300.
Counts, William H., to Admiral Corporation. Bias boost circuit for television receiver. 4,193,094, Cl. 358-190.000.
Courtright, Burr, to CH_2O, Inc. Agricultural irrigation system and components therefor. 4,192,340, Cl. 137-344.000.
Cousse, Henri; Bonnaud, Bernard; Tarayre, Jean-Pierre; and Casadio, Silvano, to Pierre Fabre, S.A. Amides of pyrrolidinoethylamine which can be used in lung therapy. 4,192,883, Cl. 424-274.000.
Coval, Arthur B.: *See—*
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Cox, Bruce M.; and Ho, Morris D., to Halliburton Company. Mass flowmeter. 4,192,184, Cl. 73-194.00B.
Crawford, James F. X. Horizontal auxiliary sleeper door. 4,192,543, Cl. 296-159.000.
Crede, Helfried. Process for the recovery of energy and in particular for the recovery of heat on the heat pump principle. 4,192,146, Cl. 62-2.000.
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Crickard, James L.; and Sheets, Harold L., to Huntington Alloys, Inc. Apparatus and method for pressure testing of tubular bodies. 4,192,177, Cl. 73-49.500.
Crivello, James V., to General Electric Company. Method of foaming curable organic resin compositions. 4,192,924, Cl. 521-126.000.
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Crouzet: *See—*
  Jouret, Edouard, 4,192,198, Cl. 74-384.000.
Crow, Dennis W.; and Kreger, William E. Racquet game exerciser. 4,192,500, Cl. 272-68.000.
Croy, David G., to Cameron Iron Works, Inc. Subsea production chamber. 4,192,384, Cl. 166-356.000.
Cselt-Centro Studi e Laboratori Telecomunicazioni S.p.A: *See—*
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Cubic Corporation: *See—*
  En, John, 4,193,062, Cl. 371-43.000.
Curtis Instruments, Inc.: *See—*
  Finger, Eugene P.; and Sands, Eugene A., 4,193,026, Cl. 324-428.000.
Curutchet, Pedro D. Surgical instruments. 4,192,314, Cl. 128-322.000.
Cushman, David W.: *See—*
  Ondetti, Miguel A.; and Cushman, David W., 4,192,881, Cl. 424-273.00R.
  Ondetti, Miguel A.; and Cushman, David W., 4,192,882, Cl. 424-274.000.
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  Urzi, Santi T., 4,192,257, Cl. 119-81.000.
Cykowski, Mark F., to Burroughs Corporation. Keyboard interrupt method and apparatus. 4,193,113, Cl. 364-200.000.
Cyprus Metallurgical Processes Corporation: *See—*
  Reynolds, James E.; Hazen, Wayne C.; and Goens, Duane N., 4,192,676, Cl. 75-72.000.
Dafler, James R.: *See—*
  Pangborn, Jon B.; and Dafler, James R., 4,192,726, Cl. 204-129.000.

- Dai Nippon Toryo Co, Ltd.: *See—*
  - Yaguchi, Masachika; and Kato, Haruhiro, 4,192,581, Cl. 350-357.000.
- Dailey, Alvin. Variable gear ratio transmission. 4,192,203, Cl. 74-863.000.
- Daimler-Benz Aktiengesellschaft: *See—*
  - Haberle, Fritz; and Kurth, Hermann W., 4,192,039, Cl. 16-86.00B.
- Dalborg, Astrid T. P.: *See—*
  - Bergstrom, John R.; Hultman, Bengt G.; and Dalborg, Astrid T. P., 4,192,708, Cl. 162-49.000.
- Dales, Mark J., to Rohm and Haas Company. Crosslinked gel ion exchange resin beads characterized by strain birefringence patterns. 4,192,921, Cl. 521-38.000.
- Dam, Naim G.; and Landau, Monroe A., to Bios Inc. Method and apparatus for locating the QRS portion of an electrocardiographic signal. 4,192,318, Cl. 128-708.000.
- Damon, Ralph S. Diesel fueled engine coolant heater. 4,192,274, Cl. 123-142.50R.
- Dana Corporation: *See—*
  - Otteson, Jack O.; and Martin, Eugene J., 4,192,399, Cl. 180-170.000.
- Danfoss A/S: *See—*
  - Rasmussen, Hans C.; and Hallgreen, Knud J., 4,192,455, Cl. 237-8.00R.
- Dantzer, Elonne: *See—*
  - Goldfarb, Adolph E.; Benkoe, Erwin, deceased; Benkoe, Elisabeth, Executrix; and Dantzer, Elonne, 4,192,092, Cl. 46-123.000.
- Dardoufas, Kimon C.: *See—*
  - Marshall, Robert M.; and Dardoufas, Kimon C., 4,192,754, Cl. 252-8.800.
- Dartoy, Jacques: *See—*
  - Derouette, Jean-Jacques; Dartoy, Jacques; Fournier, Jacques; and Vollerin, Bernard, 4,192,371, Cl. 165-1.000.
- Davies, Jenkin E.: *See—*
  - van Dijk, Jan; and Davies, Jenkin E., 4,192,818, Cl. 260-566.0AE.
- Davis, Robert B.; Skelton, John; Clark, Richard E.; and Swanson, Wilbur M., to Washington University; and Albany International Corporation. Heart valve prosthesis. 4,192,020, Cl. 3-1.500.
- Daws, Lee F., to Canada, Her Majesty the Queen in right of. Collapsible dome frame. 4,192,334, Cl. 135-4.00R.
- Deaton, Ion V.; and Horman, Frederick H., to Singer Company, The. Electronic warfare simulator. 4,192,082, Cl. 35-10.400.
- Deaver, Don A.; and Sterrett, Dale E., to Tenneco Inc. Complete louver flow muffler. 4,192,401, Cl. 181-266.000.
- Decaro, Charles J., to Textron Inc. Rail anchoring system. 4,192,459, Cl. 238-356.000.
- DeCicco, Michael A.: *See—*
  - Langan, John P.; and DeCicco, Michael A., 4,192,150, Cl. 62-277.000.
- Decky, John R.; and Meyer, Bruno P. Pipe-wall stud connector. 4,192,477, Cl. 248-56.000.
- Deeks, Daniel H., to Deeks, Daniel H. Process for treating sewage effluent. 4,192,741, Cl. 210-6.000.
- Deere & Company: *See—*
  - Haverdink, Virgil D.; and Landry, Henry J., Jr., 4,192,386, Cl. 171-58.000.
  - Lawrence, Allan K.; Bass, Merlyn D.; Black, Robert D.; and Krafka, Jerry L., 4,192,468, Cl. 241-101.700.
  - Salem, Robert J., 4,193,049, Cl. 333-141.000.
  - Stecklein, Gary L., 4,192,622, Cl. 403-146.000.
  - Wilson, John E., 4,192,322, Cl. 130-27.00T.
- Defourneaux, Robert P., Jr. Bottom valve tripping and liquid channeling device for an automated bailer of shallow wells. 4,192,377, Cl. 166-70.000.
- Degremont S.A.: *See—*
  - Bernard, Jacques; Bebin, Jean; and Hazard, Jean-Pierre, 4,192,742, Cl. 210-17.000.
- Dehnert, Heinz: *See—*
  - Korber, Elmar; and Dehnert, Heinz, 4,192,321, Cl. 128-776.000.
- Deibig, Heinrich; Heide, Helmut; Reiner, Roland; and Koster, Kari, to Batelle-Institut e.V. Bone replacement or prosthesis anchoring material. 4,192,021, Cl. 3-1.900.
- Delmotte, Philippe M.: *See—*
  - Richard, Andre J.; Delmotte, Philippe M.; and Parthoens, Pierre A., 4,192,120, Cl. 52-741.000.
- de Mello Ribeiro Pinto, Luiz A. C. Continuous decantation clarifier for liquids containing suspended solids. 4,192,752, Cl. 210-298.000.
- deMey, Charles F., II; and Helms, Charles C., to Perkin-Elmer Corporation, The. L/C detector cell assembly. 4,192,614, Cl. 356-410.000.
- Dempsey, Douglas E.: *See—*
  - Tabickman, Maurice L.; and Dempsey, Douglas E., 4,192,505, Cl. 273-73.00C.
- Dennison Manufacturing Company: *See—*
  - Bone, Arnold R., 4,192,358, Cl. 140-123.600.
- Derouette, Jean-Jacques; Dartoy, Jacques; Fournier, Jacques; and Vollerin, Bernard, to Battelle Memorial Institute; and Agence Nationale de Valorisation de la Recherche (ANVAR). Process for supplying thermal energy for an endothermic reaction from a source not available at the reaction site. 4,192,371, Cl. 165-1.000.
- Desenberg, Charles: *See—*
  - Wolfson, Joseph, 4,192,068, Cl. 433-3.000.
- Detexomat Machinery Limited: *See—*
  - Haselgrove, Bob; and Nichol, John D., 4,192,242, Cl. 112-262.200.
- Deuterium Corporation: *See—*
  - Spevack, Jerome S., 4,192,847, Cl. 422-198.000.
  - Spevack, Jerome S., 4,192,850, Cl. 422-255.000.
- Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co. Ltd. Formant filter synthesizer for an electronic musical instrument. 4,192,210, Cl. 84-1.010.
- Devers, John C. Bandage with integrated applicator. 4,192,300, Cl. 128-155.000.
- Dewhirst, William: *See—*
  - O'Neil, John B.; and Dewhirst, William, 4,192,127, Cl. 57-7.000.
- Dezawa, Katsumi: *See—*
  - Tsukamoto, Goro; Yoshino, Koichiro; Kohno, Toshihiko; Taguchi, Masahiro; Dezawa, Katsumi; Kagaya, Hajime; Ito, Keizo; and Nose, Takashi, 4,192,880, Cl. 424-273.00R.
- Diamond Shamrock Corporation: *See—*
  - Dotson, Ronald L.; and O'Leary, Kevin J., 4,192,725, Cl. 204-98.000.
- Dicey Fabrics, Inc.: *See—*
  - Peeler, Burin A.; and Neisler, Henry P., 4,192,355, Cl. 139-435.000.
- Di Ciaccio, James J., to Dynamics Research Corporation. Gaging system with pivotable gage bar. 4,192,168, Cl. 72-389.000.
- Dickey, Charles R.; and Williamson, Paul M., to Bray Oil Company, Inc. Overbased magnesium sulfonate process. 4,192,758, Cl. 252-33.000.
- Dickey-john Corporation: *See—*
  - Funk, David B., 4,193,116, Cl. 364-556.000.
- Dickie, Ray A.; Holubka, Joseph W.; and Chattha, Mohinder S., to Ford Motor Company. Alkaline resistant organic coatings for corrosion susceptible substrates IV. 4,192,932, Cl. 525-511.000.
- Didier-Werke AG: *See—*
  - Bade, Werner; Gelsdorf, Gunther; and Wieland, Gunther, 4,192,687, Cl. 106-38.240.
- Diehm, Hans: *See—*
  - Meissner, Bernd; Fliege, Werner; Woerz, Otto; Dudeck, Christian; and Diehm, Hans, 4,192,820, Cl. 260-601.00R.
- Dieterich, Dieter, to Bayer Aktiengesellschaft. Modified polyisocyanates containing sulfonic acid ester groups. 4,192,938, Cl. 528-67.000.
- Dietz, Wolfgang F. W., to RCA Corporation. Deflection circuit. 4,193,018, Cl. 315-408.000.
- Dits, Herbert R., to Transform Verstarkungsmaschinen Aktiengesellschaft. Power piston apparatus. 4,192,222, Cl. 91-517.000.
- Dmitrenko, Valentina V.: *See—*
  - Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.
- Dr. Boy KG: *See—*
  - Spanier, Hermann, 4,192,616, Cl. 366-79.000.
- Dr. L. * Zambeletti S.p.A.: *See—*
  - Botre, Claudio; Bolasco, Franco; Memoli, Adriana; and Molteni, Luigi, 4,192,894, Cl. 424-329.000.
- Dodson, Daniel P., to Eastman Kodak Company. Modified polyethylene containing hot-melt adhesives useful for carpet tape. 4,192,788, Cl. 260-27.00R.
- Doi, Tatsuo: *See—*
  - Kazino, Sadayosi; and Doi, Tatsuo, 4,192,195, Cl. 74-7.00A.
- Dolgov, Sergei I.: *See—*
  - Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Dolgov, Sergei I.; and Sysoev, Vladimir S., 4,192,165, Cl. 72-238.000.
- Donaldson, Willis L.: *See—*
  - Prucha, Martin J.; Donaldson, Willis L.; and Travers, Douglas N., 4,192,967, Cl. 178-22.000.
- Dornbush, David A.: *See—*
  - Erickson, Chad S.; and Dornbush, David A., 4,192,081, Cl. 34-225.000.
- Dorosh, Michael. Stud extractor. 4,192,205, Cl. 81-53.200.
- Dosapro Milton Roy: *See—*
  - Lombard, Didier, 4,192,223, Cl. 92-5.00R.
- Dotson, Ronald L.; and O'Leary, Kevin J., to Diamond Shamrock Corporation. Electrolytic production of high purity alkali metal hydroxide. 4,192,725, Cl. 204-98.000.
- Dougherty, Thomas J.: *See—*
  - Frailing, Charles E.; and Dougherty, Thomas J., 4,193,025, Cl. 324-427.000.
- Dougherty, Walter S., to United States of America, Health, Education and Welfare. System for creating motion effects employing still projection equipment. 4,192,584, Cl. 353-30.000.
- Dougherty, William E., to International Business Machines Corporation. Multi-layer dielectric structure. 4,193,082, Cl. 357-80.000.
- Dow Chemical Company, The: *See—*
  - Wagner, Eugene R.; and Matthews, Donald P., 4,192,884, Cl. 424-275.000.
- Downs, Byron E., II, to Honeywell Inc. Eddy current instrumentation circuitry for distinguishing flaw signals from spurious noise signals. 4,193,028, Cl. 324-237.000.
- Dragerwerk Aktiengesellschaft: *See—*
  - Bartscher, Wolfgang; Sachtler, Jurgen; and Schultner, Roland, 4,192,836, Cl. 261-142.000.
- Dreher, George L., to Beloit Corporation. Combined breaker size press coater. 4,192,712, Cl. 162-265.000.
- Dresser Industries, Inc.: *See—*
  - Marsh, Harry A., Jr., 4,192,492, Cl. 266-281.000.
  - Smith, John R. E., 4,192,380, Cl. 166-250.000.
- DSO "Bulgarplod": *See—*
  - Krivoshiev, Georgi P., 4,192,999, Cl. 250-561.000.

- Dube, Jacques: *See—*
  - Allais, Andre; Meier, Jean; and Dube, Jacques, 4,192,890, Cl. 424-308.000.
- Duckworth, Charles E. Cooling system for internal combustion engine. 4,192,266, Cl. 123-119.00A.
- Dudeck, Christian: *See—*
  - Meissner, Bernd; Fliege, Werner; Woerz, Otto; Dudeck, Christian; and Diehm, Hans, 4,192,820, Cl. 260-601.00R.
- Duembgen, Gerd: *See—*
  - Broecker, Franz J.; Duembgen, Gerd; Glietenberg, Helmut; Miesen, Ernest; and Schwarzmann, Matthias, 4,192,807, Cl. 260-343.600.
- Duhl, Daniel; and Wall, Denton B., to Polylok Corporation. Fabric and apparatus and method for making same. 4,192,160, Cl. 66-207.000.
- Dumas, Daniel; Lacroix, Serge; and Vallon, Jean, to Societe des Electrodes et Refractaires Savoie. Carbonaceous luting paste and ambient temperature luting process. 4,192,730, Cl. 204-294.000.
- Dumortier, Thierry M., to Fabriqe Nationale Herstal, en abrege FN. Shell for sporting cartridge of plastic material. 4,192,233, Cl. 102-43.00P.
- Dunbeker, George H.: *See—*
  - Trieschock, George E.; and Dunbeker, George H., 4,192,843, Cl. 264-528.000.
- Dunlap, Harold E., to Thermo Electron Corporation. Creping doctor. 4,192,709, Cl. 162-111.000.
- Duphar International Research B.V.: *See—*
  - van Dijk, Jan; and Davies, Jenkin E., 4,192,818, Cl. 260-566.0AE.
- Du Pont de Nemours, E. I., and Company: *See—*
  - Adams, John B., Jr.; and Wommack, Joel B., Jr., 4,192,669, Cl. 71-108.000.
  - Beresniewicz, Aleksander; and Gallagher, John P., 4,192,826, Cl. 525-425.000.
  - MacDonald, Robert D., 4,192,052, Cl. 29-157.30A.
  - Robinson, Ivan M., 4,192,943, Cl. 528-417.000.
- DuPont of Canada Limited: *See—*
  - Lovell, Peter J.; and Saunders, Ian C. B., 4,192,935, Cl. 526-348.600.
- Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Imidazolyl alkylamino nitroethylene compounds. 4,192,879, Cl. 424-273.00R.
- Durbin, James. Concrete wall forming system. 4,192,481, Cl. 249-42.000.
- Durley, Benton A., III. Ultrasonic piezoelectric transducer using a rubber mounting. 4,193,009, Cl. 310-323.000.
- Duthweiler, Frederick C., to Union Oil Company of California. Method and apparatus for building ice islands. 4,192,630, Cl. 405-217.000.
- Dyckerhoff & Widmann Aktiengesellschaft: *See—*
  - Jungwirth, Dieter; Renoth, Josef; and Wlodkowski, Johann, 4,192,114, Cl. 52-230.000.
- Dynamics Research Corporation: *See—*
  - Di Ciaccio, James J., 4,192,168, Cl. 72-389.000.
- Dynamit Nobel Aktiengesellschaft: *See—*
  - Gawlick, Heinz; Marondel, Gunter; and Siegelin, Werner, 4,192,837, Cl. 264-3.00E.
- E. Beaudry & Cie, Societe Anonyme: *See—*
  - Jackson, Philip, 4,192,749, Cl. 210-107.000.
- E. R. Squibb & Sons, Inc.: *See—*
  - Chen, James L.; Cilento, Rudolfo D.; Hill, John A.; and La Via, Anthony L., 4,192,785, Cl. 260-17.4GC.
  - Haslanger, Martin F., 4,192,891, Cl. 424-305.000.
  - Hauck, Frederic P.; Narayanan, Venkatachala L.; O'Connor, Jeremiah J.; and Pilote, Raymond R., 4,192,889, Cl. 424-309.000.
  - Mackaness, George B.; and Hou, Joseph P., 4,192,859, Cl. 424-5.000.
  - Ondetti, Miguel A., 4,192,878, Cl. 424-270.000.
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  - Ondetti, Miguel A.; and Cushman, David W., 4,192,882, Cl. 424-274.000.
  - Ondetti, Miguel A., 4,192,945, Cl. 546-245.000.
- E.T.I. Corporation: *See—*
  - Murphy, Wesley T., 4,192,119, Cl. 52-588.000.
- Easterly, Herbert D. Auxiliary truck heater. 4,192,457, Cl. 237-12.30C.
- Eastern Company, The: *See—*
  - Vass, George S., 4,192,631, Cl. 405-261.000.
- Eastman Kodak Company: *See—*
  - Chasman, Richard A.; and Erickson, Wayne F., 4,192,678, Cl. 430-214.000.
  - Dodson, Daniel P., 4,192,788, Cl. 260-27.00R.
  - Erickson, Wayne F., 4,192,679, Cl. 430-214.000.
  - Foster, Charles H., 4,192,811, Cl. 260-397.250.
  - Hage, Charles T., 4,192,607, Cl. 355-50.000.
  - Mainord, Kenneth R., 4,192,942, Cl. 260-597.00R.
  - Wang, Richard H. S.; Irick, Gether, Jr.; and Ownby, James C., 4,192,794, Cl. 260-42.450.
- Eaton Corporation: *See—*
  - Blazek, Gustav; and Charych, Arthur, 4,193,075, Cl. 343-108.00M.
  - Bogema, Edward J.; Vandervoort, John R.; and Bevins, John R., 4,192,196, Cl. 74-339.000.
  - Collins, Marcus H.; and Smith, John K., 4,192,702, Cl. 156-416.000.
- Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, to Citizen Watch Company Limited. Portable electronic device. 4,192,135, Cl. 368-62.000.
- Edcliff Instruments: *See—*
  - Avellis, Cosmo L.; Pavone, Carlo; and Wolfkamp, Albertus, 4,192,183, Cl. 73-182.000.
- Edelman, Leonard E., to Westinghouse Electric Corp. Non-pulverulent solid polymeric structure. 4,192,933, Cl. 525-377.000.
- Edouard Dubied & Cie (Societe Anonyme): *See—*
  - Kohler, Fritz, 4,192,156, Cl. 66-64.000.
- Edwards, Jeffrey D.: *See—*
  - Stineman, Thomas L.; Edwards, Jeffrey D.; and Grosskopf, Jack C., 4,192,918, Cl. 435-256.000.
- Edwards, Margaret P.: *See—*
  - Parker, William D.; Smith, Harry M.; and Edwards, Margaret P., 4,192,697, Cl. 156-188.000.
- Eggineers, Inc.: *See—*
  - Caudle, Otis M., 4,192,121, Cl. 53-248.000.
- EIC Corporation: *See—*
  - Harvey, Walter W.; and Makrides, Alkis C., 4,192,854, Cl. 423-220.000.
- Eisenhauer, Marvin W.: *See—*
  - Kridler, Edward L.; Eisenhauer, Marvin W.; and Huson, Loyal A., 4,192,283, Cl. 126-25.0AA.
- Ekstrom, Lars A., to Raywall Kommanditbolag. Windows. 4,192,111, Cl. 52-171.000.
- Electric Power Research Institute, Inc.: *See—*
  - Barkan, Philip; and Imam, Imdad, 4,192,981, Cl. 200-144.00B.
- Electrolytic Zinc Co. of Australasia Limited: *See—*
  - Pammenter, Robert V.; and Haigh, Curzon J., 4,192,852, Cl. 423-42.000.
- Eletr, Sam H.: *See—*
  - Kronick, Melvyn N.; Bryson, Charles E., III; Bridgham, John A.; and Eletr, Sam H., 4,192,996, Cl. 250-373.000.
- Elfes, Lee E.; and Wood, Dale A., to Massey-Ferguson Inc. Stackable filter head unit. 4,192,750, Cl. 210-133.000.
- Eli Lilly and Company: *See—*
  - Soper, Quentin F., 4,192,670, Cl. 71-121.000.
- Emerson Electric Co.: *See—*
  - Henton, Paul V.; and Fait, Roger J., 4,192,751, Cl. 210-136.000.
- Emura, Tomoyuki: *See—*
  - Takahashi, Tsukasa; Sekihara, Takeshi; Emura, Tomoyuki; and Miki, Masayoshi, 4,192,934, Cl. 526-62.000.
- En, John, to Cubic Corporation. Triple random error correcting convolutional code. 4,193,062, Cl. 371-43.000.
- Enemark, Robert B.: *See—*
  - Cooper, Glenn F.; and Enemark, Robert B., 4,193,069, Cl. 340-630.000.
- Energy Research Corporation: *See—*
  - Maru, Hansraj C., 4,192,906, Cl. 429-13.000.
- English Electric Valve Company Limited: *See—*
  - Nixon, Ralph D., 4,193,014, Cl. 313-396.000.
- Enjoji, Masahiko: *See—*
  - Ishidera, Takashi; and Enjoji, Masahiko, 4,192,660, Cl. 55-276.000.
- Enomoto, Kunio; Kikuchi, Uhee; Kobori, Masanori; Kimura, Suguru; Kamiyama, Satoru; Todoroki, Nobuaki; and Yasukawa, Jun-ichi, to Taikisha Ltd.; Honda Motor Co., Ltd.; and Shinto Paint Co., Ltd. Method for supplying powder into a coating tank and its apparatus. 4,192,728, Cl. 204-181.00R.
- Entreprises de Travaux Publics et Prives J. Richard Societe Anonyme: *See—*
  - Richard, Andre J.; Delmotte, Philippe M.; and Parthoens, Pierre A., 4,192,120, Cl. 52-741.000.
- Erickson, Chad S.; and Dornbush, David A., to Alternative Pioneering Systems, Inc. Food dehydrating machine. 4,192,081, Cl. 34-225.000.
- Erickson, Elwyn J. Shielded spray apparatus. 4,192,462, Cl. 239-288.000.
- Erickson, Erick E.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Board game apparatus. 4,192,512, Cl. 273-243.000.
- Erickson, Norman. Dental appliance. 4,192,071, Cl. 433-93.000.
- Erickson, Wayne F., to Eastman Kodak Company. Bifunctional benzisoxazolone compounds. 4,192,679, Cl. 430-214.000.
- Erickson, Wayne F.: *See—*
  - Chasman, Richard A.; and Erickson, Wayne F., 4,192,678, Cl. 430-214.000.
- Ernst Leitz Wetzlar GmbH: *See—*
  - Henkelmann, Kurt; and Bruckner, Dietrich, 4,192,585, Cl. 353-101.000.
- Escher Wyss GmbH: *See—*
  - Bubik, Alfred; Jox, Rainer; and Schultz, Hans-Joachim, 4,192,710, Cl. 162-198.000.
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- Essex Transducers Corporation: *See—*
  - Kompanek, Harry W., 4,193,010, Cl. 310-330.000.
- Etablissements Francois Salomon et Fils: *See—*
  - Salomon, Georges P. J., 4,192,087, Cl. 36-119.000.
- Etablissements Unicor: *See—*
  - Brodin, Eric, 4,192,310, Cl. 126-286.000.
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  - Iizuka, Haruhiko; Sugasawa, Fukashi; Matsumoto, Junichiro; and Etoh, Yukihiro, 4,192,278, Cl. 123-198.00F.
- Ettenhofer, Kurt L.: *See—*
  - Wiggins, Robert W.; Ettenhofer, Kurt L.; and Bess, Jack, 4,193,129, Cl. 367-106.000.
- Exxon Research & Engineering Co.: *See—*
  - Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,192,735, Cl. 208-112.000.
  - Bucker, Edward R.; and Amick, James A., 4,192,720, Cl. 204-14.00N.
  - Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., 4,192,780, Cl. 252-518.000.

  - McVicker, Gary B.; and Vannice, M. Albert, 4,192,777, Cl. 252-447.000.
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  - Oswald, Alexis A.; and Valint, Paul L., Jr., 4,192,829, Cl. 260-948.000.
  - Rao, Bhaskara M. L., 4,192,912, Cl. 429-105.000.
  - Smith, Hosea E., 4,192,515, Cl. 277-11.000.
  - Worley, Arthur C., 4,192,188, Cl. 73-424.000.
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  - Dumortier, Thierry M., 4,192,233, Cl. 102-43.00P.
- Fadeev, Alexandr I.: *See—*
  - Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G., 4,192,715, Cl. 176-30.000.
- Fait, Roger J.: *See—*
  - Henton, Paul V.; and Fait, Roger J., 4,192,751, Cl. 210-136.000.
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- Fargo Machine & Tool Company: *See—*
  - Fortunski, Anthony C.; and Gentry, Everett G., 4,192,615, Cl. 366-65.000.
- Farmland Industries, Inc.: *See—*
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- Farquhar, Bannister W.; and Sloan, Denis, to Boeing Company, The. Noise suppression refracting inlet for jet engines. 4,192,336, Cl. 137-15.100.
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- Fay, William L., to Visor-Trac, Inc. Visored headgear. 4,192,017, Cl. 2-12.000.
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  - Conroy, Michael F., 4,192,434, Cl. 220-306.000.
- Fedida, Samuel; and Sargent, Desmond J., to Post Office. Information handling apparatus having multiple ports distributed around shifting register rings. 4,193,121, Cl. 364-900.000.
- Feecon Corporation: *See—*
  - Pierce, Leo P., 4,192,385, Cl. 169-56.000.
- Feeley, John M.; and Feeley, Ruth E. Diamond alphabet playing cards. 4,192,513, Cl. 273-294.000.
- Feeley, Ruth E.: *See—*
  - Feeley, John M.; and Feeley, Ruth E., 4,192,513, Cl. 273-294.000.
- Feldman, Michael A. Soft contact lens apparatus. 4,192,204, Cl. 81-43.000.
- Feldmeier, Robert H. Vertical liquid storage tank and apparatus for cleaning. 4,192,332, Cl. 134-167.00R.
- Felfoldi, James J. Disposable diaper with wetness indicator. 4,192,311, Cl. 128-287.000.
- Fergg, Berthold; Findeis, Gunter; and Zahn, Wolfgang, to AGFA-Gevert, A.G. Method and apparatus for making color prints. 4,192,605, Cl. 355-38.000.
- Ferneau, Richard H., to Weil, Burt. Cart having extensible auxiliary wheels. 4,192,541, Cl. 296-20.000.
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  - Walters, Frank, 4,193,017, Cl. 315-169.400.
- Ferrari, Lorenzo: *See—*
  - Bruzzese, Tiberio; and Ferrari, Lorenzo, 4,192,864, Cl. 424-122.000.
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  - Bertoglio, Ottavio; Caccia, Aurelio; Fidanza, Riccardo; and Van-Veen, Wouter M. D., 4,192,972, Cl. 179-6.30R.
- Fiege, Helmut: *See—*
  - Bauer, Kurt; Krempel, Alfred; Molleken, Reiner; Wedemeyer, Karlfried; and Fiege, Helmut, 4,192,959, Cl. 568-764.000.
- Filtrol Corporation: *See—*
  - Alafandi, Hamid; and Stamires, Dennis, 4,192,778, Cl. 252-455.00Z.
- Finan, Michael A.: *See—*
  - Clark, David R.; Marshall, Alan; and Finan, Michael A., 4,192,744, Cl. 210-54.000.
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  - Schafer, Walter; Wagner, Kuno; and Findeisen, Kurt, 4,192,925, Cl. 521-163.000.
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- Findley, Charles A. Log splitting device. 4,192,364, Cl. 144-193.00A.
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  - Naf, Ferdinand, 4,192,781, Cl. 252-522.00R.
- Firth, George F.: *See—*
  - Hayden, Owen; Sheward, George E.; Ormrod, Derek T.; Willby, Christopher R.; and Firth, George F., 4,192,374, Cl. 165-158.000.
- Fischer, John P. Tile cutter. 4,192,282, Cl. 125-23.00T.
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  - Pye, David S.; Gallus, Julius P.; and Fischer, Paul W., 4,192,753, Cl. 252-8.50A.
- Fisher, John M., to B. F. Goodrich Company, The. Valve assembly. 4,192,339, Cl. 137-223.000.
- Fisher, Leslie G., to GKN Transmissions Limited. Hookes joint yoke. 4,192,153, Cl. 64-17.00R.
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  - Griffiths, Alan J., 4,192,860, Cl. 424-43.000.
  - Towlerton, Richard G.; and Lapras, Michel, 4,192,886, Cl. 424-283.000.
- Fitzgerald, Denis E. Portable miniature golf game. 4,192,511, Cl. 273-176.00G.
- Fitzpatrick, Francis A., to Upjohn Company, The. Conjugates formed by reacting a prostaglandin mimic compound with a carrier molecule. 4,192,799, Cl. 260-121.000.
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  - Meissner, Bernd; Fliege, Werner; Woerz, Otto; Dudeck, Christian; and Diehm, Hans, 4,192,820, Cl. 260-601.00R.
- Florindez, Augusto. Automatic bag supplying machine for bread baggers. 4,192,122, Cl. 53-572.000.
- Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., to Texaco Inc. Process for recovering hydrocarbons from a hydrocarbon bearing formation. 4,192,755, Cl. 252-8.55D.
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- Floyd, Middleton B., Jr.; Weiss, Martin J.; Grudzinskas, Charles V.; and Chen, Sow-Mei L., to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-substituted prostanoic acids and congeners. 4,192,950, Cl. 562-500.000.
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  - Chang, Andrew K., 4,192,074, Cl. 33-228.000.
  - Wech, Robert J., 4,192,705, Cl. 156-515.000.
- Fogel, Isaac, to Classic Corporation. Waterbed mattress. 4,192,031, Cl. 5-451.000.
- Fogelberg, Mark J., to Borg-Warner Corporation. Automatic locking clutch. 4,192,411, Cl. 192-36.000.
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  - Cioccio, Armand; and Folz, Walter C., 4,193,029, Cl. 324-301.000.
- Ford Motor Company: *See—*
  - Dickie, Ray A.; Holubka, Joseph W.; and Chattha, Mohinder S., 4,192,932, Cl. 525-511.000.
  - Gandhi, Haren S.; Watkins, William L.; and Stepien, Henryk K., 4,192,779, Cl. 252-470.000.
  - Topouzian, Armenag, 4,192,911, Cl. 429-104.000.
  - Wingfield, Robert C., Jr., 4,192,929, Cl. 525-110.000.
- Fortunato, James M.: *See—*
  - Glamkowski, Edward J.; and Fortunato, James M., 4,192,874, Cl. 424-248.540.
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- Foster, Charles H., to Eastman Kodak Company. Process for separating stigmasterol-derived products. 4,192,811, Cl. 260-397.250.
- Foster, Edward H.; and Reiss, James M., to Atomic Products Corporation. Device for delivering radioactive gas from a sealed vial. 4,192,438, Cl. 222-5.000.
- Foster, Peter W.; Berry, Thomas; and Murenbeeld, Karel, to John Heathcoat & Company Limited. Method of treating multifilament synthetic yarn. 4,192,047, Cl. 28-220.000.
- Foster Wheeler Energy Corporation: *See—*
  - Wolowodiuk, Walter, 4,192,373, Cl. 165-70.000.
- Foto-Mark, Inc.: *See—*
  - Pederson, Paul D., Jr.; Ufford, Keith A.; and Nelson, Lawrence V., 4,192,988, Cl. 219-201.000.
- Fournier, Jacques: *See—*
  - Derouette, Jean-Jacques; Dartoy, Jacques; Fournier, Jacques; and Vollerin, Bernard, 4,192,371, Cl. 165-1.000.
- Fowler, Harold W.: *See—*
  - Hodges, Frank P.; Fowler, Harold W.; and Anderson, Phillip R., 4,192,246, Cl. 114-23.000.
- Fowlerex Pty. Limited: *See—*
  - Hood, Maxwell G., 4,192,745, Cl. 210-66.000.
- Frailing, Charles E.; and Dougherty, Thomas J., to Globe-Union, Inc. Automatic battery analyzer. 4,193,025, Cl. 324-427.000.
- Frank, Robert I.: *See—*
  - Kaplow, Roy; and Frank, Robert I., 4,193,081, Cl. 357-30.000.
- Frankel, Robert S. Camera quadripod. 4,192,601, Cl. 354-293.000.

- Frankenberg, Alfred A., to Robertshaw Controls Company. Thermostat construction and method of making the same. 4,192,453, Cl. 236-87.000.
- Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
  - Theurer, Josef, 4,192,237, Cl. 104-7.00B.
- Frassek, Karl H.: *See—*
  - Beck, Heinz; Frassek, Karl H.; Holtvoigt, Werner; and Mukerjee, Ambar, 4,192,930, Cl. 525-227.000.
- Freakes, Anthony: *See—*
  - Baselice, Louis R.; Freakes, Anthony; Miller, Joseph A.; and Ventz, George A., 4,192,496, Cl. 271-10.000.
- Freeman, Frank H.: *See—*
  - Madhavan, Narayanan; and Freeman, Frank H., 4,192,795, Cl. 260-42.520.
- Freidinger, Roger M.: *See—*
  - Veber, Daniel F.; and Freidinger, Roger M., 4,192,875, Cl. 424-256.000.
- Frezza, Robert, to Samcoe Holding Corporation. Adjustable spreader for tubular knitted fabric. 4,192,045, Cl. 26-75.000.
- Friebe, Herbert, deceased; by Rodert, Axel, administrator; and Reininghaus, Ulrich. Mine prop construction. 4,192,479, Cl. 248-354.00H.
- Friedrich, Horst: *See—*
  - Sedlak, Adolf; and Friedrich, Horst, 4,192,132, Cl. 368-160.000.
- Friedrich Kocks GmbH & Company: *See—*
  - Brauer, Hans, 4,192,164, Cl. 72-234.000.
- Fuji Jukogyo Kabushiki Kaisha: *See—*
  - Oya, Hiroo; and Tatejima, Masakazu, 4,192,846, Cl. 422-168.000.
- Fuji Photo Film Co., Ltd.: *See—*
  - Kato, Hisashi; Iwasa, Masakazu; and Kudo, Yoshio, 4,192,232, Cl. 101-426.000.
  - Oidaira, Toshiaki; Asanuma, Katsumi; Yanagimoto, Takekazu; Yasui, Senzi; Saito, Kozo; and Hakamata, Yoshio, 4,192,594, Cl. 354-90.000.
- Fuji Photo Optical Co., Ltd.: *See—*
  - Suzuki, Masane; and Yasuda, Kenzi, 4,192,578, Cl. 350-320.000.
- Fujii, Takashi; Ohmi, Atsushi; Nogami, Tomoyuki; and Ohta, Takaaki, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Sealed type hydraulic reservoir. 4,192,345, Cl. 137-572.000.
- Fujisawa, Isao: *See—*
  - Washizuka, Isamu; Hashimoto, Shintaro; Kakumae, Masaru; Sato, Yuuichi; Fujisawa, Isao; Inoue, Yukihiro; and Hashimoto, Sadakatsu, 4,192,060, Cl. 29-592.00R.
- Fujita, Hisashi: *See—*
  - Masuzima, Sho; and Fujita, Hisashi, 4,192,061, Cl. 29-854.000.
- Fujiwhara, Mitsuto; Matsuo, Syunji; Kawasaki, Mikio; Masukawa, Toyoaki; and Kaneko, Yutaka, to Konishiroku Photo Industry Co., Ltd. Process for forming an amplified dye image. 4,192,681, Cl. 430-373.000.
- Fukuda, Hideo: *See—*
  - Hashimoto, Noboru; Fukuda, Hideo; and Shibata, Setsuo, 4,192,833, Cl. 261-36.00R.
- Fukuda, Tamotsu: *See—*
  - Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, 4,192,268, Cl. 123-119.0EC.
- Fuller, William D.: *See—*
  - Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, 4,192,798, Cl. 260-112.50R.
- Funk, David B., to Dickey-john Corporation. Analysis instrument. 4,193,116, Cl. 364-556.000.
- Furuya, Mikihito, to Nippon Kogaku K.K. Switch mechanism for a motor driven device. 4,192,599, Cl. 354-173.000.
- Fushiki, Isamu; Kamitakahara, Atushi; and Mori, Keiichi, to Konishiroku Photo Industry Co., Ltd. Process for treating light-sensitive silver halide color photographic material. 4,192,680, Cl. 430-380.000.
- Futamoto, Masaaki; Kawabe, Ushio; Hosoki, Shigeyuki; Komoda, Tsutomu; and Yamamoto, Shigehiko, to Hitachi, Ltd. Cathode for an electron source and a method of producing the same. 4,193,013, Cl. 313-341.000.
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  - Nahta, Roop C., 4,192,648, Cl. 8-86.000.
- Gageur, Fritz; and Trotscher, Gerhard, to Lindauer Dornier Gesellschaft mbH. Device for treating a sheet of material partially enclosing a backing roll or a cooling cylinder. 4,192,251, Cl. 118-63.000.
- Gale, Paul E.; and Toth, Endre L., to Arcair Company. Apparatus for generating and using a magnetic tape to control movement of a co-ordinate drive tool carriage. 4,193,021, Cl. 318-568.000.
- Galey, Jean: *See—*
  - Gilbert, Ghislain; Bentz, Gerard; and Galey, Jean, 4,192,147, Cl. 62-49.000.
- Gallagher, John P.: *See—*
  - Beresniewicz, Aleksander; and Gallagher, John P., 4,192,826, Cl. 525-425.000.
- Gallus, Julius P.: *See—*
  - Pye, David S.; Gallus, Julius P.; and Fischer, Paul W., 4,192,753, Cl. 252-8.50A.
- Gandhi, Haren S.; Watkins, William L.; and Stepien, Henryk K., to Ford Motor Company. Catalyst system and method for increasing the selectivity of a catalyst. 4,192,779, Cl. 252-470.000.
- Ganellin, Charon R.: *See—*
  - Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,192,879, Cl. 424-273.00R.
- Gankin, Viktor J.: *See—*
  - Polyakov, Sergei A.; Shapiro, Aron L.; and Gankin, Viktor J., 4,192,961, Cl. 585-319.000.
- Ganslaw, Stuart H.: *See—*
  - Micchelli, Albert L.; Nowak, Frank A., Jr.; and Ganslaw, Stuart H., 4,192,861, Cl. 424-47.000.
- Garden, Jock C.: *See—*
  - Wickstrom, Lawrence L.; and Garden, Jock C., 4,192,107, Cl. 52-82.000.
- Garmon, Ivan E., to Champion International Corporation. Four cell box and blank therefor. 4,192,444, Cl. 229-28.00R.
- Garner, Peter: *See—*
  - Logan, Maurus C.; Cole, John M.; and Garner, Peter, 4,192,056, Cl. 29-468.000.
- Gas-Fired Products, Inc.: *See—*
  - Horne, William P., 4,192,323, Cl. 131-135.000.
- Gas Research Institute: *See—*
  - Pangborn, Jon B.; and Dafler, James R., 4,192,726, Cl. 204-129.000.
- Gass, Jacques: *See—*
  - Ferraro, Lugi; Beltrani, Gianni; Gass, Jacques; and Trochon, Bernard, 4,192,298, Cl. 128-205.240.
- Gauthier, Roland. Clothes line device. 4,192,426, Cl. 211-105.400.
- Gawlick, Heinz; Marondel, Gunter; and Siegelin, Werner, to Dynamit Nobel Aktiengesellschaft. Caseless propellant charge. 4,192,837, Cl. 264-3.00E.
- Gehring, Johann: *See—*
  - Scheubeck, Egmont; and Gehring, Johann, 4,192,849, Cl. 422-242.000.
- Geier, James M. Rocking chair frame. 4,192,547, Cl. 297-452.000.
- Gekhman, Boris S.: *See—*
  - Vasilevsky, Petr N.; Gekhman, Boris S.; Parfinenko, Ivan V.; Podgursky, Alfred M.; and Lazaretnik, Avram S., 4,192,294, Cl. 128-1.00R.
- Gelsdorf, Gunther: *See—*
  - Bade, Werner; Gelsdorf, Gunther; and Wieland, Gunther, 4,192,687, Cl. 106-38.240.
- General Corrugated Machinery Co., Inc.: *See—*
  - Baselice, Louis R.; Freakes, Anthony; Miller, Joseph A.; and Ventz, George A., 4,192,496, Cl. 271-10.000.
- General Electric Company: *See—*
  - Barker, Henry P.; and Mitchell, Lawrence C., 4,192,954, Cl. 568-723.000.
  - Crivello, James V., 4,192,924, Cl. 521-126.000.
  - Herzner, Frederick C., 4,192,633, Cl. 416-221.000.
  - Kimura, Shiro G.; Lavigne, Raymond G.; and Browall, Warella R., 4,192,842, Cl. 264-298.000.
  - Losert, Gerhard K., 4,192,564, Cl. 312-253.000.
  - MacLaury, Michael R., 4,192,956, Cl. 568-726.000.
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  - Reinitz, Clayton W., 4,192,955, Cl. 568-724.000.
  - Webb, William M., 4,192,149, Cl. 62-151.000.
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  - Smith, Kent F., 4,193,126, Cl. 365-174.000.
- General Motors Corporation: *See—*
  - Borlinghaus, Hans J., 4,192,161, Cl. 70-455.000.
  - Brown, Richard C., 4,192,431, Cl. 220-62.000.
- General Signal Corporation: *See—*
  - Schnell, Werner J., 4,192,192, Cl. 73-715.000.
  - Schnell, Werner J., 4,192,193, Cl. 73-739.000.
- General Time Corporation: *See—*
  - Robinson, Ralph C., 4,192,136, Cl. 368-222.000.
- Genese, Joseph N., to Abbott Laboratories. Catheter placement assembly having axial and rotational alignment means. 4,192,306, Cl. 128-214.400.
- Gensho, Takahashi; Masamitsu, Yanai; Masakazu, Kurihara; Yoneharu, Tanaka; and Kazuhiro, Suzuoki, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive compositions containing hydrogenated 1,2-polybutadiene. 4,192,684, Cl. 430-284.000.
- Gentry, Everett G.: *See—*
  - Fortunski, Anthony C.; and Gentry, Everett G., 4,192,615, Cl. 366-65.000.
- Georex Industries, Inc.: *See—*
  - Womack, D. Gene; and Hignight, Charles G., 4,192,393, Cl. 175-103.000.
- Geraci, Fred. Contour sheet for a convertible sofa bed. 4,192,032, Cl. 5-497.000.
- Gericke, Willem A.: *See—*
  - Featherstone, Robert A.; Roos, Paul P.; Gericke, Willem A.; Saleil, Jean; Leroy, Pierre J.; and Masson, Jean-Marcel, 4,192,675, Cl. 75-60.000.
- Gerigk, Gunter; Klendauer, Wolfgang; Pietruck, Horst; and Hammer, Klaus-Dieter, to Hoechst Aktiengesellschaft. Tubular packaging material. 4,192,904, Cl. 428-36.000.
- Gersbach, John E., to International Business Machines Corporation. Simultaneous read/write cell. 4,193,127, Cl. 365-174.000.
- Gersonde, Klaus: *See—*
  - Nicolau, Yves-Claude; and Gersonde, Klaus, 4,192,869, Cl. 424-199.000.
- Gerstenmeier, Jurgen; Klotz, Hermann; and Leiber, Heinz, to Robert Bosch GmbH. Testing apparatus for an anti-lock control system. 4,192,180, Cl. 73-121.000.
- Gerulis, Benedict R. Hydraulic lock-out device. 4,192,338, Cl. 137-106.000.
- Gewerkschaft Eisenhutte Westfalia: *See—*
  - Beckman, Klaus; and Redemann, Richard, 4,192,471, Cl. 241-185.00R.
  - Von Viebahn, Hans E.; and Tengler, Julius, 4,192,632, Cl. 405-298.000.

- Giannetti, Joseph P.; and Swift, Harold E., to Gulf Research and Development Company. Novel fuel compositions comprising upgraded solid and/or semi-solid material prepared from coal. 4,192,653, Cl. 44-51.000.
- Gianni, Richard. Multi-level socket for an integrated circuit. 4,192,565, Cl. 339-17.0CF.
- Gielnik, Harry, to Munchmeyer & Co. Apparatus for cutting open and cleaning the stomachs of small animals, for example poultry. 4,192,040, Cl. 17-11.000.
- Gilb, Tyrell T., to Simpson Manufacturing Co., Inc. Holdown for attaching wood framing members to concrete foundations. 4,192,118, Cl. 52-714.000.
- Gilbert, Ghislain; Bentz, Gerard; and Galey, Jean, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Arrangements for the controlled injection of cryogenic fluid. 4,192,147, Cl. 62-49.000.
- Gilbert, Judson T.; Harrison, George R.; Holbrook, Alan R.; Levy, Michael; Scott, John B.; and Swan, Harris K., to Racal-Milgo, Inc. Microcomputer data display communication system with a hardwire editing processor. 4,193,112, Cl. 364-200.000.
- Giner, Jose D.: *See—*
  - United States of America, National Aeronautics and Space Administration; Giner, Jose D.; and Cahill, Kathleen J., 4,192,910, Cl. 429-101.000.
- Ginger, Edward A., to UOP Inc. Process for the simultaneous separation of sulfur and nitrogen oxides from a gaseous mixture. 4,192,855, Cl. 423-239.000.
- Ginsburg, Sara: *See—*
  - Savarese, John J.; Kitz, Richard J.; and Ginsburg, Sara, 4,192,877, Cl. 424-258.000.
- GKN Transmissions Limited: *See—*
  - Fisher, Leslie G., 4,192,153, Cl. 64-17.00R.
- Glamkowski, Edward J.; and Fortunato, James M., to American Hoechst Corporation. Substituted 1,2,6,7-tetrahydroindolo[1,7-ab][1,5]benzodiazepines. 4,192,874, Cl. 424-248.540.
- Glass, Roger W.; and Kuntze, Richard A., to Ontario Research Foundation. Heat treatment of chrysotile asbestos fibres. 4,192,707, Cl. 162-3.000.
- Glaxo Laboratories Limited: *See—*
  - Phillipps, Gordon H.; May, Peter J.; and Ayres, Barry E., 4,192,871, Cl. 424-241.000.
- Glietenberg, Helmut: *See—*
  - Broecker, Franz J.; Duembgen, Gerd; Glietenberg, Helmut; Miesen, Ernest; and Schwarzmann, Matthias, 4,192,807, Cl. 260-343.600.
- Globe-Union, Inc.: *See—*
  - Frailing, Charles E.; and Dougherty, Thomas J., 4,193,025, Cl. 324-427.000.
- Glover, Clarence C.: *See—*
  - Morrison, Steven; Lisle, Thomas K., Jr.; and Glover, Clarence C., 4,193,066, Cl. 340-347.0CC.
- Glushakov, Sergei N.: *See—*
  - Sheludyakov, Viktor D.; Kirilin, Alexei D.; Mironov, Vladimir F.; Glushakov, Sergei N.; and Karpman, Yakov S., 4,192,815, Cl. 260-453.00P.
- Godai, Tomokazu; Sugiyama, Tohru; Sugino, Morihiko; Kondo, Masaru; and Ogawa, Tsuneshi, to Kobe Steel, Ltd. Process and apparatus for measurement of diffusible hydrogen. 4,192,175, Cl. 73-19.000.
- Godejahn, Jr. Gordan C.: *See—*
  - Khan, Mahboob; Godejahn, Jr. Gordan C.; Heimbigner, Gary L.; and Aghishian, Noubar A., 4,192,059, Cl. 29-571.000.
- Goebel, Larry W., to Ray Goebel & Sons, Inc. Wheel rut closing device for irrigation system. 4,192,388, Cl. 172-463.000.
- Goens, Duane N.: *See—*
  - Reynolds, James E.; Hazen, Wayne C.; and Goens, Duane N., 4,192,676, Cl. 75-72.000.
- Goettl, Adam D. Automatic flushing and draining reservoir apparatus for evaporative coolers. 4,192,832, Cl. 261-36.00R.
- Goldfarb, Adolph E.; Benkoe, Erwin, deceased; by Benkoe, Elisabeth, Executrix; and Dantzer, Elonne, to Goldfarb, Adolph E.; and Benkoe, Elisabeth, Executrix for Estate of Erwin Benkoe. Toy eating animal utilizing conveyor. 4,192,092, Cl. 46-123.000.
- Goldie, Harry: *See—*
  - Carter, Philip S.; Stitzer, Steven N.; and Goldie, Harry, 4,193,047, Cl. 333-17.00L.
- Goldman, Holliday L.; and Winther, Svend E., to Allis-Chalmers Corporation. Hydraulic actuator to provide both rotary and linear motions to a movable valve. 4,192,482, Cl. 251-56.000.
- Gomolka, William. Electrical connector. 4,192,567, Cl. 339-75.00M.
- Good, William R.: *See—*
  - Mueller, Karl F.; and Good, William R., 4,192,827, Cl. 525-123.000.
- Goodman, Murray: *See—*
  - Verlander, Michael S.; Fuller, William D.; and Goodman, Murray, 4,192,798, Cl. 260-112.50R.
- Goodyear Aerospace Corporation: *See—*
  - Crossman, Richard L., 4,192,407, Cl. 188-196.00R.
- Goodyear Tire & Rubber Company, The: *See—*
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  - Rye, Grover W., 4,192,694, Cl. 148-6.110.
  - Scriver, Richard M., Jr.; and Ross, Waldemar A., 4,192,366, Cl. 152-209.00R.
- Gorman, Edward D. Flow distributor for leaching fields. 4,192,628, Cl. 405-45.000.
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  - Bowers, John J., 4,193,122, Cl. 364-900.000.
  - Parkinson, David B.; and Parkinson, Truman D., 4,192,049, Cl. 29-2.000.
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- Grahac, Mirko, to WOMA-Apparatebau Wolfgang Maasberg & Co., GmbH. Full-flow relief valve. 4,192,343, Cl. 137-474.000.
- Grandadam, Jean A.; Jobard, Alain; and Scheid, Jean-Pierre, to Roussel Uclaf. Novel zootechnical compositions. 4,192,870, Cl. 424-240.000.
- Grandori, Carlo, to Robbins Company, The. Tunnel boring machines. 4,192,556, Cl. 299-56.000.
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- Gray, Stan. Combustion mixture mixing device. 4,192,273, Cl. 123-141.000.
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- Gross, Heiko, to Siempelkamp Giesserei KG. Cover for a nuclear reactor pressure vessel. 4,192,717, Cl. 176-87.000.
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  - Combes, Marvin G., 4,192,483, Cl. 251-172.000.
- Groves, Kenneth L., Jr. Looped slide. 4,192,499, Cl. 272-56.50R.
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- GTE Automatic Electric Laboratories Incorporated: *See—*
  - Baum, Henry K., 4,192,965, Cl. 174-135.000.
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- Gulli, Frank. Bumper construction for motor vehicles. 4,192,538, Cl. 293-134.000.
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  - Baker, Eugene E.; and Carter, Ernest E., Jr., 4,192,378, Cl. 166-186.000.
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  - Shields, Charles H.; and Kane, Gary D., 4,192,456, Cl. 237-12.30R.
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- Hascoe, Norman, to Semi-Alloys, Inc. Hermetic sealing cover for a container for semiconductor devices. 4,192,433, Cl. 220-200.000.
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- Hazen, Wayne C.: *See—*
  - Reynolds, James E.; Hazen, Wayne C.; and Goens, Duane N., 4,192,676, Cl. 75-72.000.
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  - Chen, James L.; Cilento, Rudolfo D.; Hill, John A.; and La Via, Anthony L., 4,192,785, Cl. 260-17.4GC.
- Hill, Max L., to Coleman Company, Inc., The. Air conditioner mounting assembly for a camping trailer. 4,192,542, Cl. 296-173.000.
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  - Kastreuz, Gerhard; and Waschk, Volker, 4,192,391, Cl. 173-116.000.
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- Hodges, Frank P.; Fowler, Harold W.; and Anderson, Phillip R., to Westinghouse Electric Corp. Laminar flow quiet torpedo nose. 4,192,246, Cl. 114-23.000.
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  - Gerigk, Gunter; Klendauer, Wolfgang; Pietruck, Horst; and Hammer, Klaus-Dieter, 4,192,904, Cl. 428-36.000.
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  - Mixich, Johann; and Jastrow, Horst, 4,192,922, Cl. 521-56.000.
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  - Bagley, James S.; and Van Norden, Gary J., 4,193,100, Cl. 360-73.000.
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  - Esposito, Ralph H., 4,193,078, Cl. 346-76.00R.
  - Kabat, John L.; and Kompelien, Arlon D., 4,193,006, Cl. 307-117.000.
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- Hunt, Norman, to Associated Engineering Limited. Actuator mechanism incorporating screw-and-nut devices. 4,192,398, Cl. 180-178.000.
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  - Taylor, Ian D., 4,192,369, Cl. 160-223.000.
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  - Crickard, James L.; and Sheets, Harold L., 4,192,177, Cl. 73-49.500.
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  - Munnerlyn, Charles R.; and Clapham, Terrance N., 4,192,317, Cl. 128-646.000.
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  - Platt, John R.; and Weaver, William N., 4,192,096, Cl. 47-73.000.
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  - Price, Raymond; and Hall, Nigel, 4,192,800, Cl. 260-205.000.
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  - Morigami, Eiji; and Inahara, Motoharu, 4,192,971, Cl. 179-6.00E.
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  - Maiocchi, Luigi, 4,192,368, Cl. 152-362.00R.
- Ingersoll-Rand Company: *See—*
  - Krasnoff, Eugene L.; and Lindeboom, Herman, 4,192,219, Cl. 91-276.000.
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  - Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,192,782, Cl. 252-522.00R.
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  - Mucci, Peter E. R., 4,192,569, Cl. 339-96.000.
  - Vance, Ian A. W., 4,193,034, Cl. 375-88.000.
- International Tapetronics Corporation: *See—*
  - Fesler, John C.; and Bell, Dennis M., 4,193,103, Cl. 360-122.000.
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  - Rabow, Gerald; and Nashman, Alvin E., 4,193,030, Cl. 375-2.000.
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  - LaHaye, Peter G., 4,192,022, Cl. 3-13.000.
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  - Melby, William E.; Isdale, Charles E., Sr.; and Collins, Vernon K., 4,192,916, Cl. 435-274.000.
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  - Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.
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  - Schwartzman, Irwin J., 4,192,217, Cl. 85-41.000.
- Jackson, Hiram S.: *See—*
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- Jahn, Gerhard. Loose leaf binder. 4,192,620, Cl. 402-15.000.
- Jahnke, Richard W., to Lubrizol Corporation, The. Rust inhibitor additive compositions, method of making, and aqueous fluids containing the same. 4,192,769, Cl. 252-389.00R.
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  - Kendig, Paul M.; Lawther, James M.; and James, Robert G., 4,192,245, Cl. 114-23.000.
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  - Ogata, Shunji; and Yamamoto, Yohei, 4,192,662, Cl. 62-13.000.
- Jastrow, Horst: *See—*
  - Mixich, Johann; and Jastrow, Horst, 4,192,922, Cl. 521-56.000.
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  - Marckwardt, Werner, 4,193,117, Cl. 364-728.000.
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- Jeromin, Lothar S., to Xerox Corporation. Blanket heated photoreceptor. 4,192,989, Cl. 219-216.000.
- Jessup, Wilbur F., to Cincinnati Milacron Inc. Centerless plunge grinding machine with progressive angle development. 4,192,102, Cl. 51-103.00R.
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  - Hashimoto, Noboru; Fukuda, Hideo; and Shibata, Setsuo, 4,192,833, Cl. 261-36.00R.
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  - Grandadam, Jean A.; Jobard, Alain; and Scheid, Jean-Pierre, 4,192,870, Cl. 424-240.000.
- John Heathcoat & Company Limited: *See—*
  - Foster, Peter W.; Berry, Thomas; and Murenbeeld, Karel, 4,192,047, Cl. 28-220.000.
- John Thomas Batts, Inc.: *See—*
  - Batts, John H., 4,192,441, Cl. 223-96.000.
- Johnson, Bruce K.: *See—*
  - LaRocque, Arthur G.; Whiteside, George D.; and Johnson, Bruce K., 4,192,587, Cl. 354-27.000.
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  - Brzezinski, Donald E., 4,192,098, Cl. 49-91.000.
- Johnson, Gary D. Holder for dental floss. 4,192,330, Cl. 132-91.000.
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  - Millet, Marcus J., 4,192,304, Cl. 128-214.400.
- Johnson, Louis W. Cone crusher. 4,192,472, Cl. 241-215.000.
- Johnson, Michael K. Self-propelling toy. 4,192,094, Cl. 46-207.000.
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  - Walters, Robert A.; Johnson, William L.; and Bivins, Gary W., 4,192,316, Cl. 128-419.0PG.
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  - Jones, Edward C., Jr., 4,192,639, Cl. 425-372.000.
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- Jones, Horace T., to Baxter Travenol Laboratories, Inc. Reflectivity compensating apparatus. 4,192,611, Cl. 356-320.000.
- Jordan, Lawrence J., to Maytag Company, The. Sidewall construction for silverware basket. 4,192,432, Cl. 220-83.000.
- Joshi, Shridhar B., to Pittsburgh Corning Corporation. Method of making a cellular body from a high silica borosilicate composition. 4,192,664, Cl. 65-22.000.
- Jouret, Edouard, to Crouzet. Two gear train reduction mechanism. 4,192,198, Cl. 74-384.000.
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  - Bubik, Alfred; Jox, Rainer; and Schultz, Hans-Joachim, 4,192,710, Cl. 162-198.000.
- Juby, Peter F., to Bristol-Myers Company. Optionally substituted 4-oxo-4H-pyrido[1,2-a]pyrimidine-3-N-(1H-tetrazol-4-yl)carboxamides and their use as antiallergy agents. 4,192,944, Cl. 544-282.000.
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  - Naito, Naoki, 4,192,446, Cl. 229-37.00R.
- Junger, Rudolf; and Maulhardt, Hans-Joachim, to Akzona Incorporated. Cooling agent mixture containing ethylene glycol monoacetate, ethylene glycol diacetate, and glycol monomethyl ether for low-temperature freezing processes. 4,192,760, Cl. 252-79.000.
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- Kabushiki Kaisha Daini Seikosha: *See—*
  - Komaki, Shojiro, 4,192,133, Cl. 368-73.000.
- Kabushiki Kaisha Komatsu Seisakusho: *See—*
  - Ueda, Masao, 4,192,409, Cl. 192-4.00R.
- Kabushiki Kaisha Kyoritsu Yuki Kogyo Kenkyusho: *See—*
  - Nakao, Kozaburo; and Miyajima, Toru, 4,192,962, Cl. 13-7.000.
- Kabushiki Kaisha Suwa Seikosha: *See—*
  - Hosokawa, Minoru; Ishii, Hiroshi; Kawamura, Yoshikazu; and Okazaki, Sakiho, 4,192,131, Cl. 368-157.000.
- Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
  - Inukai, Mitsuo; Iwatsuki, Masahiro; and Tamura, Keiichi, 4,192,474, Cl. 242-107.40A.
- Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
  - Tanasawa, Yasusi; Muto, Norio; and Saito, Akinori, 4,192,466, Cl. 239-464.000.

- Kagaya, Hajime: *See—*
  - Tsukamoto, Goro; Yoshino, Koichiro; Kohno, Toshihiko; Taguchi, Masahiro; Dezawa, Katsumi; Kagaya, Hajime; Ito, Keizo; and Nose, Takashi, 4,192,880, Cl. 424-273.00R.
- Kahn, Leonard R. Reduction of adjacent channel interference. 4,192,970, Cl. 179-1.0GS.
- Kajinami, Shingo; Saunders, Elmer J.; and Schnell, Philip G., to Standard Oil Company (Indiana). Heat treatment for single-cell materials and resultant products. 4,192,897, Cl. 426-60.000.
- Kakumae, Masaru: *See—*
  - Washizuka, Isamu; Hashimoto, Shintaro; Kakumae, Masaru; Sato, Yuuichi; Fujisawa, Isao; Inoue, Yukihiro; and Hashimoto, Sadakatsu, 4,192,060, Cl. 29-592.00R.
- Kalasek, Karl, to Vereinigte Edelstahlwerke Aktiengesellschaft, Firma. Sterilization process and apparatus for infusion solutions and the like filled in containers. 4,192,845, Cl. 422-25.000.
- Kambara, Ginjiro: *See—*
  - Koike, Susumu; Kambara, Ginjiro; and Matsuda, Toshio, 4,193,080, Cl. 357-23.000.
- Kamitakahara, Atushi: *See—*
  - Fushiki, Isamu; Kamitakahara, Atushi; and Mori, Keiichi, 4,192,680, Cl. 430-380.000.
- Kamiyama, Satoru: *See—*
  - Enomoto, Kunio; Kikuchi, Uhee; Kobori, Masanori; Kimura, Suguru; Kamiyama, Satoru; Todoroki, Nobuaki; and Yasukawa, Jun-ichi, 4,192,728, Cl. 204-181.00R.
- Kanbe, Masaru: *See—*
  - Sakamoto, Eiichi; Ishihara, Masao; Nakazato, Kazuo; Yamada, Hiroshi; Terada, Sadatugu; Kitahara, Kenichi; Abe, Naoto; Komiya, Mamoru; and Kanbe, Masaru, 4,192,683, Cl. 430-536.000.
- Kane, Gary D.: *See—*
  - Shields, Charles H.; and Kane, Gary D., 4,192,456, Cl. 237-12.30R.
- Kanebo, Ltd.: *See—*
  - Tsukamoto, Goro; Yoshino, Koichiro; Kohno, Toshihiko; Taguchi, Masahiro; Dezawa, Katsumi; Kagaya, Hajime; Ito, Keizo; and Nose, Takashi, 4,192,880, Cl. 424-273.00R.
- Kaneko, Yutaka: *See—*
  - Fujiwhara, Mitsuto; Matsuo, Syunji; Kawasaki, Mikio; Masukawa, Toyoaki; and Kaneko, Yutaka, 4,192,681, Cl. 430-373.000.
- Kano, Ikushi: *See—*
  - Hakamada, Takeshi; Soma, Misao; and Kano, Ikushi, 4,192,352, Cl. 138-149.000.
- Kaplan, Saul; Merianos, John J.; Green, Harold A.; and Petrocci, Alfonso N., to Kewanee Industries, Inc. Amphoteric surfactants. 4,192,817, Cl. 260-513.00N.
- Kaplow, Roy; and Frank, Robert I., to Massachusetts Institute of Technology. Means for effecting cooling within elements for a solar cell array. 4,193,081, Cl. 357-30.000.
- Karas, Anthony J. Tennis serving cage. 4,192,503, Cl. 273-29.00A.
- Karayianis, Nick: *See—*
  - Morrison, Clyde A.; Karayianis, Nick; and Wortman, Donald E., 4,193,044, Cl. 331-94.50F.
- Karikawa, Tohru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Film feed mechanism for a spaced apart take-up shaft and film take-up spool. 4,192,600, Cl. 354-212.000.
- Karl Mayer Textilmaschinenfabrik GmbH: *See—*
  - Kohl, Karl, 4,192,158, Cl. 66-146.000.
  - Kohl, Karl, 4,192,159, Cl. 66-203.000.
- Karpman, Yakov S.: *See—*
  - Sheludyakov, Viktor D.; Kirilin, Alexei D.; Mironov, Vladimir F.; Glushakov, Sergei N.; and Karpman, Yakov S., 4,192,815, Cl. 260-453.00P.
- Kashio, Toshio, to Casio Computer Co., Ltd. Key input apparatus. 4,193,038, Cl. 328-104.000.
- Kastner, Sidney O., to United States of America, National Aeronautics and Space Administration. Diffractoid grating configuration for X-ray and ultraviolet focusing. 4,192,994, Cl. 250-280.000.
- Kastreuz, Gerhard; and Waschk, Volker, to Hilti Aktiengesellschaft. Piston for a hammer drill having a separable part. 4,192,391, Cl. 173-116.000.
- Kato, Haruhiro: *See—*
  - Yaguchi, Masachika; and Kato, Haruhiro, 4,192,581, Cl. 350-357.000.
- Kato, Hiroshi; Ito, Yoshiaki; Tokonami, Hiroshi; and Sawada, Atsuo, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Process of sizing, weaving, desizing and waste water treatment. 4,192,649, Cl. 8-138.000.
- Kato, Hisashi; Iwasa, Masakazu; and Kudo, Yoshio, to Fuji Photo Film Co., Ltd. Electrostatic image recording method and apparatus therefor. 4,192,232, Cl. 101-426.000.
- Kato, Yuzo: *See—*
  - Kurahayashi, Sadasuke; Kato, Yuzo; Tsuda, Shin; Muto, Hakaru; and Watanabe, Asao, 4,193,097, Cl. 358-261.000.
- Katzen, Stanley J.: *See—*
  - Rekers, Louis J.; Katzen, Stanley J.; and Krekeler, Jerome H., 4,192,775, Cl. 252-430.000.
- Kawabe, Ushio: *See—*
  - Futamoto, Masaaki; Kawabe, Ushio; Hosoki, Shigeyuki; Komoda, Tsutomu; and Yamamoto, Shigehiko, 4,193,013, Cl. 313-341.000.
- Kawaguchi, Ikuo, to Hitachi, Ltd. Convergence detecting device for color picture tube. 4,193,086, Cl. 358-10.000.
- Kawai Musical Instrument Mfg. Co. Ltd.: *See—*
  - Deutsch, Ralph, 4,192,210, Cl. 84-1.010.
- Kawakami, Yoshito, to Toppan Printing Co., Ltd.; and Nikka Kabushiki Kaisha. Washing apparatus for ink rollers of printing machine. 4,192,231, Cl. 101-425.000.
- Kawamura, Yoshikazu: *See—*
  - Hosokawa, Minoru; Ishii, Hiroshi; Kawamura, Yoshikazu; and Okazaki, Sakiho, 4,192,131, Cl. 368-157.000.
- Kawano, Hitoshi; Ikemura, Kiyoshi; and Hayashi, Mithuhilo. High frequency arc welding method and apparatus. 4,192,987, Cl. 219-137.0PS.
- Kawasaki, Mikio: *See—*
  - Fujiwhara, Mitsuto; Matsuo, Syunji; Kawasaki, Mikio; Masukawa, Toyoaki; and Kaneko, Yutaka, 4,192,681, Cl. 430-373.000.
- Kazino, Sadayosi; and Doi, Tatsuo, to Nippondenso Co., Ltd. Starter with a shock absorbing arrangement. 4,192,195, Cl. 74-7.00A.
- Kazuhiro, Suzuoki: *See—*
  - Gensho, Takahashi; Masamitsu, Yanai; Masakazu, Kurihara; Yoneharu, Tanaka; and Kazuhiro, Suzuoki, 4,192,684, Cl. 430-284.000.
- Keilholz, Friedrich, to Ludwig Peithmann KG. Flowmeter for liquids. 4,192,185, Cl. 73-243.000.
- Keith, Charles H.; and Tucker, Richard O., to Celanese Corporation. Process for producing filter material. 4,192,838, Cl. 264-10.000.
- Keller Corporation, The: *See—*
  - Keller, Leonard J., 4,192,651, Cl. 44-1.0SR.
- Keller, Leonard J., to Keller Corporation, The. Method of producing pulverulent carbonaceous fuel. 4,192,651, Cl. 44-1.0SR.
- Kelley, John S.; and Moldas, Richard P., to USM Corporation. Method of making can closures. 4,192,244, Cl. 113-121.00C.
- Kelly, Thomas L. Taped and double glued rubber joint. 4,192,116, Cl. 52-469.000.
- Kelsey-Hayes Company: *See—*
  - Bertolasi, Robert B., 4,193,022, Cl. 318-592.000.
- Kemi Oy: *See—*
  - Saalasti, Tapio, 4,192,088, Cl. 37-3.000.
- Kendig, Paul M.; Lawther, James M.; and James, Robert G., to United States of America, Navy. Guiding means for self-propelled torpedoes. 4,192,245, Cl. 114-23.000.
- Kennedy, Alvin B., Jr. Blowout preventer and method of insuring prevention of fluid leaks out of a wellhead. 4,192,379, Cl. 166-250.000.
- Kennedy, Andrew J., to United States of America, Army. High strength extended leakage path ceramic tube wall for image intensifier and method of manufacture. 4,192,064, Cl. 29-631.000.
- Kennedy, Russell J.; Lazier, Samuel S.; and Zorzi, Joe. Float controlled volumetric gauge. 4,192,187, Cl. 73-321.000.
- Kenrich Petrochemicals, Inc.: *See—*
  - Sugerman, Gerald; and Monte, Salvatore J., 4,192,792, Cl. 260-42.140.
- Kepco, Inc.: *See—*
  - Nercessian, Sarkis, 4,193,104, Cl. 361-56.000.
- Kewanee Industries, Inc.: *See—*
  - Kaplan, Saul; Merianos, John J.; Green, Harold A.; and Petrocci, Alfonso N., 4,192,817, Cl. 260-513.00N.
- Khan, Mahboob; Godejahn, Jr. Gordan C.; Heimbigner, Gary L.; and Aghishian, Noubar A., to Rockwell International Corporation. Process for and structure of high density VLSI circuits, having inherently self-aligned gates and contacts for FET devices and conducting lines. 4,192,059, Cl. 29-571.000.
- Kiang, Yen-Hsiung, to Trane Company, The. Method for hot gas cooling and gaseous contaminant removal. 4,192,659, Cl. 55-89.000.
- Kiehs, Karl; and Theobald, Hans, to BASF Aktiengesellschaft. Manufacture of salts of O,S-dithiophosphoric acids. 4,192,831, Cl. 260-987.000.
- Kieser, Hermann: *See—*
  - Schnizler, Albrecht, Jr.; and Kieser, Hermann, 4,192,982, Cl. 200-157.000.
- Kiko, Frederick J., to Lorain Products Corporation. Multi-section apparatus for improving signal transmission through telephone transmission lines. 4,192,974, Cl. 179-16.00F.
- Kikuchi, Kenichi: *See—*
  - Shiratori, Harunori; and Kikuchi, Kenichi, 4,192,529, Cl. 280-689.000.
- Kikuchi, Takeshi: *See—*
  - Tanaka, Shigenori; Tojo, Akio; Ohnishi, Kimimasa; and Kikuchi, Takeshi, 4,192,357, Cl. 139-450.000.
- Kikuchi, Uhee: *See—*
  - Enomoto, Kunio; Kikuchi, Uhee; Kobori, Masanori; Kimura, Suguru; Kamiyama, Satoru; Todoroki, Nobuaki; and Yasukawa, Jun-ichi, 4,192,728, Cl. 204-181.00R.
- Killian, Henry R. Direct digital control device. 4,193,019, Cl. 318-13.000.
- Kimball, David V., to Kimball Industries, Inc. Unidirectional bearing structure having temperature cycling tolerance. 4,192,190, Cl. 73-665.000.
- Kimball Industries, Inc.: *See—*
  - Kimball, David V., 4,192,190, Cl. 73-665.000.
- Kimura, Hironobu: *See—*
  - Shirayama, Shimpey; Konagai, Chikara; Terasawa, Michitaka; and Kimura, Hironobu, 4,193,000, Cl. 250-385.000.
- Kimura, Shiro G.; Lavigne, Raymond G.; and Browall, Warella R., to General Electric Company. Method for casting ultrathin methylpentene polymer membranes. 4,192,842, Cl. 264-298.000.
- Kimura, Suguru: *See—*
  - Enomoto, Kunio; Kikuchi, Uhee; Kobori, Masanori; Kimura, Suguru; Kamiyama, Satoru; Todoroki, Nobuaki; and Yasukawa, Jun-ichi, 4,192,728, Cl. 204-181.00R.

King, Fred V. Crossbow with trigger locking device. 4,192,281, Cl. 124-25.000.

Kinsekisha Laboratory, Ltd.: *See—*

Chiba, Tadataka, 4,193,046, Cl. 331-109.000.

Kipchakbaev, Alexandr D.: *See—*

Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.

Kirilin, Alexei D.: *See—*

Sheludyakov, Viktor D.; Kirilin, Alexei D.; Mironov, Vladimir F.; Glushakov, Sergei N.; and Karpman, Yakov S., 4,192,815, Cl. 260-453.00P.

Kirkland, Kerry G.; and Masciopinto, Anthony J., to Armco Inc. Offshore multiple well drilling and production apparatus. 4,192,383, Cl. 166-341.000.

Kitagawa, Katsutoshi; and Yamauchi, Hiroki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Valve drive device for an internal combustion engine. 4,192,263, Cl. 123-90.390.

Kitahara, Kenichi: *See—*

Sakamoto, Eiichi; Ishihara, Masao; Nakazato, Kazuo; Yamada, Hiroshi; Terada, Sadatugu; Kitahara, Kenichi; Abe, Naoto; Komiya, Mamoru; and Kanbe, Masaru, 4,192,683, Cl. 430-536.000.

Kitaura, Mashio, to Minolta Camera Kabushiki Kaisha. Indicating system for cameras. 4,192,590, Cl. 354-53.000.

Kitz, Richard J.: *See—*

Savarese, John J.; Kitz, Richard J.; and Ginsburg, Sara, 4,192,877, Cl. 424-258.000.

Klar, Erhard: *See—*

Moskowitz, Larry N.; and Klar, Erhard, 4,192,672, Cl. 75-0.50C.

Klein, Alfred: *See—*

Munker, Erich; Klein, Alfred; and Heitze, Gerhard, 4,192,208, Cl. 83-438.000.

Klein, Bernard J.; and Verga, Samuel D. Apparatus for cleaning and/or coating. 4,192,038, Cl. 15-250.060.

Klein, Carlton: *See—*

Lemchen, Marc S.; Chong, Ian M.; and Klein, Carlton, 4,192,070, Cl. 433-11.000.

Klein, Lloyd E.: *See—*

Koontz, Ralph F.; and Klein, Lloyd E., 4,192,913, Cl. 429-119.000.

Klein, Sigismund: *See—*

Heinzelmann, Karl-Georg; and Klein, Sigismund, 4,192,495, Cl. 271-10.000.

Klema, Kenneth G. Sliding door apparatus. 4,192,100, Cl. 49-404.000.

Klemm, Richard O.: *See—*

Peters, Leo; and Klemm, Richard O., 4,192,991, Cl. 219-413.000.

Klendauer, Wolfgang: *See—*

Gerigk, Gunter; Klendauer, Wolfgang; Pietruck, Horst; and Hammer, Klaus-Dieter, 4,192,904, Cl. 428-36.000.

Kleuters, Wilhelm J.; Van Rosmalen, Gerard E.; Bierhoff, Martinus P. M.; and Immink, Kornelis A., to U.S. Philips Corporation. Optical videodisc read unit with tracking and focussing wobblers. 4,193,091, Cl. 358-128.500.

Kley, Richard D.: *See—*

Bastian, Lehyman J.; and Kley, Richard D., 4,192,442, Cl. 226-127.000.

Klinge, Gerald E. Hair styling implement. 4,192,326, Cl. 132-34.00R.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*

Berg, Josef, 4,192,261, Cl. 123-58.00B.

Klockner Ionon GmbH: *See—*

Oppel, Werner, 4,193,070, Cl. 340-650.000.

Klotz, Hermann: *See—*

Gerstenmeier, Jurgen; Klotz, Hermann; and Leiber, Heinz, 4,192,180, Cl. 73-121.000.

Kluksdahl, Harris E., to Chevron Research Company. Removal of indigenous metal impurities from an oil with phosphorus oxide-promoted alumina. 4,192,736, Cl. 208-251.00H.

Knauer, Karl; and Pfleiderer, Hans J., to Siemens Aktiengesellschaft. Transversal filter. 4,193,050, Cl. 333-165.000.

Knepper, William H., Jr., to AMF Incorporated. Bowling ball cleaner with pneumatic control of ball lift, brushes and cleaning compound. 4,192,034, Cl. 15-21.00A.

Knoke, Silas J., to Lear Siegler, Inc. Adjustable bed frame. 4,192,028, Cl. 5-181.000.

Knopf, Robert J.: *See—*

Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., 4,192,789, Cl. 260-29.20E.

Kobayashi, Shinsaku: *See—*

Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, 4,192,953, Cl. 568-673.000.

Kobayashi, Toshiro: *See—*

Hayashi, Motoshige; and Kobayashi, Toshiro, 4,192,839, Cl. 264-45.500.

Kobe Steel, Ltd.: *See—*

Godai, Tomokazu; Sugiyama, Tohru; Sugino, Morihiko; Kondo, Masaru; and Ogawa, Tsuneshi, 4,192,175, Cl. 73-19.000.

Kobori, Masanori: *See—*

Enomoto, Kunio; Kikuchi, Uhee; Kobori, Masanori; Kimura, Suguru; Kamiyama, Satoru; Todoroki, Nobuaki; and Yasukawa, Jun-ichi, 4,192,728, Cl. 204-181.00R.

Koehmstedt, Paul L., to Battelle Memorial Institute. Grounding electrode and method of reducing the electrical resistance of soils. 4,192,963, Cl. 174-6.000.

Koehring Company: *See—*

Sousek, Eugene A., 4,192,103, Cl. 51-249.000.

Koering, Dale, J. Electroplating apparatus. 4,192,331, Cl. 134-77.000.

Kohl, Karl, to Karl Mayer Textilmaschinenfabrik GmbH. Weft thread tensioning device for warp knitting machines. 4,192,158, Cl. 66-146.000.

Kohl, Karl, to Karl Mayer Textilmaschinenfabrik GmbH. Apparatus for the production of loop pile ware on warp knitting machine. 4,192,159, Cl. 66-203.000.

Kohler, Fritz, to Edouard Dubied & Cie (Societe Anonyme). Knitting method and apparatus. 4,192,156, Cl. 66-64.000.

Kohnen, Hubert. Method and apparatus for position determination. 4,193,073, Cl. 343-6.00R.

Kohno, Toshihiko: *See—*

Tsukamoto, Goro; Yoshino, Koichiro; Kohno, Toshihiko; Taguchi, Masahiro; Dezawa, Katsumi; Kagaya, Hajime; Ito, Keizo; and Nose, Takashi, 4,192,880, Cl. 424-273.00R.

Koike, Susumu; Kambara, Ginjiro; and Matsuda, Toshio, to Matsushita Electronics Corporation. Non-volatile memory device. 4,193,080, Cl. 357-23.000.

Kokvik, Bjorn: *See—*

Olsen, Kolbjorn, 4,193,110, Cl. 362-371.000.

Kolchanov, Arnold P.: *See—*

Babich, Vladimir A.; Vitlin, Abram M.; Kolchanov, Arnold P.; and Sheveleva, Elena I., 4,192,489, Cl. 266-88.000.

Kolene Corporation: *See—*

Stevens, John M.; Allen, Grant W.; Cole, John M.; and Mousseau, Timothy K., 4,192,992, Cl. 219-494.000.

Koleske, Joseph V.: *See—*

Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., 4,192,789, Cl. 260-29.20E.

Komaba, Shiro: *See—*

Goshima, Yoshitomo; Hattori, Hiroyuki; Komaba, Shiro; and Umezawa, Kazumi, 4,192,608, Cl. 355-51.000.

Komaki, Shojiro, to Kabushiki Kaisha Daini Seikosha. Electronic watch with means for producing pulse sound at selected intervals. 4,192,133, Cl. 368-73.000.

Komatsu, Toshio: *See—*

Yoshikawa, Yoshio; Nawata, Takanari; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, 4,192,773, Cl. 252-429.00R.

Komine, Kikuji: *See—*

Onodera, Takashi; Komine, Kikuji; and Ohashi, Fumio, 4,192,732, Cl. 208-33.000.

Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomu, 4,192,733, Cl. 208-33.000.

Komiya, Mamoru: *See—*

Sakamoto, Eiichi; Ishihara, Masao; Nakazato, Kazuo; Yamada, Hiroshi; Terada, Sadatugu; Kitahara, Kenichi; Abe, Naoto; Komiya, Mamoru; and Kanbe, Masaru, 4,192,683, Cl. 430-536.000.

Komoda, Tsutomu: *See—*

Futamoto, Masaaki; Kawabe, Ushio; Hosoki, Shigeyuki; Komoda, Tsutomu; and Yamamoto, Shigehiko, 4,193,013, Cl. 313-341.000.

Kompanek, Harry W., to Essex Transducers Corporation. Sensor device using piezoelectric coating subjected to bending. 4,193,010, Cl. 310-330.000.

Kompelien, Arlon D.: *See—*

Kabat, John L.; and Kompelien, Arlon D., 4,193,006, Cl. 307-117.000.

Konagai, Chikara: *See—*

Shirayama, Shimpey; Konagai, Chikara; Terasawa, Michitaka; and Kimura, Hironobu, 4,193,000, Cl. 250-385.000.

Kondo, Masaru: *See—*

Godai, Tomokazu; Sugiyama, Tohru; Sugino, Morihiko; Kondo, Masaru; and Ogawa, Tsuneshi, 4,192,175, Cl. 73-19.000.

Kondo, Tokuzo. Completely one-step permanent wave solution and a method for using the same. 4,192,863, Cl. 424-72.000.

Kondur, Nicholas, Jr.; Blomquist, James E.; and Rucinski, Roland R., to LRC, Inc. High speed ticket printer. 4,192,618, Cl. 400-124.000.

Konishi, Yoshikazu: *See—*

Aoki, Mitsugu; Konishi, Yoshikazu; and Ishihara, Taketoshi, 4,192,582, Cl. 351-30.000.

Konishiroku Photo Industry Co., Ltd.: *See—*

Fujiwhara, Mitsuto; Matsuo, Syunji; Kawasaki, Mikio; Masukawa, Toyoaki; and Kaneko, Yutaka, 4,192,681, Cl. 430-373.000.

Fushiki, Isamu; Kamitakahara, Atushi; and Mori, Keiichi, 4,192,680, Cl. 430-380.000.

Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,192,682, Cl. 430-405.000.

Sakamoto, Eiichi; Ishihara, Masao; Nakazato, Kazuo; Yamada, Hiroshi; Terada, Sadatugu; Kitahara, Kenichi; Abe, Naoto; Komiya, Mamoru; and Kanbe, Masaru, 4,192,683, Cl. 430-536.000.

Kono, Masao: *See—*

Tani, Tatsuo; and Kono, Masao, 4,192,609, Cl. 355-77.000.

Konrad, Albert. Improved closure seal and apparatus for applying the same. 4,192,043, Cl. 24-21.000.

Koontz, Ralph F.; and Klein, Lloyd E., to Magnavox Government and Industrial Electronics Company. Deferred action battery having an improved depolarizer. 4,192,913, Cl. 429-119.000.

Koppers Company, Inc.: *See—*

Hewitt, William, 4,192,559, Cl. 308-36.100.

Korber, Elmar; and Dehnert, Heinz. Tooth displacement measuring apparatus. 4,192,321, Cl. 128-776.000.

Korolkov, Konstantin I.: *See—*

Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G., 4,192,715, Cl. 176-30.000.

Korpel, Adrianus, to Zenith Radio Corporation. Optical detection system for simultaneously interrogating a plurality of tracks. 4,193,090, Cl. 358-128.500.

Korpics, Frank J., to AMSTED Industries Incorporated. Pedestal roof wear liner. 4,192,240, Cl. 105-225.000.

Kortbeek, Andras G. T. G.; and van der Nat, Adrianus A., to Shell Oil Company. Preparation of an active $TiCl_3$ catalyst. 4,192,774, Cl. 252-429.00B.

Kos, Joseph M.; Patrick, John P.; and Harner, Kermit I., to United Technologies Corporation. Multi-mode control system for wind turbines. 4,193,005, Cl. 290-44.000.

Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G. Fuel assembly handling system of nuclear reactor. 4,192,715, Cl. 176-30.000.

Koster, Kari: *See—*

Deibig, Heinrich; Heide, Helmut; Reiner, Roland; and Koster, Kari, 4,192,021, Cl. 3-1.900.

Kothe, Erich, to Singer Company, The. Automatic re-set pressure switch. 4,192,980, Cl. 200-83.0WM.

Kotyuk, Bernard, to Primary Design Group, Inc. Pill package. 4,192,422, Cl. 206-528.000.

Koughan, Walter L. Shock-absorbing line device. 4,192,493, Cl. 267-74.000.

Koverya, Vladimir M.: *See—*

Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.

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Krafka, Jerry L.: *See—*

Lawrence, Allan K.; Bass, Merlyn D.; ~~Black,~~ Robert D.; and Krafka, Jerry L., 4,192,468, Cl. 241-101.700.

Kramer, Arthur W.: *See—*

Calhoun, Gregory L.; Kramer, Arthur W.; Bauer, Frank I.; and Bencloski, William A., 4,192,067, Cl. 30-379.000.

Krasnoff, Eugene L.; and Lindeboom, Herman, to Ingersoll-Rand Company. Hydraulic actuator. 4,192,219, Cl. 91-276.000.

Kreger, William E.: *See—*

Crow, Dennis W.; and Kreger, William E., 4,192,500, Cl. 272-68.000.

Krekeler, Jerome H.: *See—*

Rekers, Louis J.; Katzen, Stanley J.; and Krekeler, Jerome H., 4,192,775, Cl. 252-430.000.

Krempel, Alfred: *See—*

Bauer, Kurt; Krempel, Alfred; Molleken, Reiner; Wedemeyer, Karlfried; and Fiege, Helmut, 4,192,959, Cl. 568-764.000.

Krener, Ole G.; and Waldstrom, Ejvind, to O.G. Hoyer A/S. Apparatus for transferring frozen confections from a supply conveyor to a discharge conveyor. 4,192,415, Cl. 198-374.000.

Kridler, Edward L.; Eisenhauer, Marvin W.; and Huson, Loyal A., to Beatrice Foods Co. Barbecue grill cover positioning means. 4,192,283, Cl. 126-25.0AA.

Krieg, Adrian H. Apparatus for cutting sheet plate. 4,192,487, Cl. 266-58.000.

Kriger, Jury N.: *See—*

Rabinovich, Volf I.; Kriger, Jury N.; Svitenko, Igor A.; and Sapunov, Viktor E., 4,192,370, Cl. 164-252.000.

Krismer, Bruno; and Pungs, Harmut, to Hermann C. Starck Berlin. Method of obtaining tantalum-niobium from ores having a high titanium content. 4,192,674, Cl. 75-10.00R.

Krivoshiev, Georgi P., to DSO "Bulgarplod". Control device for automatic color-sorting apparatus. 4,192,999, Cl. 250-561.000.

Kroger Co., The: *See—*

Stineman, Thomas L.; Edwards, Jeffrey D.; and Grosskopf, Jack C., 4,192,918, Cl. 435-256.000.

Kronick, Melvyn N.; Bryson, Charles E., III; Bridgham, John A.; and Eletr, Sam H., to Hewlett-Packard Company. Measurement of oxygen by differential absorption of UV radiation. 4,192,996, Cl. 250-373.000.

Krutzner, Karl, Jr., to Polysius AG. Apparatus for heat treating fine-grain solids. 4,192,643, Cl. 432-106.000.

Kubota, Atsushi: *See—*

Tsunoi, Haruo; Morikawa, Teruo; Yamada, Katsuhiko; Ohkawara, Kenji; and Kubota, Atsushi, 4,192,229, Cl. 100-158.00R.

Kudo, Yoshio: *See—*

Kato, Hisashi; Iwasa, Masakazu; and Kudo, Yoshio, 4,192,232, Cl. 101-426.000.

Kuerten, Heribert: *See—*

Rapp, Guenther; Thomas, Erwin; Wolf, Dieter; Kuerten, Heribert; and Zehner, Peter, 4,192,856, Cl. 423-387.000.

Kuntze, Richard A.: *See—*

Glass, Roger W.; and Kuntze, Richard A., 4,192,707, Cl. 162-3.000.

Kurahayashi, Sadasuke; Kato, Yuzo; Tsuda, Shin; Muto, Hakaru; and Watanabe, Asao, to Canon Kabushiki Kaisha. Facsimile apparatus. 4,193,097, Cl. 358-261.000.

Kurihara, Takao: *See—*

Yasumatsu, Mutsuo; Shoji, Shinichi; Sakamoto, Koichi; Kurihara, Takao; Terabayashi, Takeshi; and Ohmura, Kasutaka, 4,192,901, Cl. 426-580.000.

Kuris, Arthur, to Ultrasonic Plaque Control Laboratories, Inc. Ultrasonic toothbrush. 4,192,035, Cl. 15-22.00R.

Kurth, Hermann W.: *See—*

Haberle, Fritz; and Kurth, Hermann W., 4,192,039, Cl. 16-86.00B.

Kuryla, William C.; and Raines, Russell H., to Union Carbide Corporation. Print paste formulations with hydroxyalkyl carboxyalkyl cellulose. 4,192,647, Cl. 8-62.000.

Kusters, Eduard: *See—*

Appenzeller, Valentin, 4,192,050, Cl. 29-148.40D.

Kutz, Heinrich: *See—*

Zilges, Franz-Josef; and Kutz, Heinrich, 4,192,162, Cl. 72-45.000.

Kuwana, Kazutaka: *See—*

Hida, Takashi; Mitsui, Tsutomu; Hashiride, Tadaaki; and Kuwana, Kazutaka, 4,192,157, Cl. 66-76.000.

Kyu, Shikun, to Motorola, Inc. Frequency divider circuit with selectable integer/non-integer division. 4,193,037, Cl. 328-46.000.

L. Schuler GmbH: *See—*

Munch, Werner; and Mikusch, Gerald, 4,192,169, Cl. 72-405.000.

La Spirotechnique Industrielle et Commerciale: *See—*

Ferraro, Lugi; Beltrani, Gianni; Gass, Jacques; and Trochon, Bernard, 4,192,298, Cl. 128-205.240.

Labat, Gaston: *See—*

Messines, Jean-Paul; Labat, Gaston; and Tramier, Bernard, 4,192,392, Cl. 175-66.000.

Labrecque, Leopold. Therapeutic feet bathing device. 4,192,297, Cl. 128-66.000.

Lacroix, Serge: *See—*

Dumas, Daniel; Lacroix, Serge; and Vallon, Jean, 4,192,730, Cl. 204-294.000.

Laeis-Werke Aktiengesellschaft: *See—*

Huebner, Bernhard; and Tresser, Dietfried, 4,192,167, Cl. 72-356.000.

Lafleur, Alain: *See—*

Peltre, Philippe; and Lafleur, Alain, 4,192,761, Cl. 252-99.000.

LaHaye, Peter G., to Iolab Corporation. Artificial intraocular lens with improved stave. 4,192,022, Cl. 3-13.000.

Lahr, Roy J.: *See—*

Arase, Shingo; and Lahr, Roy J., 4,193,119, Cl. 364-900.000.

Laine, Yrjo T. Safety device for doors, windows and similar. 4,192,537, Cl. 292-264.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*

Gilbert, Ghislain; Bentz, Gerard; and Galey, Jean, 4,192,147, Cl. 62-49.000.

Laird, James A.: *See—*

Tung, Chi F.; and Laird, James A., 4,192,576, Cl. 350-105.000.

Lamoreaux, Kenneth C., Jr. Photographic film clip. 4,192,602, Cl. 354-346.000.

Landau, Harolyn S.: *See—*

Landau, Paul H.; and Landau, Harolyn S., 4,192,425, Cl. 211-50.000.

Landau, Monroe A.: *See—*

Dam, Naim G.; and Landau, Monroe A., 4,192,318, Cl. 128-708.000.

Landau, Paul H.; and Landau, Harolyn S. Telephone accessory. 4,192,425, Cl. 211-50.000.

Landry, Henry J., Jr.: *See—*

Haverdink, Virgil D.; and Landry, Henry J., Jr., 4,192,386, Cl. 171-58.000.

Landsman, Douglas A.: *See—*

Jalan, Vinod M.; Landsman, Douglas A.; and Lee, John M., 4,192,907, Cl. 429-40.000.

Lang, Thomas; and Zoske, Karl-Heinz, to Robert Bosch GmbH. Control device for fuel-injected internal combustion engines. 4,192,272, Cl. 123-140.0MC.

Langan, John P.; and DeCicco, Michael A., to Langan, John P. Defrosting arrangement for a refrigerator. 4,192,150, Cl. 62-277.000.

Lansing Bagnall Limited: *See—*

Stroud, Robert J., 4,192,397, Cl. 180-68.500.

Lapras, Michel: *See—*

Towlerton, Richard G.; and Lapras, Michel, 4,192,886, Cl. 424-283.000.

Laptev, Fedor V.: *See—*

Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G., 4,192,715, Cl. 176-30.000.

LaRocque, Arthur G.; Whiteside, George D.; and Johnson, Bruce K., to Polaroid Corporation. Proportional fill flash. 4,192,587, Cl. 354-27.000.

Larsson, Leif T.: *See—*

Nilsson, Per A.; Harryson, Gunnar B.; Larsson, Leif T.; Poderschan, Karl J.; Ritakallio, Pekka; and Lehner, Theo, 4,192,490, Cl. 266-225.000.

Lassau, Christian: *See—*

Hillion, Gerard; and Lassau, Christian, 4,192,960, Cl. 568-816.000.

Latina, Roland N., to A-T-O Inc. Baseball glove. 4,192,018, Cl. 2-19.000.

Lau, Edward H., to Redactron Corporation. Electronically controlled printer system. 4,192,619, Cl. 400-163.000.
Laude, Pierre; Marka, Erwin; and Zuntini, Franco, to Systemes de Traitements de Surfaces S.A. Aqueous solution of monovalent gold and ammonium sulfite complex, process for the preparation thereof and electrolytic bath obtained therefrom for the plating of gold or gold alloys. 4,192,723, Cl. 204-43.00G.
Laudig, Ronald C.; and Morelli, John A., to AMP Incorporated. Antenna lead splice. 4,192,566, Cl. 339-47.00R.
Laureano, Angel F., to Bel Air Aluminum Manufacturing, Inc. Push-pull door latch. 4,192,536, Cl. 292-228.000.
Laurie, Archibald M.: *See—*
Maly, George P.; and Laurie, Archibald M., 4,192,375, Cl. 166-51.000.
La Via, Anthony L.: *See—*
Chen, James L.; Cilento, Rudolfo D.; Hill, John A.; and La Via, Anthony L., 4,192,785, Cl. 260-17.4GC.
Lavigne, Raymond G.: *See—*
Kimura, Shiro G.; Lavigne, Raymond G.; and Browall, Warella R., 4,192,842, Cl. 264-298.000.
Lawrence, Alan J.: *See—*
Williams, Roger M.; and Lawrence, Alan J., 4,192,973, Cl. 370-53.000.
Lawrence, Allan K.; Bass, Merlyn D.; Black, Robert D.; and Krafka, Jerry L., to Deere & Company. Feed roll assembly for a forage harvester. 4,192,468, Cl. 241-101.700.
Lawther, James M.: *See—*
Kendig, Paul M.; Lawther, James M.; and James, Robert G., 4,192,245, Cl. 114-23.000.
Lazaretnik, Avram S.: *See—*
Vasilevsky, Petr N.; Gekhman, Boris S.; Parfinenko, Ivan V.; Podgursky, Alfred M.; and Lazaretnik, Avram S., 4,192,294, Cl. 128-1.00R.
Lazier, Samuel S.: *See—*
Kennedy, Russell J.; Lazier, Samuel S.; and Zorzi, Joe, 4,192,187, Cl. 73-321.000.
Leach, Byron E., deceased; and by Leach, Ellanor L., executrix. Method of using dialkylphenols in the treatment of mycoplasma diseases. 4,192,896, Cl. 424-346.000.
Leach, Ellanor L., executrix: *See—*
Leach, Byron E., deceased; and Leach, Ellanor L., executrix, 4,192,896, Cl. 424-346.000.
Lear Siegler, Inc.: *See—*
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Knoke, Silas J., 4,192,028, Cl. 5-181.000.
Leclanche S.A.: *See—*
Ruetschi, Paul, 4,192,914, Cl. 429-206.000.
Lectron Products, Inc.: *See—*
Slavin, Michael; and Rea, Irvin B., 4,193,060, Cl. 340-52.00D.
Lederer, Michael; and Bouman, Antonius J. M., to Hoechst Aktiengesellschaft. Suspension polymerization. 4,192,797, Cl. 525-243.000.
Lee, Arthur L.; and Coval, Arthur B., to A. L. Lee Corporation. Spring applied brake mechanism. 4,192,405, Cl. 188-170.000.
Lee, John M.: *See—*
Jalan, Vinod M.; Landsman, Douglas A.; and Lee, John M., 4,192,907, Cl. 429-40.000.
Lee, Robert G. H.: *See—*
Savard, Guy; Lee, Robert G. H.; and Hornsey, Derek, 4,192,740, Cl. 210-3.000.
Leeds & Northrup Company: *See—*
Hitt, James J.; and Mergner, George C., 4,193,063, Cl. 340-200.000.
Legressus, Claude: *See—*
Blanchard, Bruno; Legressus, Claude; Massignon, Daniel; Sopizet, Rene; and Stefani, Rene, 4,193,003, Cl. 250-492.00A.
Lehner, Theo: *See—*
Nilsson, Per A.; Harryson, Gunnar B.; Larsson, Leif T.; Poderschan, Karl J.; Ritakallio, Pekka; and Lehner, Theo, 4,192,490, Cl. 266-225.000.
Leiber, Heinz, to Robert Bosch GmbH. Pneumatic-hydraulic brake system for vehicles. 4,192,557, Cl. 303-114.000.
Leiber, Heinz: *See—*
Gerstenmeier, Jurgen; Klotz, Hermann; and Leiber, Heinz, 4,192,180, Cl. 73-121.000.
Lemchen, Marc S.; Chong, Ian M.; and Klein, Carlton. Orthodontic devices. 4,192,070, Cl. 433-11.000.
Lemke, James U.: *See—*
Bixby, James A.; Lemke, James U.; and Lentz, Robert A., 4,193,098, Cl. 360-10.000.
Lempa, Roman F., to Selas Corporation of America. Universal pilot assembly. 4,192,642, Cl. 431-263.000.
Lendle, Wilhelm: *See—*
Graser, Reinhold; Lendle, Wilhelm; and Post, Hendrik W., 4,192,821, Cl. 260-652.00P.
Leney, Thomas F.: *See—*
Schwartz, Edward C.; and Leney, Thomas F., 4,193,074, Cl. 343-16.00M.
Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; Prentice, Paul N.; and Tuchman, Walter L., to International Business Machines Corporation. Cryptographic verification of operational keys used in communication networks. 4,193,131, Cl. 375-2.000.
Lentz, Robert A.: *See—*
Bixby, James A.; Lemke, James U.; and Lentz, Robert A., 4,193,098, Cl. 360-10.000.
Leroy, Pierre J.: *See—*
Featherstone, Robert A.; Roos, Paul P.; Gericke, Willem A.; Saleil, Jean; Leroy, Pierre J.; and Masson, Jean-Marcel, 4,192,675, Cl. 75-60.000.
Lever Brothers Company: *See—*
Pengilly, Roger W., 4,192,862, Cl. 424-47.000.
Levi Strauss & Co.: *See—*
Blessing, Hubert; and Allison, Gaylord D., 4,192,243, Cl. 112-273.000.
Levkovitch, Shimon N. Device for displaying samples of drapes, fabrics or other textile products. 4,192,563, Cl. 312-134.000.
Levy, Dudley D. Device for vaporizing liquid hydrocarbon fuel. 4,192,269, Cl. 123-122.00F.
Levy, Michael: *See—*
Gilbert, Judson T.; Harrison, George R.; Holbrook, Alan R.; Levy, Michael; Scott, John B.; and Swan, Harris K., 4,193,112, Cl. 364-200.000.
Lewandowski, Joseph T.: *See—*
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Lewicki, Gregory D.: *See—*
Lewicki, Stephen; Lewicki, Gregory D.; and Lewicki, Stephen J., 4,192,699, Cl. 156-145.000.
Lewicki, Stephen; Lewicki, Gregory D.; and Lewicki, Stephen J. Method of making inflatable cellular assemblies of plastic material. 4,192,699, Cl. 156-145.000.
Lewicki, Stephen J.: *See—*
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Lewis, Bernard. Combination copy machine and microfilm camera. 4,192,606, Cl. 355-40.000.
Leybold-Hereaus GmbH: *See—*
Aichert, Hans; Stark, Friedrich; Stephan, Herbert; and Hoffmann, Otto-Horst, 4,192,253, Cl. 118-712.000.
Lezier, Gerard; and Vasseur, Bernard. Molding device having heat transfer chambers insulated from each other for molding expandable thermoplastic resin particles. 4,192,638, Cl. 425-256.000.
Liebetruth, Reiner; and Mika, Norbert, to Siemens Aktiengesellschaft. Tomographic apparatus for producing transverse layer images. 4,193,001, Cl. 250-445.00T.
Liedtke, Ronald R., to Schick Incorporated. Hair styling appliance including improved bayonet fasteners for assembling same. 4,192,325, Cl. 132-9.000.
Lindauer Dornier Gesellschaft mbH: *See—*
Gageur, Fritz; and Trotscher, Gerhard, 4,192,251, Cl. 118-63.000.
Lindeboom, Herman: *See—*
Krasnoff, Eugene L.; and Lindeboom, Herman, 4,192,219, Cl. 91-276.000.
Lindner, Christian; Suling, Carlhans; Bartl, Herbert; and Hardt, Dietrich, to Bayer Aktiengesellschaft. Polyesters which can be prepared by reacting a carbonic acid aryl ester with a polyester prepared from a polyhydric alcohol and a polybasic carboxylic acid which is aliphatic. 4,192,940, Cl. 528-370.000.
Linford, John R.: *See—*
Nash, Harold G.; and Linford, John R., 4,193,118, Cl. 364-734.000.
Lingenfelter, Ralph E., to Holston Manufacturing Company. Minisock. 4,192,019, Cl. 2-239.000.
Lisle, Thomas K., Jr.: *See—*
Morrison, Steven; Lisle, Thomas K., Jr.; and Glover, Clarence C., 4,193,066, Cl. 340-347.0CC.
Lissmyr, Per O. Shutting-off device. 4,192,376, Cl. 166-53.000.
Livick, Lester R. Magnetic ball game. 4,192,508, Cl. 273-118.00A.
Lobdell, Donn D.; Herman, Stephen J.; Anderson, Robert L.; and Goyne, Thomas E., to Cobe Laboratories, Inc. Fluid level monitoring through fluid cell protrusion. 4,193,004, Cl. 250-577.000.
Lobermann, Claude; and Croitoriu, Jean-Claude, to Automation 2000 S.A. Transformer protective device. 4,192,174, Cl. 73-19.000.
Locks, William S.: *See—*
Weimer, James C.; Locks, William S.; Wilson, Edwin B.; and Miller, Francis G., 4,192,551, Cl. 299-1.000.
Logan, Maurus C.; Cole, John M.; and Garner, Peter, to Thomas & Betts Corporation. Assembly tool. 4,192,056, Cl. 29-468.000.
Lombard, Didier, to Dosapro Milton Roy. Adjustment device, notably for metering reciprocating pumps. 4,192,223, Cl. 92-5.00R.
London Laboratories Limited Co.: *See—*
Soltys, Joseph F., 4,192,686, Cl. 106-1.230.
Longo, John M.: *See—*
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Lorac Company, The: *See—*
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Lorain Products Corporation: *See—*
Kiko, Frederick J., 4,192,974, Cl. 179-16.00F.
Lore, Corrado: *See—*
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Lore, Nicola; and Lore, Corrado. Automatically retractable chalk and plumb line assembly. 4,192,078, Cl. 33-414.000.
Losert, Gerhard K., to General Electric Company. Load equalizing support system. 4,192,564, Cl. 312-253.000.
Lovell, Peter J.; and Saunders, Ian C. B., to DuPont of Canada Limited. Ethylene polymers of high melt index. 4,192,935, Cl. 526-348.600.
Lowe, Colin F. Frameless metal building. 4,192,108, Cl. 52-90.000.
LRC, Inc.: *See—*
Kondur, Nicholas, Jr.; Blomquist, James E.; and Rucinski, Roland R., 4,192,618, Cl. 400-124.000.

Lu, Chin H., to Xerox Corporation. In situ coating then spray drying of magnetic toner. 4,192,902, Cl. 427-127.000.
Lubrizol Corporation, The: *See—*
Jahnke, Richard W., 4,192,769, Cl. 252-389.00R.
Lucas, Donald M.: *See—*
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Ludwig Peithmann KG: *See—*
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Lupoi, Vincent, to PPG Industries, Inc. Method of producing glass-ceramics with uniform brown stain decoration. 4,192,666, Cl. 65-33.000.
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M.U. Engineering & Mfg. Co.: *See—*
Sherlock, Hugh P., 4,192,295, Cl. 128-295.000.
MacDonald, Robert D., to Du Pont de Nemours, E. I., and Company. Method for bonding a heat exchanger fin to a tube. 4,192,052, Cl. 29-157.30A.
Mackaness, George B.; and Hou, Joseph P., to E. R. Squibb & Sons, Inc. Contrast media containing liposomes as carriers. 4,192,859, Cl. 424-5.000.
MacLaury, Michael R., to General Electric Company. Dehydrohalogenation of a diphenyl trichloroethane. 4,192,956, Cl. 568-726.000.
MacLaury, Michael R., to General Electric Company. Dehydrohalogenation of a diphenyl trichloroethane. 4,192,957, Cl. 568-726.000.
Madaliev, Shavkat: *See—*
Varlamov, Gennady D.; Mamatov, Juldash; Bekbulatov, Ildgam A.; and Madaliev, Shavkat, 4,192,931, Cl. 525-489.000.
Madhavan, Narayanan; and Freeman, Frank H., to Sybron Corporation. Barium aluminum silicate filler for U.V. curable composites. 4,192,795, Cl. 260-42.520.
Madsen, Bruce S., to Western Electric Company, Inc. Stabilizing composition for a metal deposition process. 4,192,764, Cl. 430-455.000.
Maeda, Takashi: *See—*
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Magnavox Government and Industrial Electronics Company: *See—*
Koontz, Ralph F.; and Klein, Lloyd E., 4,192,913, Cl. 429-119.000.
Mahalla, Shalom. Metal crystals and process. 4,192,695, Cl. 148-32.000.
Maher, John P.; and Jacobsen, Robert T., to Sprague Electric Company. Making an electroding ink for a monolithic ceramic capacitor. 4,192,698, Cl. 156-89.000.
Mainord, Kenneth R., to Eastman Kodak Company. Emulsifiable ethylene/carbon monoxide copolymer waxes. 4,192,942, Cl. 260-597.00R.
Maiocchi, Luigi, to Industrie Pirelli S.p.A. Tire core bead for tubeless tires. 4,192,368, Cl. 152-362.00R.
Maisch, Wolfgang; and Burkel, Rainer, to Robert Bosch GmbH. Method and apparatus for automatic engine shut-off and restart. 4,192,279, Cl. 123-198.00F.
Makino, Fusao: *See—*
Morita, Toshiaki; Takatori, Hironari; Makino, Fusao; Yasuda, Syoichi; and Nishioka, Yoshiki, 4,193,056, Cl. 340-146.3AC.
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Makrides, Alkis C.: *See—*
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Malm, Elisabeth: *See—*
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Maly, George P.; and Laurie, Archibald M., to Union Oil Company of California. Gravel-packing tool assembly. 4,192,375, Cl. 166-51.000.
Mamatov, Juldash: *See—*
Varlamov, Gennady D.; Mamatov, Juldash; Bekbulatov, Ildgam A.; and Madaliev, Shavkat, 4,192,931, Cl. 525-489.000.
Mannesmann AG: *See—*
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Mansell, John D.: *See—*
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Mar-Pha Societe d'Etudes et d'Exploitation de Marques: *See—*
Brown, Eric; Boschetti, Egisto; Corgier, Monique M.; and Touet, Joel, 4,192,784, Cl. 260-8.000.
Marckwardt, Werner, to Jenoptik Jena G.m.b.H. Electronic correlator. 4,193,117, Cl. 364-728.000.
Marhofer, Gerd: *See—*
Buck, Robert; and Marhofer, Gerd, 4,193,023, Cl. 323-19.000.
Marka, Erwin: *See—*
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Markovsky, Evgeny A.: *See—*
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.
Marks, Richard L.; and Weidler, Charles H., to AMP Incorporated. Connector assembly and improved connector plug. 4,192,568, Cl. 339-91.00R.
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Marsh, Harry A., Jr., to Dresser Industries, Inc. Device for fabrication of tapholes in metallurgical vessels. 4,192,492, Cl. 266-281.000.
Marshall, Alan: *See—*
Clark, David R.; Marshall, Alan; and Finan, Michael A., 4,192,744, Cl. 210-54.000.
Marshall, Robert M.; and Dardoufas, Kimon C., to Allied Chemical Corporation. Soil resistant yarn finish composition for synthetic organic polymer yarn. 4,192,754, Cl. 252-8.800.
Martin, Alan. Tool for setting blind fasteners. 4,192,163, Cl. 72-114.000.
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Otteson, Jack O.; and Martin, Eugene J., 4,192,399, Cl. 180-170.000.
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Martin, Mulford, Jr., to Armco Inc. Corner assembly for wall panels. 4,192,113, Cl. 52-282.000.
Martin, Raymond H.; and Brushaber, Larry R. Double wall plastic article and method and apparatus for forming a double wall plastic article with a pair of thermoplastic sheets. 4,192,701, Cl. 156-285.000.
Maru, Hansraj C., to Energy Research Corporation. Electrochemical cell operation and system. 4,192,906, Cl. 429-13.000.
Marvin Glass & Associates: *See—*
Erickson, Erick E.; and Breslow, Jeffrey D., 4,192,512, Cl. 273-243.000.
Meyer, Burton C., 4,192,580, Cl. 350-238.000.
Masakazu, Kurihara: *See—*
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Kirkland, Kerry G.; and Masciopinto, Anthony J., 4,192,383, Cl. 166-341.000.
Mason & Hanger-Silas Mason Co., Inc.: *See—*
Wait, Henry J., 4,192,216, Cl. 89-40.00B.
Massa, Richard L.; and Cook, Kenneth J., to Valeron Corporation, The. Automatic zeroing system. 4,193,039, Cl. 328-162.000.
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Savarese, John J.; Kitz, Richard J.; and Ginsburg, Sara, 4,192,877, Cl. 424-258.000.
Zurawski, Vincent R., Jr., 4,192,917, Cl. 435-236.000.
Massachusetts Institute of Technology: *See—*
Kaplow, Roy; and Frank, Robert I., 4,193,081, Cl. 357-30.000.
Massaro, Anthony A., Jr.: *See—*
Blanco, Rodney A.; and Massaro, Anthony A., Jr., 4,192,053, Cl. 29-157.400.
Massey-Ferguson Inc.: *See—*
Elfes, Lee E.; and Wood, Dale A., 4,192,750, Cl. 210-133.000.
Massey-Ferguson Services N.V.: *See—*
Allely, Robert, 4,192,123, Cl. 56-13.600.
Hausmann, Winfried, 4,192,523, Cl. 280-400.000.
Massignon, Daniel: *See—*
Blanchard, Bruno; Legressus, Claude; Massignon, Daniel; Sopizet, Rene; and Stefani, Rene, 4,193,003, Cl. 250-492.00A.
Masson, Jean-Marcel: *See—*
Featherstone, Robert A.; Roos, Paul P.; Gericke, Willem A.; Saleil, Jean; Leroy, Pierre J.; and Masson, Jean-Marcel, 4,192,675, Cl. 75-60.000.
Masukawa, Toyoaki: *See—*
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Masuzima, Sho; and Fujita, Hisashi, to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha. Process and apparatus for manufacture of parallel lead electronic components. 4,192,061, Cl. 29-854.000.
Mathieu, Pierre: *See—*
Tellier, Jacques; Philippe, Andre; Mathieu, Pierre; and Voirin, Robert, 4,192,857, Cl. 423-576.000.
Matsuda, Toshio: *See—*
Koike, Susumu; Kambara, Ginjiro; and Matsuda, Toshio, 4,193,080, Cl. 357-23.000.
Matsumoto, Hiromitsu: *See—*
Yamashita, Ryuichi; and Matsumoto, Hiromitsu, 4,192,140, Cl. 60-277.000.
Matsumoto, Junichiro: *See—*
Iizuka, Haruhiko; Sugasawa, Fukashi; Matsumoto, Junichiro; and Etoh, Yukihiro, 4,192,278, Cl. 123-198.00F.
Matsumoto, Katsuhiko: *See—*
Higuchi, Kazuo; and Matsumoto, Katsuhiko, 4,192,545, Cl. 297-216.000.

Matsuo, Masataka, to Nippon Steel Corporation. Refractory powder flame projecting apparatus. 4,192,460, Cl. 239-79.000.

Matsuo, Syunji: *See—*
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Matsushita Electronics Corporation: *See—*
Koike, Susumu; Kambara, Ginjiro; and Matsuda, Toshio, 4,193,080, Cl. 357-23.000.

Matsuzawa, Toshihiko: *See—*
Tanioka, Katsuhiko; Matsuzawa, Toshihiko; Iida, Noboru; Makino, Naoji; and Hayasaka, Itirow, 4,192,793, Cl. 260-42.140.

Mattern, Gunter: *See—*
Clauson-Kaas, Niels; Mattern, Gunter; and Traber, Walter, 4,192,946, Cl. 546-249.000.

Matthews, Donald P.: *See—*
Wagner, Eugene R.; and Matthews, Donald P., 4,192,884, Cl. 424-275.000.

Matyas, Stephen M.: *See—*
Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; Prentice, Paul N.; and Tuchman, Walter L., 4,193,131, Cl. 375-2.000.

Maulhardt, Hans-Joachim: *See—*
Junger, Rudolf; and Maulhardt, Hans-Joachim, 4,192,760, Cl. 252-79.000.

Max, Lee B., to Varian Associates, Inc. Package for push-pull semiconductor devices. 4,193,083, Cl. 357-80.000.

May, Peter J.: *See—*
Phillipps, Gordon H.; May, Peter J.; and Ayres, Barry E., 4,192,871, Cl. 424-241.000.

Mayer, Max, to Siemens Aktiengesellschaft. Circuit arrangement for determining specific characters occurring directly consecutively in a sequence of characters, in particular for teleprinter exchange systems. 4,192,966, Cl. 178-3.000.

Maytag Company, The: *See—*
Jordan, Lawrence J., 4,192,432, Cl. 220-83.000.

McAndrew, James R. Utility arch. 4,192,069, Cl. 433-21.000.

McCoin, Dan K., to Bales-McCoin Research, Inc. Variable ratio gear transmission. 4,192,200, Cl. 74-690.000.

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McComb, Barry P. Bidets or like apparatus. 4,192,023, Cl. 4-7.000.

McCort, Ralph E., to Owens-Corning Fiberglas Corporation. Seals for ovens. 4,192,516, Cl. 277-12.000.

McCracken, John, to Vought Corporation. Fragmentation explosive structure having elongated fragments. 4,192,234, Cl. 102-67.000.

McCullough, John E.: *See—*
Armstrong, Allen E.; and McCullough, John E., 4,192,152, Cl. 62-402.000.

McElroy, Kenneth W. Motorcycle battery indicator. 4,192,909, Cl. 429-91.000.

McEwan, John A. Jump-proof electrical disenabling system. 4,192,400, Cl. 180-287.000.

McFarlane, James D.: *See—*
Patton, Franklin D.; and McFarlane, James D., 4,192,181, Cl. 73-155.000.

McKay, Frank F., Jr.: *See—*
Worrell, G. Richard; and McKay, Frank F., Jr., 4,192,656, Cl. 48-192.000.

McKinstry, Paul H.; and Barnhart, Robert R., to Uniroyal, Inc. Elastomeric composition having reduced Mooney viscosity. 4,192,790, Cl. 260-31.2MR.

McKusick, Wayne L., to United States of America, Navy. Combination infrared radio fuze. 4,193,072, Cl. 343-6.0ND.

McLaren, Edwin C., to Champion International Corporation. Divided paperboard tray. 4,192,443, Cl. 229-28.00R.

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Antoniuk, Andrew V.; Hankinson, Lawrence V.; Boulter, David M.; and McMillan, William R., 4,192,228, Cl. 100-37.000.

McVicker, Gary B.; and Vannice, M. Albert, to Exxon Research & Engineering Co. Preparation and use of supported potassium (or rubidium)-Group VIII-metal cluster catalysts in CO/H_2 Fischer-Tropsch synthesis reactions. 4,192,777, Cl. 252-447.000.

Mead Corporation, The: *See—*
Oliff, James R., 4,192,540, Cl. 294-87.200.

Mearl Corporation, The: *See—*
Armanini, Louis, 4,192,691, Cl. 106-291.000.

Meevis, Martinus H. J.: *See—*
van den Bosch-Meevis, Henriette M. J.; and Meevis, Martinus H. J., 4,192,046, Cl. 28-151.000.

Megahed, Shenoda S., to Becton, Dickinson and Company. Adapter for syringe. 4,192,320, Cl. 128-764.000.

Megles, John E., Jr.: *See—*
Chyung, Kenneth; and Megles, John E., Jr., 4,192,665, Cl. 65-33.000.

Meier, Jean: *See—*
Allais, Andre; Meier, Jean; and Dube, Jacques, 4,192,890, Cl. 424-308.000.

Meinke, James M., to Bell Telephone Laboratories, Incorporated. Fault detection in data rate conversion systems using a first-in, first-out buffer. 4,193,123, Cl. 364-900.000.

Meissner, Bernd; Fliege, Werner; Woerz, Otto; Dudeck, Christian; and Diehm, Hans, to BASF Aktiengesellschaft. Preparation of 3-methyl-2-buten-1-al. 4,192,820, Cl. 260-601.00R.

Melby, William E.; Isdale, Charles E., Sr.; and Collins, Vernon K., to A. H. Robins Company, Incorporated. Process for producing defatted heparin tissue for heparin production. 4,192,916, Cl. 435-274.000.

Memoli, Adriana: *See—*
Botre, Claudio; Bolasco, Franco; Memoli, Adriana; and Molteni, Luigi, 4,192,894, Cl. 424-329.000.

Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, to BBC Brown Boveri & Company Limited. Permanent-magnet alloy. 4,192,696, Cl. 148-101.000.

Mercier, Jacques H., to Normand Trust. Pressure vessel. 4,192,350, Cl. 138-30.000.

Merck & Co., Inc.: *See—*
Cheng, Hsiung, 4,192,900, Cl. 426-579.000.
Veber, Daniel F.; and Freidinger, Roger M., 4,192,875, Cl. 424-256.000.

Merger, Franz; Towae, Friedrich; and Schroff, Ludwig, deceased (by Schroff, Meinie T., heiress-at-law), to BASF Aktiengesellschaft. Preparation of aralkyl phenyl ethers and alkyl phenyl ethers. 4,192,949, Cl. 560-67.000.

Mergner, George C.: *See—*
Hitt, James J.; and Mergner, George C., 4,193,063, Cl. 340-200.000.

Merianos, John J.: *See—*
Kaplan, Saul; Merianos, John J.; Green, Harold A.; and Petrocci, Alfonso N., 4,192,817, Cl. 260-513.00N.

Merry, Glenn W., to Winter Park Associates. Multiple transfer process and article resulting therefrom. 4,192,640, Cl. 430-248.000.

Mersek, Leo D.; and Rettig, Peter P., to Ajax Manufacturing Company, The. Forging machine transfer for heavy workpieces. 4,192,172, Cl. 72-420.000.

Messer Griesheim GmbH: *See—*
Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, 4,192,488, Cl. 266-77.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Heinrich, Wilhelm, 4,192,475, Cl. 244-3.160.

Messines, Jean-Paul; Labat, Gaston; and Tramier, Bernard, to Societe Nationale Elf Aquitaine (Production). Recovery of drilling fluids. 4,192,392, Cl. 175-66.000.

Metabowerke GmbH & Co.: *See—*
Schnizler, Albrecht, Jr.; and Kieser, Hermann, 4,192,982, Cl. 200-157.000.

Meyer, Adolf; and Gutfleisch, Peter O., to Portland-Zementwerke Heidelberg A.G. Fiber-reinforced hydraulically hardenable shaped objects. 4,192,690, Cl. 106-99.000.

Meyer, Bruno P.: *See—*
Decky, John R.; and Meyer, Bruno P., 4,192,477, Cl. 248-56.000.

Meyer, Burton C., to Marvin Glass & Associates. Toy microscope. 4,192,580, Cl. 350-238.000.

Meyer, Carl H. W.: *See—*
Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; Prentice, Paul N.; and Tuchman, Walter L., 4,193,131, Cl. 375-2.000.

Micchelli, Albert L.; Nowak, Frank A., Jr.; and Ganslaw, Stuart H., to National Starch and Chemical Corporation. Hydrocarbon propelled aerosol hair spray compositions. 4,192,861, Cl. 424-47.000.

Michaels, Alan S., to Alza Corporation. Device using prestretched polymer for dispensing medication. 4,192,308, Cl. 128-260.000.

Michel, Dominique; and Noblanc, Alain G. N., to Compagnie Generale pour les Developpements, FRX. Assembly positioning a crane on a platform installed in the sea. 4,192,110, Cl. 52-111.000.

Michele, Joseph V.: *See—*
Campos, Adolph A.; and Michele, Joseph V., 4,192,634, Cl. 418-61.00A.

Miesen, Ernest: *See—*
Broecker, Franz J.; Duembgen, Gerd; Glietenberg, Helmut; Miesen, Ernest; and Schwarzmann, Matthias, 4,192,807, Cl. 260-343.600.

Mika, Norbert: *See—*
Liebetruth, Reiner; and Mika, Norbert, 4,193,001, Cl. 250-445.00T.

Miki, Masayoshi: *See—*
Takahashi, Tsukasa; Sekihara, Takeshi; Emura, Tomoyuki; and Miki, Masayoshi, 4,192,934, Cl. 526-62.000.

Mikiver, Maarja: *See—*
Thorsell, Walborg; Mikiver, Maarja; Malm, Elisabeth; and Wennberg, Lennart, 4,192,892, Cl. 424-324.000.

Mikusch, Gerald: *See—*
Munch, Werner; and Mikusch, Gerald, 4,192,169, Cl. 72-405.000.

Milberger, Walter E.; and Wright, Larry G., to United States of America, Air Force. High speed transmitter pulser. 4,193,032, Cl. 178-116.000.

Millar, Douglas A. J.: *See—*
Chappell, Marcus S.; and Millar, Douglas A. J., 4,192,137, Cl. 60-39.16R.

Miller, Arthur F.: *See—*
Grasselli, Robert K.; Miller, Arthur F.; and Hardman, Harley F., 4,192,776, Cl. 252-432.000.

Miller, Francis G.: *See—*
Weimer, James C.; Locks, William S.; Wilson, Edwin B.; and Miller, Francis G., 4,192,551, Cl. 299-1.000.

Miller, Franklin C. Apparatus for simulating game of golf. 4,192,510, Cl. 273-176.00A.

Miller, Joseph A.: *See—*
Baselice, Louis R.; Freakes, Anthony; Miller, Joseph A.; and Ventz, George A., 4,192,496, Cl. 271-10.000.

Miller, Robert L.: *See—*
Cloyd, Grover D.; Miller, Robert L.; and Lucas, Donald M., 4,192,887, Cl. 424-283.000.

Millet, Marcus J., to Johnson & Johnson. Intravenous catheter assembly with fluid flow restriction capability. 4,192,304, Cl. 128-214.400.

Mima, Rikichi, to Miwa Gomu Kogyo Kabushiki Kaisha. Cutter mat and method of making same. 4,192,494, Cl. 269-289.00R.

Mimura, Masahisa: *See—*
Tanaka, Atsushi; Shinoda, Toshihiko; and Mimura, Masahisa, 4,192,928, Cl. 521-177.000.

Minami, Takeshi; and Toda, Shinichi, to Chlorine Engineers Corporation, Ltd. Method for electrolyzing molten metal chlorides. 4,192,724, Cl. 204-67.000.

Minnesota Mining and Manufacturing Company: *See—*
Tung, Chi F.; and Laird, James A., 4,192,576, Cl. 350-105.000.

Minolta Camera Kabushiki Kaisha: *See—*
Kitaura, Mashio, 4,192,590, Cl. 354-53.000.
Ogino, Shuji, 4,192,577, Cl. 350-184.000.

Mironov, Vladimir F.: *See—*
Sheludyakov, Viktor D.; Kirilin, Alexei D.; Mironov, Vladimir F.; Glushakov, Sergei N.; and Karpman, Yakov S., 4,192,815, Cl. 260-453.00P.

Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, to Sankyo Company Limited. Polyprenyl derivatives. 4,192,953, Cl. 568-673.000.

Mitchell, John R. Saw horse brace. 4,192,406, Cl. 182-185.000.

Mitchell, Lawrence C.: *See—*
Barker, Henry P.; and Mitchell, Lawrence C., 4,192,954, Cl. 568-723.000.

Mitchell, Paul: *See—*
Brougham, Robert W.; and Mitchell, Paul, 4,193,089, Cl. 358-111.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Hashimoto, Tsutomu; and Nakamura, Nobuhiro, 4,192,452, Cl. 235-471.000.
Shibayama, Kyoichi; Okahashi, Kazuo; and Hayashi, Osamu, 4,192,786, Cl. 260-18.0EP.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Yoshikawa, Yoshio; Nawata, Takanari; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, 4,192,773, Cl. 252-429.00R.

Mitsui Petrochemical Industries Ltd.: *See—*
Hashimoto, Isao; Nakagawa, Hiroaki; and Nambu, Hirohiko, 4,192,958, Cl. 568-763.000.

Mitsui, Tsutomu: *See—*
Hida, Takashi; Mitsui, Tsutomu; Hashiride, Tadaaki; and Kuwana, Kazutaka, 4,192,157, Cl. 66-76.000.

Miura, Seishi: *See—*
Ishihara, Takeo; and Miura, Seishi, 4,192,276, Cl. 123-179.00K.

Miwa Gomu Kogyo Kabushiki Kaisha: *See—*
Mima, Rikichi, 4,192,494, Cl. 269-289.00R.

Mixich, Johann; and Jastrow, Horst, to Hoechst Aktiengesellschaft. Finely divided expandable styrene polymers. 4,192,922, Cl. 521-56.000.

Mixon, James L., Jr.; and Sherman, Mark L. Support device for musical instruments. 4,192,214, Cl. 84-327.000.

Miyajima, Toru: *See—*
Nakao, Kozaburo; and Miyajima, Toru, 4,192,962, Cl. 13-7.000.

Mizushima, Masashi, to Hitachi, Ltd. Driver system of memory type gray-scale display panel. 4,193,095, Cl. 358-241.000.

Mo och Domsjo Aktiebolag: *See—*
Bergstrom, John R.; Hultman, Bengt G.; and Dalborg, Astrid T. P., 4,192,708, Cl. 162-49.000.

Mobil Oil Corporation: *See—*
Pavlica, Robert T.; Stein, Thomas R.; and Streed, Carl W., 4,192,734, Cl. 208-80.000.
Salmon, Howard J., 4,192,787, Cl. 260-21.000.
Smith, Clarence G., 4,193,058, Cl. 367-71.000.

Mohring, Edgar; Wagner, Kuno; and Muller, Hanns P., to Bayer Aktiengesellschaft. Preparation of polyisocyanates containing biuret groups. 4,192,936, Cl. 528-59.000.

Moldas, Richard P.: *See—*
Kelley, John S.; and Moldas, Richard P., 4,192,244, Cl. 113-121.00C.

Molleken, Reiner: *See—*
Bauer, Kurt; Krempel, Alfred; Molleken, Reiner; Wedemeyer, Karlfried; and Fiege, Helmut, 4,192,959, Cl. 568-764.000.

Molteni, Luigi: *See—*
Botre, Claudio; Bolasco, Franco; Memoli, Adriana; and Molteni, Luigi, 4,192,894, Cl. 424-329.000.

Mondshine, Thomas C., to Texas Brine Corporation. Anticaking of sodium chloride and potassium chloride. 4,192,756, Cl. 252-8.55R.

Monte, Salvatore J.: *See—*
Sugerman, Gerald; and Monte, Salvatore J., 4,192,792, Cl. 260-42.140.

Montgomery, Max L. Auger conveyer. 4,192,418, Cl. 198-659.000.

Moog Inc.: *See—*
Replogle, Douglas L., 4,192,527, Cl. 280-618.000.

Moore, Donn F., to Computer Peripherals, Inc. Band welding fixture. 4,192,055, Cl. 29-281.400.

Moran, Steven E., to United States of America, Navy. Optical heterodyne system for imaging in a dynamic diffusive medium. 4,193,088, Cl. 358-95.000.

Morelli, John A.: *See—*
Laudig, Ronald C.; and Morelli, John A., 4,192,566, Cl. 339-47.00R.

Morgan, Burton D., to Concept Development Institute, Inc. Inflatable building and anchor means for pipeline construction. 4,192,105, Cl. 52-2.000.

Morgan, John H. Highway vehicle splash and spray control shield. 4,192,522, Cl. 280-154.50R.

Mori, Keiichi: *See—*
Fushiki, Isamu; Kamitakahara, Atushi; and Mori, Keiichi, 4,192,680, Cl. 430-380.000.

Morigami, Eiji; and Inahara, Motoharu, to Iwasaki Tsushinki Kabushiki Kaisha. Remote-controllable automatic telephone answering device. 4,192,971, Cl. 179-6.00E.

Morikawa, Michio: *See—*
Hayashi, Torahiko; Maeda, Takashi; and Morikawa, Michio, 4,192,636, Cl. 425-96.000.

Morikawa, Teruo: *See—*
Tsunoi, Haruo; Morikawa, Teruo; Yamada, Katsuhiko; Ohkawara, Kenji; and Kubota, Atsushi, 4,192,229, Cl. 100-158.00R.

Morita, Toshiaki; Takatori, Hironari; Makino, Fusao; Yasuda, Syoichi; and Nishioka, Yoshiki, to Sharp Kabushiki Kaisha. OCR for reading a constraint free hand-written character or the like. 4,193,056, Cl. 340-146.3AC.

Moriya, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Read only memory. 4,193,125, Cl. 365-104.000.

Morrison, Clyde A.; Karayianis, Nick; and Wortman, Donald E., to United States of America, Army. Rare earth semiconductor laser. 4,193,044, Cl. 331-94.50F.

Morrison, Steven; Lisle, Thomas K., Jr.; and Glover, Clarence C., to United States of America, Air Force. Automatic bias adjustment circuit for a successive ranged analog/digital converter. 4,193,066, Cl. 340-347.0CC.

Mosby, William L.; and Hardy, William B., to American Cyanamid Company. Polymers stabilized with organo-phosphorus compounds. 4,192,796, Cl. 260-45.85S.

Moser, Theo, to Robert Bosch GmbH. Apparatus for filling capsules and the like. 4,192,361, Cl. 141-82.000.

Moskowitz, Larry N.; and Klar, Erhard, to SCM Corporation. Spray-and-fuse self-fluxing alloy powders. 4,192,672, Cl. 75-0.50C.

Motorola, Inc.: *See—*
Cerny, Frank J., Jr.; Helm, George D.; and Wesoloski, Ronald G., 4,193,036, Cl. 455-327.000.
Hilbert, Francis H.; and Parker, Norman W., 4,192,968, Cl. 179-1.0GS.
Kyu, Shikun, 4,193,037, Cl. 328-46.000.
Nash, Harold G.; and Linford, John R., 4,193,118, Cl. 364-734.000.
Wechsler, Reuben, 4,192,993, Cl. 235-92.0DE.

Mousseau, Timothy K.: *See—*
Stevens, John M.; Allen, Grant W.; Cole, John M.; and Mousseau, Timothy K., 4,192,992, Cl. 219-494.000.

Moyer, Laurence, to Cessna Aircraft Company, The. Cylinder locking ring. 4,192,225, Cl. 92-169.000.

Moyer, Richard D. Scooped boat hull having tri-keel surfaces. 4,192,248, Cl. 114-56.000.

MPL, Inc.: *See—*
Raghavachari, Srinivas T., 4,192,919, Cl. 435-292.000.

Mubarak, Scott J.: *See—*
Hargens, Alan R.; and Mubarak, Scott J., 4,192,319, Cl. 128-748.000.

Mucci, Peter E. R., to International Standard Electric Corporation. Underwater connector. 4,192,569, Cl. 339-96.000.

Muchnik, Simon V.: *See—*
Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.

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Muether, Manfred; Phleps, Tilman; and Schmitt, Ernst, to Siemens Aktiengesellschaft. Dental x-ray diagnostic installation. 4,193,002, Cl. 250-479.000.

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Beck, Heinz; Frassek, Karl H.; Holtvoigt, Werner; and Mukerjee, Ambar, 4,192,930, Cl. 525-227.000.

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Mohring, Edgar; Wagner, Kuno; and Muller, Hanns P., 4,192,936, Cl. 528-59.000.

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Gielnik, Harry, 4,192,040, Cl. 17-11.000.

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Foster, Peter W.; Berry, Thomas; and Murenbeeld, Karel, 4,192,047, Cl. 28-220.000.

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  - Noll, Klaus; Nachtkamp, Klaus; and Pedain, Josef, 4,192,937, Cl. 528-59.000.
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- Nagai, Kazuyoshi. Process for fusion-bonding of resins. 4,192,700, Cl. 156-272.000.
- Naganawa, Hiroshi: *See—*
  - Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,192,915, Cl. 435-78.000.
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  - Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,192,682, Cl. 430-405.000.
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  - Baba, Kohzo; and Nagatomo, Itsuyoshi, 4,192,673, Cl. 75-0.50C.
- Nagel, Hartmut: *See—*
  - Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, 4,192,696, Cl. 148-101.000.
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  - Ohoda, Michio; Nakajima, Yasuo; Sugihara, Kunihiko; and Nagumo, Shin-ichi, 4,192,262, Cl. 123-75.00B.
- Nahta, Roop C., to GAF Corporation. Cationic dye carrier and selective process for dyeing polyesters. 4,192,648, Cl. 8-86.000.
- Naito, Naoki, to Jujo Paper Co., Ltd. Paperboard liquid container. 4,192,446, Cl. 229-37.00R.
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  - Hashimoto, Isao; Nakagawa, Hiroaki; and Nambu, Hirohiko, 4,192,958, Cl. 568-763.000.
- Nakagawa, Sumio; Tanaka, Toshio; and Todo, Kenji, to Hitachi, Ltd. Combustion control apparatus. 4,192,641, Cl. 431-15.000.
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- Nakamura, Takeshi, to Murata Manufacturing Co., Ltd. Tuning fork formed of rolled invariable elasticity material. 4,193,008, Cl. 310-321.000.
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- Nakazato, Kazuo: *See—*
  - Sakamoto, Eiichi; Ishihara, Masao; Nakazato, Kazuo; Yamada, Hiroshi; Terada, Sadatugu; Kitahara, Kenichi; Abe, Naoto; Komiya, Mamoru; and Kanbe, Masaru, 4,192,683, Cl. 430-536.000.
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  - Hauck, Frederic P.; Narayanan, Venkatachala L.; O'Connor, Jeremiah J.; and Pilote, Raymond R., 4,192,889, Cl. 424-309.000.
- Nash, Harold G.; and Linford, John R., to Motorola, Inc. Low pass digital averaging filter. 4,193,118, Cl. 364-734.000.
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  - Rabow, Gerald; and Nashman, Alvin E., 4,193,030, Cl. 375-2.000.
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  - Rekers, Louis J.; Katzen, Stanley J.; and Krekeler, Jerome H., 4,192,775, Cl. 252-430.000.
- National Research Development Corporation: *See—*
  - Hoult, David I.; and Styles, Peter, 4,193,024, Cl. 324-313.000.
- National Semiconductor Corporation: *See—*
  - Tietz, Gary W., 4,193,007, Cl. 307-291.000.
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  - Micchelli, Albert L.; Nowak, Frank A., Jr.; and Ganslaw, Stuart H., 4,192,861, Cl. 424-47.000.
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  - Peeler, Burin A.; and Neisler, Henry P., 4,192,355, Cl. 139-435.000.
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- Nelson, Robert L., to Tracor, Inc. Pressure sensor. 4,192,191, Cl. 73-701.000.
- Nercessian, Sarkis, to Kepco, Inc. Programmable overvoltage protector. 4,193,104, Cl. 361-56.000.
- Nezu, Hisao, to Nippon Seiki Kabishiki Kaisha. Odometer. 4,192,450, Cl. 235-95.00R.
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  - Haselgrove, Bob; and Nichol, John D., 4,192,242, Cl. 112-262.200.
- Nicholas International Limited: *See—*
  - Suh, John T.; and Bare, Thomas M., 4,192,805, Cl. 260-340.50R.
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  - Tanaka, Seiyo, 4,192,145, Cl. 60-675.000.
- Nihon-Yohin Co., Ltd.: *See—*
  - Sato, Tomoyoshi, 4,192,333, Cl. 135-3.00E.
- Nikka Kabushiki Kaisha: *See—*
  - Kawakami, Yoshito, 4,192,231, Cl. 101-425.000.
- NIKO Konserven-Maschinenfabrik Hinsbek GmbH & Co., KG: *See—*
  - Thonissen, Willi, 4,192,416, Cl. 198-433.000.
- Nilsson, Per A.; Harryson, Gunnar B.; Larsson, Leif T.; Poderschan, Karl J.; Ritakallio, Pekka; and Lehner, Theo, to Stiftelsen for Metallurgisk Forskning. Lance for injecting powdery material into molten metal. 4,192,490, Cl. 266-225.000.
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  - Yamaga, Eiichi; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichiro; Oya, Akiyoshi; and Uchiyama, Yasuji, 4,192,211, Cl. 84-1.010.
  - Yamaga, Eiichi; Aoki, Eiichiro; and Imamura, Akio, 4,192,212, Cl. 84-1.030.
- Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Kato, Hiroshi; Ito, Yoshiaki; Tokonami, Hiroshi; and Sawada, Atsuo, 4,192,649, Cl. 8-138.000.
- Nippon Kogaku K.K.: *See—*
  - Furuya, Mikihito, 4,192,599, Cl. 354-173.000.
  - Sato, Akihiko; and Araki, Yoshitaka, 4,192,598, Cl. 354-153.000.
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- Nippon Soken, Inc.: *See—*
  - Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, 4,192,268, Cl. 123-119.0EC.
- Nippon Steel Corporation: *See—*
  - Matsuo, Masataka, 4,192,460, Cl. 239-79.000.
  - Ueda, Yuziro; Yoshida, Toru; and Honda, Michiyasu, 4,192,486, Cl. 266-44.000.
- Nippon Telegraph and Telephone Public Corporation: *See—*
  - Houkawa, Kouji; Yamauchi, Yoshiki; and Yoshikawa, Shokichiro, 4,193,045, Cl. 331-107.00A.
- Nippondenso Co., Ltd.: *See—*
  - Kazino, Sadayosi; and Doi, Tatsuo, 4,192,195, Cl. 74-7.00A.
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  - Morita, Toshiaki; Takatori, Hironari; Makino, Fusao; Yasuda, Syoichi; and Nishioka, Yoshiki, 4,193,056, Cl. 340-146.3AC.
- Nissan Motor Company, Limited: *See—*
  - Iizuka, Haruhiko; Sugasawa, Fukashi; Matsumoto, Junichiro; and Etoh, Yukihiro, 4,192,278, Cl. 123-198.00F.
  - Ohoda, Michio; Nakajima, Yasuo; Sugihara, Kunihiko; and Nagumo, Shin-ichi, 4,192,262, Cl. 123-75.00B.
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- Noblanc, Alain G. N.: *See—*
  - Michel, Dominique; and Noblanc, Alain G. N., 4,192,110, Cl. 52-111.000.
- Nogami, Tomoyuki: *See—*
  - Fujii, Takashi; Ohmi, Atsushi; Nogami, Tomoyuki; and Ohta, Takaaki, 4,192,345, Cl. 137-572.000.
- Nolan, John P. S., to Skemmill Limited. Coiling machine. 4,192,126, Cl. 57-3.000.
- Noll, Klaus; Nachtkamp, Klaus; and Pedain, Josef, to Bayer Aktiengesellschaft. Process for the preparation of isocyanate polyaddition products which have hydroxyl groups in side chains. 4,192,937, Cl. 528-59.000.
- Nonoyama, Takao; and Yasuda, Takeru, to Toyota Jidosha Kegko Kabushiki Kaisha. Exhaust gas purifying system for engines. 4,192,141, Cl. 60-290.000.

- Normand Trust: *See—*
  - Mercier, Jacques H., 4,192,350, Cl. 138-30.000.
- Norris, Philip R., to Polaroid Corporation. Photographic film assemblage. 4,192,593, Cl. 354-86.000.
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  - Byers, Leroy R., 4,192,476, Cl. 244-83.00K.
- Nose, Takashi: *See—*
  - Tsukamoto, Goro; Yoshino, Koichiro; Kohno, Toshihiko; Taguchi, Masahiro; Dezawa, Katsumi; Kagaya, Hajime; Ito, Keizo; and Nose, Takashi, 4,192,880, Cl. 424-273.00R.
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- Numakura, Toshihiko: *See—*
  - Yamagiwa, Kazuo; Saito, Kaneo; and Numakura, Toshihiko, 4,193,084, Cl. 358-4.000.
- Nyhus, Orville K., to Rockwell International Corporation. Balun transformer. 4,193,048, Cl. 333-26.000.
- O.G. Hoyer A/S: *See—*
  - Krener, Ole G.; and Waldstrom, Ejvind, 4,192,415, Cl. 198-374.000.
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  - Schwappach, Dieter, 4,192,089, Cl. 37-142.00A.
- Occidental Oil Shale, Inc.: *See—*
  - Cha, Chang Y., 4,192,381, Cl. 166-261.000.
  - Ricketts, Thomas E., 4,192,554, Cl. 299-2.000.
  - Studebaker, Irving G.; and Hefelfinger, Richard, 4,192,553, Cl. 299-2.000.
- O'Connor, Jeremiah J.: *See—*
  - Hauck, Frederic P.; Narayanan, Venkatachala L.; O'Connor, Jeremiah J.; and Pilote, Raymond R., 4,192,889, Cl. 424-309.000.
- Ogami, Noboru. Forceps designed to facilitate insertion of a laminaria tent into the uterine cervix. 4,192,313, Cl. 128-321.000.
- Ogata, Shunji; and Yamamoto, Yohei, to Japan Oxygen Co., Ltd.; and Tokyo Cryogenic Industries Co., Ltd. Process for liquefying and rectifying air. 4,192,662, Cl. 62-13.000.
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  - Godai, Tomokazu; Sugiyama, Tohru; Sugino, Morihiko; Kondo, Masaru; and Ogawa, Tsuneshi, 4,192,175, Cl. 73-19.000.
- Ogino, Shuji, to Minolta Camera Kabushiki Kaisha. Zoom lens system. 4,192,577, Cl. 350-184.000.
- Ogiso, Akira: *See—*
  - Mishima, Hiroshi; Ogiso, Akira; and Kobayashi, Shinsaku, 4,192,953, Cl. 568-673.000.
- Oglesbee, Richard K., to Anchor Hocking Corporation. Cushioning pads for cartons. 4,192,421, Cl. 206-426.000.
- Ohashi, Fumio: *See—*
  - Onodera, Takashi; Komine, Kikuji; and Ohashi, Fumio, 4,192,732, Cl. 208-33.000.
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  - Tsunoi, Haruo; Morikawa, Teruo; Yamada, Katsuhiko; Ohkawara, Kenji; and Kubota, Atsushi, 4,192,229, Cl. 100-158.00R.
- Ohmi, Atsushi: *See—*
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- Ohmura, Kasutaka: *See—*
  - Yasumatsu, Mutsuo; Shoji, Shinichi; Sakamoto, Koichi; Kurihara, Takao; Terabayashi, Takeshi; and Ohmura, Kasutaka, 4,192,901, Cl. 426-580.000.
- Ohnishi, Kimimasa: *See—*
  - Tanaka, Shigenori; Tojo, Akio; Ohnishi, Kimimasa; and Kikuchi, Takeshi, 4,192,357, Cl. 139-450.000.
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- Ohoda, Michio; Nakajima, Yasuo; Sugihara, Kunihiko; and Nagumo, Shin-ichi, to Nissan Motor Company, Limited. Control system for varying the amount of scavenging air to be admitted to internal combustion engine. 4,192,262, Cl. 123-75.00B.
- Ohshina, Morio: *See—*
  - Nakamura, Yozo; and Ohshina, Morio, 4,192,154, Cl. 64-21.000.
- Ohta, Takaaki: *See—*
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- Oidaira, Toshiaki; Asanuma, Katsumi; Yanagimoto, Takekazu; Yasui, Senzi; Saito, Kozo; and Hakamata, Yoshio, to Fuji Photo Film Co., Ltd. Camera film processor. 4,192,594, Cl. 354-90.000.
- Okahashi, Kazuo: *See—*
  - Shibayama, Kyoichi; Okahashi, Kazuo; and Hayashi, Osamu, 4,192,786, Cl. 260-18.0EP.
- Okamura, Hiromasa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary master cylinder means. 4,192,224, Cl. 92-125.000.
- Okazaki, Mitsuo; Yamaguchi, Akihiro; and Sasaki, Masaomi, to Ricoh Co., Ltd. 1,3,4-Oxadiazole derivatives and use thereof. 4,192,677, Cl. 430-77.000.
- Okazaki, Sakiho: *See—*
  - Hosokawa, Minoru; Ishii, Hiroshi; Kawamura, Yoshikazu; and Okazaki, Sakiho, 4,192,131, Cl. 368-157.000.
- Oki, Toshikazu: *See—*
  - Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,192,915, Cl. 435-78.000.
- O'Konski, George J.: *See—*
  - Beuch, Wallace E.; O'Konski, George J.; Rusch, Kenneth D.; and Wytaski, Thomas A., 4,193,102, Cl. 360-105.000.
- Okumura, Takatoshi: *See—*
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- O'Leary, Kevin J.: *See—*
  - Dotson, Ronald L.; and O'Leary, Kevin J., 4,192,725, Cl. 204-98.000.
- Oliff, James R., to Mead Corporation, The. Article carrier blank. 4,192,540, Cl. 294-87.200.
- Olsen, Kolbjorn, to Kokvik, Bjorn. Light fixtures. 4,193,110, Cl. 362-371.000.
- Olympus Optical Company Limited: *See—*
  - Hyakumura, Kazushi, 4,192,579, Cl. 350-227.000.
- Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Derivatives of thiazolidinecarboxylic acids and related acids. 4,192,878, Cl. 424-270.000.
- Ondetti, Miguel A.; and Cushman, David W., to E. R. Squibb & Sons, Inc. Carboxyalkylacyl substituted imidazolylamino acids. 4,192,881, Cl. 424-273.00R.
- Ondetti, Miguel A.; and Cushman, David W., to E. R. Squibb & Sons, Inc. Carboxyalkylacylamino acids. 4,192,882, Cl. 424-274.000.
- Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Process for preparing proline and homoproline derivatives. 4,192,945, Cl. 546-245.000.
- O'Neil, John B.; and Dewhirst, William, to Exxon Research & Engineering Co. Method and apparatus for making monofilament twines. 4,192,127, Cl. 57-7.000.
- Onodera, Takashi; Komine, Kikuji; and Ohashi, Fumio, to Toa Nenryo Kogyo Kabushiki Kaisha. Recovery and recycle of dewaxing aid. 4,192,732, Cl. 208-33.000.
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  - Glass, Roger W.; and Kuntze, Richard A., 4,192,707, Cl. 162-3.000.
- Oppel, Werner, to Klockner Ionon GmbH. Method and arrangement for controlling the electrical relationships of a current-intensive glow discharge. 4,193,070, Cl. 340-650.000.
- Optical Coating Laboratory, Inc.: *See—*
  - Anthon, Erik W., 4,192,995, Cl. 250-338.000.
- Orban, Jean, to Vivitar Corporation. Electronic system for photographic devices. 4,192,586, Cl. 354-24.000.
- Ordynsky, Georgy V.: *See—*
  - Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G., 4,192,715, Cl. 176-30.000.
- O'Riordan, Sean S. Atomic model. 4,192,084, Cl. 35-18.00A.
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  - Hayden, Owen; Sheward, George E.; Ormrod, Derek T.; Willby, Christopher R.; and Firth, George F., 4,192,374, Cl. 165-158.000.
- Osborn, Claiborn L., to Union Carbide Corporation. Radiation curable urethane compositions. 4,192,762, Cl. 252-182.000.
- Oseas, Jonathan: *See—*
  - Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; Prentice, Paul N.; and Tuchman, Walter L., 4,193,131, Cl. 375-2.000.
- Osipov, Vitaly G.: *See—*
  - Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G., 4,192,715, Cl. 176-30.000.
- Ostbo, Nils. Air preheating means at a vertical steam or hot water boiler. 4,192,260, Cl. 122-182.00R.
- Oswald, Alexis A.; and Valint, Paul L., Jr., to Exxon Research & Engineering Co. Unsymmetrical O-alkyl S′-butyl S-alkylthioalkyl dithiophosphates and oxidized derivatives thereof. 4,192,829, Cl. 260-948.000.
- Ott, Anton: *See—*
  - Hamma, Karlmann; and Ott, Anton, 4,192,199, Cl. 74-687.000.
- Ott, Paul W.: *See—*
  - Van Steenwyk, Donald H.; Cash, John R.; and Ott, Paul W., 4,192,077, Cl. 33-313.000.
- Otteson, Jack O.; and Martin, Eugene J., to Dana Corporation. Safety vacuum valve and electric switch for speed control systems. 4,192,399, Cl. 180-170.000.
- Owen, Geoffrey R.: *See—*
  - Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,192,879, Cl. 424-273.00R.
- Owen, Robert. Wraparound weighted exercise device for the foot and ankle. 4,192,502, Cl. 272-119.000.
- Owens-Corning Fiberglas Corporation: *See—*
  - Chrisman, Max G., 4,192,667, Cl. 65-374.0RM.
  - McCort, Ralph E., 4,192,516, Cl. 277-12.000.
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  - Babcock, Clarence L.; Busdiecker, Robert A.; and Hagedorn, Erwin C., 4,192,688, Cl. 106-39.700.
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  - Urbanski, Edward F., 4,192,209, Cl. 83-564.000.
- Pacella, Samuel S. Flexible conduit connector. 4,192,532, Cl. 285-248.000.
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  - Ay, Leo E.; and Arriaza, Ramon E., 4,192,173, Cl. 73-11.000.
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- Parker, William D.; Smith, Harry M.; and Edwards, Margaret P., to Winn & Coales (Denso) Limited. Hot applied coatings. 4,192,697, Cl. 156-188.000.
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  - Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Dolgov, Sergei I.; and Sysoev, Vladimir S., 4,192,165, Cl. 72-238.000.
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- Patrick, John P.: *See—*
  - Kos, Joseph M.; Patrick, John P.; and Harner, Kermit I., 4,193,005, Cl. 290-44.000.
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- Patton, Franklin D.; and McFarlane, James D., to Westbay Instruments Ltd. Casing assembly probes. 4,192,181, Cl. 73-155.000.
- Paul, Francis R., to Owens-Corning Fiberglas Corporation. Apparatus for applying liquid to continuously advancing filaments. 4,192,252, Cl. 118-258.000.
- Paul, John M., to Budd Company, The. Series pneumatic and coil spring railway car suspension. 4,192,239, Cl. 105-199.00R.
- Paust, Joachim; and Schumacher, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Methyl fumaraldehyde monoacetals and process. 4,192,806, Cl. 260-340.700.
- Pavlica, Robert T.; Stein, Thomas R.; and Streed, Carl W., to Mobil Oil Corporation. Production of high quality fuel oils. 4,192,734, Cl. 208-80.000.
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- Pederson, Paul D., Jr.; Ufford, Keith A.; and Nelson, Lawrence V., to Foto-Mark, Inc. Electrically heated thermal microbial drain barrier. 4,192,988, Cl. 219-201.000.
- Peeler, Burin A.; and Neisler, Henry P., to Dicey Fabrics, Inc. Apparatus for looms having fluid operated yarn insertion means. 4,192,355, Cl. 139-435.000.
- Peletz, Harold. Precast concrete catch basin with form for gutter inlet. 4,192,625, Cl. 404-5.000.
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- Pengilly, Roger W., to Lever Brothers Company. Hairspray containing a hairspray resin and a drag reducing agent. 4,192,862, Cl. 424-47.000.
- Penick, Ib, to Camera Plus, Inc. Camera with improved shutter arrangement. 4,192,596, Cl. 354-142.000.
- Peoples, John R. Electric jump rope. 4,192,501, Cl. 272-75.000.
- Pepsico, Inc.: *See—*
  - Tabickman, Maurice L.; and Dempsey, Douglas E., 4,192,505, Cl. 273-73.00C.
- Perkin-Elmer Corporation, The: *See—*
  - deMey, Charles F., II; and Helms, Charles C., 4,192,614, Cl. 356-410.000.
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- Peters, Klaus-Jurgen; Wissmann, Michael; and Schelhas, Peter, to Robert Bosch GmbH. Regulating apparatus for a fuel supply system for a mixture-compressing, externally ignited internal combustion engine. 4,192,271, Cl. 123-139.0AW.
- Peters, Leo; and Klemm, Richard O. Oven for cooking meat roasts. 4,192,991, Cl. 219-413.000.
- Petersen, John F. Weeelchair tilt cradle. 4,192,549, Cl. 297-464.000.
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  - Kaplan, Saul; Merianos, John J.; Green, Harold A.; and Petrocci, Alfonso N., 4,192,817, Cl. 260-513.00N.
- Petry, Stanton H., to Cory Food Services, Inc. Beverage brewer. 4,192,227, Cl. 99-279.000.
- Pfarrwaller, Erwin, to Sulzer Brothers Limited. Shuttle sensing means for weaving machine catcher mechanism. 4,192,354, Cl. 139-342.000.
- Pfarrwaller, Erwin, to Sulzer Brothers Limited. Catcher mechanism in a gripper projectile weaving machine and method of operating same. 4,192,356, Cl. 139-439.000.
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  - Knauer, Karl; and Pfleiderer, Hans J., 4,193,050, Cl. 333-165.000.
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  - Hunke, Friedrich; and Philipp, Heinz, 4,192,635, Cl. 425-71.000.
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  - Tellier, Jacques; Philippe, Andre; Mathieu, Pierre; and Voirin, Robert, 4,192,857, Cl. 423-576.000.
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- Phillips, Clarence A. L.; and Archer, Henry W., to Texaco Trinidad, Inc.; and Texaco Development Corporation. Desiccant and defoliating spray composition for leguminous plants. 4,192,668, Cl. 71-70.000.
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  - Chapman, Charles C., 4,192,825, Cl. 585-719.000.
  - Smith, Ernest L., 4,192,440, Cl. 222-528.000.
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  - Brougham, Robert W.; and Mitchell, Paul, 4,193,089, Cl. 358-111.000.
- Pierce, Bill L., to Westinghouse Electric Corp. Direct contact heat exchanger with phase change of working fluid. 4,192,144, Cl. 60-641.000.
- Pierce, Leo P., to Feecon Corporation. Fire fighting apparatus. 4,192,385, Cl. 169-56.000.
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  - Cousse, Henri; Bonnaud, Bernard; Tarayre, Jean-Pierre; and Casadio, Silvano, 4,192,883, Cl. 424-274.000.
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  - Brookhyser, Byron B.; and Pierson, Darrell E., 4,192,079, Cl. 34-13.800.
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  - Hauck, Frederic P.; Narayanan, Venkatachala L.; O'Connor, Jeremiah J.; and Pilote, Raymond R., 4,192,889, Cl. 424-309.000.
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- Pippin, Roy L. Container filling apparatus and method. 4,192,359, Cl. 141-12.000.
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  - Toto, John A., 4,192,498, Cl. 271-21.000.

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  - Joshi, Shridhar B., 4,192,664, Cl. 65-22.000.
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  - Williams, Roger M.; and Lawrence, Alan J., 4,192,973, Cl. 370-53.000.
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  - Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.
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  - Vasilevsky, Petr N.; Gekhman, Boris S.; Parfinenko, Ivan V.; Podgursky, Alfred M.; and Lazaretnik, Avram S., 4,192,294, Cl. 128-1.00R.
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  - LaRocque, Arthur G.; Whiteside, George D.; and Johnson, Bruce K., 4,192,587, Cl. 354-27.000.
  - Norris, Philip R., 4,192,593, Cl. 354-86.000.
  - Ting, Lawrence K. M., 4,192,597, Cl. 354-145.000.
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  - Duhl, Daniel; and Wall, Denton B., 4,192,160, Cl. 66-207.000.
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  - Meyer, Adolf; and Gutfleisch, Peter O., 4,192,690, Cl. 106-99.000.
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  - Heller, Anton H., 4,192,288, Cl. 126-343.50A.
- Powers, John R., to Texaco Inc. Triple seal bubble cap assembly with kidney shaped inner tubular sleeve for a gas and liquid contact apparatus. 4,192,835, Cl. 261-114.00A.
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  - Willett, Boyd R., 4,192,555, Cl. 299-4.000.
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  - Lupoi, Vincent, 4,192,666, Cl. 65-33.000.
  - Rideout, Walker H.; and Mansell, John D., 4,192,823, Cl. 260-658.00R.
  - Rinehart, Dale W., 4,192,689, Cl. 106-52.000.
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  - Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; Prentice, Paul N.; and Tuchman, Walter L., 4,193,131, Cl. 375-2.000.
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  - Kotyuk, Bernard, 4,192,422, Cl. 206-528.000.
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  - Peltre, Philippe; and Lafleur, Alain, 4,192,761, Cl. 252-99.000.
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  - Alicot, Michel J. C.; Rhode, Rene H. P.; and Tignol, Adrien P. N., 4,192,804, Cl. 548-177.000.
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  - Krismer, Bruno; and Pungs, Harmut, 4,192,674, Cl. 75-10.00R.
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  - Cooper, George R., 4,193,031, Cl. 455-38.000.
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  - Berg, Charles A., 4,192,646, Cl. 432-239.000.
- Quinn, James R. Fluid level and visual inspection device. 4,192,186, Cl. 73-303.000.
- Rabinovich, Volf I.; Kriger, Jury N.; Svitenko, Igor A.; and Sapunov, Viktor E., to Chekhovsky Zavod Energeticheskogo Mashinostroenia. Device for effecting electroslag remelting processes. 4,192,370, Cl. 164-252.000.
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  - Gilbert, Judson T.; Harrison, George R.; Holbrook, Alan R.; Levy, Michael; Scott, John B.; and Swan, Harris K., 4,193,112, Cl. 364-200.000.
- Raghavachari, Srinivas T., to MPL, Inc. Blood sampling and culturing kit. 4,192,919, Cl. 435-292.000.
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  - Kuryla, William C.; and Raines, Russell H., 4,192,647, Cl. 8-62.000.
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- Rawlings, Dennis G., to Automotive Products Limited. Driven plates for friction clutches. 4,192,413, Cl. 192-106.200.
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  - Goebel, Larry W., 4,192,388, Cl. 172-463.000.
- Raywall Kommanditbolag: *See—*
  - Ekstrom, Lars A., 4,192,111, Cl. 52-171.000.
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  - Dietz, Wolfgang F. W., 4,193,018, Cl. 315-408.000.
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  - Slavin, Michael; and Rea, Irvin B., 4,193,060, Cl. 340-52.00D.
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  - Lau, Edward H., 4,192,619, Cl. 400-163.000.
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  - Beckman, Klaus; and Redemann, Richard, 4,192,471, Cl. 241-185.00R.
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  - Johnson, Robert M., 4,192,166, Cl. 72-347.000.
- Reed, Donald K.; and Reed, Shere R. Apparatus for quilting layered fabrics. 4,192,241, Cl. 112-117.000.
- Reed, Shere R.: *See—*
  - Reed, Donald K.; and Reed, Shere R., 4,192,241, Cl. 112-117.000.
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  - Burbidge, Bernard W.; and Rees, David M., 4,192,771, Cl. 252-415.000.
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  - Arnaud, Henry, 4,192,264, Cl. 123-119.00A.
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  - Wanner, Karl; and Reibetanz, Wilbert, 4,192,390, Cl. 173-75.000.
- Reilly, Robert M., Sr. Pliable awning system. 4,192,112, Cl. 52-222.000.
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  - Friebe, Herbert, deceased; Rodert, Axel, administrator; and Reininghaus, Ulrich, 4,192,479, Cl. 248-354.00H.
- Reinitz, Clayton W., to General Electric Company. Process for the recovery of 2,2-bis(4-hydroxyphenyl) propane. 4,192,955, Cl. 568-724.000.
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  - Foster, Edward H.; and Reiss, James M., 4,192,438, Cl. 222-5.000.
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- Rekow, Vernon C., to Champion International Corporation. Corner pad. 4,192,423, Cl. 206-586.000.
- Rempes, Paul E., Jr.: *See—*
  - Podiak, Richard S.; Houghton, LeRoy H.; and Rempes, Paul E., Jr., 4,193,012, Cl. 313-137.000.

- Renoth, Josef: *See—*
  - Jungwirth, Dieter; Renoth, Josef; and Wlodkowski, Johann, 4,192,114, Cl. 52-230.000.
- Repla Limited: *See—*
  - Bucci, Carlo G., 4,192,624, Cl. 403-295.000.
- Replogle, Douglas L., to Moog Inc. Pivot clip for a ski binding. 4,192,527, Cl. 280-618.000.
- Resneau, Jean-Claude: *See—*
  - Henry, Raymond; Resneau, Jean-Claude; and Bouvet, Jean-Victor, 4,192,574, Cl. 350-96.170.
- Rettig, Peter P.: *See—*
  - Mersek, Leo D.; and Rettig, Peter P., 4,192,172, Cl. 72-420.000.
- Reynolds, Elmo M.: *See—*
  - Reynolds, Robert H.; and Reynolds, Elmo M., 4,192,125, Cl. 56-328.00R.
- Reynolds, James E.; Hazen, Wayne C.; and Goens, Duane N., to Cyprus Metallurgical Processes Corporation. High temperature reduction of copper salts. 4,192,676, Cl. 75-72.000.
- Reynolds Metals Company: *See—*
  - Schardein, Daniel J.; Rogers, Charles M.; and Vice, Diane N., 4,192,722, Cl. 204-38.00B.
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- Rheem Manufacturing Company: *See—*
  - Trieschock, George E.; and Dunbeker, George H., 4,192,843, Cl. 264-528.000.
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  - Hayashi, Torahiko; Maeda, Takashi; and Morikawa, Michio, 4,192,636, Cl. 425-96.000.
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  - Alicot, Michel J. C.; Rhode, Rene H. P.; and Tignol, Adrien P. N., 4,192,804, Cl. 548-177.000.
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  - Bauer, Wolfgang; and Ribka, Joachim, 4,192,947, Cl. 548-334.000.
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- Richard, Leroy J. Hydraulic coupler assembly. 4,192,347, Cl. 137-614.060.
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  - Parker, Roger A., 4,192,895, Cl. 424-331.000.
- Richco Plastic Company: *See—*
  - Coules, Ronald A., 4,192,478, Cl. 248-222.300.
- Rickard, Lawrence C. Combination of an archery bow and adjustable pulley assembly. 4,192,280, Cl. 124-23.00R.
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  - Hasegawa, Keiji; and Tatara, Yoshikuni, 4,193,071, Cl. 340-723.000.
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  - Grandori, Carlo, 4,192,556, Cl. 299-56.000.
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  - Khan, Mahboob; Godejahn, Jr. Gordan C.; Heimbigner, Gary L.; and Aghishian, Noubar A., 4,192,059, Cl. 29-571.000.
  - Nyhus, Orville K., 4,193,048, Cl. 333-26.000.
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  - Amick, David R., 4,192,920, Cl. 521-31.000.
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  - Worrell, Robert A., Sr.; and Ross, Richard T., 4,192,420, Cl. 206-205.000.
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  - Scriver, Richard M., Jr.; and Ross, Waldemar A., 4,192,366, Cl. 152-209.00R.
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  - Allais, Andre; Meier, Jean; and Dube, Jacques, 4,192,890, Cl. 424-308.000.
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- Salomon, Georges P. J., to Etablissements Francois Salomon et Fils. Ski boot with foot-retention device. 4,192,087, Cl. 36-119.000.
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  - Frezza, Robert, 4,192,045, Cl. 26-75.000.
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  - Hardtmann, Goetz E., 4,192,876, Cl. 424-258.000.
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  - Ito, Ryosuke; and Takahashi, Susumu, 4,193,076, Cl. 343-702.000.
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  - Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.
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  - Lovell, Peter J.; and Saunders, Ian C. B., 4,192,935, Cl. 526-348.600.
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  - Liedtke, Ronald R., 4,192,325, Cl. 132-9.000.
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  - Zilges, Franz-Josef; and Kutz, Heinrich, 4,192,162, Cl. 72-45.000.
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- Schnell, Philip G.: *See—*
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- Schnell, Werner J., to General Signal Corporation. Liquid filled pressure gauge. 4,192,193, Cl. 73-739.000.
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  - Sichak, Stephen, 4,192,086, Cl. 36-44.000.
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  - Paust, Joachim; and Schumacher, Horst, 4,192,806, Cl. 260-340.700.
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  - Hilzinger, Fritz; and Schwarz, Theodor, 4,192,315, Cl. 128-346.000.
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  - Broecker, Franz J.; Duembgen, Gerd; Glietenberg, Helmut; Miesen, Ernest; and Schwarzmann, Matthias, 4,192,807, Cl. 260-343.600.
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  - Moskowitz, Larry N.; and Klar, Erhard, 4,192,672, Cl. 75-0.50C.
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- Scott, James, to GTE Automatic Electric Laboratories Incorporated. Pushbutton call transmitter. 4,192,976, Cl. 179-90.00K.
- Scott, John B.: *See—*
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  - Bastian, Lehyman J.; and Kley, Richard D., 4,192,442, Cl. 226-127.000.
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- Segmuller, Bruno J. Bottle cap. 4,192,428, Cl. 215-256.000.
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  - Thompson, Philip; Huiatt, Jerry L.; and Seidel, Don C., 4,192,737, Cl. 209-5.000.
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  - Takahashi, Tsukasa; Sekihara, Takeshi; Emura, Tomoyuki; and Miki, Masayoshi, 4,192,934, Cl. 526-62.000.
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  - Hayashi, Motoshige; and Kobayashi, Toshiro, 4,192,839, Cl. 264-45.500.
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- Selas Corporation of America: *See—*
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  - Hascoe, Norman, 4,192,433, Cl. 220-200.000.
- Sergienko, Vladimir Y.: *See—*
  - Chernogorenko, Vasily B.; Alzhanov, Tleubai M.; Lynchak, Kima A.; Muchnik, Simon V.; Ishkhanov, Evgeny S.; Sergienko, Vladimir Y.; Sapian, Vladimir G.; Koverya, Vladimir M.; Pobortsev, Mendel E.; Markovsky, Evgeny A.; Dmitrenko, Valentina V.; Bykov, Vladimir I.; Kipchakbaev, Alexandr D.; and Vopilov, Alexandr N., 4,192,853, Cl. 423-122.000.
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  - Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G., 4,192,715, Cl. 176-30.000.
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  - Morita, Toshiaki; Takatori, Hironari; Makino, Fusao; Yasuda, Syoichi; and Nishioka, Yoshiki, 4,193,056, Cl. 340-146.3AC.
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- Sheets, Harold L.: *See—*
  - Crickard, James L.; and Sheets, Harold L., 4,192,177, Cl. 73-49.500.
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  - Kortbeek, Andras G. T. G.; and van der Nat, Adrianus A., 4,192,774, Cl. 252-429.00B.
  - Singleton, David M., 4,192,770, Cl. 252-414.000.
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- Sherlock, Hugh P., to M.U. Engineering & Mfg. Co. Bedside drainage bag. 4,192,295, Cl. 128-295.000.
- Sherman, Mark L.: *See—*
  - Mixon, James L., Jr.; and Sherman, Mark L., 4,192,214, Cl. 84-327.000.
- Sherritt Gordon Mines Limited: *See—*
  - Hirsch, Horst E.; Higginson, John F.; Parker, Ernest G.; and Swinkels, Godefridus M., 4,192,851, Cl. 423-28.000.
- Sheveleva, Elena I.: *See—*
  - Babich, Vladimir A.; Vitlin, Abram M.; Kolchanov, Arnold P.; and Sheveleva, Elena I., 4,192,489, Cl. 266-88.000.
- Sheward, George E.: *See—*
  - Hayden, Owen; Sheward, George E.; Ormrod, Derek T.; Willby, Christopher R.; and Firth, George F., 4,192,374, Cl. 165-158.000.
- Shibata, Setsuo: *See—*
  - Hashimoto, Noboru; Fukuda, Hideo; and Shibata, Setsuo, 4,192,833, Cl. 261-36.00R.
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- Shields, Charles H.; and Kane, Gary D., to Harnischfeger Corporation. Heating system for machine operator's cab. 4,192,456, Cl. 237-12.30R.
- Shinagawa Chemical Industry Co., Ltd.: *See—*
  - Tanioka, Katsuhiko; Matsuzawa, Toshihiko; Iida, Noboru; Makino, Naoji; and Hayasaka, Itirow, 4,192,793, Cl. 260-42.140.
- Shingu, Tadashi: *See—*
  - Horike, Akihiro; Itakura, Yoshio; and Shingu, Tadashi, 4,192,685, Cl. 430-283.000.
- Shinoda, Toshihiko: *See—*
  - Tanaka, Atsushi; Shinoda, Toshihiko; and Mimura, Masahisa, 4,192,928, Cl. 521-177.000.
- Shinto Paint Co., Ltd.: *See—*
  - Enomoto, Kunio; Kikuchi, Uhee; Kobori, Masanori; Kimura, Suguru; Kamiyama, Satoru; Todoroki, Nobuaki; and Yasukawa, Jun-ichi, 4,192,728, Cl. 204-181.00R.
- Shiratori, Harunori; and Kikuchi, Kenichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Stabilizer mounting means. 4,192,529, Cl. 280-689.000.
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  - Koshkin, Jury N.; Ordynsky, Georgy V.; Shkhiyan, Tsolak G.; Shapkin, Alexandr F.; Fadeev, Alexandr I.; Laptev, Fedor V.; Batjukov, Vladimir I.; Korolkov, Konstantin I.; Borodin, Ivan V.; Chernomordik, Evgeny N.; and Osipov, Vitaly G., 4,192,715, Cl. 176-30.000.
- Shoji, Shinichi: *See—*
  - Yasumatsu, Mutsuo; Shoji, Shinichi; Sakamoto, Koichi; Kurihara, Takao; Terabayashi, Takeshi; and Ohmura, Kasutaka, 4,192,901, Cl. 426-580.000.
- Shoketsu Kinzoku Kogyo Kabushiki Kaisha: *See—*
  - Iizumi, Tomomitsu, 4,192,346, Cl. 137-599.000.
- Shuster, Edward J.: *See—*
  - Hall, John B.; Hruza, Denis E., Sr.; Shuster, Edward J.; Vock, Manfred H.; and Vinals, Joaquin F., 4,192,782, Cl. 252-522.00R.
- Shutt, Joseph A.: *See—*
  - Reedman, David C.; Shutt, Joseph A.; and Peck, Alan M., 4,192,033, Cl. 12-10.100.
- Sichak, Stephen, to Scholl, Inc. Deodorizing insole. 4,192,086, Cl. 36-44.000.
- Siclari, Francesco, to Snia Viscoas Societa Nazionale Industria Applicazioni Viscosa S.p.A. Omega-hydroxy alkenoic acid. 4,192,813, Cl. 260-410.90R.
- Siebens, Larry N.: *See—*
  - Stanger, Robert J.; and Siebens, Larry N., 4,192,572, Cl. 339-111.000.
- Siegel, Milton I., to AMBA Marketing Systems, Inc. Organizer handbag. 4,192,365, Cl. 150-35.000.
- Siegelin, Werner: *See—*
  - Gawlick, Heinz; Marondel, Gunter; and Siegelin, Werner, 4,192,837, Cl. 264-3.00E.
- Siemens Aktiengesellschaft: *See—*
  - Baumann, Heinz, 4,192,997, Cl. 250-445.00T.
  - Berghof, Winfried; and Pichler, Alfred, 4,192,985, Cl. 219-121.0EM.
  - Bodlaj, Viktor, 4,192,612, Cl. 356-381.000.

  - Heinzelmann, Karl-Georg; and Klein, Sigismund, 4,192,495, Cl. 271-10.000.
  - Knauer, Karl; and Pfleiderer, Hans J., 4,193,050, Cl. 333-165.000.
  - Liebetruth, Reiner; and Mika, Norbert, 4,193,001, Cl. 250-445.00T.
  - Mayer, Max, 4,192,966, Cl. 178-3.000.
  - Muether, Manfred; Phleps, Tilman; and Schmitt, Ernst, 4,193,002, Cl. 250-479.000.
  - Scheubeck, Egmont; and Gehring, Johann, 4,192,849, Cl. 422-242.000.
  - Schmelz, Helmut; and Schwaen, Werner, 4,192,840, Cl. 264-61.000.
- Siempelkamp Giesserei KG: *See—*
  - Gross, Heiko, 4,192,717, Cl. 176-87.000.
- Silver, Roger C.: *See—*
  - Wyckoff, Frank K.; and Silver, Roger C., 4,192,626, Cl. 404-123.000.
- Simko, Paul; and Strasser, Albert, to Brass & Bronze Mfg. Co. Ltd. Swinging door structures for exterior telephone booths. 4,192,099, Cl. 49-366.000.
- Simpson, Cullie M. Alarm system for platform scale. 4,192,394, Cl. 177-45.000.
- Simpson Manufacturing Co., Inc.: *See—*
  - Gilb, Tyrell T., 4,192,118, Cl. 52-714.000.
- Singer Company, The: *See—*
  - Deaton, Ion V.; and Horman, Frederick H., 4,192,082, Cl. 35-10.400.
  - Kothe, Erich, 4,192,980, Cl. 200-83.0WM.
- Singh, Medilen S. Three dimensional puzzle figure. 4,192,509, Cl. 273-157.00R.
- Singleton, David M., to Shell Oil Company. Cracking catalyst restoration with boron compounds. 4,192,770, Cl. 252-414.000.
- Sippel, David L.: *See—*
  - Carlson, John A.; Rusch, Kenneth D.; and Sippel, David L., 4,193,101, Cl. 360-97.000.
- Skelton, John: *See—*
  - Davis, Robert B.; Skelton, John; Clark, Richard E.; and Swanson, Wilbur M., 4,192,020, Cl. 3-1.500.
- Skemmill Limited: *See—*
  - Nolan, John P. S., 4,192,126, Cl. 57-3.000.
- Slavin, Michael; and Rea, Irvin B., to Lectron Products, Inc. Control circuit for a tone generator. 4,193,060, Cl. 340-52.00D.
- Slinkard, William E.; and Baylis, Anthony B., to Celanese Corporation. Hydrocarbon oxidation process. 4,192,951, Cl. 562-549.000.
- Sloan, Denis: *See—*
  - Farquhar, Bannister W.; and Sloan, Denis, 4,192,336, Cl. 137-15.100.
- SMG Suddeutsche Maschinenbau Gesellschaft mbH: *See—*
  - Baltschun, Horst, 4,192,414, Cl. 192-129.00R.
- Smit, Jozephus J. M.: *See—*
  - Wagemakers, Adrianus J.; Roozen, Johan C. J. A.; and Smit, Jozephus J. M., 4,193,107, Cl. 361-298.000.
- Smith, Bernard. 4-Jaw work holding chucks. 4,192,521, Cl. 279-112.000.
- Smith, Clarence G., to Mobil Oil Corporation. System for displaying seismic data on a cathode-ray tube. 4,193,058, Cl. 367-71.000.
- Smith, Ernest L., to Phillips Petroleum Company. Pour spout for a container. 4,192,440, Cl. 222-528.000.
- Smith, Eugene L., Jr.: *See—*
  - Wang, Samuel S.; and Smith, Eugene L., Jr., 4,192,739, Cl. 209-166.000.
- Smith, Harry M.: *See—*
  - Parker, William D.; Smith, Harry M.; and Edwards, Margaret P., 4,192,697, Cl. 156-188.000.
- Smith, Hosea E., to Exxon Research & Engineering Co. Gasket retaining spring. 4,192,515, Cl. 277-11.000.
- Smith, John K.: *See—*
  - Collins, Marcus H.; and Smith, John K., 4,192,702, Cl. 156-416.000.
- Smith, John R. E., to Dresser Industries, Inc. Method and apparatus for logging inclined earth boreholes. 4,192,380, Cl. 166-250.000.
- Smith, Kent F., to General Instrument Corporation. I^2L Ram unit. 4,193,126, Cl. 365-174.000.
- Smith Kline & French Laboratories Limited: *See—*
  - Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,192,879, Cl. 424-273.00R.
- Smith, Margaret B. Wheelchair abduction pillow. 4,192,546, Cl. 297-466.000.
- Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., to Union Carbide Corporation. Blends of acrylic latexes and derivatives of ester diol alkoxylates. 4,192,789, Cl. 260-29.20E.
- Smith, Robert H., to Atlantic Richfield Company. Process for preparing sulfur-containing coal or lignite for combustion having low SO_2 emissions. 4,192,652, Cl. 44-10.00R.
- Smith, Steven R.: *See—*
  - Swerling, Stephen; Smith, Steven R.; and Wiesmann, Thomas W., 4,192,451, Cl. 371-20.000.
- Smith, Walton J. Horticultural improvements. 4,192,097, Cl. 47-59.000.
- SmithKline Corporation: *See—*
  - Bondinell, William E.; and Pendleton, Robert G., 4,192,888, Cl. 424-321.000.
  - Weinstock, Joseph, 4,192,872, Cl. 424-244.000.
- Snia Viscoas Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
  - Siclari, Francesco, 4,192,813, Cl. 260-410.90R.
- Snyder, Michael D. Multiple pulse timer. 4,193,064, Cl. 340-309.400.
- Societe Anonyme de Telecommunications: *See—*
  - Beaudet, Didier M., 4,193,051, Cl. 333-201.000.
- S.A. Manganese Amcor Ltd.: *See—*
  - Featherstone, Robert A.; Roos, Paul P.; Gericke, Willem A.; Saleil, Jean; Leroy, Pierre J.; and Masson, Jean-Marcel, 4,192,675, Cl. 75-60.000.
- Societe des Electrodes et Refractaires Savoie: *See—*
  - Dumas, Daniel; Lacroix, Serge; and Vallon, Jean, 4,192,730, Cl. 204-294.000.
- Societe Nationale Elf Aquitaine (Production): *See—*
  - Messines, Jean-Paul; Labat, Gaston; and Tramier, Bernard, 4,192,392, Cl. 175-66.000.
  - Tellier, Jacques; Philippe, Andre; Mathieu, Pierre; and Voirin, Robert, 4,192,857, Cl. 423-576.000.
- Sofia, Anthony A. Racquet safety device. 4,192,506, Cl. 273-73.00R.
- Soltys, Joseph F., to London Laboratories Limited Co. Compositions and method for inhibiting formation of explosive compounds and conditions in silvering concentrates for electroless deposition of silver. 4,192,686, Cl. 106-1.230.
- Solvay & Cie: *See—*
  - Berger, Eugene; and Bienfait, Charles, 4,192,772, Cl. 252-429.00C.
- Soma, Misao: *See—*
  - Hakamada, Takeshi; Soma, Misao; and Kano, Ikushi, 4,192,352, Cl. 138-149.000.
- Song, Hubert, to Sperry Rand Corporation. Phase lock control system with trajectory correction. 4,193,020, Cl. 318-314.000.
- Sony Corporation: *See—*
  - Yamagiwa, Kazuo; Saito, Kaneo; and Numakura, Toshihiko, 4,193,084, Cl. 358-4.000.
- Soper, Quentin F., to Eli Lilly and Company. Acetal derivatives of 4-(substituted amino)-3,5-dinitrobenzaldehydes. 4,192,670, Cl. 71-121.000.
- Sopizet, Rene: *See—*
  - Blanchard, Bruno; Legressus, Claude; Massignon, Daniel; Sopizet, Rene; and Stefani, Rene, 4,193,003, Cl. 250-492.00A.
- Sousek, Eugene A., to Koehring Company. Cutting reel grinder with automatic control. 4,192,103, Cl. 51-249.000.
- Southard, Robert K.: *See—*
  - Bickford, David E.; Southard, Robert K.; Sucheski, Matthew M.; and Wagner, Earl W., 4,192,207, Cl. 83-42.000.
- Southwire Company: *See—*
  - Chia, E. Henry; and Schoerner, Roger J., 4,192,693, Cl. 148-2.000.
- Spanier, Hermann, to Dr. Boy KG. Injection unit for injection molding apparatus. 4,192,616, Cl. 366-79.000.
- Spencer, Robert A.: *See—*
  - Balde, John W.; Spencer, Robert A.; and Thompson, Richard K., Jr., 4,192,062, Cl. 29-857.000.
- Sperry Rand Corporation: *See—*
  - Song, Hubert, 4,193,020, Cl. 318-314.000.
- Spevack, Jerome S., to Deuterium Corporation. Thermal control in dual temperature systems. 4,192,847, Cl. 422-198.000.
- Spevack, Jerome S., to Deuterium Corporation. Dual temperature exchange systems. 4,192,850, Cl. 422-255.000.
- Spielhoff, Horst, to Hermann Berstorff Maschinenbau GmbH. Screw extruder for processing rubber or plastics material. 4,192,617, Cl. 366-83.000.
- Spin Physics, Inc.: *See—*
  - Bixby, James A.; Lemke, James U.; and Lentz, Robert A., 4,193,098, Cl. 360-10.000.
- Spinner, Ulrich: *See—*
  - Menth, Anton; Nagel, Hartmut; and Spinner, Ulrich, 4,192,696, Cl. 148-101.000.
- Sprague Electric Company: *See—*
  - Coleman, James H., 4,193,106, Cl. 361-275.000.
  - Maher, John P.; and Jacobsen, Robert T., 4,192,698, Cl. 156-89.000.
- Spreter von Kreudenstein, Emil H. Device to create cooling through use of waste heat. 4,192,148, Cl. 62-116.000.
- Stahlecker, Fritz, to Stahlecker, Hans. Movable servicing device for a spinning machine, especially an open end spinning machine. 4,192,129, Cl. 57-301.000.
- Stahlecker, Hans: *See—*
  - Stahlecker, Fritz, 4,192,129, Cl. 57-301.000.
- Stamires, Dennis: *See—*
  - Alafandi, Hamid; and Stamires, Dennis, 4,192,778, Cl. 252-455.00Z.
- Stamm, Kurt, to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H. Highly directional ultrasonic electret transducer. 4,192,977, Cl. 179-111.00E.
- Standal, Norman S. Guidance system for irrigation sprinkling apparatus. 4,192,335, Cl. 137-1.000.
- Standard Oil Company, The: *See—*
  - Grasselli, Robert K.; Miller, Arthur F.; and Hardman, Harley F., 4,192,776, Cl. 252-432.000.
- Standard Oil Company (Indiana): *See—*
  - Kajinami, Shingo; Saunders, Elmer J.; and Schnell, Philip G., 4,192,897, Cl. 426-60.000.
- Stange, Ingvar. Expandable muff mould. 4,192,704, Cl. 156-443.000.
- Stanger, Robert J.; and Siebens, Larry N., to Amerace Corporation. Electrical connector apparatus. 4,192,572, Cl. 339-111.000.
- Stark, Friedrich: *See—*
  - Aichert, Hans; Stark, Friedrich; Stephan, Herbert; and Hoffmann, Otto-Horst, 4,192,253, Cl. 118-712.000.
- Staten, Ivan C.: *See—*
  - Pinnock, Jay L.; and Staten, Ivan C., 4,192,458, Cl. 237-51.000.
- Stearns, Richard S.; and Hollstein, Elmer J., to Suntech, Inc. Coal extraction process. 4,192,731, Cl. 208-8.0LE.
- Stecklein, Gary L., to Deere & Company. Articulated joint including Belleville spring seals maintained in a preselected compressed state. 4,192,622, Cl. 403-146.000.

- Steegmueller, Alfred: *See—*
  - Bernatt, Joseph; and Steegmueller, Alfred, 4,192,534, Cl. 285-382.200.
- Stefani, Rene: *See—*
  - Blanchard, Bruno; Legressus, Claude; Massignon, Daniel; Sopizet, Rene; and Stefani, Rene, 4,193,003, Cl. 250-492.00A.
- Stein, Thomas R.: *See—*
  - Pavlica, Robert T.; Stein, Thomas R.; and Streed, Carl W., 4,192,734, Cl. 208-80.000.
- Stein, William E.: *See—*
  - Brau, Charles A.; Stein, William E.; and Rockwood, Stephen D., 4,193,043, Cl. 331-94.5PE.
- Steinberger, Ned. Stringed musical instruments. 4,192,213, Cl. 84-293.000.
- Stephan, Herbert: *See—*
  - Aichert, Hans; Stark, Friedrich; Stephan, Herbert; and Hoffmann, Otto-Horst, 4,192,253, Cl. 118-712.000.
- Stepien, Henryk K.: *See—*
  - Gandhi, Haren S.; Watkins, William L.; and Stepien, Henryk K., 4,192,779, Cl. 252-470.000.
- Sterrett, Dale E.: *See—*
  - Deaver, Don A.; and Sterrett, Dale E., 4,192,401, Cl. 181-266.000.
- Stevens, John M.; Allen, Grant W.; Cole, John M.; and Mousseau, Timothy K., to Kolene Corporation. Electric heating assembly for a fused bath. 4,192,992, Cl. 219-494.000.
- Stiftelsen for Metallurgisk Forskning: *See—*
  - Nilsson, Per A.; Harryson, Gunnar B.; Larsson, Leif T.; Poderschan, Karl J.; Ritakallio, Pekka; and Lehner, Theo, 4,192,490, Cl. 266-225.000.
- Stineman, Thomas L.; Edwards, Jeffrey D.; and Grosskopf, Jack C., to Kroger Co., The. Production of Baker's yeast from acid whey. 4,192,918, Cl. 435-256.000.
- Stinson, Theodore W. Cylindrical drum tiller attachment. 4,192,387, Cl. 172-21.000.
- Stiron Chemical Industry Co. Ltd.: *See—*
  - Ohno, Tasuku, 4,192,514, Cl. 274-1.00A.
- Stitzer, Steven N.: *See—*
  - Carter, Philip S.; Stitzer, Steven N.; and Goldie, Harry, 4,193,047, Cl. 333-17.00L.
- Stoffel, James C., to Xerox Corporation. Image interpolation system. 4,193,092, Cl. 358-136.000.
- Stoffel, James C., to Xerox Corporation. Half tone encoder/decoder. 4,193,096, Cl. 358-260.000.
- Stoner, Larry L., to Aspro, Inc. Centrifugal clutch with shoe stops. 4,192,412, Cl. 192-105.0CD.
- Strahan, Travis R. Platform ramp sight for firearms. 4,192,075, Cl. 33-257.000.
- Strasser, Albert: *See—*
  - Simko, Paul; and Strasser, Albert, 4,192,099, Cl. 49-366.000.
- Strautz, Michael G., to Bell Telephone Laboratories, Incorporated. Electrical connector strain relief housing. 4,192,571, Cl. 339-103.00M.
- Streed, Carl W.: *See—*
  - Pavlica, Robert T.; Stein, Thomas R.; and Streed, Carl W., 4,192,734, Cl. 208-80.000.
- Stroud, Robert J., to Lansing Bagnall Limited. Battery locating device. 4,192,397, Cl. 180-68.500.
- Studebaker, Irving G.; and Hefelfinger, Richard, to Occidental Oil Shale, Inc. Method for attenuating seismic shock from detonating explosive in an in situ oil shale retort. 4,192,553, Cl. 299-2.000.
- Studiengesellschaft Kohle mbH.: *See—*
  - Nicolau, Yves-Claude; and Gersonde, Klaus, 4,192,869, Cl. 424-199.000.
- Stueben, Kenneth C., to Union Carbide Corporation. Cumene oxidation using 'onium catalysts. 4,192,952, Cl. 568-574.000.
- Styles, Peter: *See—*
  - Hoult, David I.; and Styles, Peter, 4,193,024, Cl. 324-313.000.
- Sucheski, Matthew M.: *See—*
  - Bickford, David E.; Southard, Robert K.; Sucheski, Matthew M.; and Wagner, Earl W., 4,192,207, Cl. 83-42.000.
- Sugasawa, Fukashi: *See—*
  - Iizuka, Haruhiko; Sugasawa, Fukashi; Matsumoto, Junichiro; and Etoh, Yukihiro, 4,192,278, Cl. 123-198.00F.
- Sugerman, Gerald; and Monte, Salvatore J., to Kenrich Petrochemicals, Inc. Atactic polypropylene. 4,192,792, Cl. 260-42.140.
- Sugihara, Kunihiko: *See—*
  - Ohoda, Michio; Nakajima, Yasuo; Sugihara, Kunihiko; and Nagumo, Shin-ichi, 4,192,262, Cl. 123-75.00B.
- Sugino, Morihiko: *See—*
  - Godai, Tomokazu; Sugiyama, Tohru; Sugino, Morihiko; Kondo, Masaru; and Ogawa, Tsuneshi, 4,192,175, Cl. 73-19.000.
- Sugiuchi, Tadashi: *See—*
  - Nakagawa, Takashi; Sugiuchi, Tadashi; Iwashita, Kanau; and Uchida, Masaaki, 4,192,402, Cl. 181-256.000.
  - Nakagawa, Takashi; Sugiuchi, Tadashi; and Iwashita, Kanau, 4,192,403, Cl. 181-268.000.
  - Nakagawa, Takashi; Sugiuchi, Tadashi; and Iwashita, Kanau, 4,192,404, Cl. 181-272.000.
- Sugiyama, Tohru: *See—*
  - Godai, Tomokazu; Sugiyama, Tohru; Sugino, Morihiko; Kondo, Masaru; and Ogawa, Tsuneshi, 4,192,175, Cl. 73-19.000.
- Suh, John T.; and Bare, Thomas M., to Nicholas International Limited. Process of preparing amino ethanols. 4,192,805, Cl. 260-340.50R.
- Sukornick, Bernard F.: *See—*
  - Sweeney, Richard F.; and Sukornick, Bernard F., 4,192,822, Cl. 260-653.000.
- Suling, Carlhans: *See—*
  - Lindner, Christian; Suling, Carlhans; Bartl, Herbert; and Hardt, Dietrich, 4,192,940, Cl. 528-370.000.
- Sulzer Brothers Limited: *See—*
  - Haegele, Gerd, 4,192,142, Cl. 60-322.000.
  - Haegele, Gerd, 4,192,143, Cl. 60-322.000.
  - Hintsch, Otto, 4,192,353, Cl. 139-307.000.
  - Pfarrwaller, Erwin, 4,192,354, Cl. 139-342.000.
  - Pfarrwaller, Erwin, 4,192,356, Cl. 139-439.000.
- Sumitomo Chemical Company, Limited: *See—*
  - Takahashi, Tsukasa; Sekihara, Takeshi; Emura, Tomoyuki; and Miki, Masayoshi, 4,192,934, Cl. 526-62.000.
- Sunnen Products Company: *See—*
  - Vanderwal, Frank E., Jr., 4,192,073, Cl. 33-178.00B.
- Sunoco Energy Development Co.: *See—*
  - Seitzer, Walter H., 4,192,650, Cl. 44-1.00R.
- Suntech, Inc.: *See—*
  - Stearns, Richard S.; and Hollstein, Elmer J., 4,192,731, Cl. 208-8.0LE.
- Suzuki, Masane; and Yasuda, Kenzi, to Fuji Photo Optical Co., Ltd. Method of projecting a line image of uniform brightness. 4,192,578, Cl. 350-320.000.
- Svitenko, Igor A.: *See—*
  - Rabinovich, Volf I.; Kriger, Jury N.; Svitenko, Igor A.; and Sapunov, Viktor E., 4,192,370, Cl. 164-252.000.
- Swan, Harris K.: *See—*
  - Gilbert, Judson T.; Harrison, George R.; Holbrook, Alan R.; Levy, Michael; Scott, John B.; and Swan, Harris K., 4,193,112, Cl. 364-200.000.
- Swanson, Wilbur M.: *See—*
  - Davis, Robert B.; Skelton, John; Clark, Richard E.; and Swanson, Wilbur M., 4,192,020, Cl. 3-1.500.
- Swearingen, Gloria K. Portable dressing table or vanity. 4,192,329, Cl. 132-79.00R.
- Sweeney, Richard F.; and Sukornick, Bernard F., to Allied Chemical Corporation. Process for producing halogenated hydrocarbons. 4,192,822, Cl. 260-653.000.
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- Swift, Harold E.: *See—*
  - Giannetti, Joseph P.; and Swift, Harold E., 4,192,653, Cl. 44-51.000.
- Swift, Thomas G.: *See—*
  - Bomball, William A.; and Swift, Thomas G., 4,192,783, Cl. 260-8.000.
- Swinkels, Godefridus M.: *See—*
  - Hirsch, Horst E.; Higginson, John F.; Parker, Ernest G.; and Swinkels, Godefridus M., 4,192,851, Cl. 423-28.000.
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  - Madhavan, Narayanan; and Freeman, Frank H., 4,192,795, Cl. 260-42.520.
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- Sysoev, Vladimir S.: *See—*
  - Vydrin, Vladimir N.; Barkov, Leonid A.; Pastukhov, Valery V.; Dolgov, Sergei I.; and Sysoev, Vladimir S., 4,192,165, Cl. 72-238.000.
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  - Laude, Pierre; Marka, Erwin; and Zuntini, Franco, 4,192,723, Cl. 204-43.00G.
- Szema, Li-Chieh, to Westinghouse Electric Corp. Gas turbine combustor air inlet. 4,192,138, Cl. 60-759.000.
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- Tabickman, Maurice L.; and Dempsey, Douglas E., to Pepsico, Inc. Game racket. 4,192,505, Cl. 273-73.00C.
- Tadanier, John S.: *See—*
  - Martin, Jerry R.; Tadanier, John S.; and Collum, Paulette, 4,192,867, Cl. 424-180.000.
- Taguchi, Masahiro: *See—*
  - Tsukamoto, Goro; Yoshino, Koichiro; Kohno, Toshihiko; Taguchi, Masahiro; Dezawa, Katsumi; Kagaya, Hajime; Ito, Keizo; and Nose, Takashi, 4,192,880, Cl. 424-273.00R.
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  - Enomoto, Kunio; Kikuchi, Uhee; Kobori, Masanori; Kimura, Suguru; Kamiyama, Satoru; Todoroki, Nobuaki; and Yasukawa, Jun-ichi, 4,192,728, Cl. 204-181.00R.
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  - Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,192,682, Cl. 430-405.000.
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  - Ito, Ryosuke; and Takahashi, Susumu, 4,193,076, Cl. 343-702.000.
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  - Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, 4,192,268, Cl. 123-119.0EC.

- Takatori, Hironari: *See—*
  - Morita, Toshiaki; Takatori, Hironari; Makino, Fusao; Yasuda, Syoichi; and Nishioka, Yoshiki, 4,193,056, Cl. 340-146.3AC.
- Takeuchi, Eiichi, to Casio Computer Co., Ltd. Time counting control system. 4,192,130, Cl. 368-155.000.
- Takeuchi, Tomio: *See—*
  - Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,192,915, Cl. 435-78.000.
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  - Inukai, Mitsuo; Iwatsuki, Masahiro; and Tamura, Keiichi, 4,192,474, Cl. 242-107.40A.
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- Tanaka, Atsushi; Shinoda, Toshihiko; and Mimura, Masahisa, to Teijin Limited. Thermoplastic polyurethane and process for the preparation thereof. 4,192,928, Cl. 521-177.000.
- Tanaka, Seiyo, to Nihon Sekiyu Hanbai Kabushiki Kaisha. Process for utilizing energy produced by the phase change of liquid. 4,192,145, Cl. 60-675.000.
- Tanaka, Shigenori; Tojo, Akio; Ohnishi, Kimimasa; and Kikuchi, Takeshi, to Nissan Motor Company, Limited. Weft yarn grasping apparatus for fluid jet loom. 4,192,357, Cl. 139-450.000.
- Tanaka, Toshio: *See—*
  - Nakagawa, Sumio; Tanaka, Toshio; and Todo, Kenji, 4,192,641, Cl. 431-15.000.
- Tanasawa, Yasusi; Muto, Norio; and Saito, Akinori, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Swirl injection valve. 4,192,466, Cl. 239-464.000.
- Tani, Tatsuo; and Kono, Masao, to Ricoh Co., Ltd. Method for effecting registration for a copying apparatus. 4,192,609, Cl. 355-77.000.
- Tanioka, Katsuhiko; Matsuzawa, Toshihiko; Iida, Noboru; Makino, Naoji; and Hayasaka, Itirow, to Sekisio Kagaku Kogyo Kabushiki Kaisha; and Shinagawa Chemical Industry Co., Ltd. Stabilizers for chlorine-containing resins. 4,192,793, Cl. 260-42.140.
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  - Self, James M., 4,192,791, Cl. 260-40.00R.
- Tapio, Olli; Veijonen, Lassi; and Hannonen, Eero, to Valmetoy. Paper-manufacturing method and apparatus for conveying a web from a forming wire to a drying section. 4,192,711, Cl. 162-199.000.
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  - Cousse, Henri; Bonnaud, Bernard; Tarayre, Jean-Pierre; and Casadio, Silvano, 4,192,883, Cl. 424-274.000.
- Tatara, Yoshikuni: *See—*
  - Hasegawa, Keiji; and Tatara, Yoshikuni, 4,193,071, Cl. 340-723.000.
- Tatejima, Masakazu: *See—*
  - Oya, Hiroo; and Tatejima, Masakazu, 4,192,846, Cl. 422-168.000.
- Tateoka, Kiyoshi, to Tokico Ltd. Vacuum booster. 4,192,220, Cl. 91-376.00R.
- Taylor, Ian D., to Hunter Douglas International N.V., ANX. Adjustable decorative shutter. 4,192,369, Cl. 160-223.000.
- Technisub S.p.A.: *See—*
  - Ferraro, Lugi; Beltrani, Gianni; Gass, Jacques; and Trochon, Bernard, 4,192,298, Cl. 128-205.240.
- Teijin Limited: *See—*
  - Horike, Akihiro; Itakura, Yoshio; and Shingu, Tadashi, 4,192,685, Cl. 430-283.000.
  - Sasaki, Yoshiyuki; and Harada, Kiyoshi, 4,192,041, Cl. 19-0.350.
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- Teijin Seiki Company Limited: *See—*
  - Yamamoto, Toru, 4,192,218, Cl. 91-216.00A.
- Tektronix, Inc.: *See—*
  - Swerling, Stephen; Smith, Steven R.; and Wiesmann, Thomas W., 4,192,451, Cl. 371-20.000.
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  - Von Viebahn, Hans E.; and Tengler, Julius, 4,192,632, Cl. 405-298.000.
- Tenneco Inc.: *See—*
  - Deaver, Don A.; and Sterrett, Dale E., 4,192,401, Cl. 181-266.000.
- Terabayashi, Takeshi: *See—*
  - Yasumatsu, Mutsuo; Shoji, Shinichi; Sakamoto, Koichi; Kurihara, Takao; Terabayashi, Takeshi; and Ohmura, Kasutaka, 4,192,901, Cl. 426-580.000.
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  - Sakamoto, Eiichi; Ishihara, Masao; Nakazato, Kazuo; Yamada, Hiroshi; Terada, Sadatugu; Kitahara, Kenichi; Abe, Naoto; Komiya, Mamoru; and Kanbe, Masaru, 4,192,683, Cl. 430-536.000.
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  - Shirayama, Shimpey; Konagai, Chikara; Terasawa, Michitaka; and Kimura, Hironobu, 4,193,000, Cl. 250-385.000.
- Texaco Development Corporation: *See—*
  - Phillips, Clarence A. L.; and Archer, Henry W., 4,192,668, Cl. 71-70.000.
- Texaco Inc.: *See—*
  - Cobb, John M., 4,192,267, Cl. 123-119.00A.
  - Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., 4,192,755, Cl. 252-8.55D.
  - Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., 4,192,767, Cl. 252-312.000.
  - Powers, John R., 4,192,835, Cl. 261-114.00A.
  - Schievelbein, Vernon H., 4,192,382, Cl. 166-269.000.
- Texaco Trinidad, Inc.: *See—*
  - Phillips, Clarence A. L.; and Archer, Henry W., 4,192,668, Cl. 71-70.000.
- Texas Brine Corporation: *See—*
  - Mondshine, Thomas C., 4,192,756, Cl. 252-8.55R.
- Texas Instruments Incorporated: *See—*
  - Bullock, David C., 4,193,124, Cl. 365-12.000.
- Textron Inc.: *See—*
  - Decaro, Charles J., 4,192,459, Cl. 238-356.000.
- Thayer, Robert H. Chemically dehydrated cold camera. 4,192,592, Cl. 354-76.000.
- Theobald, Hans: *See—*
  - Kiehs, Karl; and Theobald, Hans, 4,192,831, Cl. 260-987.000.
- Thermatool Corporation: *See—*
  - Rudd, Wallace C., 4,192,984, Cl. 219-76.170.
- Thermo Electron Corporation: *See—*
  - Dunlap, Harold E., 4,192,709, Cl. 162-111.000.
- Thetford Corporation: *See—*
  - Sargent, Frank T.; and Butler, Frederick A., 4,192,027, Cl. 4-441.000.
- Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track surfacing machine. 4,192,237, Cl. 104-7.00B.
- Thiokol Corporation: *See—*
  - Bertozzi, Eugene R., 4,192,941, Cl. 528-374.000.
- Thomas & Betts Corporation: *See—*
  - Logan, Maurus C.; Cole, John M.; and Garner, Peter, 4,192,056, Cl. 29-468.000.
- Thomas, Erwin: *See—*
  - Rapp, Guenther; Thomas, Erwin; Wolf, Dieter; Kuerten, Heribert; and Zehner, Peter, 4,192,856, Cl. 423-387.000.
- Thompson, Charles E.: *See—*
  - Cancelleri, Dan; and Thompson, Charles E., 4,192,729, Cl. 204-272.000.
- Thompson, Philip; Huiatt, Jerry L.; and Seidel, Don C., to United States of America, Interior. Froth flotation of insoluble slimes from sylvinite ores. 4,192,737, Cl. 209-5.000.
- Thompson, Richard K., Jr.: *See—*
  - Balde, John W.; Spencer, Robert A.; and Thompson, Richard K., Jr., 4,192,062, Cl. 29-857.000.
- Thomson-CSF: *See—*
  - Henry, Raymond; Resneau, Jean-Claude; and Bouvet, Jean-Victor, 4,192,574, Cl. 350-96.170.
- Thonissen, Willi, to NIKO Konserven-Maschinenfabrik Hinsbek GmbH & Co., KG. Device for transferring piece material, in particular pieces of fruit or vegetable. 4,192,416, Cl. 198-433.000.
- Thorsell, Walborg; Mikiver, Maarja; Malm, Elisabeth; and Wennberg, Lennart. Aromaticα-hydroxyamides with insect repellent properties. 4,192,892, Cl. 424-324.000.
- Tietjens, Eduard W., to U.S. Philips Corporation. Shaving apparatus. 4,192,065, Cl. 30-43.600.
- Tietz, Gary W., to National Semiconductor Corporation. Emitter coupled logic master-slave flip-flop with emitter-follower clockentry. 4,193,007, Cl. 307-291.000.
- Tignol, Adrien P. N.: *See—*
  - Alicot, Michel J. C.; Rhode, Rene H. P.; and Tignol, Adrien P. N., 4,192,804, Cl. 548-177.000.
- Timex Corporation: *See—*
  - Sedlak, Adolf; and Friedrich, Horst, 4,192,132, Cl. 368-160.000.
- Tims, Allan C.: *See—*
  - Young, A. Mark; Henriquez, Theodore A.; and Tims, Allan C., 4,193,130, Cl. 367-149.000.
- Ting, Lawrence K. M., to Polaroid Corporation. Photographic apparatus for selectively actuating a pulsable electronic strobe. 4,192,597, Cl. 354-145.000.
- Tippetts, K. Boyd, to Honeywell Information Systems Inc. Coding system. 4,192,449, Cl. 234-111.000.
- Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
  - Onodera, Takashi; Komine, Kikuji; and Ohashi, Fumio, 4,192,732, Cl. 208-33.000.
  - Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomu, 4,192,733, Cl. 208-33.000.
- Toda, Shinichi: *See—*
  - Minami, Takeshi; and Toda, Shinichi, 4,192,724, Cl. 204-67.000.
- Todd, Robert B.: *See—*
  - Robertson, George H.; Rooney, Robert L.; and Todd, Robert B., 4,192,841, Cl. 264-117.000.
- Todo, Kenji: *See—*
  - Nakagawa, Sumio; Tanaka, Toshio; and Todo, Kenji, 4,192,641, Cl. 431-15.000.
- Todoroki, Nobuaki: *See—*
  - Enomoto, Kunio; Kikuchi, Uhee; Kobori, Masanori; Kimura, Suguru; Kamiyama, Satoru; Todoroki, Nobuaki; and Yasukawa, Jun-ichi, 4,192,728, Cl. 204-181.00R.
- Toho Chemical Industry Co., Ltd.: *See—*
  - Hamanaka, Hiroyoshi, 4,192,759, Cl. 252-78.100.
- Tojo, Akio: *See—*
  - Tanaka, Shigenori; Tojo, Akio; Ohnishi, Kimimasa; and Kikuchi, Takeshi, 4,192,357, Cl. 139-450.000.
- Tokico Ltd.: *See—*
  - Tateoka, Kiyoshi, 4,192,220, Cl. 91-376.00R.
- Tokonami, Hiroshi: *See—*
  - Kato, Hiroshi; Ito, Yoshiaki; Tokonami, Hiroshi; and Sawada, Atsuo, 4,192,649, Cl. 8-138.000.

Tokutomi, Seijiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Abnormal operation warning apparatus for a camera. 4,192,589, Cl. 354-53.000.
Tokyo Cryogenic Industries Co., Ltd.: *See—*
  Ogata, Shunji; and Yamamoto, Yohei, 4,192,662, Cl. 62-13.000.
Tokyo Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
  Masuzima, Sho; and Fujita, Hisashi, 4,192,061, Cl. 29-854.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
  Aoki, Mitsugu; Konishi, Yoshikazu; and Ishihara, Taketoshi, 4,192,582, Cl. 351-30.000.
Tokyo Magnetic Printing Company Ltd.: *See—*
  Hayashi, Hideaki, 4,193,099, Cl. 360-17.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  Moriya, Yoshiaki, 4,193,125, Cl. 365-104.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
  Horiike, Yasuhiro, 4,192,706, Cl. 156-643.000.
  Imamura, Makoto, 4,193,085, Cl. 358-8.000.
  Koyama, Mitsuaki, 4,192,604, Cl. 355-3.0DD.
  Shirayama, Shimpey; Konagai, Chikara; Terasawa, Michitaka; and Kimura, Hironobu, 4,193,000, Cl. 250-385.000.
Tomy Kogyo Co., Inc.: *See—*
  Hamano, Nobuo, 4,192,093, Cl. 46-204.000.
Topouzian, Armenag, to Ford Motor Company. Sodium sulfur battery seal. 4,192,911, Cl. 429-104.000.
Toppan Printing Co., Ltd.: *See—*
  Kawakami, Yoshito, 4,192,231, Cl. 101-425.000.
Torres, Julio A., to Conoco, Inc. Anti-scale stuffing box improvement. 4,192,517, Cl. 277-24.000.
Torrington Company, The: *See—*
  Hartnett, Michael J., 4,192,560, Cl. 308-187.000.
Toth, Endre L.: *See—*
  Gale, Paul E.; and Toth, Endre L., 4,193,021, Cl. 318-568.000.
Toto, John A., to Pitney-Bowes, Inc. Sheet separating and feeding apparatus. 4,192,498, Cl. 271-21.000.
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  Brown, Eric; Boschetti, Egisto; Corgier, Monique M.; and Touet, Joel, 4,192,784, Cl. 260-8.000.
Touze, Francois M. J. Cooling boxes for blast-furnaces. 4,192,258, Cl. 122-6.500.
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  Merger, Franz; Towae, Friedrich; and Schroff, Ludwig, deceased, 4,192,949, Cl. 560-67.000.
Towlerton, Richard G.; and Lapras, Michel, to Fisons Limited. Methods for treating gastrointestinal disease. 4,192,886, Cl. 424-283.000.
Toyota Jidosha Kegko Kabushiki Kaisha: *See—*
  Nonoyama, Takao; and Yasuda, Takeru, 4,192,141, Cl. 60-290.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  Amano, Masuo; and Tanahashi, Toshio, 4,192,265, Cl. 123-119.00A.
  Fujii, Takashi; Ohmi, Atsushi; Nogami, Tomoyuki; and Ohta, Takaaki, 4,192,345, Cl. 137-572.000.
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  Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, 4,192,268, Cl. 123-119.0EC.
  Ishidera, Takashi; and Enjoji, Masahiko, 4,192,660, Cl. 55-276.000.
  Kitagawa, Katsutoshi; and Yamauchi, Hiroki, 4,192,263, Cl. 123-90.390.
  Okamura, Hiromasa, 4,192,224, Cl. 92-125.000.
  Shiratori, Harunori; and Kikuchi, Kenichi, 4,192,529, Cl. 280-689.000.
Traber, Walter: *See—*
  Clauson-Kaas, Niels; Mattern, Gunter; and Traber, Walter, 4,192,946, Cl. 546-249.000.
Trace, William L.; and Walker, Jerry L., to Calgon Corporation. Methoxypropylamine and hydrazine steam condensate corrosion inhibitor compositions and methods. 4,192,844, Cl. 422-11.000.
Tracor, Inc.: *See—*
  Nelson, Robert L., 4,192,191, Cl. 73-701.000.
Tramier, Bernard: *See—*
  Messines, Jean-Paul; Labat, Gaston; and Tramier, Bernard, 4,192,392, Cl. 175-66.000.
Trane Company, The: *See—*
  Kiang, Yen-Hsiung, 4,192,659, Cl. 55-89.000.
Transform Verstarkungsmaschinen Aktiengesellschaft: *See—*
  Dits, Herbert R., 4,192,222, Cl. 91-517.000.
Travers, Douglas N.: *See—*
  Prucha, Martin J.; Donaldson, Willis L.; and Travers, Douglas N., 4,192,967, Cl. 178-22.000.
Tremblay, Joseph A., to Lorac Company, The. Two piece ornament. 4,192,903, Cl. 428-8.000.
Tresser, Dietfried: *See—*
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Trieschock, George E.; and Dunbeker, George H., to Rheem Manufacturing Company. Method for blow molding of thermoplastic articles. 4,192,843, Cl. 264-528.000.
Trochon, Bernard: *See—*
  Ferraro, Lugi; Beltrani, Gianni; Gass, Jacques; and Trochon, Bernard, 4,192,298, Cl. 128-205.240.
Tronchet, Jean M. J.; Baehler, Bruno; Rossi, Alberto; Baschang, Gerhard; and Sele, Alex, to Ciba-Geigy Corporation. Novel aryl-hexafuranosides and processes for their preparation. 4,192,868, Cl. 424-180.000.
Trotscher, Gerhard: *See—*
  Gageur, Fritz; and Trotscher, Gerhard, 4,192,251, Cl. 118-63.000.
Truesdell, Delbert E.: *See—*
  Alderson, Loren L.; and Truesdell, Delbert E., 4,192,337, Cl. 137-101.000.
Truitt, Thomas E. Pendulum device. 4,192,072, Cl. 33-27.00L.
Trutzschler GmbH & Co. KG: *See—*
  Jagst, Peter, 4,192,042, Cl. 19-81.000.
TRW Inc.: *See—*
  Hayden, Rodney, 4,193,052, Cl. 335-128.000.
  Hodge, Malcolm H., 4,192,575, Cl. 350-96.210.
Tsuda, Shin: *See—*
  Kurahayashi, Sadasuke; Kato, Yuzo; Tsuda, Shin; Muto, Hakaru; and Watanabe, Asao, 4,193,097, Cl. 358-261.000.
Tsukamoto, Goro; Yoshino, Koichiro; Kohno, Toshihiko; Taguchi, Masahiro; Dezawa, Katsumi; Kagaya, Hajime; Ito, Keizo; and Nose, Takashi, to Kanebo, Ltd. 2-Substituted benzimidazole compounds. 4,192,880, Cl. 424-273.00R.
Tsunoi, Haruo; Morikawa, Teruo; Yamada, Katsuhiko; Ohkawara, Kenji; and Kubota, Atsushi, to Canon Kabushiki Kaisha. Fixing apparatus. 4,192,229, Cl. 100-158.00R.
Tuchman, Walter L.: *See—*
  Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; Prentice, Paul N.; and Tuchman, Walter L., 4,193,131, Cl. 375-2.000.
Tucker, Richard O.: *See—*
  Keith, Charles H.; and Tucker, Richard O., 4,192,838, Cl. 264-10.000.
Tucker, Willkie Y. Anti-rape device. 4,192,066, Cl. 30-162.000.
Tung, Chi F.; and Laird, James A., to Minnesota Mining and Manufacturing Company. Ultra-high-index glass microspheres and products made therefrom. 4,192,576, Cl. 350-105.000.
Twiestmeyer, Terry B. Trailer hitch apparatus. 4,192,524, Cl. 280-415.00A.
Uchida, Masaaki: *See—*
  Nakagawa, Takashi; Sugiuchi, Tadashi; Iwashita, Kanau; and Uchida, Masaaki, 4,192,402, Cl. 181-256.000.
Uchiyama, Yasuji: *See—*
  Yamaga, Eiichi; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichiro; Oya, Akiyoshi; and Uchiyama, Yasuji, 4,192,211, Cl. 84-1.010.
Udagawa, Tsugio; Araya, Takeshi; and Yoshida, Takashi, to Hitachi, Ltd.; and Hitachi Seiko, Ltd. Method and apparatus for automatic weld line tracing. 4,192,986, Cl. 219-137.00R.
Ueda, Masao, to Kabushiki Kaisha Komatsu Seisakusho. Clutch mechanism for winch. 4,192,409, Cl. 192-4.00R.
Ueda, Yasutsugu, to Bristol-Myers Company. Novel phosphorane intermediates for use in preparing penem antibiotics. 4,192,801, Cl. 260-239.00A.
Ueda, Yuziro; Yoshida, Toru; and Honda, Michiyasu, to Nippon Steel Corporation. Method for controlling exhaust gases in oxygen blown converter. 4,192,486, Cl. 266-44.000.
Ufford, Keith A.: *See—*
  Pederson, Paul D., Jr.; Ufford, Keith A.; and Nelson, Lawrence V., 4,192,988, Cl. 219-201.000.
Ultrasonic Plaque Control Laboratories, Inc.: *See—*
  Kuris, Arthur, 4,192,035, Cl. 15-22.00R.
UMC Industries, Inc.: *See—*
  Schuller, James T.; and Haeusser, Harry C., 4,192,436, Cl. 221-129.000.
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, to Bristol-Myers Company. Anthracycline glycosides from streptomyces. 4,192,915, Cl. 435-78.000.
Umezawa, Kazumi: *See—*
  Goshima, Yoshitomo; Hattori, Hiroyuki; Komaba, Shiro; and Umezawa, Kazumi, 4,192,608, Cl. 355-51.000.
Union Carbide Corporation: *See—*
  Kuryla, William C.; and Raines, Russell H., 4,192,647, Cl. 8-62.000.
  Osborn, Claiborn L., 4,192,762, Cl. 252-182.000.
  Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., 4,192,789, Cl. 260-29.20E.
  Stueben, Kenneth C., 4,192,952, Cl. 568-574.000.
  Ward, James A., 4,192,727, Cl. 204-159.120.
Union Oil Company of California: *See—*
  Duthweiler, Frederick C., 4,192,630, Cl. 405-217.000.
  Maly, George P.; and Laurie, Archibald M., 4,192,375, Cl. 166-51.000.
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- Wallop Industries Limited: *See—*
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- Walters, Frank, to Ferranti Limited. Gas discharge display panel. 4,193,017, Cl. 315-169.400.
- Walters, Robert A.; Johnson, William L.; and Bivins, Gary W., to ARCO Medical Products Company. Programmable atrio-ventricular pacer. 4,192,316, Cl. 128-419.0PG.
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- Wanner, Karl; and Reibetanz, Wilbert, to Robert Bosch GmbH. Power tool. 4,192,390, Cl. 173-75.000.
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- Wechsler, Reuben, to Motorola, Inc. Static digital data entry method and apparatus for a timer or clock. 4,192,993, Cl. 235-92.0DE.
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- Weinstock, Joseph, to SmithKline Corporation. 6-Halo-3-lower alkyl-7,8-dihydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,192,872, Cl. 424-244.000.
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- Weissman, Barry, to Western Electric Company, Inc. High-voltage amplifier with low output impedance. 4,193,040, Cl. 330-293.000.
- Welle, Hendricus B. A.; and Claassen, Volkert, to U.S. Philips Corporation. Anti-depressive compounds. 4,192,893, Cl. 424-327.000.
- Wellman, Gerald A. Wire reel. 4,192,473, Cl. 242-84.000.
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- Wester, Gene W., to California Institute of Technology. Unity power factor converter. 4,193,111, Cl. 363-84.000.
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  - Madsen, Bruce S., 4,192,764, Cl. 430-455.000.
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  - Edelman, Leonard E., 4,192,933, Cl. 525-377.000.
  - Hodges, Frank P.; Fowler, Harold W.; and Anderson, Phillip R., 4,192,246, Cl. 114-23.000.
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  - Szema, Li-Chieh, 4,192,138, Cl. 60-759.000.
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- Weydemuller, Donald C. Electronic ignition system. 4,192,275, Cl. 123-148.00E.
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- White, William G. Door sealing apparatus. 4,192,101, Cl. 49-478.000.
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  - LaRocque, Arthur G.; Whiteside, George D.; and Johnson, Bruce K., 4,192,587, Cl. 354-27.000.
- Wich, Robert, to Braun AG. Method of making a shearfoil for dry shavers. 4,192,719, Cl. 204-11.000.
- Wickstrom, Lawrence L.; and Garden, Jock C., to Farmland Industries, Inc. Conical roof structure. 4,192,107, Cl. 52-82.000.
- Wieland, Gunther: *See—*
  - Bade, Werner; Gelsdorf, Gunther; and Wieland, Gunther, 4,192,687, Cl. 106-38.240.
- Wiesmann, Thomas W.: *See—*
  - Swerling, Stephen; Smith, Steven R.; and Wiesmann, Thomas W., 4,192,451, Cl. 371-20.000.
- Wiggins, Robert W.; Ettenhofer, Kurt L.; and Bess, Jack, to United States of America, Navy. Charging circuit for sonar systems. 4,193,129, Cl. 367-106.000.
- Wilderness Mold, Inc.: *See—*
  - Patenaude, James K., 4,192,104, Cl. 51-273.000.
- "Wilhelmstal" Ernst & Sohn GmbH & Co. KG: *See—*
  - Porth, Erwin, 4,192,448, Cl. 229-80.000.
- Willby, Christopher R.: *See—*
  - Hayden, Owen; Sheward, George E.; Ormrod, Derek T.; Willby, Christopher R.; and Firth, George F., 4,192,374, Cl. 165-158.000.
- Willett, Boyd R., to PPG Industries Canada Ltd. Method of disposing solid sodium chloride while selectively solution mining potassium chloride. 4,192,555, Cl. 299-4.000.
- Williams, Amos. Apparatus and method for reconstituting seat backs. 4,192,548, Cl. 297-452.000.
- Williams, Frank N., to Bradley Corporation. Drain valve ball lever. 4,192,026, Cl. 4-203.000.
- Williams, Roger M.; and Lawrence, Alan J., to Plessey Handel und Investments AG. Processor overload arrangement in time division multiplex exchanges. 4,192,973, Cl. 370-53.000.
- Williams, Ronald S.; and Hill, Robert S., to Arvin Industries, Inc. Tube-to-plate connection. 4,192,531, Cl. 285-222.000.
- Williamson, Paul M.: *See—*
  - Dickey, Charles R.; and Williamson, Paul M., 4,192,758, Cl. 252-33.000.
- Willinger, Allan H., to Willinger Bros., Inc. Aquarium airstone device. 4,192,255, Cl. 119-5.000.
- Willinger Bros., Inc.: *See—*
  - Willinger, Allan H., 4,192,255, Cl. 119-5.000.
- Willisch, Hannes. Device for preparation and hygienization of refuse or refuse-clarified sludge mixtures by means of composting. 4,192,848, Cl. 422-239.000.
- Wilson, Donald L. Surgical incision guide means. 4,192,312, Cl. 128-303.00R.
- Wilson, Edwin B.: *See—*
  - Weimer, James C.; Locks, William S.; Wilson, Edwin B.; and Miller, Francis G., 4,192,551, Cl. 299-1.000.
- Wilson, John E., to Deere & Company. Axial flow separator with stepped threshing bar rotor. 4,192,322, Cl. 130-27.00T.
- Wingfield, Robert C., Jr., to Ford Motor Company. Corrosion resistant primers. 4,192,929, Cl. 525-110.000.
- Winn & Coales (Denso) Limited: *See—*
  - Parker, William D.; Smith, Harry M.; and Edwards, Margaret P., 4,192,697, Cl. 156-188.000.
- Winter Park Associates: *See—*
  - Merry, Glenn W., 4,192,640, Cl. 430-248.000.
- Winther, Svend E.: *See—*
  - Goldman, Holliday L.; and Winther, Svend E., 4,192,482, Cl. 251-56.000.
- Wissmann, Michael: *See—*
  - Peters, Klaus-Jurgen; Wissmann, Michael; and Schelhas, Peter, 4,192,271, Cl. 123-139.0AW.
- Witschard, Gilbert, to Hooker Chemicals & Plastics Corp. Polymer compositions having enhanced low temprature impact resistance on ageing. 4,192,828, Cl. 525-83.000.
- Wlodkowski, Johann: *See—*
  - Jungwirth, Dieter; Renoth, Josef; and Wlodkowski, Johann, 4,192,114, Cl. 52-230.000.
- Woerz, Otto: *See—*
  - Meissner, Bernd; Fliege, Werner; Woerz, Otto; Dudeck, Christian; and Diehm, Hans, 4,192,820, Cl. 260-601.00R.
- Wolf, Dieter: *See—*
  - Rapp, Guenther; Thomas, Erwin; Wolf, Dieter; Kuerten, Heribert; and Zehner, Peter, 4,192,856, Cl. 423-387.000.
- Wolf, Rainer, to Sandoz Ltd. Halogenated phosphonitrilic esters. 4,192,830, Cl. 260-973.000.
- Wolfkamp, Albertus: *See—*
  - Avellis, Cosmo L.; Pavone, Carlo; and Wolfkamp, Albertus, 4,192,183, Cl. 73-182.000.
- Wolfson, Joseph, to Desenberg, Charles. Orthodontic band and seating tool therefor. 4,192,068, Cl. 433-3.000.
- Wolowodiuk, Walter, to Foster Wheeler Energy Corporation. Leak detection system for duplex tube heat exchangers. 4,192,373, Cl. 165-70.000.
- WOMA-Apparatebau Wolfgang Maasberg & Co., GmbH: *See—*
  - Grahac, Mirko, 4,192,343, Cl. 137-474.000.
- Womack, D. Gene; and Hignight, Charles G., to Georex Industries, Inc. Helicopter portable earth drilling apparatus. 4,192,393, Cl. 175-103.000.
- Wommack, Joel B., Jr.: *See—*
  - Adams, John B., Jr.; and Wommack, Joel B., Jr., 4,192,669, Cl. 71-108.000.
- Wood, Dale A.: *See—*
  - Elfes, Lee E.; and Wood, Dale A., 4,192,750, Cl. 210-133.000.
- Woods, Jay: *See—*
  - Haslam, Lester H.; Woods, Jay; and Woods, Verle W., 4,192,095, Cl. 47-58.000.
- Woods, Verle W.: *See—*
  - Haslam, Lester H.; Woods, Jay; and Woods, Verle W., 4,192,095, Cl. 47-58.000.
- Wor, Jan T.: *See—*
  - Blom, Nico; and Wor, Jan T., 4,192,230, Cl. 101-93.030.
- Worley, Arthur C., to Exxon Research & Engineering Co. Catalyst sampler device. 4,192,188, Cl. 73-424.000.
- Wormington, Garold L. Heat exchanger. 4,192,286, Cl. 126-121.000.
- Worrell, G. Richard; and McKay, Frank F., Jr., to Atlantic Richfield Company. Method and apparatus for halting the advancement of accidental ethylene decomposition in a gas pipeline. 4,192,656, Cl. 48-192.000.
- Worrell, G. Richard, to Atlantic Richfield Company. Method and apparatus for halting the advancement of ethylene decomposition flame fronts. 4,192,657, Cl. 48-192.000.
- Worrell, G. Richard, to Atlantic Richfield Company. Pipeline flame arrestor. 4,192,658, Cl. 48-192.000.
- Worrell, Robert A., Sr.; and Ross, Richard T., to Scott Paper Company. Flexible and pliable moisture-impervious package. 4,192,420, Cl. 206-205.000.
- Wortman, Donald E.: *See—*
  - Morrison, Clyde A.; Karayianis, Nick; and Wortman, Donald E., 4,193,044, Cl. 331-94.50F.
- Wright, Larry G.: *See—*
  - Milberger, Walter E.; and Wright, Larry G., 4,193,032, Cl. 178-116.000.
- Wright, William B., Jr.; and Hardy, Robert A., Jr., to American Cyanamid Company. 5H-Pyrrolo[2,1-c][1,4]benzodiazepine derivatives. 4,192,803, Cl. 260-243.300.
- Wu, Yulin, to Phillips Petroleum Company. Preparation of vicinal epoxides. 4,192,810, Cl. 260-348.160.
- Wyatt, James L. Pin-hook dispensing and inserting or setting tool. 4,192,437, Cl. 221-255.000.
- Wyckoff, Frank K.; and Silver, Roger C., to Atlas Products, Inc. Machine for applying a uniform pressure. 4,192,626, Cl. 404-123.000.
- Wykoff, Richard H., to AMSTED Industries Incorporated. Liquid-solid separator. 4,192,747, Cl. 210-83.000.
- Wyler, John S., to Westinghouse Electric Corp. Apparatus for determining stagnation pressure, static pressure, pitch angle, and yaw angle of elastic fluid. 4,192,178, Cl. 73-116.000.
- Wyslouzil, Walter, to Canadian Patents and Development Limited. Microwave moisture-profile gauge. 4,193,027, Cl. 324-58.50R.
- Wytaski, Thomas A.: *See—*
  - Beuch, Wallace E.; O'Konski, George J.; Rusch, Kenneth D.; and Wytaski, Thomas A., 4,193,102, Cl. 360-105.000.
- Xerox Corporation: *See—*
  - Arase, Shingo; and Lahr, Roy J., 4,193,119, Cl. 364-900.000.
  - Buck, Kenneth J., 4,192,603, Cl. 355-3.0BE.
  - Jeromin, Lothar S., 4,192,989, Cl. 219-216.000.
  - Lu, Chin H., 4,192,902, Cl. 427-127.000.
  - Perun, William D.; and Amatangelo, Paul C., 4,192,497, Cl. 271-18.000.
  - Stoffel, James C., 4,193,092, Cl. 358-136.000.
  - Stoffel, James C., 4,193,096, Cl. 358-260.000.
  - Wang, Shing C., 4,193,042, Cl. 331-945.0PE.
  - Yeh, Keming W., 4,193,079, Cl. 357-22.000.
- Yaguchi, Masachika; and Kato, Haruhiro, to Dai Nippon Toryo Co, Ltd. Electrochromic display device. 4,192,581, Cl. 350-357.000.
- Yamada, Hiroshi: *See—*
  - Sakamoto, Eiichi; Ishihara, Masao; Nakazato, Kazuo; Yamada, Hiroshi; Terada, Sadatugu; Kitahara, Kenichi; Abe, Naoto; Komiya, Mamoru; and Kanbe, Masaru, 4,192,683, Cl. 430-536.000.
- Yamada, Katsuhiko: *See—*
  - Tsunoi, Haruo; Morikawa, Teruo; Yamada, Katsuhiko; Ohkawara, Kenji; and Kubota, Atsushi, 4,192,229, Cl. 100-158.00R.

- Yamada, Takashi: *See—*
  - Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,192,135, Cl. 368-62.000.
- Yamaga, Eiichi; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichiro; Oya, Akiyoshi; and Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,192,211, Cl. 84-1.010.
- Yamaga, Eiichi; Aoki, Eiichiro; and Imamura, Akio, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with automatic performance device. 4,192,212, Cl. 84-1.030.
- Yamagiwa, Kazuo; Saito, Kaneo; and Numakura, Toshihiko, to Sony Corporation. Video recorder having means for maintaining constant the amplitude of the frequency-modulated signal. 4,193,084, Cl. 358-4.000.
- Yamaguchi, Akihiro: *See—*
  - Okazaki, Mitsuo; Yamaguchi, Akihiro; and Sasaki, Masaomi, 4,192,677, Cl. 430-77.000.
- Yamaha Hatsudoki Kabushiki Kaisha: *See—*
  - Yamashita, Ryuichi; and Matsumoto, Hiromitsu, 4,192,140, Cl. 60-277.000.
- Yamamoto, Ryohei. Elongated shingle assembly. 4,192,115, Cl. 52-468.000.
- Yamamoto, Shigehiko: *See—*
  - Futamoto, Masaaki; Kawabe, Ushio; Hosoki, Shigeyuki; Komoda, Tsutomu; and Yamamoto, Shigehiko, 4,193,013, Cl. 313-341.000.
- Yamamoto, Toru, to Teijin Seiki Company Limited. Fail-safe fluid control valve. 4,192,218, Cl. 91-216.00A.
- Yamamoto, Yohei: *See—*
  - Ogata, Shunji; and Yamamoto, Yohei, 4,192,662, Cl. 62-13.000.
- Yamashita, Ryuichi; and Matsumoto, Hiromitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Apparatus and method relating to internal combustion engines utilizing an exhaust gas reactor. 4,192,140, Cl. 60-277.000.
- Yamauchi, Hiroki: *See—*
  - Kitagawa, Katsutoshi; and Yamauchi, Hiroki, 4,192,263, Cl. 123-90.390.
- Yamauchi, Yoshiki: *See—*
  - Houkawa, Kouji; Yamauchi, Yoshiki; and Yoshikawa, Shokichiro, 4,193,045, Cl. 331-107.00A.
- Yanagimoto, Takekazu: *See—*
  - Oidaira, Toshiaki; Asanuma, Katsumi; Yanagimoto, Takekazu; Yasui, Senzi; Saito, Kozo; and Hakamata, Yoshio, 4,192,594, Cl. 354-90.000.
- Yardley Products, Inc.: *See—*
  - Ziaylek, Theodore, Jr., 4,192,990, Cl. 219-243.000.
- Yasuda, Kenzi: *See—*
  - Suzuki, Masane; and Yasuda, Kenzi, 4,192,578, Cl. 350-320.000.
- Yasuda, Syoichi: *See—*
  - Morita, Toshiaki; Takatori, Hironari; Makino, Fusao; Yasuda, Syoichi; and Nishioka, Yoshiki, 4,193,056, Cl. 340-146.3AC.
- Yasuda, Takeru: *See—*
  - Nonoyama, Takao; and Yasuda, Takeru, 4,192,141, Cl. 60-290.000.
- Yasui, Senzi: *See—*
  - Oidaira, Toshiaki; Asanuma, Katsumi; Yanagimoto, Takekazu; Yasui, Senzi; Saito, Kozo; and Hakamata, Yoshio, 4,192,594, Cl. 354-90.000.
- Yasukawa, Jun-ichi: *See—*
  - Enomoto, Kunio; Kikuchi, Uhee; Kobori, Masanori; Kimura, Suguru; Kamiyama, Satoru; Todoroki, Nobuaki; and Yasukawa, Jun-ichi, 4,192,728, Cl. 204-181.00R.
- Yasumatsu, Mutsuo; Shoji, Shinichi; Sakamoto, Koichi; Kurihara, Takao; Terabayashi, Takeshi; and Ohmura, Kasutaka, to Calpis Shokuhin Kogyo Kabushiki Kaisha. Milk-containing acid syrup. 4,192,901, Cl. 426-580.000.
- Yeh, Keming W., to Xerox Corporation. MESFET with non-uniform doping. 4,193,079, Cl. 357-22.000.
- Yelke, Edward. Piezoelectric transducer for fuel injection engine. 4,192,179, Cl. 73-119.00A.
- Yello, Joseph F., to Zenith Radio Corporation. Addressable event display and control system. 4,193,120, Cl. 364-900.000.
- Yerman, Arthur J., to Becton, Dickinson and Company. Vented vacuum tube and stopper. 4,192,429, Cl. 215-307.000.
- Yobaccio, Edward A., to Polaroid Corporation. Rotatable adapter for use in optically coupling a viewing device with a photographic camera. 4,192,591, Cl. 354-62.000.
- Yoneharu, Tanaka: *See—*
  - Gensho, Takahashi; Masamitsu, Yanai; Masakazu, Kurihara; Yoneharu, Tanaka; and Kazuhiro, Suzuoki, 4,192,684, Cl. 430-284.000.
- Yoshida, Makoto, to Citizen Watch Company Limited. Electronic timepiece correction device. 4,192,134, Cl. 368-80.000.
- Yoshida, Takashi: *See—*
  - Udagawa, Tsugio; Araya, Takeshi; and Yoshida, Takashi, 4,192,986, Cl. 219-137.00R.
- Yoshida, Toru: *See—*
  - Ueda, Yuziro; Yoshida, Toru; and Honda, Michiyasu, 4,192,486, Cl. 266-44.000.
- Yoshikawa, Shokichiro: *See—*
  - Houkawa, Kouji; Yamauchi, Yoshiki; and Yoshikawa, Shokichiro, 4,193,045, Cl. 331-107.00A.
- Yoshikawa, Yoshio; Nawata, Takanari; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, to Mitsubishi Gas Chemical Company, Inc. Oxygen absorbent. 4,192,773, Cl. 252-429.00R.
- Yoshino, Koichiro: *See—*
  - Tsukamoto, Goro; Yoshino, Koichiro; Kohno, Toshihiko; Taguchi, Masahiro; Dezawa, Katsumi; Kagaya, Hajime; Ito, Keizo; and Nose, Takashi, 4,192,880, Cl. 424-273.00R.
- Young, A. Mark; Henriquez, Theodore A.; and Tims, Allan C., to United States of America, Navy. Fiber optic hydrophone for use as an underwater electroacoustic standard. 4,193,130, Cl. 367-149.000.
- Young, James E.; and Walker, Ralph S. Flow regulating device for arterial catheter systems. 4,192,303, Cl. 128-214.00R.
- Young, Rodney C.: *See—*
  - Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,192,879, Cl. 424-273.00R.
- Yuyama, Megumu: *See—*
  - Yoshikawa, Yoshio; Nawata, Takanari; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, 4,192,773, Cl. 252-429.00R.
- Yxfeldt, Leif J. Connecting device. 4,192,463, Cl. 239-289.000.
- Zahn, Wolfgang: *See—*
  - Fergg, Berthold; Findeis, Gunter; and Zahn, Wolfgang, 4,192,605, Cl. 355-38.000.
- Zahnradfabrik Friedrichshafen AG: *See—*
  - Hamma, Karlmann; and Ott, Anton, 4,192,199, Cl. 74-687.000.
- Zehner, Peter: *See—*
  - Rapp, Guenther; Thomas, Erwin; Wolf, Dieter; Kuerten, Heribert; and Zehner, Peter, 4,192,856, Cl. 423-387.000.
- Zeidler, H. Rudolf, to Zenith Radio Corporation. Electron gun shield cup providing tube evacuation bypass vents. 4,193,016, Cl. 313-449.000.
- Zenith Carburetter Company Limited: *See—*
  - Ross, Gray E. D., 4,192,277, Cl. 123-179.00G.
- Zenith Radio Corporation: *See—*
  - Korpel, Adrianus, 4,193,090, Cl. 358-128.500.
  - Yello, Joseph F., 4,193,120, Cl. 364-900.000.
  - Zeidler, H. Rudolf, 4,193,016, Cl. 313-449.000.
- Ziaylek, Theodore, Jr., to Yardley Products, Inc. Tip assembly for use with a thermal press. 4,192,990, Cl. 219-243.000.
- Ziccardi, John J. Hemorrhage alarms. 4,193,068, Cl. 340-604.000.
- Zigmont, Clifford V. Spa lounge. 4,192,024, Cl. 4-172.000.
- Zilges, Franz-Josef; and Kutz, Heinrich, to Schloemann-Siemag Aktiengesellschaft. Method and apparatus for the extrusion of tubes of easily oxidized materials. 4,192,162, Cl. 72-45.000.
- Zoltai, John T. Electronic authentication system. 4,193,061, Cl. 371-67.000.
- Zorzi, Joe: *See—*
  - Kennedy, Russell J.; Lazier, Samuel S.; and Zorzi, Joe, 4,192,187, Cl. 73-321.000.
- Zoske, Karl-Heinz: *See—*
  - Lang, Thomas; and Zoske, Karl-Heinz, 4,192,272, Cl. 123-140.0MC.
- Zuntini, Franco: *See—*
  - Laude, Pierre; Marka, Erwin; and Zuntini, Franco, 4,192,723, Cl. 204-43.00G.
- Zurawski, Vincent R., Jr., to Massachusetts General Hospital. Process for rosetting human B lymphocytes with Rhesus monkey erythrocyte. 4,192,917, Cl. 435-236.000.
- Zyliss Zysset AG: *See—*
  - Hartmann, Horst, 4,192,470, Cl. 241-169.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF MARCH, 1980

Note—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Bahder, George: *See—*
  - Silver, David A.; and Bahder, George, Re. 30,228, Cl. 174-36.000.
- Berman, Paul A.; Giras, Theodore C.; Crews, Roy E.; and Ziegelman, Robert L., to Ziegelman, Robert L. Modular operating centers and methods of building same for use in electric power generating plants and other industrial and commercial plants, processes and systems. Re. 30,229, Cl. 290-1.00R.
- Cannell, Roger D.: *See—*
  - Louis, Joseph E.; and Cannell, Roger D., Re. 30,226, Cl. 417-216.000.
- Ciba-Geigy Corporation: *See—*
  - von Rutte, Richard; and Gasser, Walter, Re. 30,227, Cl. 252-301.220.
- Crews, Roy E.: *See—*
  - Berman, Paul A.; Giras, Theodore C.; Crews, Roy E.; and Ziegelman, Robert L., Re. 30,229, Cl. 290-1.00R.
- Daugherty, Donald A.: *See—*
  - Simmons, John H.; and Daugherty, Donald A., Re. 30,225, Cl. 164-45.000.
- Gasser, Walter: *See—*
  - von Rutte, Richard; and Gasser, Walter, Re. 30,227, Cl. 252-301.220.
- General Cable Corporation: *See—*
  - Silver, David A.; and Bahder, George, Re. 30,228, Cl. 174-36.000.
- Giras, Theodore C.: *See—*
  - Berman, Paul A.; Giras, Theodore C.; Crews, Roy E.; and Ziegelman, Robert L., Re. 30,229, Cl. 290-1.00R.
- Louis, Joseph E.; and Cannell, Roger D., to Sundstrand Corporation. Torque limiting control. Re. 30,226, Cl. 417-216.000.
- Ortega, Robert, to Purex Corporation. Valve construction. Re. 30,224, Cl. 137-625.470.
- Precision Metalsmiths, Inc.: *See—*
  - Simmons, John H.; and Daugherty, Donald A., Re. 30,225, Cl. 164-45.000.
- Purex Corporation: *See—*
  - Ortega, Robert, Re. 30,224, Cl. 137-625.470.
- Silver, David A.; and Bahder, George, to General Cable Corporation. Power cable with corrugated or smooth longitudinally folded metallic shielding tape. Re. 30,228, Cl. 174-36.000.
- Simmons, John H.; and Daugherty, Donald A., to Precision Metalsmiths, Inc. Method and apparatus for feeding granulated material. Re. 30,225, Cl. 164-45.000.
- Sundstrand Corporation: *See—*
  - Louis, Joseph E.; and Cannell, Roger D., Re. 30,226, Cl. 417-216.000.
- von Rutte, Richard; and Gasser, Walter, to Ciba-Geigy Corporation. Agent for brightening and removing greyness from textiles. Re. 30,227, Cl. 252-301.220.
- Ziegelman, Robert L.: *See—*
  - Berman, Paul A.; Giras, Theodore C.; Crews, Roy E.; and Ziegelman, Robert L., Re. 30,229, Cl. 290-1.00R.

LIST OF PLANT PATENTEES

- Pan-American Plant Company: *See—*
  - Shoesmith, Leonard H., 4,509, Cl. 74.000.
  - Shoesmith, Leonard H., 4,510, Cl. 74.000.
- Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named Gettysburg. 4,509, 3-11-80, Cl. 74.000.
- Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named Anthem. 4,510, 3-11-80, Cl. 74.000.

LIST OF DESIGN PATENTEES

- Abbate, Jack, to Regency Service Carts, Inc. Insulated bowl. 254,416, 3-11-80, Cl. D7-22.000.
- Adams, Jim M., to Projects in Health, Inc. Peak expiratory flow meter or similar article. 254,443, 3-11-80, Cl. D24-17.000.
- Amity Leather Products Co.: *See—*
  - Gajewski, Dennis A., 254,414, Cl. D6-172.000.
- Backstrom, Olof F., to Oy Fiskars AB. Hairdresser's scissors. 254,420, 3-11-80, Cl. D8-57.000.
- Backstrom, Olof F., to Oy Fiskars AB. Nail scissors. 254,421, 3-11-80, Cl. D8-57.000.
- Bakal, Peter A. Switchboard console for a telecommunications system. 254,436, 3-11-80, Cl. D14-58.000.
- Bataca, Inc.: *See—*
  - Reinhard, Carl W., 254,440, Cl. D21-211.000.
- Battaglia, Anthony. Hand held hair dryer. 254,451, 3-11-80, Cl. D28-13.000.
- Boghosian, Robert A., to Warner-Lambert Company. Chromatography column. 254,445, 3-11-80, Cl. D24-56.000.
- Borucki, Robert L., to Graco Metal Products, Inc. Seat for baby swing. 254,409, 3-11-80, Cl. D6-10.000.
- Brouwer, Ryk V., to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,403, 3-11-80, Cl. D2-431.000.
- Brouwer, Ryk V., to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,404, 3-11-80, Cl. D2-431.000.
- Brouwer, Ryk V., to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,406, 3-11-80, Cl. D2-431.000.
- Brouwer, Ryk V., to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,407, 3-11-80, Cl. D2-431.000.
- Brouwer, Ryk V., to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,408, 3-11-80, Cl. D2-431.000.
- Brouwer, RykV., to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,405, 3-11-80, Cl. D2-431.000.
- Broyhill Manufacturing Company, The: *See—*
  - Broyhill, Roy F.; Parsons, James; Schroeder, Ralph; and Stewart, Clarence E., 254,431, Cl. D12-97.000.
- Broyhill, Roy F.; Parsons, James; Schroeder, Ralph; and Stewart, Clarence E., to Broyhill Manufacturing Company, The. Utility vehicle. 254,431, 3-11-80, Cl. D12-97.000.
- Carlson, Arthur W. Flat frankfurter. 254,396, 3-11-80, Cl. D1-26.000.
- Cervone, David P. Air cleaner. 254,442, 3-11-80, Cl. D23-149.000.
- Clugston, George D. Combined feeder and waterer for pets. 254,454, 3-11-80, Cl. D30-16.000.
- Coffey, James M. Catamaran wind vane. 254,430, 3-11-80, Cl. D12-70.000.
- Concord Laboratories: *See—*
  - Raitto, Russell G., 254,446, Cl. D24-99.000.
- Cornwell, Alexander M., Jr.; and Miller, Joseph N., to Jackes-Evans Manufacturing Company. Mailbox. 254,455, 3-11-80, Cl. D99-29.000.
- Dattner, Richard. Shelter. 254,448, 3-11-80, Cl. D25-18.000.
- DeMars, Robert A.; and Thor, John D. Detachable handle for a beverage can or the like. 254,417, 3-11-80, Cl. D7-70.000.
- DeMars, Robert A.; and Thor, John D. Combined opener and handle for a beverage can. 254,419, 3-11-80, Cl. D8-34.000.
- Doukas, Peter J. Building. 254,449, 3-11-80, Cl. D25-33.000.
- Erie Crate and Manufacturing Company: *See—*
  - Van Geem, John D., 254,423, Cl. D9-177.000.
- Fabreeka Products Company: *See—*
  - Summers, Frank B., Jr., 254,429, Cl. D12-60.000.
- Ferron, James R., to GTE Automatic Electric Laboratories Incorporated. Housing for a telephone set. 254,435, 3-11-80, Cl. D14-53.000.

Finn, Norman H., to United States Shoe Corporation, The. Open toe wedgie sneaker. 254,397, 3-11-80, Cl. D2-296.000.
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Fredrick, William H. Nestable shipping container. 254,424, 3-11-80, Cl. D9-246.000.
Fredriksson, Lars O. A., to K A Bergs Smide AB. Combined hook and anchorage plate. 254,422, 3-11-80, Cl. D8-367.000.
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Matsushita Electric Industrial Co., Ltd.: *See—*
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  Pulse, Herschel F.; McSherry, William F.; and McMahan, Forrest E., 254,450, Cl. D25-89.000.
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Norenberg, Lowell G. Paint stirring paddle. 254,418, 3-11-80, Cl. D7-102.000.
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  Adams, Jim M., 254,443, Cl. D24-17.000.
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  Brouwer, Ryk V., 254,404, Cl. D2-431.000.
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  Van Brouwer, Ryk, 254,401, Cl. D2-431.000.
  Van Brouwer, Ryk, 254,402, Cl. D2-431.000.
Raitto, Russell G., to Concord Laboratories. Blood gas syringe stopper. 254,446, 3-11-80, Cl. D24-99.000.
Rakocy, William J.; and Rauch, Howard L., to North American Philips Corporation. Curling iron. 254,452, 3-11-80, Cl. D28-35.000.
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  Rakocy, William J.; and Rauch, Howard L., 254,452, Cl. D28-35.000.
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Reinhard, Carl W., to Bataca, Inc. Game club with unitary handle. 254,440, 3-11-80, Cl. D21-211.000.
Roch, Gerald V., to Hurco Manufacturing Company, Inc. Bending press gauge control panel. 254,433, 3-11-80, Cl. D13-12.000.
Schessl, Ronald G. Wheel chock unit. 254,432, 3-11-80, Cl. D12-217.000.
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Testut-Aequitas: *See—*
  Perrier, Robert, 254,426, Cl. D10-91.000.
  Perrier, Robert, 254,427, Cl. D10-91.000.
Thor, John D.: *See—*
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  DeMars, Robert A.; and Thor, John D., 254,419, Cl. D8-34.000.
United States Shoe Corporation, The: *See—*
  Finn, Norman H., 254,397, Cl. D2-296.000.
  Finn, Norman H., 254,398, Cl. D2-286.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,399, 3-11-80, Cl. D2-431.000.
Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,400, 3-11-80, Cl. D2-431.000.
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Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 254,402, 3-11-80, Cl. D2-431.000.
Van Geem, John D., to Erie Crate and Manufacturing Company. Bottle crate. 254,423, 3-11-80, Cl. D9-177.000.
Warner-Lambert Company: *See—*
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ISSUED MARCH 11, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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144 B	4,192,981
157	4,192,982
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11	4,192,719
14 N	4,192,720
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528	4,192,422
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8 LE	4,192,731
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Vol. 992 Number 3

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of the UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 18, 1980

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For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

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Jan. 28, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

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The "U.S. Patent Classification—Numeric Listing" consists of a listing, in ascending numeric sequence, of all U.S. patents and related items together with the original and all cross-reference classifications (both "official" and "unofficial") for each patent current as of the date of publication.

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1-20 (Full Set)	PB80–123805	All	
14-20 (Partial Set)	PB80–124019	[2] 2,860,852	4,180,866
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10	PB80–123904	2,061,514	2,267,418
11	PB80–123912	2,267,419	2,469,316
12	PB80–123920	2,469,317	2,665,044
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19	PB80–123995	3,808,177	3,994,623
20/21	PB80–124001	3,994,624	4,180,866

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[2] Issued in November 1958.

[3] Reel 1 includes the following ranges of numbers:

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February 14, 1980.

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Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,461,461, Re. S.N. 101,536, Filed Dec. 10, 1979, Cl. 544/323, 6-AMINO-4-(SUBSTITUTED AMINO) 1,2-DIHYDRO-1-HYDROXY-2-IMINOPYRIMIDINES, William C. Anthony, et al., Owner of Record: *The Upjohn Company, Kalamazoo, Mich.,* Attorney or Agent: Martin B. Barancik, et al., Ex. Gp.: 122

3,500,552, Re. S.N. 105,792, Filed Dec. 20, 1979, Cl. 34/8, METHOD AND APPARATUS FOR DRYING FOODS, Daniel F. Farkas, et al., Owner of Record: *The United States of America as represented by The Secretary of Agriculture, Washington, D.C.,* Attorney or Agent: M. Howard Silverstein, et al., Ex. Gp.: 344

3,727,004, Re. S.N. 098,995, Filed Nov. 30, 1979, Cl. 179/1 D, LOUDSPEAKER SYSTEM, Amar G. Bose, Owner of Record: *Bose Corporation, Framingham, Mass.,* Attorney or Agent: Charles Hieken, et al., Ex. Gp.: 234

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Disclaimers

Des. No. 213,431.—*Leland George Stone*, Mundelein, Ill. KNOB. Patent dated March 4, 1969. Disclaimer filed June 10, 1979, by the assignee, *Amerock Corporation.*

Hereby enters this disclaimer to the single claim of said patent.

Des. No. 251,351.—*Ottorino N. Mercadante,* Corning, N.Y. PLATE OR THE LIKE. Patent dated March 20, 1979. Disclaimer filed Jan. 25, 1980, by the assignee, *Corning Glass Works.*

Hereby enters this disclaimer to the sole claim of said patent.

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Hereby enters this disclaimer to the remaining term of said patent.

4,025,249.—*Jerry A. King,* Palm Beach Gardens, Fla. APPARATUS FOR MAKING METAL POWDER. Patent dated May 24, 1977. Disclaimer filed Dec. 3, 1979, by the assignee, *United Technologies Corporation.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,086,564.—*William Eugene Claxton,* Mogadore. Ohio. ELECTRONIC ALARM CIRCUITRY. Patent dated Apr. 25, 1978. Disclaimer filed Nov. 14, 1979, by the assignee, *The Firestone Tire & Rubber Co.*

Hereby enters this disclaimer to claims 1, 3, 6, 7, 10 and 11 of said patent.

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Hereby dedicates to the Public the remaining term of said patent.

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Hereby dedicates the entire remaining term of said patent to the Public.

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Hereby dedicates the entire remaining term of said patent to the Public.

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

OTJAG, DEPARTMENT OF THE ARMY

Chief, Intellectual Properties Division,
Room 2D 444, Pentagon, Washington, D.C. 20310

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1900 Half Street, SW., Washington, D.C. 20324

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U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Room A2–3018, Washington, D.C. 20545

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NATIONAL AERONAUTICS & SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP–4, Washington, D.C. 20546

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	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 26, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-2-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-3-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-14-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	5-3-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-8-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-25-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	11-16-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-16-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-29-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	3-13-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-14-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	12-14-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	1-8-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	8-22-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	8-17-78

Expiration of patents: The patents within the range of numbers indicated below expire during January 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,070,801 to 3,076,194, inclusive
Plant Patents	Numbers 2,208 to 2,223, inclusive

REISSUES

MARCH 18, 1980

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,230

CLOSED CIRCUIT METHOD OF CIRCULATING A SUBSTANTIALLY SOLID FREE DRILLING FLUID

Junius M. Jackson, deceased, late of Kingwood, Tex., and by Betty A. Jackson, executrix, Houston, Tex., assignors to Brinadd Company, Houston, Tex.

Original No. 3,844,361, dated Oct. 29, 1974, Ser. No. 352,527, Apr. 19, 1973. Division of Ser. No. 101,177, Dec. 23, 1970, abandoned. Application for reissue Jun. 6, 1977, Ser. No. 803,601

Int. Cl.^{2} E21B *21/00;* **C09K** *7/02*

U.S. Cl. 175—66 **9 Claims**

1. A closed circuit method of circulating a substantially solid free drilling fluid comprising (1) formulating a drilling fluid based on water, including an additive to inhibit drilled solids from disintegrating, water soluble weighting agents and a viscosifier consisting of material having no gel strength and no structured viscosity, (2) pumping said drilling fluid down the wellbore through the drilling string and bit and back up to the surface in the annulus surrounding the bit and drill string, (3) screening the drilling fluid to separate out and discard the coarse particles (4) removing the major portion of sand, silt and other particles from said drilling fluid by **[**settling and decantation**]** *mechanical means,* (5) removing solids remaining in said drilling fluid by **[**mechanical means**]** *settling and decantation* and, (6) returning the cleaned-up substantially solid free drilling fluid to the wellbore.

Re. 30,231

LENS SELECTION DEVICE

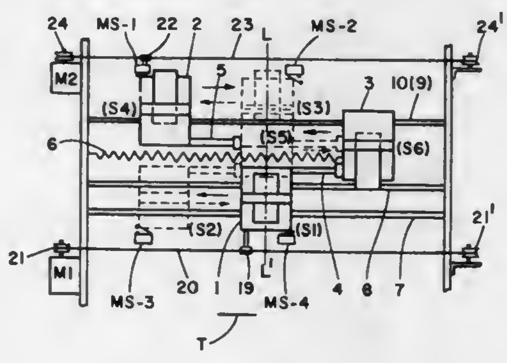
Hiroshi Ikeda, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Original No. 3,936,150, dated Feb. 3, 1976, Ser. No. 533,920, Dec. 18, 1974. Application for reissue Jan. 26, 1978, Ser. No. 872,515

Claims priority, application Japan, Dec. 22, 1973, 49-2168[U]

Int. Cl.^{2} G02B *15/04;* **G03B** *27/40*

U.S. Cl. 350—183 **12 Claims**



11. A lens selection device comprising a pair of first lenses each of which is movable between operative and retracted positions, drive means for moving each of said first lenses between its operative and retracted positions, a second lens movable between an operative and a retracted position and means motivated by the movement of a first lens toward an operative position for moving said second lens to its retracted position and responsive to the dispositions of both said first lens in their retracted positions for locating said second lens in its operative position.

Re. 30,232

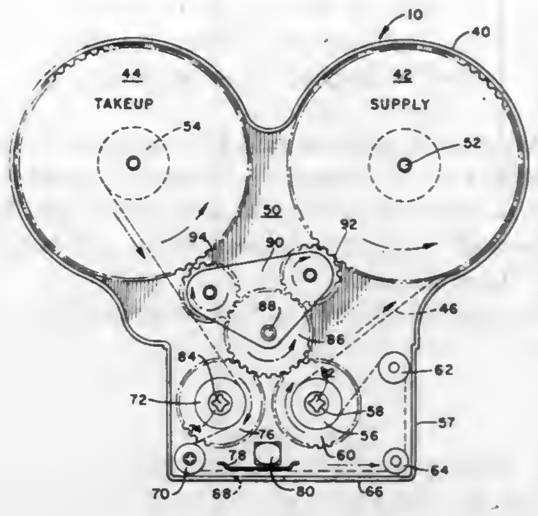
LARGE CAPACITY FILM CASSETTE

Joseph H. Wright, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Original No. 4,018,518, dated Apr. 19, 1977, Ser. No. 531,340, Dec. 10, 1974. Application for reissue Aug. 14, 1978, Ser. No. 933,721

Int. Cl.^{2} G03B *23/02*

U.S. Cl. 352—78 R **8 Claims**



1. A large capacity film cassette for use with projection apparatus having a cassette-receiving well of a size and configuration to receive a limited capacity cassette which includes a pair of radially spaced film strip reels mounted for rotation around parallel axes, and the apparatus including a pair of drive sprockets engagable with the reels of such a limited capacity cassette to effect forward and rewind operation of said reels, said large capacity film cassette comprising:

a large capacity supply reel and large capacity take-up reel;

a housing enclosing and supporting said supply reel and take-up reel in **[**radially**]** spaced relation for rotation **[**around parallel axes**]**, said housing having a projector mounting tongue portion of a size and shape to be received in the receiving well of the projecting apparatus;

means within said housing for guiding a film strip between said supply reel and take-up reel and through an operative projection station within said tongue portion; and

transmission means within said housing for coupling the drive sprockets of the projection apparatus with either said supply reel or said take-up reel while said tongue portion is received in the well, said transmission means including means shiftable between engagement with either said take-up reel or said supply reel in accordance with the direction of rotation of the drive sprockets to effect driving coupling of the drive sprockets respectively therewith during forward and rewind driving operations, and said transmission means comprising a pair of shiftable gears alternately engagable with either said supply reel or said take-up reel, and rocker means for supporting said shiftable gears so that one of said pair of gears engages said take-up reel for rotation thereof to take up the film strip during forward operation and the other of said pair of gears engages said supply reel for rotation thereof during rewind operation of the projection apparatus.

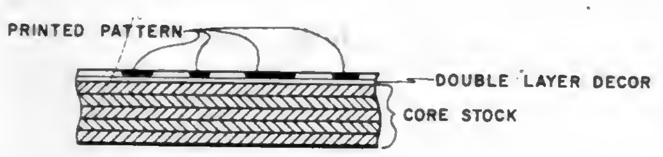
Re. 30,233
MULTIPLE LAYER DECORATED PAPER, LAMINATE PREPARED THEREFROM AND PROCESS

William C. Lane, Chillicothe, Ohio, and Donald E. Moffatt, Lee, Mass., assignors to The Mead Corporation, Dayton, Ohio

Original No. 3,798,111, dated Mar. 19, 1974, Ser. No. 237,952, Mar. 24, 1972. Continuation-in-part of Ser. No. 147,839, May 28, 1971, abandoned. Application for reissue Jul. 29, 1975, Ser. No. 600,154

Int. Cl.² B32B *5/16*

U.S. Cl. 428—207 **22 Claims**



1. An abrasion resistant laminate comprising a core and a resin impregnated cured decorated surface paper, said surface paper, prior to resin impregnation comprising

(a) a paper base layer;

(b) a top layer integral with said base layer and comprising from about 2 to 100 percent by weight of abrasion resisting mineral particles having a hardness of from 7 to 10 on the Moh scale and an average particle size ranging from 10 to 75 microns, and

(c) printing applied on the exposed outer surface of said top layer.

Re. 30,234
POLYMERIC COMPOSITIONS

Keith G. Sampson, Clophill; Victor F. Jenkins, St. Albans, and Anthony J. Bunker, Tickhill, all of England, assignors to Laporte Industries, Limited, Luton, England

Original No. 4,005,155, dated Jan. 25, 1977, Ser. No. 547,215, Feb. 5, 1975. Division of Ser. No. 311,528, Dec. 4, 1972, abandoned. Application for reissue Jan. 18, 1979, Ser. No. 4,492

Claims priority, application United Kingdom, Dec. 9, 1971, 57175/71

Int. Cl.² C08L *31/02, 33/14, 61/20, 61/28*

U.S. Cl. 525—162 **7 Claims**

1. A process for the preparation of a crosslinked modified copolymer having the desirable combination of flexibility, hardness and chemical durability which comprises:

a. reacting together at least two ethylenically unsaturated monomers at least one of which is an ethylenically unsaturated hydroxyalkyl ester of formula $CH_2{=}CR_1{-}COOR_2$ in which R_1 is H or an alkyl group and R_2 is an alkyl group to which one or more $-CH_2OH$ groups are attached, to form a copolymer,

b. modifying said copolymer by reacting it with from 10% to 60% by weight of an epsilon caprolactone, and

c. crosslinking the modified copolymer of (b) with from 10% to 40% by weight of an amino resin selected from the group consisting of urea formaldehydes, melamine formaldehydes and benzoguamine formaldehydes.

Re. 30,235
PHOTOSENSITIVE COLORANT MATERIALS

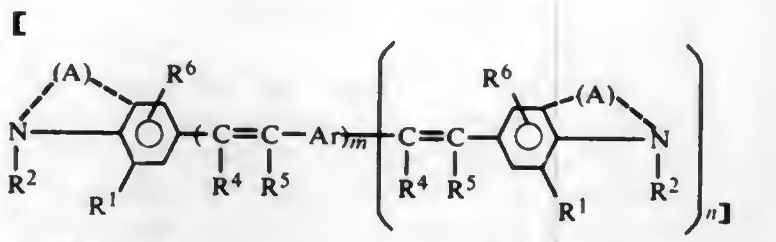
Hal E. Wright, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

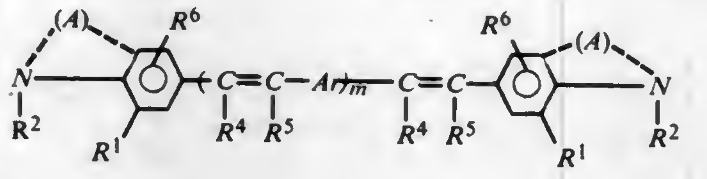
Original No. 4,012,376, dated Mar. 15, 1977, Ser. No. 645,067, Dec. 29, 1975. Application for reissue Dec. 15, 1978, Ser. No. 970,025

Int. Cl.² C07D *401/10*

U.S. Cl. 542—447 **4 Claims**

1. An electrically photosensitive colorant having the formula:





wherein

[n represents 0 or 1;] m represents the integer 1 or 2;

Ar represents a substituted or unsubstituted aromatic ring group, free from any saturated N-heterocyclic ring group fused thereto, having 6 to 20 ring atoms in the aromatic ring;

A represents a substituted or unsubstituted alkylene group having 2 to 5 carbon atoms in the alkylene chain;

each of R^1 and R^2, when taken together, represents a substituted or unsubstituted alkylene group having 2 to 5 carbon atoms in the alkylene chain;

each of R^1, R^4, R^5, and R^6, when taken alone, represents hydrogen, nitro, cyano, halogen, alkoxy having 1 to 8 carbon atoms, substituted or unsubstituted alkyl having 1 to 8 carbon atoms in the alkyl group, substituted or unsubstituted phenyl, carboxy ester having 1 to 4 carbon atoms, or an amide having the formula:

$$-CONR_2^7$$

wherein

R^7 represents hydrogen or substituted or unsubstituted phenyl or substituted or unsubstituted alkyl having 1 to 8 carbon atoms in alkyl group; and

R^2, when taken alone, represents hydrogen, substituted or unsubstituted alkyl having 1 to 8 carbon atoms in the alkyl group, or substituted or unsubstituted aromatic ring group havng 6 to 20 carbon ring atoms.

PLANT PATENTS

GRANTED MARCH 18, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,511
ALGA STRAIN

Mordhay Avron, Rehovot, and Ami Ben-Amotz, Ramat Gan, both of Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 918,802, Jun. 26, 1978. This application Oct. 20, 1978, Ser. No. 955,007

Int. Cl.² A01H *13/00*

U.S. Cl. Plt.—89 **1 Claim**

1. A new and distinct variety of alga of the genus Dunaliella, named *Dunaliella bardawil,* substantially as herein shown and described, characterized by the fact that when grown outdoors in a thin layer the cells are bright orange, the cells containing up to 9% dry weight of carotene and up to 50% glycerol.

4,512
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Dec. 14, 1978, Ser. No. 969,449

Int. Cl.² A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are (1) dark red, similar to Honest Abe (miniature—plant patent pending) in color, the buds and flowers resembling June Time (miniature—U.S. Plant Pat. No. 2,563) in size and shape and (2) the bud (sepals) being lightly covered with short moss, said moss being soft to the touch and further characterized by a plant which is vigorous and compact, easy to propagate from softwood cuttings or by budding, with an abundance of flowers borne singly or several to the stem in loose clusters.

PATENTS

GRANTED MAR. 18, 1980

ERRATA

For CLASS	See PATENT NO.
433-177	4,193,194
433-013	4,193,195
433-082	4,193,196
433-082	4,193,197
433-077	4,193,198
339-098	4,193,201
057-222	4,193,239
368-034	4,193,255
368-074	4,193,256
084-484	4,193,257
029-593	4,193,287
410-007	4,193,349
410-064	4,193,350
114-144 C	4,193,432
126-430	4,193,543
312-280	4,193,652
455-154	4,193,686
430-213	4,193,795
430-258	4,193,797
430-300	4,193,798
430-319	4,193,799
430-139	4,193,802
430-353	4,193,804
435-182	4,193,845
260-586 C	4,193,878
548-132	4,193,922
424-308	4,193,931
525-002	4,193,945
424-283	4,194,029
528-067	4,194,035
528-182	4,194,038
546-146	4,194,044
546-209	4,194,045
546-259	4,194,046
548-312	4,194,048
548-336	4,194,049
560-041	4,194,050
560-060	4,194,051
560-155	4,194,052
560-176	4,194,053
562-493	4,194,054
562-503	4,194,055
562-517	4,194,056
585-011	4,194,057
585-455	4,194,058
371-020	4,194,113
455-076	4,194,151
455-031	4,194,152
455-031	4,194,153

ERRATA—Continued

For CLASS	See PATENT NO.
455-114	4,194,154
455-345	4,194,155
455-214	4,194,156
455-348	4,194,157
455-333	4,194,158
455-179	4,194,159

PATENTS

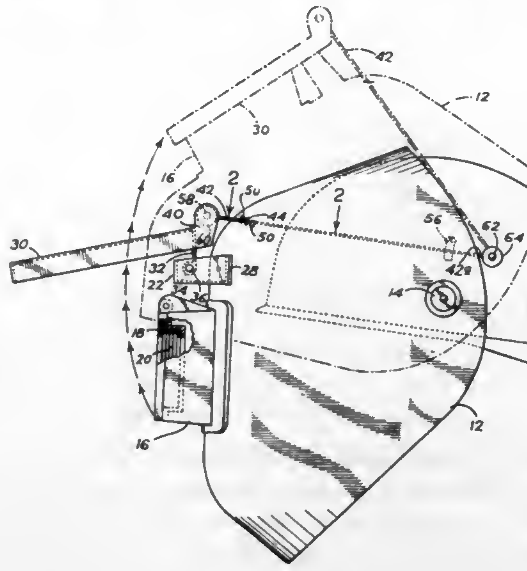
GRANTED MARCH 18, 1980

GENERAL AND MECHANICAL

4,193,132

RAIN-SHIELDED WELDER'S MASK

Edwin E. Peterson, 4109 Chenowith, The Dalles, Oreg. 97058
Filed Sep. 25, 1978, Ser. No. 945,552
Int. Cl.^{2} A61F *9/06*
U.S. Cl. 2—8 **6 Claims**



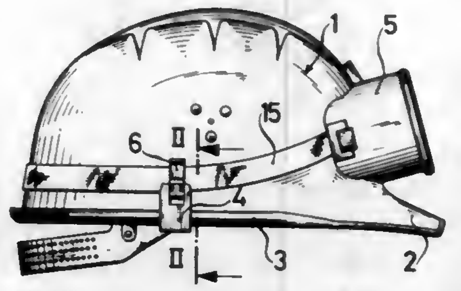
1. A rain-shielded welder's mask assembly comprising in combination:
- (a) a head piece,
- (b) a welder's mask with outwardly projecting eye piece,
- (c) first pivotal mounting means releasably attaching the mask to the head piece for relative angular movement between raised inoperative and lowered operative mask positions,
- (d) a dished rain shield dimensioned to nest over the eye piece,
- (e) a gutter secured to the mask above the eye piece,
- (f) pin hinge means connecting the rain shield to the gutter for angular movement between a rain shield raised position in which it extends substantially horizontally above the eye piece when the mask is lowered and a rain shield lowered position in which it nests over the eye piece when the mask is raised,
- (g) a lever extending upwardly from the inner end of the rain shield,
- (h) a substantially rigid link, and
- (i) detachable grommet-type connecting means connecting the respective ends of the link one to the lever and the other to the head piece,
- (j) the link extending rearwardly from the rain shield through an opening in the mask and thence rearwardly between the mask and head piece to its rearward connection to the head piece.

4,193,133

DETACHABLE HELMET GOGGLE BRACKET

Friedrich Laibach, Haan, and Paul Hoebink, Solingen, both of Fed. Rep. of Germany, assignors to Fondermann & Co., Haan, Fed. Rep. of Germany
Filed Apr. 10, 1978, Ser. No. 895,198
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1977, 7711402[U]
Int. Cl.^{2} A61F *9/00;* **A44B** *11/04*
U.S. Cl. 2—10 **10 Claims**

1. A bracket for detachably securing a retaining strap of safety goggles to a safety helmet having a rim projecting laterally about at least a portion of said helmet, said bracket comprising
- (a) a resilient U-shaped member having a U-portion and a pair of spaced limbs extending therefrom and adapted to extend about said rim with said U-portion contacting said rim and said limbs extending along the interior and exterior sides of said helmet;
- (b) one of said limbs, adapted to extend along the exterior side of said helmet, being bifurcated providing spaced bifurcated ends; and
- (c) a clamp lever pivotally mounted between said bifurcated ends of said one limb of said U-shaped member and including at least one elongated arm, said clamp lever defining a passage through which said retaining strap of said safety goggles extending about said safety helmet passes;

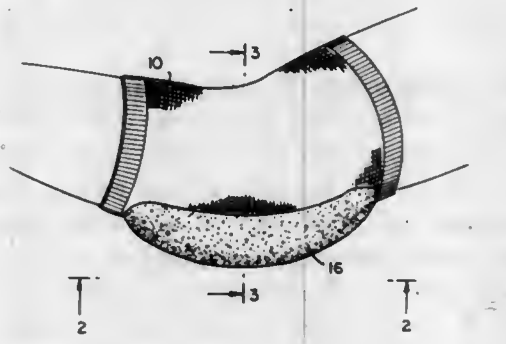


- (d) said clamp lever including said arm being adapted to pivot between an initial position wherein said rim of said safety helmet may be passed between said limbs and into contact with said U-portion of said member and a locking position wherein said one arm is pressed against the exterior side of said helmet and projects towards said U-portion of said member such that said rim of said helmet is retained between the end of said one arm and said U-portion of said member.

4,193,134

PROTECTIVE DEVICE WITH INTEGRALLY MOLDED PAD

James R. Hanrahan, Fairfield, Conn., and Richard G. Levine, Lawrence, N.Y., assignors to Bristol-Myers Company, New York, N.Y.
Filed Mar. 4, 1977, Ser. No. 774,377
Int. Cl.^{2} A41D *13/08*
U.S. Cl. 2—16 **6 Claims**



1. A body-protecting pad comprising:

a hydrokinetic sleeve of a knit fabric having an internal hydrophobic yarn and an external surface at least partially comprised of a hydrophilic yarn;

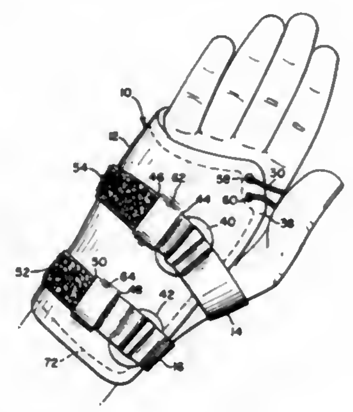
an integral, hydrophilic polyurethane pad molded and foamed in situ into said external surface of said sleeve so as to be bonded to and at least partially embedded in said sleeve;

whereby moisture can be wicked away from the wearer, through the fabric, and into the pad.

4,193,135

PROTECTIVE DEVICE FOR THE HAND

Jhoon G. Rhee, 4068 Rosamora Ct., Arlington, Va. 22207
Filed May 12, 1978, Ser. No. 905,470
Int. Cl.² A41D *19/00*
U.S. Cl. 2—162 **14 Claims**

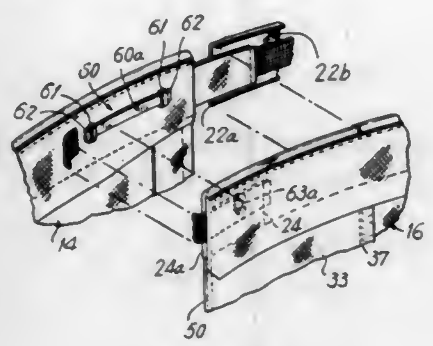


1. A protective device for a person's hand, palm and wrist having a generally rectangular shape of a person's hand and a sandwich-like construction comprising an outer layer of a tough, pliable material, an inner layer of energy absorbing material, and a bendable stiffening member, which is bendable about a palm and wrist, interposed between said outer and inner layers, the peripheral edges of said outer and inner layers being held together and the peripheral edges of said stiffening member disposed near said peripheral edges of said inner and outer layers, said device including securing means for retaining the device on a wearer's hand.

4,193,136

SPLIT WAISTBAND PANTS

Kenney J. Pierce, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.
Filed Mar. 22, 1978, Ser. No. 888,957
Int. Cl.² A41F *9/02*
U.S. Cl. 2—237 **7 Claims**

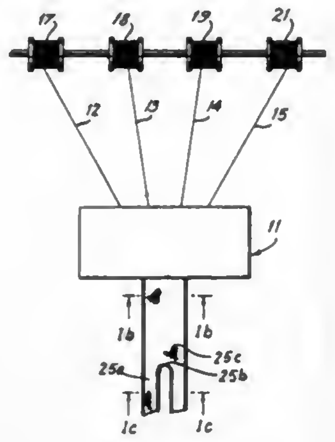


1. A split waistband pants comprising a left pant leg and a right pant leg, and for each leg a front panel and a rear panel, said front and rear panels terminating in a split waistband, a split waistband portion for each of said panels, a pocket along an exterior seam between each of said front panels and rear panels, said pocket securedly attached to said waistband portions for said front panel and said rear panel with a split in said pocket pouch therebetween, said pocket further securedly attached to the front panel of said pant legs and to the rear panel of the pant leg at the side seam thereof, an elastic member in said waistband for said front panel secured at said waistband portion of said rear panel, an elastic member for said rear panel portion of said waistband secured at one end to the waistband portion of said front panel on an interior portion therefor and on the other end thereof terminating in the waistband portion of said waistband for the rear panel thereof, means for an unrestrained slidable attachment of each of said waistband portions for said rear panels and front panels to each other, and means for restricting said slidable attachment from slidably exceeding a predetermined limiting distance.

4,193,137

WARP-KNITTED DOUBLE-VELOUR PROSTHESIS

Rudolf N. Heck, Ringwood, N.J., assignor to Meadox Medicals, Inc., Oakland, N.J.
Filed May 6, 1977, Ser. No. 794,481
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.4 **19 Claims**

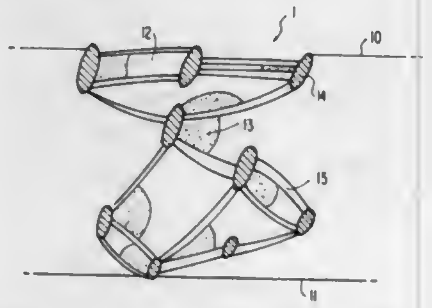


1. A warp-knitted prosthesis, comprising a trellis, pile velour exterior to said trellis and pile velour interior to said trellis, said pile velour being in the form of loops protruding from said trellis, said trellis consisting of a flat thread of synthetic fiber warp-knitted in closed stitch, and said pile velour consisting of a texturized thread of synthetic fiber in open stitch passing through said trellis to form loops interior to and exterior to said trellis, said interior and exterior loops being continuous with each other for facilitating ingrowth of tissue from the exterior of said prosthesis to the interior thereof, the combination of a trellis warp-knitted of flat thread in closed stitch and a velour of texturized thread in open stitch providing minimum porosity, appropriate rigidity for functioning as a prosthesis and extremely fine hand.

4,193,138

COMPOSITE STRUCTURE VASCULAR PROSTHESES

Koichi Okita, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Aug. 17, 1977, Ser. No. 825,513
Claims priority, application Japan, Aug. 20, 1976, 51-99808; Jul. 1, 1977, 52-79387
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.4 **28 Claims**



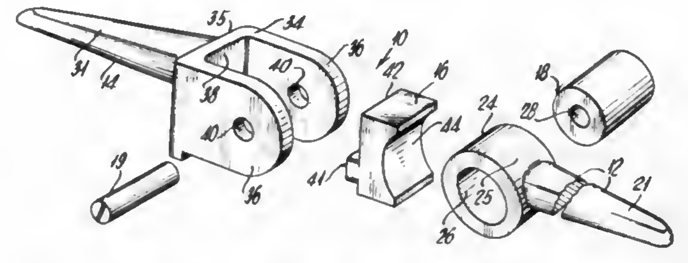
1. A composite structure vascular prosthesis comprising a porous polytetrafluoroethylene tube in which the pores of the porous polytetrafluoroethylene tube are filled with at least one water-insolubilized water-soluble polymer.

4,193,139

PROSTHETIC FINGER JOINT

Peter S. Walker, Ridgewood, N.J., assignor to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Mar. 8, 1978, Ser. No. 884,786
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.91 **17 Claims**

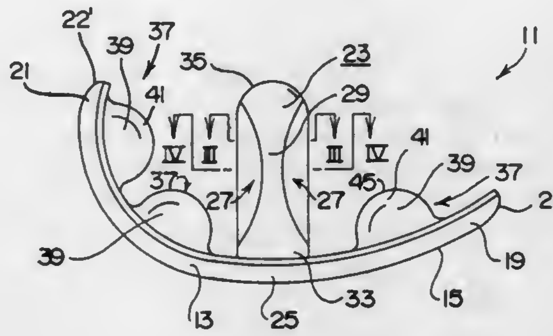
10. A prosthetic finger joint comprising: a first component adapted to be associated with a first bone of the finger, said first component having an arcuate bearing surface at one end thereof, said first component including means for allowing said first component to pivot on said bearing surface; a second component adapted to be associated with a second bone adjacent to said first bone, said second component having a terminal portion at one end facing toward said arcuate bearing surface, said terminal portion having rigid wall means defining an open-ended socket, said wall means including means therewith for cooperating with said pivot allowing means of said first component to allow pivoting of said first component with respect to said second component; and a third component having an arcuate bearing surface mating with said arcuate bearing surface on said first component, said third component fixedly located in said open-ended socket so that said wall means embraces the same and so that there is no relative movement between said second and third components, said mating bearing surfaces cooperating to carry the loading forces of said finger joint in use.



4,193,140

KNEE PROSTHESIS

Harry T. Treace, Forest Hill, Tenn., assignor to Richards Manufacturing Company, Inc., Memphis, Tenn.
Filed Dec. 19, 1975, Ser. No. 642,369
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.911 **2 Claims**



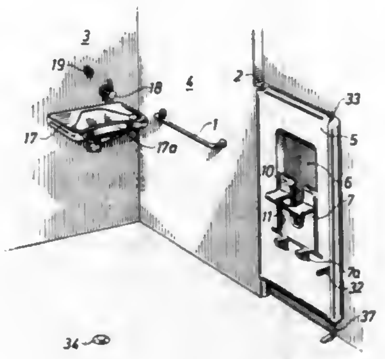
1. A knee prosthesis for implanting with cement in a human knee comprising:

(a) a single curved elongated body portion having upper and lower surfaces, and having posterior and anterior ends;
(b) single post means fixedly attached to said curved body portion intermediate said posterior and anterior ends and extending generally upwardly from said upper surface for interaction with the cement with which used to resist in and of itself all twisting forces which might be encountered in the use of the prosthesis and to resist tension and compression forces, said post means in cross section along a substantial portion of the length thereof is cross shaped and said post means is of a reduced size in cross-sectional area at a midportion halfway between the upper and lower ends thereof, and with said post means increasing in cross-sectional size from said midportion towards said upper and lower ends; and
(c) at least one cement holding means of less height than said post, fixedly attached to said body portion and extending in a direction generally remote from said lower surface for interaction with the cement with which used to provide support to said body portion and to resist tension and compression forces along a substantial portion of the length of said body portion.

4,193,141

REST ROOM, ESPECIALLY FOR DISABLED PERSONS

Ralf H. S. Rosenberg, and Morgan H. O. Ferm, both of Göteborg, Sweden, assignors to Ifo Sanitar AB, Bromolla, Sweden
Filed Sep. 25, 1978, Ser. No. 945,712
Claims priority, application Sweden, Sep. 28, 1977, 7710825
Int. Cl.² A47K *17/00, 3/22, 11/08*
U.S. Cl. 4—1 **4 Claims**

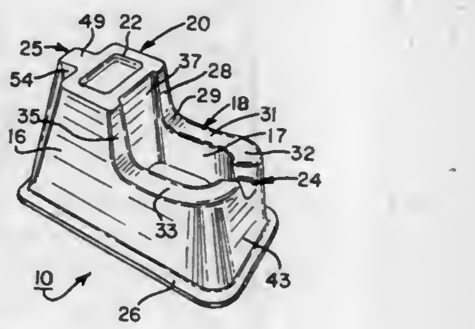


1. A restroom for disabled persons comprising:
(a) a first wall;
(b) a sanitary fixture **(17)**;
(c) a seat carried by said first wall;
(d) a hand shower nozzle;
(e) said first wall comprising means for selectively positioning said seat in an upper vertical and a lower horizontal position;
(f) said seat further comprising a central opening **(10)** to form a bidet in said lower horizontal position allowing the introduction of said hand shower into the space below said opening;
(g) said seat further comprising a cross-member **(11)** projecting into said room when said seat is in said upper vertical position;
(h) said cross-member having a support surface adapted to support a semi-sitting person; and
(i) said first wall having means attached thereto for swinging said first wall about a vertical axis between a first position permiting a disabled person to sit on or rise from said seat, and a second position whereat said seat is opposite said sanitary fixture.

4,193,142

CHILD'S TOILET APPARATUS

Bernadine Henningfield, 326 W. Jefferson St., Elkhorn, Wis. 53121
Filed Sep. 25, 1978, Ser. No. 945,227
Int. Cl.² A47K *11/02*
U.S. Cl. 4—141 **4 Claims**



1. A child's toilet apparatus comprising a body having an axis of elongation and a base defining a first plane adapted to rest upon a horizontal surface, said body having a pedestal portion at one end extending from the first plane to a first

surface disposed in a second plane parallel to the first plane and a receptacle portion at the other end extending from the first plane to a second surface disposed in a third plane parallel to the first plane, said third plane being disposed between the first and second planes, the second surface being provided with a recess extending therein to form a receptacle portion, said receptacle having spaced opposite walls generally parallel to the axis of elongation of the body extending between the base and the second surface, whereby the second surface forms seat portions on opposite sides of the receptacle for supporting the child, the pedestal portion extending from the receptacle portion and having spaced opposite sides generally parallel to the axis of elongation of the body extending between the base and the first surface, the sides of the pedestal portion being spaced from each other by a distance less than the distance between the walls of the receptacle portion to permit the child to comfortably position its legs on opposite sides of the pedestal portion with its feet resting on the horizontal surface while sitting on the second surface of the receptacle portion, the first surface being above the second surface to provide a convenient position for the hands of the child and the pedestal portion having a third surface extending between the first and second surfaces confronting the recess forming a splash guard; and further including a groove disposed in the second surface extending from the receptacle on the side thereof opposite the pedestal portion to form a pouring spout; and further including handle means disposed on the pedestal portion of said body to facilitate pouring operations; and wherein said handle means is in the form of an outwardly projecting flange on said pedestal portion having a pair of finger hold recesses on opposite sides thereof; and further including a recess in the upper surface of said pedestal portion for storing and supporting articles of amusement; and wherein said flange includes a pair of side parallel spaced apart portions extending from said pedestal portion rearwardly and inclined gradually upwardly therefrom.

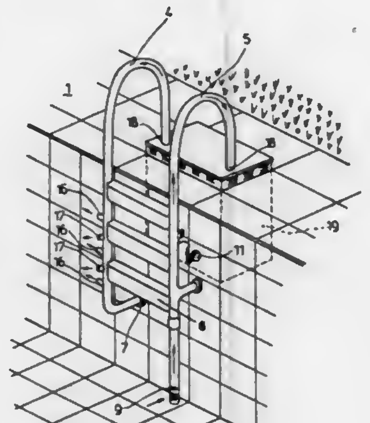
4,193,143
SWIMMING POOL STEPS AND WATER CIRCULATING ARRANGEMENT FOR SWIMMING POOLS

Claudio Werneck De Carvalho Vianna, Rua Santa Alexandrina, 900 Apt. 101, Rio Comprido Rio de Janeiro, Brazil

Filed Oct. 27, 1977, Ser. No. 846,097

Int. Cl.² E04H *3/20*

U.S. Cl. 4—172.17 **5 Claims**



1. Swimming pool steps comprising first and second lateral handrails and a plurality of steps connecting said handrails, said handrails comprising pipe members having respective return curves at first ends thereof for fixture to the edge of a swimming pool, said first handrail having a second lower end provided with a telescopically fitted sleeve to adjust the length of said first handrail so that said lower end abuts the bottom of the pool, said sleeve being provided with orifice means adjacent its free end, said second handrail having a closed lower end and, along the mid-section thereof, first and second series of ports, said first series being laterally directed away from said steps in a horizontal direction substantially in a plane defined by said plurality of steps, said first ends of said first and second handrails being connected respectively to suction and pressure lines of pump-filter-purifier unit means, each port of each series being below the uppermost of level of water in the pool, the ports of said second series being distributed along said midsection of said second handrail between said ports of said first series and at a forward angle of approximately 45° with respect thereto, said ports of said second series being of smaller diameter than said first series of ports.

4,193,144
LAVATORY SEAT

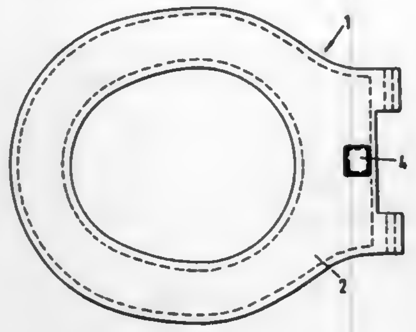
Ronald McNally, 29 Lewis St., Bedlinog, Treharris, Mid Glamorgan, Wales

Filed Jul. 3, 1978, Ser. No. 921,673

Claims priority, application United Kingdom, Jul. 6, 1977, 28201/77

Int. Cl.² A47K *13/00, 13/30*

U.S. Cl. 4—229 **4 Claims**



1. A lavatory seat having an outer surface including a body supporting surface and a surface for resting adjacent a lavatory bowl when the body supporting surface is supporting a body, a mass of material forming said outer surface and means defining a disinfectant passage communicating with said mass of material, the improvement being comprised in that said body supporting surface is imperforate, said material mass being a homogeneous, nonporous mass of plastics material permeable by said disinfectant liquid and bounded at least by said body supporting surface and passage for absorbing liquid disinfectant from said passage and migrating said liquid disinfectant therethrough and through said imperforate body supporting surface and therewith for uniform, non-wetting disinfection continuously across said body supporting surface.

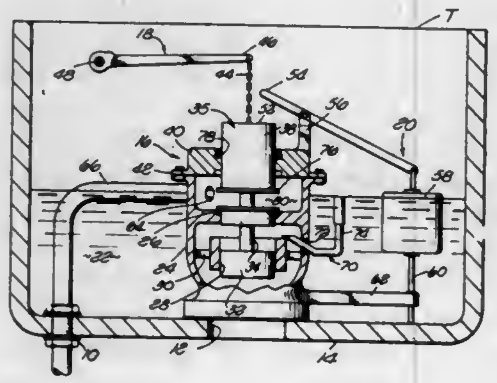
4,193,145
TOILET FLUSHING VALVE MECHANISM

Gary Gross, and James F. Thies, both of N. Hollywood, Calif., assignors to Garon Processing Co., North Hollywood, Calif.

Filed Jun. 29, 1978, Ser. No. 920,570

Int. Cl.² E03D *1/36;* F16K *31/18*

U.S. Cl. 4—346 **3 Claims**



1. A toilet flushing valve mechanism for use in a tank connected to a source of flushing fluid under pressure, and defining an outlet to a bowl, comprising:

a housing defining an inlet port adapted to be connected to said source of flushing fluid and further defining a vertical valve chamber extending transverse to said inlet port, said chamber being coupled through said outlet to said bowl;

a multiple land spool valve positioned in said valve chamber and having spaced apart land means with said inlet port coupled to the space therebetween, one of said lands for mating with said chamber to close said outlet to said bowl;

activating means for displacing said spool valve to open said outlet to said bowl;

float means in said tank for moving said spool valve to close said outlet to said bowl under control of the water level in said tank; and

a tube means, defining a passage from a location inside said vertical valve chamber and below said spool valve to a location outside said vertical valve chamber in said tank, said tube means for carrying a bleed-off flow from said inlet port when said spool valve is open during a flushing operation to raise the water level in said tank, said tube further defining an opening outside said vertical valve chamber at the normal water level in said tank to after fill said toilet with water from said tank received therein through the tube means during the flushing operation.

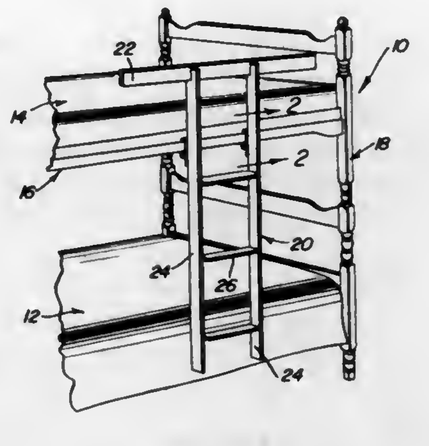
4,193,146
BUNK BED LADDER BRACKET

Harry Fredman, and Irving N. Fredman, both of 908 SW. Washington, Peoria, Ill. 61602

Filed Apr. 13, 1978, Ser. No. 896,205

Int. Cl.² E06C *1/36*

U.S. Cl. 5—8 **10 Claims**



1. In combination with a bunk bed assembly including a leg supported upper bed having a generally horizontally disposed bed rail and a ladder extending vertically alongside the bunk bed assembly to enable access to the upper bed, that improvement comprising bracket means supporting the ladder from the bed rail, said bracket means including means engaging the upper edge of the bed rail and means engaging the lower edge of the bed rail to prevent accidental disengagement of the ladder from the bed rail and to prevent longitudinal sliding movement of the ladder in relation to the bed rail, said bracket means including a separate bracket structure mounted on each stile of the ladder, said means engaging the upper edge of the bed rail including a terminal end of a bracket strap overlying the top edge and engaging the inner surface of a vertical flange of a right angled bed rail, the means engaging the bottom edge of the bed rail including a strap having a hook-shaped end engaging the inner edge of the horizontal flange of the bed rail and an opposite end connected with the stile of the ladder to prevent relative vertical movement between the ladder and rail and prevent relative twisting between the ladder and rail, said strap engaged with the vertical flange of the rail extends to a point below the rail with the strap engaging the lower flange of the rail being secured to the lower portion of the vertical strap, said vertical strap including two offset portions disposed at different vertical levels for engaging the bottom flange of two different size bed rails, said offset portions having fastener receiving means thereon at two laterally spaced positions to enable the horizontal strap to engage with two different size bed rails.

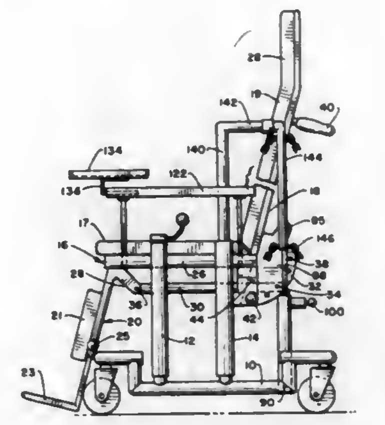
4,193,147
CANTILEVERED LIFTING AND TRANSPORTING DEVICE

Edwin L. Fischer, 22035 W. Carbon Mesa Rd., Malibu, Calif. 90265

Filed Jul. 10, 1978, Ser. No. 922,940

Int. Cl.² A61G *5/00*

U.S. Cl. 5—81 R **17 Claims**



1. A convertible lifting and transporting device comprising:

a U-shaped base having the ends joined by one side;

a pair of vertical supports mounted on said one side;

a horizontal frame attached to said vertical supports having a seat;

a back rest rotatably mounted on one side of said seat;

a leg rest rotatably mounted on the other side of said seat;

said vertical supports including means for raising and lowering said horizontal frame, back rest and leg rest;

rotatable means rotatably joining the back rest to the leg rest whereby said back and leg rests may be simultaneously rotated from a substantially vertical position to a horizontal position parallel with said seat to form a stretcher; and

lock means for locking said lifting and transporting device in the upright or flat position.

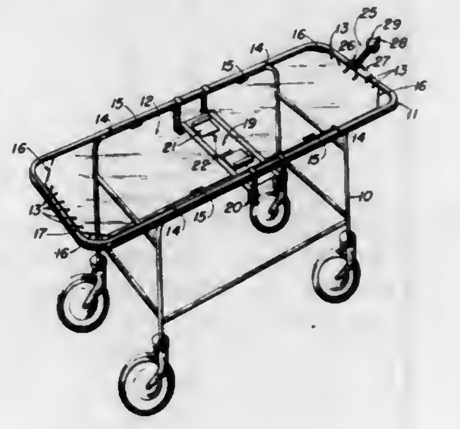
4,193,148
TRANSPARENT RADIATION PENETRABLE STRETCHER PANEL

Charlie D. Rush, Rte. 4, Box 324E, Albany, Ga. 31701

Filed Aug. 21, 1978, Ser. No. 935,626

Int. Cl.² A61G *7/10*

U.S. Cl. 5—86 **9 Claims**



7. A combined stretcher and x-ray examination table for emergency patients comprising in combination a wheeled stretcher base, an upper horizontal stretcher frame detachably secured to said base, and a light transparent and radiation penetrable patient support panel secured to and held taut within the confines of the upper stretcher frame and being

liftable as a unit with said stretcher frame; whereby said patient may be visually observed through said panel.

4,193,149
BEDS AND MATTRESSES

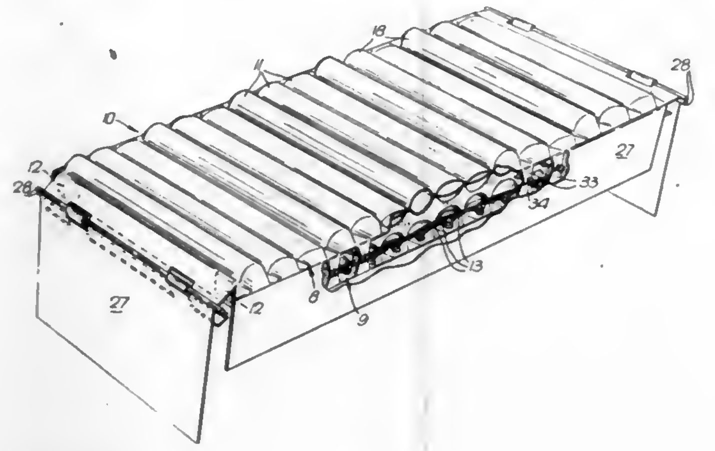
Robert J. D. Welch, 20 Abercorn Pl., St. John's Wood, London NW. 8, England

Filed Mar. 27, 1978, Ser. No. 890,459

Claims priority, application United Kingdom, Mar. 29, 1977, 13223/77

Int. Cl.² A61H *1/00;* **A61G** *7/10*

U.S. Cl. 5—447 **14 Claims**



1. A mattress comprising a plurality of inflatable tubes each of which extends across the mattress, said tubes being arranged in at least two layers wherein the tubes of each said layer are in side by side arrangement and said tubes of each said layer are divided into a plurality of arrays so that all the tubes of each respective array are inflatable in common and, means for aligning the tube of the respective layer of tubes such that the tube in use, are disposed in substantial vertical alignment with the tubes of in another layer.

4,193,150
ELEVATED MATTRESS

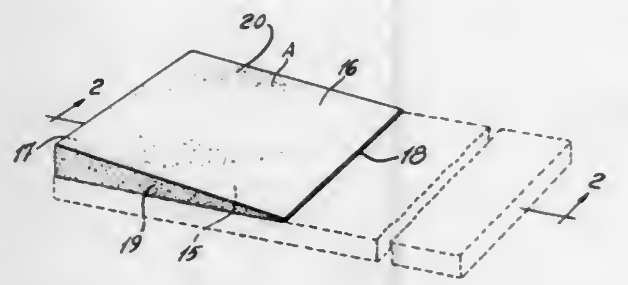
Arthur Vineberg, 3170 Delavigne, Montreal, Quebec, Canada

Filed Jul. 21, 1978, Ser. No. 926,634

Claims priority, application Canada, Aug. 4, 1977, 284083

Int. Cl.² A47G *9/00;* **A61G** *7/06;* **A47C** *27/14*

U.S. Cl. 5—431 **3 Claims**



1. An auxiliary elevated mattress, comprising,
a one piece wedge-shaped integral homogeneous supportive body entirely of open cell resilient synthetic resin foam of which the indentation load deflection (ILD) is within the range from about 20 to about 26 based on the pounds of force for a 25% deflection in pounds force per 50 sq. inches in a sample of a size 15 inches by 15 inches by 4 inches,
said body having, extending from a head end to a foot end, a planar rectangular base surface of which the length is in the range from about 32 inches to about 42 inches, and an uninterrupted planar load-receiving surface diverging therefrom at an acute angle, a major planar head end surface having a height from about $6\frac{1}{2}$ to about $5\frac{7}{8}$ inches extending from the base surface to the load-bearing surface and a minor foot end surface having a height not greater than about one-half inch extending perpendicularly from the base surface to the load-bearing surface,
the base and load-receiving surfaces having substantially the width of a normal mattress, the length and inclination of the load-receiving surface being such as to support the head, neck and thorax of a patient reclining on the mattress with the crease in his buttocks near the foot end,
the entire base and load-supporting surfaces being of exposed raw foam whose open cells provide resistance to slippage,
the body being deflectable from about 23% to about 27% under the weight of the reclining patient.

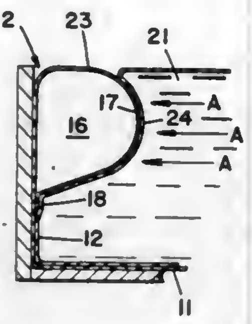
4,193,151
WATERBED SAFETY LINER

David Calleance, 1945 - 23rd Ave., San Francisco, Calif. 94116

Filed Jul. 24, 1978, Ser. No. 927,299

Int. Cl.² A47C *27/08*

U.S. Cl. 5—452 **9 Claims**



1. In a waterbed including a liquid filled bladder disposed within a supporting frame; an improved safety liner comprising a base sheet extending beneath the bladder, sidewalls extending inwardly from said base sheet and forming a coffer containing the bladder, and an inflatable chamber joined to said sidewalls and extending continuously about said coffer, said inflatable chamber including inner and lower side portions disposed superjacently of the periphery of said bladder and being buoyantly supported thereby, such that said inflatable chamber is surrounded on two sides by said bladder.

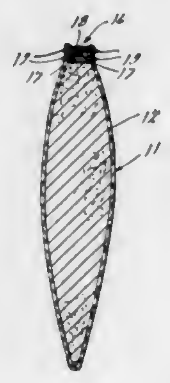
4,193,152
CLOSEABLE PILLOW, TOTE BAG AND THE LIKE

Charles R. Seibold, Jr., 202 Post & Rail Rd., Longwood, Fla. 32750

Filed Mar. 1, 1978, Ser. No. 882,414

Int. Cl.² A47G *9/00;* **A61G** *7/06*

U.S. Cl. 5—490 **7 Claims**



1. In a casing, a length of cloth-like material, a pair of Velcro strips secured at each end of the material with the locking face disposed downwardly and with the material on the top thereof, folding the material in the center to have the Velcro strips on the top of each other with the locking faces disposed outwardly, securing the side edges of the material together up to the ends of the Velcro strips, turning the resulting casing inside out with the Velcro strips in position to lockingly engage each other to close the open end of the casing, and means for securing the side edges of the Velcro strips in sealed relation to each other and the side edges of the casing.

4,193,153
LIFE JACKET

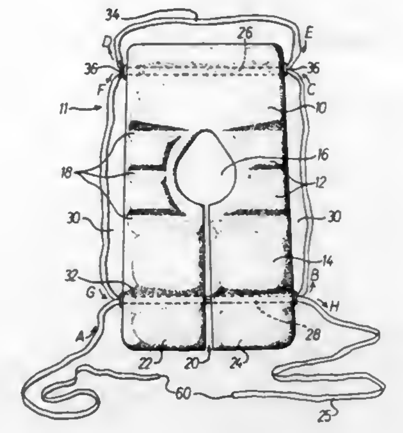
Andrew C. R. Tyrer, 144, Rupert Rd., Huyton, Liverpool L36 9TH, England, and David G. Lace, Wigan, England, assignors to R. Perry & Company Limited, Merseyside and Andrew Charles Ratcliffe Tyrer, Liverpool, both of, England

Filed Jun. 19, 1978, Ser. No. 916,754

Claims priority, application United Kingdom, Mar. 28, 1978, 11938/78

Int. Cl.² B63C *9/10*

U.S. Cl. 9—342 **19 Claims**



1. A lifejacket comprising a one-piece body member of moulded, flexible, plastic foam which includes a shoulder portion coupled to a headrest portion and to a chest portion so that when the lifejacket is in its initial unstressed state, the headrest, shoulder and chest portions are substantially coplanar, said shoulder portion defining a neck aperture, said chest portion defining a longitudinal slit which extends through from said neck aperture thereby dividing the chest portion into two similar parts, means defining a transverse bore through said headrest portion and a transverse bore through said chest portion and a one-piece tape having two free ends which pass through said transverse bores for securing the lifejacket to a wearer, the tape being threaded from a first side of the body member through said second bore in the chest portion, then through a first bore in the headrest portion from the other side of the body member, then again through said second bore in the chest portion from the first side of the member so that said two free ends of the tape extend from opposite ends of said second bore, respectively.

15. A method of manufacturing a lifejacket, which comprises a one piece body member of moulded, flexible, plastics foam which includes a shoulder portion coupled to a headrest portion and to a chest portion, means defining a neck aperture in the shoulder portion, means defining a longitudinal slit which extends through the chest portion from said neck aperture thereby dividing the chest portion into two similar parts, means defining at least two longitudinally spaced transverse bores in said headrest and chest portions, and a one piece tape which passes through said at least two longitudinally spaced transverse bores for securing the lifejacket to a wearer, said method comprising the steps of heating sheets of foam until a thermo laminable state is achieved, assembling said sheets in layers in a mould which is open around the outside but closed about an internal rim, whereby said neck aperture can be formed, subsequent compression of said mould allowing thermo-forming of the foam to take place until the jacket is cool, forming said transverse bores through the jacket and then threading said tape therethrough.

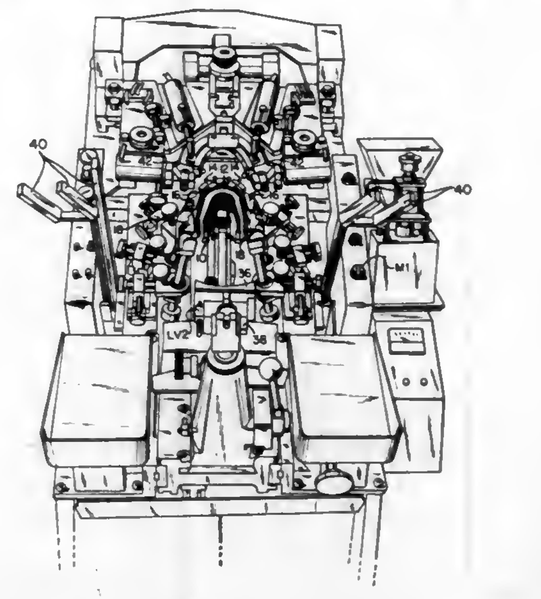
4,193,154
TOE PULLING OVER AND LASTING MACHINE

Michael M. Becka, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Aug. 25, 1978, Ser. No. 936,998

Int. Cl.² A43D *21/00*

U.S. Cl. 12—10.1 **1 Claim**



1. A toe pulling over and lasting machine operable on a shoe assembly that includes a last having an insole located on its bottom and an upper mounted thereon comprising: a support for supporting the shoe assembly bottom-down; a toe pincers operable to grip the upper margin proximate to its toe end extremity; at least one side pincers located on each side of and forwardly of the toe pincers operable to grip the upper margin heelwardly of the portion of the upper margin gripped by the toe pincers; upper stretching means for effecting relative upward movement of the support with respect to the toe and side pincers to stretch the toe portion of the upper about the last; optionally operable pincers adjusting means for thereafter selectively adjusting each of the pincers heightwise to relocate the stretched upper about the last; wiping means actuable to wipe the toe portion of the upper margin against the insole; circuit means for causing the machine to first go through a preliminary stage wherein the toe pincers are actuated to grip the upper margin, then go through a primary stage wherein the side pincers are actuated to grip the upper margin and the upper stretching means is actuated, and then go through a secondary stage that is concluded by actuation of the wiping means; a control for operating the circuit means as aforesaid; a selector movable between a first position and a second position; and circuitry so connecting the control, the circuit means, and the selector that when the selector is in its first position a first actuation of the control causes the machine to go through said preliminary stage after which the machine comes to a halt to enable the operator to place the upper margin properly in the side pincers, a second actuation of the control causes the machine to go through said primary stage and then come to a halt to enable actuation of the pincers adjusting means, and a third actuation of the control causes the machine to go through the secondary stage, and that when the selector is in its second position a first actuation of the control causes the machine to go through said preliminary stage and then come to a halt and a second actuation of the control causes the machine to automatically go through the primary stage and the secondary stage without coming to a halt between the primary stage and the secondary stage; characterized in that the selector is movable into a third position and said circuitry so connects the control, the circuit means and the selector that when the selector is in its third position a single actuation of the control causes the machine to automatically go through the preliminary stage, the primary stage and the secondary stage without coming to a halt between any of these stages.

4,193,155

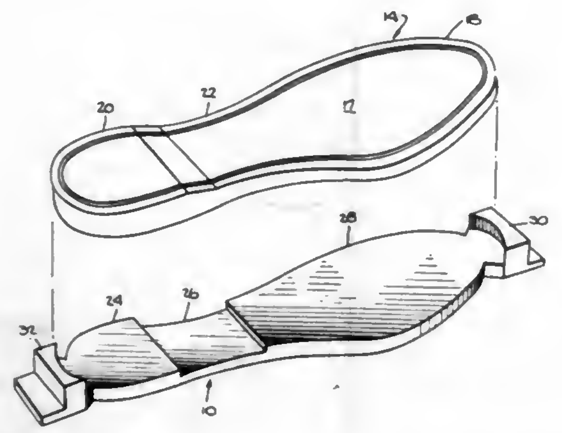
ANVIL FOR OUTSOLE SLITTING

John F. Borisuck, Naugatuck; William L. Coviello, Waterbury, and Gary W. Sheedy, Naugatuck, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 22, 1977, Ser. No. 853,936

Int. Cl.^{2} A43D *43/04;* B26D *7/20*

U.S. Cl. 12—40 **7 Claims**



1. An anvil for supporting an outsole formed from an elastomeric compound having a heel portion thicker than the sole portion during a process of imparting a multiplicity of slits to the outer surface of the heel and sole portions of said outsole, said anvil being substantially flat over most of its length, and having a sole portion and a heel portion, the sole portion extending to a greater height than the heel portion of the anvil, whereby the multiplicity of slits may be imparted to said outsole heel and sole portions by a single reciprocating cutting blade in one continuous operation without removing the outsole from the anvil or changing the position of the outsole on said anvil.

4,193,156

APPARATUS FOR CLEANING SUBMERGED SURFACES

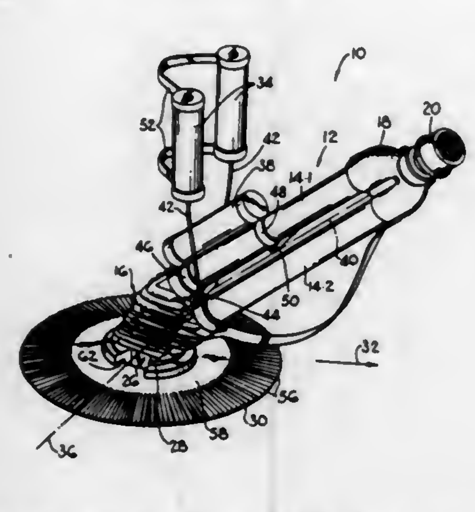
Fernand L. O. J. Chauvier, Springs, South Africa, assignor to Daniel Jean Velere Denis Chauvier, Dunnottar, South Africa

Division of Ser. No. 823,757, Aug. 11, 1977, Pat. No. 4,156,948. This application Nov. 24, 1978, Ser. No. 963,529

Claims priority, application South Africa, Aug. 19, 1976, 76/4992; Oct. 13, 1976, 76/6105

Int. Cl.^{2} E04H *3/20*

U.S. Cl. 15—1.7 **1 Claim**



1. A flexible disc for a cleaning head of an apparatus that cleans a surface submerged in a liquid, said cleaning head including a mouth engageable with the surface to be cleaned, said disc comprising

a substantially planar member fabricated from a resiliently flexible material, said member including a central aperture within which said cleaning head is receivable for detachably interconnecting said disc and said cleaning head,

a series of concertina-like folds in an outer annular portion of said disc, said concertina-like folds extending radially outward relative to said central aperture, and said concertina-like folds permitting the outer periphery of said disc to be resiliently extensible around the outer periphery of said disc, and

a series of grooves in one surface of said disc which extend from the outer periphery of said disc through said outer annular portion into an inner annular portion of said disc, said grooves also extending radially outward relative to said central aperture, and said grooves being located in that disc surface adapted to engage the surface to be cleaned,

said flexible disc cooperating with said cleaning head during use of said apparatus for retaining said mouth in cleaning proximity with the surface to be cleaned and for assisting in removal of dirt from that surface.

4,193,157

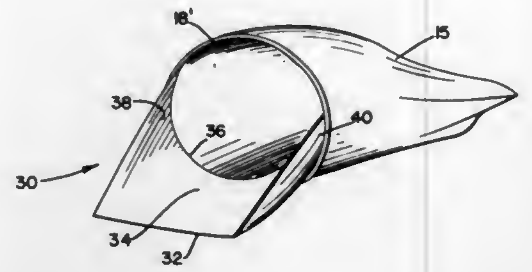
BAG SPREADER

Helen F. Large, 25 A Center St., Rumson, N.J. 07760

Continuation of Ser. No. 887,125, Mar. 16, 1978, abandoned. This application Apr. 4, 1979, Ser. No. 26,821

Int. Cl.^{2} B65B *67/12*

U.S. Cl. 15—257.1 **7 Claims**



1. A spreader for temporarily holding open the mouth of a flexible bag so as to facilitate the gathering of leaves or other debris into the bag comprising: a relatively rigid, closed circle hoop stiff enough to be shape retaining about which the opened mouth of a bag may be placed; and ground penetration means affixed to said hoop and extending laterally, outwardly therefrom, whereby said hoop may be oriented upright with respect to the ground and said ground engaging means forced into the ground to stabilize said hoop and hold the open bag in a desired orientation during introduction of said debris.

4,193,158

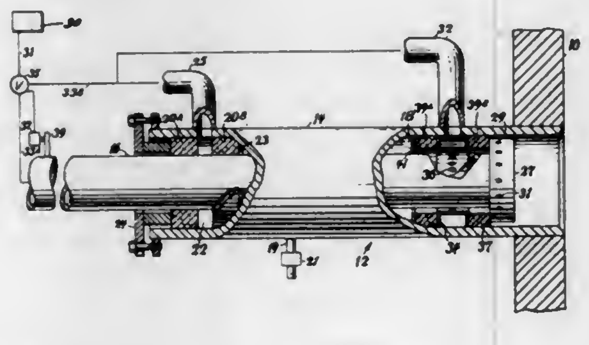
SOOT BLOWER FOR PRESSURIZED FURNACE

Henry J. Blaskowski, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 5, 1979, Ser. No. 1,342

Int. Cl.^{2} F23J *3/00;* F27D *23/00*

U.S. Cl. 15—317 **9 Claims**



1. A soot blower for removal of slag from the walls of a reactor containing pressurized gases, said soot blower comprising a conduit affixed to a wall of the reactor and adapted to extend outward therefrom, a second conduit concentrically positioned within the first conduit to provide an annular space therebetween, means supporting the second conduit for longitudinal movement within the first conduit, a cylindrical head affixed to an end of the second conduit having an imperforate end face with an apertured cylindrical periphery that is adapted to lie adjacent the inner cylindrical wall of the first cylindrical conduit, a source of pressurized fluid, means connecting the source of pressurized fluid to the second conduit for exhaust from the apertures of the cylindrical head, means for moving the second conduit longitudinally within the first conduit to move the apertured head into the reactor and exhaust fluid therefrom, and means for supplying a quantity of pressurized fluid to the annular space that lies between the first and second conduits to exclude foreign matter therefrom.

4,193,159

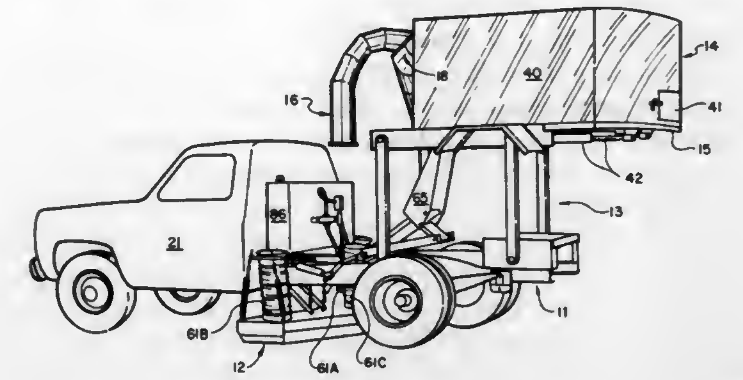
MOBILE CLEANING APPARATUS FOR REMOVING DEBRIS FROM THE SURFACE OF PARKING LOTS AND THE LIKE

Benjamin F. Beard, III, P.O. Box 22106, Charlotte, N.C. 28222

Continuation-in-part of Ser. No. 871,034, Jan. 20, 1978, abandoned. This application May 9, 1979, Ser. No. 37,480

Int. Cl.^{2} E01H *1/08*

U.S. Cl. 15—340 **20 Claims**



10. A mobile cleaning apparatus for pneumatically removing debris from the surface of parking lots and the like, comprising:

a mobile vehicle chassis;

a pickup head for collecting debis comprising outwardly extending and opposing arms having an air pressure port adjacent to the free end of each opposing arm for impinging air onto the surface to be cleaned and a vacuum port in said pickup head at the juncture of said opposing arms for removing dirt and debris from said pickup head, said pickup head being transversely carried by said vehicle chassis at a predetermined spaced relationship from the surface to be cleaned and with said opposing arms thereof being swept forwardly in the direction of forward travel of said vehicle chassis;

a hydraulically actuated bell and crank for vertically adjusting said pickup head, said bell and crank being carried by said vehicle chassis and operatively connected to said pickup head for vertically adjusting said pickup head to a predetermined distance from the surface to be cleaned;

collection hopper means movably mounted on said vehicle chassis and having a hydraulically actuated door in the bottom thereof;

a bifurcated pneumatic pressure duct having a leg thereof extending to and communicating with said air pressure port in each opposing arm of said pickup head, said pressure duct extending from said pickup head to said collection hopper means with said legs thereof being joined at the end remote from said pickup head;

a pneumatic vacuum duct connected to and communicating with said vacuum port of said pickup head, said vacuum duct extending from said pickup head to said collection hopper means;

an inverted, conical filter screen having a hydraulically driven fan positioned therewithin disposed in said collection hopper means so as to pull an air current through said filter screen, said fan communicating with the upstream end of said pressure duct and with the downstream end of said vacuum duct through said screen for creating a partially regenerated air current through said pressure duct to said pickup head for entraining debris from the surface beneath said pickup head into the air current formed therein and a suction current through said vacuum duct from said pickup head for transporting the entrained debris to said collection hopper means; and

means for raising said collection hopper means to a predetermined rearwardly raised position so that said bottom door may be opened and the debris collected within said collection hopper means dumped into a trash bin, said means for raising said collection hopper means including a pluality of parallel, rigid support legs of substantially equal length, each of said support legs being pivotally connected at one end thereof to said vehicle chassis and at the other end thereof to said collection hopper means, and a hydraulic ram lift means carried by said vehicle chassis and operatively connected to said collection hopper means.

4,193,160

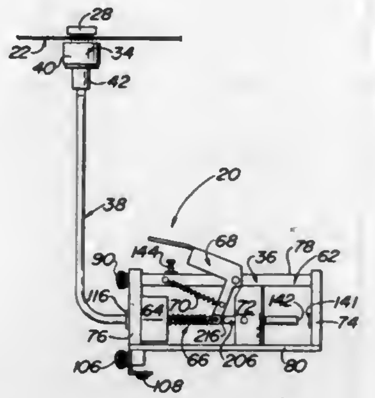
SOLDER EVACUATION UNIT

Harold F. Vandermark, Blue Bell, Pa., assignor to Nu-Concept Computer Systems, Inc., Colmar, Pa.

Filed Oct. 7, 1977, Ser. No. 840,190

Int. Cl.^{2} A47L *5/02*

U.S. Cl. 15—341 **8 Claims**



1. Apparatus for simultaneously evacuating molten solder from plural holes in a printed circuit board comprising hollow cup means for contacting said circuit board, said cup means including a resilient lip forming a mouth for the interior of said cup means, the entire periphery of said lip contacting and intimately engaging the circuit board to completely encircle the molten solder area and seal said area with said mouth, thereby isolating the molten solder area from the ambient atmosphere, and vacuum generating means for instantaneously generating a vacuum in response to actuation, said vacuum generating means being in communication with said cup means to instantaneously produce a vacuum within said cup means to thereby pull the molten solder from said holes into said cup means.

4,193,161

VACUUM APPARATUS WITH TILTING CONTAINER

Robert G. Scott, Lemont, Ill., assignor to American Cleaning Equipment Corporation of Illinois, Addison, Ill.

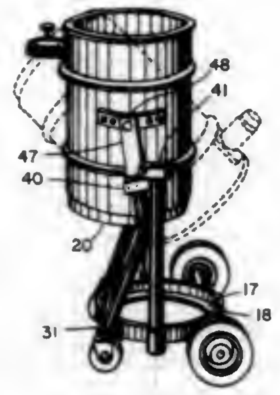
Filed Nov. 24, 1978, Ser. No. 963,316

Int. Cl.^{2} A47L *9/00*

U.S. Cl. 15—352 **4 Claims**

1. In a vacuum apparatus including a container and a power unit removably mounted to the top of the container, the improvement comprising: a base provided with support wheels; support means extending upwardly of said base and defining first and second vertical axes spaced on either side of said container; a handle of generally inverted U-shape and defining lower portions aligned coaxially with said support means and extending upwardly and rearwardly therefrom when said handle is in a use position; first connecting means for pivotally connecting the ends of said handle to said support means at a position laterally offset relative to said axes of said support

means while permitting said handle to be rotated between a use position in which said handle extends above said container and a dumping position in which said handle is rotated approximately 180° from said use position; and second connecting means for pivotally connecting said handle to said container at a location below the pivotal connection of said handle to said support means when said handle is in said use position, the pivotal connections between said handle and said container defining a horizontal axis intersecting with the vertical axes of said support means in the use position; whereby the center of gravity of the container and its contents is generally aligned with the axes of said support means in the use position and offset from said pivotal connection between said handle and support means, and said center of gravity is also laterally offset to the other side of said pivotal connection between said handle and said support means in the dumping position.



4,193,162

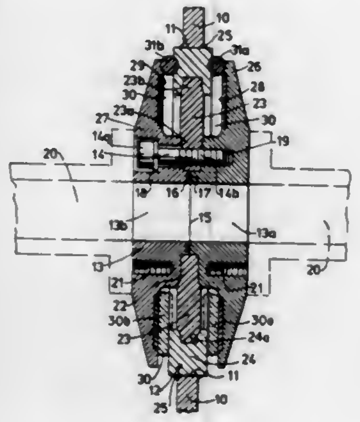
FLEXIBLE BUSHINGS

Steinar Larssen, Helldal, Norway, assignor to Patents and Developments A/S, Helldal, Norway

Filed Oct. 20, 1977, Ser. No. 843,885

Int. Cl.^{2} F16L *5/00*

U.S. Cl. 16—2 **17 Claims**



1. A pipe bushing comprising

a pair of disc-shaped steel parts fastened together along an inner annular joint surface;

an elastically yielding annular disc-shaped element clamped between said parts outwardly of said joint surface;

a steel ring concentric to and secured to said element; said ring being disposed between said steel parts to define a slot between each steel part, said steel ring and said element; and

barrier-forming means bordering said slot for filling each slot in response to heating of said means.

4,193,163

KNUCKLE JOINT HINGE

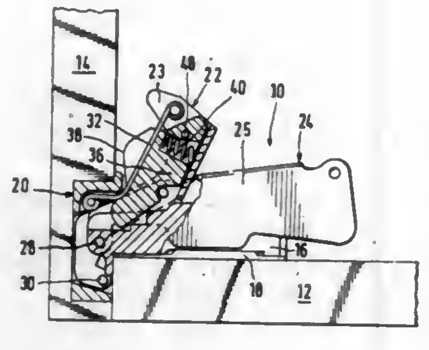
Reinhard Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,059

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721620

Int. Cl.^{2} E05D *11/00*

U.S. Cl. 16—137 **15 Claims**



1. A knuckle joint hinge for a piece of furniture having a door, said hinge having a supporting-wall part and a door part, a knuckle joint mechanism joining said parts and being formed by two link arms coupled pivotingly together in their middle area and each forming two lever arms, one of which is on the door side, one end of one link arm being articulated to the supporting-wall part and one end of the other link arm being articulated to the door part, the other end of said one link arm being guided along a curve in space and coupled to said door part, and the other end of said other link arm being guided along a curve in space and coupled to said suporting-wall part, a filler piece mounted in the portion of the knuckle joint mechanism formed by the door-side lever arms of the link arms facing said door part so as to be variable in position, and a pre-tensioned spring biasing said filler piece into a position covering the variable gaps which form between the door-side lever arms and between the lever arms and the door during the opening and closing movement of the hinge, and a cam associated with said filler piece, said filler piece supporting itself against one of said door and door part, by means of said cam on the side of the filler piece facing the door.

4,193,164

REAR HINGE FOR HOLDING LID OF RECORD PLAYER TO CONSOLE

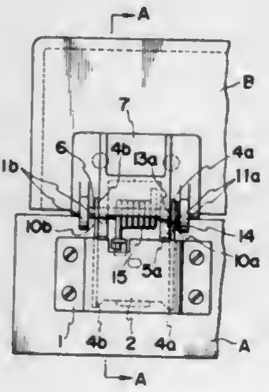
Hirohumi Okayama, Yokohoma, Japan, assignor to Kato Electric and Machinery Co., Ltd, Kanagawa, Japan

Filed May 24, 1978, Ser. No. 909,011

Claims priority, application Japan, Jun. 10, 1977, 52-76287[U]

Int. Cl.^{2} E05D *11/08*

U.S. Cl. 16—141 **7 Claims**



1. A rear hinge arrangement for holding the lid of a console, said console having a lock plate (1) affixed to the rear top portion thereof and said lock plate (1) having a defined receptacle portion to receive and hold a component of an attaching member of the rear hinge, said rear hinge comprising in combination:

(a) an attaching member (2) with an insert component designed to enter and be held by the defined receptacle portion of a lock plate (1), and, an outer section extending out of said receptacle portion, a pair of first and second side plates (**4***a*, **4***b*) on said attaching member (2), and extending at least from said outer section, said side plates (**4***a*, **4***b*) having a juxtapositioned first set of opposite axial apertures;

(b) a rectangular supporting member (7) with a defined rear part, including a pair of second side plates (**11***a*, **11***b*) likewise with a pair of juxtapositioned opposite axial apertures, for positioning alongside said first side plates in axial alignment therewith, and, a hollow receiving portion (8) in said rear part, for receiving and holding a lid;

(c) a hinge pin (6) passing through said first and second sets of apertures, weak spring means (15) disposed around said hinge pin (6) and engaging said supporting member (7) biasing said supporting member (7) towards an open position; and,

(d) matching concave or convex recesses (**5***a*, **5***b*, **13***a*, **13***b*) in at least one of the side plates of the first pair of side plates (**4***a*) and the one of the pair of the second side plates (**11***a*) adjacent to the one side plate of the first pair of side plates (**4***a*), said recesses extending radially on diametrically opposite sides of said first and second apertures at an angle to the horizontal corresponding to an angle at which the console lid is to remain partly open.

4,193,165

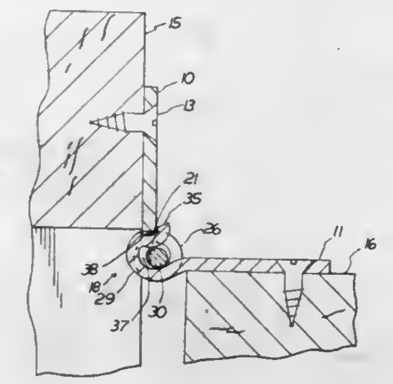
HINGE CONSTRUCTION

Joseph J. Malacheski, and Richard J. Zenda, both of 32 Warner St., Plains, Pa. 18705

Filed Oct. 11, 1978, Ser. No. 950,366

Int. Cl.^{2} E05D *11/06*

U.S. Cl. 16—191 **10 Claims**



1. A hinge construction composed of two cooperating hinge leaves provided with outwardly projecting knuckles with pin-receiving passages, said knuckles integral with and arranged alternately with openings along the entire length of one side margin of said leaves, at least one retention means integral with and projecting from at least one said leaf and comprised of an arcuated member which is in resilient registration with a deflector, said member having a radius increasingly greater than and outside of the circumference of said knuckles, said knuckles interfitting with said openings to align said passages and said retention means to receive a pivotal pin to pivotally interconnect said leaves, a retention furrow to resiliently engage and disengage said deflector comprised of a side margin of a said opening, and stop means to limit movement of a said leaf.

4,193,166

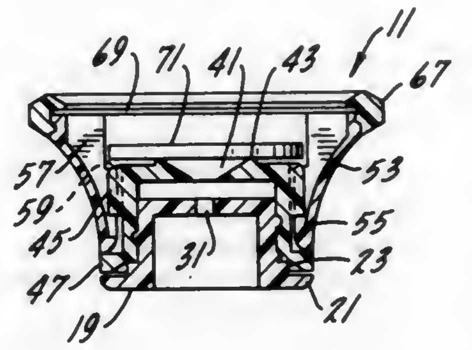
KNOB FOR A PAN COVER

Paul C. Neff, Antioch, Ill., assignor to Northwest Molded Products Corporation, Waukegan, Ill.

Filed Aug. 7, 1978, Ser. No. 931,935

Int. Cl.^{2} A47B *95/02*

U.S. Cl. 16—121 **5 Claims**



1. A knob for the cover of a pan used for waterless cooking, including:

means for mounting said knob in an opening formed in the pan cover,

a vent passage outlet,

a vent passage extending through said mounting means and connecting said pan cover opening with said vent passage outlet,

means to selectively open and close said vent passage outlet which means includes:

a disc for closing said vent passage outlet, and

means to lift said disc from said vent passage outlet to open said outlet.

4,193,167

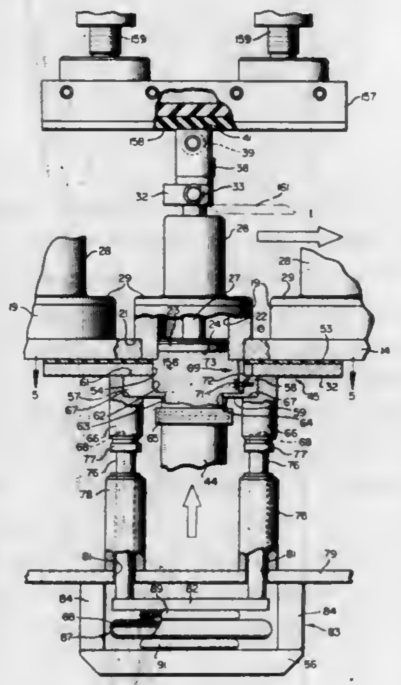
APPARATUS FOR MOLDING MEAT PATTIES

Gerald J. Orlowski, Scottsdale, Ariz.; Rodney D. Wicklund, Denver, Colo.; Richard D. Sandlas, Littleton, Colo., and Walter W. Weibler, Arvada, Colo., assignors to Armour and Company, Phoenix, Ariz.

Filed Nov. 9, 1978, Ser. No. 959,384

Int. Cl.^{2} A22C *7/00*

U.S. Cl. 17—32 **29 Claims**



1. In an apparatus for forming patties from a mass of agglomerable edible material such as meat; said apparatus comprising

a turret mounted for rotation on a vertical axis and having a plurality of cavities, each cavity having a piston reciprocably mounted therein and each piston having a bottom surface cooperating with the cavity to define a patty-forming mold with a bottom opening;

feeding means cooperating with said turret for moving said edible material from a supply source upwardly into each mold successively during rotation of said turret relative to said feeding means;

control means regulating the reciprocation of each piston in its cavity in timed relation to the rotation of said turret, whereby said piston moves upwardly for filling the mold with said edible material when the bottom opening of the mold is in communication with said feeding means in one rotary position of said turret and whereby said piston moves downwardly for discharging a formed patty from the cavity in another rotary position of said turret which is remote from said one rotary position; and

means for separating a formed patty from the bottom surface of said piston;

the improvement which comprises:

vertically movable support means for supporting said feeding means below said turret;

said feeding means including a feed spout assembly having a seal plate, a feed opening in said seal plate, and inlet means communicating with said feed opening for supplying said edible material under pressure; and

retractable fluid pressure applying means coacting with said support means for urging said seal plate upwardly in sealing engagement against the bottom surface of said turret.

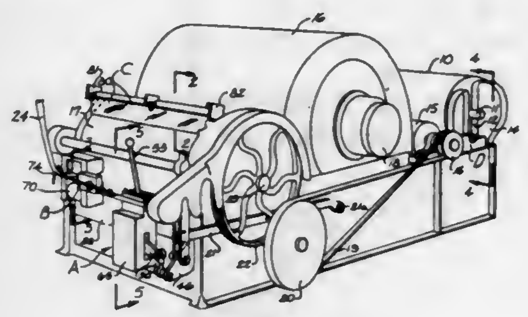
4,193,168
STOP MOTION AND CONDITION RESPONSIVE APPARATUS FOR CARDING MACHINES

James H. Burnett, 5300 Augusta Rd, Apt. 160, Greenville, S.C. 29605

Filed Dec. 7, 1977, Ser. No. 858,105

Int. Cl.^{2} D01G *31/00*

U.S. Cl. 19—0.25 19 Claims



1. Stop motion apparatus for disengaging a drive motion on a carding machine, said carding machine being of the type having motorized drive means for imparting said drive motion to said carding machine when engaged, actuator means for selectively engaging or disengaging said drive motion, said apparatus comprising:

base means for attachment to said carding machine;

a movable arm assembly carried adjacent said base means;

linkage means for connecting said arm assembly to said actuator means of said carding machine;

said movable arm assembly having a first position in which said actuator means disengages said drive motion and a second position in which said actuator means engages said drive motion;

a cam-lock assembly for locking said pivotable arm assembly in said second position;

said cam-lock assembly including a movable cam surface carried by said base means and a roller surface carried by said movable arm assembly for engaging with said cam surface in a locking relationship when said movable arm assembly is in said second position; and

release means for releasing said cam-lock assembly allowing said movable arm assembly to move to said first position.

4,193,169
METHOD OF STRIPPING PULP BALES AND A MACHINE THEREFOR

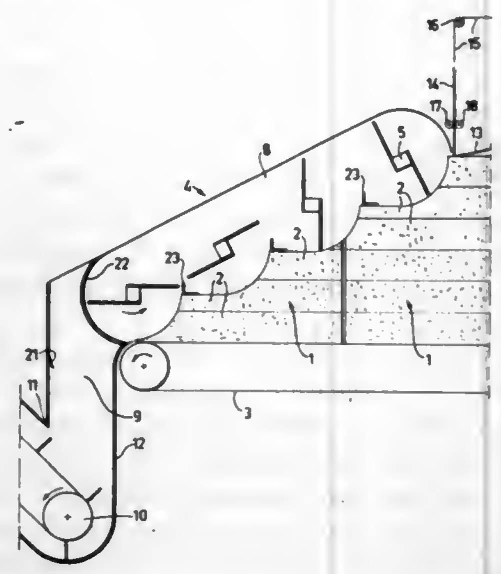
Carl F. S. Olsson, Kampastigen 4, Vaxjo, Sweden (S-352 52)

Continuation of Ser. No. 624,581, Oct. 22, 1975, abandoned. This application May 5, 1978, Ser. No. 903,302

Claims priority, application Sweden, Oct. 23, 1974, 7413329

Int. Cl.^{2} D01G *7/02*

U.S. Cl. 19—80 R 22 Claims



1. A method of stripping pulp bales, comprising the steps of:

relatively moving a first group of tools and a surface of a bale against each other to strip pulp from the bale by forming a plurality of parallel grooves on said surface which are defined by opposing sidewalls, relatively moving a second, different group of tools and said surface of the bale against each other to strip pulp from the bale by contacting the opposing sidewalls of said parallel grooves.

4,193,170
DRAWING DEVICE FOR SLIVER

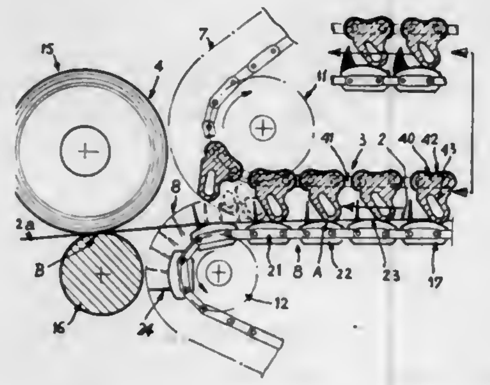
Jean F. Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie, Guebwiller, France

Division of Ser. No. 734,969, Oct. 22, 1976, Pat. No. 4,107,821. This application Mar. 6, 1978, Ser. No. 883,793

Claims priority, application France, Oct. 28, 1975, 75 32864; Jul. 15, 1976, 76 21611

Int. Cl.^{2} D01G *19/10*

U.S. Cl. 19—127 4 Claims



1. A device for drawing sliver comprising two endless elements moving in unison and one located above the other and forming therebetween a working zone through which the sliver passes for the control and retention of the sliver, one of said two endless elements comprising an assembly, said assembly comprising a pair of laterally spaced endless chains mounted for movement on a closed circuit with a portion of the circuit traversing the working zone, a plurality of first transverse bars extending between said pair of endless chains and being hinged relative to one another by said endless chains, each of said first transverse bars having a first relatively flat convex active surface facing inwardly toward the other said

endless element as said first transverse bars traverse the working zone, said first transverse bars being spaced closely apart so that the first convex active surfaces of said transverse bars form a materially continuous apron in the working zone, the first convex active surfaces of said first transverse bars each having a crown portion located closest to the other said endless element as said first transverse bars traverse said working zone with the crown portion forming a contact surface for the sliver, a plurality of penetration members formed on and projecting outwardly from said first convex active surface toward the other said endless element as said first transverse bars traverse the working zone, said penetration members being offset in the direction of movement of said endless elements through the working zone from the crown portion of said first convex active surface on which they are located, said penetration members arranged in a row extending transversely across said first convex active surface and the other of said two endless elements comprises a succession of second transverse bars hinged to one another and each having a second convex active surface facing toward the one of said two endless elements in said working zone, two successive said second active surfaces in said working zone defining therebetween a space for receiving the row of said penetration members on said first convex surface located opposite the space and said second active surfaces cooperating with the crown portions on said first active surfaces for controlling the sliver, each said second transverse bar comprises an elongated transverse strip which in said working zone faces toward and is spaced from an oppositely disposed one of said first transverse bars, and a flexible lip secured to and extending from each said transverse strip toward the oppositely disposed one of said first transverse bars and the surface of said flexible lip spaced from said transverse strip forms said second convex active surface thereon and said second convex active surface applies the sliver to the first convex active surface of said first transverse bars.

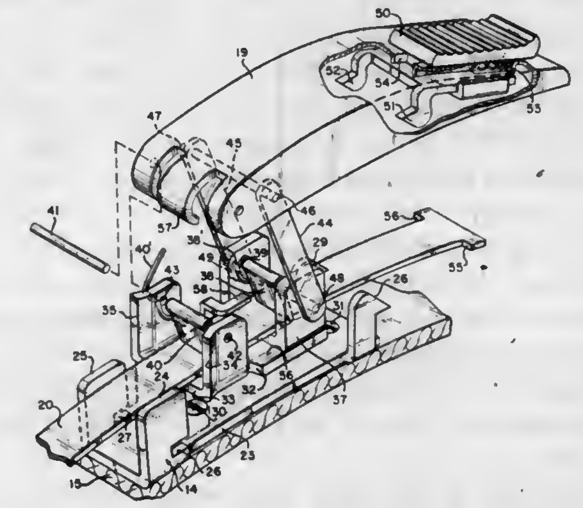
4,193,171
SKI BOOT TIGHTENING BUCKLE

Abraham Lichowsky, 220 S. Cliffwood, Los Angeles, Calif. 90049

Filed Sep. 18, 1978, Ser. No. 942,990

Int. Cl.^{2} A44B *21/00;* A43C *11/00*

U.S. Cl. 24—68 SK 4 Claims



1. A ski boot tightening buckle including, in combination:

(a) anchor means secured on one side portion of said ski boot; and

(b) buckle means coupled to the opposite side portion of said ski boot for manual attachment to said anchor means so that tightening of said buckle means after attachment draws said one side and opposite side towards each other to tighten said boot, said buckle means including:

  (1) a slide plate having a front end portion for hooking to said anchor means and defining a sliding surface extending rearwardly from said front end portion;

  (2) a carriage positioned on said slide plate for sliding movement in forward and rearward directions;

  (3) a drive pawl pivoted to said carriage;

  (4) a clutch pawl pivoted to said slide plate in a position forward of said driving pawl;

  (5) a buckle lever pivoted to a portion of said slide plate adjacent to said front end portion;

  (6) drive link means pivotally connected at opposite ends to said buckle lever and carriage respectively such that swinging movement of said lever about its pivot between open and closed positions slides said carriage forwardly and rearwardly through said drive link means; and

  (7) a flexible strip coupled at one end to said opposite side portion of said ski boot and passing under said clutch pawl and through said carriage under said drive pawl, said clutch pawl and drive pawl resting in engagement with the top surface of said strip at an angle to the vertical whereby forward and rearward movement of said carriage drives said strip during each rearward movement in a direction to draw said opposite said portion of said ski boot closer to said one side portion to thereby tighten said ski boot.

4,193,172
ORNAMENTAL ATTACHMENT FOR SLIDE FASTENER SLIDERS

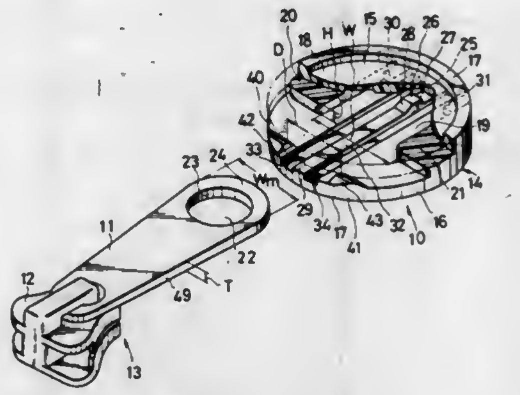
Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 5, 1978, Ser. No. 903,175

Claims priority, application Japan, May 12, 1977, 52-60449; May 12, 1977, 52-60450

Int. Cl.^{2} A44B *19/00*

U.S. Cl. 24—205.15 H 10 Claims



1. An ornamental attachment for a slide fastener slider with a pull tab, comprising:

(a) a body having a pair of spaced plates defining therebetween a channel for receiving the pull tab;

(b) means in said channel for locking the pull tab in the channel; and

(c) means on at least one of said plates for positionally stabilizing the pull tab in said channel, said stabilizing means including at least one land projecting from one of said plates into said channel to resiliently engage the pull tab therein.

4,193,173
CLAMP ASSEMBLY

Edwin W. Lorenz, 757 Murray Crescent, Cobourg, Ontario, Canada

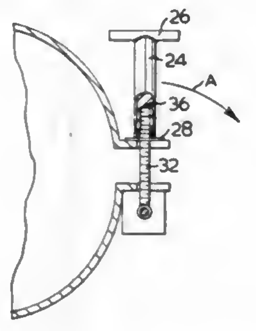
Filed Oct. 17, 1977, Ser. No. 842,879

Int. Cl.^{2} A44B *21/00*

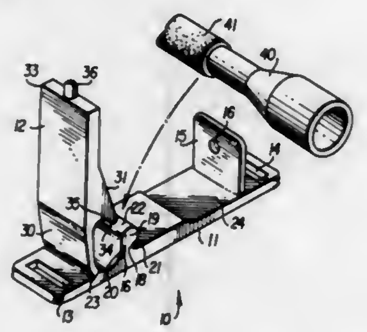
U.S. Cl. 24—249 LS 5 Claims

1. Apparatus for clamping together a pair of flanges of a processing vessel comprising: an elongated tubular stem, a handle at one end of said stem for applying torque thereto, means defining a surface at the other end of the stem for engaging one of the pair of flanges in the clamping position of said

apparatus, means defining screw threads on a portion of the interior of the tubular stem adjacent said other end thereof, an elongated threaded stud at least partially disposed within said tubular stem with the threads thereof engaging with the screw threads of the tubular stem, the stud being freely rotatable relative to said stem so that on relative rotation between them the stud is screwed inwardly or outwardly of the stem, the end of said stud remote from said stem having pivot axis defining means thereon defining a pivot axis at right angles to the longitudinal axis of said threaded stud for pivotally connecting said stud to the other one of the flanges of the processing vessel, and the end of the said stud located within said tubular stem having means thereon adapted to come into interference with the threaded portion of the stem when an attempt is made to substantially completely unscrew the stud from the stem thus preventing the disengagement of the stud from the stem.

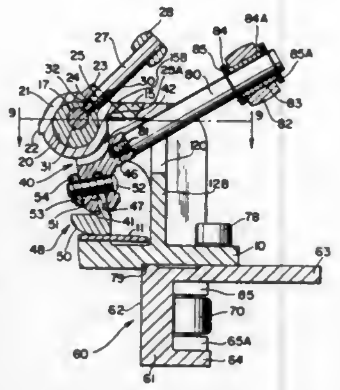


4,193,174
LEVER AND FULCRUM CLAMPING ASSEMBLY
Thomas P. Stephens, Boxford, Mass., assignor to Portex, Inc., Wilmington, Mass.
Filed Apr. 11, 1978, Ser. No. 895,405
Int. Cl.² A44B *21/00*
U.S. Cl. 24—249 R **12 Claims**



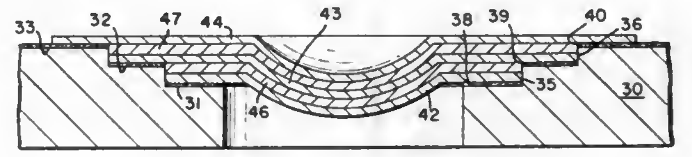
1. A clamping assembly for fixedly enclosing at least one generally tubular member, comprising:
first and second clamping arms each having a first end portion;
said first end portions being attached to each other to allow for the relative pivotal motion of said clamping arms;
a flange assembly including a neck portion attached to said first clamping arm and a head portion integrally attached to said neck portion, wherein said head portion is formed with a relatively greater cross-sectional size than said neck portion;
a generally wedge-shaped assembly extending from said second clamping arm; and
convexly-shaped surface means formed on a portion of said flange head and engagable with complementary concavely-shaped surface means formed on a portion of said wedge-shaped assembly as said second clamping arm is pivoted toward said first clamping arm, to frictionally retain at least one tubular member positioned between said clamping arms.

4,193,175
METHOD OF OPERATING A TENTERING CLIP
Hans H. Richter, Warwick, R.I., assignor to Marshall and Williams Company, Providence, R.I.
Division of Ser. No. 853,277, Nov. 21, 1977, Pat. No. 4,155,148. This application Jun. 9, 1978, Ser. No. 914,129
Int. Cl.² D06C *3/04*
U.S. Cl. 26—94 **4 Claims**



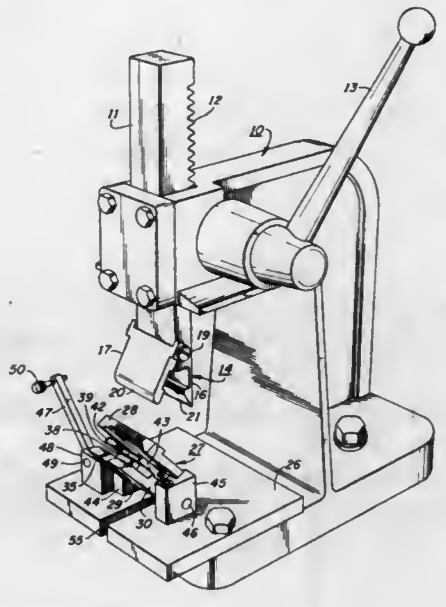
1. A method of operating a tentering clip having a jaw lifting housing arm and a jaw projection to alternately grip an edge portion of a sheet of material and thereby hold said sheet in position for movement through a tentering machine and to release said sheet after movement thereof through said tentering machine comprising the steps of:
a. providing said tentering clip with a clamp surface operable to have an edge portion of said sheet engaged thereon, and a clamping shoe under control of a jaw lifting housing arm and a jaw projection operable to engage with said sheet edge portion to clamp said edge portion on said clamping surface when the tentering clip is in a first zone;
b. moving said tentering clip along said tentering machine from said first zone to a second zone to guide said sheet therealong;
c. elevating said clamping shoe, through upward movement of said jaw projection, to a first position disposed generally vertically above said surface when said tentering clip is moved into said second zone to said tentering machine to thereby release said sheet portion from clamping engagement between said clamping shoe and said surface;
d. sequentially moving said clamping shoe to a second position, through downward movement of said jaw lifting housing arm and the downward movement of said jaw projection, to a position disposed generally horizontally outward from said surface while maintaining said clamping shoe elevated above said surface;
e. thereafter moving said tentering clip to said first zone of said tentering machine to receive a further sheet edge portion;
f. aligning said further sheet edge portion with said surface;
g. moving said clamping shoe from said second position to an intermediate position through upward movement of said jaw projection placing said shoe generally vertically above said surface;
h. and thereafter releasing said clamping shoe for movement in a generally vertical path toward said surface through upward movement of jaw lifting housing arm and the downward movement of said jaw projection to clamp said further edge portion between said clamping shoe and said surface to thereby hold said sheet in position as said sheet with said further edge moves from said first zone to said second zone of said tentering machine.

4,193,176
MULTIPLE GRID FABRICATION METHOD
Matthew Patterson, Torrance, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Oct. 30, 1978, Ser. No. 956,010
Int. Cl.² H01J *9/14*
U.S. Cl. 29—25.14 **3 Claims**



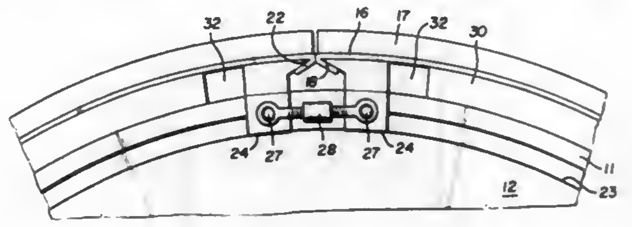
1. An improved method of fabricating grid electrodes, comprising the steps of:
metallurgically bonding a plurality of grid blanks separated by spacer discs onto a support member to form a sandwich structure;
forming a dimple in said sandwich structure;
machining a predetermined grid pattern through said sandwich structure in a single step; and
removing said spacer discs so as to leave a plurality of spaced apart, uniformly patterned, dimpled grids.

4,193,177
ELECTRICAL CONNECTOR ASSEMBLY APPARATUS
John D. Fitzgerald, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 17, 1978, Ser. No. 961,712
Int. Cl.² H01R *43/04*
U.S. Cl. 29—56.6 **5 Claims**



1. Apparatus for assembling an electrical connector housing (**15**) having an array of insulation piercing contact terminals and a conductor mounting comb (**41**) having a corresponding array of insulated electrical conductors (**52**) arranged therein, said apparatus including a press means (**10**) having a ram (**11**) and platform (**26**) for mounting a first and a second clamping mechanism (**14, 27**) therebetween for retaining said housing (**15**) and said comb (**41**), respectively, in alignment and for fitting said housing (**15**) about said comb (**41**), characterized in that said first clamping mechanism (**14**) is provided with a pair of jaws (**16, 17**) with means for clasping said housing (**15**), one of said jaws (**16**) being terminated in a conductor folding ramp (**22**) and a first conductor severing blade (**21**), said second clamping mechanism (**27**) is provided with a second pair of jaws (**28, 29**) and a pedestal (**38**) therebetween for supporting said comb (**41**), and in that one of said second pair of jaws (**28**) has a plurality of slots (**54**) corresponding to said array of conductors (**52**) for arranging the ends of said conductors (**52**) therein and is provided with a second conductor severing blade (**33**), and further in that said first and second blades (**21, 33**) cooperate to sever said conductors (**52**) and said ramp (**22**) is positioned to fold said conductors (**52**) about said comb (**41**) as said housing (**15**) is fitted about said comb (**41**).

4,193,178
COATING ROLLER
Alexander D. McArthur, Oakville; Robert J. Holsgrove, Georgetown, and Gerard Hodge, Brampton, all of Canada, assignors to Persista, Inc., Brampton, Canada
Filed May 18, 1978, Ser. No. 907,123
Int. Cl.² B21B *31/08;* B60B *7/02*
U.S. Cl. 29—129.5 **8 Claims**



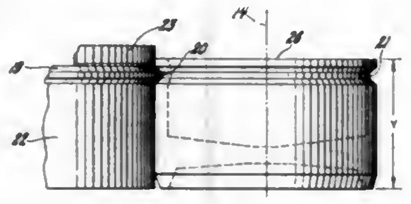
1. In a roller formed of a cylindrical drum around which is wrapped a removable cover, the improvement comprising;
a pair of closely spaced apart, narrow, elongated strips arranged upon the outer circumferential surface of the drum and extending substantially parallel to the drum axis;
means securing said strips to the drum, with at least one of the strips being movable sideways, i.e., circumferentially of the drum, upon the drum surface;
means for releaseably interconnecting each of the opposite ends of the cover to its adjacent strip, so that movement of said one strip towards the other exerts a tangential pull upon the cover to cause the cover to tightly envelop the drum;
and a relatively thick layer of a substantially non-compressible, resilient elastomeric material secured to the larger area of the drum surface exposed between the strips, that is, the area of the peripheral surface of the drum excluding the area covered by the strips and the close space between them;
said layer of elastomeric material being between said drum and said cover and the tangential pull on the cover against said layer causes the cover to substantially uniformly surround and press radially inwardly against the layer, said layer acting like a non-compressible fluid for equalizing any forces applied to said cover, and causing movement of the elastomeric layer to correspond to the inner surface of the cover for thereby self-centering the cover.

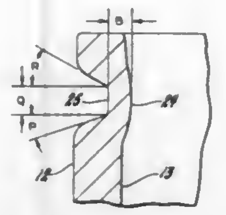
4,193,179
PROCESS OF MANUFACTURING AN ARTICLE HAVING A GROOVE ROLLED THEREIN, AND AN ARTICLE PRODUCED THEREBY
Howard F. Confer, Bloomfield Hills, and Daniel C. Confer, Royal Oak, both of Mich., assignors to Condor Manufacturing Inc., Warren, Mich.
Filed Nov. 14, 1977, Ser. No. 851,395
Int. Cl.² B23P *15/10;* B21H *7/18*
U.S. Cl. 29—156.5 R **8 Claims**

1. A process of manufacturing an article, comprising the steps of:
making a cup-shaped article blank which includes at least one substantially curvilinear wall member having a first substantially curvilinear surface and a second substantially curvilinear surface disposed substantially opposite to said first substantially curvilinear surface, such that said article blank is substantially in the shape of a piston for a disc brake;
rolling a piston boot groove in a first predetermined area of said first substantially curvilinear surface of said substantially curvilinear wall member while permitting a second predetermined area of said second substantially curvilinear surface to deform to predetermined dimensions during

said rolling step, said second predetermined area of said second substantially curvilinear surface being disposed substantially opposite to said first predetermined area of said first substantially curvilinear surface;

controlling the dimensions of said article blank during the aforesaid rolling step so that the thickness of said substantially curvilinear wall member between the base of said piston boot groove and said second substantially curvilinear surface is less than the thickness of said substantially curvilinear wall member between said first and second substantially curvilinear surfaces at areas remote from said piston boot groove;





making said article blank wherein said first and second substantially curvilinear surfaces are disposed concentric to a central axis, and wherein said article blank is provided with a transverse portion which is disposed substantially transverse to said central axis and said first and second substantially curvilinear surfaces, said transverse portion having its thinnest dimension adjacent to said central axis and having its thickest dimension contiguous with said substantially curvilinear wall member; and

after said rolling step, facing off the end surface closest to said groove so that said faced off surface is substantially perpendicular to said central axis.

4,193,180

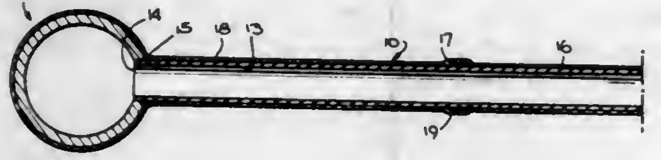
METHOD OF FORMING A HEAT EXCHANGER

Irving D. Press, West Orange, N.J., assignor to Resistoflex Corporation, Roseland, N.J.

Filed Mar. 2, 1977, Ser. No. 773,750

Int. Cl.² B05D *3/02;* **B23P** *15/26*

U.S. Cl. 29—157.4 **9 Claims**



1. A method for fabricating a heat exchanger for use in a corrosive environment having metal heat exchanger tubes connected between metal manifolds and coated with a protective layer of a given fluorocarbon resin comprising in combination the steps of cross feed extruding jackets of said resin onto said tubes, removing the ends of said jackets to expose the ends of said tubes for a predetermined distance, assembling said ends of said tubes into corresponding openings in said manifolds, producing heat fused metal joints between said tubes and said manifolds while maintaining the temperature of said jackets below the melting point of said resin, coating said manifolds, the exposed portions of said tubes and the ends of said jackets with said given fluorocarbon resin by spraying in dry powder form, and thereafter applying heat to fuse said sprayed on resin to provide a continuous monolithic coating of resin over said tubes and manifolds.

4,193,181

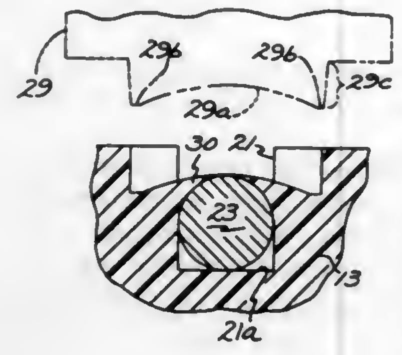
METHOD FOR MOUNTING ELECTRICALLY CONDUCTIVE WIRES TO A SUBSTRATE

Henry J. Boulanger, Cumberland, R.I., and Salvatore P. Rizzo, Foxboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 747,654, Dec. 6, 1976, Pat. No. 4,123,627. This application Feb. 21, 1978, Ser. No. 879,180

Int. Cl.² B25K *25/00;* **H01H** *9/00*

U.S. Cl. 29—509 **3 Claims**



1. A method for locking a round wire in a groove in a substrate in which the wire is disposed entirely below the surface of the substrate comprising the steps of employing a deformable substrate, providing a member having a generally concave cut out portion between two projecting ears, the cut out portion having a diameter greater than the diameter of the wire, bringing the member into contact with the substrate so that the cut out portion stradles the wire and moving the member toward the substrate until the cut out portion essentially contacts the top of the wire deforming the substrate so that the substrate material flows onto the wire thereby locking the wire in the groove.

4,193,182

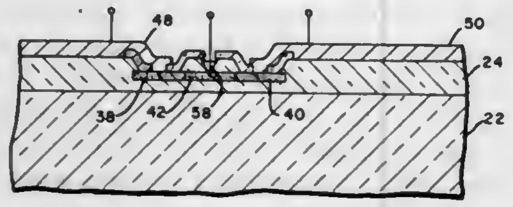
PASSIVATED V-GATE GaAs FIELD-EFFECT TRANSISTOR AND FABRICATION PROCESS THEREFOR

Don H. Lee, Agoura, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 766,325, Feb. 7, 1977, Pat. No. 4,156,879. This application Mar. 6, 1978, Ser. No. 883,978

Int. Cl.² B01J *17/00*

U.S. Cl. 29—571 **4 Claims**



1. A process for fabricating a field-effect transistor which includes the steps of:

(a) implanting selected conductivity-type determining ions through one surface of a semiconductor body to form a buried layer therein,

(b) masking said surface to define source, drain and channel regions within the previously formed buried layer,

(c) implanting additional ions into selected regions of said buried layer to define heavily doped source and drain regions interconnected by a lightly doped channel region,

(d) removing portions of said semiconductor body overlying said source and drain regions to thereby expose same for electrical contacts, while leaving intact a semiconductor mesa configuration covering and passivating said channel region,

(e) forming a passivation layer atop said source, drain and mesa regions and having openings therein aligned with electrical contact areas for said source, drain and channel regions,

(f) removing a predetermined portion of said semiconductor mesa to expose a small predetermined area of said channel region for electrical contact, and

(g) depositing ohmic contact metallization on said source and drain regions, and further depositing Schottky-gate metallization in the removed portion of said semiconductor mesa and on an exposed area of said channel region.

4,193,183

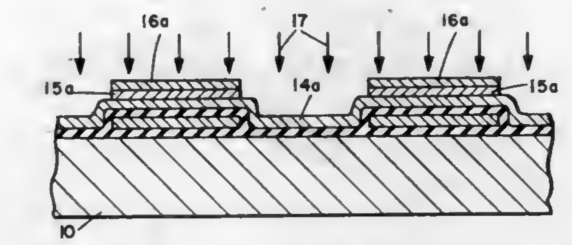
INFRARED PHOTOLITHOGRAPHIC PROCESS FOR CONSTRUCTING SELF-ALIGNED ELECTRODES

Thomas Klein, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 26, 1978, Ser. No. 919,157

Int. Cl.² B01J *17/00*

U.S. Cl. 29—578 **15 Claims**



1. A process for constructing self-aligned electrodes on an insulating layer lying on a surface of a semiconductor substrate having dopant impurity atoms of a first density comprised of the steps of:

forming on said insulating layer, spaced apart polysilicon electrodes having dopant impurity atoms of a second density which is substantially greater than said first density;

forming an insulating layer over said spaced apart polysilicon electrodes;

forming on said insulating layer over said electrodes, a layer of polysilicon having dopant impurity atoms of a third density which is substantially less than said second density;

forming a layer of image reversal material on said polysilicon layer;

forming a layer of heat sensitive polymer on said image reversal layer;

heating said spaced apart electrodes with infrared radiation to polymerize said heat sensitive polymer directly above said electrodes;

removing the unpolymerized portions of said heat sensitive polymer layer and the underlying portions of said image reversal layer to expose the portions of said polysilicon layer lying between said spaced apart electrodes;

forming an insulating layer on said exposed portions; and

removing said polysilicon layer in the regions not covered by said insulating layer on said exposed portions.

15. A process for constructing self-aligned electrodes overlying a surface of a semiconductor substrate that is substantially transparent to infrared radiation including the steps of:

forming spaced apart ones of said electrodes with conductive means that is highly absorbative of infrared radiation;

forming a continuous layer of heat sensitive polymer means over and between said spaced apart electrodes for polymerizing in response to heat applied thereto; and

exposing the resulting structure to infrared radiation to heat said spaced apart electrodes and thereby heat and polymerize said heat sensitive polymer means in the regions lying directly above said spaced apart electrodes.

4,193,184

METHOD OF MANUFACTURING A STATOR FOR AN ELECTRICAL MACHINE

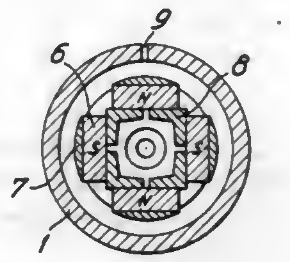
Bodo Fütterer, Lucerne, Switzerland, assignor to Interelectric AG, Sachseln, Switzerland

Continuation-in-part of Ser. No. 739,264, Nov. 5, 1976, Pat. No. 4,125,791. This application Sep. 15, 1978, Ser. No. 942,765

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1975, 2550640

Int. Cl.² H02K *15/02*

U.S. Cl. 29—596 **7 Claims**



1. A method for manufacturing a stator for electrical machines, which stator comprises an outer ferromagnetic flux return means, a permanent magnet system positioned inside of said flux return means in a coaxial and equidistant relationship thereto and having at least four permanent magnets, each shaped cylindrically at its outer surface, and an end plate supporting said magnetic flux return means and said permanent magnet system, comprising the steps of securing said flux return means to said end plate, inserting said permanent magnets into the interior of a sleeve, the inner diameter of which corresponds to the desired outer diameter of the permanent magnet system, providing a plurality of ferromagnetic link members equal in number to the number of permanent magnets, each of said link members being adapted to come into planar contact with the radially inner surface of two adjacent ones of said permanent magnets, applying a bonding agent to at least one of the surfaces of said permanent magnets and of said link means, bringing each of said link means into contact with two adjacent ones of said permanent magnets until the bonding agent has cured, securing the so formed permanent magnet system to the end plate, and withdrawing said sleeve from said permanent magent system.

4,193,185

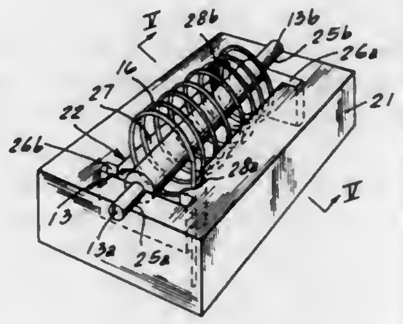
METHOD OF MAKING A HIGH TOLERANCE COIL ASSEMBLY

James P. Liautaud, River Bluff Rds., Cary, Ill. 60013

Filed Jan. 12, 1978, Ser. No. 868,995

Int. Cl.² H01F *41/06*

U.S. Cl. 29—605 **4 Claims**



1. A method of constructing a low cost high tolerance molded coil, comprising the steps of:

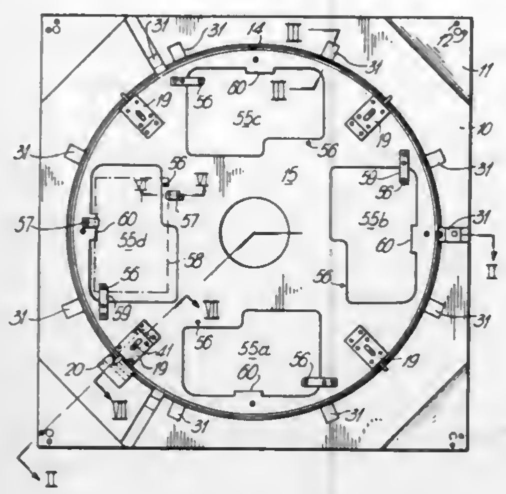
winding a coil with at least first and second connection leads;

providing a mold having first and second mating mold blocks, each block having a mold cavity therein for the

formation of an integral outer core for supporting said coil and integral connection lead and coil securing portions;
placing the coil in the mold cavity of the first block;
providing a pre-molded and pre-shrunk plastic inner core;
aligning and supporting said inner core approximately along a longitudinal center line of the coil;
mating the second mold block with the first mold block;
injecting a heated molding plastic into the mold cavities formed inside of the mated blocks; and
cooling and removing the molded coil from the mold blocks without withdrawing the inner core from the molded coil, the pre-shrunk inner core preventing shrinking of the outer core during cooling to substantially stabilize electrical variances of the coil.

4,193,186
ROTARY INDEXING APPARATUS FOR AUTOMATIC DEVICE INSERTION ON PRINTED CIRCUIT BOARDS

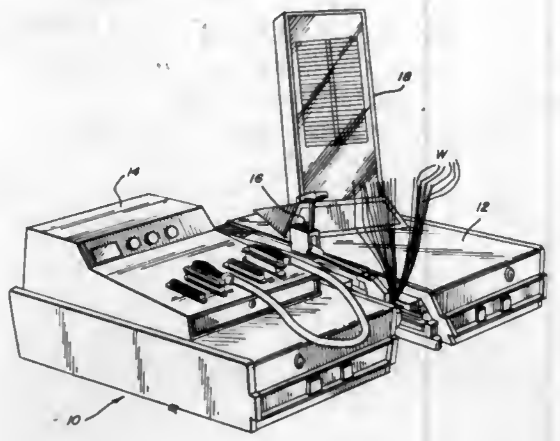
Rolf Boehler, Dorchester, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Sep. 1, 1978, Ser. No. 938,937
Int. Cl.² H05K ***3/30***
U.S. Cl. 29—741 **5 Claims**



1. Rotary indexing apparatus for automatic device insertion on printed circuit boards, comprising:
- a support plate for attachment to an insertion machine, said support including a central circular aperture;
- a locating and support member rotatably located and supported at its periphery in said circular aperture, said periphery of the locating and support member having two circumferential surfaces inclined at 90° to each other to provide an upper surface and a lower surface, said surfaces inclined at 45° to the plane of the locating and support member, a plurality of first rollers extending from said support plate and engaging with said lower surface, said first rollers each rotatably mounted for rotation about an axis parallel to said lower surface, and a plurality of second rollers extending from said support plate and engaging with said upper surface, said second rollers each rotatably mounted for rotation about an axis parallel to said upper surface, said pluralities of rollers rotatably locating, supporting and retaining said locating and support member in said circular aperture;
- a plurality of locations on said locating and support member, each location comprising an aperture and locating and support means associated with the aperture to hold a printed circuit board, said locations spaced around a central axis to provide predetermined angular orientations of said printed circuit boards;
- a plurality of manually operated latches on said locating and support member, a latch for each location, each latch adjacent to the related location, and a stop on the support plate, for rotationally locating said locations about said central axis for sequential positioning of said locations beneath an insertion position on said insertion machine, each of said latches comprising a radially slidable member having an outer end for engagement with said stop, and means resiliently urging said radially slidable member outwards, said stop including a member mounted on said support plate and including a recess for reception of said outer end of said radially slidable member for positive location of said locating and support member.

4,193,187
CLAMP-SQUEEZING APPARATUS

Jacob S. Haller, Northbrook; Gordon L. Mines, Elmhurst, and Meinert J. Mischnick, Mount Prospect, all of Ill., assignors to TRW, Inc., Elk Groove Village, Ill.
Filed Mar. 27, 1978, Ser. No. 890,671
Int. Cl.² B23P ***19/00, 11/00***
U.S. Cl. 29—749 **13 Claims**



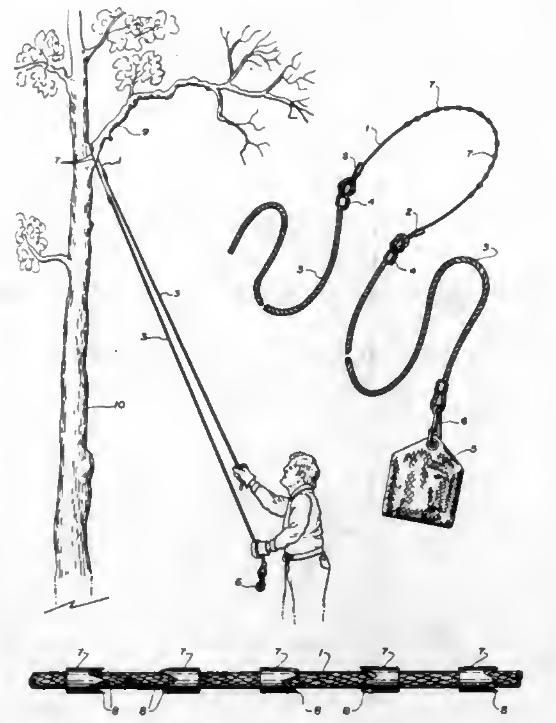
1. A clamp squeezing apparatus comprising a stationary support, a support plate mounted on said stationary support for reciprocal movement along a path of travel; a nest mounted on said support plate for positioning an electrical connector having a cable clamp disposed thereon; squeeze arms pivotally mounted on said movable plate; squeeze jaws connected to said squeeze arms located so as to be disposed on either side of a connector clamp when such connecter is mounted on said nest; means carried by said plate for moving said plate along an axial path, and stationary cam means on said stationary support and connected to said squeeze arms for urging said squeeze arm jaws into clamping engagement with a connector cable clamp mounted on said nest in the course of support plate movement.

4,193,188
FLEXIBLE SAW

Robert M. Johnson, 11 Jana Dr., Weston, Conn. 06883
Filed Sep. 29, 1978, Ser. No. 947,017
Int. Cl.² B23D ***45/00***
U.S. Cl. 30—166 R **1 Claim**

1. A flexible saw for sawing high branches from trees comprising a flexible cutting area, and flexible holding means on each end of the flexible cutting area to oscillate the cutting area against a branch of a tree to be cut, and wherein said cutting area comprises a base and a series of spaced apart cutting means secured thereto, and wherein said base is a cable and the cutting means are collars frictionally secured thereon and having sharp points solely on one end thereof, and wherein said cutting area cable has loops formed thereon at each end, and generally similar loops formed on one end of each of the holding means whereby said cutting area and said holding means are permanently secured together, and a weight detachably attached to an opposite end of only one holding means, and wherein said cable is metal, and said collars are metal and are positioned on said cable with sharp points on one end of each collar and a smooth surface on the opposite end of each collar, the sharp points of every other collar facing toward one end of the cable and the sharp points of collars in between every other collar facing toward the opposite end of the cable such that the ends of collars having the sharp points face each other and the ends of collars having the smooth surface face

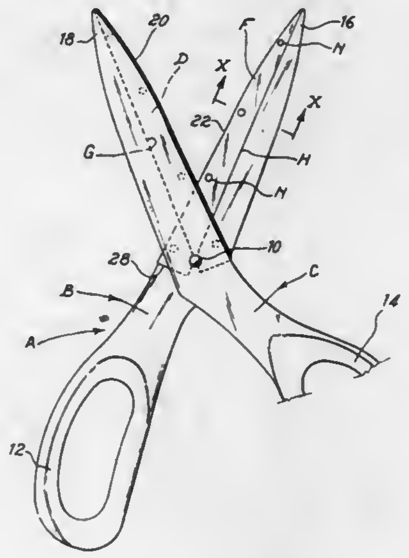
each other, and wherein the holding means is made of plastic and is longer than the cutting area cable, and wherein said sharp points form teeth, and the outside diameter of the collars are in the range of 0.110–0.132″, the inside diameter between 0.058–0.078″, the length from ⅛–⅜″, and the teeth formed at a



60° angle to each other thereby forming 4 teeth on the cutting end of each collar, and wherein the length of the cable is in the range of 30–70″, and 35–100 cutting collars are equally spaced ¼–½″ apart starting from the mid-point of the length of the cable and extending towards its outer ends.

4,193,189
SCISSORS OR SIMILAR CUTTING TOOLS WITH PLASTIC HANDLES

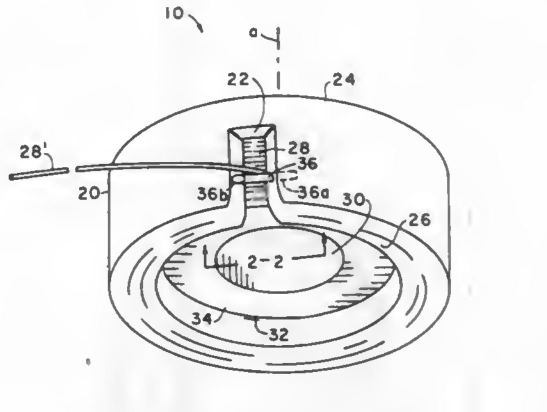
Sergio Marin, Via Trento, Inverigo (Como), Italy
Filed Jul. 17, 1978, Ser. No. 925,623
Claims priority, application Italy, Sep. 27, 1977, 22375/77[U]
Int. Cl.² B26B ***13/04***
U.S. Cl. 30—260 **5 Claims**



1. A scissors comprising first and second pivotably connected arms, each arm including a finger-engaging portion and a remote tip portion, each said arm being constituted in entirety of a plastic material, each arm having a recessed seat, a metal blade for each arm, and means for removably securing the blade in a respective seat in each arm, said means comprising integral projections on each arm extending in each seat from the bottom surface thereof, said projections being of truncate conical shape, each blade being provided with a hole for receiving a respective projection, said hole being shaped to engage a respective projection and enable removal of the blades by the elasticity of the plastic material of the projection.

4,193,190
FILAMENT TRIMMER CUTTING HEAD IMPROVEMENT

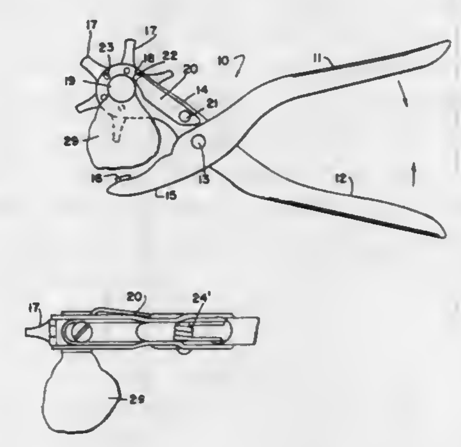
Dale A. Wood, 1011 Wiseburg Rd., Whitehall, Md. 21161
Filed Jun. 15, 1978, Ser. No. 915,727
Int. Cl.² A01D ***55/18;*** **A01G** ***3/06***
U.S. Cl. 30—276 **10 Claims**



1. In a filament trimmer cutting head of the type having inverted-cup-shape with structure defining a generally parallel-sided slot extending from proximate the base of the cup shape through the rim of the inverted cup shape for guiding filament cutting length, and having provision for manually feeding filament by drawing filament free of the slot, unwinding and replacing the filament in the slot, the improvement comprising: a pin, said pin having affixation across the slot at a location intermediate the length of the slot, providing room for said filament to be retained by the pin between the pin and the base of the inverted cup shape, thereby preventing said filament from moving downwardly out of the slot during cutting operations.

4,193,191
TURRET PUNCH

John J. Sisco, 11354 Evans Trail, Beltsville, Md. 20705
Filed Jul. 3, 1978, Ser. No. 921,804
Int. Cl.² B26F ***1/00***
U.S. Cl. 30—364 **5 Claims**

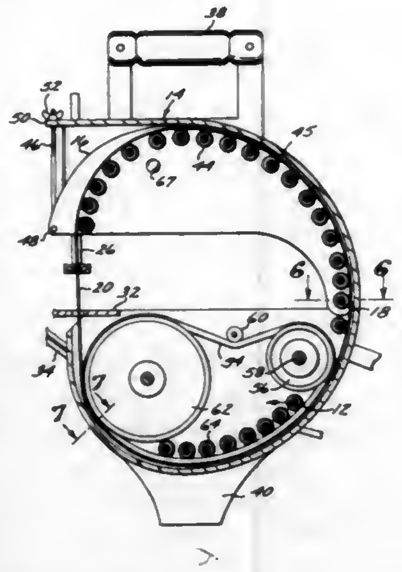


1. In a turret type punch having a pair of pivoted handles with jaws mounted at one end of said handles and wherein there is provided a rotatable turret on one of said jaws, said turret having a plurality of open ended cutting tubes mounted thereon and wherein an anvil is provided on the other of said jaws against which one end of the cutting tubes will contact upon forcing the handles to a position wherein said one end of said cutting tubes will be forced against said anvil to form an opening in a material placed between said tube and said anvil, the improvement comprising, an opening formed centrally of said jaw having said rotatable turret with said tubes mounted thereon, the interior of said tubes communicating with said opening, a sleeve mounted within said opening, said sleeve having an opening therein aligned with one of the said tubes, a channel formed on one end of said sleeve, a receptacle detachably secured to said channel, the cut portion of the said mate-

rial passing through said tubes and entering into said sleeve and ultimately into said receptacle.

4,193,192
BAND SAW

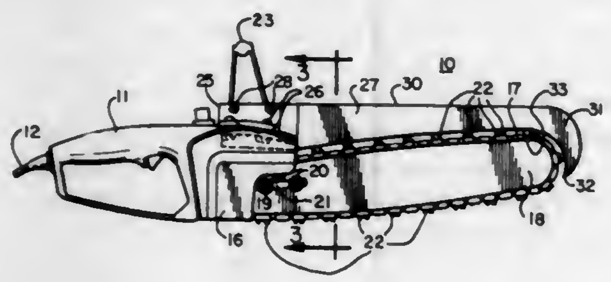
Jose L. Cortez, 9050 E. Jeff St., Bellflower, Calif. 90706
Filed May 8, 1978, Ser. No. 903,901
Int. Cl.^{2} B23D *53/12*
U.S. Cl. 30—380 **4 Claims**



1. A band saw comprising:
a main frame having an upper and lower section;
a pair of upper and lower roller carriages having a plurality of spaced and arcuately arranged rollers, said upper roller carriage being mounted from said main frame and adjustably connected to said upper section of said frame for lateral shifting with respect thereto;
friction belt drive means mounted in said low section of said frame having a drive pinion, a friction pulley and a plurality of spaced and arcuately arranged friction rollers and a friction belt, said drive pulley, said friction pulley and said friction rollers defining an arcuately shaped friction belt path;
adjustment means connected between said main frame and upper carriage for adjusting the lateral positioning of said upper carriage with respect to said lower carriage; and,
an endless band saw blade positioned around said arcuately shaped friction belt path in said lower section of said frame and around said arcuately spaced rollers on said upper and lower roller carriages whereby said adjustment means may be adjusted to adjust the lateral position of said upper carriage relative to said lower carriage.

4,193,193
GUARD FOR CHAIN SAW

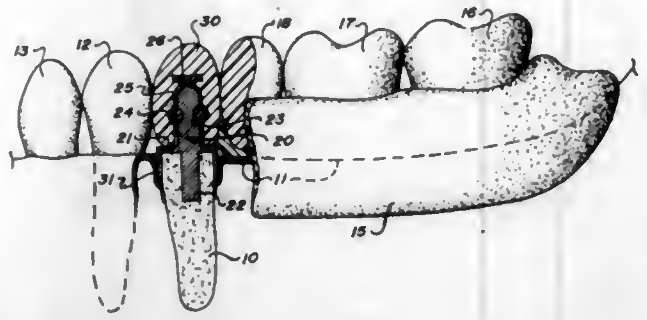
Adolph Holzworth, 909 Bellevue Ave., Hulmeville, Pa. 19047
Filed Aug. 9, 1978, Ser. No. 932,354
Int. Cl.^{2} B27B *17/02*
U.S. Cl. 30—382 **3 Claims**



1. In combination with a chain saw having a housing containing a motor, a grip frame engaged with the motor housing, an exposed saw chain carried on an exposed chain bar detachably secured to the housing,
a guard which comprises
an elongated rigid bar of flat material fixedly attached to said motor housing and extending in spaced relation above said saw chain a distance greater than the length of said chain bar,
said bar being of a width less than the width of the saw chain.

4,193,194
DENTURE

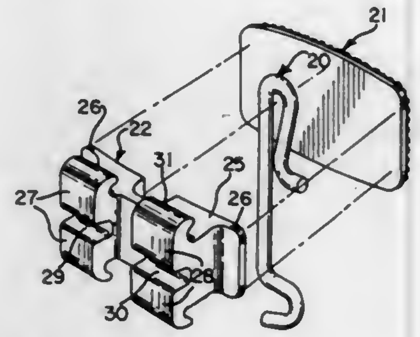
David D. Dalise, Suite A, 7111 Prospect Pl. NE., Albuquerque, N. Mex. 87110
Filed Jun. 19, 1978, Ser. No. 916,891
Int. Cl.^{2} A61C *13/22*
U.S. Cl. 433—177 **8 Claims**



1. A removable denture attachment system for use with a natural or implanted fixed root system which comprises in combination:
(a) a post supported by said root system,
(b) a resilient ring on said post,
(c) an encapsulating envelope surrounding said ring and post, and
(d) a denture surrounding said post, ring, and envelope.

4,193,195
ORTHODONTIC APPLIANCE

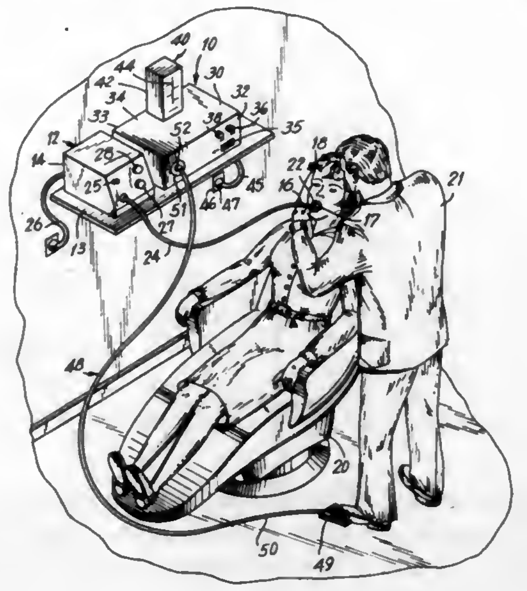
Daniel A. Merkel; John E. Viglietti, and William P. Gagin, all of Sheboygan, Wis., assignors to American Orthodontics Corporation, Sheboygan, Wis.
Filed Jul. 20, 1978, Ser. No. 926,287
Int. Cl.^{2} A61C *7/00*
U.S. Cl. 433—13 **9 Claims**



1. An orthodontic appliance in combination with a bracket mountable on a band or pad, said bracket including an occlusogingivally extending slot at the face engaging the band or pad, said appliance including a base received in said slot and locked against movement when said bracket is attached to the band or pad, and an arm extending from the base with a hook on the free end thereof for receiving an elastic force transmission member, whereby the appliance is removable from the assembled bracket and band or pad by severing a portion of the appliance base.

4,193,196
FLUID SUPPLY UNIT FOR DENTAL INSTRUMENTS

Arthur Kuris, Riverdale, and Leonard W. Suroff, Jerico, both of N.Y., assignors to Aquasonic Products Corp., New York, N.Y.
Continuation-in-part of Ser. No. 843,416, Oct. 19, 1977, and Ser. No. 702,536, Jul. 6, 1976, abandoned. This application May 15, 1978, Ser. No. 905,866
Int. Cl.^{2} A61C *19/02*
U.S. Cl. 433—82 **46 Claims**

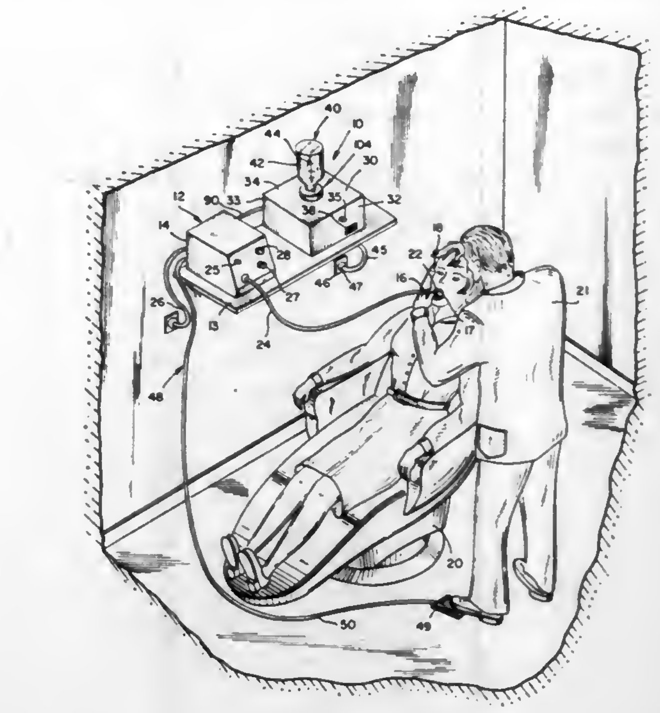


1. An auxiliary fluid supply unit for use in conjunction with a dental or medical instrument having a handpiece including an operative tip adapted for simultaneous activation and supplying of fluid through the handpiece as well as the tip, said fluid supply unit comprising:
A. dispensing means for pumping fluid and adapted to be coupled to said instrument so that fluid is communicated to the handpiece,
B. fluid reservoir means communicating with said dispensing means to permit the utilization of a variety of fluids for performing procedures with the instrument,
C. said dispensing means includes pumping means communicating with said reservoir means for pumping fluid under pressure to said instrument,
D. remote control means electrically coupling said instrument to said dispensing means for simultaneously energizing the instrument and the auxiliary fluid pumping means and dispensing fluid from said reservoir means by said pumping means through the handpiece, and
E. said control means including:
  (1) switching means electrically coupled to said instrument and said dispensing means for simultaneous energizing and control thereof,
  (2) remote means operatively connected to said switching means for simultaneously activating the instrument and permitting the flow of fluid therethrough, and
  (3) connecting means between said control means and said instrument for permitting the remote operation of the instrument by activation of said control means.

4,193,197
FLUID SUPPLY UNIT AND SYSTEMS FOR DENTAL AND MEDICAL INSTRUMENTS

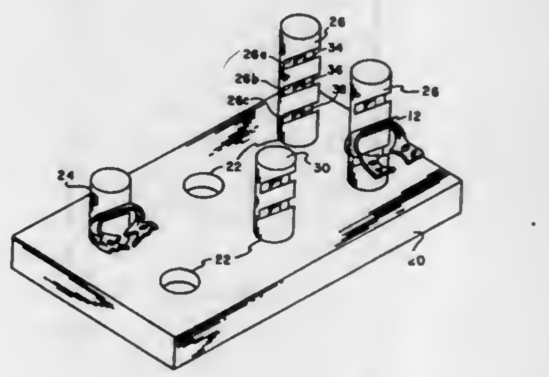
Arthur Kuris, Riverdale, and Leonard W. Suroff, Jericho, both of N.Y., assignors to Aquasonic Products Corp., New York, N.Y.
Continuation-in-part of Ser. No. 702,536, Jul. 6, 1976, abandoned. This application Oct. 19, 1977, Ser. No. 843,416
Int. Cl.^{2} A61C *13/00*
U.S. Cl. 433—82 **31 Claims**

1. An enclosed supply unit for use in conjunction with a dental or medical instrument having a handpiece including a tip adapted to be associated within the oral cavity or the like and requiring fluid to be supplied through the handpiece to the tip, said fluid supply unit comprising:
A. dispensing means for pumping fluid and adapted to be coupled to the instrument so that fluid is supplied to the handpiece,
B. fluid reservoir means communicating with said dispensing means to permit the utilization of fluids while performing oral hygienic procedures with the instrument,
C. pumping means operatively associated with said dispensing means, said pumping means being maintained continuously operational to maintain the fluid in said dispensing means under continuous pressure so as to obtain an immediate flow of fluid to the handpiece upon the instrument being operational,
D. said fluid reservoir means is in the form of a container that is adapted to be readily engaged with said dispensing means and contains a fluid therein for dispensing to the instrument,
E. mounting means for coupling said container in releasably fixed relationship to said dispensing means, and
F. venting means operatively associated with said mounting means for venting said container so as to permit a flow of air into said container to replace the fluid displaced therefrom.



4,193,198
ORGANIZER FOR DENTAL CLAMPS

Philip J. Bauer, 214 Slice Dr., Stamford, Conn. 06907
Filed Nov. 27, 1978, Ser. No. 963,773
Int. Cl.^{2} A61C *3/00*
U.S. Cl. 433—77 **8 Claims**



1. For use in supporting and systematically organizing according to shape and size a plurality of metal dental clamps of the type having a bow and a pair of legs a portable rack comprising:

- a support member. and
- at least one elongated post projecting from said support member.
- each said at least one post having at least one slit formed in its outer wall extending inwardly and substantially perpendicular to its longitudinal axis dimensioned to receive therein and support the bow portion of a dental clamp, and having contained therein permanent magnet material exposed at least at the inner end of said slit for retaining the dental clamp in the slit by magnetic attraction.

4,193,199

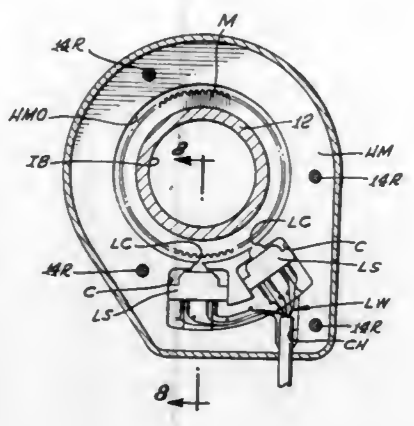
SHAFT POSITION TRANSDUCER

Glenn R. Whiteley, Pasadena, and Michael F. Bent, South Pasadena, both of Calif., assignors to Servo Products Company, Pasadena, Calif.

Filed May 15, 1978, Ser. No. 906,073

Int. Cl.^{2} G01B *3/18;* **G01D** *5/34*

U.S. Cl. 33—1 PT **12 Claims**



1. A shaft position transducer adapted to be mounted on a shaft comprising

- a bushing carrying a rotary scale means in the form of a gear having a plurality of equally spaced gear teeth and with the top surface of the gear teeth having light characteristics of one kind and the areas between the teeth having light characteristics of another kind,
- a housing constructed of two pieces adapted to be secured together for enclosing the bushing and the rotary scale means, one housing piece having an internally constructed circular opening for permitting the rotary scale to rotate in one housing piece and to be completely enclosed within the internal circular opening of said one housing piece, said housing pieces having a central aperture for mounting the bushing therein,
- a pair of cavities for mounting a light sensing package in each of the cavities defined on the inside surface of the housing in said one housing piece at a location spaced radially outwardly of the circular opening for the rotary scale, each cavity having a small opening communicating with the circular opening of said one housing piece,
- a light sensing package having a light source and a light sensor arranged in a side-by-side relationship in the package and adapted to be snugly mounted in and retained in the circuit package cavity in a preselected nonmovable position, one of said packages being mounted in each of the cavities and being retained therein without possibility of movement when in use, the light sensing packages being further defined to permit the light rays emitted from each of said light sources to impinge on the rotary scale by being conveyed thorugh the individual small opening and be reflected therefrom and being reconveyed through said small opening to impinge on the light sensor for providing electrical analog signals representative of the successive gear teeth when the top surfaces of the rotary scale means rotates past each of said small openings.

4,193,200

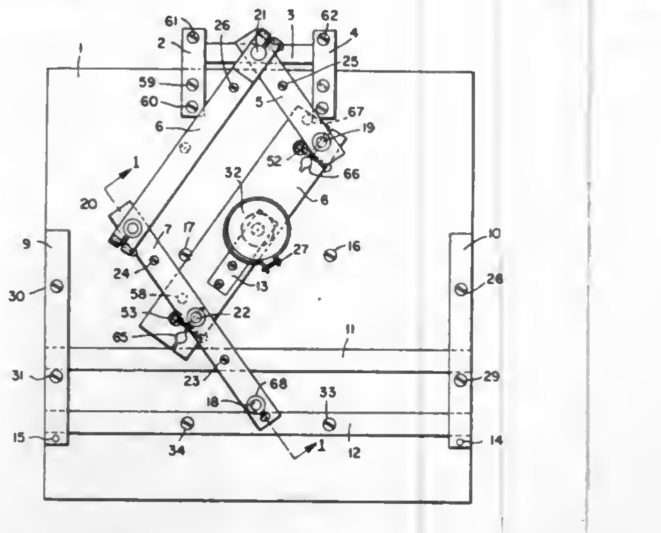
ENGRAVING MACHINES

Lewis E. Massie, Box 79, Solana Beach, Calif. 92024

Filed Nov. 13, 1978, Ser. No. 959,907

Int. Cl.^{2} B43L *13/10*

U.S. Cl. 33—25 B **4 Claims**



1. In an engraving machine comprising a mounting assembly and a pantograph structure comprising a pantograph frame comprising two pairs of arm members pivotally joined to each other in pantograph form and attached to said mounting assembly, the combination of a joint means for pivotally joining said arm members comprising axially aligned bores in adjoining arm members and a shaft of rigid material extending through and beyond opposite ends of the bores, said shaft secured to one of the respective arms by means of a slotted bore and clamping screw, the mating arm having a bore providing a bearing for said shaft, said mating arm comprising two parts in face to face butting contact along a plane perpindicular to the axis of the bore and shaft, said two parts being joined by screws extending through enlarged holes in one part and engaging threaded holes in the other part thus threaded holes providing means for displacing the two parts in any direction in their mutual planes, said displacement drawing the two parts in snug though moving engagement with the shaft.

4,193,201

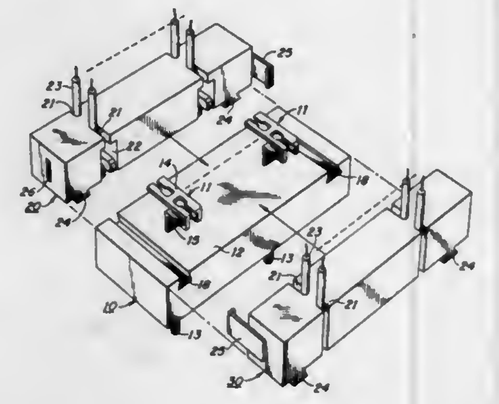
SOLDERLESS ELECTRICAL CONNECTOR CONSTRUCTION

Robert H. Van Horn, Worthington, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 29, 1978, Ser. No. 964,452

Int. Cl.^{2} H01R *13/38*

U.S. Cl. 339—98 **8 Claims**



1. An electrical connector construction including a terminal block (**10**) having a row of terminal means (**11**) extending from a surface (**12**) of said terminal block (**10**), characterized in that each of said terminal means (**11**) comprises first and second oppositely directed, insulation-piercing blades (**16, 17**),

- a first block (**20**) is provided having a row of cavities (**22**) therein on one side face to receive corresponding ones of said first blades (**16**) and further having conductor receiving channels (**21**) formed therein on said one face perpendicular to and in registration with said first blades (**16**), and in that
- a second block (**30**) is provided also having a row of cavities (**22**) therein on one side face to receive corresponding ones of said second blades (**17**) and further also having conductor receiving channels (**21**) formed therein on said one face perpendicular to and in registration with said second blades (**17**), and further in that said first and second blocks (**20, 30**) are fitted into abutment at said side faces along said surface of said terminal block (**10**) for connecting conductors (**23**), when fitted in said channels (**21**), between said blades (**16, 17**) of said terminal means (**11**).

4,193,202

APPARATUS AND METHOD FOR DETERMINING THE LOCATION OF PERIPHERAL POINTS OF BODIES

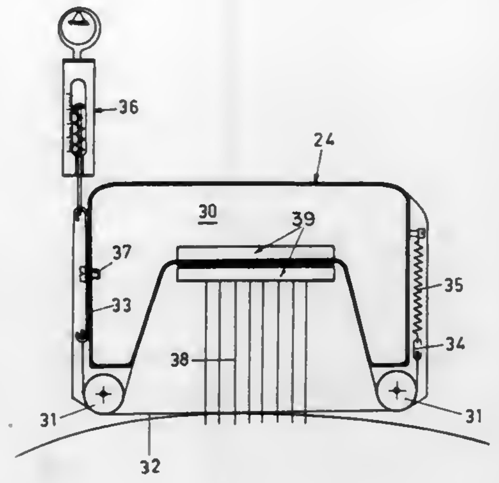
Albert Kürzi, and Willy Mersiovsky, both of Zurich, Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Sep. 22, 1978, Ser. No. 944,785

Claims priority, application Switzerland, Sep. 23, 1977, 11647/77

Int. Cl.^{2} G01B *7/02*

U.S. Cl. 33—174 L **15 Claims**



1. An apparatus for determining the position of peripheral points of a body to be measured, such as a body of rotation, relative to an axis of the body, comprising:

- a sensing gauge head member carried by means for moving said gauge head member toward the body to be measured;
- a flexible member under mechanical stress between two portions of the sensing gauge head; and,
- signal means for indicating that the flexible member is in contact with the body to be measured, the signal means being operatively connected to the flexible member.

4,193,203

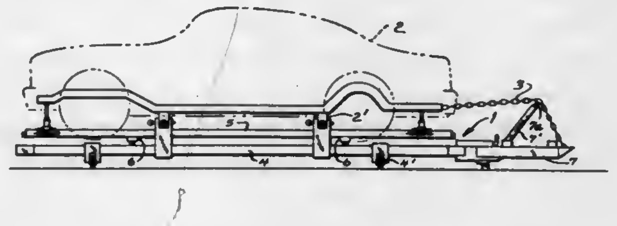
METHOD AND APPARATUS FOR REFORMING AND STRAIGHTENING VEHICLES

Pierre N. LeGrand, Ashford, England, and Dirk J. van Dalen, Janesville, Wis., assignors to Applied Power Inc., Milwaukee, Wis.

Division of Ser. No. 831,508, Sep. 8, 1977. This application Apr. 14, 1978, Ser. No. 896,186

Int. Cl.^{2} B21D *1/14;* **G01B** *5/24*

U.S. Cl. 33—180 AT **5 Claims**



1. A measuring bridge for use in an apparatus for straightening and reforming a vehicle for indicating and monitoring the magnitude of correction in the repair of the vehicle, said measuring bridge being supported on a surface below the vehicle and comprising:

- a plurality of interconnected tracks,
- a plurality of independent support means movably mounted on said tracks for at least longitudinal and lateral movement,
- a plurality of reference elements mounted on said independent support means and engageable with datum points on undamaged portions of the vehicle to provide predetermined reference positioning of the measuring bridge with respect to the vehicle,
- a plurality of indicating elements mounted on said independent support means and in coupling relationship with datum points on damaged and unaligned portions of the vehicle, said indicating elements responding to the application of corrective forces to provide a continuous indication of the magnitude of correction of the vehicle,
- and means disposed between the tracks and the supporting surface for positioning the tracks and elements mounted thereon relative the vehicle before and during repair thereof and the reference elements in engagement with the vehicle, said positioning means including roller means for permitting rolling movement between the tracks and the supporting surface.

4,193,204

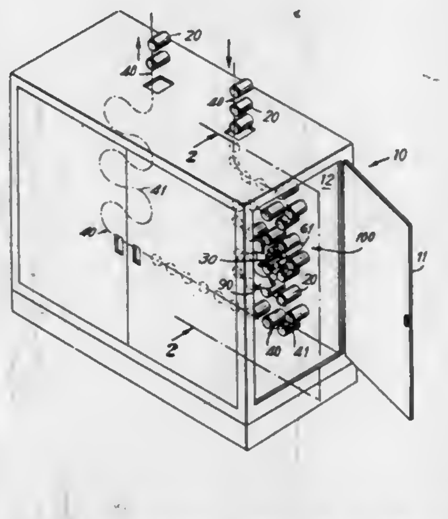
ULTRAVIOLET LIGHT CURING APPARATUS FOR CONTAINERS AND THE LIKE

Irving Nerod, Geneva, N.Y., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 11, 1978, Ser. No. 968,015

Int. Cl.^{2} F26B *3/30*

U.S. Cl. 34—4 **7 Claims**



1. A method for continuously curing ultra-violet-curable coated articles comprising:

- (a) passing said articles about an ultraviolet light source;
- (b) rotating the surfaces of the articles relative to the light source as the articles pass thereabout
- (c) rotating reflector means about the light source in substantially synchronous relation to the articles, thereby focusing the light continuously on the surfaces of the articles during passage thereof about the light source.

4,193,205

COLUMNAR CONTAMINANT REMOVER

Frank M. Black, P.O. Box 9254, Houston, Tex. 77011

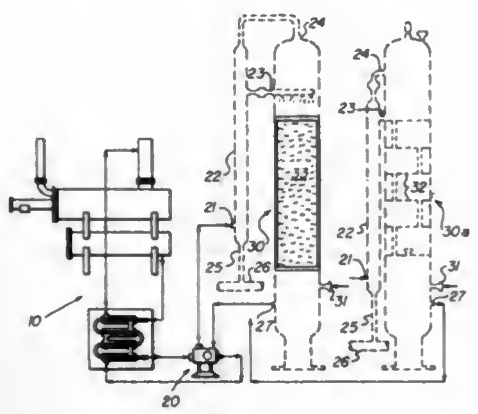
Filed Aug. 28, 1978, Ser. No. 937,063

Int. Cl.^{2} F26B *3/00*

U.S. Cl. 34—9 **2 Claims**

2. A method of removing contaminants from a gas comprising:

causing said gas to move upwardly within a vessel from near its bottom along a tortuous and spiralar path to exit near said vessel's top, and



causing a cleaning liquid to move downwardly from near said vessel's top counter currently to the upward path of said gas to exit near said vessel's bottom.

4,193,206

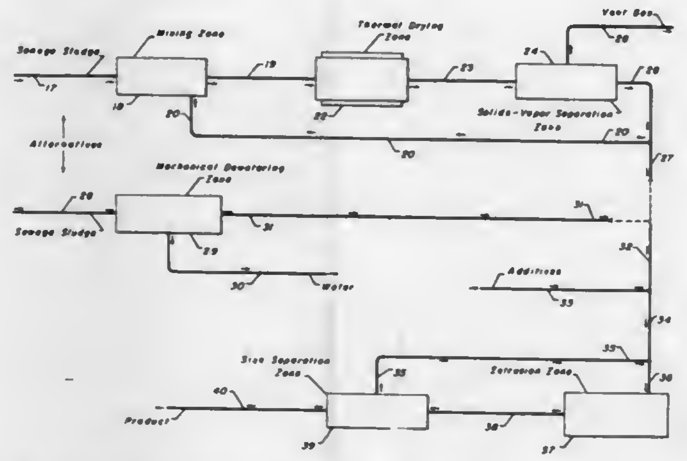
PROCESSES FOR DRYING SEWAGE SLUDGE AND FILTERING WATER

Vere Maffet, West Chester, Pa., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 775,673, Mar. 8, 1977, Pat. No. 4,128,946, Ser. No. 813,577, Jul. 7, 1977, Pat. No. 4,098,006, Ser. No. 813,578, Jul. 7, 1977, Pat. No. 4,098,006, Ser. No. 844,097, Oct. 20, 1977, Pat. No. 4,121,349, Ser. No. 858,879, Dec. 8, 1977, Pat. No. 4,161,825, and Ser. No. 891,437, Mar. 29, 1978, which is a continuation-in-part of said Ser. No. 813,577, said Ser. No. 858,879, is a continuation-in-part of said Ser. No. 813,577, and Ser. No. 813,578, said Ser. No. 844,097, is a continuation-in-part of said Ser. No. 813,578, said Ser. No. 813,578, and Ser. No. 813,577, each is a continuation-in-part of said Ser. No. 775,673. This application May 25, 1978, Ser. No. 909,587

Int. Cl.^{2} F26B *7/00*

U.S. Cl. 34—12 **15 Claims**



1. A process for drying sewage sludge which comprises the steps of:

(a) passing a feed stream comprising sewage sludge into a toroidal dryer operated at drying conditions and effecting the evaporation of water contained in the feed stream, and the production of a toroidal dryer effluent stream comprising particles of sewage sludge derived from the feed stream and water vapor;

(b) separating said toroidal dryer effluent stream in a solids-vapor separating zone and producing a vapor stream comprising water vapor and a dry solids stream comprising dried sewage sludge and containing less than about 15 wt. % water;

(c) admixing a plasticizer comprising an aqueous formaldehyde solution into at least a first portion of the dry solids stream, with the amount of plasticizer which is added being less than 5 wt.% of the first portion of the dry solids stream; and,

(d) extruding the first portion of the dry solids stream in an extrusion zone under conditions sufficient to effect the formation of a product stream having a bulk density greater than about 30 lb/ft^{3}.

4,193,207

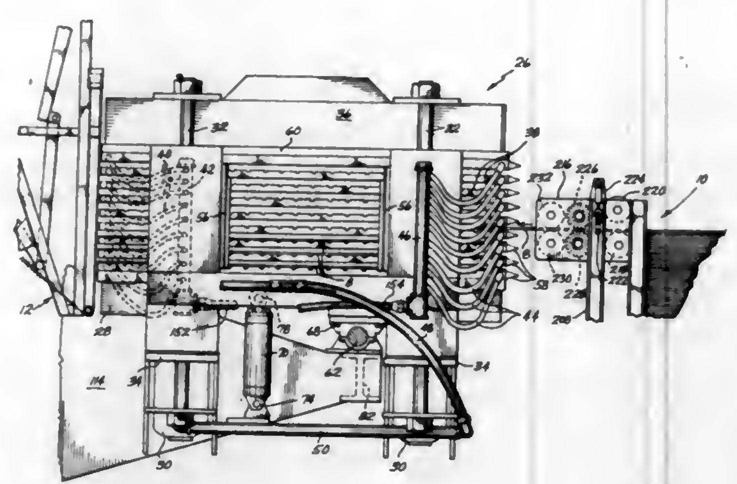
METHOD FOR VENEER DRYING

Richard C. Allen, and Darrell E. Pierson, both of Federal Way, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 20, 1978, Ser. No. 888,457

Int. Cl.^{2} F26B *3/20*

U.S. Cl. 34—13.8 **6 Claims**



1. A method for the primary drying of wood veneer in a contact veneer drying having at least two substantially flat metal plates therein for the insertion therebetween of wet veneer sheets, the plates being controllable for opening and closing, comprising:

inserting a sheet of wet veneer between the metal plates having an initial average moisture content within a range of from 30 to 250%;

closing the metal plates and applying continuous uniform pressure over a portion of both surfaces of a wet veneer sheet within a range of from 5 psi to 70 psi and for a time period within a range of from 30 seconds to 12 minutes;

elevating the temperature of the contact surfaces of the metal plates to a level within a range of from 250° F. to 400° F. and continuously holding the temperature within the range for the time period during which the pressure is applied; and

simultaneously with the application of the pressure and temperature continuously exhausting the water and steam generated to atmosphere through a plurality of exhaust grooves positioned in at least one of the metal plates on a contact surface thereof.

4,193,208

SINGLE PASS ALFALFA DEHYDRATOR DRYER AND FLIGHTING THEREFOR

Richard L. Ronning, Overland Park, Kans., assignor to Ronning Engineering Company, Inc., Overland Park, Kans.

Filed Nov. 18, 1977, Ser. No. 852,690

Int. Cl.^{2} F26B *11/04*

U.S. Cl. 34—131 **9 Claims**

1. A single pass dehydrator for drying moisture laden combustible material, said dehydrator including:

an elongate, generally horizontal, material-receiving hollow dryer drum having a sidewall, an inlet and an outlet;

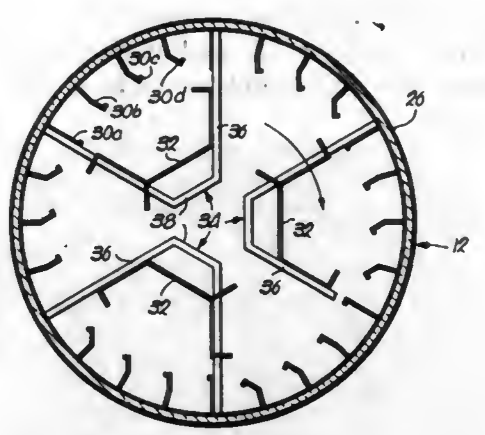
means for creating an airflow from said inlet to said outlet whereby to entrain material at said inlet for conveyance through said drum;

a burner adjacent said inlet for heating said material and said airflow;

a number of elongate flighting panels disposed within said drum in offset relation to the longitudinal axis of the latter; and

means mounting said panels on said drum in offset relation to the sidewall thereof,

said mounting means including a plurality of elongate support struts spaced along the length of said drum, each strut extending generally transversely of the drum between the



drum wall and said panels for supporting the panels against longitudinal buckling while at the same time spacing said panels from said sidewall of the drum,

said struts being arranged in pairs, each pair of struts being interconnected to form a rigid U-shaped support for a respective panel.

4,193,209

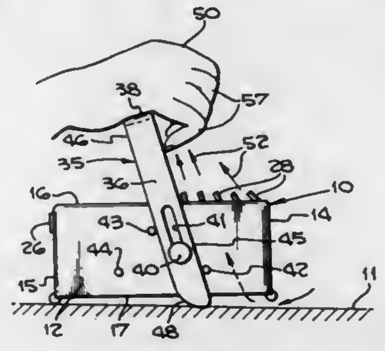
FINGERNAIL DRYER

Paula J. Lovison, 916 N. First St. #E, Alhambra, Calif. 91801, and William D. Lovison, 260 Colusa Way, Vista, Calif. 92083

Filed Sep. 28, 1978, Ser. No. 946,545

Int. Cl.^{2} F26B *21/00*

U.S. Cl. 34—239 **6 Claims**



1. A cosmetic accessory device for the hands comprising a housing for use on a supporting surface, said housing having sidewall, topwall and bottomwall structures providing a chamber, a power actuated fan contained in said chamber, outlet passage means for said fan in one of said wall structures, a source of power for said fan and a switch mounted on said housing in operative relationship with said source of power, a hand supporting bracket comprising legs having opposite side edges, a hand rest extending between adjacent ends of the legs, opposite ends of the legs having each a pivotal connection to the housing on respective opposite sidewall structures, said bracket having a first position wherein said hand rest is in a hand supporting position located adjacent said outlet passage means wherein to support fingernails of a user's hand in successive positions for cleaning, for application of polish and for drying of said polish, and wherein said legs are in a position on the supporting surface, the pivotal connection of at least one of the legs comprising a releasable interlocking connection with said housing, said bracket having a second position wherein the hand rest is spaced from an adjacent sidewall structure and in a carrying position.

4,193,210

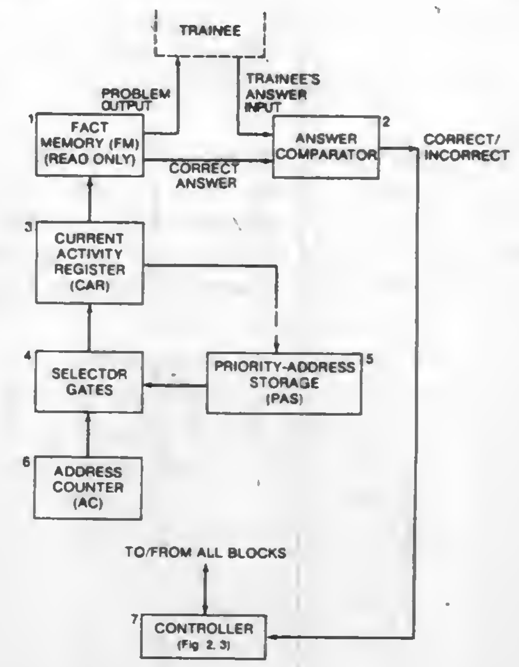
AUTOMATIC MEMORY TRAINER

Peter Turnquist, 24400 Geyserville Ave., Cloverdale, Calif. 95425

Continuation-in-part of Ser. No. 828,853, Aug. 29, 1977, abandoned, which is a continuation of Ser. No. 624,272, Oct. 20, 1975, abandoned. This application Jul. 31, 1978, Ser. No. 929,688

Int. Cl.^{2} G09B *7/04*

U.S. Cl. 35—9 A **32 Claims**



1. Apparatus useful by a trainee to facilitate learning, said apparatus comprising:

memory means for storing a plurality of data items;

first sequencing means for selecting data items from said memory means;

additional sequencing means for making multiple selections of the same data item and separating successive selections of such item by an interval comprising one or more selections of other data items;

interval variation means for automatically varying said interval from one predictable magnitude to another predictable magnitude;

output means, responsive to each data item selected, for transmitting data, as defined by said selected data item, to a trainee;

input means for receiving the trainee's response corresponding to the transmitted data; and

classification means, responsive to the selected data and to the responses by the trainee, for determining whether responses by the trainee are good or bad and for classifying data items as subject to selection by said additional sequencing means.

4,193,211

MODULAR TERRAIN MODEL BOARD ASSEMBLY AND METHOD OF BUILDING SAME

Martin Dotsko, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,353

Int. Cl.^{2} G09B *25/08*

U.S. Cl. 35—12 N **8 Claims**

1. A method of joining a multiplicity of panels making up the three-dimensional model board used with a closed-circuit television visual display system of a vehicle simulator comprising the steps of:

placing the edges of two panels representing contiguous areas of simulated terrain substantially parallel and at a spaced distance from each other such that when said two panels are viewed together they represent one larger continuous area of simulated terrain, each of said panels of terrain including a surface area and extended edges around the perimeter of said panels;

inserting a packing strip in said spaced distance, below said surface area of each said panel and in contact with said parallel edges, said packing strip further including a cord attached to a surface of said packing strip at spaced intervals; and

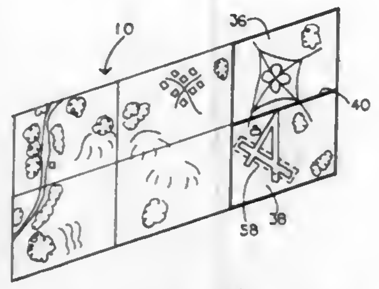
filling the seam defined by said edges of said panels and said packing strip with an adhesive compound up to a level of said surface areas of said panels to obtain a continuous terrain between said two panels, said adhesive compound having qualities such that said cord will separate from said packing strip and cut through said adhesive compound when pulled up from said packing strip and along said seam.

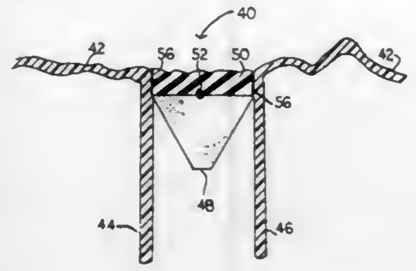
5. A three-dimensional terrain model board made up of a multiplicity of panels for use with a close-circuit television visual display system of a vehicle simulator comprising;

a multiplicity of panels placed such that the edges of two panels are substantially parallel and at a spaced distance from each other such that when said two panels are viewed together they represent a larger continuous area of simulated terrain, said panels including a surface area simulating said terrain and extended edges around the perimeter of said panels;

a packing strip inserted in said spaced distance between said edges of two parallel panels representing contiguous areas of a simulated terrain, said packing strip being placed below said surface area of each panel and in contact with said parallel edges and further including a cord detachably secured to a surface of said packing strip at spaced intervals; and

an adhesive compound applied to the seam defined by said edges of said panel and said packing strip, said adhesive compound applied in sufficient quantity to fill said seam up to said surface area of said panels to obtain a continuous terrain between said two contiguous panels, said adhesive compound, having qualities such that said cord will separate from said packing strip and cut through said adhesive compound when pulled up from said packing strip and along said seam.



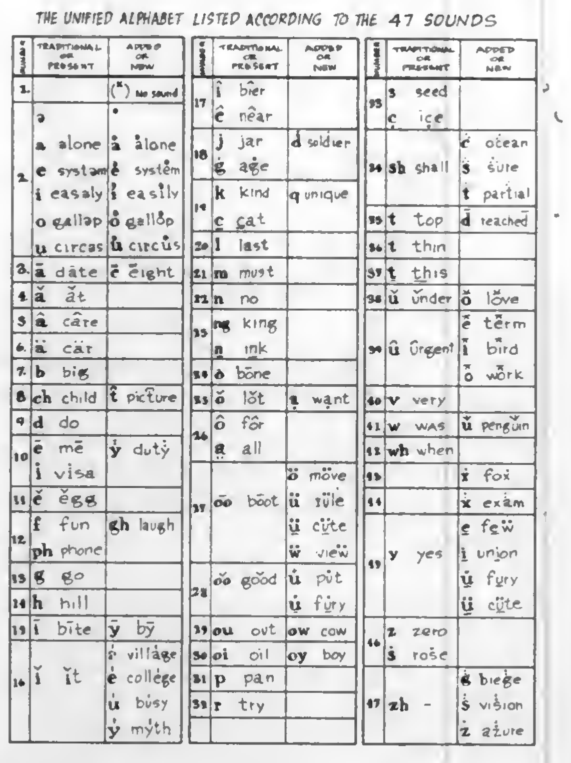


4,193,212
UNIFIED ENGLISH PRONOUNCING ALPHABET

Hassan A. Al-Kufaishi, P.O. Box 124, Bloomington, Calif. 92316

Filed May 17, 1978, Ser. No. 890,538
Int. Cl.² G09B *17/00*
U.S. Cl. 35—35 R **1 Claim**

1. A set of diacritic marks that allows the word to be read with self-pronunciation while still using the normal traditional spelling of the word, said set of 24 new marks covering 47 sounds to operate in conjunction with certain chosen traditional diacritics together with rules of application pertaining to the entire set, comprising a double-dash over "ē" for sound of long "ā"; a cap over "t̂" for sound of "ch"; double-dotted "i" and "ÿ" for sound of long "ē"; rule that "gh" has sound of "f" except when it is silent; vertical dash over letters "a̍," "e̍," "u̍," and "y̍" for short "ĭ" sound; macron over "ȳ" for long "ī" sound; general rule to consider "y" the same as "i" when being marked with diacritics; dot over "ḋ" for "j" sound; "q" for sound of "k" always; under-dotted "a" for sound of breve "ŏ"; single mini-circle over "ů" and underscored "ů̲" for sound of breve ligatured "o͝o"; double mini-circle over "o," "u," underscored "u̲," and "w" for sound of long ligatured "o," ("o͞o"); "ow" for sound of "ou"; "oy" for sound of "oi"; tri-dots in triangle form over "c," "s," and "t," dash over "d̄" for sound of "t"; underlined breve mark (˘̲) over "ŭ" for breve "ŭ"; overlined circumflex (ˆ̄) over "e," "i," "o," for sound of "u"; double dots over "g̈," "s̈," and "z̈," for sound of "zh"; a mini "x", the omission mark, over any letter of the alphabet which is silent; all marks being made while maintaining the orthography intact.



THE UNIFIED ALPHABET LISTED ACCORDING TO THE 47 SOUNDS

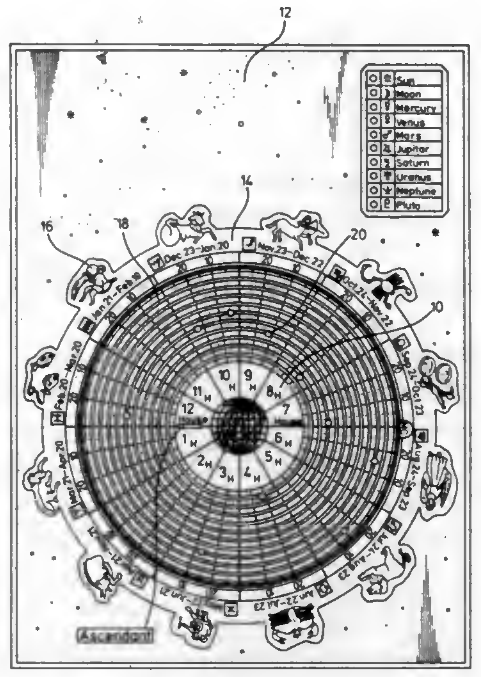
NUMBER	TRADITIONAL OR PRESENT	ADDED OR NEW
1.		(ˣ) No sound
2.	ə a alone e systəm i easəly o galləp u circəs	• ȧ ȧlone ė systėm i̇ easi̇ly ȯ gallȯp u̇ circu̇s
3.	ā dāte	ē ēight
4.	ă ăt	
5.	â câre	
6.	ä cär	
7.	b big	
8	ch child	t̂ pict̂ure
9	d do	
10	ē mē i visa	ÿ dutÿ
11	ĕ ĕgg	
12	f fun ph phone	gh laugh
13	g go	
14	h hill	
15	ī bīte	ȳ bȳ
16	ĭ ĭt	a̍ villa̍ge e̍ colle̍ge u̍ bu̍sy y̍ my̍th
17	î bîer ê nêar	
18	j jar ġ aġe	ḋ soldier
19	k kind c̲ c̲at	q unique
20	l last	
21	m must	
22	n no	
23	ng king n̲ ink	
24	ō bōne	
25	ŏ lŏt	ạ wạnt
26	ô fôr a̤ all	
27	o͞o bo͞ot	ö möve ü rüle ü̲ cü̲te ẅ vieẅ
28	o͝o go͝od	ů pův ů̲ fů̲ry
29	ou out	ow cow
30	oi oil	oy boy
31	p pan	
32	r try	
33	s seed c ice	
34	sh shall	c⃛ oc⃛ean s⃛ s⃛ure t⃛ part⃛ial
35	t top	d̄ reached̄
36	t thin	
37	t̲ t̲his	
38	ŭ ŭnder	ŏ lŏve
39	û ûrgent	ê̄ tê̄rm î̄ bî̄rd ô̄ wô̄rk
40	v very	
41	w was	ŭ pengŭin
42	wh when	
43		ẋ foẋ
44		ẋ exȧm
45	y yes	e̲ fe̲w i̲ uni̲on ṳ fṳry ṳ cṳte
46	z zero ṡ roṡe	
47	zh -	g̈ bieg̈e s̈ vis̈ion z̈ az̈ure

4,193,213
ASTROLOGICAL FORTUNE-TELLING DEVICE

Kataro Suda, Tokyo, Japan, assignor to Suda Kinzoku Seisakusho Co. Ltd., Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 922,976
Claims priority, application Japan, Oct. 13, 1977, 52-122878
Int. Cl.² G09B *29/00;* A63F *9/18*
U.S. Cl. 35—44 **8 Claims**

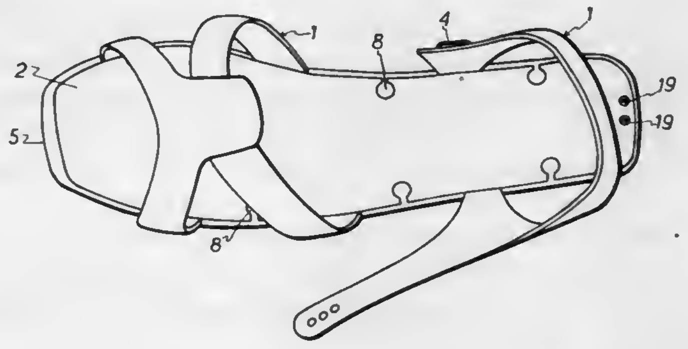
1. An astrological fortune-telling device which comprises a base plate having twelve divisions of houses, a plate which is provided with the twelve depicted constellation signs and mounted rotatably on a center of the twelve divisions of said base plate, orbits concentrically arranged around said center for placement of markings which correspond to the sun and the planets excluding the earth at any position, a transparent cover placed over said base plate with said rotatable plate, and a transparent disk provided with fan-shape areas which is surmounted removably on said transparent cover and rotatable in relation to the center of said rotatable plate.



4,193,214
CHANGEABLE SANDAL

Chin-Yuan Wang, No. 15, Hsi-An Rd., Pu-Li Town, Nan Tou, Taiwan (545)

Filed Nov. 28, 1977, Ser. No. 855,437
Int. Cl.² A43B *3/12, 3/24*
U.S. Cl. 36—11.5 **6 Claims**



1. A sandal formed of attachable elements which are individually replaceable comprising:

a binding element having an inside surface and a plurality of fasteners on said inside surface and having two end portions;

a vamp having opposed L-shaped ends, each of said ends having a base and vertical portion;

a sole having a heel portion and having a plurality of cut-out fastening regions and a plurality of angular indentations in the side thereof, each of said fastening regions corresponding to one of said fasteners, each of said fastening regions being adapted to receive therein said corresponding fastener, each of said indentations corresponding to one of said L-shaped ends, each of said indentations being adapted to receive therein the base portion of said corresponding L-shaped end, the vertical portion of said L-shaped end abutting said side of said sole;

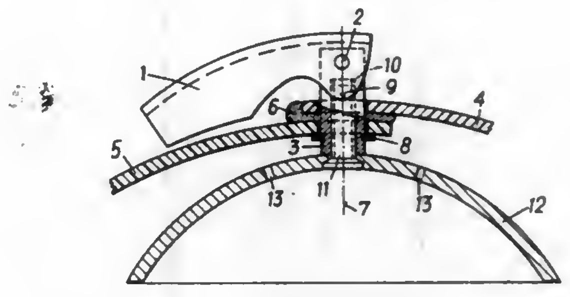
said binding element surrounding and molding to said side of said sole, holding said base portion of each said L-shaped ends fitting in said corresponding indentation and holding said vertical portion of each said L-shaped end abutting the side of said sole, thereby detachably joining said sole, vamp and binding element; and

means for detachably locking the heel portion of said sole to said binding element end portions.

4,193,215
FASTENER FOR INSTEP PORTION OF SKI SHOE

Adolf Hensler, Koflach, Austria, assignor to Koflach Sportgerate Gesellschaft m.b.H., Koflach, Austria

Filed Jul. 10, 1978, Ser. No. 923,444
Int. Cl.² A43B *11/00, 5/04*
U.S. Cl. 36—50 **9 Claims**

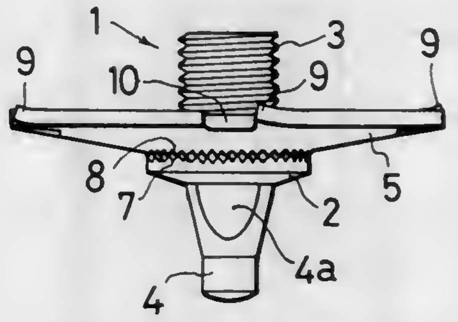


1. In a ski shoe construction: a cup portion which in use covers the front part of the foot, said cup having a slot overlying the instep of the foot and formed by overlapping upper and lower edge portions of the cup; a pulling element passing through said upper and lower edge portions of said slot in a direction perpendicular to the planes of said edge portions, said pulling element having an upwardly facing surface engaging said lower edge portions; and a tightening element arranged outwardly of said upper edge portion and cooperating with said pulling element and with said upper edge portion to releasably clamp said upper and lower edge portions together in a direction perpendicular to the planes of said edge portions whereby said clamping does not result in movement of said edge portions in their planes.

4,193,216
SPIKE ASSEMBLY FOR SPORTS SHOES

Takeshi Ueda, 13-11, Kuruwa-cho, Gunma-ken, Isezaki-shi, Japan

Filed Oct. 11, 1978, Ser. No. 950,296
Int. Cl.² A43C *15/00*
U.S. Cl. 36—67 D **2 Claims**

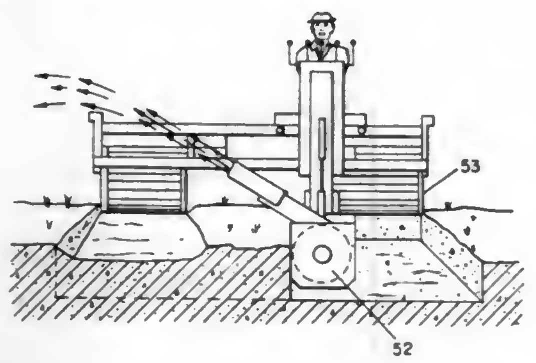


1. A spike assembly for a sports shoe comprising a spike body formed at its one end portion into a screw element and at its other end portion into a spike element and having at its middle portion a flange provided with a serrated surface facing said screw element; a washer provided with a serrated surface and loosely mounted at its center opening, which is somewhat larger in diameter than the screw element, on the screw element, so that the flange and the washer face one another at their respective serrated surfaces, said surfaces being engageable one with another to prevent turning; and an annular member made of synthetic resin mounted at its opening, which is somewhat smaller in diameter than the screw element, on the screw element so as to support the washer from the outside thereof; said washer being provided at its peripheral edge with turning proof projections adapted to be engaged with the sole of the shoe.

4,193,217

PIVOTABLE BUCKET WITH A ROTATABLE EARTH MOVING MECHANISM

John M. Poche, 6317 Franklin Ave., New Orleans, La. 70122
Filed Sep. 29, 1977, Ser. No. 837,846
Int. Cl.^{2} E02F *3/24*
U.S. Cl. 37—93 **9 Claims**

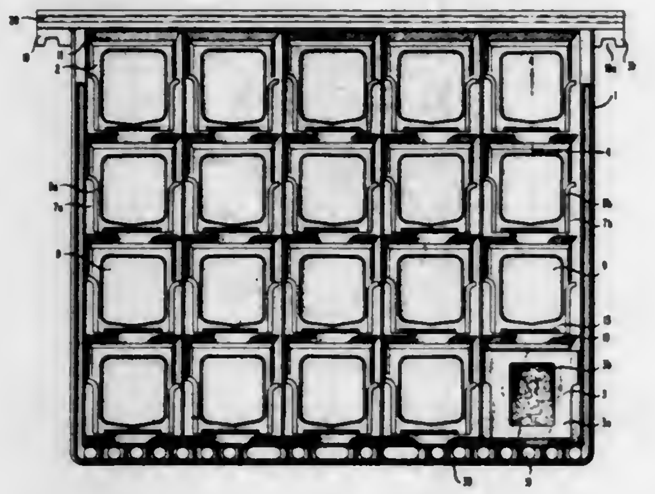


1. A bucket pivotably secured to the outer end of an elbow-type power boom attached to a carrier vehicle having hydraulic power, an earth moving mechanism comprising a rotatable wheel-like structure provided with a plurality of equally spaced and outwardly extending earth ejecting blades integral with said wheel-like structure and being provided additionally with support vanes and a retaining support ring, the wheel-like structure being mounted on a horizontally disposed power shaft having a shredder blade mounted on the outer end of the power shaft and a hydraulic motor mounted in the bucket and connected to the shaft by a reduction drive mechanism and a combination shear blade and compression plate forming a compression chamber in the upper portion of the bucket.

4,193,218

TRANSLUCENT STORAGE PAGES FOR FILING FILM SLIDES

Leon Mermelstein, Rockaway, N.J., assignor to Franklin Distributors Corporation, Morris Plains, N.J.
Filed Apr. 13, 1978, Ser. No. 896,139
Int. Cl.^{2} G09F *1/10*
U.S. Cl. 40—374 **5 Claims**



1. A self-supporting unitary slide storage page for holding and viewing photographic slides, comprising a sheet of translucent plastic material of archival character;

said sheet comprising retaining means, including a number of contiguous rectangular trays which are spaced apart in a lateral and longitudinal patterned relationship;

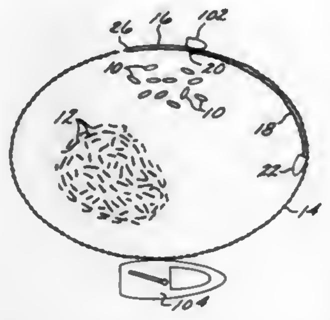
each of said trays being adapted to hold a photographic slide, and including integral projecting tabs for holding said slide in storage position in said tray;

each said tray having a slightly recessed rectangular central base portion which is surrounded on its inner periphery with a slightly raised frame constructed for contact with the edge mounts of said photographic slides, the shape of said recessed central base portion constructed to substantially correspond in lateral extent to at least exceed the extent of the emulsion-covered portion of the said slides and to be slightly spaced apart therefrom when one of said slides is in storage position in one of said trays.

4,193,219

SEA MAMMAL GATE

Clarence W. Pogue, 6631 Monlaco Rd., Long Beach, Calif. 90808
Filed Dec. 19, 1977, Ser. No. 861,691
Int. Cl.^{2} A01K *73/02*
U.S. Cl. 43—14 **7 Claims**



1. A sea mammal gate for use with a seine net and connected in lieu of floats along a portion of the upper edge thereof, comprising;

at least one elongated inflatable chamber;

a compressed gas line leading to said inflatable chamber; and

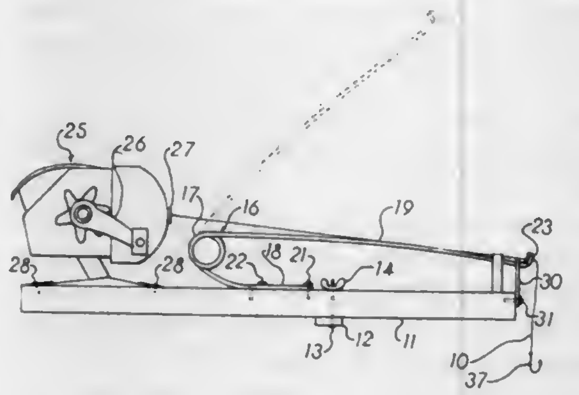
a valve assembly interposed between said inflatable chamber and said compressed gas line for selectively admitting gas to and exhausting gas from said inflatable chamber, thereby altering the bouyancy characteristics of said inflatable chamber including a main valve with a closure element normally biased to seal a valve opening, a pilot gas line control for overcoming the bias of said closure element as desired, and a pressure relief valve normally biased shut to maintain pressure in said inflatable chamber and unsealable to release excessive pressure in said inflatable chamber; and

a herding net weighted at the bottom and with floats at the top having one free end and one end coupled to said seine net proximate to one end of said elongated inflatible chamber.

4,193,220

FISHING APPARATUS

George W. Bourquin, 710 Sierra Rd. West, and Louis LaFontain, 1627 Hollins Ave., both of Helena, Mont. 59601
Filed Feb. 6, 1978, Ser. No. 875,290
Int. Cl.^{2} H01K *97/00*
U.S. Cl. 43—15 **8 Claims**

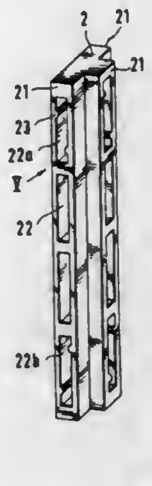


1. Fishing apparatus including a longitudinal support member, a pivotable cross member securable in a position transverse of said support member, a coil spring member having a coil portion and substantially straight arms extending a significant distance from each end of said coil portion, one of said arms of said coil spring member being affixed to said support member so a second arm of said spring member is disposed longitudinally of said support member and biased away from said support member, said second spring arm being of a length so that when said second spring arm is disposed adjacent to said support member the free end of said second spring arm extends beyond an end of said support member, said free end of said second spring arm having a line-guiding portion, a rotatable line storage reel mounted on said support member between said coil portion of said coil spring member and the end of said support member remote from said free end of said second spring arm, locking means engageable with said second spring arm mounted on said support member, said locking means including a hook portion at the free end thereof, and latching means mounted on said support member adjacent said free end of said second spring arm; said latching means including a hook portion engageable with said second spring arm and pivotable transversely of said support member, a support portion pivotally connected to said hook portion, and biasing means urging said hook portion away from said support portion.

4,193,221

TOY BUILDING

Hans Beck, Oberasbach, Fed. Rep. of Germany, assignor to geobra Brandstaetter GmbH & Co., KG, Zirndorf, Fed. Rep. of Germany
Filed Jan. 30, 1978, Ser. No. 873,328
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704204
Int. Cl.^{2} A63H *33/06*
U.S. Cl. 46—19 **28 Claims**

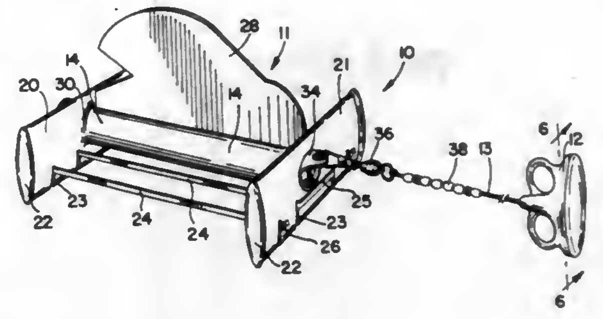


1. A toy building set for constructing a toy building comprising a plurality of wall plates each having lateral edge portions, said lateral edge portions having anchoring elements thereon, said wall plates forming sections of the outer wall of the toy building, a plurality of connecting members each having a plurality of recesses for receiving said anchoring elements, said recesses being defined at least partially by opposed recess walls, said opposed recess walls being spaced from one another a distance greater than the thickness of said anchoring elements, at least some of said opposed recess walls having clamping bars extending from said opposed recess walls, said clamping bars being offset relative to one another such that the clamping bar on one recess wall is displaced in a non-opposed position relative to the clamping bar on the opposed recess wall, said clamping bars having terminating ends which engage said anchoring elements, said wall plates being made of a resilient material, said terminating ends of said clamping bars on said opposed recess walls being spaced from one another such that upon insertion of an anchoring element into the recess, the anchoring element is lightly distorted to thereby provide a clamping securement.

4,193,222

AUDIBLE AND LUMINOUS SWINGABLE TOY

Eugene A. Deschand, 148 N. Grand Ave., Bradley, Ill. 60915
Filed Aug. 7, 1978, Ser. No. 931,850
Int. Cl.^{2} A63H *5/00*; C09K *3/00*
U.S. Cl. 46—52 **12 Claims**



1. An audible and luminous swingable toy for swinging in an orbit, said toy comprising:

an elongate and tubular central body portion, said body portion being of transparent or translucent material;

light emitting means disposed in said tubular body portion for illuminating the body portion;

a first elongate end piece secured to said body portion near one end thereof in generally perpendicular relationship thereto;

a second elongate end piece secured to said body portion near an opposite end thereof in generally perpendicular relationship thereto;

a plurality of apertures in said first and second end pieces at spaced points therealong;

a plurality of vibratory members disposed in said apertures between said first and second end pieces such that said vibratory members are in generally parallel and spaced apart relationship, said vibratory members adapted to emit audible noise frequencies upon excitation by air currents while swinging in said orbit;

stabilizing fin means disposed perpendicularly to a plane defined by said vibratory members for orienting and maintaining said vibratory members perpendicular to another plane defined by said orbit;

cord means attached to one end of said central tubular body portion; and

twist relieving means disposed in said cord means to relieve twisting in said cord means such that said vibratory members tend to remain oriented in a plane perpendicular to the plane defined by said orbit.

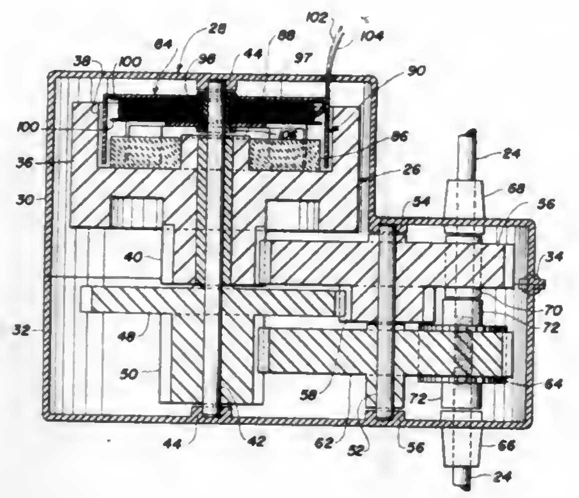
4,193,223

INERTIA WHEEL TOY VEHICLE

Bruce M. D'Andrade, Flemington, N.J., and Kwok Wa Tsui, WanChai, Hong Kong, assignors to Arco Industries Ltd., New York, N.Y.
Filed May 25, 1978, Ser. No. 909,540
Int. Cl.^{2} A63H *29/20*
U.S. Cl. 46—209 **6 Claims**

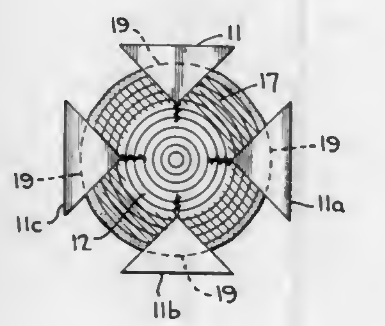
1. A wheeled toy adapted to run along a supporting surface and having a body and at least one current conductible axle rotatably supported thereby with wheels on the ends of said axle, an inertia type flywheel rotatably supported by said body for rotation about a fixed axis, and a speed-changing gear train connected between said flywheel and at least one of the wheels of said toy comprising a drivewheel, said toy when rolled along said supporting surface by applied force rotating said flywheel to store kinetic energy therein and upon release of the toy said stored energy to said flywheel drives at least one wheel of said toy to propel the toy along said surface, in combination with an auxiliary electric device mounted upon said toy, an electric generator connected to said flywheel for operation thereby to generate electric current, said generator comprising a permanent magnet and a field including a coil, one of the latter items being fixedly supported by said body of said toy

and the other being connected to said flywheel for rotation therewith relative to said fixedly supported item, a pair of contacts supported upon said body for contact with said axle, and a circuit connecting said auxiliary electric device in series with said contacts and the opposite ends of said coil, whereby electric current generated by said generator is delivered to said auxiliary electric device to activate the same, when said flywheel is rotating said generator to generate electric current.



4,193,224
STEM GROWTH CONTROL DEVICE AND METHOD

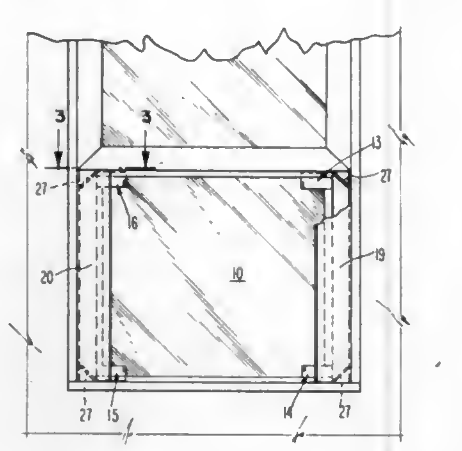
Henry H. Turner, 2702 Techwood Dr., Columbus, Ga. 31906
Continuation of Ser. No. 745,324, Nov. 26, 1976, abandoned, which is a continuation of Ser. No. 610,771, Sep. 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 429,392, Dec. 28, 1973, abandoned. This application Jan. 5, 1979, Ser. No. 1,188
Int. Cl.^{2} A01G *1/00*
U.S. Cl. 47—58 **29 Claims**



1. A method for limiting growth of a plant at a selected level for control of translocation past said level, comprising the step of confining growth to at least one slot at said level, said slot extending outwardly from said plant and being transverse to channels for translocation of metabolites at said level and being delineated laterally on each of its respective sides by an edge of a plate of material maintained transverse to said channels and strong and rigid enough to resist the pressure of growth while functioning adequately as a template or pattern for limitation of growth, each said edge serving to limit growth at and perpendicular to the respective said edge while allowing relatively free growth at and parallel to the respective said edge, so that, in and immediately adjacent to a surface transverse to said pathways and surrounding said plant at the time of initiation of said method and defined by and lying within said slot and said material, growth occurs in said slot and not in the portion of said surface occupied by said material, with, after such growth, an ultimate area occupied by said plant in said surface smaller because of and in proportion to the degree of said limitation, there being produced thereby a narrow pass, or bottleneck, or insufficiency of means for translocation past said level.

4,193,225
AUXILIARY WINDOW ELEMENT

Louis L. Posner, Huntingdon Valley, and Patrick J. McGarry, Wyndmoor, both of Pa., assignors to Thermal Economics, Inc., Pa.
Continuation-in-part of Ser. No. 825,989, Aug. 19, 1977. This application Aug. 8, 1978, Ser. No. 931,879
Int. Cl.^{2} E05C *21/02*
U.S. Cl. 49—465 **1 Claim**



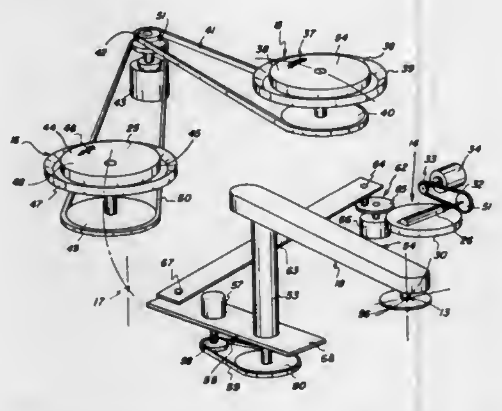
1. In an adjustable auxiliary window element adapted to fit in a window frame, said element having a window encased in a perimetric frame having side portions, a top portion, a bottom portion and four corner portions, the improvement which comprises:

adjustable extension means in the form of channels which telescopically engage said encased window laterally;

resilient means secured to said corner portions and extending within said channels and adapted to bias said channels outwardly, wherein said corner portions interfit with said top and bottom portions so as to enable vertical adjustment of said top or bottom portion by adjustment of a corner portion, and wherein said corner portions include a tab positioned thereon without said top and bottom portions and said channels and adapted to be gripped for ease of adjustment, and wherein said channels are formed with a free end extending away from said window for ease of adjustment.

4,193,226
POLISHING APPARATUS

Gerald L. Gill, Jr., Scottsdale, and Philip J. Rioux, Glendale, both of Ariz., assignors to Kayex Corporation, Rochester, N.Y.
Division of Ser. No. 835,295, Sep. 21, 1977, Pat. No. 4,141,180. This application Aug. 30, 1978, Ser. No. 938,036
Int. Cl.^{2} B24B *7/00*
U.S. Cl. 51—124 R **3 Claims**



1. Apparatus for polishing one surface of a thin, flat wafer of a semiconductive material, comprising:

at least one station having a flat, rotatable polishing surface;

carrier means pivotally mounted with respect to the one station including a self-levelling, rotatable pressure head having a chamber covered with a perforated, high-friction material for retaining the wafer in contact therewith, the carrier means moving the wafer into the one station and over an area of the polishing surface between its periphery and its rotational axis, moving the wafer in a vertical direction to position and hold the same in the area and in contact with the polishing surface under pressure, and continuously rotating the wafer during such moving and holding;

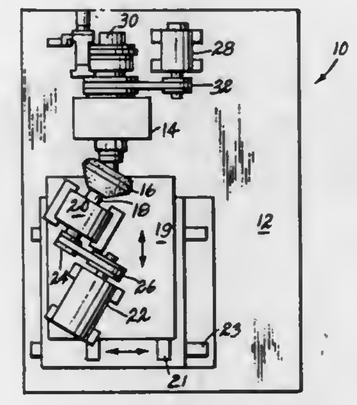
means interconnected to the carrier means for oscillating the same for a period of time while the wafer is in contact with the polishing surface and is being rotated to polish the one surface;

means interconnected to the carrier means for controlling the movement thereof and for maintaining the wafer in contact with the polishing surface at the pressure and for the period of time; and

means interconnected to the chamber of the pressure head for connecting a source of a liquid thereto to wet the high-friction material for enhancing retention of the wafer thereby during movement and rotation of the wafer, for connecting a vacuum thereto for holding the wafer in contact with the high-friction material during movement and positioning of the wafer in the area, and for connecting a source of air thereto for ejecting the wafer from the high-friction material.

4,193,227
ADAPTIVE GRINDING CONTROL

Herbert R. Uhtenwoldt, West Boylston, Mass., assignor to Cincinnati Milacron-Heald Corporation, Worcester, Mass.
Filed Jun. 21, 1978, Ser. No. 917,415
The portion of the term of this patent subsequent to Apr. 3, 1996, has been disclaimed.
Int. Cl.^{2} B24B *49/16*
U.S. Cl. 51—165.77 **3 Claims**



2. A grinding machine for grinding workpieces with diverse grindability characteristics, comprising:

(a) a base;

(b) a grinding wheel rotably mounted upon said base;

(c) a workpiece support for supporting a workpiece with diverse grindability characteristics;

(d) means for effectuating relative infeed movement between said grinding wheel and said workpiece support;

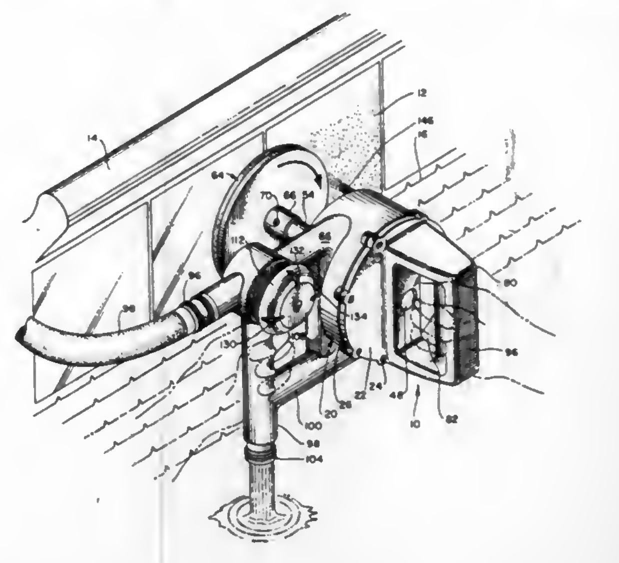
(e) means for generating a signal whose magnitude varies as a function of the interface force between said grinding wheel and a workpiece supported in said workpiece support;

(f) first means utilizing said generated signal for increasing the infeed in response to an increase in said sensed force, said first means increasing the infeed until the interface force reaches a predetermined level; and

(g) second means utilizing said generated signal for decreasing the infeed in response to a decrease in said sensed force, said means decreasing the infeed until the interface force reaches a predetermined level.

4,193,228
WATER DRIVEN TOOL

Donald F. Bowler, 7942 Moorcroft Ave., Canoga Park, Calif. 91304
Filed Dec. 19, 1977, Ser. No. 862,030
Int. Cl.^{2} B24B *23/02*
U.S. Cl. 51—170 T **6 Claims**



1. A water driven hand tool, comprising:

a water driven turbine,

a turbine housing enclosing said turbine,

a turbine shaft mounted for rotation in said housing,

said turbine being mounted on said shaft for rotation therewith,

a housing inlet connected to supply water under pressure to rotatably drive the turbine,

a housing outlet to discharge said water from said housing after it has acted on said turbine,

an external shaft connected to said turbine shaft to rotate therewith,

tool means on the end of the external shaft to be rotated thereby,

a valve in said inlet to open and close the inlet to the housing, and

a by-pass pipe connected to said inlet and to said valve, said by-pass pipe having a discharge connected to said housing outlet downstream of said valve and said inlet,

said valve in a first position being operable to supply water to said housing through said inlet and to shut off water to said by-pass pipe,

said valve in a second position being operable to shut off water to said inlet to said housing and to discharge water through said by-pass pipe,

said valve in a third position being operable to shut off water to said housing and said by-pass pipe,

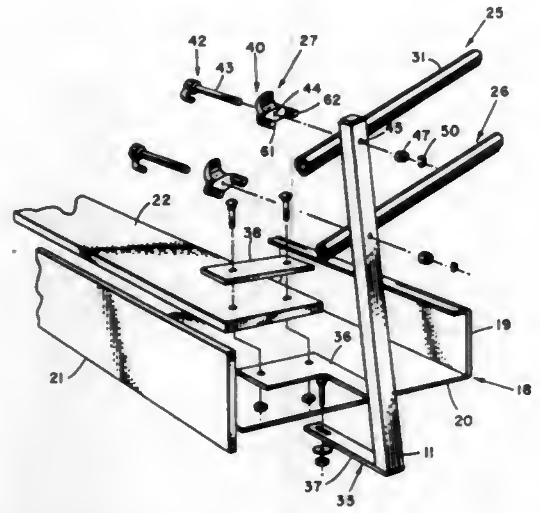
said outlet being connected to said by-pass pipe so that during normal operation of said turbine, when said valve is in said first position, said water discharges through said by-pass discharge.

4,193,229
HANDRAIL FOR TELESCOPING SEATING SYSTEM WITH REMOVABLE RAILS

Arlin P. Hartman, Champaign, Ill., assignor to American Seating Company, Grand Rapids, Mich.
Filed Aug. 7, 1978, Ser. No. 931,759
Int. Cl.^{2} E04H *3/12, 17/20*
U.S. Cl. 52—9 **8 Claims**

1. In combination with a telescoping seating system having a plurality of telescoping rows arranged in stepped relation in the use position; a handrail comprising a plurality of post mounted to the sides of respective rows and extending upwardly thereof; upper and lower elongated rail means spanning said posts in the use position; and a clamp assembly for releasably clamping each of said rail means to each of said

posts, each clamp assembly comprising a locking bolt rotatably received in an associate post, a clamp nut including a clamp surface adapted to engage and hold said rail means, said clamp nut received on said bolt and movable axially thereof between a clamping position in which said clamp surface engages and secures said rail means and a release position in which said clamp surface is free from said rail means, one of said bolt and clamp nut including a cam element and the other providing a cam surface, said cam element and cam surface cooperating in limited rotary motion to cause said clamp surface to engage and hold said rail means when said bolt is turned in one direction and to release said clamp surface from said rail means to permit said rail means to be removed when said bolt is turned in the other direction.



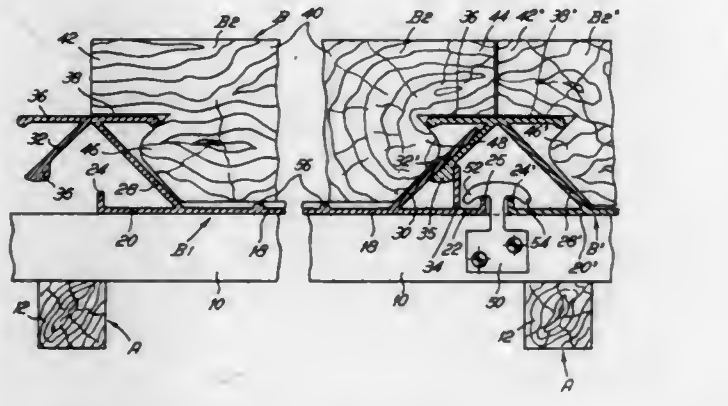
4,193,230
COVERING FOR BUILDING STRUCTURES AND RELATED INSTALLATION METHOD

Renato Piana, Corso Tintori 19, Florence, Italy

Filed May 15, 1978, Ser. No. 905,977

Int. Cl.² E04B *1/10, 1/38*

U.S. Cl. 52—90 **13 Claims**



1. Covering for a roof or wall structure for buildings in general, consisting of elements mutually coupeable and able to be connected to the supporting frame of the structure, characterized by a plurality of parelelly located plates (B1) having longitudinal edges (24, 25) extending from the bottom to the top of the roof or wall structure and provided, at least along a portion of the longitudinal edges (20, 22) thereof, with means (30, 34, 32') for a mutual connecting and tight closing and with fixed-joint type members (36, 38) extending as a ridge along the longitudinal edges of said plates and effective to hold covering bodies (B2) against said plates, further characterized in that the plates (B1) terminate at the longitudinal ends thereof with coplanar fins (20, 22) therewith anchoring members clamping said plates against the base frame (A) engage.

4,193,231
SILLS FOR BUILDING CONSTRUCTION

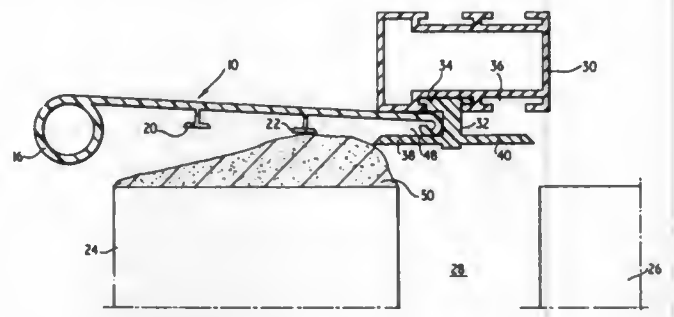
George Molyneux, Plymouth, England, assignor to Radway Plastics Limited, Solihull, England

Filed Feb. 21, 1978, Ser. No. 879,565

Claims priority, application United Kingdom, Jan. 28, 1978, 3583/78

Int. Cl.² E06B *1/70*

U.S. Cl. 52—97 **14 Claims**



1. A structural assembly comprising an elongate structural element for use in a frame in an opening in the wall of a building, said structural assembly defining an effective pocket open along one side thereof, and a sill which comprises an elongate plate-like element formed with an inner edge portion comprising an arcuate surface, as seen in transverse section, said inner edge portion being received within said pocket and said plate-like element extending from said structural element; the width of said pocket being greater, measured from the outside open edge of said structural element to the inner end of said pocket, than the cross-sectional width of said inner edge portion, whereby said sill, while said inner edge portion is retained in said pocket, may be both pivoted about its inner edge portion and adjusted laterally with respect to said elongate structural element.

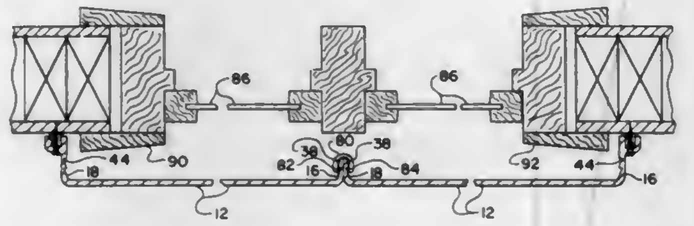
4,193,232
WINDOW CAP

Richard Almsted, 7311 Tempo Ter., Fridley, Minn. 55432, and Verlyn V. Ellertson, Wyoming, Minn. 55092

Continuation of Ser. No. 827,064, Aug. 23, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 946,742

Int. Cl.² E06B *3/28*

U.S. Cl. 52—98 **8 Claims**



1. In combination with a wall of a building including a window and window frame unit mounted in the building wall,

a window cap attached in fixed sealed relation to the building wall and completely enclosing the window and frame unit, said window cap comprising:

a window pane having a peripheral edge; and also having

a peripheral spacer element extending around said window pane peripheral edge and being larger in all dimensions than the window frame to completely surround and enclose the window and frame unit,

said peripheral spacer element being sufficiently thick to space said pane outwardly from the window and frame unit, and

means for sealing the spacer elements to a portion of said building wall surrounding and enclosing said window frame.

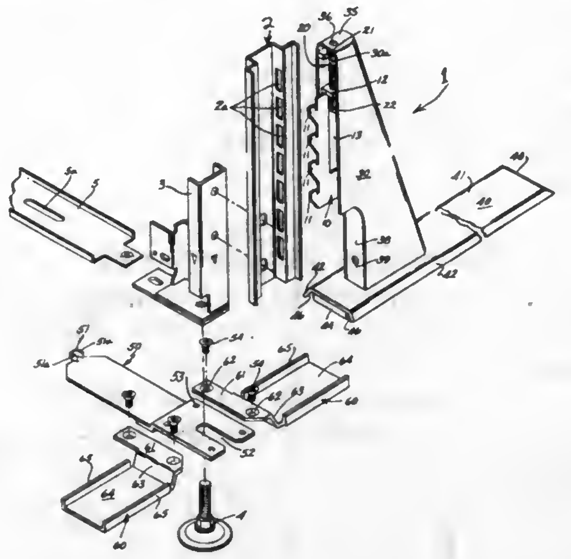
4,193,233
ADJUSTABLE PANEL STABILIZER

Harold L. VandenHoek, and Frank S. Breiner, both of Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed May 24, 1978, Ser. No. 909,120

Int. Cl.² E04D *15/00*

U.S. Cl. 52—122 **23 Claims**



1. In a stabilizer having attachment means for attaching the stabilizer to a free standing panel, the improvement comprising: said stabilizer including a vertical leg which is at least partially hollow on the interior therof, said hollow interior opening to the rear of said leg; track means located within said hollow of vertical leg, said attachment means being movably mounted upon said track means within said stabilizer leg and projecting rearwardly through said opening; adjustment means securing said attachment means to said stabilizer whereby one can move the attachment means up or down on said track means within said stabilizer leg by operating said adjustment means thereby facilitating adjustment of the stabilizer relative to a panel without actually changing the level of the stabilizer foot on the floor on which it rests.

4,193,234
STABILIZING OF STRUCTURES

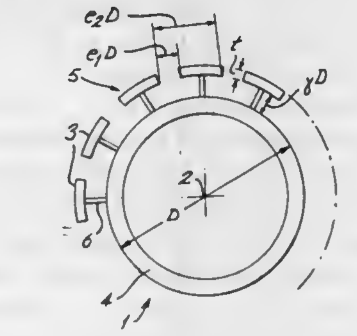
Henry H. Y. Wong, Bearsden, Scotland, assignor to National Research Development Corporation, London, England

Filed Feb. 24, 1978, Ser. No. 881,050

Claims priority, application United Kingdom, Feb. 24, 1977, 07911/77; Aug. 13, 1977, 34089/77

Int. Cl.² E04H *9/14*

U.S. Cl. 52—173 R **12 Claims**



1. A structure intended to operate while at least partially immersed in relatively-moving fluid and including a stabilising device carried by said structure, said stabilising device comprising a plurality of slats, said slats being arranged so as to form at least one shroud around at least part of the periphery of said structure, said slats being spaced apart from each other in a peripheral direction whereby said shroud is peripherally discontinuous and whereby slot-shaped gaps extending substantially the full axial length of said shroud are formed between each adjacent set of slats, said shroud being spaced from said structure whereby a passage to receive a proportion of said relatively-moving fluid by way of said slot-shaped gaps is formed between said structure and said shroud, said passage having substantially smooth, spaced confronting inner and outer walls whereby to permit high intensity turbulent flow within said passage of said received fluid, said inner wall of said passage being formed by a continuous surface of said structure, and said outer wall of said passage being a surface substantially parallel to and spaced from the confronting wall of said structure and being an interrupted surface constituted by inward-facing surfaces of said slats.

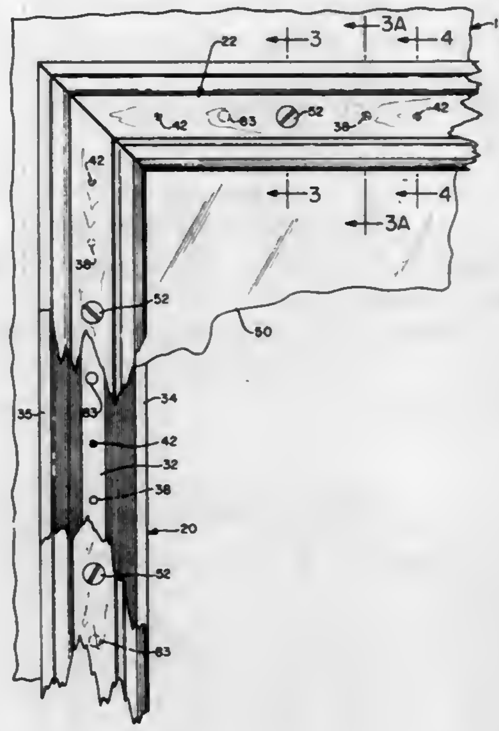
4,193,235
AUXILIARY COVERING FOR A WINDOW

Philip M. Cucchiara, 17304 Winslow Rd., Shaker Heights, Ohio 44120

Filed Jun. 14, 1978, Ser. No. 915,398

Int. Cl.² E06B *3/26*

U.S. Cl. 52—202 **13 Claims**



1. An auxiliary covering for a window positioned in a stationary window frame and comprising:

a base frame strip and a top frame strip having complementary shaped engaging surfaces including at least one longitudinally extending rib and groove on the different strips, said base frame strip having a back surface adapted to be positioned on a window frame, wall surface or the like,

said base frame strip having a series of nails extending therethrough from its back surface and protruding upwardly from the strip less than the thickness of said top frame strip,

a plastic sheet having an edge length thereof impaled on said nails, and

means securing said frame strips together, said plastic sheet being in sealed engagement with and between said frame strips, said top frame strip having an inner surface contacting said plastic sheet and one or more openings in such inner surface for receiving the upper ends of said nails, said base frame strip being secured to the window frame.

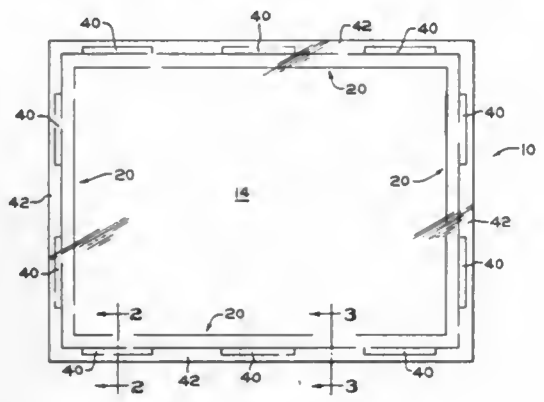
4,193,236
MULTIPLE GLAZED UNIT HAVING AN ADHESIVE CLEAT

Renato J. Mazzoni, Tarentum; George R. Mistrick, Leechburg, and Barent A. Rosskamp, Tarentum, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 30, 1978, Ser. No. 873,326

Int. Cl.² E06B *7/12*

U.S. Cl. 52—172 **22 Claims**



1. A method of making a multiple glazed unit to prevent spacer displacement comprising the steps of:

- mounting a spacer between a pair of panes to provide an airspace therebetween;
- selecting an adhesive having a shear property of greater than about 40 pounds per square inch (2.80 kilograms per squre centimeter) to prevent spacer displacement;
- securing the panes and spacer together with at least one cleat of the adhesive of said selecting step to prevent spacer displacement; and
- sealing the panes and spacer with a sealant.

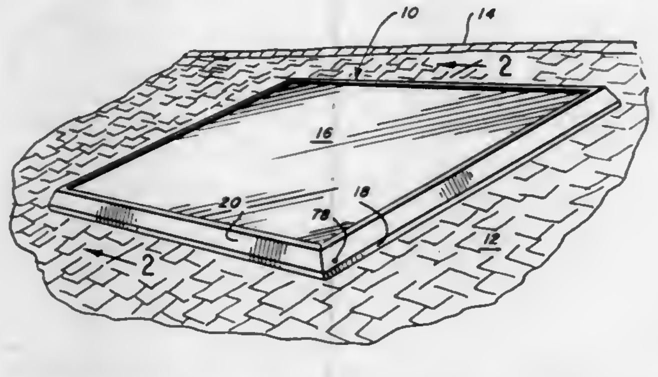
4,193,237
SKYLIGHT STRUCTURE

Dieter K. Jankowski, Glenview, Ill., assignor to Imperial Glass Structure, Wheeling, Ill.

Filed Jun. 7, 1978, Ser. No. 913,506

Int. Cl.² E04B *7/18*

U.S. Cl. 52—200 **4 Claims**



1. In a skylight structure for mounting on a flashed curb frame on residential buildings or the like having a single translucent glazing panel and a framework supporting said panel, the improvement comprising:

- a top framing member of said framework having a horizontal wall with a downwardly facing glazing groove at one end and a depending wall at the other end, said top framing member further including a wall depending from the underside of said horizontal wall terminating in a fork shaped channel; and
- a bottom framing member of said framework having a generally horizontal portion including an elevated bridge section having a pair of leg walls extending downwardly from the horizontal span of the bridge and terminating in a pair of spaced apart feet for mounting on top of the flashed curb frame, an upwardly facing glazing groove at one end of the bridge span, and a pair of walls extending upwardly intermediate the bridge span defining a U-shaped channel on top of the bridge span for receiving the forked shape channel of the top framing member therebetween, said bridge span having predrilled holes intermediate the channel walls and spaced apart at predetermined intervals so that a self-threading fastener can be passed between the feet and legs of the bridge span on the bottom framing member and extended through the predrilled hole into engagement with the inside walls of the fork shaped channel so that by tightening the fastener, the top framing member is pulled into tighter engagement with the bottom framing member clamping the translucent panel between glazing strips in the glazing grooves of the top and bottom framing members in a watertight relationship without a single exposed fastener holding the framework together.

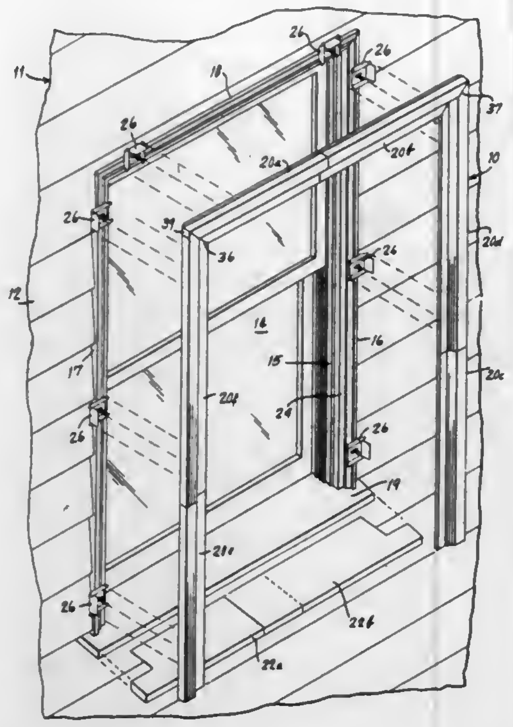
4,193,238
WINDOW CASING COVER

Alexander A. Chalmers, Warren; J. Lynn Gailey, Newton Falls, and Carl A. Wollam, Cortland, all of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed May 26, 1978, Ser. No. 910,063

Int. Cl.² E06B *1/04*; E04F *19/02*

U.S. Cl. 52—211 **24 Claims**



1. A window casing cover kit capable of being assembled on and in covering relation to a window casing at least partially surrounding a window opening, said cover kit comprising:

- (a) a plurality of case molding members for covering said window casing, each of said members being an elongated resiliently deformable channel section having opposed longitudinal flanges bent toward each other and being adapted to be disposed immediately outwardly of a portion of said casing adjacent an edge of the window opening with the long dimension of the channel section oriented parallel to said edge and with the channel of the channel section opening inwardly, said members being further adapted to be thus disposed one after another around said opening in endwise engagement with each other thereby to cover said casing;
- (b) a plurality of brackets for securing said members to said window casing, each of said brackets comprising a base portion adapted to be mounted on a portion of said casing and a pair of spaced, parallel, generally C-shaped seat portions adapted to be positioned on the outer side of said base with both seat portions extending transversely of the long dimension of one of said members and adapted to be simultaneously gripped between the opposed flanges of said one member, when said base is mounted on a portion of said casing and said one member is disposed immediately outwardly thereof as aforesaid, said seat portions being dimensioned for snap-on engagement of said member flanges with said seat portions, said brackets being further adapted to be mounted as aforesaid in spaced relation to each other on said casing around said window opening inwardly of said case molding members such that said case molding members are held on said casing by gripping engagement of their flanges with the seat portions of said brackets; and
- (c) for each of said brackets, fastening means adapted to be positioned in engaging relation to the bracket and to a portion of the casing for securing the base portion of the bracket to a portion of the casing when the base portion is mounted on the casing portion as aforesaid, and being further adapted, when thus positioned, to permit self-aligning translational, rotational, and in-and-out movement of the bracket relative to the last-mentioned casing portion upon engagement of the flanges of a case molding member with the bracket seat portions as aforesaid when the bracket base portion is mounted on the last-mentioned casing portion.

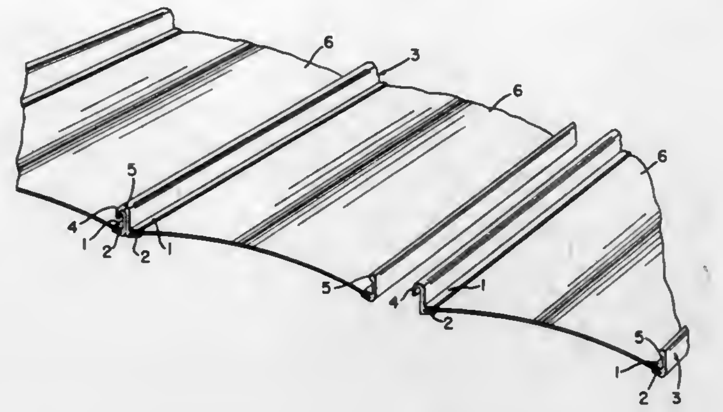
4,193,239
PREFABRICATED WALL OR CEILING ASSEMBLY

LeRoy Barto, Scenic Hills Estates, Harrodsburg, Ky. 40330

Filed Jun. 27, 1978, Ser. No. 919,688

Int. Cl.² E04B *1/04, 1/74*

U.S. Cl. 52—222 **1 Claim**



1. A wall or ceiling assembly comprised of two elongated units each having at least three panel engaging arms placed at an angle to the body of the units whereby panels so engaged are placed in tension, the elongated units having integral mating means for mating or crimping one of the mating means to the other, panels engaged by the panel engaging arms of the elongated units whereby tension in the panels caused by the angle of installation is transmitted back to the elongated units causing said elongated units to be pressed together said panels overlying one another with a space therebetween and insulating material contained in said space between the panels.

4,193,240
EXTERIOR WALL COMPOSITION

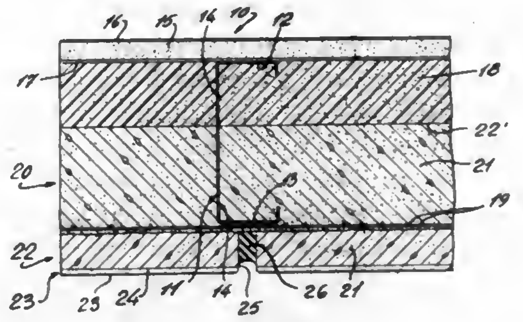
Hans F. Odoerfer, 12801 Monk Blvd., Pierrefonds, Quebec, Canada

Filed Aug. 10, 1978, Ser. No. 932,670

Int. Cl.² E04B *2/00*

U.S. Cl. 52—344 **10 Claims**

1. An exterior wall composition for building structures, comprising a lattice framework of rigid wall structural members, at least some of said wall structural members having inner and outer attachment means, an inner wall membrane secured to at least some of said inner attachment means of said wall structural members to define an inner wall having a finished outer wall surface, a sprayed layer of insulating material on an inner face of said inner wall membrane between said structural members, a reinforcing material layer having interstices secured to at least some of said outer attachment means to define an outer reinforcing wall membrane, a first sprayed layer of concrete material sprayed on said insulating material and extending outwardly of said reinforcing material layer and cured thereon whereby said wall structural members are completely embedded between said first sprayed layer of concrete material and said inner wall membrane, and a second thinner layer of concrete material containing a bonding additive sprayed on an exterior surface of said first layer to constitute an outer wall surface.



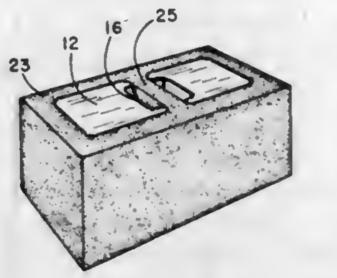
4,193,241
MASONRY BLOCK INSULATING DEVICE

Knud Jensen, 2929 E. Stewart Ave., Apt. 3, Las Vegas, Nev. 89101, and Ralph F. Cooper, 5251 New Bedford Cir., Las Vegas, Nev. 89122

Filed Dec. 5, 1977, Ser. No. 857,202

Int. Cl.² E04C *1/06*

U.S. Cl. 52—405 **5 Claims**

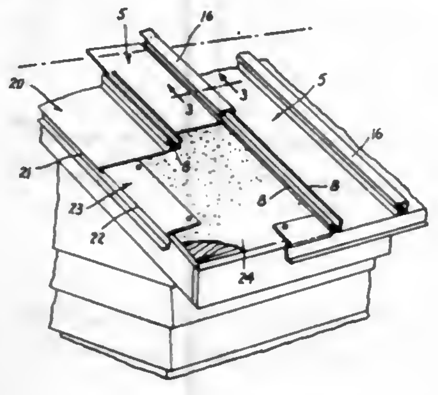


1. A method of forming a cinder block wall comprising the steps:

- (1) forming insulating plug members, each having a generally rectangular cross-section with first and second opposite flat end walls and four side walls, and an integral protruding portion having a height equal to the height of a mortar joint extending outwardly from the first one of said flat end walls and said protruding portion having a substantially flat end surface capable of being moved in any lateral direction against the second flat end wall of an adjacent plug member when said wall is being formed to permit truing up the outer surface of the side wall, said protruding portion having a cross-sectional dimension so as to fill a substantial portion of the space between adjacent insulating plug members,
- (2) inserting one of said plug members in each cavity of a plurality of blocks whereby said first and second flat end walls are substantially flush with top and bottom surfaces, respectively, of said cinder block, and said protruding portion extends outwardly from said cinder block approximately the height of a mortar joint,
- (3) providing block surfaces with mortar,
- (4) stacking successive blocks on one another to form said cinder block wall, and
- (5) moving the blocks laterally immediately after stacking as required to true up the outer surface of the block wall during construction, the flat end surfaces of each insert being in face to face relationship with the second flat end walls of adjacent inserts thereby permitting said lateral movement.

4,193,242
SHEET METAL ROOFING SYSTEM

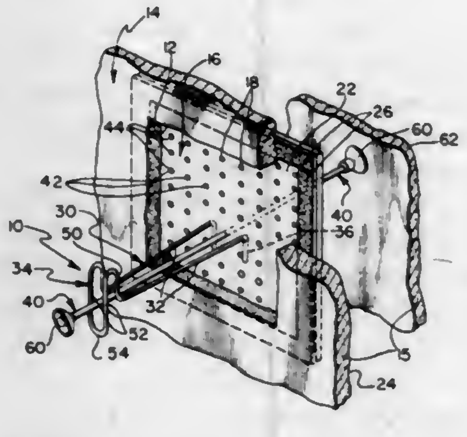
Louis L. Vallée, 6392 Maubourg Ave., Montreal, Quebec, Canada (H1M 2C8)
Filed Apr. 10, 1978, Ser. No. 895,080
Int. Cl.² E04D *3/366*
U.S. Cl. 52—469 **3 Claims**



1. A metal roofing system of the batten type having a series of pan sections, each pan section formed of a single piece of pre-folded sheet metal having an elongated central base portion, two upstanding side walls, and a securing channel located outwardly of each upstanding side wall; each upstanding side wall having an inner member and an outer member, the said inner member being shorter in height than the outer member and in close contact with the outer member upwards from the said central base portion of the pan section, the said side wall members being folded inwardly and downwardly to form a lip spaced from the said side wall members; the said sheet metal being bent outwardly at the lower edge of the outer member of each side wall to form a said securing channel including an outer base portion lying in the plane of the central base portion and an outer edge portion bent upwardly a short distance at right angles to the outer base portion, each securing channel having in its outer base portion a series of apertures to receive securing means; means to secure the said securing channels to an underlying roof structure with the said outer edge portion of each securing channel of one pan section abutting the outer edge portion of a securing channel on an adjacent pan section; and a series of caps, each cap engaging with, said bridging the gap between, the facing sidewalls of adjacent pan sections.

4,193,243
PANEL REPAIR KIT

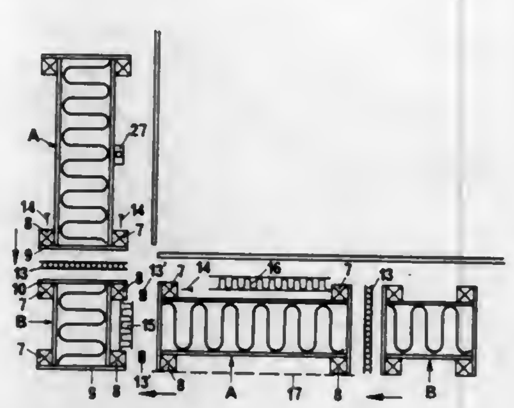
Francis L. Tiner, 3508 Coronado Dr., Sarasota, Fla. 33581
Filed Mar. 3, 1978, Ser. No. 883,144
Int. Cl.² E04G *23/02;* **B32B** *35/00*
U.S. Cl. 52—514 **19 Claims**



1. A kit for use in patching a hole in a panel of a hollow construction having a substantially fixed part spaced inwardly from and opposed to an inner face of the panel, the kit when operatively assembled comprising, means in the form of a substantially planar plate for insertion through the hole to be repaired and having a face for abutting engagement with the inner face of the panel substantially completely about the periphery of the hole, said plate having substantially equal sized perforations interlockable with a moldable patching material used in filling the hole, means in the form of a rod receivable in any one of said perforations and having a first end portion for seated engagement with the fixed part of the hollow construction, and means for positioning said plate in a desired position fixed to the panel for receiving the patching material while the hole is being filled, the positioning means comprising cooperating means for interengaging the rod with a portion of the plate containing the perforation receiving the rod and including the portion of said plate along a peripheral portion of the perforation which receives said rod and also including the adjacent periphery of said rod and operatively fixing said plate to said rod with said end portion of said rod seated against the fixed part of the hollow construction, and said positioning means further comprising adhesive retaining means positionable along said face of said plate for securing said plate to the inner face of the panel along the periphery of the hole to be patched.

4,193,244
BUILDING BLOCK AND MODULE SYSTEM FOR HOUSE BUILDING

Sture L. Samuelsson, Askvägen 2 D, 752 52 Uppsala, Sweden
Filed Apr. 18, 1978, Ser. No. 897,315
Claims priority, application Sweden, Apr. 19, 1977, 7704477
Int. Cl.² E04C *2/10*
U.S. Cl. 52—582 **9 Claims**

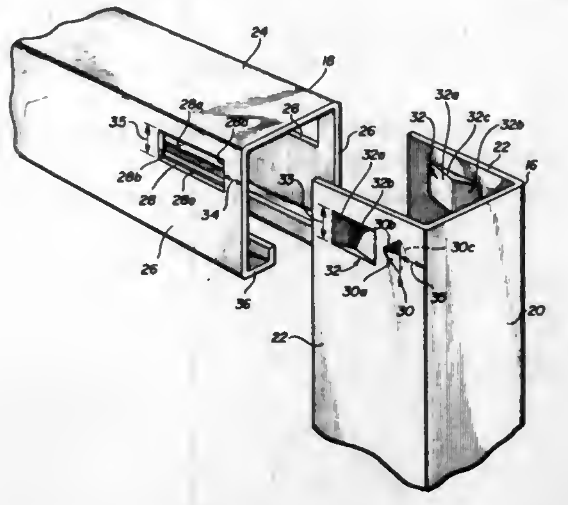


1. A module block for house building comprising two parallel-spaced base plates of wooden sheet material and of equal size and a heat insulating material disposed in the space between the base plates, wherein each of said base plates has an elongated support member of wooden material attached at each longitudinal edge thereof, the support members of at least one of said base plates being disposed on the outside of the module block, and wherein said parallel-spaced base plates are connected by means of a pair of side plates of thin wooden sheet material, which extend essentially perpendicular to said base plates and each of which is secured to one support member of one of said base plates and to one support member of the other of said base plates and wherein said base plates and side plates are constructed of different wooden materials from said support members.

4,193,245
DOOR FRAME CONSTRUCTION

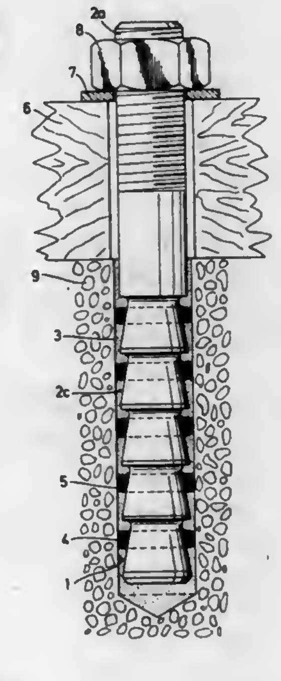
Larry K. Johnson, Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.
Filed Aug. 3, 1978, Ser. No. 930,807
Int. Cl.² E04C *2/38*
U.S. Cl. 52—656 **12 Claims**

1. A door frame comprising; at least a pair of parallel, spaced apart upright channel members, and at least a pair of parallel spaced apart cross channel members assembled to said upright channel members and disposed generally perpendicular with respect to said upright channel members, said upright channel members and said cross channel members each include a web portion and two parallel side flanges, first interengagable cooperating means on said upright channel members and said cross channel members, which when engaged hold edge portions of said cross channel members in assembled relation with said upright channel members so as to substantially prevent disassembly, and second interengagable cooperating means on said upright channel members and said cross channel members which when engaged substantially prevent pivotal movement therebetween so as to maintain the assembled cross channel members and upright channel members in a substantially square relation and said first cooperating means comprises a detent member struck from each of the parallel side flanges of one of said channel members and projecting out of the plane of said flanges, and slot means formed in each of the parallel said flanges of the other of said channel members, and disposed for engagement of said detent members therein upon assembly of said cross channel members with said upright channel members, wherein said cross channel members edge portions are insertable between the parallel side flanges of said upright channel members, and said detent members are resilient for yielding to said insertion, and thereafter snappingly engaging said resilient detent member in said slot means, effecting assembly without the need for manual deformation.



4,193,246
CLAMPING MEMBER FOR AN ADHESIVELY SECURED ANCHOR ROD

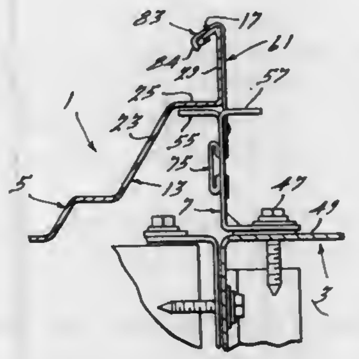
Erwin Schiefer, and Gusztav Lang, both of München, Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Jul. 18, 1978, Ser. No. 925,859
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2733007
Int. Cl.² F16B *13/04*
U.S. Cl. 52—698 **3 Claims**



1. Anchor rod to be secured in a bore hole or similar recess by means of a hardenable adhesive compound, said anchor rod comprising an axially extending rod having a front end inserted first into the bore hole and a rear end, at least an axial portion of said anchor rod having a maximum diameter circumferential surface thereon extending from the front end toward the rear end and arranged to be inserted into the bore hole, means arranged at the rear end of said rod rearwardly of said axial portion for connecting a load to the rod, and clamping means positioned on said axial portion of said rod insertable into the bore hole for retaining the rod within the bore hole before the adhesive compound sets wherein the improvement comprises that said axial portion of said anchoring rod includes clamping surfaces inclined at an angle to the axis of said rod with the clamping surface diverging outwardly from the axis in the direction toward the front end of said rod, said clamping surface diverging outwardly from a location inwardly of the maximum diameter circumferential surface of said rod to the maximum diameter circumferential surface thereof, said clamping surface comprises at least one frusto-conical surface encircling the axis of said rod with the smaller diameter end thereof being closer to the rear end of said rod and the larger diameter end being closer to the front end of said rod, said clamping means includes rolling bodies rollable on said clamping surface and elements in contact with said rolling bodies and holding the rolling bodies on the clamping surface, and the combination of said rolling bodies and elements projects outwardly beyond the maximum diameter circumferential surface of said axial part of said rod before any load can be applied, said rolling bodies are balls and said element is an annular elastomeric sheathing holding said balls therein with said sheathing completely encircling said clamping surface and arranged to maintain said balls in continuous contact with the wall of said bore hole, and before any load is applied said sheathing and balls are located at the smaller diameter end of said clamping surface.

4,193,247
PANEL MOUNTING CLIP

Robert E. Heckelsberg, Germantown, Tenn., assignor to AMCA International Corporation, Hanover, N.H.
Filed Feb. 6, 1978, Ser. No. 875,533
Int. Cl.² E04D *1/34*
U.S. Cl. 52—713 **3 Claims**



1. A panel mounting clip assembly for interengagement with overengaged longitudinal edges of a pair of adjacent panel members and for attaching them to a panel support member, comprising a base member having a bottom flange adapted to be fastened to said support member and a web extending transversely to said bottom flange, said web having a slot therein extending substantially parallel to said bottom flange and to the length of a panel connected to the clip, a flexible tab having a holding portion formed therein and extending through said slot, said tab having a web on one side of said base member web and said holding portion having flange means on the other side of said base member web, said flange means and tab web resiliently gripping said base member web, said tab having a width substantially less than the length of said slot and being slidable along the length of the slot, said tab having an arm projecting as cantilever above said base member and adapted to interfit with and be crimped to said panel edges, said base member

having shelf flange means extending laterally from and substantially perpendicularly to said first mentioned web at a position spaced from said bottom flange and interengageable with coacting rim portions on the panels to support the panels at positions spaced above said support member, said holding portion substantially filling the narrower dimension of the slot and being resilient in the direction of said narrower dimension.

4,193,248

VEHICLE PROTECTIVE SYSTEM

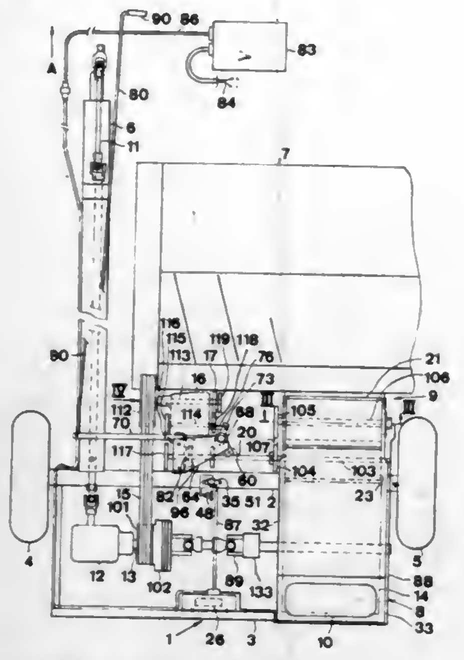
Joseph T. G. Gilleman, Sint-Denijs-Westrem, Belgium, assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Nov. 30, 1978, Ser. No. 965,009

Claims priority, application United Kingdom, Dec. 2, 1977, 50290/77; Jan. 5, 1978, 268/78

Int. Cl.² A01D *75/18*

U.S. Cl. 56—10.2 **9 Claims**



1. A harvesting machine comprising:
(a) a chassis,
(b) a crop processing means on the chassis for operating on crop material fed thereto,
(c) feeder means for feeding crop material to the crop processing means,
(d) a drive train for driving the feeder means,
(e) detector means associated with the feeder means for detecting undesirable objects passing through the feeder means towards the crop processing means,
(f) drive arresting means associated with the drive train of the feeder means, and
(g) drive train interrupting means adapted to interrupt the drive train to the feeder means independently of said arresting means,
(h) said detector means being operable upon detection of an undesirable object to cause the arresting means to initiate arrest of the drive to feeder means and to also cause said drive train interrupting means to interrupt the drive train simultaneously or preceding said arrest to reduce the load on the drive train during arrest.

4,193,249

HYDRAULIC DRIVE FOR LAWN CLIPPING VACUUM COLLECTOR

DeForest Tackett, Rte. 1 Box 192-A, Reddick, Fla. 32686

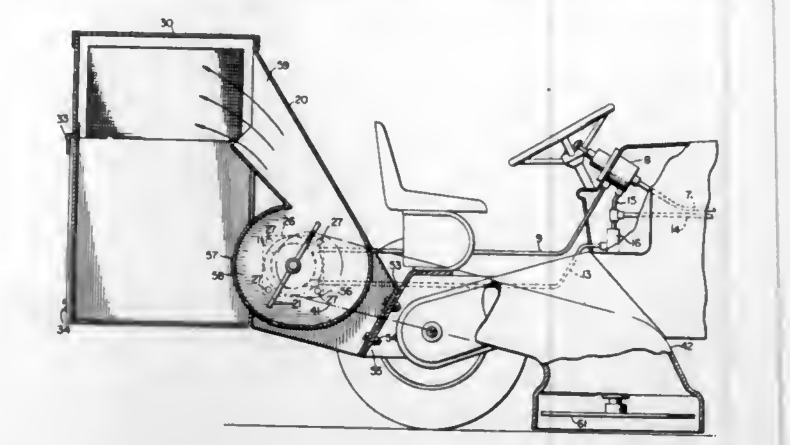
Filed May 16, 1978, Ser. No. 880,055

The portion of the term of this patent subsequent to Aug. 8, 1995, has been disclaimed.

Int. Cl.² A01D *35/262*

U.S. Cl. 56—11.9 **6 Claims**

1. A hydraulic drive lawn clipping vacuum collector attachment for a tractor lawn mower driven by an internal combustion engine and incorporating a power takeoff, a driven grass cutting blade contained within a housing and a rear hitch mounting plate, comprising:
a refuse storage bin;
a mounting bracket affixed to said refuse storage bin and adapted to be rigidly secured to said tractor, said mounting bracket adapted to support said refuse storage bin suspended above ground levels;
a blower housing incorporated in said mounting bracket;
an impeller contained within said blower housing;
a duct coupling said lawn mower blade housing to said refuse storage bin;
a hydraulic pump driven by said power takeoff of said internal combustion engine, said hydraulic pump including a fluid inlet and fluid outlet;
a rotary hydraulic motor, including a fluid inlet and a fluid outlet;
said hydraulic motor incorporating a rotary shaft for supporting and driving said impeller;
said hydraulic motor supported by said blower housing;



a first hydraulic fluid transfer means for coupling hydraulic fluid from said hydraulic pump fluid outlet to said rotary hydraulic motor fluid inlet, said first hydraulic fluid transfer means includes a control valve means for regulating the volume of fluid flow from said hydraulic pump to said rotary hydraulic motor;
a second hydraulic fluid transfer means for coupling hydraulic fluid from said rotary hydraulic motor fluid outlet to said hydraulic pump fluid inlet, said second hydraulic fluid transfer means includes a hydraulic fluid reservoir including a hydraulic fluid outlet coupled to said hydraulic pump fluid inlet and an inlet coupled to said rotary hydraulic motor fluid outlet; and
said control valve includes bypass means to direct surplus hydraulic fluid from said first hydraulic fluid transfer means to said second hydraulic fluid transfer means and said second hydraulic fluid transfer means includes a one-way valve coupled to said rotary hydraulic motor fluid outlet to prevent surplus hydraulic fluid from said bypass means from entering said rotary hydraulic motor.

4,193,250

HEIGHT CONTROL FOR MULTI-ROW CROP HARVESTER

Norman J. Kessens, and Marvin L. Joray, both of Celina, Ohio, assignors to Paul Revere Corporation, Coldwater, Ohio

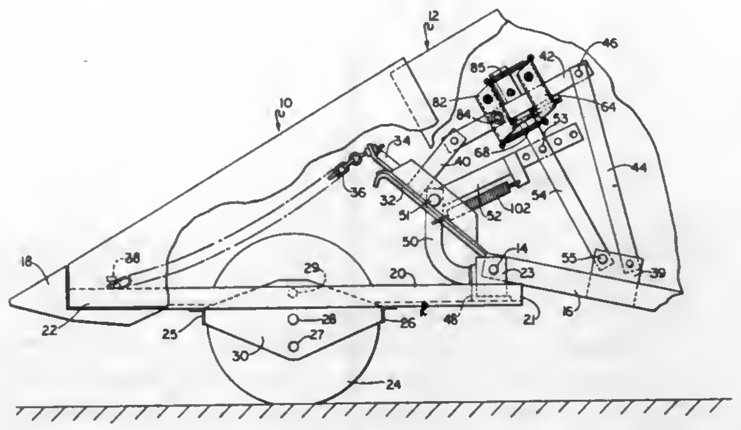
Filed Nov. 29, 1978, Ser. No. 964,705

Int. Cl.² A01D *67/00, 75/14*

U.S. Cl. 56—208 **8 Claims**

1. Automatic height control apparatus for use in a multi-row crop harvester having a crop processing header transversely mounted across its forward facing end, the header having a multiplicity of spaced apart row dividers arrayed across the front thereof, the dividers each having a frame assembly, said frame assembly being pivotally mounted to the lower forward edge of the header frame, the mounting being such that the forward tips of the dividers are able to move up and down independent of the movement of the header, said apparatus comprising:

a ground engaging member mounted under the forward end of at least one of said dividers, said ground engaging member causing the leading edge of said member equipped divider to float up and down in response to changes in the terrain traversed by said crop harvester;
mechanical linkage for monitoring the angular relationship between said member equipped divider and said header, said linkage including a contactor bar having its one end pivotally attached to the frame of said header and its second end arranged to move in an arcuate path in direct proportion to the up and down motion of the forward tip of said divider;
a first electrode positioned to make contact with the second end of said contactor when the tip of said ground engaging member equipped divider is raised a prescribed amount with respect to the header, contact between said first electrode and said contactor bar being known as an up-command;
a second electrode positioned to make contact with the second end of said contactor bar when the tip of said member equipped divider is lowered a prescribed amount with respect to the header, contact between said second electrode and said contactor bar being known as a down-command; and
a servomechanism control system for elevational control of the crop processing header in response to the up-commands and the down-commands generated when said contactor bar makes, respectively, contact with either said first or said second electrode.



4,193,251

BALING DEVICE FOR AGRICULTURAL CROPS

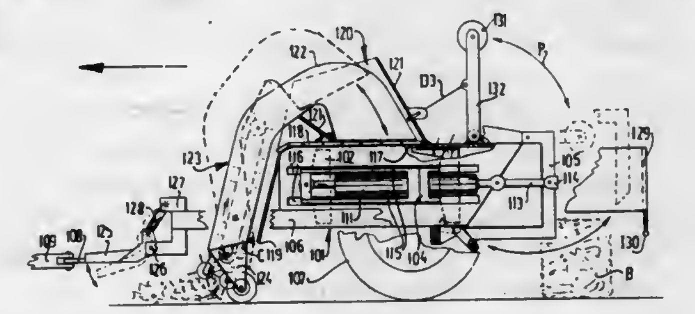
Pieter A. Oosterling, Nieuw-Vennep, and Adriaan van Zweeden, Rijsenhout, both of Netherlands, assignors to Expert N.V., Curaçao, Netherlands Antilles

Filed Nov. 4, 1977, Ser. No. 848,526

Claims priority, application Netherlands, Nov. 5, 1976, 7612345; May 13, 1977, 7705351

Int. Cl.² A01D *39/00*

U.S. Cl. 56—341 **4 Claims**



1. In a baling device, the combination of:
a mobile frame having supporting wheels;
a generally horizontal baling chamber on said frame having a movable end wall against which material is to be compressed;
a collection chamber disposed laterally of said baling chamber and having a discharge mouth communicating therewith in spaced relation to said end wall whereby said baling chamber defines a compression space beyond said discharge mouth toward said end wall;
a ram dimensioned to fill the cross section of the baling chamber and reciprocable therein between a retracted position clearing said discharge mouth on that side thereof remote from said end wall and in extended position beyond said discharge mouth and adjacent said end wall;
drive means connecting said ram with said end wall whereby said end wall is subjected to closing force when said ram is moved toward its extended position to compress material between said ram and said end wall;
means for continuously feeding material to be compressed into said collection chamber in response to movement of said frame over the ground;
a closure member normally blocking said discharge mouth; and
means for moving said closure member in concert with said ram whereby said closure member is moved from its normal, blocking position as said ram is moved toward its retracted position and is returned to its normal position as said ram is moved toward its extended position.

4,193,252

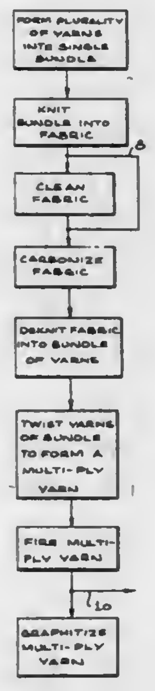
KNIT-DEKNIT METHOD OF HANDLING YARN TO PRODUCE CARBON OR GRAPHITE YARN

Gary D. Shepherd, Redondo Beach; Ramon B. Fernandez, Hawthorne; R. Glenn Kapaun, Huntington Beach, and Charles P. Logan, Hawthorne, all of Calif., assignors to Hitco, Irvine, Calif.

Filed Jun. 28, 1978, Ser. No. 919,850

Int. Cl.² D01F *9/12;* **D04B** *19/00;* **D02G** *1/00*

U.S. Cl. 57—351 **10 Claims**


FORM PLURALITY OF YARNS INTO SINGLE BUNDLE
KNIT BUNDLE INTO FABRIC
8
CLEAN FABRIC
CARBONIZE FABRIC
DEKNIT FABRIC INTO BUNDLE OF YARNS
TWIST YARNS OF BUNDLE TO FORM A MULTI-PLY YARN
FIRE MULTI-PLY YARN
10
GRAPHITIZE MULTI-PLY YARN

1. A method of making yarn which has been at least partially carbonized from a precursor yarn comprising the steps of:
forming the precursor yarn into a length of fabric;
taking the length of fabric through a carbonization process to convert the precursor yarn into a yarn of at least partly carbon composition; and
thereafter disassembling the fabric into the yarn which has been at least partially carbonized;
the yarn being comprised of a plurality of single ply yarns which are twisted together to form a multi-ply yarn as a separate step at some point in the method.

4,193,253

SPINNING POT

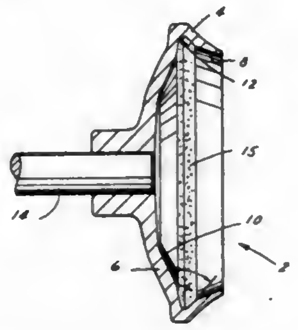
Werner Herbert, Markdorf; Wunibald Kunz, Friedrichshafen, and Klaus Pimiskern, Daisendorf, all of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,895

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750456

Int. Cl.^{2} D01H *1/12*

U.S. Cl. 57—58.89 **6 Claims**



1. In a spinning arrangement, in combination:

(a) a spinning pot having an axis and formed with a cavity of circular crosssection about said axis,

(1) said pot having a bottom face transverse to said axis and axially bounding said cavity, and an axially extending, annular side face radially bounding an axially terminal part of said cavity open in a direction away from said bottom face,

(2) said side face flaring from said terminal part inward of said cavity,

(3) Respective axial portions of said bottom and side faces converging at an acute angle in a radially outward direction and defining a part of said cavity of greatest diameter; and

(b) a coating of a thermally hardened alloy of nickel and a nickel-phosphorus compound covering at least said portions of said faces and having a surface exposed in said cavity,

(c) a shaping disk is turned in the cavity of the pot in rolling engagement between the disk and the coating, producing a smoothing of said coating.

4,193,254

TENSIONING DEVICE FOR A DRIVE BELT FOR CONTROLLING THE ROTATION OF ALIGNED MEMBERS SUCH AS SPINDLES OF TEXTILE MACHINES

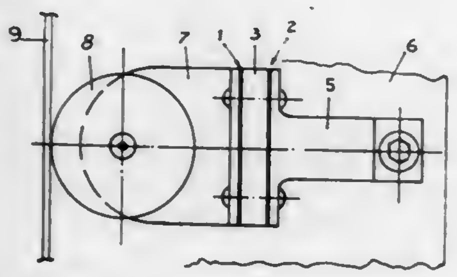
Goffredo Fusaroli, Milan, Italy, assignor to S.A.M.P.R.E. S.p.A., Italy

Filed Dec. 4, 1978, Ser. No. 966,160

Claims priority, application Italy, Dec. 6, 1977, 30504 A/77

Int. Cl.^{2} D01H *1/24*

U.S. Cl. 57—105 **4 Claims**



1. A tensioning device for supporting a rotatable pressure roller in tangential engagement with a continuous drive belt running tangentially to a row of members aligned along a longitudinal axis of a machine, for instance spindles of a ring spinning machine or of a ring twisting machine or rotors of machines for open end spinning, for ensuring the adherence of the belt to the members to be driven in rotation, comprising

a flexible support formed by two identical tapes of hardened steel and by two identical spacers secured in spaced relation between the ends of said tapes to fix the tapes in spaced, parallel relation to each other,

a pressing roller rotatably mounted on one end of said support, and

means fixing the other end of the support to a machine, said tapes being flexible to permit said one end of the support to move relative to its other end in such a way that the axis of the pressing roller is displaceable with said one end of the support parallel to itself.

4,193,255

ELECTRONIC TIMEPIECE WITH CALENDAR FUNCTION

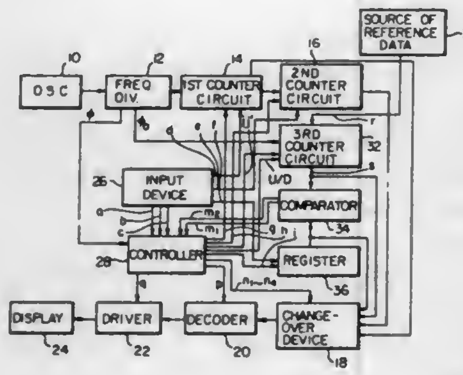
Heihachiro Ebihara; Fukuo Sekiya, both of Tokorozawa, and Takashi Yamada, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 756,677, Jan. 4, 1977, abandoned. This application Jul. 18, 1978, Ser. No. 925,714

Claims priority, application Japan, Jan. 12, 1976, 51-2614; Jun. 1, 1976, 51-63830

Int. Cl.^{2} G04B *19/24*

U.S. Cl. 368—34 **15 Claims**



2. An electronic timepiece comprising:

means for generating a relatively high frequency signal;

means for dividing the relatively high frequency signal to provide a low frequency signal;

means for generating time information signals in response to the low frequency signal;

means for presetting reference data indicative of an existing leap year, year, month, date and day of the week and counting leap years, years, months, dates and days of the week at a high speed with the reference data serving as starting point;

means for storing a desired year, month, date and days of the week to be determined;

means for comparing the content of the presetting means and the content of the storing means and generating a coincidence signal when the contents are in agreement;

means for halting counting operation of the presetting means in response to the coincidence signal and generating an output signal in response thereto;

means for generating drive signals in response to the time information signals;

means for displaying time information in response to the drive signals; and

means for passing an output from the presetting means to the drive signal generating means in response to the output signal from the halting means to cause the content of the presetting means to be displayed by the display means.

4,193,256

DIGITAL CLOCKS PROVIDED WITH TIME SWITCH MECHANISMS

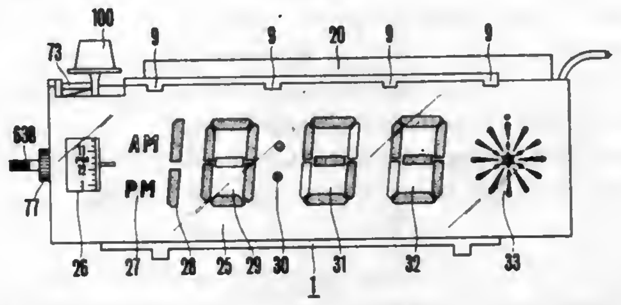
Kanji Tobeta, Tokyo, and Shuji Otsuka, Yonezawa, both of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Feb. 3, 1978, Ser. No. 874,831

Claims priority, application Japan, Jun. 3, 1977, 52-72389[U]; Jun. 16, 1977, 52-70446; Jun. 30, 1977, 52-78544

Int. Cl.^{2} G04B *23/00, 19/30*

U.S. Cl. 368—74 **9 Claims**



1. A digital clock provided with a time switch mechanism, comprising parallel shafts extending between opposing side walls of a frame, a plurality of digit display units mounted on said parallel shafts for displaying respective digits, digit shift means also mounted on said parallel shafts between adjacent digit display units for shifting time digits from lower digits to upper digits, a driving motor mounted on one side wall for driving at least significant digit display unit, a sub-plate confronting the other side walls, a time switch mechanism including a timer setting wheel rotatable to select a set time and having cam receiving means, a cam gear driven by said motor and having cam elements to engage said cam receiving means for predetermined rotative relation of said wheel and said cam gear, and a timer lever urging said cam gear toward said timer setting wheel and movable upon engagement of said cam elements with said cam receiving means, said mechanism located between said other side wall and said sub-plate, cam members secured to the opposite ends of a shaft for supporting said digit shift means, a buzzer operating member operated by the leakage flux of said driving motor, one of said cam members engaging said timer lever, and the other said cam member engaging said buzzer operating member for transmitting the motion of said timer lever to said buzzer operating member through said shaft for supporting said digit shift means to actuate said buzzer when said cam elements and said cam receiving means are engaged.

4,193,257

PROGRAMMABLE METRONOME

Paul F. Watkins, 5551 Montgomery Square Dr. #102, Kettering, Ohio 45440

Filed Nov. 9, 1978, Ser. No. 959,353

Int. Cl.^{2} G04F *5/02;* **A63J** *17/00;* **G10B** *15/00*

U.S. Cl. 84—484 **6 Claims**

1. A programmable metronome comprising

a variable rate time pulse generator,

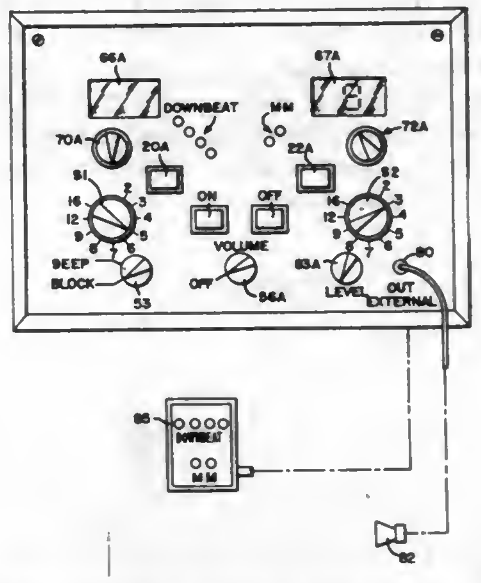
means for setting the rate of said time pulse generator,

audible and visible transducer means including separate visible transducers for beats and downbeats and a tone generator capable of emitting different sounds for beats and downbeats,

divider means receiving pulses from said time pulse generator,

selector means connected between said divider means and said transducer means and operable to pass different numbers of pulses per measure from said time pulse generator to said transducer means according to manual selection of desired beats/measure,

and a downbeat emphasis circuit having an input from said selector means and an output to said downbeat transducer means to add emphasis to each downbeat in a measure of beats.



4,193,258

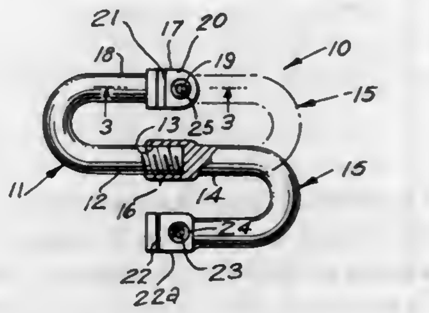
CHAIN SHACKLE

Adam F. Fasnacht, 19832 Alana Rd., Castro Valley, Calif. 94546

Filed Jul. 21, 1978, Ser. No. 926,885

Int. Cl.^{2} F16G *15/02*

U.S. Cl. 59—86 **2 Claims**



1. A chain shackle, comprising a pair of "U"-shaped members, which are pivotal on each other, one of said members having tooth and clincher pin means, and the other of said members having tooth and opening means, for locking said chain shackle to a chain; one of said pair of "U"-shaped members being threaded on the outer periphery of one leg, and being rotatably received within a threaded end of the other of said pair of "U"-shaped members, which forms a pivotal joint, and said "U"-shaped member having said externally threaded end, being provided with a head on its opposite leg having said tooth and clincher pin means.

4,193,259

PROCESS FOR THE GENERATION OF POWER FROM CARBONACEOUS FUELS WITH MINIMAL ATMOSPHERIC POLLUTION

James R. Muenger, Beacon, and Everett M. Barber, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 24, 1979, Ser. No. 42,272

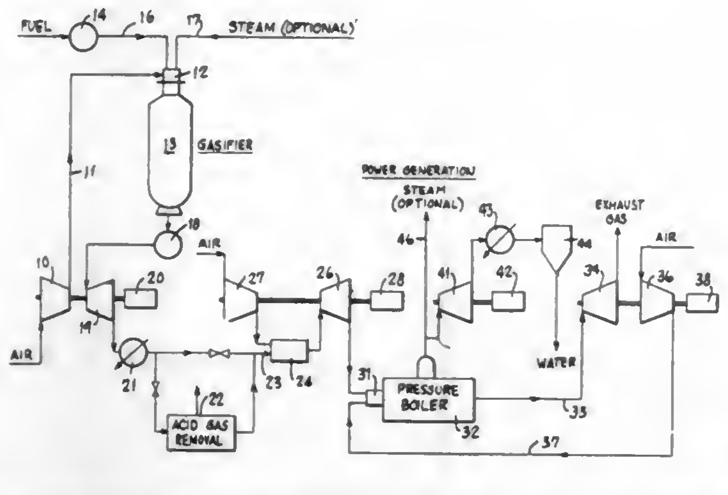
Int. Cl.^{2} F02C *7/02;* **F02G** *3/00*

U.S. Cl. 60—39.04 **7 Claims**

6. In a process for the generation of power from a liquid or solid sulfur-containing fuel wherein said fuel is subjected to partial oxidation with air or oxygen at elevated pressure effecting conversion of said sulfur-containing fuel to a fuel gas stream having a higher heating value in the range of 60 to 350 Btu's per cubic foot and comprising carbon monoxide, hydrogen, methane and gaseous sulfur compounds, and said gaseous

sulfur compounds are removed from said fuel gas stream, the improvement which comprises:

(a) subjecting said fuel gas stream to partial oxidation with air at said pressure in the range of 300 to 500 psia and at a temperature in the range of 1500° to 2500° F. effecting conversion of said fuel gas to a low heating value gaseous mixture comprising hydrogen and carbon oxides, said gaseous mixture comprising hydrogen and carbon oxides and having a higher heating value in the range of 40 to 233 Btu's per standard cubic foot.



(b) expanding said low heating value gaseous mixture from (a) in an engine to a pressure in the range of 30 to 50 psia producing power,

(c) subjecting said low heating value gaseous mixture to substantially complete combustion with air at a pressure in the range of 30 to 50 psia producing flue gases comprising products of complete combustion, and

(d) expanding said flue gases in an engine to substantially atmospheric pressure with the production of power.

4,193,260
COMBUSTION APPARATUS

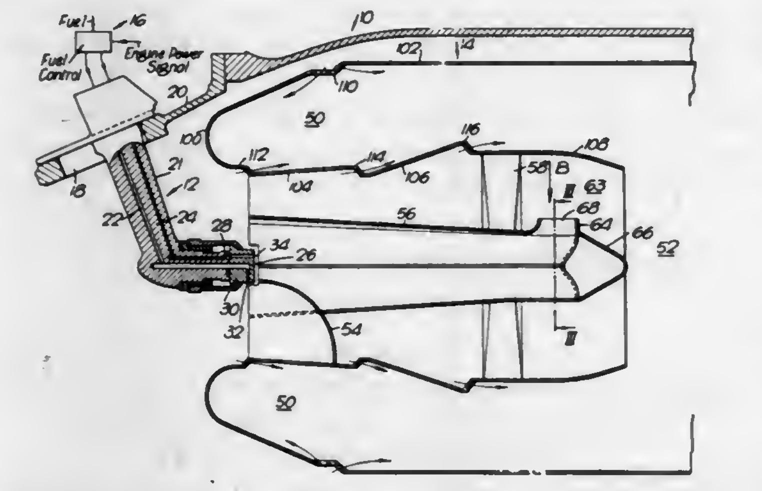
Denis R. Carlisle, Risley, and Andrew R. Grun, Tilehill, both of England, assignors to Rolls-Royce Limited, London, England

Filed Aug. 23, 1977, Ser. No. 827,108

Claims priority, application United Kingdom, Sep. 4, 1976, 36732/76

Int. Cl.^{2} F02C *7/22*

U.S. Cl. 60—737 **2 Claims**



1. A combustion apparatus for a gas turbine engine comprising:

a combustion chamber having generally annular outer and inner walls joined at their upstream ends, said inner wall being of lesser length than the outer and said chamber having a primary upstream combustion zone located generally between said walls and a secondary combustion zone located generally downstream of said inner wall;

a fuel injector having a plurality of primary fuel nozzles and a plurality of secondary fuel nozzles;

a plurality of primary duct means arranged to receive fuel from respective ones of said primary fuel nozzles along with compressed air and to direct the resulting primary fuel and air mixture to said primary combustion zone;

a plurality of secondary duct means contained within said inner wall and arranged to receive fuel from respective ones of said secondary fuel nozzles along with compressed air and to direct the resulting secondary fuel and air mixture into said secondary combustion zone;

tube means extending from adjacent said secondary fuel nozzles to adjacent said secondary combustion zone and spaced from said inner wall, each of said plurality of secondary duct means comprising a longitudinally extending segment of said tube means aligned with a respective one of said secondary fuel nozzles, each said segment having an outlet for the secondary fuel and air mixture which is directed radially outwardly from the axial-center line of the combustion chamber; and

air swirling means located between said tube means and said inner wall upstream of said segment outlets.

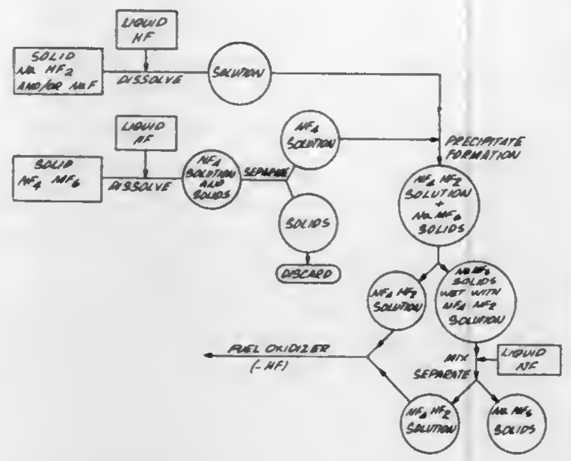
4,193,261
METHOD OF OXIDATION OF FUELS WITH TETRAFLUORAMMONIUM BIFLUORIDE

William D. English, Orange, Calif., assignor to TRW, Inc., Redondo Beach, Calif.

Filed Feb. 21, 1978, Ser. No. 879,636

Int. Cl.^{2} C06D *5/08*

U.S. Cl. 60—218 **6 Claims**



1. A method for the generation of energy which comprises combining an oxidizable fuel with a solution of tetrafluorammonium bifluoride in anhydrous liquid hydrogen fluoride provided in an amount sufficient for hypergolic oxidization of said fuel, the tetrafluorammonium bifluoride content of the solution being up to about 50 mole percent, the balance of the solution being substantially anhydrous liquid hydrogen fluoride.

4,193,262
GAS TURBINE ENGINES

Leonard S. Snell, Bristol, England, assignor to Rolls-Royce Limited, GB2, United Kingdom

Filed Feb. 3, 1978, Ser. No. 874,758

Claims priority, application United Kingdom, Feb. 24, 1977, 7953/77

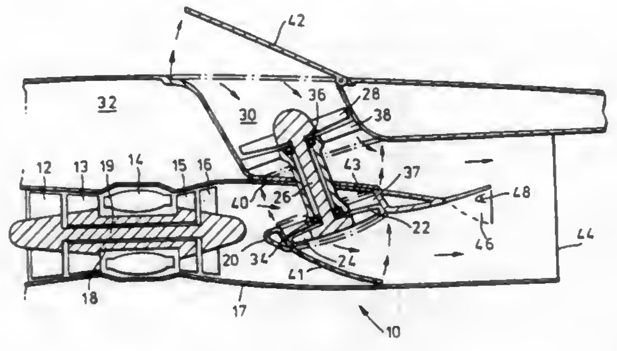
Int. Cl.^{2} F02K *3/10*

U.S. Cl. 60—261 **8 Claims**

1. A gas turbine engine power plant comprising a gas turbine engine terminating in an elongate jet pipe which extends along a longitudinal axis, an air duct constructed to receive air and direct it to mix with an efflux of gases from the engine, an auxiliary compressor located in the air duct, a free turbine for driving the auxiliary compressor located in the jet pipe, flow diverter means selectively operable to direct the efflux of gases from the engine as desired through either of two paths, one path being through the free turbine to drive it and thereby produce a flow of compressed air from the auxiliary compressor, the other path circumventing the free turbine so that the free turbine is rendered inoperable independently of the engine, and a flow mixer means for mixing the air from the auxiliary compressor with the efflux of gases from the engine, the free turbine being mounted for rotation about an axis angled to the longitudinal axis of the jet pipe so that in its inoperative state, where the efflux of gases from the engine circumvents it, the free turbine presents a low profile and minimizes the disturbance to the flow of gases in the jet pipe.

4. A gas turbine power plant as claimed in claim 1 in which the gas efflux and the compressed air are mixed by a plurality of mixer chutes arranged downstream of said free turbine.

5. A gas turbine power plant as claimed in claim 4 in which a reheat gutter means is situated within or adjacent to the mixer chutes.



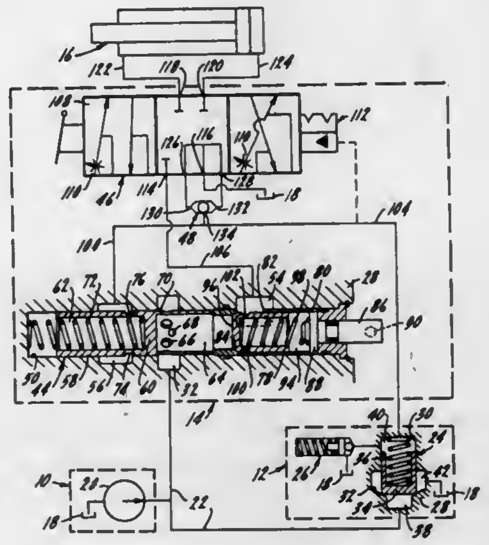
4,193,263
FLUID CONTROL SYSTEM WITH INDIVIDUALLY VARIABLE FLOW CONTROL MECHANISM FOR EACH CONTROL SECTION

David R. Ille, Wooster, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jul. 27, 1978, Ser. No. 928,649

Int. Cl.^{2} F15B *11/16, 15/18*

U.S. Cl. 60—420 **21 Claims**



1. In a fluid system including fluid supply means, a fluid motor, and directional control valve means movable between a neutral position and a power position for controlling fluid flow from said fluid supply means to said fluid motor; the improvement comprising flow control means responsive to load pressure at said fluid motor for maintaining a constant rate of fluid flow from said fluid supply means to said fluid motor when said directional control valve means is in said power position, said flow control means being independently variable to determine said constant rate.

4,193,264
PRESSURED FLUID SUPPLY SYSTEM

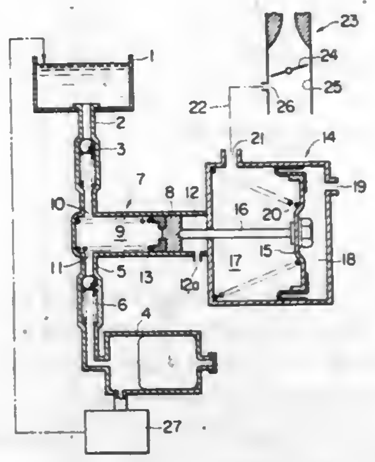
Koichi Takahashi; Yoshikazu Hayakawa, and Keizaburo Usui, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jul. 15, 1977, Ser. No. 816,253

Claims priority, application Japan, Jul. 27, 1976, 51/89297

Int. Cl.^{2} F15B *1/02*

U.S. Cl. 60—397 **43 Claims**



1. A pressurized fluid supply system for a motor vehicle equipped with an internal combustion engine, said internal combustion engine having an induction manifold and a throttle valve operatively disposed thereon, comprising:

reservoir means containing unpressurized working fluid;

reciprocating pump means fluidly communicating with said reservoir means for receiving working fluid therefrom;

vacuum motor means operatively connected to said reciprocating pump means for inducing the reciprocating motion of first piston means reciprocatingly disposed in said reciprocating pump means, said vacuum motor means having second piston means reciprocatingly disposed therein so as to divide said vacuum motor sealingly into a vacuum chamber and an atmospheric chamber, said vacuum chamber being fluidly connected to the induction manifold of said engine downstream of said throttle valve; and

accumulator means fluidly connected to said reciprocating pump means for receiving pressurized fluid displaced therefrom thereinto;

control means interposed between said induction manifold and said vacuum motor for controlling the fluid communication therebetween, and pressure relief means fluidly connected between said reciprocating pump means and said accumulator means; said control means comprising:

an unstable multivibrator connected to a source of electromotive force through a main switch; and

electromagnetic valve means interposed in a conduit interconnecting the induction manifold downstream of said throttle valve and said vacuum chamber, said electromagnetic valve means being arranged to communicate the vacuum chamber with the atmosphere when in a first state of energization and communicate the vacuum chamber with the induction manifold when in a second state of energization;

said unstable multivibrator being arranged to periodically take alternate first and second states, and said first state being one which induces said first state of energization in said electromagnetic valve means and said second state being one which induces said second state of energization in said electromagnetic valve means.

4,193,265

TRANSDUCER FOR CONVERTING THE ENERGY OF OCEAN CURRENTS

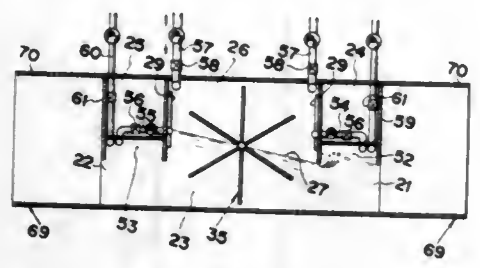
Fumio Ootsu, 6-4, Shirahae-cho, Sasebo-shi, Nagasaki-ken, Japan (857)

Filed Sep. 8, 1978, Ser. No. 940,606

Claims priority, application Japan, Apr. 18, 1978, 53/44791

Int. Cl.² F15B *11/06*

U.S. Cl. 60—398 **3 Claims**



1. A transducer for converting the energy of an ocean current to another form of energy, comprising:

(a) a housing having a pair of opposed open ends and adapted to be placed underwater;

(b) a channel extending between said open ends for allowing sea-water to flow therethrough;

(c) a plenum room disposed in said housing and overlying said channel, said plenum room being bottomed by the sea-water in said channel;

(d) an impeller including a drive shaft rotatably supported by said housing, said impeller being disposed partly in said plenum room and partly in said channel whereby said impeller can be rotated by the flow of sea-water through said channel;

(e) means operatively coupled with said drive shaft for producing energy in response to rotation of said impeller;

(f) a pair of air-trapping chambers disposed in said housing and located one on each side of and in communication with said plenum room, each of said chambers opening toward said channel whereby said chambers can receive any air that has escaped from said plenum room through said channel;

(g) an air reservoir communicating with said plenum room; and

(h) means for controlling the commnication between said plenum room and said chambers and between said air reservoir and said plenum room when the sea-water at the bottom of said plenum room reaches a predetermined level.

4,193,266

GAS TURBINE POWER PLANT

Hansulrich Frutschi, Riniken, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jul. 19, 1978, Ser. No. 926,199

Claims priority, application Switzerland, Jul. 28, 1977, 9326/77

Int. Cl.² F02C *1/04*

U.S. Cl. 60—644 **18 Claims**

1. A power plant, comprising:

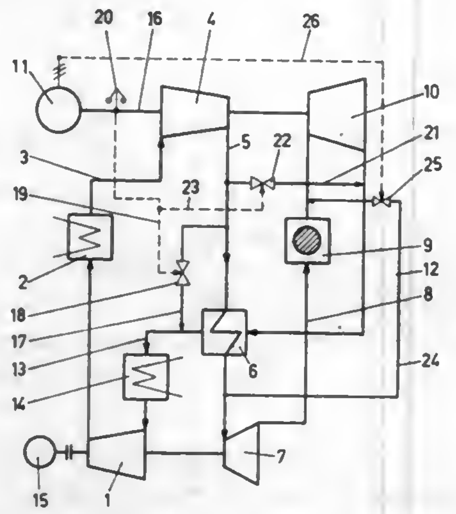
compressor means for compressing a working fluid, the compressor means having a relatively high pressure compressor section and a relatively low pressure compressor section;

turbine means for expanding the working fluid, the turbine means having a relatively high pressure turbine section and a relatively low pressure turbine section;

heating means for supplying heat to the working fluid;

circulation means for supplying the working fluid in a closed path among the compressor means, the turbine means and the heating means, the circulation means supplying the working fluid from the high pressure section of the turbine means to the heating means and then to the low-pressure section of the turbine means;

first shaft means for operatively connecting together the high pressure compressor section and the low pressure turbine section;



second shaft means for cooperatively connecting together the low pressure compressor section and the high pressure turbine section; and

control means for maintaining the pressure of the working gas substantially constant between the high and low pressure turbine sections and within the heating means.

4,193,267

METHOD AND APPARATUS FOR GENERATING POWER UTILIZING PRESSURE-RETARDED OSMOSIS

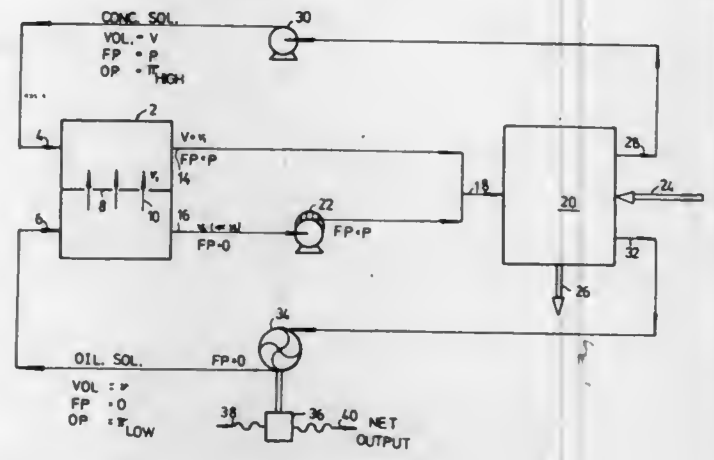
Sidney Loeb, Warrenton, Va., assignor to Ben-Gurion University of the Negev Research & Development Authority, Beersheba, Israel

Filed Feb. 15, 1978, Ser. No. 877,989

Claims priority, application Israel, Feb. 25, 1977, 51541

Int. Cl.² F01K *25/06*

U.S. Cl. 60—649 **15 Claims**



1. A method of generating power, comprising:

(A) introducing at a high hydraulic pressure a first liquid, constituting a concentrated solution, of a high osmotic pressure into a first pathway which is at least partially defined by one face of a semi-permeable membrane;

(B) introducing at a lower hydraulic pressure a second liquid, constituting a dilute solution, of a lower osmotic pressure into a second pathway which is at least partially defined by the opposite face of the semi-permeable membrane;

(C) maintaining the hydraulic pressures of the liquids on the opposite faces of the membrane at a pressure difference which is less than the osmotic pressure difference between the liquids, to effect, by Pressure-Retarded-Osmosis, the passage of a part of the solvent of the dilute solution through the semi-permeable membrane, forming a pressurized mixed solution of greater volume than said concentrated solution introduced into said first pathway;

(D) and converting the potential energy stored in the pressurized mixed solution to useful energy by:

(i) pressurizing a quantity of liquid taken as a flushing solution from the second pathway at a point downstream of the semi-permeable membrane and adding same to the pressurized mixed solution;

(ii) thermally separating said pressurized mixed and flushing solutions to regenerate said concentrated and dilute solutions while both are pressurized;

(iii) recycling said pressurized, regenerated concentrated solution back through said first pathway;

(iv) depressurizing said pressurized, regenerated dilute solution to produce useful energy; and

(v) recycling the depressurized dilute solution back through said second pathway.

4,193,268

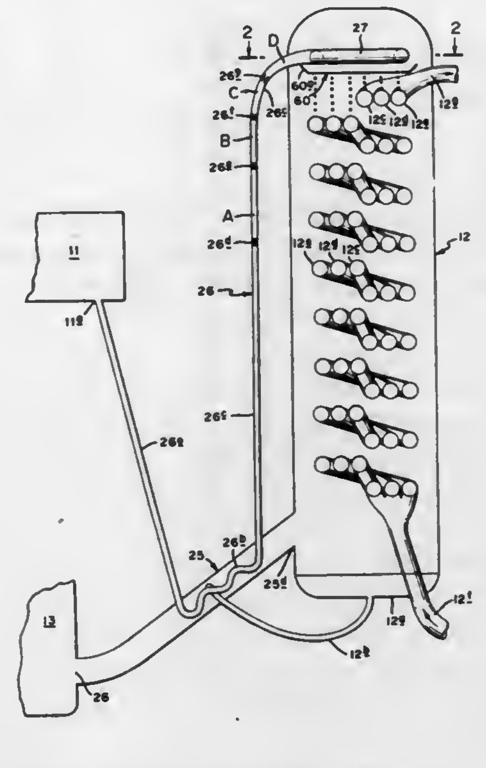
EVAPORATION DEVICE AND METHOD WITH CONTROLLED REFRIGERANT EXPANSION AND STORAGE

Benjamin A. Phillips, Benton Harbor, Mich., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 796,773, May 13, 1977, Pat. No. 4,127,010. This application Nov. 21, 1978, Ser. No. 962,838

Int. Cl.² F25B *15/00, 37/00*

U.S. Cl. 62—101 **17 Claims**



1. An evaporation device comprising:

expansion means for receiving liquid refrigerant at a condenser pressure and for expanding said liquid refrigerant to an evaporator pressure lower than the condenser pressure;

an insulated housing;

a coil within said insulated housing having an inlet and an outlet through said housing for conducting within the interior of said coil a material to be cooled by the evaporation of liquid refrigerant;

separation means for receiving refrigerant from said expansion means and for separating liquid refrigerant from gaseous refrigerant therein and for directing said liquid refrigerant over said coil in heat exchange relation with the interior of said coil;

means for flowing refrigerant as a thin film over the outside surface of said coil;

gas outlet means for receiving gaseous refrigerant from said separation means and from over said coil and for conducting gaseous refrigerant out of said insulated housing; and

storage means beneath said coil for collecting liquid refrigerant not evaporated by passage over said coil within said housing.

11. A method of evaporating a refrigerant comprising the steps:

expanding liquid refrigerant from a condenser pressure to an evaporator pressure lower than said condenser pressure;

separating gaseous refrigerant from the liquid refrigerant;

directing liquid refrigerant over and in heat exchange relation with a coil containing material to be cooled, whereby liquid may evaporate by withdrawing heat of evaporation from the material to be cooled to form gaseous refrigerant;

receiving and storing unevaporated liquid refrigerant beneath the coil; and

withdrawing gaseous refrigerant from adjacent the coil.

4,193,269

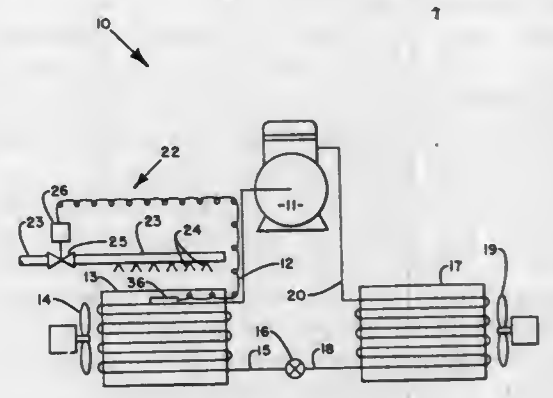
APPARATUS FOR SUPPLYING A COOLING LIQUID TO A CONDENSER OF A REFRIGERATION UNIT

Vincent T. Barry, Camillus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 14, 1978, Ser. No. 933,339

Int. Cl.² F25B *39/04*

U.S. Cl. 62—171 **4 Claims**



1. Apparatus for supplying a cooling fluid to a condenser of a refrigeration unit comprising:

a conduit for passing the cooling fluid from a source thereof into heat transfer relation with the condenser;

a valve to regulate the flow of fluid through the conduit and having an open position allowing fluid flow therethrough; and

an electronic control for use with a source of an alternating electric current, and including

a triac having an open state for preventing the current from passing therethrough, a closed state for conducting the current through the triac, and a trigger wherein, when a current having a predetermined magnitude passes thereto, the triac changes from the open state to the closed state,

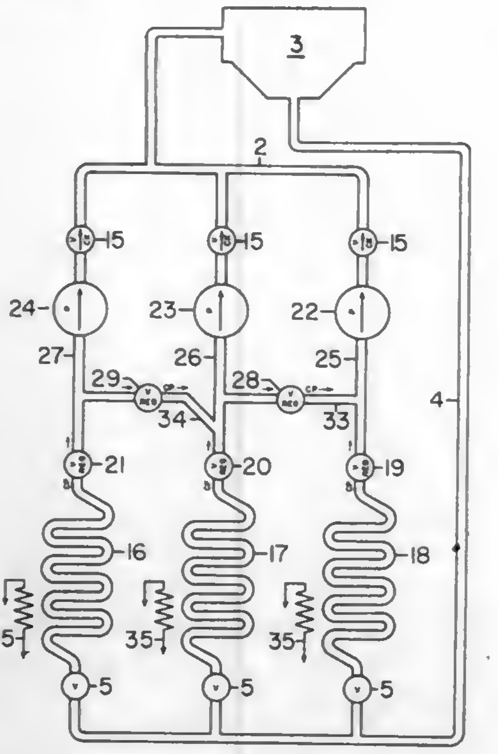
electrically actuated means positioned in series with the triac for moving the valve to the open position, and

a temperature responsive resistance element in heat transfer relation with a refrigerant passing through the condenser and positioned in series with the trigger of the triac for varying the magnitude of the current passing to the trigger in response to the temperature of the refrigerant passing through the condenser for changing the triac from the open state to the closed state when the temperature of the refrigerant passing through the condenser reaches a predetermined magnitude, and

means for shifting the phase of the current passing to the trigger of the triac.

4,193,270
REFRIGERATION SYSTEM WITH COMPRESSOR LOAD TRANSFER MEANS

Jack D. Scott, 486 Madrona St., Twin Falls, Id. 83301
Filed Feb. 27, 1978, Ser. No. 881,415
Int. Cl.^{2} F25B *7/00*
U.S. Cl. 62—175 **11 Claims**



1. A closed cycle, multiple compressor, multiple evaporator, refrigeration system comprising:

condenser means for receiving compressed gaseous refrigerant from a plurality of compressor means and condensing it to a liquid;

a first refrigerated fixture having an evaporator means associated with and cooling said fixture;

a first compressor means for compressing gaseous effluent refrigerant and returning it to said condenser means;

a first suction header means for receiving gaseous effluent refrigerant from said first evaporator means and transferring it to said first compressor means;

a second refrigerated fixture having an evaporator means associated with and cooling said fixture;

said second evaporator means operating at a higher pressure than said first evaporator means;

a second compressor means for compressing gaseous effluent refrigerant and returning it to said condenser means;

a second suction header means for receiving gaseous effluent refrigerant from said second evaporator means at a pressure higher than the pressure in the first suction header means and transferring it to said second compressor means;

means for transferring gaseous effluent refrigerant from said second suction header means to the first suction header means to maintain a minimum amount of gaseous effluent refrigerant flow to said first compressor means;

supply header means for supplying compressed liquid refrigerant from said condenser means to said first and second evaporator means.

4,193,271
AIR CONDITIONING SYSTEM HAVING CONTROLLABLY COUPLED THERMAL STORAGE CAPABILITY

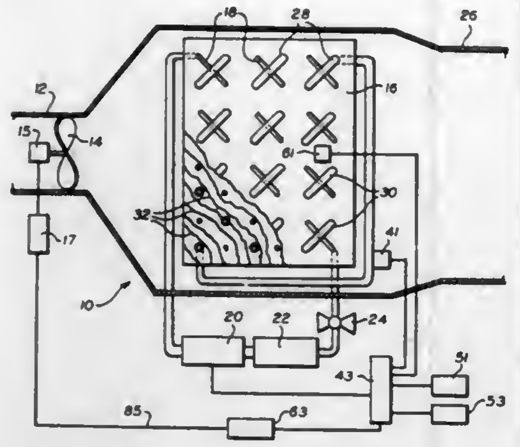
Richard F. Honigsbaum, 21 A Barry Gardens, Passaic, N.J. 07055
Filed Jul. 7, 1977, Ser. No. 813,471
Int. Cl.^{2} F25D *17/00;* **B60H** *3/04*
U.S. Cl. 62—180 **34 Claims**

1. In a system for conditioning a stream of air to provide an output air stream having a controlled temperature, said system being of the type comprising means for producing an air stream, a first medium in heat exchange relation with said air stream and means for controlling the temperature of said medium to effect sufficient heat exchange between said medium and said air stream to maintain the temperature of said output air stream at said controlled temperature, the improvement in said system comprising:

a second medium having thermal storage capability;

thermal conducting means interposed between said first and second media for effecting heat exchange therebetween, at least a portion of said thermal conducting means being disposed in the path of said air stream for heat exchange therewith, said portion being arranged to permit passage of said stream therethrough;

means for controlling the flow rate of said air stream through said thermal conducting means portion for controllably apportioning heat transfer from said air stream and said second medium to said first medium when said means for controlling the temperature of said first medium is activated whereby when said means for controlling the temperature of said first medium is activated and said flow rate is increased there is increased heat transfer from said air stream to said first medium and decreased heat transfer from said second medium to said first medium and when said flow rate is decreased there is decreased heat transfer from said air stream to said first medium and increased heat transfer from said second medium to said first medium; and for controlling the rate of heat transfer from said air stream to said second medium when said means for controlling the temperature of said first medium is deactivated whereby when said first temperature controlling means is deactivated and said flow rate is increased there is increased heat transfer from said air stream to said second medium and when said flow rate is decreased there is decreased heat transfer from said air stream to said second medium; and



cycling means operatively connected to said first medium temperature controlling means for effecting activation and deactivation thereof.

4,193,272
PORTION CONTROLLED FROZEN FOOD

Vincent E. Bernard, 422 Brook Glen, Richardson, Tex. 75080
Division of Ser. No. 633,481, Nov. 19, 1975, Pat. No. 4,060,998, which is a continuation-in-part of Ser. No. 526,146, Nov. 22, 1974, abandoned. This application Sep. 12, 1977, Ser. No. 832,194
Int. Cl.^{2} F25C *5/02*
U.S. Cl. 62—320 **4 Claims**

2. A system for forming a plurality of discrete products having preselected volumes and weights comprising:

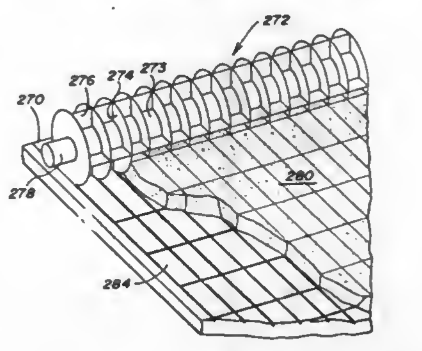
means for receiving a quantity of semi-fluid material,

a pump for pumping said material at a selected rate,

an extruder associated with said pump and having an inlet to receive said pumped material and having an outlet for outputting said pumped material,

conduits connected to said outlet for conveying a continuous sheet of said material,

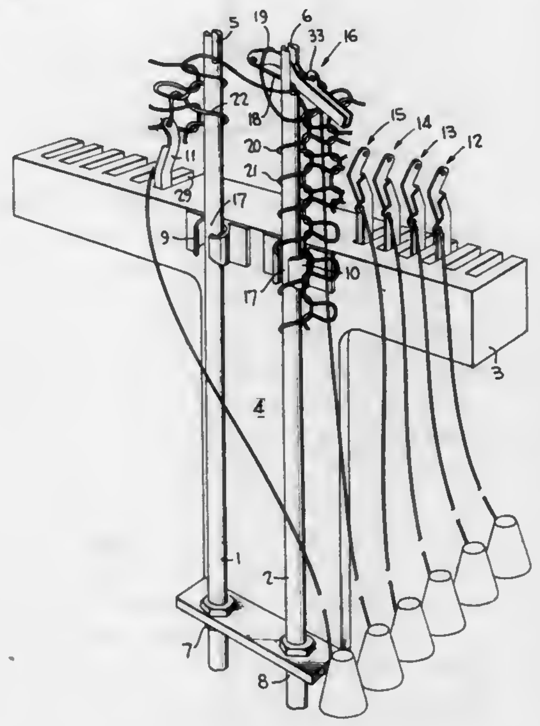
a chilling station located at the remote end of said conduit for receiving said continuous sheet of said material and for chilling said continuous sheet to an extent that said sheet maintains its extruded cross-section, and



a rotatable drum having equally spaced sharpened circumferential ribs for slicing said sheet into continuous lengths and sharpened longitudinal ribs for severing said lengths to form discrete predetermined shapes from said mixture, said linear conveyor including indentations for receiving the sharpened edges of said circumferential and longitudinal ribs to facilitate cutting of said continuous sheet.

4,193,273
APPARATUS FOR USE IN PRODUCING KNIT FABRICS

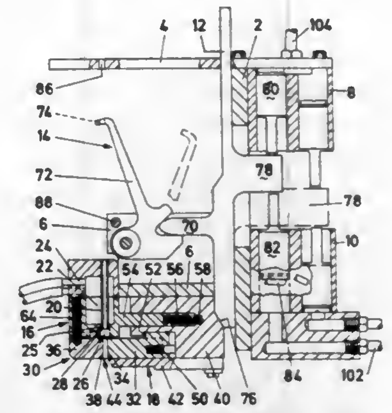
Walter Palange, 655 Park Shore Dr., Naples, Fla. 33940
Filed Mar. 15, 1978, Ser. No. 886,776
Claims priority, application Italy, Jun. 28, 1977, 16905 A/77; Oct. 21, 1977, 51513 A/77
Int. Cl.^{2} D04B *3/00*
U.S. Cl. 66—4 **4 Claims**



1. Apparatus for use in producing knit fabrics comprising a base member, at least two elongate upright knitting supports on said base member, means defining a slot in each support extending longitudinally from a free upper end thereof and at least one needle for use, when threaded with yarn from a yarn supply, in forming stitches on the supports, said needle comprising a curved forward end terminating in a tip, a first yarn-threading eye located substantially in the region of said tip and a second yarn-threading eye spaced rearwardly along the needle from said first eye, wherein said supports consist of a pair of rods, said base member comprising an upper section and a lower section depending from said upper section, a pair of collets mounted on said upper section, said collets loosely receiving said rods and being provided with openings allowing sliding movement of knit material along said rods, and means attaching said rods to said lower section at ends of said rods remote from said slots.

4,193,274
YARN FEED AND CHANGE MECHANISMS

Daniel W. F. Gostelow, Leicester, England, assignor to Wildt Mellor Bromley Limited, Leicester, England
Filed Mar. 6, 1979, Ser. No. 17,901
Claims priority, application United Kingdom, Mar. 17, 1978, 10611/78
Int. Cl.^{2} D04B *15/54*
U.S. Cl. 66—140 R **5 Claims**



1. Striper for knitting machine including:

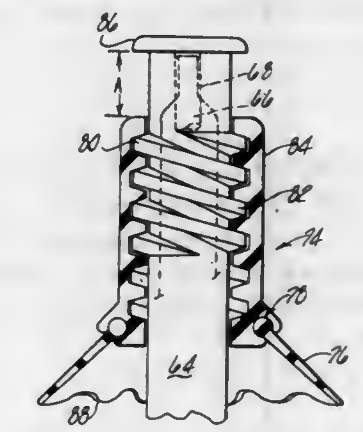
a plurality of yarn feed passages; pneumatic means for providing a flow of fluid through the passages to thereby propel a leading yarn end towards knitting needles of the knitting machine; and, associated with the respective yarn feed passages;

a movable yarn feed passage wall portion for the respective yarn feed passage and a wall portion facing the movable yarn feed passage wall portion; drive means for moving movable wall portion against the facing wall portion to thereby trap yarn and hold it in alignment with the passage direction; and

a member movable independently of the movable wall portion for severing yarn held in the passage.

4,193,275
AGITATOR MECHANISM FOR CLOTHES WASHING MACHINE

John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Dec. 4, 1978, Ser. No. 965,803
Int. Cl.^{2} D06F *17/06, 17/10*
U.S. Cl. 68—134 **10 Claims**



1. A washing machine comprising:

a clothes washing receptacle mounted in an upright position;

means for introducing a washing solution into said clothes washing receptacle;

an agitator mechanism including:

an agitator center post extending upwardly into the interior of said clothes receiving receptacle;

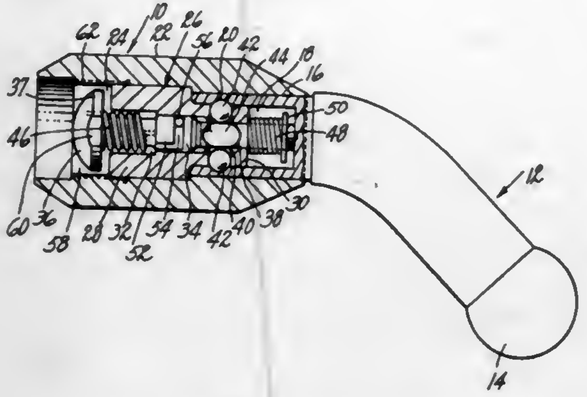
a vertical reciprocation agitator member;

means mounting said vertical reciprocation agitator member so as to be freely rotatable relative to said agitator center post, said vertical reciprocation agitator member including an agitator element extending radially outwardly from said agitator center post;

said means mounting said vertical reciprocation agitator member on said agitator center post including interengaging cam surfaces fixed to said agitator center post and said vertical reciprocation agitator member, respectively, causing relative axial movement in either direction between said vertical reciprocation agitator member and said agitator center post upon relative rotation therebetween in either direction; and

means for oscillating said agitator center post, whereby interengagement between clothing items and said agitator element causes relative rotation between said vertical reciprocation agitator member and said agitator center post, whereby said vertical reciprocation thereof will occur to produce agitation of said clothes load in said washing solution to carry out said washing action.

4,193,276
LOCK FOR RAILROAD SWITCH
George A. Lundberg, Kinnelon, N.J., assignor to E. J. Brooks Company, Newark, N.J.
Filed Sep. 13, 1978, Ser. No. 941,913
Int. Cl.^{2} E05B *67/36*
U.S. Cl. 70—34 **5 Claims**



1. A lock assembly for releasably engaging a shackle end, comprising a housing having locking means at one end for engaging a shackle end and lock operating means comprising an elongated shaft rotatable between a locking orientation and an unlocking orientation, means retaining said shaft in the unlocking orientation and means biasing said shaft to the locking orientation, and means responsive to axial movement of the shaft in a predetermined direction to cause said shaft to rotate to the locking position.

4,193,277
LOCK BODY WITH LOCKING PINS OPENED OR CLOSED BY THE CYLINDRICAL KEY BAR
Jiuan P. Lo, 30-1, Lane 325, St., Tong Ho,Taipei City, Taiwan
Filed Feb. 8, 1978, Ser. No. 876,043
Int. Cl.^{2} E05B *15/14, 19/02, 27/06, 27/10*
U.S. Cl. 70—358 **9 Claims**

1. A cylindrical lock comprising:

a housing;

a cylindrical plug mounted for rotation in said housing;

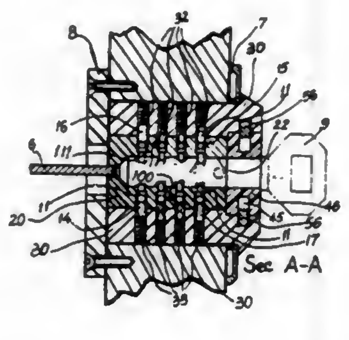
a roll-back mounted for rotation with said plug;

tumbler means disposed in said plug for opening and closing said lock;

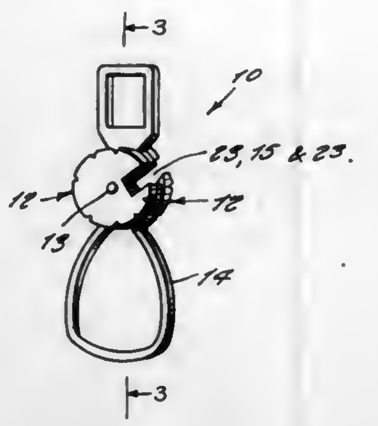
cylindrical key bar means for aligning said tumbler means at the periphery of said plug;

said bar means including a cylindrical bar having angled grooves in the periphery thereof corresponding to said tumbler means;

said tumbler means being responsive to pressure applied by the sides of said grooves when said key bar means are rotated in said plug to rotate said plug and said rollback.



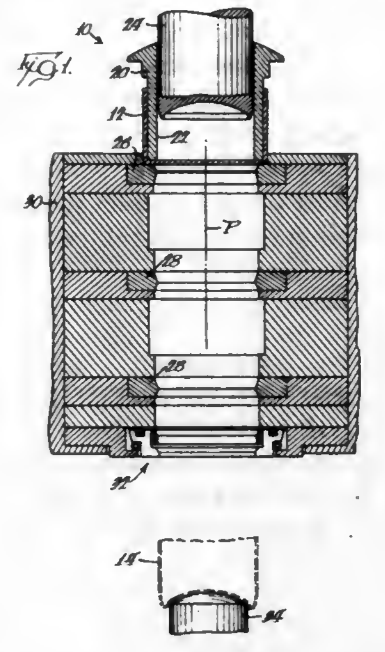
4,193,278
LOCKED KEY RING
Jorge M. Martinez, 2857 Burt St., Las Vegas, Nev. 89101
Filed May 8, 1978, Ser. No. 903,940
Int. Cl.^{2} A44B *15/00*
U.S. Cl. 70—459 **1 Claim**



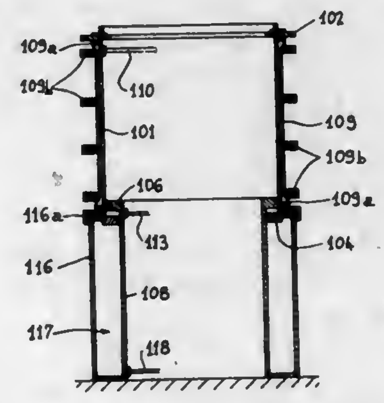
1. A locked key ring, comprising, in combination, a flat ring member, a round flat wheel positioned on each opposite side of said ring member; said ring member including an open ring element at one end, a closed loop at an opposite end and a circular portion therebetween having the same diameter as said wheels, said circular portion including a hook on an end of said ring element, and an opening adjacent said hook, each said wheel having a peripheral notch for selective alignment with said opening, said flat ring member including an opening through a center of said circular portion, a tension coil spring directly journalled rotatably free in said circular portion central opening, each opposite end of said spring being rigidly anchored within one of said wheels, said wheel notches being misaligned with each other when said spring is rotationally relaxed, and said spring allowing rotation of said wheels respective to each other and said ring member.

4,193,279
CUP HOLDER ASSEMBLY
Edward G. Maeder, Minnetonka, Minn., assignor to National Can Corporation, Chicago, Ill.
Filed Apr. 26, 1978, Ser. No. 900,269
Int. Cl.^{2} B21D *22/00*
U.S. Cl. 72—44 **14 Claims**

1. In a drawing and ironing machine including a fixed frame, a ring carried by said fixed frame and having a first circular opening therein, a punch movable axially of said first circular opening, a cup holder sleeve interposed between said punch and said ring, said cup holder sleeve having an axial bore for receiving said punch, and a support for said cup holder sleeve, the improvement of said support including a first member having a second circular opening therein aligned with said first circular opening and having a circumferential recess extending from the periphery thereof, a movable support element having a peripheral portion received in said recess and cooperating with one end of said cup holder sleeve, said support element having a circular aperture and being movable radially of said second circular opening, and biasing means between said first member and said support element normally maintaining said support element centered with respect to said second circular opening and accommodating radial movement of said one end of said cup holder sleeve and said support element in said openings.



4,193,280
APPARATUS FOR THE MANUFACTURE OF EXPANSION BELLOWS
Paul Mazier, Rillieux la Pape, France, assignor to Souplesse Fonctionnelle Systematique S.F.Z., Chassieu, France
Filed May 10, 1978, Ser. No. 904,414
Claims priority, application France, May 13, 1977, 77 16030
Int. Cl.^{2} B21D *15/06*
U.S. Cl. 72—59 **6 Claims**



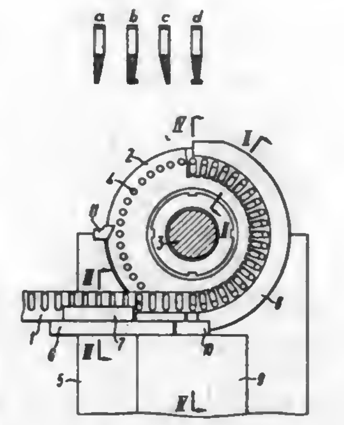
1. An apparatus for longitudinally contracting deformable sleeves by the hydroforming process to manufacture expansion bellows for pipelines and the like, said apparatus comprising:

a movable rigid sleeve having an inwardly turned lower portion and being positionable inside a deformable sleeve to be contracted;

means cooperating with said rigid sleeve and the deformable sleeve for defining a hydroforming circuit between the outer surface of said rigid sleeve and the inner surface of the deformable sleeve to be contracted; and

means positioned inside said rigid sleeve for defining an actuating circuit separate from said hydroforming circuit, the actuating circuit being adapted to cooperate with interior portions of said rigid sleeve to longitudinally move said rigid sleeve from a first position in which a first predetermined portion of said rigid sleeve is encompassed by said deformable sleeve to a second position in which a portion less than the first predetermined portion is encompassed by said deformable sleeve, movement of said rigid sleeve from said first to said second position longitudinally contracting the deformable sleeve.

4,193,281
DEVICE FOR MANUFACTURING COILED MAGNETIC CORES FOR ELECTRICAL MACHINES
Valery A. Kulikov, ulitsa Bobkova 8, kv. 2; Ernst A. Stepanian, Suzdalsky prospekt 7, kv. 41, and Emilen A. Stepaniants, ulitsa Zelenaya 4, kv. 6, all of Vladimir, U.S.S.R.
Filed Apr. 24, 1978, Ser. No. 899,592
Int. Cl.^{2} B21D *11/06, 11/08;* H02K *15/00*
U.S. Cl. 72—130 **6 Claims**



1. A device for manufacturing coiled magnetic cores for electrical machines by bending a continuous band edgewise into a coil and wherein said band is provided with recesses, comprising a bed; means for tensioning said band mounted on said bed; a straight guide and an arched guide for said band mounted on said bed; a shaping element interposed between said guides; a rotary disc, mounted on a shaft and having an end face or side surface, received in a recess provided in said bed, a portion of the end face of said rotary disc facing said arched guide; said shaping element being a die having a wedge-shaped head with a working edge to produce a maximum elongation of said band at one edge forming the outer diameter of said coil; said working edge of said head extending radially and at an angle to said side surface of said rotary disc for forming a coil of a preset shape having at least one angled side surface formed by a series of elementary portions in the zone of the edge with maximum elongation alternate with portions preserving the original thickness of said band; uniformly spaced fingers mounted on said rotary disc and equal to the number of recesses in a single complete stator turn of said electrical machine; a cam secured to said bed for setting said fingers in reciprocating motion; for engagement with said band recesses two guide channels; for said band the first of said guide channels being straight and formed by said bed and said straight guide; the second guide channel being arched and formed by a portion of said rotary disc and said arched guide; and drive means for driving said shaping member in reciprocating motion, and for driving said shaft carrying said disc.

4,193,282
ROLLING MACHINE
Alexander I. Wilson, Sheffield, England, assignor to Hill Engineering Company Limited, Sheffield, England
Filed Jul. 3, 1978, Ser. No. 921,766
Int. Cl.^{2} B21B *13/20*
U.S. Cl. 72—194 **21 Claims**

1. A rolling machine for reducing the cross-sectional dimensions of an elongate workpiece movable lengthwise along a passline, the machine comprising:

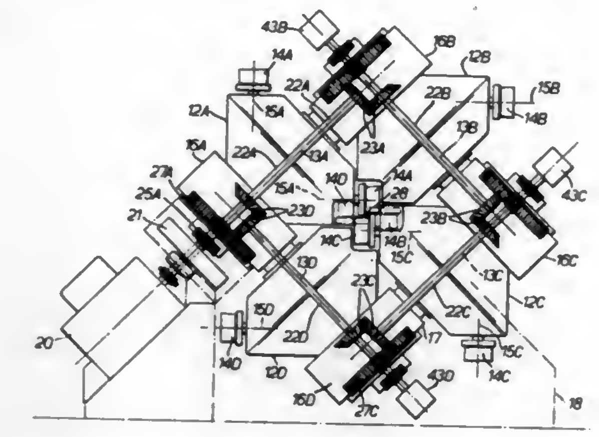
(a) a first pair of cooperating rolls between which said workpiece is to be intermittently reduced in a first reduction direction and each of which has a roll axis;

(b) a second pair of cooperating rolls between which said workpiece is intermittently reduced in a second reduction direction transverse to said first direction and each of which has a roll axis;

(c) each said roll having a first rolling face extending substantially parallel to said roll axis and a second rolling face transverse to said roll axis and merging smoothly with said first rolling face;

(d) for each said roll of said first and second pairs, a carrier in which said roll is journalled for rotation about its said roll axis and which is mounted for rotation about a carrier axis inclined to said roll axis,

(e) the carrier axes of said carriers for said first pair of rolls being transverse to said passline and on opposite sides thereof;



(f) the carrier axes of said carriers for said second pairs of rolls being transverse both to said passline and to said carrier axes of said carriers for said first pair of rolls and lying on oppsite sides of said passline; and

(g) means for synchronously driving all said carriers about said carrier axes;

(h) whereby in each cycle said rolls of each said pair of rolls approach and recede from said passline and each other as said rolls move in the direction of said passline, and said workpiece is intermittently contacted and reduced by said pairs of rolls alternately.

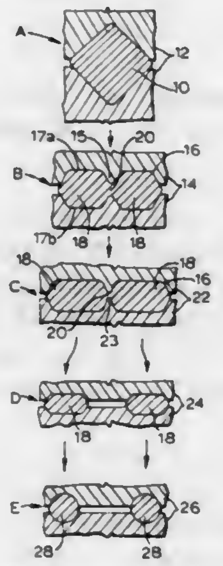
4,193,283
METHOD OF SLITTING A DOUBLE OR TRIPLE STRANDED BAR

Raymond E. Bowman, Oshawa, Canada, and Anthony Greaves, Belting, England, assignors to Co-Steel International Limited, Whitby, Canada

Continuation-in-part of Ser. No. 764,699, Feb. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 656,178, Feb. 9, 1976, abandoned. This application Aug. 21, 1978, Ser. No. 935,499

Int. Cl.^{2} B71B *1/00*

U.S. Cl. 72—204 **3 Claims**



1. In the production of elongated metal bars from billets in which the billet is passed between the opposed rolls of successive mill stands whereby a compressive working force is applied to the billet, a method of slitting a multi-stranded bar of no more than three strands wherein each strand is interconnected to the adjacent strand at a continuous node of less thickness than said strands, comprising the step of passing the bar through the opposed rolls of at least one mill stand, applying to said bar in said at least one mill stand a compressive working force so as to produce an equal cross-sectional area reduction in each of said strands and to create lateral tensile forces in each connecting node causing each of said nodes to rupture and causing a laterally outward shift of the centres of gravity of the outermost of said strands substantially simultaneously with the creation of said lateral tensile forces, thereby separating adjacent strands.

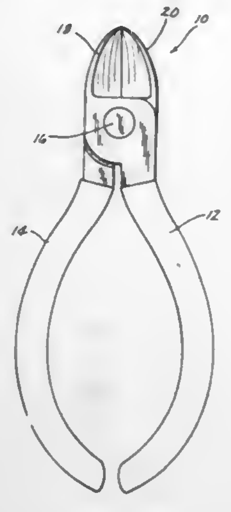
4,193,284
CAME CÜTTING AND MOLDING TOOL AND METHOD OF USING SAME

Nathan O. McCrary, Jr., 4018 Baughman, Ames, Iowa 50010

Filed Jul. 13, 1978, Ser. No. 924,167

Int. Cl.^{2} B26B *17/04;* **B23D** *29/02*

U.S. Cl. 72—325 **5 Claims**



1. A method of molding came for glazing for cut glass pieces, by cutting a length of came into two pieces, one piece having a right-angle butt end surface and the other piece having oppositely disposed beveled end surfaces said method comprising, employing a cutting and molding tool having oppositely disposed cutting blades, each blade having oppositely disposed surfaces, the surfaces on one side of said blades being flat to provide a right angle butt end cut while the surfaces on the opposite side are beveled away from the cutting edges of the blades and the opposite flat side of said blades to provide a beveled cut, placing a length of came material between and across the

open blades of said tool, and closing the blades of said tool onto said material until said blades touch the flat surfaces on said one side of said blades producing by cutting a piece of came having a right-angle butt end surface and the beveled surfaces of said other side of said blades producing by molding a piece of came having a pair of beveled end surfaces which together form a V-shaped end.

4,193,285
METHOD OF DEEP-DRAWING OF A CONTAINER OR THE LIKE FROM AN ALUMINIUM MATERIAL

Horst Zumsteg, Rorschacherberg, Switzerland, assignor to Alcan Research and Development Limited, Montreal, Canada

Filed Jun. 12, 1978, Ser. No. 914,964

Claims priority, application Switzerland, Jun. 15, 1977, 7379/77

Int. Cl.^{2} B21D *22/00*

U.S. Cl. 72—348 **5 Claims**

1. A method of producing a container or the like having the shape of a truncated cone and a rolled-in edge portion by deep-drawing a flat blank of sheet-like aluminium metal, including the steps of

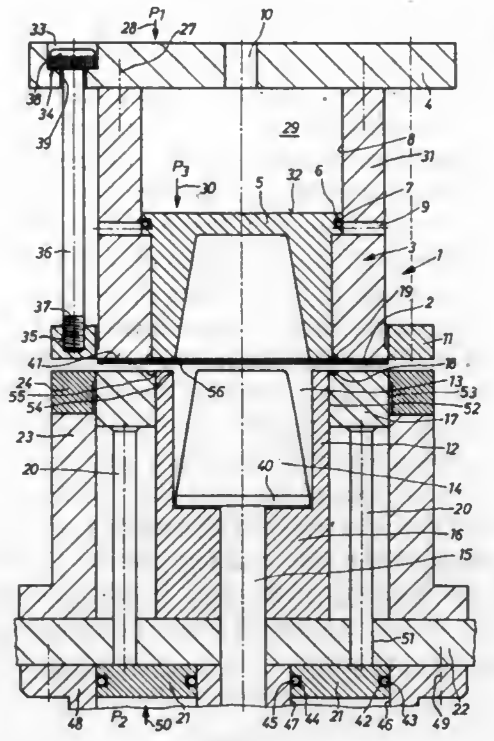
(a) deep-drawing the sheet-like blank by a first draw into a cylindrical container blank and

(b) further drawing said blank by a counter draw into its final shape in the form of a truncated cone, such that the positions of the inner and outer surfaces of the container blank remain unchanged,

wherein the improvement comprises

(c) initiating the counter draw prior to the completion of the first draw,

(d) the velocity of said counter draw exceeding the velocity of the first draw.



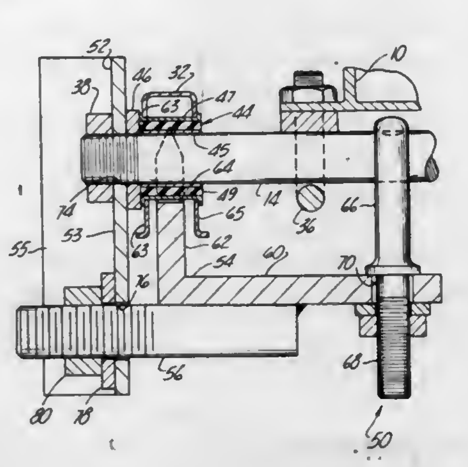
4,193,286
VEHICLE CONTROL ARM SPREADER TOOL

Moises R. Garcia, Dona Ana, N. Mex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 18, 1978, Ser. No. 906,904

Int. Cl.^{2} B21D *1/12*

U.S. Cl. 72—462 **3 Claims**



1. In association with a vehicle suspension that includes a fixed pivot shaft extending through bushings carried within U-cross sectioned end portions of a stamped metal control arm: the improvement comprising a tool installable on the pivot shaft for straightening a bent flange on a U-cross sectioned portion of the control arm; said tool comprising a first presser element (**48**) having a shaft-engageable hanger component (**50**) connected thereto for operatively locating said first presser element against one surface of the bent flange, a threaded stud (**56**) non-rotatably secured to said first presser element for disposition generally parallel to the control arm pivot shaft when the presser element is in its operative location, a second presser element (**52**) having a first opening therethrough for its mounting on an end of the pivot shaft, said second presser element having a second opening therethrough for loosely encircling an end of the aforementioned threaded stud, a first nut (**38**) threadable onto the pivot shaft, said nut being rotatable on said pivot shaft to thereby rigidly secure the second presser element to said shaft; and a second nut threadable onto the end of the stud that projects through the second opening, whereby the first presser element is forcibly drawn toward the second presser element to exert a straightening force on the bent flange, said first presser element comprising an angle member (**54**) having a first wall adapted to extend parallel to the pivot shaft, and a second upstanding wall adapted to extend into the U-shaped cross section of the metal control arm; said upstanding wall having a semi-circular notch in its upper edge for partial encirclement of the bushing carried within the control arm; the extreme upper edge of the upstanding wall being sharpened to a chisel character, whereby the first presser element can be forced into operative engagement with the bent flange on the control arm even though the U-cross sectioned end portion of the control arm is partially closed.

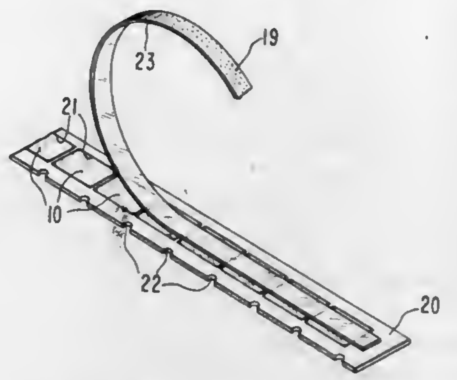
4,193,287
TECHNIQUE FOR APPLYING POLARIZER MATERIAL TO LIQUID-CRYSTAL DISPLAYS

James W. Pfeiffer, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Mar. 30, 1978, Ser. No. 891,589

Int. Cl.^{2} H01S *4/00*

U.S. Cl. 29—593 **7 Claims**



1. A method of fabricated liquid-crystal displays (LCD's) including applying polarizer material to partially-finished LCD's, which comprises the following steps:

loading a plurality of partially-finished LCD's on a strip carrier such that the LCD's lie approximately in the plane of the strip carrier;

applying adhesive polarizer material in strip form over the partially-finished LCD's on at least one side of the strip carrier; and

cutting the polarizer material to desired size with non-contact cutting means.

4,193,288
APPARATUS FOR CALIBRATING INSTRUMENTS FOR GRANULOMETRIC RECORDING

Viktor A. Berber, ulitsa Shelkovichnaya, 184, kv. 65; Evgeny S. Pervushin, ulitsa Shelkovichnaya, 182, kv. 71; Khafiz M. Murtazin, 6 Internatsionalny proezd, 20; Vladimir G. Kholin, ulitsa Shelkovichnaya, 184, kv. 53, and Boris M. Galishnikov, ulitsa Shelkovichnaya, 190, kv. 27, all of Saratov, U.S.S.R.

Filed Aug. 21, 1978, Ser. No. 935,502

Int. Cl.^{2} G01N *15/00*

U.S. Cl. 73—1 R **2 Claims**

1. An apparatus for producing a fluid flow containing reference particles of a given size, adapted to calibrate instruments for granulometric recording of particles in fluids and comprising:

a chamber;

an inlet port of said chamber;

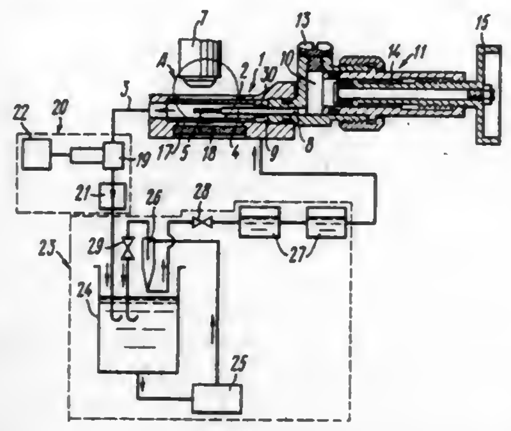
an outlet duct of said chamber adapted to communicate with the inlet of the instrument being calibrated;

a means to pump uncontaminated fluid through said chamber;

a feeding duct to feed said chamber with said reference particles;

at least one chamber portion of said chamber, located near said outlet duct and implemented as a horizontally positioned transparent cylinder;

a transparent duct disposed within said transparent cylinder coaxially therewith;



one end portion of said transparent duct tapering to a diametrical size which is commensurate with the maximum diameter of said reference particles;

an inspection means to monitor the size of said reference particles, disposed above said tapering end portion and outside of said chamber;

the other end portion of said transparent duct, isolated from the cavity of said chamber and adapted to communicate with said feeding duct;

an adjustable reverse pumping means capable of pumping the fluid with said reference particles through said feeding duct and said transparent duct.

4,193,289

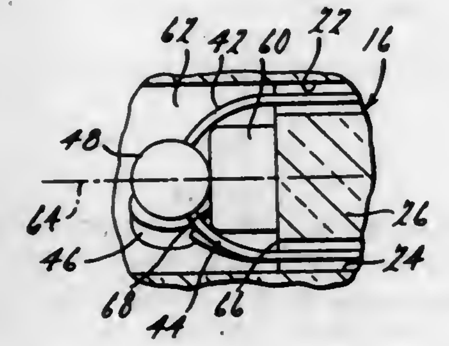
CERAMIC INSULATOR FOR AN EXHAUST GAS OXYGEN SENSOR

Jerry L. Springer; Charles M. Wells, both of Livonia, and Wells L. Green, Garden City, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 22, 1979, Ser. No. 5,421

Int. Cl.² G01N *7/02*

U.S. Cl. 73—27 R **4 Claims**



1. An improved exhaust gas oxygen sensor of the type adapted for installation in a conduit for conveying exhaust gases from an internal combustion engine, the improved sensor being responsive to the partial pressure of oxygen in the exhaust gases to which the sensor is exposed and having an electrical characteristic which varies, when the sensor is at operating temperatures in the range from about 350° C. to about 850° C., with the partial pressure of oxygen in the exhaust gases, the sensor comprising:

a body adapted for connection to the exhaust conduit of an internal combustion engine;

a ceramic insulator having a projecting portion and a terminal-pin portion, the ceramic insulator being received within the body and being positioned such that the projecting portion is adapted to project into the exhaust conduit when the body is connected thereto as adapted therefor, the projecting portion of the insulator being of circular cross-section and having a plurality of passages extending therefrom to the terminal-pin portion of the insulator, the passages having their centers located substantially equidistant from the axis of the projecting portion, the insulator projecting portion having a pedestal of circular cross-section, and the pedestal having a radius smaller in length than the distance from the axis of the projecting portion to the centers of the passages;

an oxygen sensing element supported by the projecting portion of the insulator and positioned adjacent the pedestal thereof, the oxygen sensing element being responsive to the partial pressure of oxygen in exhaust gases, the oxygen sensing element having a plurality of electrical lead wires connected thereto, the electrical lead wires each extending through a different one of the passages in the insulator to the terminal-pin portion thereof, the pedestal of the insulator restricting bending of the electrical lead wires in the region between the oxygen sensing element and the passages.

4,193,290

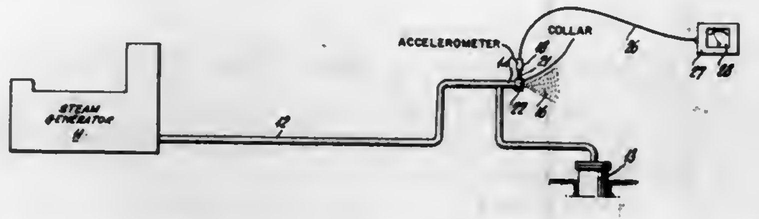
STEAM QUALITY ACOUSTIC MONITORING SYSTEM AND METHOD

Alvin J. Sustek, Jr., and Thomas G. Scott, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,134

Int. Cl.² G01N *29/02*

U.S. Cl. 73—29 **6 Claims**



1. Steam quality monitoring system for use with steam injection wells or the like, comprising

a conduit for delivering steam to be utilized,

an orifice connected to said conduit for permitting said steam to escape therethrough,

a sound transducer physically coupled adjacent to said orifice for generating sonic range frequency signals in accordance with sonic vibrations created by said steam flow through said orifice, and

means indicating the quality of said steam in response to the amplitude of said sonic signals at a predetermined frequency.

4,193,291

SLOW TORSIONAL WAVE DENSITOMETER

Lawrence C. Lynnworth, Waltham, Mass., assignor to Panametrics, Inc., Waltham, Mass.

Filed Feb. 27, 1978, Ser. No. 881,753

Int. Cl.² G01N *9/24*

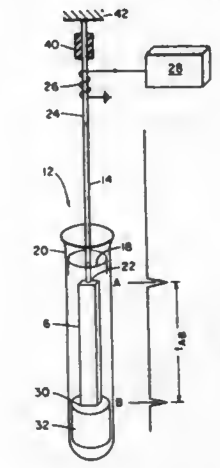
U.S. Cl. 73—32 A **46 Claims**

1. An acoustic system for measuring at least the density-dependent parameter of a fluid, comprising

transducer means for transmitting and receiving an acoustic wave responding to the torsional mode complex propagation constant γ,

a sensor acoustically coupled to said transducer means that propagates said torsional wave axially in a guided mode, said sensor having a noncircular cross section in a plane transverse to said axial direction and being at least partially immersed in said fluid,

said torsional wave having a velocity of propagation c_t along said immersed sensor portion that is less than the velocity of propagation of said wave along said sensor in a vacuum,



and the magnitude of the ratio of said reduction in propagation velocity to said propagation velocity in vacuum being a substantially linear function of the density of said fluid, and

electronic means for measuring said velocity reduction.

4,193,292

INDICATING DEVICE FOR VACUUM CLEANERS

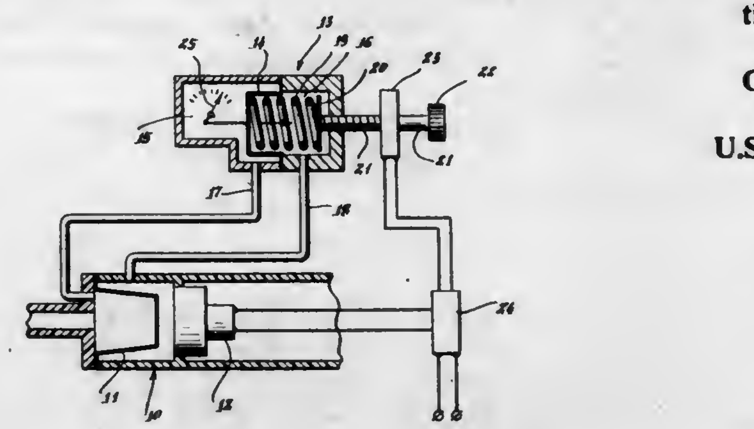
Sven B. Simonsson, Tyreso, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jan. 5, 1979, Ser. No. 1,144

Claims priority, application Sweden, Jan. 11, 1978, 7800296

Int. Cl.² G01L *7/08;* B01D *46/04*

U.S. Cl. 73—38 **7 Claims**



1. An arrangement for indicating the degree of clogging of a dust container for a vacuum cleaner, or the like, comprising a spring, a pressure sensing means, which under the influence of a pressure differential between the outside and inside of said dust container is movable against the force of said spring, a signalling device visible from the exterior of said vacuum cleaner for a continuous visual indication of the degree of clogging of the dust container and being operatively connected to said pressure sensing means, said vacuum cleaner having a motor regulator for varying the amount of the motor output, and said motor regulator being provided with a device for selective variance of the tension of said spring against the force causing said pressure sensing means to be movable.

4,193,293

APPARATUS FOR DETERMINING BLOOD ELASTICITY PARAMETERS

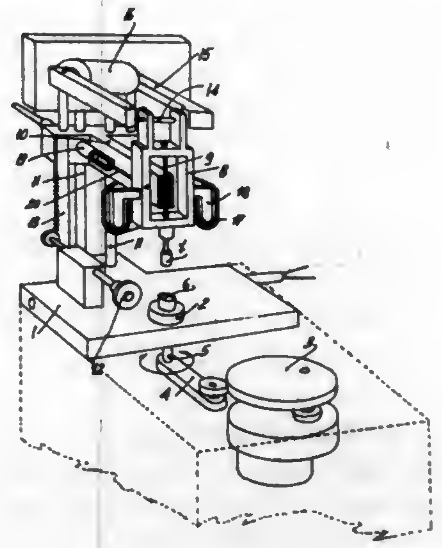
Francesco Cavallari, Milan, Italy, assignor to E.L.V.I. S.p.A., Milan, Italy

Filed Apr. 25, 1978, Ser. No. 900,057

Claims priority, application Italy, Apr. 28, 1977, 22920 A/77

Int. Cl.² G01N *33/16*

U.S. Cl. 73—64.1 **8 Claims**



1. An apparatus for determining blood elasticity parameters, comprising in combination: a cylinder rotatably carried about its vertical axis and suitable to be immersed in a blood container subjected to regular oscillations; a magnetic transducer for the cylinder oscillations connectable to an apparatus for recording the amplitude of the cylinder oscillations; the cylinder being rigidly suspended from a frame oscillating in line with the cylinder axis and being mechanically connected to a magnetic device exerting a reaction moment, said device comprising a ferromagnetic core rotating in a uniform magnetic field.

4,193,294

MAGNETOELASTIC TRANSDUCER WITH LINEAR AND TEMPERATURE-INDEPENDENT CHARACTERISTIC

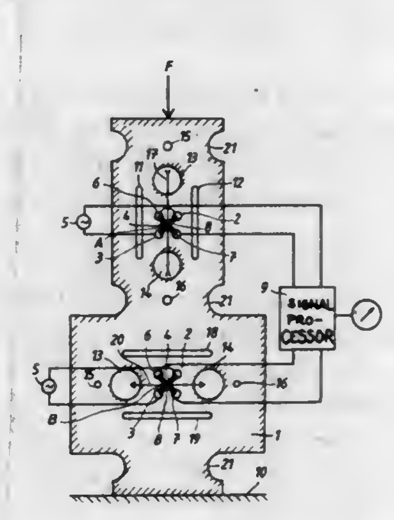
Lennart Forslund, Brunflo; Stig Jordinger, and Pavel Kolavcic, both of Vesteras, all of Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Dec. 22, 1977, Ser. No. 863,531

Claims priority, application Sweden, Dec. 28, 1976, 7614600

Int. Cl.² G01L *1/12*

U.S. Cl. 73—141 A **8 Claims**

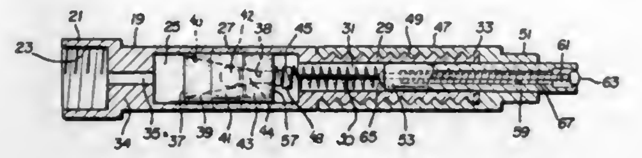


1. A force measuring magnetoelastic transducer for generating an output signal dependent on a mechanical force acting on the transducer, comprising:

a core of magnetostrictive material including at least two groups of first apertures, each group including excitation and measuring windings and between which at least one measuring zone is formed, in which the dominating part of

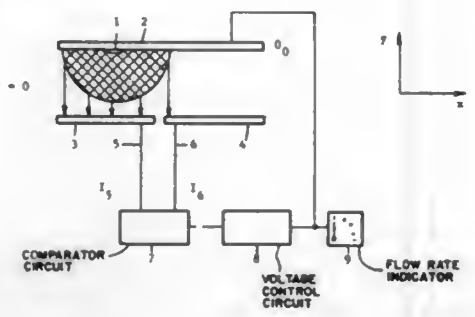
the magnetic flux appears and in which the stress therefore determines the signal from the measuring winding;
said core further including second apertures other than said two groups of first apertures for controlling the force flux, and being arranged in spaced relation from said two groups of first apertures to form at least one measuring zone substantially subjected to compressive stress and to form at least one measuring zone substantially subjected to tensile stress when a force is acting on the transducer;
means for exciting each excitation winding with an alternating current having a magnitude such that the signals generated in said measuring windings by said compressive and tensile stresses within a predetermined range of load deviate from linearity with one polarity signal for compressive stress and the opposite polarity signal for tensile stress; and
means for summing said signals generated in said measuring windings in such proportions that the deviations from linearity of said signals compensate each other.

4,193,295
VISUAL TIRE VALVE
William F. Curran, 6561 Balfour, Allen Park, Mich. 48101
Filed Jan. 12, 1979, Ser. No. 2,915
Int. Cl.² B60C *23/02*
U.S. Cl. 73—146.8 **16 Claims**



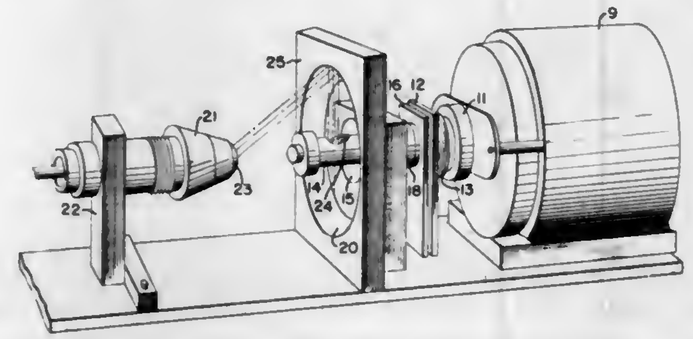
1. A visual tire valve adapted for mounting over a tire valve stem comprising a stem housing having an internally threaded collar at one end mounted upon said valve stem; an elongated bore intermediate said housing ends, and an externally threaded barrel at the other end of said housing having a counter bore communicating with said bore;
the stem housing including an apertured head between said collar and bore;
a cylindrical bolt slidably mounted in said bore having an axial aperture at one end terminating in a tapered bore;
a ball valve normally seated on said tapered bore having a stem projected loosely through said bolt aperture and outwardly thereof;
there being three annular bands of different colors end-to-end over the exterior of said bolt, for indicating over inflation, proper inflation, and under inflation, respectively;
a transparent window in said stem housing of the same width as one color band, for viewing one band and alternately, parts of adjacent bands indicating selectively the tire pressure; i.e., proper inflation, partly under or over inflation;
a second housing having an internally threaded bore adjustably mounted upon and along said barrel;
a stem having a normally closed longitudinal bore axially mounted and secured intermediate its ends upon one end of said second housing with its inner end extending into the second housing bore and said counter bore and its other end projecting from said second housing;
a calibrated spring within said second housing and stem housing interposed in compression between said bolt and stem;
and a normally seated spring biased air flow control rod within said latter stem having enlarged heads at its opposite ends closing off air communication through said stem and upon application thereto of air pressure for inflation of said tire adapted to unseat for transmitting compressed air through said stem and housings, unseating said ball valve, and through said tire valve stem until an intermediate color registers with said window.

4,193,296
METHOD AND AN INSTRUMENT FOR THE MEASUREMENT OF THE FLOW RATE OF GASES BASED ON IONIZATION
Kauko Janka, Tampere, Finland, assignor to Wallac Oy, Finland
Filed Jul. 31, 1978, Ser. No. 929,236
Claims priority, application Finland, Aug. 1, 1977, 772326
Int. Cl.² G01F *1/56*
U.S. Cl. 73—194 F **7 Claims**



1. Method of measuring the flow rate of a gas stream, comprising the steps of:
placing a source of ionization in said gas stream;
placing first, second and third electrodes in the stream of gas ionized by said source, the second and third electrodes being spaced from each other in the direction of flow and both being spaced from the first electrode in a direction transverse to said flow;
establishing a first electrical potential between the first and second electrodes and a second electrical potential between the first and third electrodes to generate first and second electrical currents in said stream of ionized gas;
adjusting the first and second electrical potentials to obtain first and second electrical currents of predetermined relative value;
the flow rate being a function of the ratio between said first and second potentials.

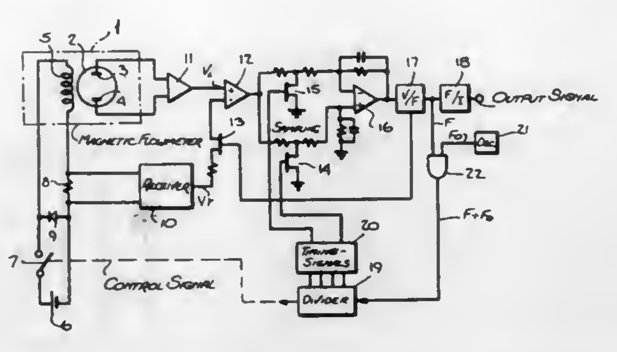
4,193,297
INFRARED FUZE TEST SIMULATOR
Gerald N. Plotkin, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 31, 1963, Ser. No. 300,409
Int. Cl.² F42C *21/00*
U.S. Cl. 73—167 **9 Claims**



1. An infrared fuze test simulator for simulating the infrared pattern which would be received by a spinning fuze in flight comprising
a stationary mounting adapted to support a fuze having an infrared admission area,
a variable high intensity infrared point source spaced from said fuze along the spin axis thereof,
means for collimating the infrared radiation given off by said infrared point source into a beam and directing the beam along said spin axis,

rotating miror means between said fuze and said infrared point source and located on said spin axis for reflecting said beam radially outward from said axis and causing said beam to sweep through a circular path around said spin axis,
stationary annular mirror means surrounding said rotating mirror means for receiving the beam from the rotating mirror means and directing the radiation upon said infrared admission area of the fuze at a predetermined angle with the fuze axis,
means disposed in the path of said beam for attenuating the intensity of said beam,
means disposed in the path of said beam for passing a desired wavelength of said beam,
means disposed in the path of said beam for changing the cross-sectional shape and size of said beam,
and shutter means disposed in the path of said radiation for controlling the rate of increase of radiation intensity at the infrared admission area.

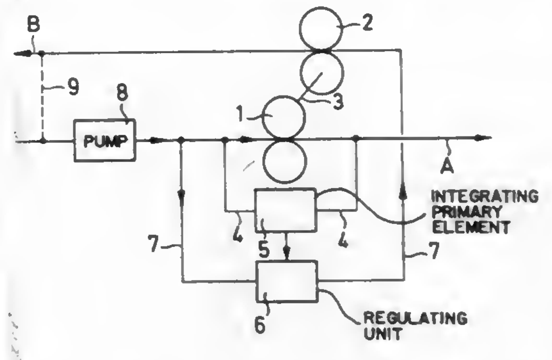
4,193,298
EXCITATION SYSTEM FOR ELECTROMAGNETIC FLOWMETER
Nagaoki Kayama, and Kazuie Suzuki, both of Tokyo, Japan, assignors to Hokushin Electric Works, Ltd., Tokyo, Japan
Filed Aug. 21, 1978, Ser. No. 935,133
Claims priority, application Japan, Aug. 24, 1977, 52-100623
Int. Cl.² G01F *1/60*
U.S. Cl. 73—194 EM **5 Claims**



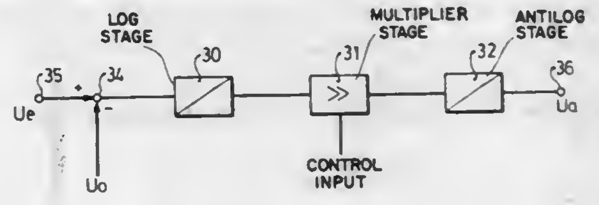
1. A method for exciting the electromagnet of a magnetic flowmeter in which a fluid to be metered is conducted through a flow tube provided with detecting electrodes, the fluid intercepting a magnetic field established by the electromagnet to induce a signal in the electrodes indicative of flow rate in a high flow-rate range as well as in a low flow-rate range, the method comprising the steps of:
A deriving from the electrode signal a control signal having a frequency which is a function of the velocity of the fluid passing through the tube;
B supplying excitation current to the electromagnet in the form of a direct current which is periodically interrupted; and
C governing the frequency of interruption of the excitation current in accordance with the control signal so that the interruption frequency of the excitation current is higher in the high flow-rate range and lower in the low flow-rate range.

4,193,299
APPARATUS FOR METERING FLUID FLOW
Heinz Holzem, Monchengladbach, and Hans J. Henning, Neuss, both of Fed. Rep. of Germany, assignors to Pierburg Luftfahrtgerate Union GmbH, Neuss am Rhein, Fed. Rep. of Germany
Filed Jun. 13, 1978, Ser. No. 915,230
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728250
Int. Cl.² G01F *15/02*
U.S. Cl. 73—199 **13 Claims**

1. Apparatus for providing a continuous instantaneous measurement of a flowing fluid and for effecting dosing of said fluid at a particular flow rate, especially for use in fuel systems for combustion engines, comprising: means defining a main flow path for said flowing fluid; a displacement flow meter connected in said main flow path; servodrive means consisting essentially of a hydraulic motor for providing driving energy to said displacement flow meter to overcome the inherent frictional resistance thereof; by-pass means connected with said main flow path defining means for diverting fluid flow therefrom to effect driving of said servodrive means; a pressure difference sensor for sensing the pressure difference across said displacement flow meter; and regulating means responsive to said pressure difference sensor for controlling the flow of said diverted fluid through said by-pass means thereby to control operation of said servodrive means in accordance with the pressure difference across said displacement flow meter.



4,193,300
SIGNAL LINEARIZING CIRCUIT FOR INTERNAL COMBUSTION ENGINES
Cornelius Peter, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 17, 1978, Ser. No. 925,488
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732715
Int. Cl.² G01F *1/68*
U.S. Cl. 73—204 **7 Claims**

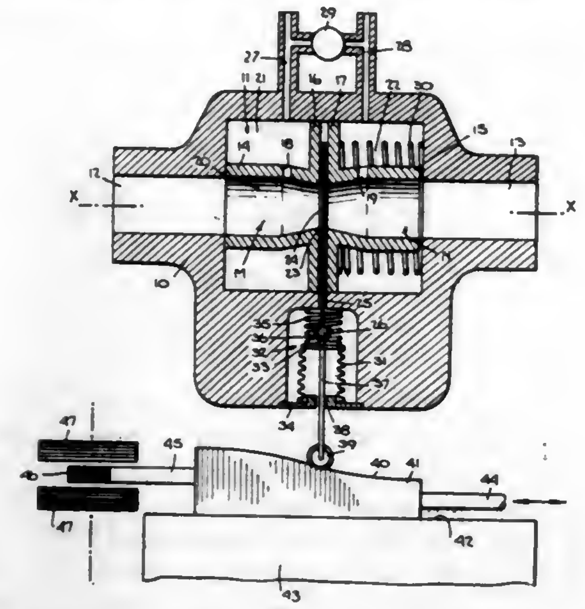


1. A circuit arrangement for linearizing the output signal of a quantitative measuring probe preferably arranged as a bridge circuit including a temperature-dependent resistor and adapted particularly for the measurement of the quantity of air flowing in the intake manifold of an internal combustion engine, comprising in combination, a log stage, a multiplier stage and an antilog stage connected in series and means for feeding the probe signal to the input of said log stage to produce a linearized output signal at the output of said antilog stage.

4,193,301
FLOW METER
Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy
Filed Oct. 5, 1978, Ser. No. 948,808
Claims priority, application Italy, Jan. 13, 1978, 19227 A/78
Int. Cl.² G01F *1/22*
U.S. Cl. 73—207 **10 Claims**

1. A fluid flow-meter, particularly adapted for measuring the flow of oil that feeds an oil-filled electric cable, having a body including a through-cavity comprising first and second chambers and means defining an opening interconnecting said chambers, means for sensing differences in pressure existing in said first and second chambers, movable means positioned at said

opening for varying the area of said opening through which fluid can flow, said movable means comprising a slidable lamina having an aperture therethrough, the lamina being arranged to slide transversely of the through-cavity and perpendicular to an axis of the through-cavity from position in which said aperture is aligned with said opening to a position in which said lamina blocks said opening, whereby sliding movement of said lamina varies the area of said opening through which fluid can flow to any condition from closed to fully open, and means for moving said movable means to maintain a preset and constant difference between the pressures in said chambers for any rate and direction of flow therethrough, said means for moving the movable means comprises a movable cam having a cam surface and wherein said lamina has a feeler connected thereto and engaging said surface, said cam being movable to vary the position of said lamina in accordance with the pressure difference between said first and second chambers.



4,193,302

METHODS AND APPARATUS FOR EXAMINATION OF SURFACE TEMPERATURE DISTRIBUTION

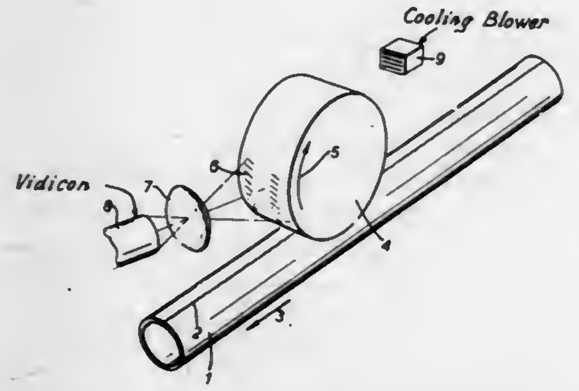
Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed Sep. 11, 1978, Ser. No. 941,252

Claims priority, application United Kingdom, Sep. 15, 1977, 38452/77

Int. Cl.² G01D *5/26;* G01J *5/26*

U.S. Cl. 73—351 **7 Claims**



1. An arrangement for monitoring the temperature distribution across the surface of a body, said surface having a relatively low thermal emissivity, said arrangement comprising;
a transfer member formed of a material of relatively low thermal conductivity and having a contact surface of relatively high thermal emissivity, said transfer member being a roller arranged to roll over said body surface, said contact surface of said roller being the rim (or rolling surface) thereof, said rolling carrying said rolling surface into, and subsequently out of, contact with said body surface, so that said rolling surface is first brought into contact with said body surface thereby effecting a transference of heat in the form of a thermal image from the latter to the former, and is thereafter removed therefrom; and
a pyroelectric vidicon camera tube arranged to receive and measure thermal radiation emitted by said roller's rolling surface so as to monitor the temperature distribution of said rolling surface, thereby effectively monitoring the temperature distribution across said body surface.

4,193,303

LEVEL AND DENSITY-METER

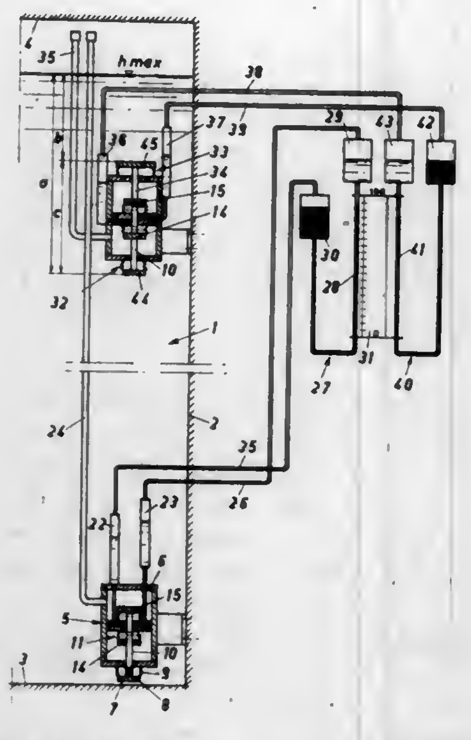
Axel Egnell, Kungsgatan 20, 440 30 Marstrand, Sweden

Filed Feb. 17, 1978, Ser. No. 878,828

Claims priority, application Sweden, Feb. 17, 1977, 7701740

Int. Cl.² G01N *9/28*

U.S. Cl. 73—438 **9 Claims**



1. An apparatus for indicating the liquid level and density of a liquid in a tank, said apparatus comprising:
a first pressure-sensitive transmitter placed at or close to the bottom of the tank;
second and third pressure-sensitive transmitters placed at different fixed distances below a highest permitted liquid level, said transmitters including means for compensating for variations in gas pressure in the tank;
first indicator means, responsive to said first pressure-sensitive transmitter, for indicating the density of said liquid when said highest permitted liquid level is reached;
means for converting the pressure upon each of said second and third pressure-sensitive transmitters into signals, said means for converting having conversion factors with the ratio of said conversion factors the inverse of the ratio of the distances from the respective transmitters to the highest permitted liquid level; and
a second indicator means, indicating the difference between said signals from said second and third transmitters, for providing an indication of when the highest permitted liquid level is approached.

4,193,304

METHODS OF AND APPARATUS FOR BALANCING A ROTOR

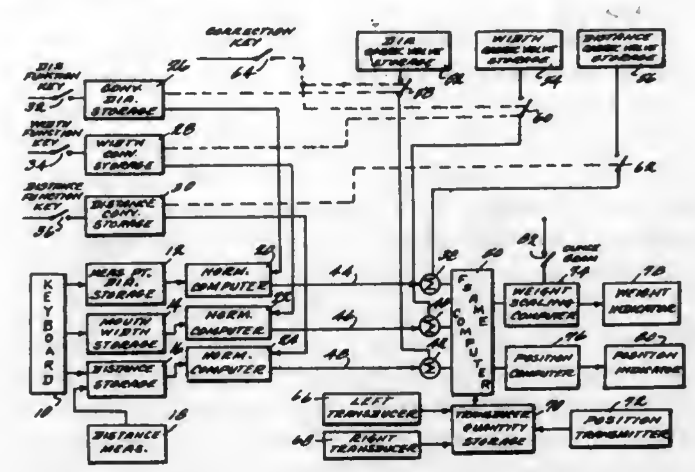
Dionys Hofmann, Darmstadt, Fed. Rep. of Germany, assignor to Gebr. Hofmann, G.m.b.H. & Co. KG, Maschinenfabrik, Darmstadt, Fed. Rep. of Germany

Filed Aug. 8, 1978, Ser. No. 932,296

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737524

Int. Cl.² G01M *1/16*

U.S. Cl. 73—462 **20 Claims**



1. A method of balancing a rotor on which geometric dimensions are provided in one or several planes, comprising the steps of:
applying said geometric dimensions in the form of at least one of absolute metric units and absolute English units to an electronic measurement system;
converting said geometric dimensions to predetermined units;
producing a signal related to the imbalances in said rotor by means of transducers;
correcting said geometric dimensions with correction values, said correction values compensating for the difference in position between the center of gravity of a counterweight applied during imbalance compensation and said geometric dimensions; and
following the step of correcting, determining the imbalance angular position and magnitude of said imbalance from said signal and the corrected geometric dimensions.

4,193,305

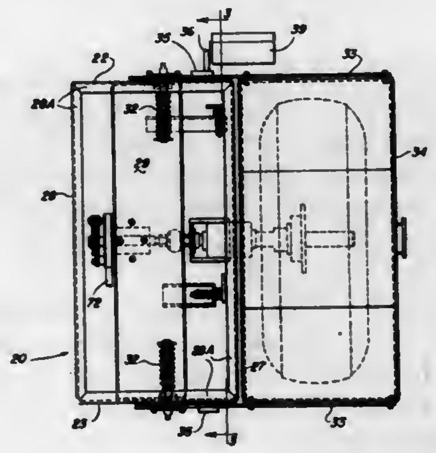
VEHICLE WHEEL AND TIRE BALANCE TESTING MACHINE

Lee Hunter, 13501 Ladue Rd., Ladue, Mo. 63141

Filed Aug. 16, 1978, Ser. No. 934,008

Int. Cl.² G01M *1/16*

U.S. Cl. 73—462 **11 Claims**



1. In a balance testing machine for vehicle wheel and tire assemblies having inside and outside reference planes representing the thickness of the assembly as measured along the axis of rotation, the combination comprising: a frame; a drive shaft in said frame; an unbalance force sensitive member in said frame; a drive motor connected to said drive shaft; a driven shaft carried by said force sensitive member and flexibly connected to said drive shaft; a plurality of flexible means supporting said force sensitive member in operative position in said frame to permit said force sensitive member to react in response to unbalance forces substantially only on one plane, said flexible means being directed at substantially right angles to said force sensitive member; a wheel and tire assembly rotatively carried by said driven shaft in position to have its inside reference plane spaced from and substantially parallel with a portion of said force sensitive member a distance less than its outside reference plane; force transducer means operatively disposed under preload between said frame and a portion of said force sensitive member for substantially rigidly engaging the same and being positioned outside of alignment with and spaced from the inside and outside reference planes a fixed distance; means connected to said force transducer means for converting the unbalance force sensed thereby into terms of counter balancing weight; and monitoring means responsive to rotation of said wheel and tire and adapted to locate the angular position of unbalance about the circumference of the wheel and tire.

4,193,306

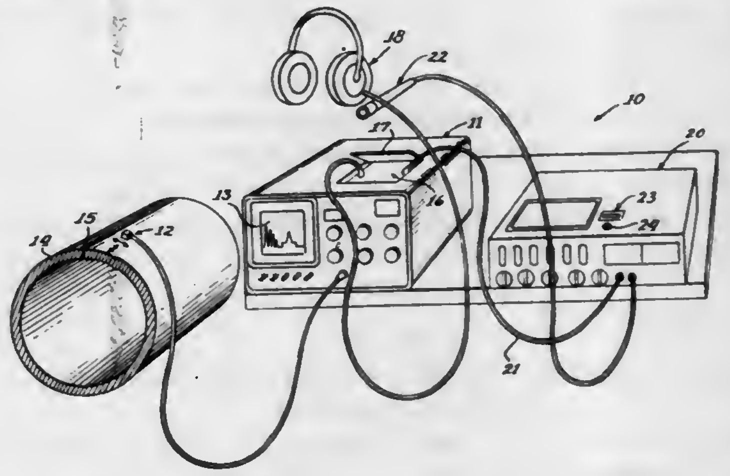
ULTRASONIC TESTING SYSTEM

John J. Flaherty, Elk Grove Village, and Eric J. Strauts, Park Ridge, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed Oct. 19, 1978, Ser. No. 952,844

Int. Cl.² G01N *29/04*

U.S. Cl. 73—629 **10 Claims**



1. In an ultrasonic pulse-echo instrument for detection of defects in a solid part, transducer means, transmitting and receiving means for energizing said transducer means to transmit a burst of ultrasonic energy into the part and for developing echo signals in response to reflections from defects within the part, said transducer means being arranged for back and forth movement toward and away from a defect to obtain a variable length wave transmission path between said transducer means and the defect, doppler circuit means coupled to said transmitting and receiving means for responding to changes in the timing of said echo signals relative to the transmitted bursts and for developing a doppler signal at an audible frequency proportional to the rate of change in the effective length of said variable length wave transmission path, and means for applying said doppler signal to electro-acoustical transducer means to produce an audible signal in response to said movement of said transducer means toward and away from the defect.

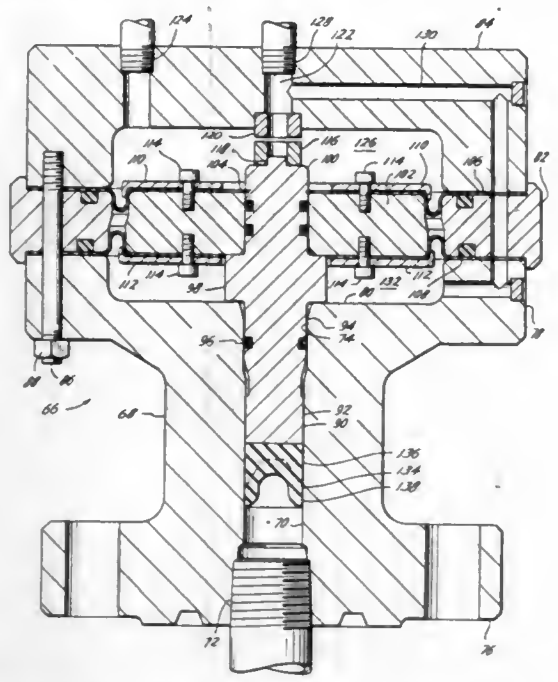
4,193,307
APPARATUS FOR INDICATING SUBSEA WELL HEAD PRESSURE

Gerald S. Baker, and Guerry L. Hahn, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 14, 1978, Ser. No. 915,538

Int. Cl.^{2} G01L *7/16*

U.S. Cl. 73—701 **11 Claims**



1. Apparatus for indicating, at an upper level, a remote subsea condition which condition can exert a force indicative thereof, comprising

- a reservoir of hydraulic fluid at the upper level,
- means for pumping fluid from the reservoir to a supply line,
- pressure indicating means in the supply line at the upper level,
- a hydraulic transmitter at the remote subsea level,
- said supply line being connected to the transmitter,
- a return line connecting the transmitter to the reservoir,
- the hydraulic heads of the supply line and the return line being approximately equal,
- said transmitter having a pressure responsive member one side of which is exposed to a force indicative of said condition and the other side to pressure in the supply line and having an exhaust valve in communication with the return line, said valve closing when said force is greater than that due to pressure in the supply line.

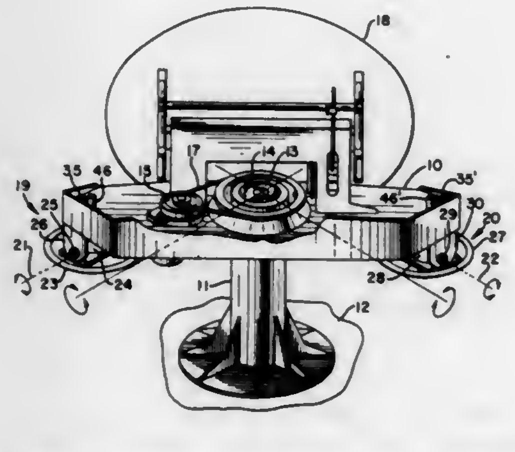
4,193,308
FLUID DASHPOT GYRO STABILIZED PLATFORM CAGING SYSTEM

William B. Stuhler, 2502 18th St., Plano, Tex. 75075, and Dorsey T. Smith, 3217 Sheridan Dr., Garland, Tex. 75041

Filed Sep. 27, 1976, Ser. No. 727,161

Int. Cl.^{2} G01C *19/04*

U.S. Cl. 74—5.22 **4 Claims**



1. A fluid caging system for a platform mounted gyro having a single degree of freedom, wherein the gyro rotor assembly housing is gimbal pivotally mounted with respect to said platform to define a precession axis relative to said platform, comprising: a gyro stabilized platform; a gyro with a gyro rotor assembly gimbal pivotally mounted with a single degree of freedom; dashpot means affixed to said platform and having a linear movement member extending therefrom along a linear motion axis normal to the median general rotational plane of said gyro rotor, a toggle linkage arm means having respective ends thereof pivotally connected to said dashpot linear movement member and said gyro rotor housing about respective pivot axis parallel to said gyro precession axis; said toggle linkage arm means effecting an amplification of the ratio of dashpot linear motion member velocity to gyro angular precession velocity for gyro rotor angular displacements in excess of predetermined design limits; and with said linkage arm means comprising an arm member having a first end thereof pivotally connected to said dashpot linear movement member, the other end of said arm member carrying cam-follower means, said gyro rotor housing carrying thereon an arcuate cam-face member being defined by substantially fixed radii from said gyro precession axis throughout a range either side of the spin axis of said gyro and terminated in respective end portions of progressively lesser radius; and guide roller means fixed mounted to said platform and engaging said arm member to substantially preclude pivot action of said arm member with respect to said dashpot linear movement member; whereby precession movements of said gyro are substantially non-restricted over a predetermined range of precession angles and damped beyond said predetermined range.

4,193,309
SPEED-CHANGING DEVICE FOR BICYCLE

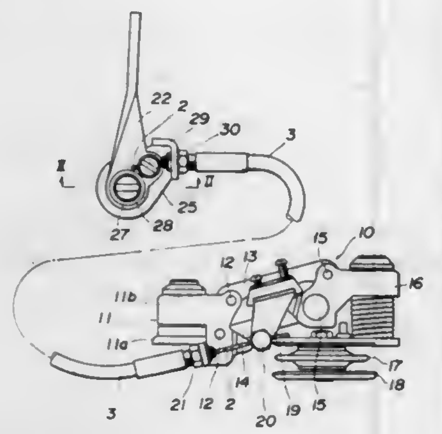
Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jul. 19, 1976, Ser. No. 706,372

Claims priority, application Japan, Aug. 1, 1975, 50-94647; Dec. 29, 1975, 50-180312[U]; Apr. 27, 1976, 51-54117[U]

Int. Cl.^{2} F16H *11/00;* **G05G** *11/00, 1/00;* **F16C** *1/10*

U.S. Cl. 74—217 B **4 Claims**



1. In a speed-changing device for a bicycle which comprises:

- a derailleur comprising a fixing member, a pair of linkage members, a movable member having a chain guide cage, said movable member being supported by the fixing member through the pair of linkage members and being relatively movable with respect to the other members,
- a movable control lever, and
- transmitting means for transmitting the movement of the control lever to the derailleur, the improvement wherein:
- said transmitting means comprises an outer cable, a relatively inflexible inner cable and rigid sleeves for said inner cable fixed thereto;
- a fixed body supporting said control lever therewith;
- retaining means for retaining said outer cable at one end thereof to said fixed body and retaining the other end thereof to one of said fixing member and one of said pair of linkage members; and
- said inner cable being within said outer cable and extending at each end thereof in a substantially straight line beyond the retained ends of the outer cable, said sleeves preventing buckling of the end of said inner cable extending from the end of said outer cable, said inner cable being retained at one end to said control lever and being retained at the other end to one of said fixing member, one of said pair of linkage members, and said movable member, said inner and outer cables being on separate members and movable relative to each other, said sleeves being longer than the maximum exposed portions of the inner cable from said ends of said outer cable and slidable within said retaining means whereby when said control lever is moved, said inner cable is pushed or pulled thereby so that said movable member may move.

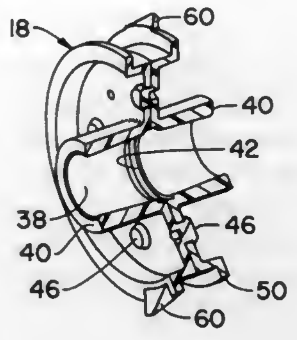
4,193,310
IDLER PULLEY

David C. Boyer, Chicago; Arthur J. Danko, Oak Lawn, and William E. Ruehl, Wheeling, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 13, 1978, Ser. No. 959,815

Int. Cl.^{2} F16H *55/48*

U.S. Cl. 74—230.3 **8 Claims**



1. A power transmission idler pulley having two identifical half portions including a hub, a web and a rim, means on said web for connecting said two half portions together to form said pulley, said hub having an axial length greater than the width of said rim and having a through bore for mounting on a predetermined diameter axle means, said hub further having a diametral measurement at opposite ends substantially equal to said predetermined diameter and increasing in diameter towards said web whereby said hub initially rides on said axle means only at its free ends but when subjected to a load in a direction perpendicular to the axis of said axle means said hub flexes to bring one intermediate side of said bore into more intimate contact with said axle means and moves the opposite side of said bore away from said axle, the free ends of said bore remaining in contact with said axle means whereby lubricant can be substantially captured within said bore, and diverging means extending radially and laterally outwardly from said rim to insure proper seating of said power transmission means.

4,193,311
DRIVING PULLEY MECHANISM

Johannes A. Rinio, Versailles, France, and Rodolphe F. Tanson, Moutfort, Luxembourg, assignors to Greifzug Gesellschaft fur Hebezeugbau m.b.H., Bergisch-Gladbach, Fed. Rep. of Germany

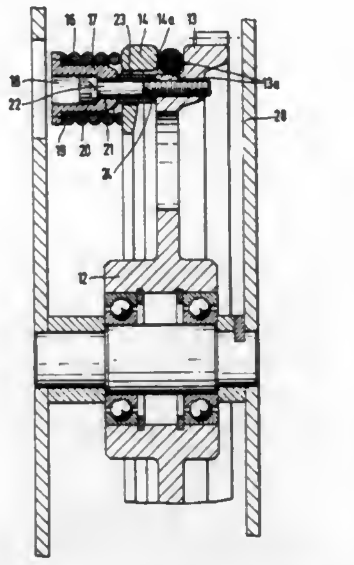
Filed Apr. 12, 1976, Ser. No. 675,876

Claims priority, application Fed. Rep. of Germany, May 17, 1975, 2522033

Int. Cl.^{2} F16H *55/36, 55/46*

U.S. Cl. 74—230.5 **6 Claims**

1. A driving pulley mechanism comprising a driving pulley, especially for multiple purpose hoists with a traversing cable, wherein the driving pulley consists of two pulley parts inclined toward each other, each of them carrying at their peripheral edge one cable groove part, and wherein the pulley parts are pressed toward each other at the apex of their peripheral edge which carries the cable, and wherein a plurality of elastical pressing devices are arranged in spaced relationship over the surface of the pulley parts in proximity of the peripheral edge of said pulley parts, and wherein the pulley parts are spread apart by a spreading device at least at one point opposite to the apex carrying the cable, the improvement consisting in that the cable groove part carried by the first pulley part presents one surface which is parallel to the pulley shaft and one surface which is perpendicular to the pulley shaft and fixed relative to said parallel surface, and wherein the cable groove part carried by the second pulley part presents one surface which is perpendicular to the pulley shaft; the second pulley part having a plurality of bores therethrough each bore associated with one of the plurality of elastical pressing devices, each of said elastical pressing devices defining a screw means extending through a bore in said second pulley part and secured to said first pulley part, a bushing and sleeve mounted on said screw means and rigidly connected thereby with said first pulley part, and spring means interposed between said bushing and said second pulley part for biasing said second pulley part against the cable.



4,193,312
TRAPEZOIDAL DRIVING BELT

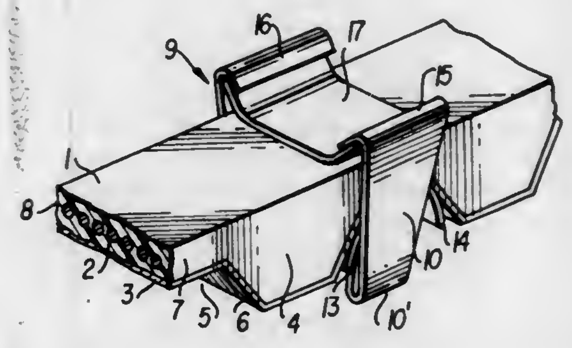
Mario Cicognani, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 18, 1978, Ser. No. 897,498

Claims priority, application Italy, May 4, 1977, 23149 A/77

Int. Cl.^{2} F16G *5/20*

U.S. Cl. 74—231 C **11 Claims**

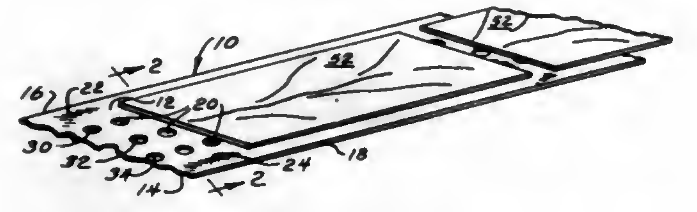


11. A drive belt having an elongated annular elastomeric or plastic body member, a plurality of inextensible reinforcing cords embedded in said body member extending longitudinally therethrough and disposed substantially parallel in transverse spaced relationship, a series of teeth spaced along one side of said elongated body member and a series of rigid wedge-shaped members connected to the teeth and extending along the length of said elongated body member, said wedge-shaped members having a trapezoidal-shaped cross-section perpendicular to the plane of symmetry of the said elongated member.

4,193,313

APPARATUS FOR CARRYING FLEXIBLE GOODS

Warren E. Frandsen, Arlington Heights, Ill., assignor to T & F Industries, Inc., Rolling Meadows, Ill.
Division of Ser. No. 716,377, Aug. 23, 1976, Pat. No. 4,095,606.
This application Dec. 8, 1977, Ser. No. 858,746
Int. Cl.² F16G *1/00*
U.S. Cl. 74—231 P **13 Claims**

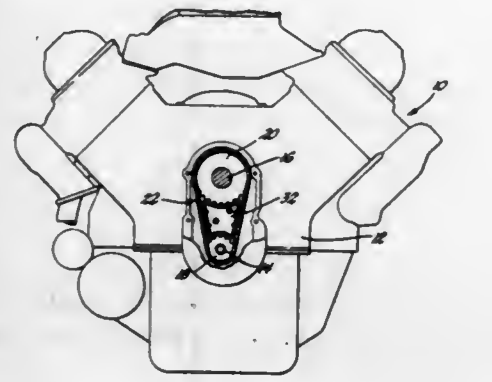


1. A carrier film for carrying a flexible material comprising: a flexible film composed of ultra high molecular weight high density polyethylene having a molecular weight in excess of 3,000,000, said flexible film having a pair of opposed surfaces, one of said opposed surfaces being roughened, said flexible film having a plurality of perforations formed therein.

4,193,314

TIMING CHAIN SNUBBER

Thomas G. Horner, Royal Oak, and Robert A. Ellis, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 22, 1978, Ser. No. 889,133
Int. Cl.² F16H *7/18*
U.S. Cl. 74—242.5 **4 Claims**



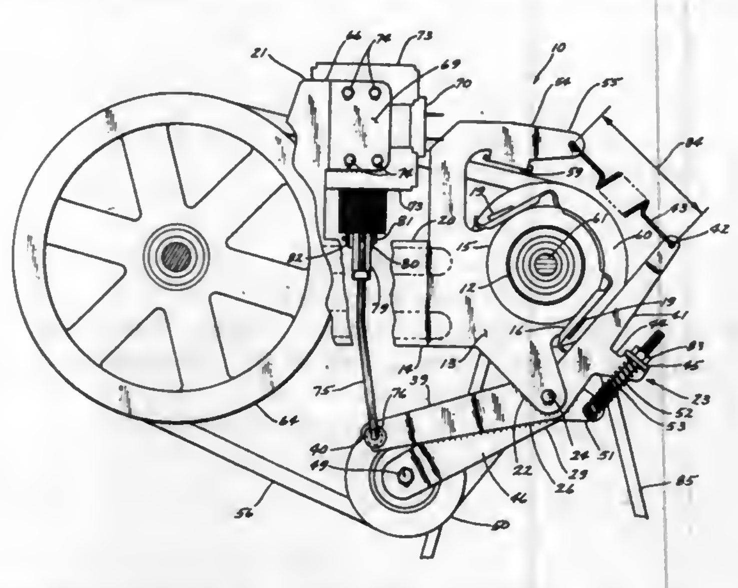
1. In an internal combustion engine, a frame rotatably supporting a crankshaft and a camshaft in spaced parallel relation, a sprocket mounted on each of said shafts, a timing chain extending around and engaging both of said sprockets for drivably connecting said crankshaft with said camshaft, and the improvement comprising a snubber for limiting vibrations in the unsupported portions of the chain intermediate the sprockets, said snubber comprising guide means fixed with respect to said frame and having a pair of fixed guide surfaces positioned so as to extend in line-to-line nondeflecting contact with the opposed inner sides of the chain unsupported portions over most of their length when in their tightly stretched positions between sprockets, so as to prevent movement of the contacted chain portions inwardly of said tightly stretched positions without affecting movements outwardly thereof.

4,193,315

BELT DRIVE SYSTEM UTILIZING AN ADJUSTABLE IDLER MECHANISM

William J. Noe, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed Feb. 6, 1978, Ser. No. 875,301
Int. Cl.² F16H *7/12*
U.S. Cl. 74—242.11 R **13 Claims**

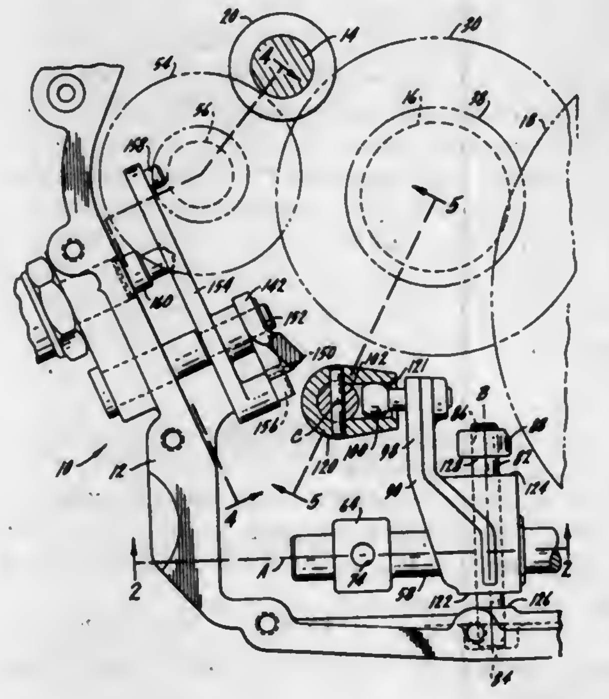
1. A drive system comprising: a motor; a driven member; drive means including a drive belt for connecting said motor and said driven member; a pair of idler members pivotally movable with respect to each other, one of said idler members including an idler pulley engageable with said drive belt; adjustable means connecting said idler members and including an adjustment member which is operable for automatically providing a positive displacement between said idler members to initially preposition said idler pulley for nominal engagement with said drive belt; and spring means operably associated with the assembly of said pair of idler means for biasing said idler pulley into driving engagement with said drive belt, said adjustment member further operable for automatically providing additional positive displacement between said idler members to achieve said driving engagement whereby driving torque may be transmitted from said motor to said driven member.



4,193,316

TRANSMISSION SHIFT CONTROL MECHANISM

Donald W. Kelbel, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Jan. 5, 1978, Ser. No. 867,073
Int. Cl.² G05G *9/18, 5/10*
U.S. Cl. 74—477 **32 Claims**

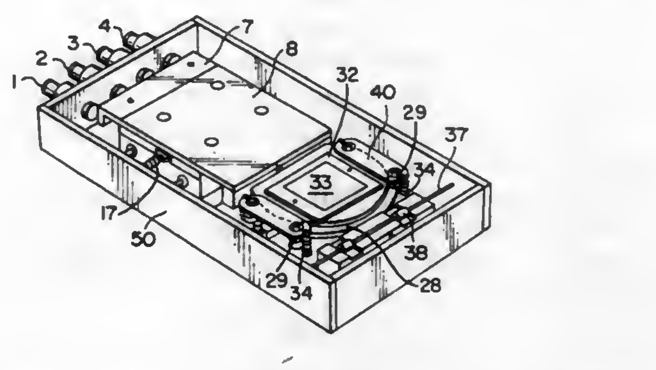


1. A transmission shift control mechanism comprising a control shaft rotatable on and slidable along a first axis, an idler lever slidable along a second axis in response to rotation of said control shaft, said idler lever being pivotal about said second axis in response to sliding of said control shaft, a shift rail rotatable on a third axis in response to sliding of said idler lever, said shift rail being slidable along said third axis in response to pivoting of said idler lever, each axis being substantially normal to the other two axes, and means responsive to rotation and sliding of said shift rail respectively for selecting and engaging at least one transmission ratio.

4,193,317

FINE POSITION CONTROL DEVICE

Hiroshi Oono, and Etuo Shiozawa, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Asaka, Japan
Filed Jan. 30, 1978, Ser. No. 873,659
Claims priority, application Japan, Feb. 9, 1977, 52-14404[U]
Int. Cl.² G05G *11/00;* **B25B** *11/00;* **B23Q** *3/18*
U.S. Cl. 74—479 **7 Claims**



1. A fine position control device capable of moving a fixed information carrier in the X, Y and Z directions of an orthogonal coordinate system and rotating the same in the X-Y plane, said device comprising:

a Y-direction moving stage,

an X-direction moving stage which moves in the Y-direction together with said Y-direction moving stage and is movable in the X-direction independently of the Y-direction moving stage,

a Z-direction moving stage which moves in the X-Y plane together with a member fixed to said X-direction moving stage and is movable in the Z-direction independently of the X-direction moving stage,

a θ-direction rotating stage which moves together with the said Z-direction moving stage and is rotatable in the X-Y plane independently of the Z-direction moving stage, said θ-direction rotating stage being adapted to hold the fixed information carrier, and

four position control knobs rotatable independently of one another and connected respectively with said X, Y and Z direction moving stages and said θ-direction rotating stage by way of feed screws,

whereby said stages are moved or rotated independently of one another by rotating said position control knobs to finely control the position of the fixed information carrier held on said θ-direction rotating stage.

4,193,318

BRAKE LEVER

Gary L. Golobay, Augusta, Kans., assignor to Conchemco, Incorporated, Lenexa, Kans.
Filed Jan. 27, 1978, Ser. No. 872,809
Int. Cl.² G05G *11/00*
U.S. Cl. 74—489 **2 Claims**

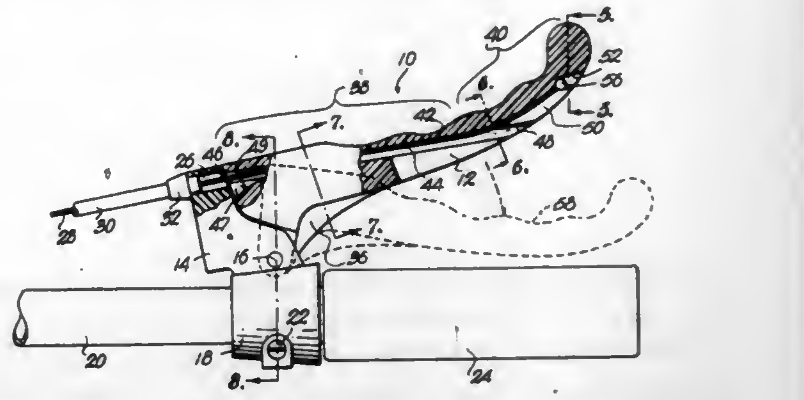
1. In a manually operated control lever assembly of the type including the combination of a support bracket secured to a handlebar or the like, an elongate lever member having one extremity thereof pivotally mounted on said support bracket and a shiftable control cable having one end thereof fastened to said lever member and biased away from said one extremity of said lever member in a direction generally aligned with the longitudinal axis of the latter, the improvement comprising:

means associated with said lever member for confining a portion of the length of the control cable along the length of the lever,

said cable portion being substantially longitudinally coextensive with said lever member and having said one end thereof attached to said lever member adjacent the opposite extremity of the lever;

said means for confining the cable along the length of the lever including a first internal passageway in said lever and a second internal passageway in said lever communicating with the first passageway;

said lever member having an essentially straight stretch adjacent said one extremity thereof, said first passageway being substantially within said straight stretch and conforming thereto, and an arcuate stretch adjacent said opposite extremity thereof, said second passageway being substantially within said arcuate stretch and conforming thereto, whereby to produce a first curvature of the cable adjacent said opposite extremity of the lever member;



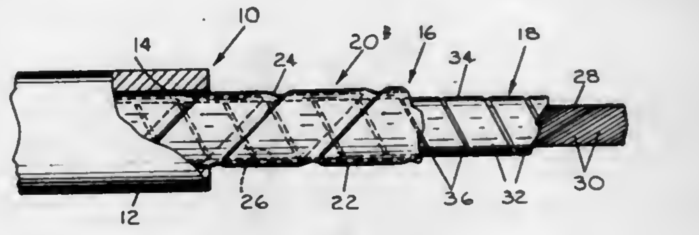
said cable portion functioning to transmit a tension force on said opposite extremity of the lever whereby to impose a compressive force on said lever member intermediate said extremities thereof;

said lever member further including an arcuately shaped cable ramp surface in said first passageway adjacent said one extremity of the lever and slidably engageable with a stretch of said control cable portion when the lever is operated whereby to produce a second curvature of the cable adjacent said one extremity and maximize the tension force upon the opposite extremity of the lever and thus the compressive force upon the lever intermediate its ends.

4,193,319

PUSH-PULL CABLE CORE WITH SELF-LUBRICATING COATING

William D. Langford, Stow, Ohio, assignor to Incom International Inc., Pittsburgh, Pa.
Filed Sep. 5, 1975, Ser. No. 610,592
Int. Cl.² F16C *1/10*
U.S. Cl. 74—501 R **13 Claims**



1. A core capable of being utilized within a conduit in a push-pull type remote control cable assembly, said core comprising:

a metallic wire member including a plurality of helically wound strands of wire having at least one flat wire helically wound about an outer surface of plurality of said strands with axial space between adjacent convolutions to provide a substantially even outer surface for said wire member; at least a partial coating on said wire member including an outer layer of TFE resin; and an inner layer of said coating include FEP resin bonded to said wire member to secure said coating to said wire member, said FEP resin layer extending into said space.

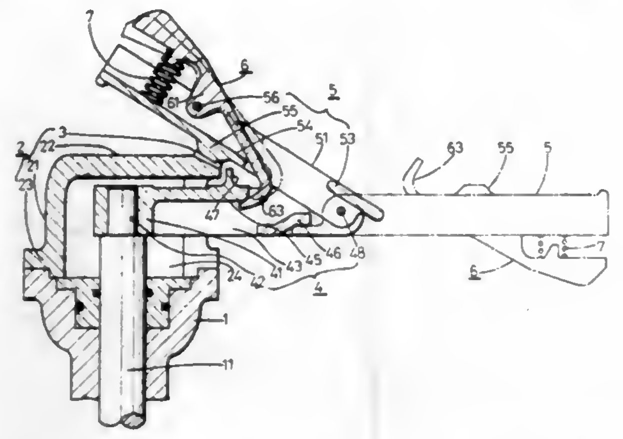
4,193,320
COLLAPSIBLE LEVER DEVICE FOR OPERATING VALVE

Kazunari Oota, Hirakata, Japan, assignor to Kubota Ltd., Osaka, Japan

Filed May 8, 1978, Ser. No. 903,482

Int. Cl.^{2} G05G *5/06*

U.S. Cl. 74—535 **10 Claims**



1. In a collapsible lever device for operating a valve including a lever having a base end mounted on a valve stem extending from a main body of the valve to open and close the valve or to regulate the flow through the valve by turning said lever, the improvement comprising:

a main lever mounted at said base end on the valve stem, said main lever comprising a portion of said lever,

an auxiliary lever having a pivot at a forward end of the main lever, said auxiliary lever comprising a portion of said lever,

a cover covering the base end of the main lever from above and mounted on the valve main body,

holding means disposed at a position between said pivot and said valve stem while said auxiliary lever is in alignment with the main lever when the auxiliary lever is turned to an unfolded position, and

locking means provided at a position where the auxiliary lever opposes the cover when the auxiliary lever is turned to a folded position.

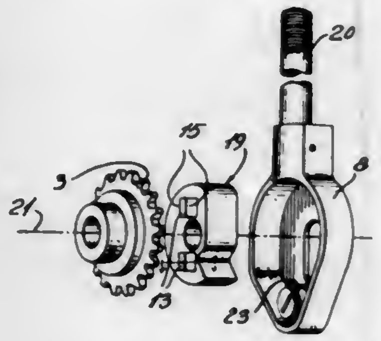
4,193,321
CAM ARRANGEMENT

Alan M. King, Westmount, Canada, assignor to Vendking International Ltd., Greenfield Park, Canada

Filed May 2, 1977, Ser. No. 792,658

Int. Cl.^{2} F16H *53/00*

U.S. Cl. 74—567 **5 Claims**



1. A cam arrangement comprising:

cam means having a peripheral camming surface with a variable radius including an abrupt change thereon and a first end face;

cam support means having a first end face;

said first end face of said cam means being adapted to be disposed adjacent to and in contact with said first end face of said cam support means;

means for movably locking said cam means with said cam support means with said end faces adjacent each other;

whereby to provide, to a controlled extent, relative motion between said cam means and said cam support means;

characterized in that said means for movably locking comprises:

a recess in the first end face of said support means;

a mating protrusion means on the first end face of said cam means;

the width of said recess being greater than the width of said protrusion means;

said protrusion means being adapted to be inserted in said recess;

and wherein both said cam means and said support means each comprise a shaft receiving hole;

said protrusion means comprising two portions, each portion extending radially outward from the shaft receiving hole of said cam means and in a substantially straight line with each other;

said recess comprising two portions, each portion extending radially outward from the shaft receiving hole of said support means and in a substantially straight line with each other.

4,193,322
CASING FOR POWER TRANSMISSION UNIT FOR AUTOMOTIVE VEHICLE

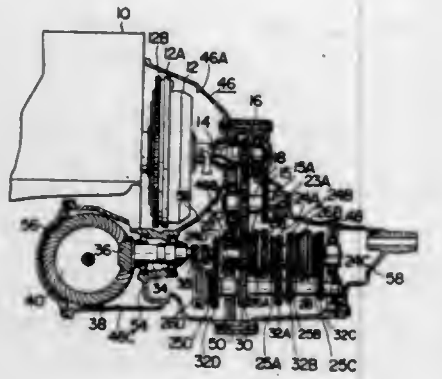
Hideki Morino, Nagoya, and Yasuyoshi Yasui, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 14, 1978, Ser. No. 877,768

Claims priority, application Japan, Feb. 14, 1977, 52-14789

Int. Cl.^{2} F16H *37/08, 57/02*

U.S. Cl. 74—700 **2 Claims**



1. For the power transmission unit of an automotive vehicle which has an engine with a crank shaft and a rear end face, a clutch coupled to the crank shaft and having a clutch output shaft and an idler shaft, a change-speed gearing drivingly connected to the clutch via the clutch output shaft and idler shaft which change-speed gearing has a main shaft and a countershaft, and a differential gear assembly drivingly connected to the change-speed gearing for driving at least one pair of wheels of the vehicle,

a casing, comprising:

a first unitary case having a first portion adapted to be securely fixed to the engine rear end face, said first portion defining a forwardly opening first chamber adapted to house the clutch;

said first unitary case further having a second portion located below said first portion, said second portion defining a rearwardly opening second chamber adapted to house at least one part of said change speed gearing;

said first unitary case further having a third portion extending forwardly from said second portion and adapted to be located under the engine, said third portion defining forwardly of said second chamber a third chamber adapted to house the differential gear assembly;

a second unitary case located rearwardly of said first unitary case, said second unitary case defining a forwardly opening fourth chamber adapted to house at least another part of said change-speed gearing;

an intermediate plate interposed between said first and second unitary cases and having bearing surface means thereof for journalling the clutch output shaft, the idler shaft, and the main and counter shafts of the change-speed gearing; and

means detachably bolting the first unitary case, intermediate plate and second unitary case together, sandwich fashion.

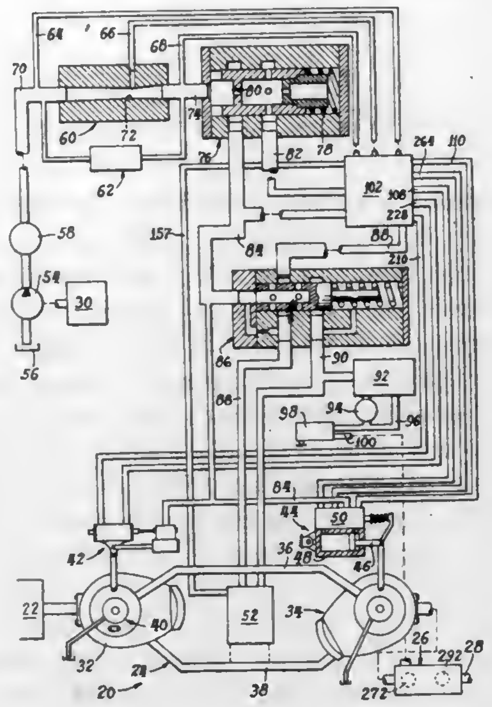
4,193,323
CONTROLS FOR COMBINED HYDROSTATIC AND MULTIPLE SPEED RANGE TRANSMISSION UNITS WITH AUTOMATIC SPEED CONTROL AND BRAKING FUNCTIONS

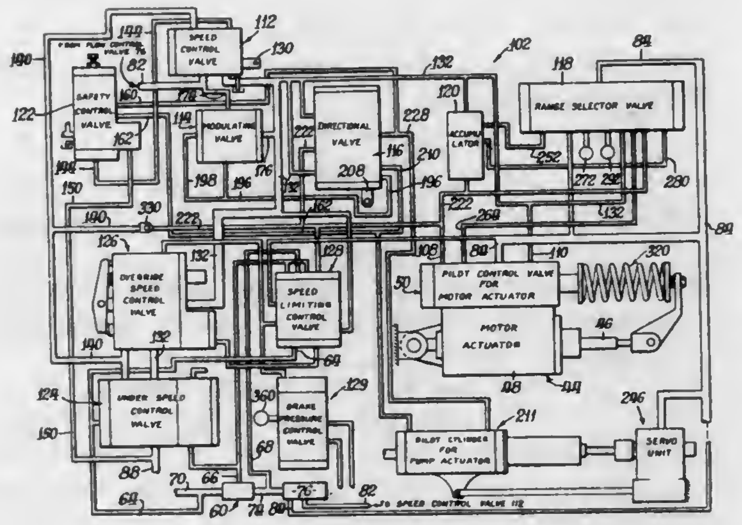
Thomas J. Bubula, Joliet; Maurice F. Franz, East Peoria; Gordon W. Johnson, Peoria, and James D. Rinaldo, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 609,637, Sep. 2, 1975, Pat. No. 4,080,850. This application Oct. 25, 1977, Ser. No. 844,663

Int. Cl.^{2} F16H *47/00*

U.S. Cl. 74—733 **11 Claims**




SPEED CONTROL VALVE
SAFETY CONTROL VALVE
MODULATING VALVE
DIRECTIONAL VALVE
ACCUMULATOR
RANGE SELECTOR VALVE
OVERRIDE SPEED CONTROL VALVE
SPEED LIMITING CONTROL VALVE
PILOT CONTROL VALVE FOR MOTOR ACTUATOR
MOTOR ACTUATOR
UNDER SPEED CONTROL VALVE
BRAKE PRESSURE CONTROL VALVE
PILOT CYLINDER FOR PUMP ACTUATOR
SERVO UNIT

1. A drive train for coupling a prime mover with an output shaft, comprising

a transmission unit arranged between the prime mover and output shaft and providing a positive coupling during both accelerating and decelerating operation of the drive train, the transmission unit being operable for producing infinitely variable torque transmission and operating speeds,

control means for producing a variable signal to which the transmission unit is responsive for establishing the rate of torque transmission and the operating speed of the transmission unit,

an underspeed control means which is responsive to operation of the prime mover at a speed below a selected minimum value for adjusting the variable signal in order to reduce torque loading of the drive train,

an override speed control means being manually operable for also adjusting the variable signal in order to selectively decrease operating speed of the drive train without necessarily adjusting the control means, and

a speed limiting control means which is responsive to operation of the prime mover at a speed above a selected maximum value for applying brake means within the drive train in order to supplement dynamic braking capacity of the transmission unit.

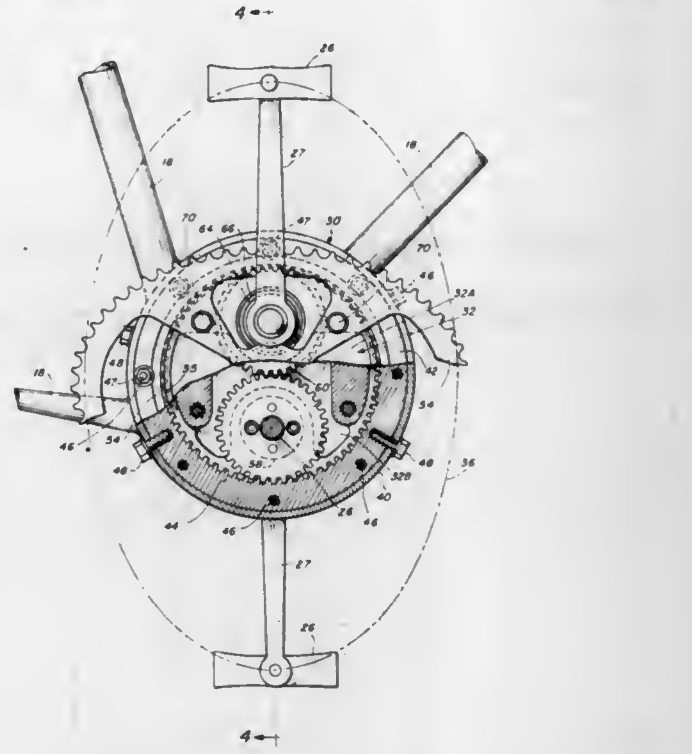
4,193,324
BICYCLE SPROCKET DRIVE APPARATUS WITH ELLIPTICAL PEDAL PATH

Michel Marc, Wellesley, Mass., assignor to Clint, Inc., Natick, Mass.

Filed Dec. 27, 1977, Ser. No. 864,278

Int. Cl.^{2} F16H *1/28;* B62M *3/06, 1/02*

U.S. Cl. 74—750 B **9 Claims**



1. Bicycle sprocket drive apparatus mounted on a bicycle frame and for propelling the bicycle, said apparatus comprising;

frame means secured to the bicycle frame, planetary gear means,

housing means for mounting the planetary gear means,

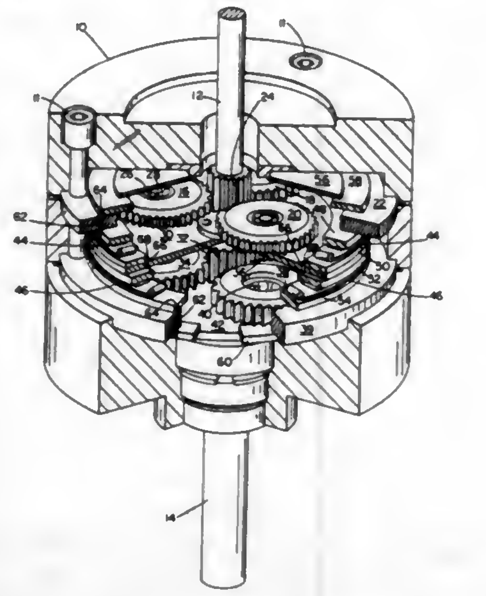
said planetary gear means including a pair of pinion gears each separately, rotatably mounted in the housing means and having axle means for the support thereof extending from opposite sides of said housing each for supporting pedal means,

a sprocket having an elliptical gear path,

whereupon rotation of said pedal means in turn causes rotation of said housing means and sprocket with said pedal means subscribing an elliptical path of rotation, and

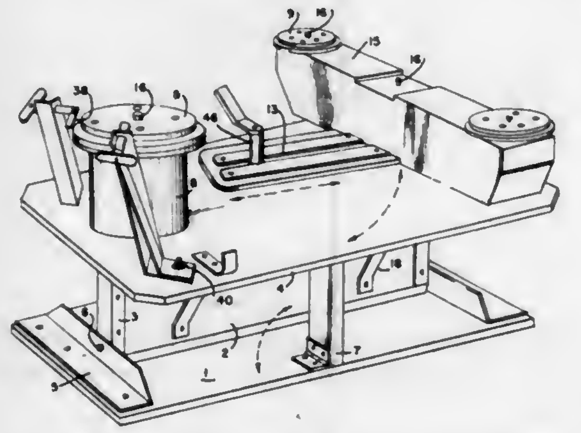
means securing the sprocket to said housing means with the minor axis of the elliptical sprocket substantially coinciding with the major axis of the elliptical pedal path.

4,193,325
GEAR BOX
Alexander P. Cotreau, 21 Peach Orchard Rd., Burlington, Mass. 01803
Filed Nov. 9, 1977, Ser. No. 849,887
Int. Cl.^{2} F16H *1/28*
U.S. Cl. 74—801 **7 Claims**



1. In a speed reducing gear box of the type including, for each reducing stage, a plurality of planetary gears revolving about a central sun gear and inside an internal gear, the improvement comprising means to axially load the planetary gears to provide sufficient friction to retard ballotting of said gears but not to substantially reduce power transmission of said gear box, wherein the means to axially load the planetary gears provides an axial load on that portion of said planetary gears engaged with said internal gear.

4,193,326
HOLDING APPARATUS FOR SHARPENING CHAIN SAWS
Alex Dudley, 220 Edgewood Rd., Lansing, Mich. 48910
Filed Feb. 23, 1978, Ser. No. 827,789
Int. Cl.^{2} B23D *63/16*
U.S. Cl. 76—74 **2 Claims**



1. An adapter for supporting a chain saw work holder, said adapter being composed of three latitudinal strips secured to two longitudinal strips, and secured on a base,

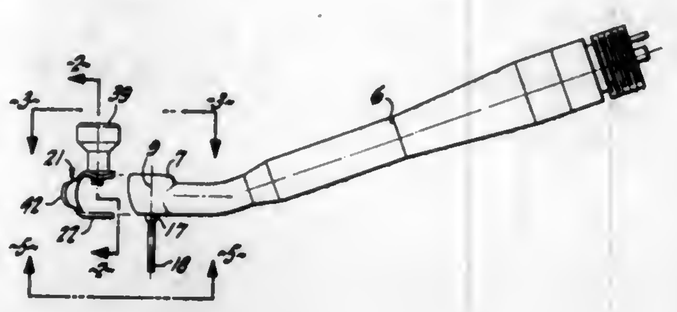
means for removably securing a work holder on said adapter, said means being a pin on the far latitudinal strip of said adapter,

means for removably securing a freely swinging pivotal rocking tool on said adapter, said means being the two longitudinal strips, which strips extend beyond the base at the front of said adapter, curving outwardly and downwardly, each having affixed an angle, said angles being bored in the center and angling upward at a 10° angle, leaving an opening, forming a saddle to receive the rocker arm of a pivotal rocking tool,

means for stopping further forward movement of a pivotal rocking tool after determining the root diameter of a cutting link, said means being an angle affixed to the center front of said adapter,

means for removably securing said adapter to any bench or table, said means being a strip secured behind each saddle and extending backwardly therefrom sufficiently to be secured by bolts to any bench.

4,193,327
WRENCH FOR A DENTAL HANDPIECE
Joseph P. Lares, Redwood City, and Albert J. Lares, Portola Valley, both of Calif., assignors to Lares Mfg. Co., San Carlos, Calif.
Filed Sep. 14, 1978, Ser. No. 942,265
Int. Cl.^{2} B25B *23/08*
U.S. Cl. 81—55 **5 Claims**



1. A wrench for a dental handpiece having a shank with an end housing having openings at opposite ends of an axis, one of said openings being in an end face substantially normal to said axis and revealing a non-circular spindle and the other of said openings being in another end face substantially normal to said axis and adjacent a non-circular burr threadedly engageable with said spindle, said wrench comprising a central frame adapted to extend around said housing and having a first end abutting one of said end faces and overlying one of said openings and having a second end abutting the other of said end faces and overlying the other of said openings; means at said first end defining an open-sided, non-circular slot adapted nonrotatably to engage said non-circular burr by a motion in a direction normal to said axis; means on said second end defining a coaxial journal; a pin rotatably and slidably disposed in said journal; means on one end of said pin non-rotatably engageable with said non-circular spindle; means on the other end of said pin for use in manually rotating and axially sliding said pin in said journal; and a spring engaging said central frame and said pin for urging said pin toward one extreme axial position in said journal.

4,193,328
APPARATUS FOR ASSEMBLING THREADED BASE TO A PROJECTILE
Bruce W. Jezek, and Glen L. McClung, both of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 18, 1978, Ser. No. 935,182
Int. Cl.^{2} B25B *13/48*
U.S. Cl. 81—72 **7 Claims**

1. An apparatus for torquing an externally threaded base member to an internally thread projectile housing which comprises:

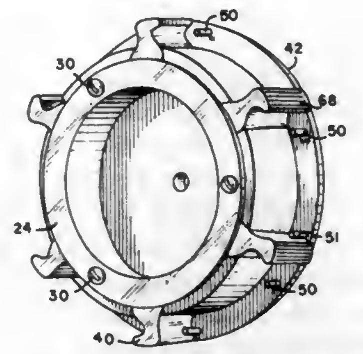
a cup shaped lug housing having an open front side, a rear side, an axially aligned hub section protruding from said rear side said hub section having an axial drive socket disposed therein, an exterior wall of said open front side having a plurality of equally spaced circularly shaped semi-cylindrical lug grooves longitudinally disposed therethrough and positioned in the periphery thereof;

taper locking torquing lug means operatively disposed in said lug grooves for retractably moving out of the way when said apparatus is inserted in said base member and for frictionally engaging said base member to operatively enable application of a torque force thereto;

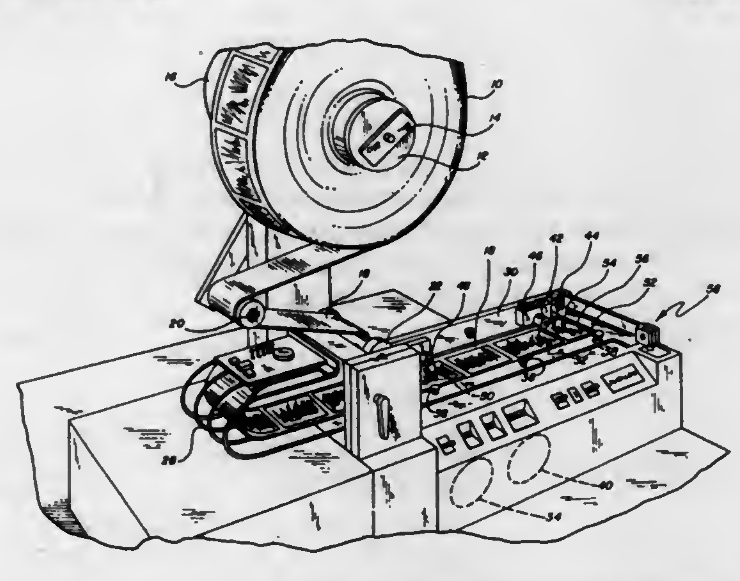
retainer ring means, fixedly attached to said open front side of said lug housing for preventing said torquing lug means from sliding out of one end of said lug grooves;

locking plate means, rotatably attached to said rear side of said lug housing for preventing said torquing lug means from sliding out of the other end of said lug grooves and for camming said lug means into a lug retracted position and into a friction taper lug locking position; and

spring biasing means for automatically rotating said locking plate means from said lug retracted position to said lug locking position to enable said base member to be automatically threaded into said internally threaded projectile housing when an appropriately directed torquing force is applied to said axial drive socket of said lug housing.



4,193,329
PHOTOGRAPHIC PAPER CUTTER WITH DAMAGE AVOIDANCE BACK STEP MOTION
Gerald R. Strunc, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.
Filed Oct. 10, 1978, Ser. No. 950,129
Int. Cl.^{2} B26D *7/06*
U.S. Cl. 83—250 **7 Claims**



1. A strip cutting apparatus for cutting segments from a strip, the apparatus comprising:

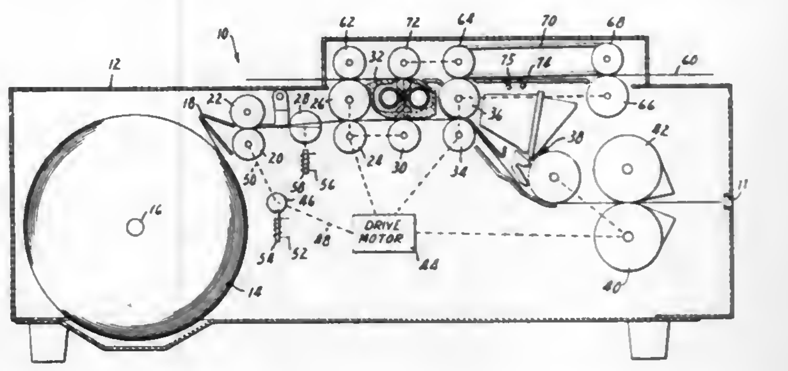
step drive means for driving the strip in a stepwise manner along a path;

knife means located along the path, the knife means including a movable blade which moves downward to cut a segment from the strip and upward to retract out of the path of the strip;

blade position sensing means for sensing the position of the movable blade; and

control means for receiving signals from the blade position sensing means and causing the step drive means to drive the strip in a reverse direction for a predetermined number of steps after the movable blade has cut a segment from the strip and before the movable blade is retracted.

4,193,330
COPY MACHINE WITH AUTOMATIC ROLL SUPPLIED COPY PAPER FEEDING AND CUTTING APPARATUS AND CONTROL CIRCUITRY
Michael P. Knox, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 25, 1978, Ser. No. 945,407
Int. Cl.^{2} B26D *5/38*
U.S. Cl. 83—364 **3 Claims**



1. An electrically operated copy machine having a transferring mechanism driven by a drive motor for providing synchronous movement in the copy machine of copy paper and original sheets of varying lengths where the copy paper is provided by a continuous web of copy paper from a copy paper supply roll and apparatus and circuitry responsive to the presence and absence of the original for cutting sheets from the copy paper which correspond to the length of the original including:

first and second copy paper feed rollers included in the transferring mechanism, said first feed roller positioned between the copy paper supply roll and said second feed roller;

first and second solenoids, each having a winding;

a cutter positioned in the path of travel of the copy paper between said first and second feed rollers and operatively connected to said first solenoid;

first and second electrical power conductors, each connected to a different side of the electrical power presented during operation of the copy machine;

first and second switch means connected to said first and second conductors, respectively, said first and second switch means spaced a short distance apart and positioned along the path of travel of an original sheet for responding to the presence and absence of original sheets presented to the copy machine, said first switch means positioned first in the path of travel of an original sheet, said first switch means connecting one end of the winding of said first solenoid to said first conductor when an original sheet is not presented to said first switch means and connecting one end of the winding of said second solenoid to said first conductor when an original sheet is presented to said first switch means, said second switch means connecting the other end of the winding of said second solenoid to said second conductor when an original sheet is not presented to said second switch means and connecting the other end of the winding of said first solenoid to said second conductor when an original sheet is presented to said second switch means; and

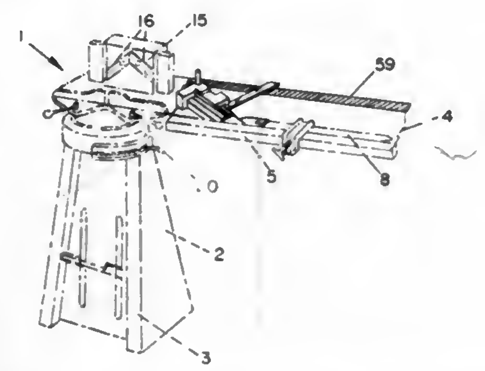
a clutch adapted for control by said second solenoid and operatively engaged between the drive motor and said first feed roller for providing sufficient rotation of said first feed roller to move the copy paper from said cutter to said second feed roller following energization of said second solenoid in response to detection of the leading edge of an original sheet at said first switch means and deenergization of said second solenoid in response to detection of the leading edge of the original sheet at said second switch means.

4,193,331

ADJUSTABLE MEASURING GUIDE ATTACHMENT FOR A PICTURE FRAME MITERING APPARATUS

David L. Gathings, 4875 Ridenour Dr., Colorado Springs, Colo. 80916

Filed Nov. 27, 1978, Ser. No. 963,810
Int. Cl.² B26D *7/16*
U.S. Cl. 83—468 **10 Claims**



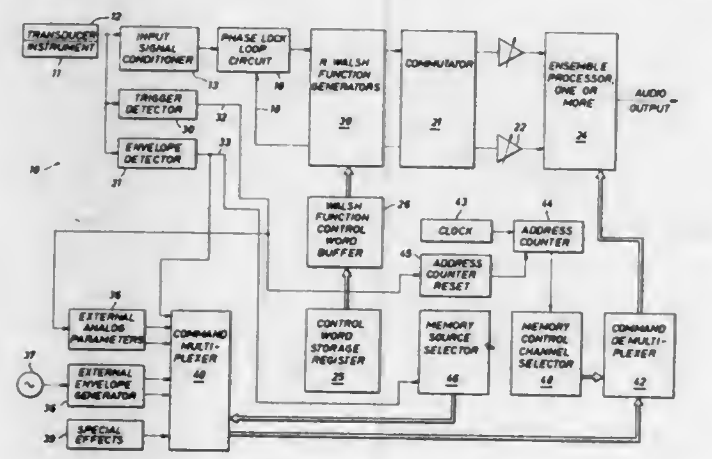
1. In combination with a picture frame mitering apparatus including an upright frame with a vertically reciprocable triangularly shaped cutting head therein, and a horizontally disposed and transversely extending flat supporting arm thereon, scale means on said arm, guide bar means at the forward edge of said arm for retaining a length of mitered rabbited molding strip thereon, retainer bar means associated in parallel engagement with said guide bar means, of a measuring guide attachment comprising a flat base extension attached endwise of said retainer bar and extending angularly therefrom at forty-five (45°) degrees, several flat superposed plate members slidably arranged on said base and being slidably interconnected for lengthwise adjustment relative thereto to provide edge means thereon at an angle of forty-five (45°) degrees for engaging with one mitered end of said rabbited molding strip, flat locator arm means on one of said plate members and projecting over said scaled supporting arm at an angle of forty-five (45°) degrees for alignment with the scale markings thereon, and an angularly shaped flat rabbit locator plate arranged on one of said plate members and projecting forwardly therefrom for interfitting under said mitered rabbited molding strip whereby said retainer bar and measuring guide attachment securely retain said molding strip on said arm for lengthwise measuring adjustment thereof until a predetermined length measurement is reached at which the opposing end of said strip is severed to provide a rabbited molding strip of exact measurement for assembly into a frame.

4,193,332

MUSIC SYNTHESIZING CIRCUIT

Charles B. Richardson, 1104 N. 17th St., Nederland, Tex. 77627

Filed Sep. 18, 1978, Ser. No. 943,058
Int. Cl.² G10H *3/00*
U.S. Cl. 84—1.01 **21 Claims**



4. For use in a music synthesizer, a circuit which forms N output signals where N is a whole number integer and the output signals are suitable for mixing to form synthesized music, the apparatus comprising:

(a) a phase lock loop circuit means having an input comparator receiving an input reference signal;
(b) a voltage control oscillator having an input terminal connected to said comparator;
(c) M stages of binary dividers connected in cascade and provided with the output signal from said voltage control oscillator;
(d) a feedback loop connected from said M cascaded dividers to said comparator wherein said comparator means is constructed and arranged to form a comparison of the phase of the signals provided thereto and to form a control signal for said voltage control oscillator; and
(e) a plurality of exclusive OR gates connected to said digital dividers for forming N Walsh function output signals.

13. An apparatus for forming synthesized music which is at least in part dependent on input signals provided thereto which represent monotonically occurring notes which notes have a fundamental and harmonics and which notes further have musical qualities including timbre, pitch, harmonic mix and wherein the apparatus comprises:

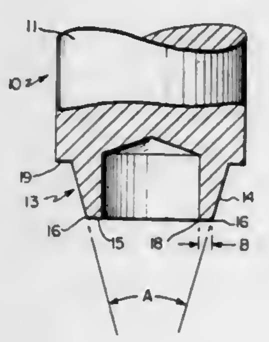
(a) a low pass filter for receiving signals representative of a series of monophonically occurring musical notes;
(b) means connected to said low pass filter for receiving the signal passed thereby and which means forms an output signal indicating the occurrence of the start of the monophonically occurring notes, said signal serving as a trigger signal;
(c) multiplexer means having M inputs thereto and N outputs therefrom, where M is larger than N and M and N are both whole number integers, and the inputs thereto are a set of presets; and
(d) a controllable mixer means for forming synthesized music having the form of a series of output signals representing monotonically occurring synthesized notes wherein said mixer means is controllable in the mixing achieved thereby and incorporates control means which are operated by N preset signals provided thereto from said multiplexer means and said mixing achieved by said mixer means is intitiated by the trigger signal input thereto and said mixer receives said multiplexer output signals as inputs thereto.

4,193,333

NON-SLOTTED CLINCH TYPE NAIL

Robert L. Hallock, 7136 NE. 8th Dr., Boca Raton, Fla. 33431

Filed Aug. 8, 1978, Ser. No. 932,074
Int. Cl.² F16B *15/00*
U.S. Cl. 85—31 **10 Claims**



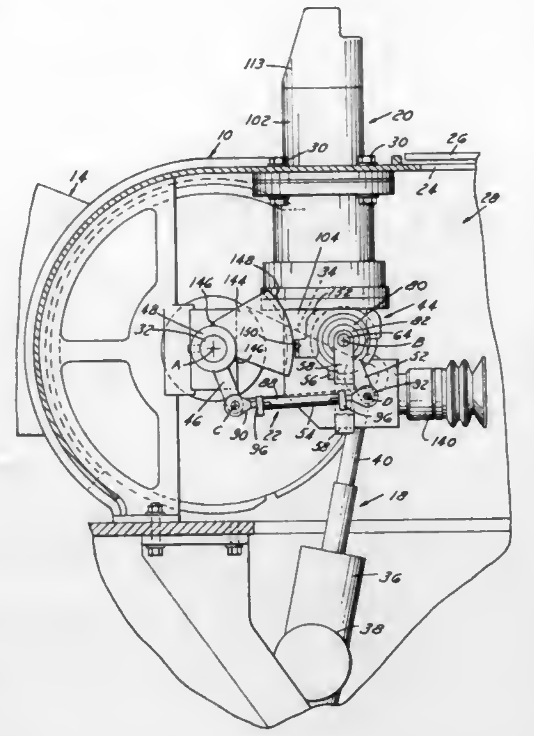
1. A clinch type fastener for driving in and attached to a metallic member comprising a body having a penetrating portion at one end, said penetrating portion including an outwardly extending generally frusto-conical outer wall which tapers from a predetermined diameter adjacent to said body to a smaller diameter remote therefrom at an included angle of at least 28° and not more than 34°, a recess including an inner wall extending axially inwardly from the outer end of said penetrating portion, the outer end of said recess having a predetermined diameter and being generally concentric with the end of said outer wall and defining a blunt continuous generally circular ring at the outer end of said penetrating portion, said ring having a substantially constant width of approximately 1/10 of the diameter of said outer end of said recess, and said penetrating portion being heat treated to a hardness greater than the hardness of the metallic member, whereby when the fastener is driven into the metallic member said penetrating portion penetrates the metallic member and such penetration causes said continuous ring to clinch inwardly around its entire periphery and capture a portion of a plug of material within the recess.

4,193,334

GUN SIGHT POSITIONING MECHANISM

Theodore A. Jackson, Utica, Mich., assignor to Cadillac Gage Company, Utica, Mich.

Filed Jul. 31, 1978, Ser. No. 929,393
Int. Cl.² F41G *1/40*
U.S. Cl. 89—41 E **16 Claims**



1. A gun sight positioning mechanism comprising a parallelogram linkage for moving a gun sight positioning shaft angularly with a gun trunnion shaft such that the gun sight tracks with a gun supported on the trunnion shaft; and a slip clutch that connects the linkage to one of the shafts so as to allow the positioning shaft of the sight to be pivoted independently of the trunnion shaft whereby the sight can be aimed downwardly at the target area while the gun remains aimed upwardly along the projectile path.

4,193,335

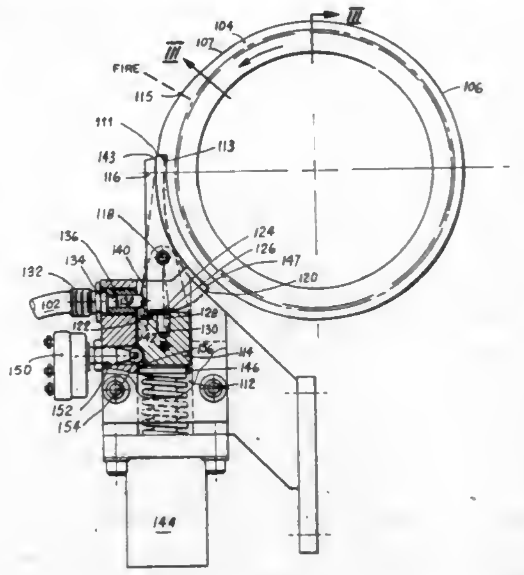
GUN MISFIRE CONTROL

Douglas P. Tassie, St. George, Vt., assignor to General Electric Company, Burlington, Vt.

Continuation of Ser. No. 778,769, Mar. 17, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 935,050
Int. Cl.² F41D *7/02*
U.S. Cl. 89—7 **11 Claims**

1. An automatic gun having an operating cycle and comprising:

a gun barrel having a gun bore and a projectile receiving chamber;
first means for closing and locking said chamber;
second means operating in synchronism with and controlling the operating cycle of said gun, including a first cam rotating in synchronism with the operating cycle of said gun;
third means coupled to said gun barrel and to said second means for detecting the firing out of a projectile from said chamber, and in the absence of said firing, for positively halting operation of said second means after the time for firing and before the time for unlocking said chamber by said first means, including detent means having a first position whereat it clears said first cam, and a second position whereat it halts said first cam at a first predetermined angular orientation of said first cam; and



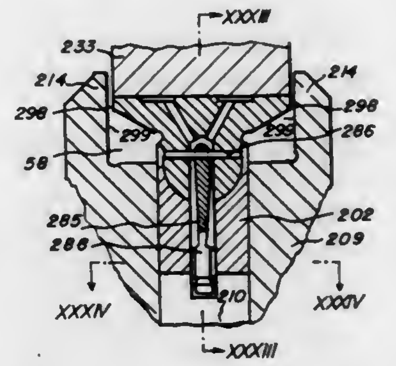
said first cam including additional means to cyclically set said detent means to said second position at a second predetermined orientation of said first cam.

4,193,336

RADIAL PISTON MACHINE WITH FREE-FLOATING PISTON AND PISTON-SHOE ASSEMBLIES

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 528,346, Nov. 29, 1974, Pat. No. 4,037,523. This application Feb. 3, 1977, Ser. No. 765,221
Claims priority, application Austria, May 14, 1974, 3991/74
Int. Cl.² F01B *1/06, 13/06, 31/00*
U.S. Cl. 91—488 **4 Claims**



1. A radial piston type fluid machine;

comprising a housing, a rotor member rotatably mounted in said housing about a rotor axis and formed with a plurality of angularly spaced and radially outwardly opening cylinders;
a piston radially displaceable in each of said cylinders and having a piston head forming a reception face of a configuration of a radius around a common centre;
a piston shoe associated to each of said pistons and having a radially inwardly projecting portion provided partially with a configuration complementary to that of said reception face and with a radius substantially equal to that of said reception face and around said common centre;
said radially inwardly projecting portion of said piston shoe able to radially engage said reception face of said piston head of the respective piston to be borne thereon and able to pivot thereon;
an actuator ring member radially outward of said rotor member, pistons and piston shoes; said actuator member guiding the strokes of said radially displaceable pistons and of said piston shoes; a pair of end elements carried on one of said members and flanking said piston shoes; said

pistons and piston shoes remaining radially moveably contained between said rotor member, said actuator ring member and said end elements, and,
wherein said common centre is located in said portion,
wherein said reception face exceeds eighty percent of the crossectional area of the respective piston;
wherein said reception face embraces a respective portion of said portion by an angle from said common centre of less than 181 degrees;
wherein said piston forms a first axis longitudinally through said piston;
wherein said rotor member forms a second axis normal to said first axis;
wherein said portion contains a first bore through said common centre along a third axis normal to said first axis and parallel to said second axis;
wherein said piston contains a second bore extending longitudinally through said piston along said first axis and forming an opening in said piston head;
wherein said portion includes a third bore normal to said first bore and through said common centre and through said first bore;
wherein a first pin means is provided in said second bore in said piston and extends into said third bore in said portion and through said first bore and through said common centre;
wherein said first pin means has a pin head and a fourth bore extending through said pin head along said third axis;
wherein a second pin means is inserted through said fourth bore in said pin head into said first bore in said portion;
wherein holding means are provided in said second bore in said piston;
wherein said holding means are engaged to said piston and to said first pin means for holding said first pin means on said piston;
wherein a limited space is provided in said portion around said first pin means and said pin head for permittance of movement of said first pin means within said limited space;
wherein said pin head is able to pivot relatively to said second pin means and relatively to said piston shoe and to said portion;
wherein at least one recess extends through said reception face into said piston head; and
wherein a communication passage is provided from the respective of said cylinders through at least said piston to said recess for leading fluid under pressure from said cylinder into said recess for lubrication of said reception face and of said configuration of said portion

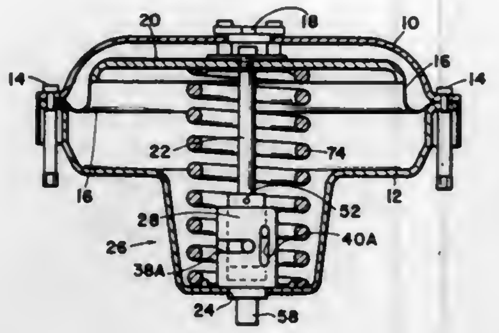
whereby the holding of said portion on said piston by outer diameter portions of said piston is excluded for the purpose of utilizing a maximum of the cross-sectional area of said piston for bearing the radial load of pressure in fluid on said piston and thereby assuring high power and efficiency of the fluid machine.

4,193,337

PNEUMATIC ROTARY ACTUATOR

Carlos A. Disdier, 7311 E. 59th Pl., Tulsa, Okla. 74145
Filed Jan. 16, 1978, Ser. No. 869,713
Int. Cl.^{2} F01B *3/04*
U.S. Cl. 92—31 **1 Claim**

1. Apparatus for providing rotational torque in response to fluid pressure comprising:
a cup-shaped housing lower portion having an axial opening therein;
a housing upper portion affixed to and closing said housing lower portion;
a flexible diaphragm having the periphery thereof secured to the interior surface of the closed housing;
a circular plate within the closed housing, the plate being engaged by said diaphragm and displaced by the application of unequal fluid pressure to opposed sides of the diaphragm;
a tubular cylindrical fixed member supported coaxially within and attached to said housing lower portion, the fixed member having its cylindrical surface radially spaced from said housing lower portion and having a longitudinal opening therethrough coaxial with said housing lower portion opening; the fixed member having a longitudinal slot there through in a plane of the axis of said longitudinal opening;
a rotatable shaft member, the upper portion being received in said fixed member and the lower portion extending out the fixed member and through said housing lower portion opening;
a longitudinal actuator member received in said fixed member, a pin extending from said actuator member received in said longitudinal slot in said fixed member, thereby serving to permit slidable but non-rotatable movement of said actuator member relative to said fixed member; the actuator member having an axial opening therein telescopically receiving said shaft member upper portion, the actuator member having an inclined slot therein defining a partial spiral about the longitudinal axis;



a rod axially connecting said plate and said actuator member;
a pin member extending perpendicularly from said shaft member and slidably received in said slot in said actuator member whereby unequal fluid pressure across said diaphragm displaces said plate, said rod and said actuator member relative to said fixed member and said shaft member whereby the interaction of said pin member in said slot causes said shaft member to rotate;
said fixed member has a semi-circular slot therein in a plane perpendicular said opening longitudinal axis and wherein said pin member extending perpendicularly of said shaft and slidably received in said slot in said actuator member is also received in the fixed member semi-circular slot; and
a spring compressibly positioned around said rod and cylindrical fixed member and between said plate and said housing lower portion normally urging said plate and thereby said rod and actuator member in the upward direction.

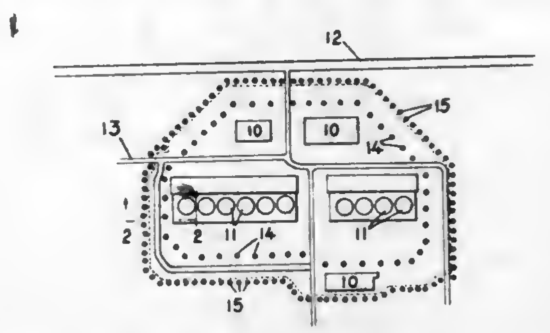
4,193,338

GAS DISPERSION SYSTEM

Varis Smiltnieks, 289 The Kingsway, Islington, and Bernard C. Stonehill, 3554 Stonecreek Crescent, Mississauga, both of Ontario, Canada
Filed Oct. 25, 1977, Ser. No. 844,805
Claims priority, application Canada, Oct. 23, 1973, 238328
Int. Cl.^{2} F27D *21/00;* **F24F** *00/00;* **G21C** *19/20*
U.S. Cl. 98—1 **6 Claims**

1. In combination with a gas dispersion system for dispersing noxious gas released into the atmosphere within a contained ground area to prevent its passing at an unacceptable concentration to a neighbouring ground area to be protected, the system comprising
a plurality of gas sensors distributed along a first base region, the gas sensors being positioned and arranged to intercept the flow of gas from the contained area towards the protected area,

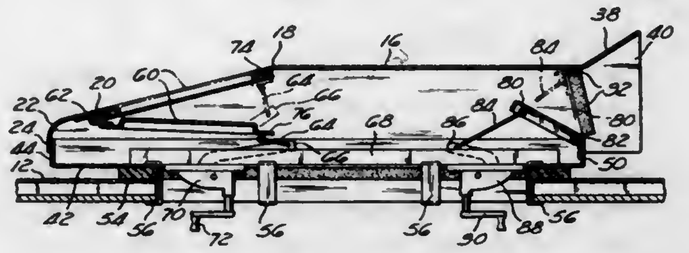
circuit means coupled to the gas sensors for producing a trip signal in accordance with the detection of gas thereby,
a plurality of burners distributed along a second base region interposed between the first base region and the protected area, the burners being so positioned and arranged so that, when ignited, they produce by thermal convection an air curtain for dispersing the gas upwards,
control means responsive to said trip signal,
fuel supply means for the burners, and
ignition means operable by the control means in response to said trip signal for igniting the burners thereby to produce the air curtain,
display means comprising a console display panel and condition-responsive means for producing thereon a display representative of the current condition of the system, the display panel providing a ground plan of the plant, a first set of indicator lamps located at positions on the panel corresponding to the positions of the gas sensors, a second set of indicator lamps located at positions on the panel corresponding to the positions of the burners, and wind direction and velocity indicating means, said condition-responsive means including means responsive to ignition of the burners for illuminating the second set of indicator lamps, and means responsive to said warning signals for illuminating the first set of indicator lamps selectively in accordance with the detection of gas by the corresponding gas sensors of the corresponding groups.



4,193,339

MOTOR VEHICLE VENTILATION DEVICE

William E. Giles, 9782 Central, Garden Grove, Calif. 92644
Filed May 30, 1978, Ser. No. 910,235
Int. Cl.^{2} B60H *1/26*
U.S. Cl. 98—2.14 **12 Claims**

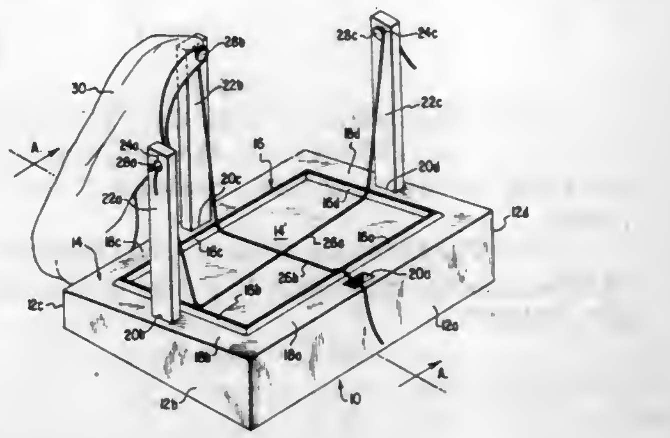


1. A ventilation device for a motor vehicle roof, comprising:
a body having a top portion and front, rear, and side portions integral with said top portion, said body having an interior for communicating with the interior of said vehicle through a hole in said roof;
a base attached to said body and attachable to said roof around the perimeter of said hole;
an air inlet in said front portion of said body;
air inlet valving means for opening and closing said air inlet and opening into the interior of said body;
first means in the interior of said body for actuating said air inlet valving means;
an air outlet in said rear portion of said body;
air outlet valving means for opening and closing said air outlet, and opening into the interior of said body;
second means in the interior of said body for actuating said air outlet valving means; and
drag-reducing means in said front portion of said body, said drag-reducing means comprising:
a short vertical leading section; and
a sloping section extending downwardly and forwardly from said top portion of said body to said vertical leading section.

4,193,340

RECEPTACLE FOR BULK COLLECTION OF WASTE PAPER AND THE LIKE

Melvin Finn, 2509 Central Ave., Alexandria, Va. 22302
Filed Jul. 5, 1978, Ser. No. 922,174
Int. Cl.^{2} B65B *13/18*
U.S. Cl. 100—34 **7 Claims**



1. Apparatus for bulk collection of waste paper, such as newspapers and the like, comprising:
a generally rectangular base portion having a generally planar paper supporting surface, and upstanding ridges on said paper supporting surface forming a generally rectangular frame for generally defining a paper receiving area of lesser size than the total area of the planar paper supporting surface;
a plurality of recesses located in the peripheral portion of the paper supporting surface outside the paper receiving area, wherein each side lof the peripheral portion of the paper supporting surface contains at least one such recess;
a plurality of upright guide members, each located in a corresponding one of said recesses, for retaining stacked papers within said paper receiving area; and
at least one through hole formed in an upper end portion of each of said uprights above the maximum desired paper storage height for receiving an end portion of a paper tying string to be threaded therethrough prior to depositing papers into the collection apparatus.

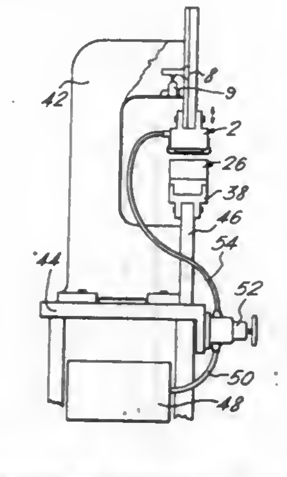
4,193,341

PRESSES

Harold J. Clements, Canterbury, and Frank Ely, Ashford, both of England, assignors to Modern Precision Engineers & Associates Limited, Ashford, England
Continuation of Ser. No. 848,191, Nov. 3, 1977, abandoned. This application Apr. 11, 1979, Ser. No. 29,047
Int. Cl.^{2} B30B *15/34*
U.S. Cl. 100—93 P **10 Claims**

1. A press comprising first and second platens mounted so as to define a working gap therebetween, at least said first platen comprising a housing having a recess defined therein, an inflatable member received within said recess, and a flexible pressure transmitting member having a pressure applying surface for applying pressure upon inflation of said inflatable member,

said pressure transmitting member being retained in the opening of the recess and being mounted so as to be free to adapt to irregularities in a workpiece over its entire pressure applying surface.



4,193,342
SLIDING SURFACE SEAL ON CONTINUOUS LAMINATING MACHINES

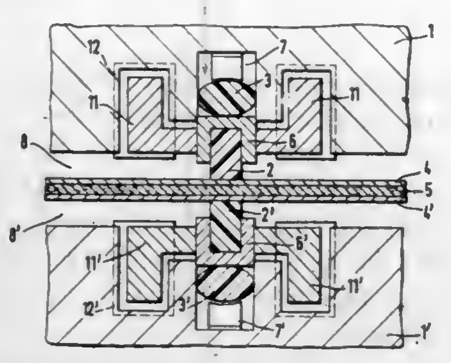
Kurt Held, Alte Str. 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed May 15, 1978, Ser. No. 906,344

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722197

Int. Cl.² B30B *5/06*

U.S. Cl. 100—154 6 Claims



1. A sliding surface seal on a continuous laminating machine comprising: two endlessly rotating bands for placing therebetween an object to be laminated; said rotating bands having backsides away from said object; chamber formed by said bands; said chamber holding fluid means for pressure buildup; sliding seals; pressure plates fastened in said machine by said sliding seals; grooves encircling an edge of said pressure plates; said seals being moved in said grooves by pressure means or by reaction forces issuing from said object to be laminated; said seals being movable outwardly or inwardly relative to said groove; U-shaped holding strips rigidly enclosing said sliding seals; support angles on said holding strips for absorbing thrust acting in a lengthwise direction; recesses on said pressure plates, said recesses emanating from said grooves and corresponding to said holding strips and said support angles on both sides of said groove.

4,193,343
PELLET MARKING APPARATUS WITH FRAME RAISING AND LOWERING MECHANISM

Charles E. Ackley, Sr., Oreland, and Charles E. Ackley, Jr., Philadelphia, both of Pa., assignors to R. W. Hartnett Company, Philadelphia, Pa.

Filed Mar. 29, 1978, Ser. No. 891,292

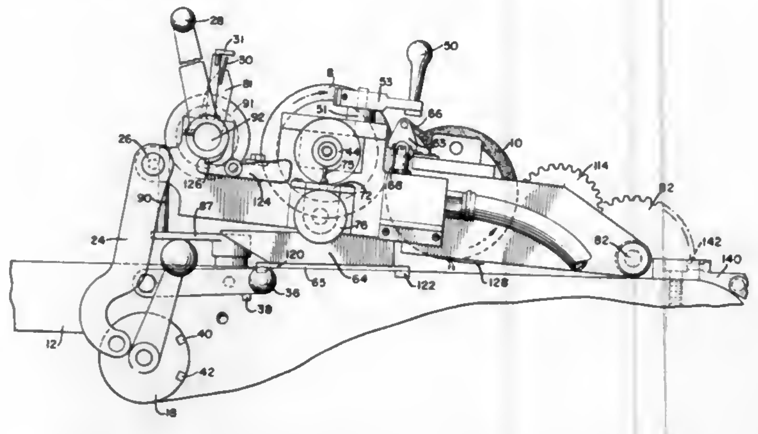
Int. Cl.² B41F *17/36*

U.S. Cl. 101—35 18 Claims

1. In a pellet marking mechanism of the type having a frame, an ink reservoir mounted on said frame, printing means comprising a design roller and a printing roller both connected to said frame, hopper means into which a multiplicity of pellets or the like are to be loaded, and conveyor means for transporting said pellets from said hopper and presenting them to said printing roller so that the desired indicia are imprinted thereon, the improvement comprising:

(a) pivot means for selectively moving said printing means between (1) an operative position in which said design roller contacts said ink reservoir to receive ink therefrom and in which said printing roller is in position to contact pellets on said conveyor, and (2) a dwell position in which said design roller is spaced from said ink reservoir and said printing roller is spaced from said conveyor in a position so as not to contact pellets thereon, and

(b) locking means cooperating with said pivot means for securing said printing means in said dwell position when desired.



4,193,344
SILK SCREEN PRINTING MACHINE

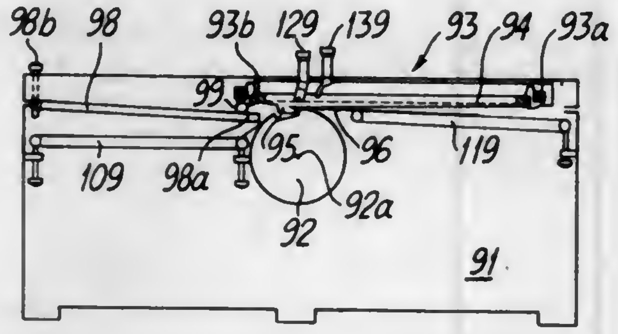
Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

Filed Sep. 28, 1977, Ser. No. 837,425

Claims priority, application Sweden, Sep. 28, 1976, 7610725

Int. Cl.² B05C *17/06*

U.S. Cl. 101—126 4 Claims



1. An improved silk-screen printer of the type employing a squeegee and means for urging the squeegee against a stencil and a material to be printed wherein any stretch in the stencil resulting from the pressure of the squeegee thereon may be compensated for by imparting movement to the stencil relative to the material to be printed, said silk-screen printer comprising:

a stationary platen having a printing surface associated therewith;

a frame spaced from and located above the stationary platen and having a stencil mounted therein, said stencil being comprised of an elastic material;

means for dispensing ink to a surface of said stencil;

a squeegee;

means for urging said squeegee against the stencil so as to provide contact between said stencil and said printing surface; and

said stencil frame being pivotably attached to one end about a shaft with the pivot axis of said stencil frame being located above the horizontal plane of said frame, an opposite end of said frame being capable of movement in a vertical plane so as to allow the frame to pivot about said axis.

4,193,345
DEVICE FOR ADJUSTMENT OF THE INK FLOW ON PRINTING PRESS INKING UNITS

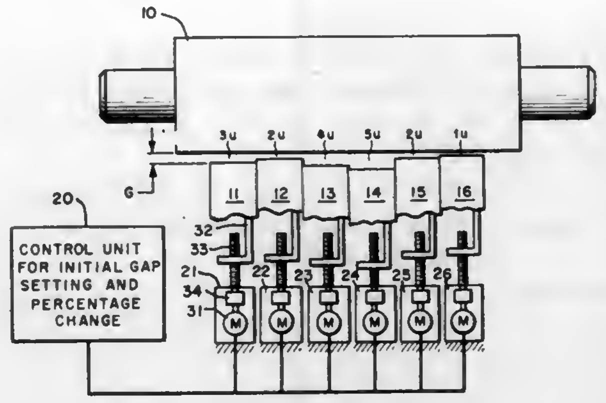
Edgar F. Schoneberger, Selingestadt, and Alfred Dorn, Lammerspiel, both of Fed. Rep. of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 890,934, Mar. 28, 1978, abandoned. This application Aug. 11, 1978, Ser. No. 932,717

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714577

Int. Cl.² B41F *31/04*

U.S. Cl. 101—365 16 Claims



1. In a metering system for metering the rate of ink flow to a printing plate on a column-by-column basis, the combination comprising an ink fountain including a fountain roller, a fountain blade made up of adjacent blade sections individually movable toward and away from the fountain roller to form a gap to adjust the ink film thickness, a miniature reversible electric motor having a step down drive connection drivingly coupled to each blade section, manual switches for initially energizing the motors to establish a respective clearance gap for each blade section to determine the initial ink feed rate to each column position, a linear follow-up potentiometer for each motor and having its slider mechanically coupled thereto, an adjustable voltage supply capable of establishing a reference voltage connection to all of the potentiometers and so that the resulting slider voltage of each potentiometer is a direct measure of the width of the associated initial gap, a voltage memory device for each potentiometer for responding to and storing the value of initial slider voltage, manual means for adjusting the voltage supply so that the voltage supplied to all of the follow-up potentiometers is changed in the same direction and amount to bring about change in the voltages on the various sliders to a new voltage related percentagewise to the initially existing voltage thereon, comparator means responsive to the difference between each initially existing voltage and the new voltage to produce a set of differential voltages, means for applying the differential voltages to the respective electric motors to move the associated sliders to new positions in which each differential voltage is reduced to zero by follow-up action so that all of the blade gaps simultaneously undergo a change to new gap widths related to the respective initial gap widths by the same fixed percentage and means for automatically restoring the voltage supply to the reference level.

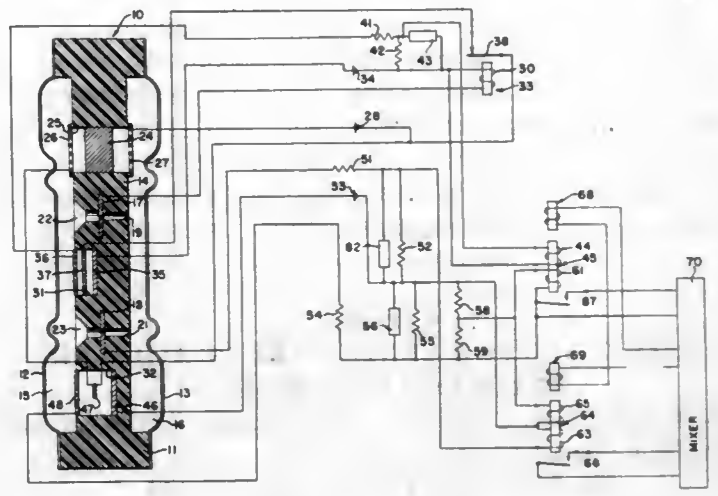
4,193,346
ELECTROLYTIC PRESSURE MECHANISM

Alton D. Anderson, Skokie, Ill., and Nelson N. Estes, Silver Spring, Md., assignors to The Unites States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 16, 1953, Ser. No. 342,762

Int. Cl.² F42B *21/38, 21/48*

U.S. Cl. 102—18 R 18 Claims



1. A vessel detecting apparatus comprising means responsive to the time varying negative pressure signal produced by the passage of a vessel in proximity to the detecting apparatus for producing an electrical signal having a time varying amplitude correlative with the square root of pressure signal, means for integrating said electrical signal over the interval of the negative pressure signal duration, and ulitization means responsive to the time integral of said electrical signal.

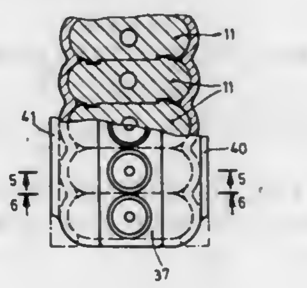
4,193,347
CASELESS AMMUNITION

Otto Stier, and Udo Vollmer, both of Biberach an der Riss, Fed. Rep. of Germany, assignors to Vollmer Werke, Maschinenfabrik GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 877,871

Int. Cl.² F42B *5/02, 9/00*

U.S. Cl. 102—38 CC 2 Claims



1. A magazined ammunition stack for hand firearms for firing caseless ammunition, of the type in which caseless cartridges are delivered out of the magazined ammunition stack into the cartridge chambers of a cartridge holder, consisting of a number of consecutively arranged caseless cartridges in which a bullet is partly surrounded by a charge, and a strip-shaped magazine of elastic plastics material holding the stacked cartridges, having chambers for taking up the cartridges, wherein:

(a) each cartridge comprises a parallelepipedic shaped charge having mutually parallel wider side faces adapted to lie against side faces of adjacent cartridges, each cartridge having a guide groove and a guide tongue which correspond to each other in such a way that the tongue on the side face of one cartridge mates with a corresponding groove of an adjacent cartridge;

(b) the parallelepipedic shaped charge of each cartridge is provided with an approximately semi-cylindrical round end on its two opposite, parallel side faces;

(c) the parallelepipedic charge of each cartridge has a longitudinal axis recess for holding a bullet, said recess being of a size which corresponds to the calibre of the bullet;

(d) the parallelepipedic shaped charge of the cartridge has rounded off or chamfered outer edges on upper and lower end faces, running into said side faces;

(e) a plurality of contiguously stacked parallelepipedic cartridges have at their bullet ends more than half of their height covered by a U-shaped profiled magazine clip, free edges of which clip have flanges with lips projecting into a gusset formed between each two adjacent cartridges by the rounded edges of narrow side faces of the cartridge, webs of said clip having openings above the bullets for the through-projection of a loading ram which pushes the cartridge out of the magazine clip.

4,193,348

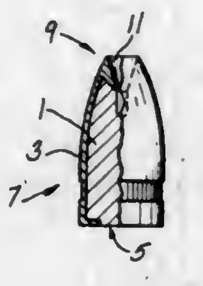
PROJECTILE FOR CENTERFIRE PISTOL AND REVOLVER CARTRIDGES

Henry J. Halverson, Collinsville, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 15, 1978, Ser. No. 877,939

Int. Cl.² F42B *11/10*

U.S. Cl. 102—91 **10 Claims**



1. A projectile for small arms consisting of a soft metal bullet and a jacket at least partially enclosing said bullet, said jacket being formed of a metal having a hardness of between about 45 and about 60 as measured by the Rockwell R-15T Hardness Test and a shear strength of between about 12,000 and about 24,000 p.s.i.

4,193,349

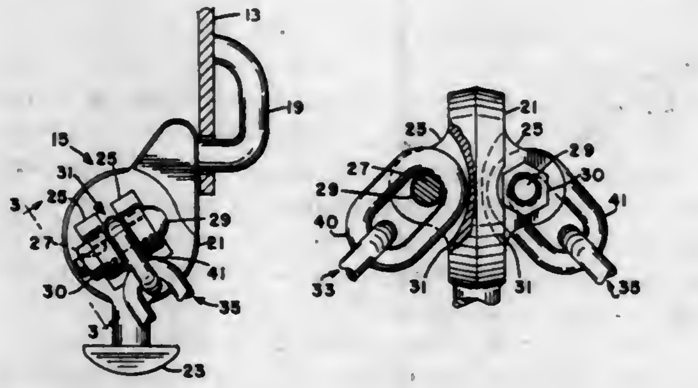
TIE DOWN CHAIN LINK UNIVERSAL CONNECTOR FITTING

John W. Allen, Sedona, Ariz., assignor to Abex Corporation, New York, N.Y.

Filed Feb. 27, 1978, Ser. No. 881,522

Int. Cl.² B25B *25/00;* **B60P** *7/08;* **B61D** *3/16, 45/00*

U.S. Cl. 410—7 **2 Claims**



1. A tie-down connector fitting for use in a tie-down assembly including tensioning chains to secure vehicles to the bed of a transporter for shipment, comprising:

a connector body;

attaching means formed on said connector body and removably engageable with said vehicles for securing said connector fitting thereto;

a pair of generally parallel spaced ears disposed on opposite sides of said connector body and extending outwardly therefrom, each pair of said spaced ears having aligning, generally central bores formed therethrough;

an idented radial portion formed in said connector body in between said spaced ears; and,

bolts insertable through said aligning central bores of each of said spaced ears, and through an end link of said tensioning chains between said spaced ears adjacent said indented radial portion to secure said end links for rotation and lateral movement about said bolts, said end link of said tensioning chains being movable laterally along said bolts and being pivotal relative to said connector body within said indented radial portion formed therein for substantially reducing the stresses placed on said end links of said tensioning chains during shipment of vehicles to prolong the useful life thereof.

4,193,350

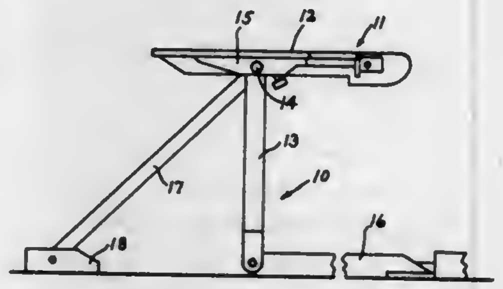
HEAD INSERT FOR RAILWAY TRAILER HITCH

Joseph F. Niggemeier, St. Charles, Mo., and Richard P. Yeates, Downers Grove, Ill., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation of Ser. No. 825,560, Aug. 18, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,721

Int. Cl.² B65J *1/22*

U.S. Cl. 410—64 **12 Claims**



1. In a trailer hitch to be mounted upon a railway flat car having a vertical strut and a diagonal strut in extended position supporting a hitch head adapted to engage and hold in place a kingpin of a trailer supported on said flat car, said hitch including a top plate having an opening including a generally semicircular and vertical kingpin engagement portion, and at least one movable jaw located below said top plate, said jaw being movable between a closed position holding a kingpin captive in said head and adapted to engage said top plate, and an open position allowing said kingpin to be removed, the kingpin applying horizontal loads to said engagement portion in closed position in transit, the improvement comprising:

an insert made of wear resistant and crack resistant material mounted on said top plate within said opening and overlying a substantial portion of the vertical extent of said kingpin engagement portion, said insert forming substantially the only contact between the jaw and the kingpin; removable fastening means engaging first openings in said insert and second openings in said top plate to hold said insert in place overlying said kingpin engagement portion; whereby said insert is easily and quickly removable from said top plate by disconnecting said fasteners from said top plate, whereby a new insert may be quickly inserted in place within said opening while said hitch remains in place on said flat car without taking said hitch out of service.

4,193,351

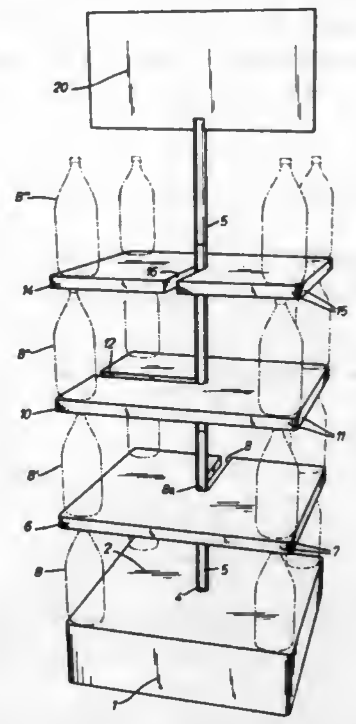
DISPLAY RACK ASSEMBLY

Paul Belokin, Jr., Rte. 4, Hayward, Wis. 54843

Filed Nov. 15, 1978, Ser. No. 960,959

Int. Cl.² A47B *57/00;* **F16M** *13/00*

U.S. Cl. 108—59 **9 Claims**



1. A knock-down type display rack assembly for supporting layers of articles, said assembly including a floor engaging base having an upper generally horizontal surface for supporting a layer of articles, a vertical support mounted in and extending upwardly from said base, a plurality of generally horizontal shelves each having a slot extending from its periphery and inwardly to a generally central portion of said shelves, said slots being insertable over said vertical support to thereby vertically align said shelves with one another, the slot of any one shelf being in non-vertical alignment with the slot of an adjacent shelf to thereby prevent all of said shelves from being slid away from said vertical support at any one time by a lateral thrust thereagainst in any one direction, a layer of articles located between adjacent shelves and on which layers the upper adjacent shelf, respectively, is supported.

4,193,352

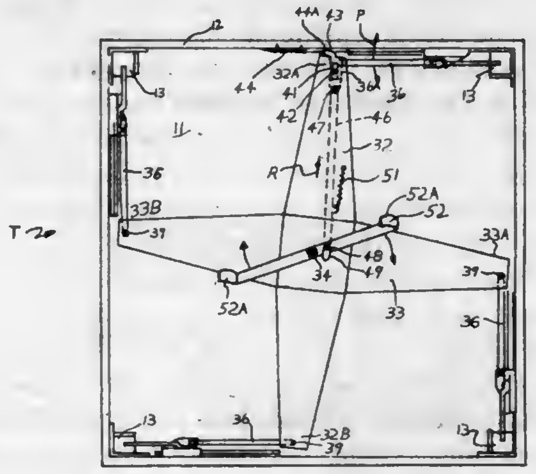
FOLDING TABLE

Noble M. Hiser, 3019 E. Drachman St., Tucson, Ariz. 85716

Filed Aug. 17, 1978, Ser. No. 934,520

Int. Cl.² A47B *3/08*

U.S. Cl. 108—126 **4 Claims**



1. A folding table comprising, in combination, a top, a downwardly depending flange extending along the marginal edge of said top, a plurality of legs pivotally mounted on said flange each disposed adjacent a corner of said top for pivotal movement between a folded position and an extended position, a guide element mounted on said flange adjacent each of said legs, a slide member slidably mounted on each of said guide elements, brace means pivotally connecting each of said slide members to the associated leg for sliding movement of said slide member on said guide element during the pivotal movement of said legs between said folded position and said extended position, a pair of cross arms disposed in intersecting arrangement at a central portion of the table through a pivot pin and extending outwardly toward the flanges of said table, plural links one each pinned to an extremity of said cross arms and to each of said slide elements for three of the legs, a single locking member connecting one cross arm extremity to a flange including a pin disposed on said extremity slideably constrained in a slot formed in an extension of said remaining link wherein said pin is connected to the remaining link so that said remaining link can move along the line of said cross arm and said remaining link has formed at the end near the slot a locking lug (**43**) adapted to latch against a keeper (**44***a*) fastened to the flange of the table, an arm (**46**) underlying said one cross arm extremity (**32**) pinned to said extension (**36***a*) and pinned through slots (**49**) disposed in the cross arms (**32**,**33**) at their juncture, a spring (**51**) extending between the cross arm and the arm (**46**) to bias said lug (**43**) into said keeper (**44***a*) and means (**52**) for retracting said locking lug (**43**) from said keeper (**44***a*).

4,193,353

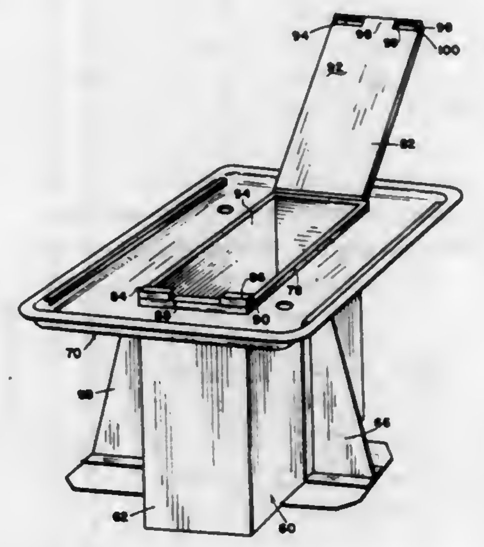
SECURITY STORAGE BOX

Arthur D. Hinton, and Morris E. Mitchell, both of Fayetteville, Ark., assignors to Steel Security Corporation, Fayetteville, Ark.

Filed Feb. 13, 1978, Ser. No. 877,343

Int. Cl.² E05G *1/024, 1/04;* **E05C** *19/18*

U.S. Cl. 109—50 **13 Claims**



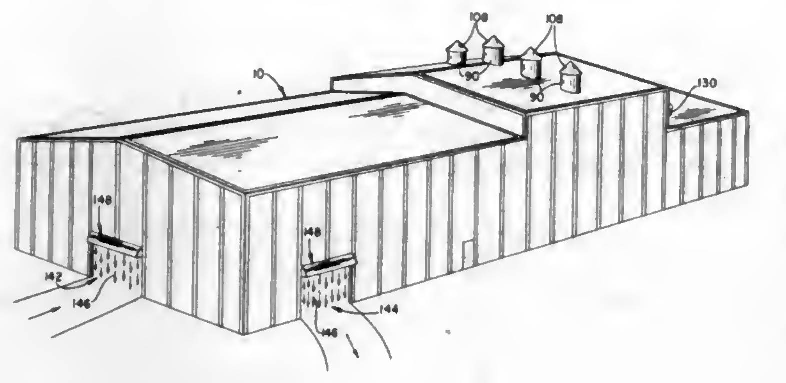
1. A security storage box comprising housing means having at least one side thereof open for providing selective access to the interior thereof, an insulated cover member secured to the housing adjacent said open side and movable between alternate opened and closed positions thereagainst, a locking pin, cooperating apertured sleeve members disposed on the cover member and housing for slidably receiving the locking pin therein, said sleeves being disposed in substantial axial alignment in the closed position of the cover against the open side of the housing whereby the locking pin may be moved longitudinally through the aligned apertures, selective key-pin members adapted for manual insertion within the apertures for controlled movement of the locking pin therein to provide alternate locked and unlocked positions between the sleeves for selective locking and unlocking of the cover member against the open side of the housing, said apertured sleeves comprising a first pair of spaced apertured sleeves, a third sleeve adapted for positioning between the spaced apertured sleeves and in substantially axial alignment therewith in the closed position of the cover member, and wherein the locking pin member is of

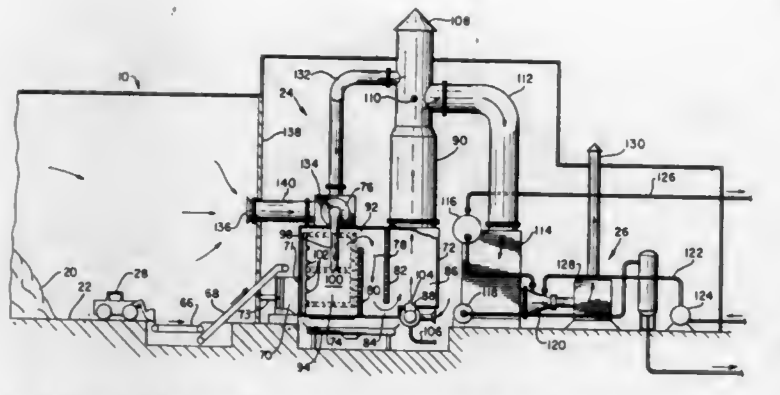
a length substantially equal to the third sleeve whereby positioning of the locking pin entirely within the third sleeve provides said unlocked position and positioning of the locking pin partially in said third sleeve provides said locked position.

4,193,354
SOLID WASTE DISPOSAL SYSTEM

Maurice G. Woods, P.O. Box 18662, Oklahoma City, Okla. 73118

Filed Oct. 20, 1977, Ser. No. 843,855
Int. Cl.² F23G *5/12*
U.S. Cl. 110—212 **13 Claims**



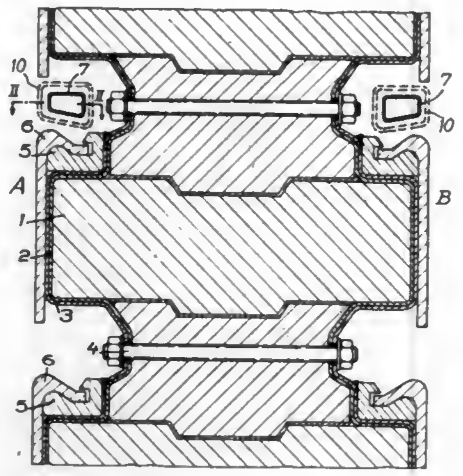


1. A waste disposal system comprising, in combination:
an incinerator for thermally oxidizing combustible waste material having a primary combustion chamber, a secondary combustion chamber, and passageway means connecting the primary chamber in fluid communication with the secondary chamber, and an exhaust stack connected in fluid communication with the seconardy combustion chamber;
means for injecting a quantity of combustion air into the primary chamber at a pressure greater than atmospheric pressure, the quantity of combustion air being in excess of the amount necessary to support complete thermal oxidation of the waste material; and,
means for evacuating gaseous products of combustion from the primary combustion chamber through the passageway means to the secondary combustion chamber and through the exhaust stack at a rate sufficient to maintain the air pressure inside of the primary combustion chamber at a level which is substantially lower than the atmospheric pressure surrounding the incinerator.

4,193,355
FURNACE WALLS WHICH CAN BE USED AT HIGH TEMPERATURES

Alban Dondeyne, Chatenay Malabry; Maurice Marchasson, Douai; Paul Ravez, Flers-en-Escrebieux, and Louis Soubrier, Douai, all of France, assignors to Houilleres du Bassin du Nord et du Pas de Calais, Douai, France

Filed Apr. 18, 1978, Ser. No. 897,487
Claims priority, application France, Apr. 18, 1977, 77 25313
Int. Cl.² F23M *5/04*
U.S. Cl. 110—336 **8 Claims**

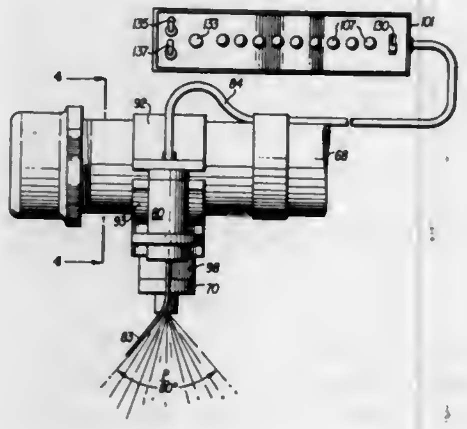


1. A furnace wall for furnaces working at temperatures above 900° C. and having recesses through which pass tubes for the introduction of fluids to be distributed in the furnace, characterized in that it comprises:
a mineral refractory material chosen from amongst ceramic materials and electro-fused materials, the said refractory material forming the load-bearing part of the wall;
a shield of a refractory metallic alloy which lines the surface of the wall with refractory material;
support means for anchoring a shield to said refractory material;
a shield comprising plates of a disposable material resistant to heat and to abrasion and anchorable to the said support means;
the said wall defining, between the disposable plates, said recesses and tube assemblies in said recesses for the introduction and distribution of fluids, the said tube assemblies consisting of an internal tube and an external tube connected so that the stresses generated on the external tube are not transmitted to the internal tube.

4,193,356
SPRAY MONITORING DEVICE AND IMPLEMENT

Dennis Vehe, and Pieter van den Berg, both of Wilson, N.C., assignors to The Lely Corporation, Wilson, N.C.

Filed Jan. 20, 1978, Ser. No. 871,137
Int. Cl.² A01C *23/02;* B05B *17/00*
U.S. Cl. 111—6 **5 Claims**

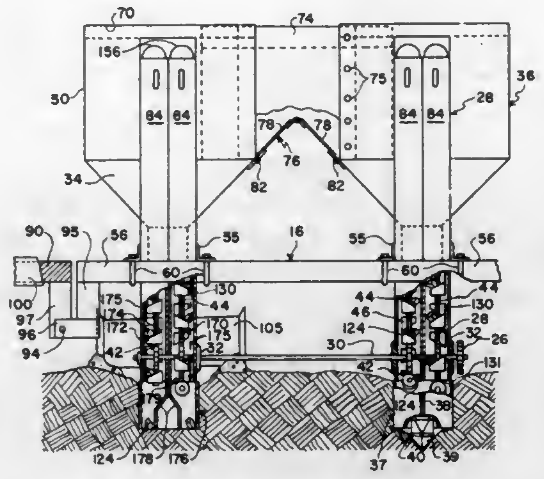


1. A spray monitoring device for use on an agricultural implement that includes at least one fluid sprayer supported by the implement frame, comprising an electrode sensor probe in a housing and means mounting the probe on the implement adjacent a spray outlet and the intended pattern of material to be sprayed, said housing including a dielectric holder for said probe and a cover with an internal flared chamber being a lower open end, said probe being an elongated conductor that is supported by said holder and connectable to an electrical signal having a power source, said probe extending from the holder through said chamber and out of the open end to the edge of the spraying pattern, a substantial distance away from said open end, said chamber tapering upwardly from said open end.

4,193,357
SEED PLANTING MACHINE HAVING SPECIFIC SEED GUIDING STRUCTURE

Carl D. Freeman, Idaho Falls, and Melvin G. Grover, Rigby, both of Id., assignors to Logan Farm Equipment Co., Inc., Idaho Falls, Id.

Continuation-in-part of Ser. No. 676,837, Apr. 10, 1976. This application Nov. 16, 1977, Ser. No. 851,921
Int. Cl.² A01C *9/02, 7/20*
U.S. Cl. 111—34 **9 Claims**

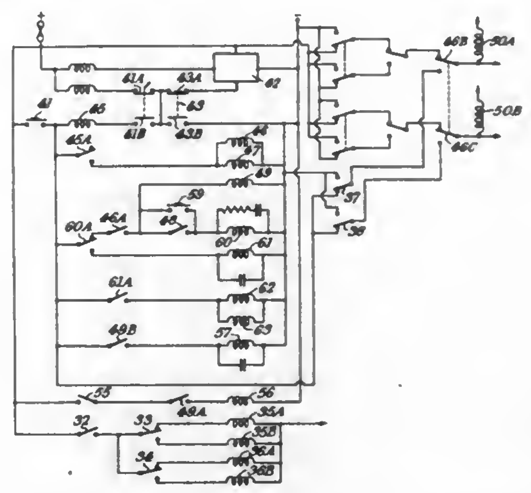


1. A machine for setting seeds including a generally vertical circulating planting device having mounted thereon at least one row of seed conveyances and surface providing means associated with said conveyances for embracing and guiding seeds carried on the bottoms of said conveyances and terminating in a seed discharge location at the bottom of the machine, said surface providing means providing a guide path in a first plane that is parallel and proximate to a second plane containing the center line of a furrow in which seeds are to be planted, the axis of circulation of said conveyances on said planting device being substantially perpendicular to said first plane, said conveyances each having an inclined bottom surface the inclination of which is transverse with respect to said guide path, successive seeds in their descent in said planting device to said discharge location being supported on the bottom surfaces of said conveyances and biased by gravity into sliding engagement with said guide path of said surface providing means, the support provided by said conveyances terminating substantially at said discharge location whereby at said discharge location forces transverse to said first plane tending to act on the seed supported by each of said conveyances and guided by said guide path of said surface providing means are minimized and the seed is guided for controlled deposit in a substantially straight line in the furrow.

4,193,358
TUFTING MACHINES

Douglas G. Woodcock, Blackpool, England, assignor to Edgar Pickering (Blackburn) Limited, Blackburn, England

Filed Jul. 31, 1978, Ser. No. 929,780
Claims priority, application United Kingdom, Aug. 5, 1977, 33011/77
Int. Cl.² D05C *15/00*
U.S. Cl. 112—79 A **5 Claims**

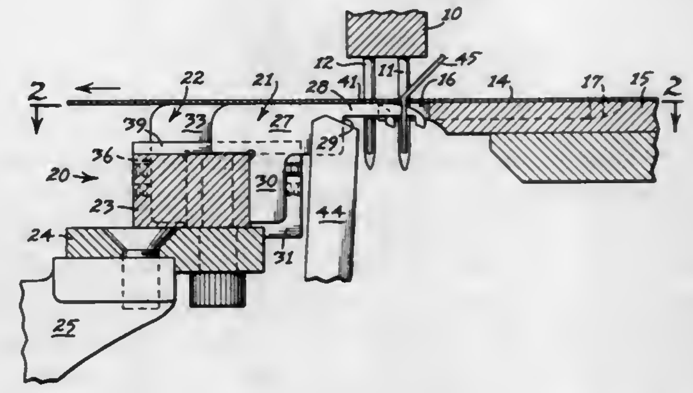


1. A tufting machine, comprising feed rollers for supplying yarns to the needles of the machine, speed control means for causing the feed rollers to feed the yarns at alternative speeds under control of a patterning mechanism to cause the needles to form pile of different heights in different areas of the fabric to be tufted in accordance with a pattern determined by the patterning mechanism, a tube system which feeds the yarns to the needles to provide repeats of the pattern across the width of the fabric, a border control mechanism including a first counter for counting the number of repetitions of the pattern in a direction lengthwise of the fabric, a second counter for counting the number of strokes performed by the needles, means operative when the first counter has counted a predetermined number of longitudinal repeats of the pattern to free the speed control mechanism from control by the patterning mechanism so that patterning ceases and means operative when the second counter has counted a predetermined number of strokes of the needles to return the speed control mechanism to control by the patterning mechanism.

4,193,359
LOW PILE FORMING APPARATUS FOR TUFTING MACHINE

Max M. Beasley, Chattanooga, Tenn., assignor to Tuftco Corporation, Chattanooga, Tenn.

Filed Jun. 23, 1978, Ser. No. 918,482
Int. Cl.² D05C *15/00*
U.S. Cl. 112—79 R **4 Claims**



1. In a staggered needle tufting machine having means for supporting the base fabric for longitudinal movement in the feeding direction through said machine, a first row of transversely spaced reciprocal front needles for introducing yarns

through the base fabric to form front loops, a second row of transversely spaced reciprocal rear needles, spaced longitudinally behind, and uniformly staggered relative to, said first row of needles for introducing yarns through the base fabric to form rear loops, a low-pile tufting apparatus comprising:

- (a) a needle plate having a plurality of needle plate fingers projecting rearward, each needle plate finger having a top surface,
- (b) each of said needle plate fingers being in substantial longitudinal alignment with the reciprocal path of a corresponding rear needle, each of said needle plate fingers terminating adjacent to and slightly spaced in front of said corresponding rear needle path,
- (c) a looper apparatus including a looper for each needle having a bill adapted to cooperate with a corresponding needle to form pile loops in operative position, each bill having a top surface, and
- (d) means supporting said looper apparatus for reciprocable movement so that each looper bill cooperates with a corresponding needle, and the top surface of said looper bills are coplanar with the top surfaces of said needle plate fingers to support the base fabric upon the top surfaces of the loopers and the needle plate fingers when said loopers are in operative position and as the base fabric moves longitudinally in the feeding direction through the machine.

4,193,360
KNIFE BLOCK ASSEMBLY TUFTING MACHINES

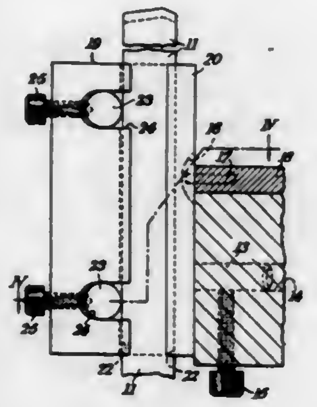
Ernest K. Lund, Accrington, England, assignor to Edgar Pickering (Blackburn) Limited, Lancashire, England

Filed Nov. 24, 1978, Ser. No. 963,579

Claims priority, application United Kingdom, Jan. 9, 1978, 759/78

Int. Cl.² D05C *15/00*

U.S. Cl. 112—79 R **2 Claims**



1. A knife block for use in a fine gauge tufting machine and comprising front and rear members joined by a thinner central web, a peg projecting from the rear member for securing the knife block to a knife bar, four knives, which are disposed in pairs on opposite sides of the web and extend in planes parallel to the web with their edges accommodated in opposed pairs of slots in the front and rear members, two spaced, knurled cylindrical clamping blocks disposed in slots in the front member with their axes perpendicular to the planes of the knives and clamping screws, fitted into tapped holes in the front member, which press the clamping blocks into engagement with the edges of the knives.

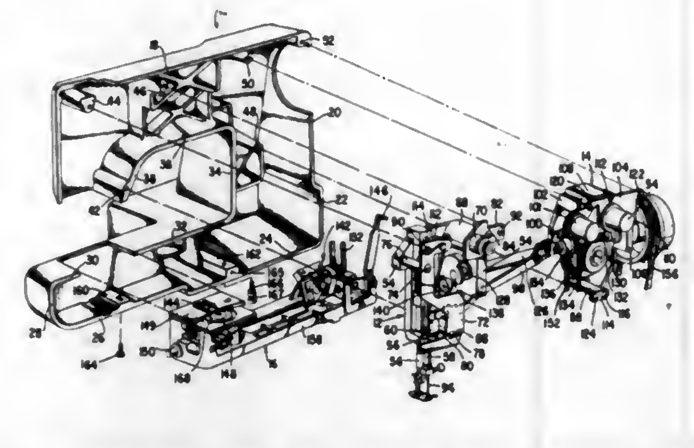
4,193,361
SEWING MACHINE CONSTRUCTION UTILIZING SUBASSEMBLIES

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,962

Int. Cl.² D05B *73/00, 73/02*

U.S. Cl. 112—259 **6 Claims**



1. In a sewing machine, the combination comprising a sewing machine rear casing section including a plurality of coplanar machined mounting surfaces, a presser and needle bar head end subassembly mounted in an unalterable position in the casing on certain of the said mounting surfaces, a needle bight control subassembly mounted on other of said mounting surfaces, and another subassembly including feed controlling mechanism, a loop taker and fixed throat plate, said another subassembly being adjustably mounted in said casing section to permit the throat plate and needle loop taker to be positioned relative to a sewing needle, and means operably connected with the subassemblies for driving the operable parts thereof.

4,193,362
DEVICE FOR LOCKING THE NEEDLE BAR OF A SEWING MACHINE IN ONE OF ITS END POSITIONS

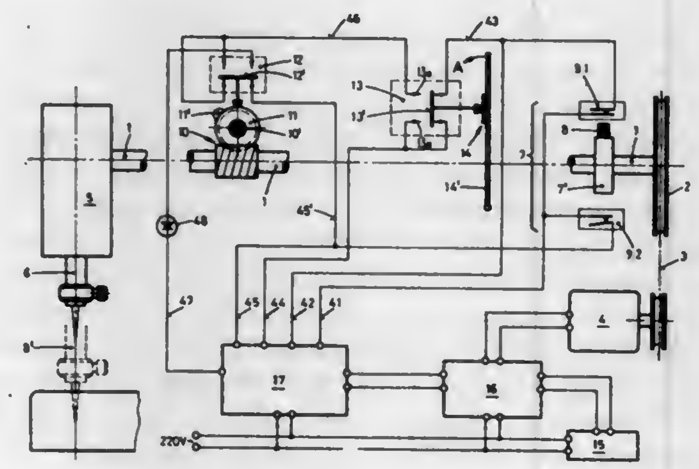
Fritz Glaser, Liestal, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft, Bernina-Nahmaschienfabrik, Steckborn, Switzerland

Filed Dec. 21, 1978, Ser. No. 971,763

Claims priority, application Switzerland, Dec. 27, 1977, 16074/77

Int. Cl.² D05B *69/22*

U.S. Cl. 112—275 **1 Claim**



1. A device for locking the needle bar of a motor-driven sewing machine for making functional and ornamental stitches in its upper or lower end position, comprising first and second pulse transmitters for respectively signaling the upper and the lower end positions of the needle bar, a control system for actuating the drive motor of the sewing machine, means for selecting the kind of functional or ornamental stitch to be made by the sewing machine, and means mechanically controlled by the needle bar drive for monitoring the position of the end of an ornamental stitch pattern in relation to a point of reference of the ornamental stitch pattern, the device comprising a first reversing switch having a movable contact member which is adapted to be brought into either of two switch positions by a control element of said means for monitoring the ornamental stitch pattern in order to transmit, in the first switch position, the position signal of the second pulse transmitter to said control system and, in the second switch position, to close a break contact in the electric circuit for actuating an indicator means adapted to signal the approach of the end of an ornamental stitch pattern, and the device also comprising a second reversing switch having a movable contact member which is adapted to be brought into either of two switch positions by a control element of the stitch-selecting means, the first of said switch positions being assigned to the functional stitch and the second to the kinds of ornamental stitch in order to transmit the position signal of the first pulse transmitter to said control system in the first switch position, and in order to apply the supply voltage to the break contact in said first reversing switch in the second switch position for actuating said indicator means when said stitch-selecting means is connected for making ornamental stitches.

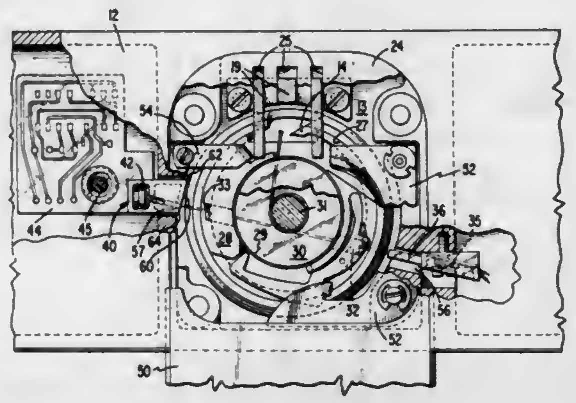
4,193,363
LINT MINIMIZATION IN SEWING MACHINE BOBBIN ALARM

Howard L. Beckerman, Red Bank, and Allan M. Dob, Clifton, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Apr. 19, 1979, Ser. No. 31,675

Int. Cl.² D05B *51/00*

U.S. Cl. 112—278 **1 Claim**



1. A sewing machine having a frame including a bed portion, said bed portion having a cavity for receiving a looptaker, a looptaker rotatably supported in said cavity, a bobbin case supported in said looptaker against rotation therewith, said bobbin case freely supporting a lower thread carrying bobbin therein, means for sensing the thread carrying condition of said bobbin, said sensing means including a light source and a light detector, wherein the improvement comprises:

- means for enclosing said light source and extending a lens portion thereof into said looptaker cavity; and
- means for encasing said light detector with a portion thereof extending into said cavity, said portion being formed on a surface adjacent said looptaker with an edge of said surface facing upstream relative to the windage generated by said looptaker and extending close to said looptaker and with said adjacent surface tapering away from said looptaker to a trailing edge facing downstream relative to said upstream edge, said adjacent surface being formed with an orifice for passage of rays from said light source to said light detector.

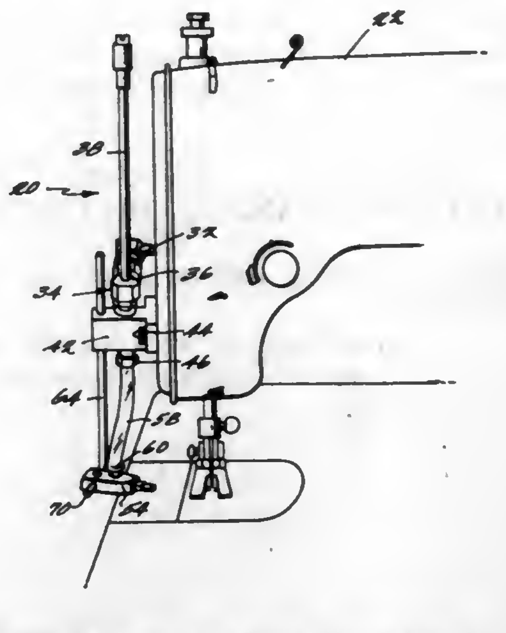
4,193,364
NEEDLE COOLER

Owen F. Dunne, Tiverton, R.I., assignor to Clevepak Corporation, White Plains, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,546

Int. Cl.² D05B *71/00, 51/00, 81/00*

U.S. Cl. 112—281 **4 Claims**



1. A needle cooler for a sewing machine comprising:

- a vortex tube having an inlet for connection to a source of pressurized gas, a cold air outlet and a hot air outlet;
- a block mounting said tube having a bore extending therethrough from an inlet coupled to said cold air outlet to a block outlet, said block including means for mounting said cooler on a sewing machine;
- a nozzle for directing cold air onto a sewing machine needle;
- a flexible tube connecting said block outlet to said nozzle; and
- a manually adjustable positioning rod extending between said block and said nozzle for positioning and holding said nozzle in an orientation so that said nozzle directs said cold air onto said needle.

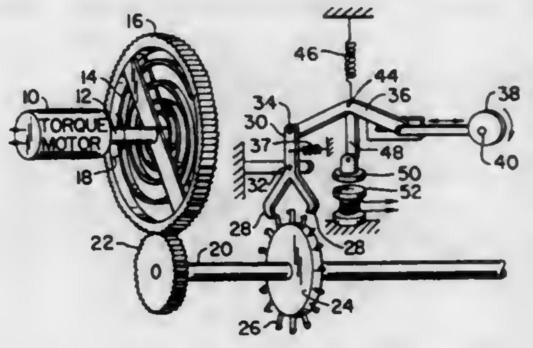
4,193,365
TOGGLE CONTROLLED SERVO SYSTEM

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed Dec. 4, 1978, Ser. No. 966,195

Int. Cl.² F16H *21/26, 33/00;* **D05B** *21/00, 27/14*

U.S. Cl. 112—314 **9 Claims**



6. Apparatus for selectively translating reciprocating motion into intermittent rotary motion, comprising

- a source of driving torque,
- a torsion member interconnecting the driving member with the torque source to thereby apply torque to the driving member in the direction of rotation of the driving member,
- reciprocatably operating escapement means for controlling rotation of the driving member,
- a two-ended toggle linkage connected at one end in an operating relationship with the escapement means, the

toggle linkage having a normally flexible knee joint between the two ends, means for supplying a constantly reciprocating driving force to the other end of the toggle linkage, and means for selectively locking the knee joint so that the driving force is transmitted to trigger the escapement means when the knee joint is locked and is diverted into flexing the knee joint when the knee joint is unlocked,

whereby the driving member is selectively rotated under power from the driving torque source through the torsion member in synchrony with the reciprocating driving force.

4,193,366

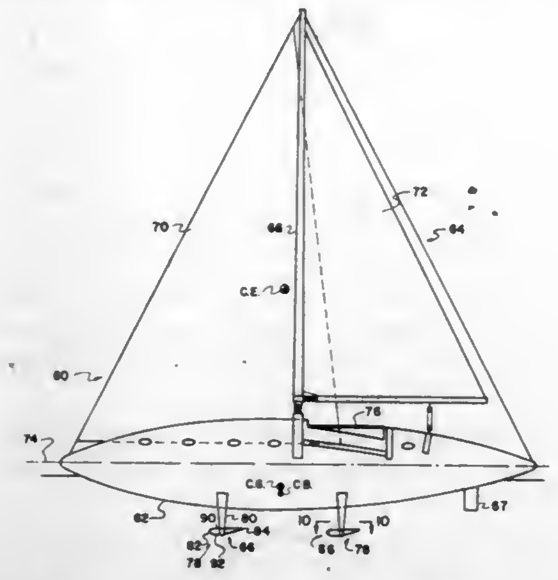
SAILING BOAT AND METHOD OF OPERATING THE SAME

Reijo K. Salminen, 1842 Academy Rd., Bellingham, Wash. 98225

Filed Mar. 27, 1978, Ser. No. 890,363

Int. Cl.^{2} B63B *35/00;* B63H *9/00*

U.S. Cl. 114—39 **17 Claims**



1. A sailboat comprising:
- a. a displacement hull having front and rear ends, a longitudinal axis, a transverse horizontal axis and a vertical axis,
- b. a sail assembly mounted to said hull and arranged to be able to be positioned relative to wind which is blowing at an angle to the longitudinal axis of the hull so that the sail develops an aerodynamic force within a predetermined force range, said aerodynamic force having a lateral aerodynamic force component and a forward aerodynamic force component,
- c. a keel member mounted beneath said hull, said keel member having a cordwise axis generally aligned with said longitudinal axis and a spanwise axis generally aligned with said transverse horizontal axis,
- d. said keel member being hydrodynamically contoured so that with the boat moving forwardly through water, said keel member produces a downward hydrodynamically created force having a substantial force component generally aligned with said vertical axis, and tending to increase the effective displacement of said hull,
- e. said keel member being positioned, sized and contoured relative to said sail assembly, so that with said boat in a heeled position and travelling forwardly with a small yaw angle, said keel member develops a downwardly and laterally direct keel force with both vertical and lateral keel force components, said keel force being of a magnitude that the lateral keel force component substantially counteracts the lateral aerodynamic force component,

whereby with said boat travelling with its longitudinal axis at an angle to the wind, said keel member is able to generate its hydrodynamic force simply by virtue of forward movement of the boat, without necessity of the boat travelling at a substantial yaw angle, with the result that the hydrodynamic lateral force component is able to substantially counteract the lateral aerodynamic force component in a manner to substantially diminish yaw angle in the forward travel of the boat.

4,193,367

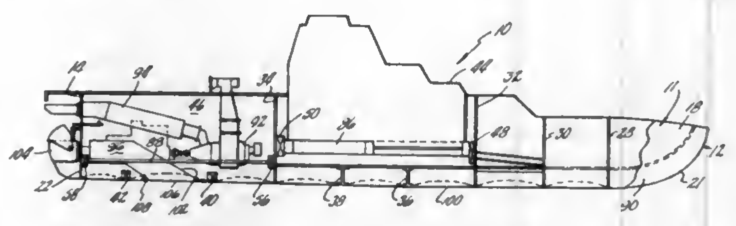
BOAT DESIGNED TO WITHSTAND THE FORCE OF UNDERWATER EXPLOSIONS

John J. Benincasa, Rockville, and Marvin L. Hage, Avon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 17, 1969, Ser. No. 816,934

Int. Cl.^{2} B63B *43/18, 43/00*

U.S. Cl. 114—68 **17 Claims**



1. A marine vessel having a hull with a capability of withstanding the force of underwater explosions and having a bow, a stern, a bottom, and a longitudinal centerline and including:
- (A) side members having top and bottom edges and abutting at said bow to form a watertight joint and extending to the stern and positioned substantially symmetrically on opposite sides of the longitudinal centerline of of the ship,
- (B) a transom having top and bottom edges and located at the stern and extending transversally between and connected to the aft end of said side members to form a watertight joint therewith,
- (C) at least one longitudinal frame member extending along the longitudinal centerline of the ship between said bow and said stern and connected to the bottom edge of said side members at said bow and connected to the bottom edge of said transom,
- (D) a plurality of transversally extending support members extending between said longitudinal frame member and said side members, to form watertight joints and the chine therewith, and spaced along said longitudinal centerline to cooperate with said longitudinal frame member and said side members to define a plurality of bays in the boat bottom, and
- (E) a separate membrane member individual to each of said bays extending across and connected to the entire outer periphery thereof.

4,193,368

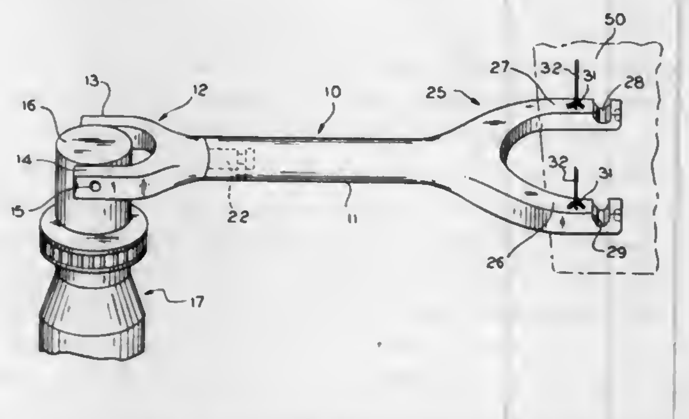
OFFSHORE MOORING SYSTEM FOR VESSEL OR SHIP

Douglas W. DeGraaf, Addison, and William A. Tam, Warrenville, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jan. 20, 1978, Ser. No. 870,993

Int. Cl.^{2} B63B *21/52*

U.S. Cl. 114—230 **20 Claims**



1. A quick-release mooring apparatus for a floating vessel comprising:

- a substantially stationary means anchored to the sea floor and projecting above sea level,
- a vessel mooring member attached at a first end above sea level to the stationary means in a manner which permits the mooring member to rotate about vertical and horizontal axes passing through the point of attachment to the stationary means,
- the second end of the mooring member comprising a vessel mooring yoke having a pair of spaced arms, one end of each of which is adapted to be releasably attached, by lifting the vessel mooring yoke, to opposite sides of the bow of a vessel for rotation about a horizontal axis,
- each arm containing a pocket open at the top in which a trunnion mounted on the vessel can mate when the vessel mooring yoke is lifted into releasable engageable contact therewith, and
- the mooring member having sufficient buoyancy for the second end to float on the sea when unconnected to a vessel.

4,193,369

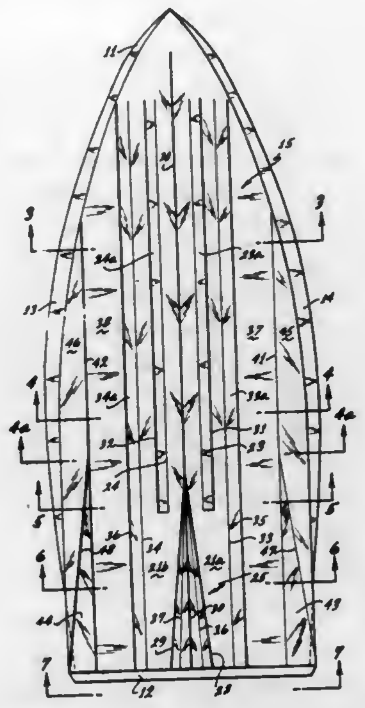
HIGH SPEED BOAT HULL

Carlos Talamantes, Jr., 9915 S. Greenleaf, Santa Fe Springs, Calif. 90670

Filed Apr. 24, 1978, Ser. No. 899,180

Int. Cl.^{2} B63B *1/00*

U.S. Cl. 114—290 **10 Claims**



1. A boat hull having a stern and bow and being symmetrical about a center line and having a midship section defined as the largest transverse section, said hull comprising:
- a keel portion having a pair of first surfaces forming a V-shape and disposed longitudinally from the stern to the bow;
- longitudinally and substantially horizontal outboard second surfaces spaced transversely on opposite sides of said keel portion;
- at any transverse plane through the hull, the lines of intersection of each of said second surfaces and said respective plane being horizontal, and the lines of intersection of said keel portion and said respective plane being V-shape and having the point of said respective V-shape line disposed lower than the first named lines of said intersection;
- a pair of upwardly arched tunnels connecting said keel portion with each one of said respective second surfaces;
- each of said tunnels having a substantially horizontal third surface and a substantially vertically disposed inboard fourth surface which connects to the keel portion, and also having a substantially vertically disposed outboard fifth surface which connects to a respective one of said second surfaces from a first region lying between aft of the bow and forward of the midship section to a second region aft of the midship section, said vertically disposed fourth and fifth surfaces being substantially parallel to each other;
- each of said tunnels having an outboard flat inclined sixth surface disposed at an incline and extending longitudinally from said second region to the stern and connecting said horizontal third surface to said respective horizontal second surface.

4,193,370

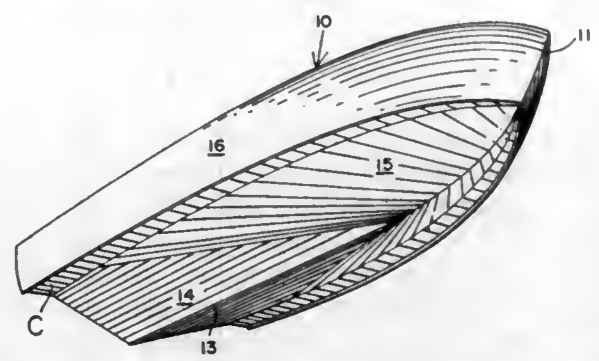
PLANING BOAT HULL

Harry L. Schoell, Miami, Fla.

Continuation of Ser. No. 779,752, Mar. 21, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,933

Int. Cl.^{2} B63B *1/18*

U.S. Cl. 114—291 **1 Claim**



1. In a planing boat hull having a bow portion, a stern portion, an upper hull portion, a lower hull portion and a keel extending between said bow portion and said stern portion, a chine portion joining said upper hull portion and said lower hull portion and extending the length of said hull, said lower hull portion having an arcuate portion at the bow formed from a segment of a cone extending on either side of said keel from said bow portion and toward said stern portion and a substantially flat and coplanar portion extending upwardly from 12° to 18° from the horizontal on either side of said keel from said arcuate portion to said stern portion, said keel lying substantially horizontally from said stern portion to substantially two-thirds of the length of said boat hull, said flat portion of said lower hull portion bordering on said horizontal portion of said keel and the remainder of said keel extending along said arcuate portion of said lower hull portion, said chine portions each having a substantially horizontal portion extending outwardly from the edges of said lower hull portion and a chine lip portion extending the length of the chine portions and extending downwardly from said horizontal portion and in a reverse direction from said flat portion of said lower hull portion at substantially 12 to 18 degrees from the horizontal.

4,193,371

DOUBLE-ACTING SINGLE-WEB SWIMMING APPARATUS

Raymond G. Baulard-Caugan, Résidence Dauphine Pavillon du Barry, Louveciennes, France (78430)

Filed Oct. 5, 1977, Ser. No. 839,501

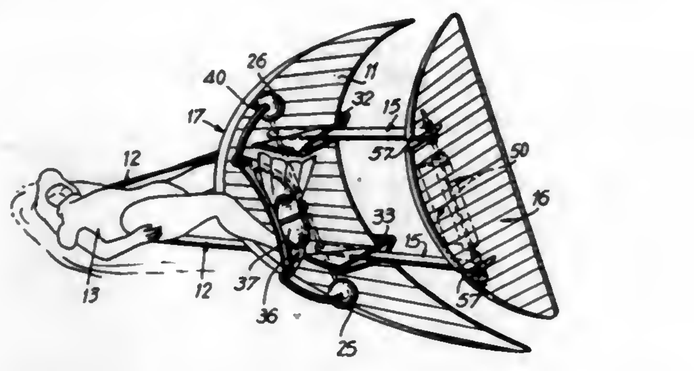
Claims priority, application France, Oct. 5, 1976, 76 29926

Int. Cl.^{2} B63H *16/00*

U.S. Cl. 115—22.2 **13 Claims**

1. An apparatus for the self-propulsion of swimmers of the type comprising an anti-drift member, a harness set connected to the said anti-drift member and adapted to be passed round the body of the said swimmer, and at least one propelling fishtail member connected to the said anti-drift member through a transmission system so mounted as to perform a swinging or oscillating motion with respect to the said anti-drift member and actuated by the swimmer, wherein said transmission system comprises a rigid, substantially rectangular frame, one of the sides of which is constituted by a first pivot-bar substantially parallel to the main medial plane of said anti-drift member, the frame side opposite to said first pivot bar

constituting a second pivot bar about which said frame pivots with respect to said anti-drift member and wherein said second pivot bar is arranged in the main medial plane of said anti-drift member and is pivotally connected to the latter by two substantially spherical joint-balls incorporated in the thickness of said anti-drift member, wherein said propelling member is arranged to substantially freely pivot about the said first pivot bar lengthwise of the latter and wherein stop means are secured to the transmission system and arranged on the pivoting path of the said propelling member about the said first pivot bar in order to oppose its rotation preferably beyond a predetermined neutral sector or angular region; and said anti-drift member is a relatively flat panel cut in the general shape of a crescent; the front edge of said propelling member being curved.



4,193,372

APPARATUS FOR WAXING A YARN

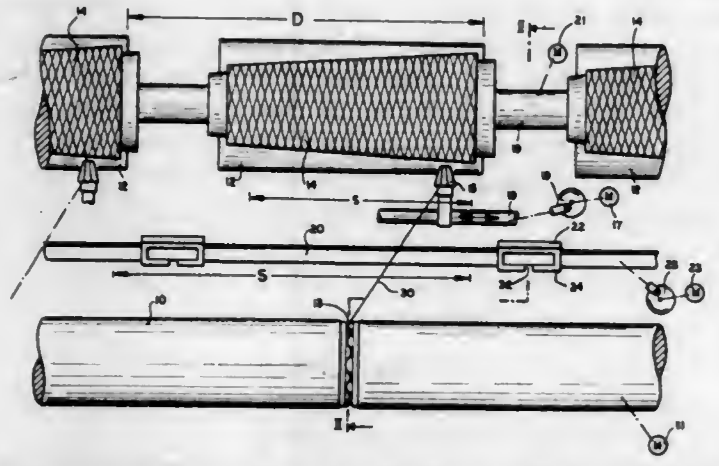
Heinrich Eckholt, Münster, Fed. Rep. of Germany, assignor to Hamel GmbH Zwirnmaschinen, Münster, Fed. Rep. of Germany

Filed Feb. 17, 1978, Ser. No. 878,885

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1977, 2707044

Int. Cl.² D06M *13/02;* B05C *1/06*

U.S. Cl. 118—713 **13 Claims**



9. An apparatus for waxing a yarn, said apparatus comprising:

means for feeding said yarn along a yarn path between an upstream feed location and a downstream feed location and through a treatment location between said feed locations;

an elongated bar extending through said treatment location and through a waxing station and having a surface displaceable between a position at said treatment location and a position spaced from said treatment location and at said waxing station;

means for applying wax to said surface in said waxing station; and

means for periodically longitudinally reciprocating said surface between said waxing station and said treatment location and transferring the wax applied in said station to said surface to said yarn in said treatment location.

4,193,373

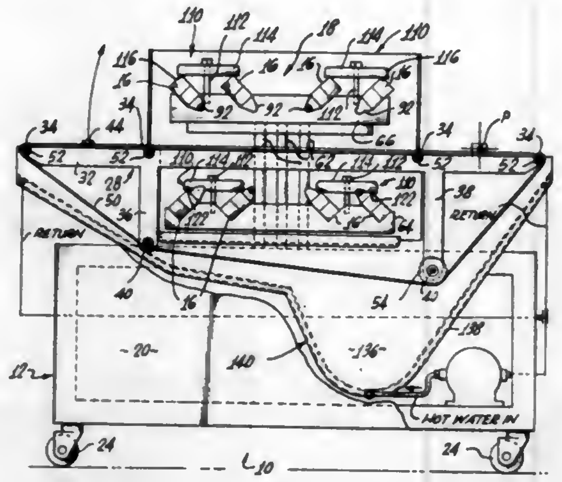
SPRAY APPARATUS FOR APPLYING INGREDIENT COATINGS TO FOOD PRODUCTS

Harold W. Hanson, Jr., Newport Beach, and Beuford C. Doering, Costa Mesa, both of Calif., assignors to Par-Way Co., Los Angeles, Calif.

Filed Jan. 20, 1978, Ser. No. 870,937

Int. Cl.² B05C *5/00*

U.S. Cl. 118—17 **24 Claims**



1. A spray apparatus comprising:

conveyor means for transporting a product to be sprayed along a predetermined path;

a plurality of spray heads arranged along said path each including a first interlocking member that defines an ingredient delivery chamber, a second interlocking member that defines an air delivery chamber substantially coextensive with said ingredient delivery chamber, a divider plate disposed between said first and second interlocking members and interlocked therewith that separates said chambers, and a plurality of spray nozzles directed at said path each having an outer orifice communicating with said air delivery chamber and an inner orifice communicating with said ingredient delivery chamber, said interlocking members being separable to expose the interior of said ingredient delivery chamber for cleaning;

means for supplying said ingredient to said ingredient delivery chamber; and

means for supplying air to said air delivery chamber.

4,193,374

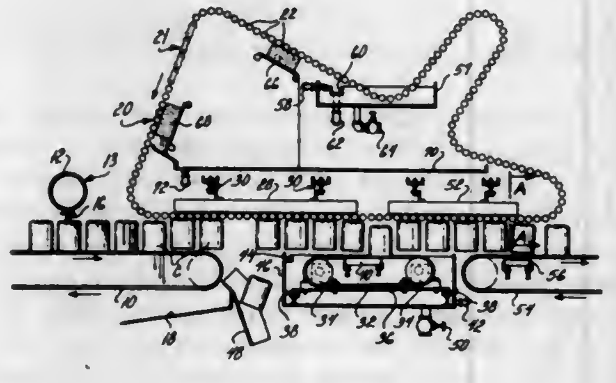
CAN HANDLING EQUIPMENT

Rohinton M. Mirza, Union City, N.J., assignor to Metalwash Machinery Corporation, Elizabeth, N.J.

Filed Jul. 17, 1978, Ser. No. 925,491

Int. Cl.² B05C *9/12, 11/02*

U.S. Cl. 118—58 **16 Claims**



1. Can handling equipment comprising a coating station at which a coating is applied to can bodies, a drying station at which said coating is dried, an overhead transfer conveyor for transferring can bodies from said coating station to said drying station, an excess coating removal station disposed between said coating and drying stations and comprising a receptacle for containing a coating solvent, an endless belt conveyor having an upper, can carrying course, disposed within said receptacle at a level such that the lower portions of can bodies supported thereon are dipped below the level of said solvent and means causing can bodies to fall from said overhead transfer conveyor to said endless belt conveyor and to be returned from said endless belt conveyor to said overhead transfer conveyor.

2. Equipment as claimed in claim 1 wherein means causing said cans to be carried by said overhead transfer conveyor are magnetic means.

4,193,375

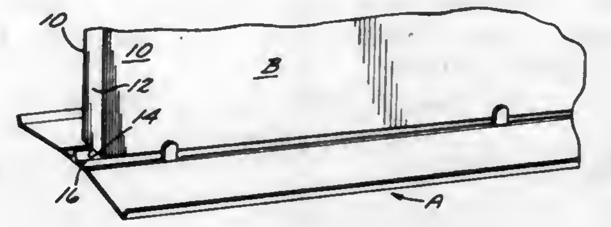
FLOOR PROTECTING DOOR PAINTING SHIELD

Stanley G. Sharland, Garden Grove, and Angelo R. Mecca, Costa Mesa, both of Calif., assignors to Douglas M. Lightfoot

Filed May 30, 1978, Ser. No. 910,676

Int. Cl.² B05C *21/00*

U.S. Cl. 118—504 **4 Claims**



1. A floor protecting door painting shield for use with a pivotally supported wood door that may be pivoted during a painting operation thereon that includes:

a. an elongate member formed of a resilient sheet and of a length at least as great as the width of the door that is to be painted, said elongate member having a transverse cross-section that includes a substantially flat center portion that is of a width at least as great as the thickness of said door, two arms of substantial length that extend downward and outwardly in opposite directions from opposite sides of said center portion at such an angle that when the shield is disposed under a door and the outer edges of said arms are in contact with the floor under said door, said center portion is forced upwardly due to the resiliency of said arms towards pressure contact with the under edge surface of said door, and a pair of lips that extend upwardly from the outer longitudinal edges of said arms to prevent paint spilled on the upper surface of said arms flowing therefrom onto said floor; and

b. first means that extend upwardly from said elongate member to removably engage said door and prevent said elongate member from being disengaged from said door when said door is pivoted relative to said floor during the painting of said door.

4,193,376

DEVELOPER POWDER SUPPLY IN MAGNET BRUSH DEVELOPMENT

Hiroshi Hamaguchi, Sakai, and Tadaaki Kawano, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 23, 1977, Ser. No. 854,212

Claims priority, application Japan, Nov. 29, 1976, 51/145454

Int. Cl.² G03G *13/09*

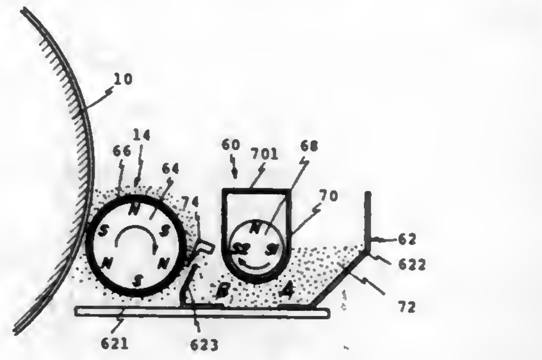
U.S. Cl. 118—658 **6 Claims**

1. In an electrophotographic copying machine wherein an image from a subject sheet is developed by a developing system through the use of developer powder contained in a developer powder reservoir, said developing system comprising:

a magnet brush developing roller for developing said image; and

a developer powder supplier disposed within said developer powder reservoir for supplying the developer powder to said magnet brush developing roller and for stirring said developer powder within the developer powder reservoir, said developer powder supplier including:

a rotatable cylindrical magnet for generating a non-uniform magnetic field therearound and including a surface portion of said rotatable cylindrical magnet which essentially does not have a magnetic field and said portion being



rotatable in response to rotation of said rotatable cylindrical magnet for supplying said developer powder in a swinging movement causing the stirring of said developer powder within said reservoir; and

a stationary non-magnetic sleeve enclosing said rotatable cylindrical magnet.

4,193,377

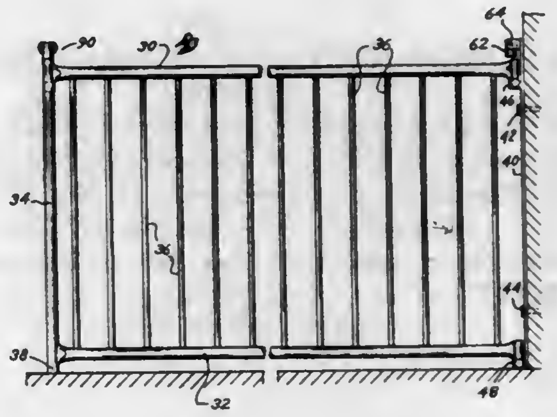
PANEL STRUCTURE FOR ANIMAL PENS

Levon R. Weldy, 911 E. Waterford St., Wakarusa, Ind. 46573

Filed Jun. 2, 1978, Ser. No. 912,102

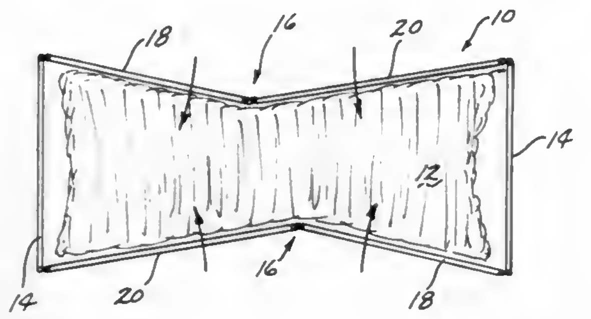
Int. Cl.² A01K *1/02*

U.S. Cl. 119—20 **10 Claims**



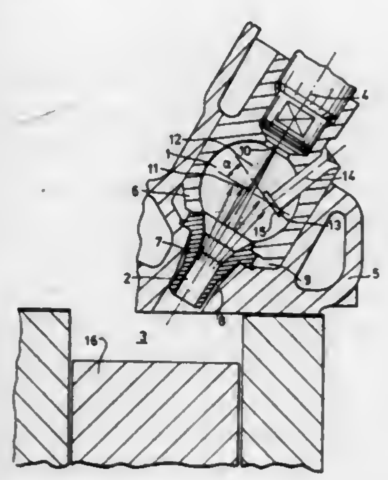
1. A panel structure for animal pens, comprising a panel, a stem connected to one end of the panel near the top thereof and extending downwardly, a stem connected to said one end of the panel near the bottom thereof and extending downwardly, a supporting member adapted to be disposed at said one end of the panel, a fixture mounted on said member near the top of the panel and having a vertical opening therethrough for receiving said first mentioned stem, a fixture mounted on said member near the bottom of the panel and having a vertical opening for receiving the lower stem on the respective end of the panel, a bracket mounted on said member and disposed above one of said fixtures, an elongated element pivoted to said bracket and movable automatically by gravity from a substantially horizontal position to a lowered vertical position above one of the stems on said panel for preventing the lifting of said panel relative to said support member and preventing the removal of said stems from the openings in said fixtures.

4,193,378
FEEDER FOR HAY BALES AND STACKS
Richard L. Harden, R.R. 1, Lineville, Iowa 50147
Continuation of Ser. No. 709,862, Jul. 29, 1976, Pat. No. 4,089,301. This application Oct. 27, 1977, Ser. No. 845,872
The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.
Int. Cl.^{2} A01K *5/00*
U.S. Cl. 119—60 **6 Claims**



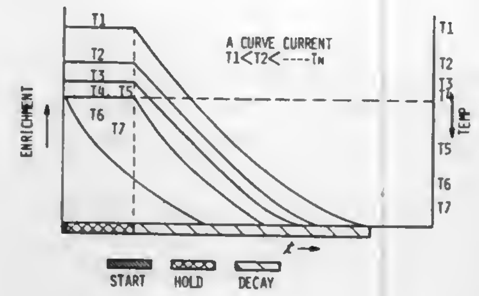
1. An animal adjustable hay feeder comprising an endless enclosure including six pivotally interconnected sections movable in response to feeding animals between a rectangular shape to a pair of triangular shapes,
- said enclosure having opposite end sections and oppositely disposed sides with each side having a pair of sections,
- each pair of side sections include a long and a short section, with the difference in length between said long and short sections being substantially greater than the thickness of said end sections,
- said long sections in said opposite sides being diagonally disposed and said short sections in said opposite sides being diagonally disposed whereby upon said sides being moved towards each other said long sections move into overlapping closely adjacent parallel planes and said short sections move into spaced apart parallel planes thereby forming a pair of spaced apart triangular shaped feeding enclosures.

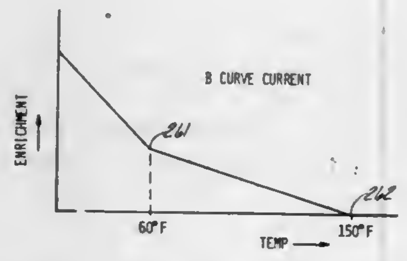
4,193,379
COMPRESSION-IGNITION INTERNAL COMBUSTION ENGINE
Werner Dietrich, Heppenheim, and Oswald Hiemesch, Lampertheim, both of Fed. Rep. of Germany, assignors to Motoren-Werke Mannheim AG, Mannheim, Fed. Rep. of Germany
Filed Jul. 19, 1977, Ser. No. 817,526
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634470
Int. Cl.^{2} F02B *3/00*
U.S. Cl. 123—32 C **9 Claims**



1. A compression-ignition internal combustion engine comprising: at least one combustion cylinder; a piston reciprocably arranged in the cylinder; a mixing chamber; said mixing chamber is axially symmetrical; a duct permanently communicating the cylinder with the mixing chamber; means for injecting fuel into the mixing chamber during compression of combustion air in the cylinder, the fuel being injected in a direction toward the duct and having the form of a narrow core jet surrounded by fine droplets, said duct and said core jet are each coaxial with said mixing chamber such that combustion air displaced into the mixing chamber during the compression flows countercurrently to the core jet; and turbulence-producing means disposed within the chamber in the path of the inflowing displaced air and located so as to be outside of the core jet, producing means, being further defined by a body which is formed with an end face having a thickness of from 15 to 35% of the largest cross section of said chamber normal to the axis thereof on which inflowing air impinges and which lies in the region of a plane normal to the axis of said chamber and passing through the center of said chamber, said end face being formed with a sharp-edged boundary so as to increase the intensity of mixing of the fuel and air.

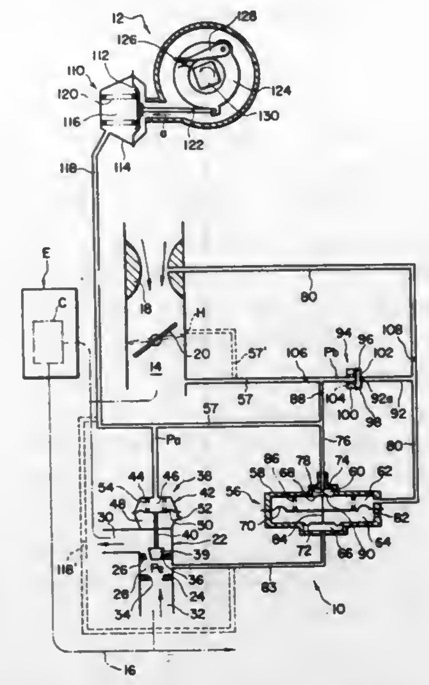
4,193,380
START AND WARM UP FEATURES FOR ELECTRONIC FUEL MANAGEMENT SYSTEMS
Roman O. Marchak, Northville, and William A. Peterson, Jr., Rochester, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.
Filed Jun. 22, 1978, Ser. No. 918,309
Int. Cl.^{2} F02B *3/02*
U.S. Cl. 123—32 EG **10 Claims**





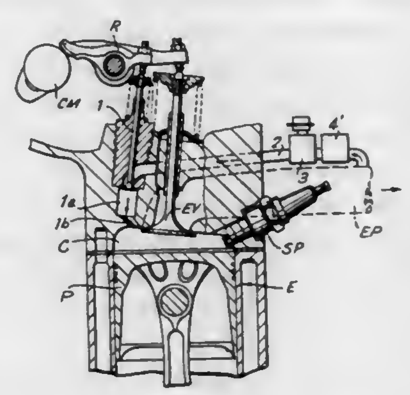
1. An electronic control unit for the management of the air/fuel ratio of an internal combustion engine, said electronic control unit comprising:
- base calibration means for regulating the air/fuel ratio of the engine in response to sensed engine operating parameters indicative of the mass air flow and mass fuel flow inducted into the engine, said base calibration means regulating the air/fuel ratio by sensing one of said mass air flow and said mass fuel flow and calculating the other from a schedule of desired air/fuel ratios;
- warm up means correcting said base calibration means for enriching the air/fuel ratio during warm up periods of the internal combustion engine, including:
- a first warm up current generator means for generating a first warm up current proportional to the desired warm up enrichment which is time and temperature dependent, said first warm up current having a temperature dependent holding level current which remains constant for a predetermined duration, said first warm up current decaying to a minimum value from said holding level after the predetermining duration of the holding level has ended; and
- a second warm up current generator means for generating a second warm up current proportional to the desired warm up enrichment which is an inverse function of temperature, wherein said first and second warm up currents are combined to generate a total warm up current for correcting said base calibration means; and
- load enrichment means for varying said total warm up current signal as a linear function of the load of said internal combustion engine; said load enrichment means increasing said enrichment for increasing loads after a predetermined load is attained up to a maximum enrichment at full loads.

4,193,381
SPARK ADVANCE CONTROL DEVICE FOR ENGINE EQUIPPED WITH EGR SYSTEM
Syunichi Aoyama, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Nov. 17, 1977, Ser. No. 852,533
Claims priority, application Japan, Nov. 19, 1976, 51/139872
Int. Cl.^{2} F02M *25/06*
U.S. Cl. 123—119 A **8 Claims**



1. In an internal combustion engine including a combustion chamber, an intake passageway providing communication between the atmosphere and the combustion chamber, a venturi formed in the intake passageway, a throttle valve rotatably disposed in the intake passageway downstream of the venturi, and an exhaust gas passageway providing communication between the combustion chamber and the atmosphere, the improvement comprising:
- means defining an EGR passageway providing communication between the exhaust gas passageway and the intake passageway for recirculating exhaust gas back to the combustion chamber;
- a diaphragm actuated EGR control valve operatively disposed in said EGR passageway to divide said EGR passageway into an upstream portion connecting to the exhaust gas passageway and a downstream portion connecting to the intake passageway, said EGR control valve being operative to change the pressure of the exhaust gas in the upstream portion of said EGR passageway to control the flow of the recirculated exhaust gas, the diaphragm of said EGR control valve defining a first chamber which communicates through means defining a first passage with the intake passageway to provide the first chamber with an intake vacuum in the intake passageway;
- control means for controlling the intake vacuum to be provided to the first chamber of said EGR control valve to change the exhaust gas pressure in the upstream portion of said EGR passageway in accordance with the exhaust gas pressure in the upstream portion of said EGR passageway and in accordance with venturi vacuum generated at the venturi in the intake passageway,
- said control means including
- means defining a second passage connecting to said first passage and having an inlet port communicating with the atmosphere for bleeding atmospheric air into said second passage to dilute the vacuum in said first chamber,
- a pressure regulating valve located with a head movable relative to said inlet port of said second passage for controlling the flow of atmospheric air bled through said inlet port into said second passage, and
- operating means operatively connected to said pressure regulating valve such that said pressure regulating valve changes the bleed of atmospheric air through said inlet port in response to the change in the vacuum at said venturi and in response to the change in the exhaust gas pressure in the upstream portion of said EGR passageway to change the dilution of the intake vacuum provided to said first chamber,
- said operating means including
- a first flexible diaphragm defining a second chamber communicating with said venturi through means defining a third passage to receive said venturi vacuum therefrom, and
- a second flexible diaphragm defining a third chamber communicating with the upstream portion of EGR passageway to receive the exhaust gas pressure therefrom, said second flexible diaphragm being fixedly connected to said first diaphragm, said first and second diaphragms being operatively connected to said pressure regulating valve such that said pressure regulating valve is operated to change the flow of atmospheric air through said inlet port in response to the change in the venturi vacuum provided in said second chamber and in response to the change in the exhaust gas pressure provided in said third chamber; and
- means for controlling the spark timing of a spark plug disposed in the combustion chamber in accordance with intake vacuum to be provided to the first chamber of said EGR control valve.

4,193,382
STRATIFIED CHARGE TYPE COMBUSTION PROCESS FOR INTERNAL COMBUSTION ENGINE AND INTERNAL COMBUSTION ENGINE UTILIZING SAME
Yujiro Oshima, Ichinomiya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan
Filed Mar. 19, 1976, Ser. No. 668,552
Claims priority, application Japan, Mar. 19, 1975, 50-33912
Int. Cl.^{2} F02M *25/06;* **F02B** *17/00*
U.S. Cl. 123—119 A **62 Claims**



1. A stratified charge type combustion process for an overhead valve type of an internal combustion engine, wherein an inflammable mixture of air and fuel supplied into a combustion chamber of said internal combustion engine is ignited and burned, comprising the steps of
- supplying an inflammable mixture into a peripheral portion of a combustion chamber during an intake stroke in order to make said inflammable mixture stay in said peripheral portion of said combustion chamber,
- supplying exhaust gases into a central portion of said combustion chamber during said intake stroke, independently of said inflammable mixture, in order to make said exhaust gases stay in said central portion of said combustion cham-

ber without diffusing throughout said combustion chamber,

forming a region containing a high concentration of exhaust gases in said central portion of said combustion chamber and another region containing said inflammable mixture charge in a manner to encompass said region therewith within said combustion chamber during a compression stroke of said engine,

thereby providing stratified charges of said one region of said exhaust gases and another region of inflammable mixture charge, and igniting said inflammable mixture charge by ignition means and burning said stratified charges of said exhaust gases and inflammable mixture charge so as to make the combustion proceed from the peripheral portion of said combustion chamber to the central portion thereof.

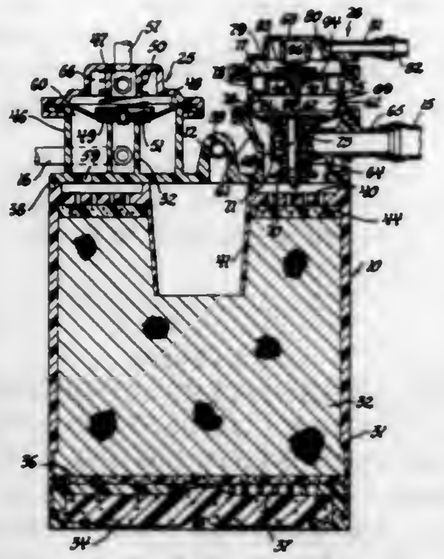
4,193,383
VACUUM OPERATED VALVE ARRANGEMENT

David W. Rogers, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 27, 1978, Ser. No. 928,381

Int. Cl.² F02M *59/00;* **F16K** *31/365;* **B01D** *50/00*

U.S. Cl. 123—136 **9 Claims**



1. In a vacuum operated valve arrangement the combination of a two-position valve movable between two positions, a spring urging said two-position valve toward one of said positions, vacuum responsive means responsive to vacuum from a source at a pressure above a predetermined negative pressure to move said two-position valve against said spring to the other of said positions, and valve means for trapping the vacuum at said vacuum responsive means at a pressure above said predetermined negative pressure to maintain said two-position valve in said other position whenever the pressure at the source drops below said predetermined pressure but releasing the trapped vacuum when the pressure at the source reaches atmospheric pressure to permit said two-position valve to be spring biased to said one position.

5. In an evaporate emission control system for a fuel system of an internal combustion engine, fuel vapor storage means for collecting and storing fuel vapor for later burning in the engine, vapor vent valve means normally biased to open to permit venting of fuel vapor from the fuel system to said storage means when the engine is not running and responsive to engine vacuum only above a predetermined negative pressure to close to prevent such venting when the engine is running, and vacuum trap-release valve means for trapping vacuum at said vent valve means at a pressure above said predetermined negative pressure whenever engine vacuum drops below said predetermined negative pressure to thereby maintain venting prevention during engine running at lower engine vacuum and releasing the trapped vacuum to thereby permit venting when the engine is not running.

4,193,384
FUEL INJECTION SYSTEM

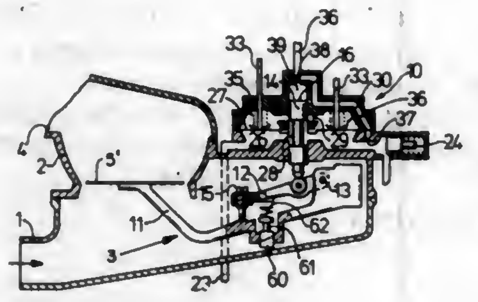
Josef Steiner, Esslingen, and Friedbert Michel, Kornwestheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,737

Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621555

Int. Cl.² F02M *1/10*

U.S. Cl. 123—179 L **4 Claims**



1. A fuel injection system for an internal combustion engine, said system including: air flow rate meter comprising a main operating lever pivotably disposed in the engine's induction tube, a baffle plate connected at the free end of the main operating lever, which moves in the induction tube under the influence of air flow therein, and an auxiliary operating lever; a fuel metering valve assembly including a slide valve, said slide valve being actuated, in the direction of greater opening of the fuel metering valve assembly, as a result of the displacement of said air flow rate meter, said slide valve being subjected to a return force provided by the pressure of hydraulic fluid; said auxiliary operating lever being pivotably connected to the main operating lever and interposed between the main operating lever and the slide valve; and a pressure control valve for altering the pressure of said hydraulic fluid according to engine temperature, the improvement in said system comprising:

an electromagnetic acutator, attached to said main operating lever, said actuator including a movable armature and a spring secured thereon for displacing said slide valve in the direction of greater opening, said spring being so dimensioned that it displaces said slide valve, during engine starting at temperatures below approximately 30° C., while at temperatures above approximately 30° C. the spring force is insufficient to displace said slide valve.

4,193,385
ENGINE STOPPING DEVICE

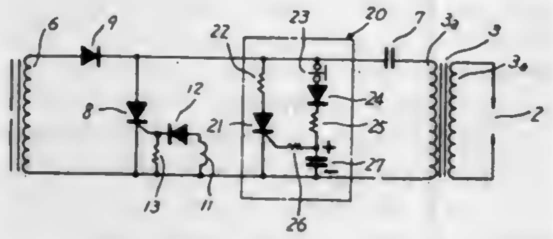
Mitsuo Katsumata; Hiroo Sato, both of Susono; Yoshihiko Ikeda, Shizuoka, and Tomikazu Fujita, Katano, all of Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Aug. 10, 1977, Ser. No. 823,272

Claims priority, application Japan, Aug. 16, 1976, 51-109473[U]; Oct. 5, 1976, 51-133297[U]; Oct. 5, 1976, 51-133298[U]; Oct. 5, 1976, 51-133299[U]; Oct. 5, 1976, 51-133300[U]; Oct. 5, 1976, 51-133301[U]; Oct. 5, 1976, 51-133302[U]

Int. Cl.² F02B *77/08*

U.S. Cl. 123—198 DC **5 Claims**



1. An engine stopping device for stopping an internal combustion engine provided with an ignition system energized by a generator driven by the engine, said stopping device comprising a first thyristor for providing a bypass in shunt with a power source of the ignition system, said thyristor being connected across the ignition power source, a series circuit of a resistor and a capacitor, said series circuit being connected across a gate and cathode of said thyristor so that said capacitor is charged by the voltage drop across the gate and cathode of said thyristor, and a manually-operated self-returning switch which is adapted to couple said ignition power source and the gate of said thyristor so that a trigger signal is supplied to said thyristor when the self-returning switch is operated to stop the engine.

4,193,386
SPEAR GUN

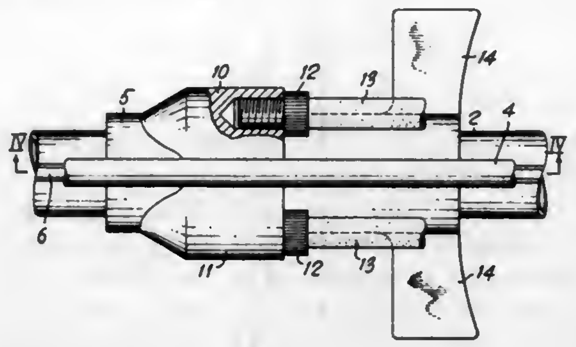
Jean-Francois Rossi, RN 209 Quartier du Bouvillard, Carros, France

Filed Mar. 31, 1978, Ser. No. 892,062

Claims priority, application France, Apr. 1, 1977, 77 10681

Int. Cl.² F41B *7/04*

U.S. Cl. 124—22 **3 Claims**



1. A spear gun comprising
- (a) a rod;
- (b) a sleeve slidably but non-rotatably mounted on said rod;
- (c) guide means for a projectile at the forward end of said rod;
- (d) a hand grip at the rear end of said rod provided with trigger release means for a projectile;
- (e) a resilient means for projecting a projectile;
- (f) means on said sleeve for fastening thereto one end of said resilient means;
- (g) a pair of cross bars extending radially outwardly from said sleeve in a substantially horizontal direction;
- (h) and means for automatically releasably locking said sleeve at any position along said rod, against the action of said resilient means, said locking means comprising
  - (i) an elongated recess in said sleeve in communication with said sleeve interior, said recess having a floor inclined downwardly from its forward end to its rear end and essentially in alignment with the longitudinal axis of the gun; and
  - (ii) a rollable member within said recess freely movable therein from a rear position in which said member is clear of said rod, to a forward position in which said member is caught between said recess floor and said rod, thereby locking said sleeve to said rod.

4,193,387
HIGH EFFICIENCY HEAT RETURN FIREPLACE

Oren W. Cline, R.R. #3, Edwardsville, Ill. 62025

Filed Jul. 29, 1977, Ser. No. 820,304

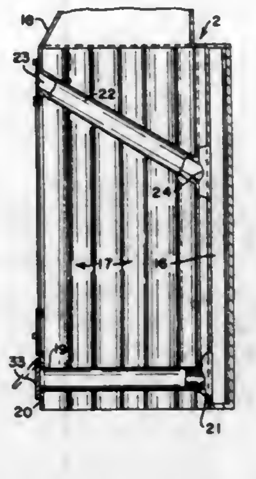
Int. Cl.² F24B *7/00*

U.S. Cl. 126—121 **4 Claims**

1. A fireplace unit, comprising:

an enclosure including a first housing and a second housing, said second housing defining a fire box for consumption of combustible material, said first housing having a first pair of oppositely opposed side walls, a back wall and a bottom wall, all connected to one another, said second housing having a second pair of oppositely opposed side walls, a back wall, and a bottom wall, the side walls, back and bottom walls of said second housing being spaced from, but generally coextensive with the corresponding walls of said first housing to delimit a heat chamber about said fire box, individual ones of the side walls and the bottom wall of said second housing being formed from a single sheet of material having a plurality of undulations formed in it, the undulations having generally alternate peaks and valleys, the undulations of said bottom wall of said second housing defining with the bottom wall of said first housing a plurality of tubular sections extending along the depth of said fire box, said tubular sections communicating with the environment of said fireplace unit on one end and with said heat chamber on another end along the back walls of said first housing and said second housing;

a plurality of pipes extending along an upper end of said fire box and communicating with said heat chamber and the room environment of said fireplace so as to provide an air flow path from said room through said tubular sections to said heat chamber, and from said heat chamber through said plurality of pipes to said room, the heat chamber about said fire box enabling air in said air flow path to be heated from said fire box along the opposed side walls, back wall and bottom wall of said second housing, while said pipe plurality permits heating of air in said air path along the upper end of said fire box;



flue means connected to said fire box to conduct hot gases from said fire box past said plurality of pipes and to the atmosphere;

means for controlling air input to said heat chamber; and

means for controlling air output from said plurality of pipes.

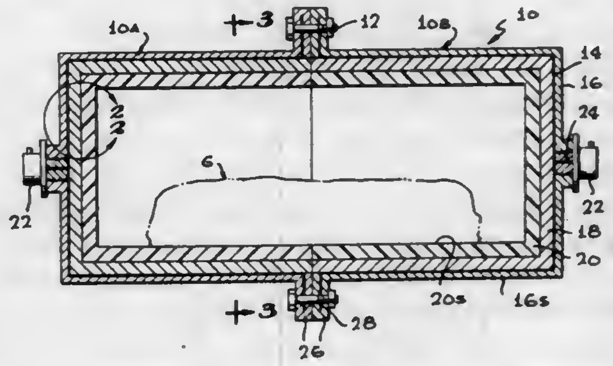
4,193,388
PORTABLE HEATABLE CONTAINER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Lien C. Yang, La Canada, Calif.

Filed Apr. 19, 1978, Ser. No. 897,831

Int. Cl.² F24J *1/00*

U.S. Cl. 126—263 **2 Claims**



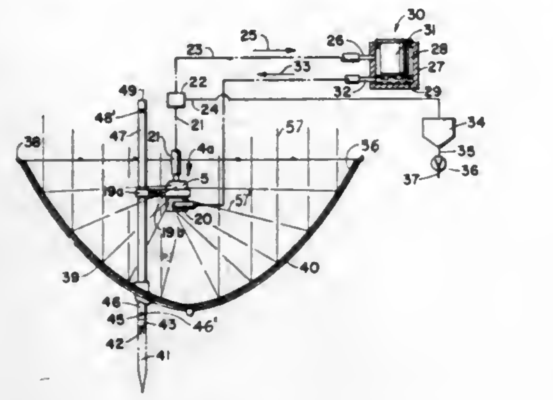
1. A cannister apparatus which can self sterilize its outside surface while avoiding excessive heating of goods within the cannister, comprising:

walls forming a container for surrounding the goods;

- a layer of combustible material surrounding said container walls to lie over substantially all areas of said container; and
- a layer of insulation lying within said container to insulate the goods from heat generated by the combustible material.

4,193,389
SOLAR RADIANT ENERGY UMBRELLA

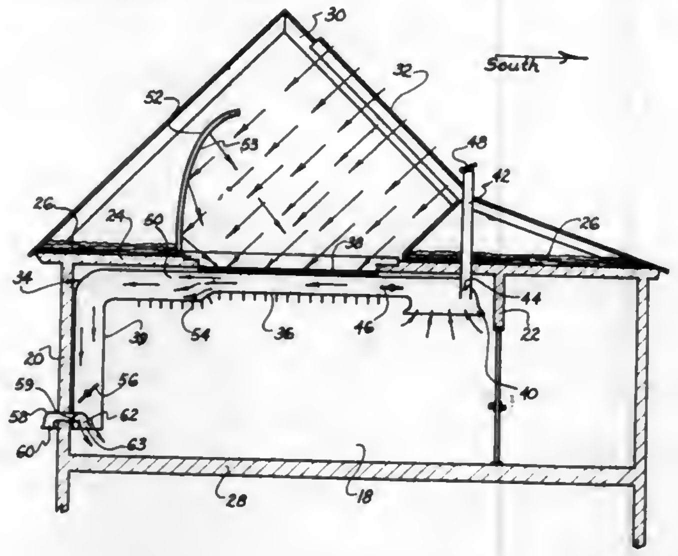
Paul H. Y. Ku, 47-50 59th St./6E, Woodside, N.Y. 11377
Filed Nov. 2, 1977, Ser. No. 847,767
Int. Cl.² F24J ***3/02***
U.S. Cl. 126—451 **8 Claims**



1. A device for harnessing radiant solar energy comprising in combination: an elongated supporting structure, a concave reflective surface adapted to receive a plurality of rays of radiant energy such that reflected rays converge to a substantially common point substantially coincident with space associated with the concave reflective surface, said elongated supporting structure including a first end extending from said reflective surface in juxtaposition to and spaced-from said common point, and an opposite remaining end of said elongated supporting structure extending from an opposite face of the concave reflective surface and adapted for supporting the concave reflective surface in a predetermined energy ray-receiving position; clamping means for clamping a liquid-containable vessel onto said first end of said elongated supporting structure, adapted such that a liquid-containable vessel supported by said clamping means is positioned substantially at said common point; and as the liquid-containable vessel, a liquid-containable vessel of predetermined shape at said common point, the predetermined shape being characterized to maintain liquid adjacent inner wall surfaces of the liquid-containable vessel and within a thickness range below a predetermined maximum layer-thickness such that liquid volume does not exceed volume required for absorbing all energy transmitted through said inner wall surfaces; and a vaporizable liquid within the liquid-containable vessel in an amount of said thickness range below said predetermined maximum layer-thickness of a volume sufficient to absorb substantially all heat energy transmitted through said adjacent inner wall surfaces, whereby excessive energy dilution is avoided and heat energy is obtainable in high concentration within the thickness range, said amount being insufficient to fill a predetermined minimum of substantially enclosed space above liquid level of said liquid sufficiently to provide for collection of vapor vaporized by heat within said liquid, and vapor channeling means for channeling vapor from said enclosed space to a heating vessel into enclosure space thereof, and as said heating vessel, a liquid-containable heating vessel connected to receive vapor by said vapor channeling means, said vapor channeling means including a liquid-trapping means for trapping liquid physically carried by vapor from the enclosed space passing through said vapor channeling means.

4,193,390
SOLAR HEATING SYSTEM

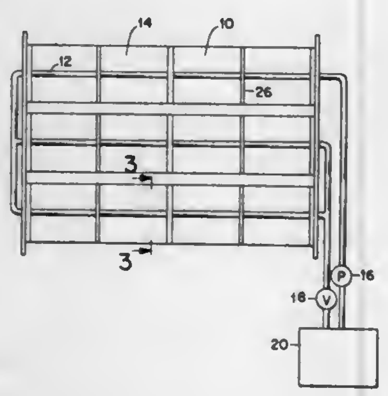
Maurice E. Hatten, 1482 Ashland Ave., Columbus, Ohio 43212
Filed Mar. 1, 1978, Ser. No. 882,409
Int. Cl.² F24J ***3/02***
U.S. Cl. 126—429 **9 Claims**



1. A natural convection solar heating system for a building of the type that includes a colder outside wall, a warmer interior zone, a ceiling for said zone, and a light admitting window, in spaced overlying relationship with said ceiling, said heating system comprising, in combination, an airflow duct means extended along said ceiling and including a horizontally extending heat transfer duct portion provided with a top heat absorbing duct wall exposed to said light admitting window, an expension plenum downstream of said heat absorbing duct wall, a duct inlet communicating with said warmer interior zone for receiving an air-flow therefrom, a downwardly extending duct portion positioned adjacent said colder outside wall and forming a continuation of said heat transfer duct portion, and a duct outlet located at a substantial distance below said duct inlet for delivering the airflow to said zone.

4,193,391
SOLAR HEATING SYSTEM

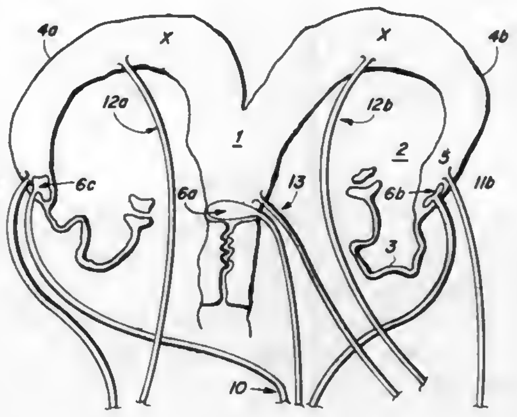
George White, Asheville, N.C., assignor to Whiteline, Inc., Asheville, N.C.
Filed Mar. 9, 1977, Ser. No. 775,871
Int. Cl.² F24J ***3/02***
U.S. Cl. 126—438 **8 Claims**



1. A reflector structure to be used in a solar heat collecting system having a liquid circulating arrangement, including piping, circulating pump and an insulated storage tank wherein the improvement comprises the combination of: a resilient sheet metal reflector plate; said reflector plate having been bent into a substantially parabolic form below the elastic breaking point thereof; said plate having flange portions extending from its longitudinal edges; at least a portion of said flange portions being substantially horizontal when said reflector plate is in its bent position; a pipe for circulating liquid extending along the focal point of said substantially parabolic reflector plate; a transparent cover plate contacting said flange portions and bridging a space between said flange portions to form an enclosure for said pipe; means for securing said transparent cover plate to said flange portions; means holding said resilient sheet metal reflector in said substantially parabolic form and preventing said resilient sheet metal reflector from springing out of said parabolic form.

4,193,392
METHOD FOR REMOVING OVA FROM ANIMALS

Gordon R. Barnett, Cape Rodney Farm, P.O. Box 95, Leigh, Warkworth, New Zealand
Filed Sep. 23, 1977, Ser. No. 836,106
Int. Cl.² A61B ***19/00;*** **A61M** ***25/00***
U.S. Cl. 128—1 R **1 Claim**

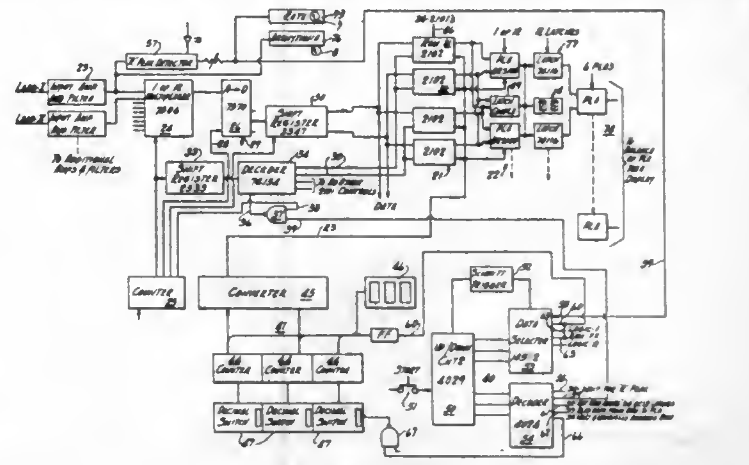


1. A method of repeatedly flushing ova from the uterus of an animal including the steps of:
- (a) surgically implanting in the uterus at least one inlet cannula extending from the uterus to the exterior of the animal;
- (b) surgically implanting in the uterus at least one outlet cannula extending from the uterus to the exterior of the animal;
- (c) surgically implanting in a lower region of the uterus an inflatable diaphragm, and surgically implanting an inflation tube passing from the inflatable diaphragm to the exterior of the animal;
- (d) inflating said diaphragm prior to inserting a flushing fluid through said inlet cannula and withdrawing said flushing fluid through said outlet cannula to thereby withdraw an ovum or ova from the uterus;
- (e) deflating said diaphragm after flushing has been completed; and
- (f) repeating steps (d) and (e) each time it is desired to flush an ovum or ova from the úterus.

4,193,393
DIAGNOSTIC APPARATUS

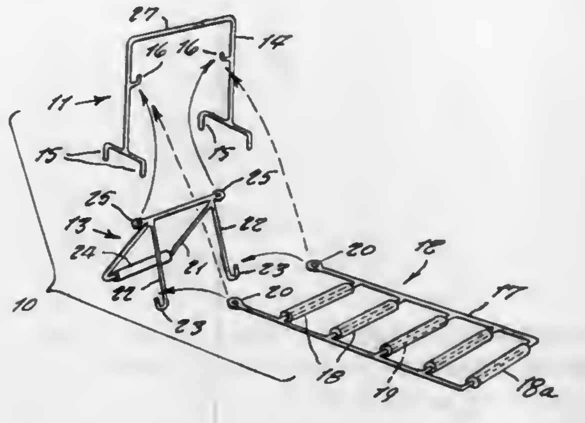
Kenneth J. Schlager, Elm Grove, Wis., assignor to International Bio-Medical Industries, Newport Beach, Calif.
Filed Aug. 25, 1977, Ser. No. 827,600
Int. Cl.² A61B ***5/04***
U.S. Cl. 128—710 **20 Claims**

1. A diagnostic instrument having means to receive a waveform signal and adapted to drive a display means, comprising input means for sequentially sampling said waveform signal in time spaced samples and having digitizing means for digitizing said waveform samples into a series of time spaced digital samples which uniquely represent the characteristic of such waveform, storage means connected to said input means and having address means for recording said waveform samples as the series of time spaced digital signals, a preset referenced means defining a series of selected positions on the waveform as predetermined combinations of said sampled waveform characteristics and time intervals and having an output means, and address means connecting the storage means to the referenced means and providing an encoded indication output on said output means of normality and abnormality based on the waveform combination and the preset reference, said output means adapted to be connected to said display means and provide a display of said indication output for diagnosis of said waveform.



4,193,394
BACK WALKER AND MASSAGE DEVICE

Billy Everett, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007
Filed Aug. 18, 1978, Ser. No. 935,019
Int. Cl.² A61H ***15/00***
U.S. Cl. 128—57 **5 Claims**



1. A back walker, comprising in combination, a stand, a roller rack and a crank, said rack selectively being supported either directly from said stand or from said crank which is supported on said stand, and said rack including a plurality of parallel, spaced-apart rollers rotatable on bearings on bars slidable on channels of said rack, and spring means allowing change of distances between said rollers during an exercise.

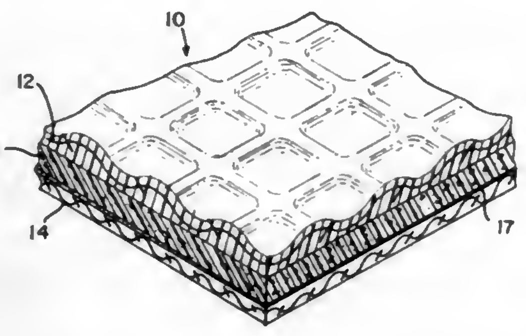
4,193,395
REMOVABLE CAST FOR INTERMEDIATE PHASE ORTHOPEDIC REHABILITATION

William A. Gruber, 18 Maple Rd., Wellesley, Mass. 02181
Filed Aug. 24, 1978, Ser. No. 936,620
Int. Cl.² A61F ***5/04***
U.S. Cl. 128—90 **21 Claims**

1. A removable orthoedic cast, comprising: a sectional cast structure made up of two cast sections joined together by a common cast portion, said cast sections terminating in respective edges which may be positioned adjacent one another to enclose said cast structure about a body portion to be supported, said common cast portion being sufficiently flexible to permit said sections to be spread apart at their edges for removal of said cast structure from the body portion, said cast structure being composed of an outer layer of thermoplastic casing material, an inner layer of lining material, and an intermediate layer of padding material bonded to said outer and inner layers.

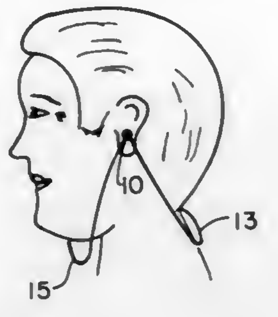
11. An orthopedic cast structure, comprising: a layer of

casting material composed of reinforced epsilon polycapriolactone; a layer of lining material; and an intermediate layer of padding material composed of medium to high density closed cell elastic sheet foam bonded to said casting material layer and said lining material layer.



4,193,396
PAIRED EARPLUG CONSTRUCTION

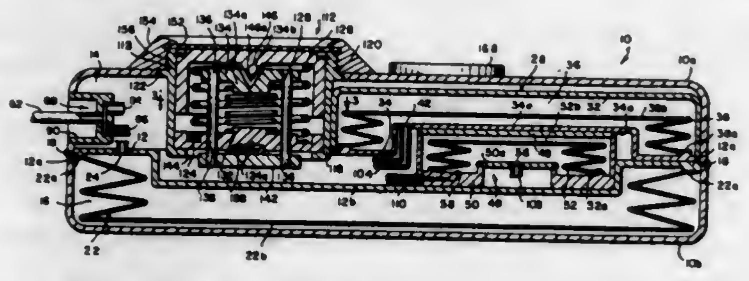
Albert R. Wacker, Zionsville, Ind., assignor to E-A-R Corporation, Indianapolis, Ind.
Filed Apr. 28, 1978, Ser. No. 900,982
Int. Cl.^{2} A61F *11/02*
U.S. Cl. 128—152 **7 Claims**



1. An earplug construction comprising a pair of earplugs composed of a plasticized thermoplastic polymeric foam tethered together in spaced array by means of at least one flexible cord element composed of a plasticized thermoplastic material, fixation of said cord element to said earplugs being by ultrasonic weldments of the ends of said cord element to the polymeric foam material of said earplugs.

4,193,397
INFUSION APPARATUS AND METHOD

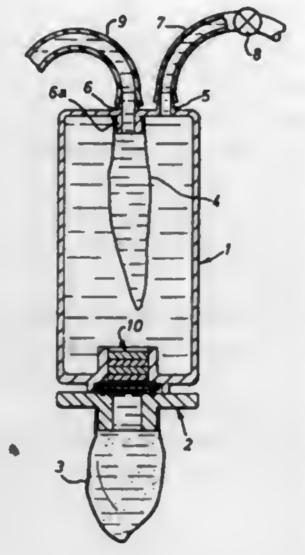
Elton M. Tucker, Medfield, and Frank R. Prosl, Duxbury, both of Mass., assignors to Metal Bellows Corporation, Sharon, Mass.
Continuation-in-part of Ser. No. 856,558, Dec. 1, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,756
Int. Cl.^{2} A61M *31/00*
U.S. Cl. 128—207.19 **15 Claims**



1. Nonelectrical implantable infusion apparatus comprising:
A. a housing;
B. a first collapsible infusate reservoir having an outlet and positioned inside the housing;
C. means for collapsing said first reservoir to expel infusate from its said outlet;
D. a second collapsible infusate reservoir having an outlet and positioned in the housing;
E. means for collapsing said second reservoir to expel infusate from its said outlet;
F. mixing means inside the housing and having a selected volume;
G. a first flow path having a first flow restriction characteristic connected betweem said first reservoir and said mixing means;
H. a second flow path having a second flow restriction characteristic connected between the said second reservoir and the mixing means;
I. a normally closed valve connected in said second flow path so that infusate flows from said second reservoir to the mixing means only when said valve is opened, the infusates from said first and second reservoirs, when said valve is opened, supplementing one another in the mixing means to produce an integrated dosage, and
J. a fluid outlet from said mixing means for conducting said integrated dosage to an infusion site.

4,193,398
FLUID DISPLACEMENT

Bernard H. Refson, Truro, England, assignor to Watson-Marlow Limited, Falmouth, England
Filed May 25, 1978, Ser. No. 909,453
Int. Cl.^{2} F24C *15/10, 15/22*
U.S. Cl. 128—213 R **12 Claims**



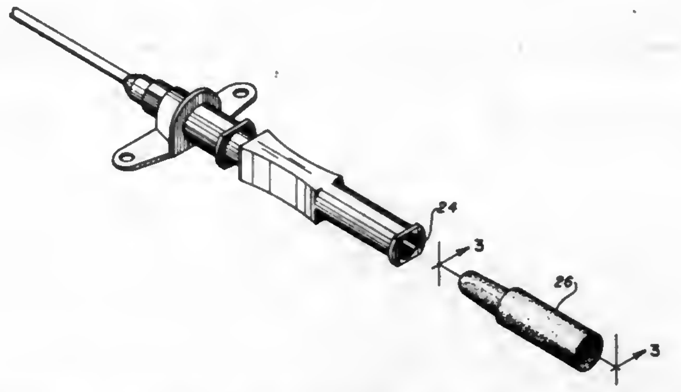
1. An extracorporeal osmotic pump comprising a first chamber for containing an osmotically stronger solution; a second chamber for containing an osmotically weaker solution or pure solvent; a duct located between the said chambers placing them in communication; a semi-permeable membrane across said duct located nearer the said second chamber; and at least one layer of liquid-permeable porous material across said duct located nearer the said first chamber, whereby it acts as a flow-control means.

4,193,399
SELF VENTING PLUG FOR VENOUS ENTRY UNIT

Thomas P. Robinson, Dallas, Tex., assignor to Travenol Laboratories, Inc., Dallas, Tex.
Filed Jul. 8, 1977, Ser. No. 813,890
Int. Cl.^{2} P61M *5/00*
U.S. Cl. 128—214.4 **11 Claims**

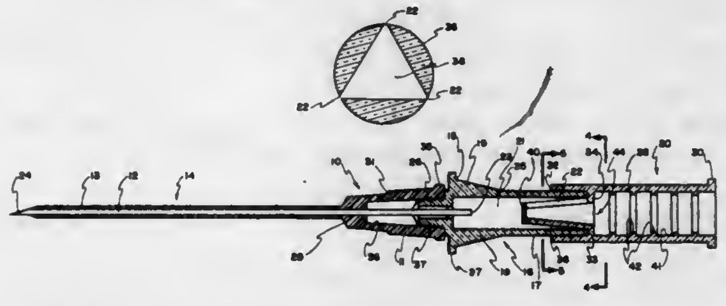
1. In a venous entry unit having a hollow needle and a hollow flashback chamber proximal of the needle in fluid communication therewith for obtaining a visual indication of blood vessel entry by flow of blood into the chamber, the chamber having a proximal opening, the improvement comprising:

a self venting plug removably seated in the proximal opening of the flashback chamber and sealingly engaging the inside surface of the flashback chamber adjacent the opening, said plug having as its major portion an integrally formed body of solid porous plastic material with pores therein of predetermined size to provide a flow path for air from the chamber outwardly through the plug while preventing the flow of blood outwardly from said chamber through said plug.



4,193,400
INTRAVENOUS NEEDLE ASSEMBLY WITH AIR BLEED PLUG

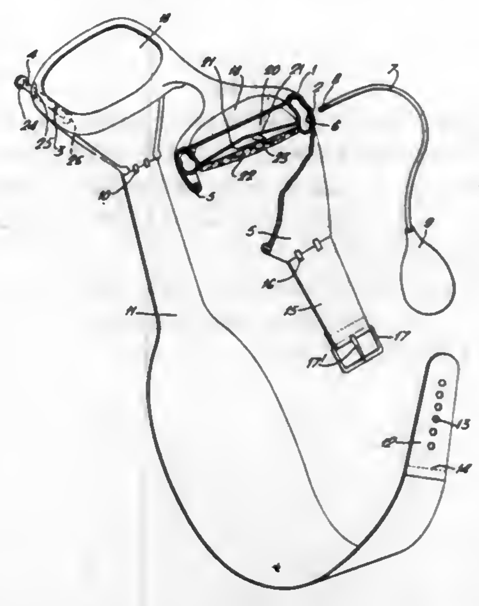
James C. Loveless, and Darrel R. Palmer, both of Sandy, Utah, assignors to The Deseret Company, Sandy, Utah
Filed Jun. 16, 1978, Ser. No. 916,657
Int. Cl. A61M *5/00*
U.S. Cl. 128—214.4 **10 Claims**



1. A catheter placement assembly comprising:
a needle for penetrating the vein of a patient;
a catheter tube to be placed in the vein and left indwelling after venipuncture;
a flashback chamber connected to the trailing end of the needle, said flashback chamber having an opening at its trailing end;
an air bleeder plug formed of a substantially shape-retaining biologically inert material removably secured to the trailing end of the flashback chamber, the plug comprising means substantially closing the trailing end opening of the flashback chamber, said closing means comprising sidewall means in close at least partial contiguous relation with the trailing end of the flashback chamber and continuously open narrow elongated slit means disposed in said sidewall means in continuous gaseous communication across and interposed between the flashback chamber and the atmosphere directly adjacent and closely spaced from the flashback chamber, the elongation of the narrow slit means embodying a substantial longitudinal dimension accommodating egress passage of air to the atmosphere without deflection of the slit means while substantially preventing passage of egress blood through the slit means.

4,193,401
ORBITAL COMPRESSION CHAMBER FOR THE CURE OF INTERNAL WOUNDS AND INFLAMMATION OF THE OCULAR APPARATUS AND CENTRAL NERVOUS SYSTEM

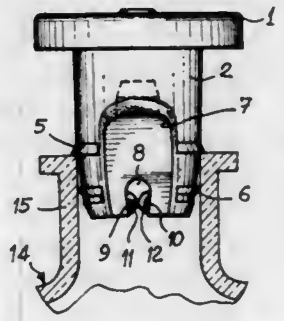
Rosolino Marinello, Via Leonardo da Vinci, 4 -Mantova, Italy
Filed Mar. 9, 1978, Ser. No. 885,046
Claims priority, application Italy, Mar. 17, 1977, 84917 A/77
Int. Cl.^{2} A61M *7/00;* **A61F** *13/12*
U.S. Cl. 128—260 **6 Claims**



1. An appliance for the cure of internal injuries, wounds, or inflammation to the ocular organs and the central nervous system of a patient comprising:
(a) a hollow spectacles framework provided with an ocular opening having a pair of membranes thereacross, one of said membranes being flexible and facing the ocular side of said framework, said membranes and said framework defining a pressure chamber communicating with the interior of said hollow spectacles framework;
(b) means for connecting a source of pressure to said hollow framework to provide pressure to the pressure chamber;
(c) a dressing impregnated with a medicament affixed to said flexible membrane on its ocular side; and
(d) a mounting means for securing said framework against the orbital cavity of said patient.

4,193,402
BOTTLE STOPPER AND METHOD OF USING SAID STOPPER

Jean-Jacques Rumpler, 1 Allee Marie-Louis, Montsoult, France (95360)
Filed Feb. 2, 1979, Ser. No. 8,885
Claims priority, application France, Feb. 8, 1978, 78 03554
Int. Cl.^{2} B65D *51/16*
U.S. Cl. 128—272 **13 Claims**



1. A bottle stopper comprising a cap and a skirt portion extending from said cap and adapted to be received in a neck portion of a bottle, said skirt member comprising:
(a) a flange arranged on said skirt member;
(b) a first slit extending from the lower end of said skirt,

which is spaced from said cap, to a point on said skirt between said lower end and said cap; and

(c) a second slit extending from the lower end of said skirt to a point on said skirt between said flange and said lower end; said second slit being bordered by first and second edges, each of said first and second edges comprising a protuberance, each of said protuberances being adapted to abut one another and space each of said first and second edges when said stopper is inserted in a bottle such that said skirt is inserted within said bottle to a level below said flange.

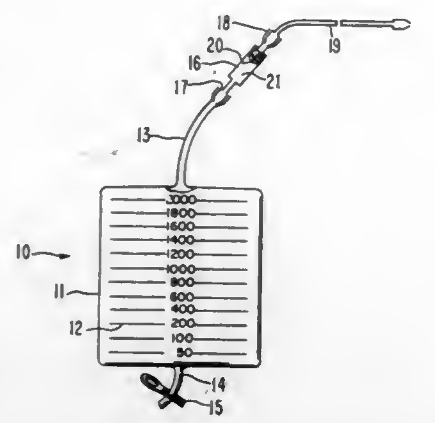
4,193,403
PATIENT-CARE APPARATUS HOUSING DEVICE FOR CONTROLLING PRESENCE OF PATHOGENS

Jimmy B. Langston, San Jose; Harold Leeper, Mountain View, and Patrick S. Wong, Palo Alto, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Jun. 9, 1977, Ser. No. 804,962

Int. Cl.² A61F *5/44*

U.S. Cl. 128—275 **1 Claim**



1. A patient-care apparatus consisting essentially of, in combination:

(a) a container for receiving and storing a biological fluid;

(b) an inlet port on the container for establishing fluid passage between the interior and the exterior of the container;

(c) an exit port on the container for draining fluid from the container, said port equipped with a clamp for controlling the amount of fluid drained from the container;

(d) a volumetric scale on the container for indicating the volume of fluid in the container;

(e) an exterior housing provided with an internal space for holding a dispensing device, said housing having an exit end adapted for receiving a catheter and in communication through a catheter with the inlet port of the container, and an inlet end adapted for receiving a catheter and in communication with a source of fluid through a catheter;

(f) a self-actuated, one-way valve in the exterior housing at its fluid receiving end for preventing fluid and pathogens from leaving the housing and entering the catheter that communicates with the source of fluid; and

(g) a dispensing device in the exterior housing, said dispensing device consisting of a body sized, shaped and adapted for placement in the space in the housing and having at least one surface for imbibing moisture and dispensing a depolymerized polymer, the body formed of a polymeric material containing paraformaldehyde selected from the group of general formulas consisting of $(CH_2O)_n$ wherein n is 3 and $HO(CH_2O)_mH$ wherein m is from 3 to 125, said paraformaldehyde being converted therein in the presence of moisture imbibed by the body to formaldehyde, which formaldehyde, is dispensed by the surface of the device into the housing for preventing the migration of pathogens into the fluid source, and also is dispensed into the container during use for controlling the presence of pathogens in the container.

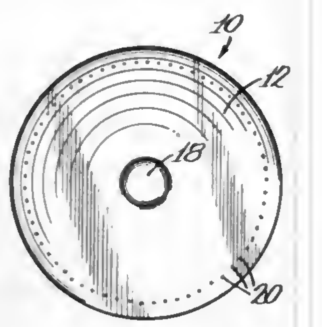
4,193,404
STRETCHABLE AND CONFORMABLE PAD

Virginia L. Repke, Oak Forest, and Robert C. Shepherd, Oak Lawn, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 725,764, Sep. 23, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 896,841

Int. Cl.² A61M *1/00*

U.S. Cl. 128—280 **23 Claims**



1. A disposable nursing pad in the form of a stretchable and conformable body having an inner surface adapted to conform to the contour of a human breast and an outer surface adapted to be received within a brassiere which comprises a fibrous, fabric facing layer defining said inner surface, an absorbent layer substantially coextensive with said facing layer, a moisture-impermeable backing overlying said absorbent layer, and securement means for binding said facing layer, said absorbent layer and said backing layer forming a unitary pad, at least one of said layers being constructed from an extensible compressively shrunk fabric web providing stretchability and conformability, said securement means being defined by a plurality of securement zones spaced from one another circumferentially about the periphery of the pad.

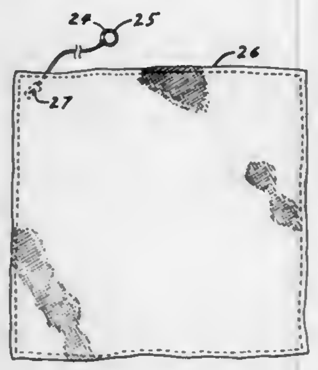
4,193,405
DETECTABLE MEDICAL AND SURGICAL IMPLEMENTS

Michael Abels, Miami, Fla., assignor to Micro Tec Instrumentation Inc., Miami, Fla.

Division of Ser. No. 712,883, Aug. 9, 1976, Pat. No. 4,114,601. This application Jun. 9, 1978, Ser. No. 914,615

Int. Cl.² A61F *13/00*

U.S. Cl. 128—296 **2 Claims**



1. A surgical sponge detectable within the human body comprising of surgical absorbant material incorporating a transponder capable of non-linear mixing of two or more radiofrequency signals impinging thereon, to thereby generate and reradiate a higher order product frequency; directing two or more radiofrequency signals towards the portion of the human body to be investigated; placing receiving means in the vicinity of said investigated portion to detect and visually or audibly indicate the presence of any reradiated higher order product frequency signals emanating from the investigated area; the existence of said reradiated signals indicating that said surgical sponge is within the human body.

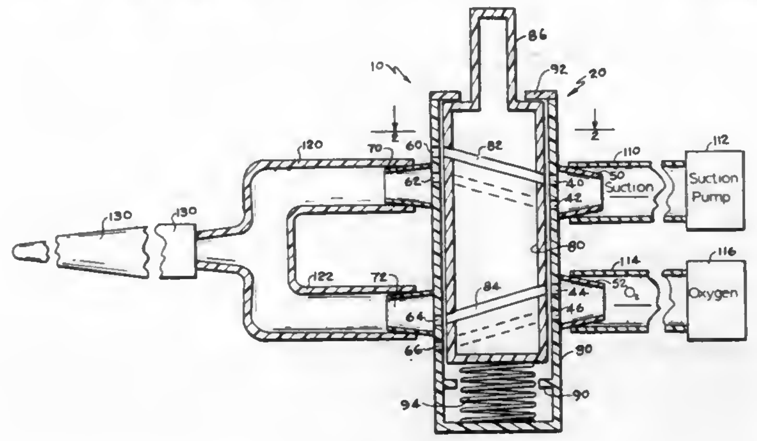
4,193,406
DUAL PURPOSE CATHETER

Walter J. Jinotti, 10 Scott St., New Brunswick, N.J. 08901

Filed Sep. 18, 1978, Ser. No. 943,387

Int. Cl.² A61M *25/00*

U.S. Cl. 128—204.18 **9 Claims**



1. A dual-purpose catheter comprising

an elongated tube having an insertion end and a valve connection end, said insertion end adapted for coupling to the human body and said valve connection end adapted for alternate connection to a source of suction or a source of oxygen.

adjustable valve means connected to said valve connection end and disposed between said tube and said sources of suction and oxygen,

said valve means including therein first and second through-passage means, said first through-passage means being adapted to be disposed (1) in a first position in which it is connected between said suction source and said tube and (2) in a second position in which it is connected between the environment and said suction source, and, when said first through-passage means is in said first position, said second through-passage means is in a first position in which it is connected between the atmosphere and said source of oxygen and, when said first through-passage means is in said second position, said second through-passage means is connected between said tube and said source of oxygen.

4,193,407
PACIFIER

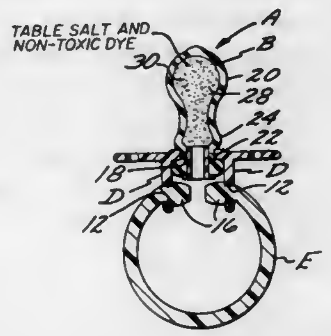
Ove Edmark, Sandviken, Sweden, assignor to Per A. Ljungberg, Corona Del Mar, Calif.

Filed Jan. 9, 1978, Ser. No. 867,776

Claims priority, application Sweden, Oct. 28, 1977, 7712191

Int. Cl.² A61J *17/00*

U.S. Cl. 128—360 **10 Claims**



1. A baby pacifier of the type that includes a resilient nipple having a bulb that develops into a tubular neck, a rigid disc that has said nipple projecting from one side thereof, a handle, and means for supporting said handle from an opposite side of said disc, said pacifier being characterized by said nipple having a non-toxic material therein having a sufficiently disagreeable taste that a baby will reject said pacifier when the baby bites through said nipple and said non-toxic material mixes with the saliva of the baby.

4,193,408
ENDODONTIC THERAPY INSTRUMENT

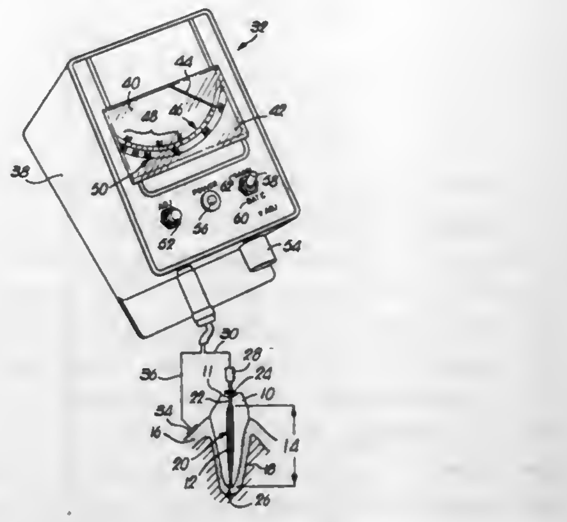
Shoji Fujino, Kita Ooizumi, Japan, assignor to Shirota Electric Furnace Material Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 751,381, Dec. 17, 1976, abandoned. This application Jun. 7, 1978, Ser. No. 913,361

Claims prlority, application Japan, Mar. 5, 1976, 51/26057

Int. Cl.² A61B *5/05*

U.S. Cl. 128—734 **10 Claims**



1. A device for measuring penetration into a root canal of a tooth, including:

an electrically conductive probe;

means operably coupled with said probe for producing an electrical measurement signal corresponding to the penetration of said probe in said canal;

meter means for measuring the penetration of said probe in said said canal,

said meter means including an electrically responsive, shiftable indicator, and first and second graduated scales operatively associated with said indicator for respectively displaying the penetration of said probe in first and second ranges in said canal,

said second range of penetration being smaller than said first range thereof,

said second scale having the graduations thereof expanded whereby to enhance the accuracy of displaying the penetration of said probe in said second range thereof; and

electrical circuit means operably coupled with said signal producing means and with said meter means, for operating on said measurement signal to selectively generate and apply to said meter means first and second control signals respectively corresponding to the penetration of said probe in said first and second ranges thereof in said canal,

said first control signal being operable for producing shifting of said indicator in one direction to display the penetration of said probe in said first range thereof on said first scale,

said second control signal being operable for producing shifting of said indicator in another direction to display the penetration of said probe in said second range thereof on said second scale.

4,193,409

METHOD AND APPARATUS FOR REGULATING THE PERMEABILITY OF WRAPPING MATERIAL FOR ROD-SHAPED SMOKERS' PRODUCTS

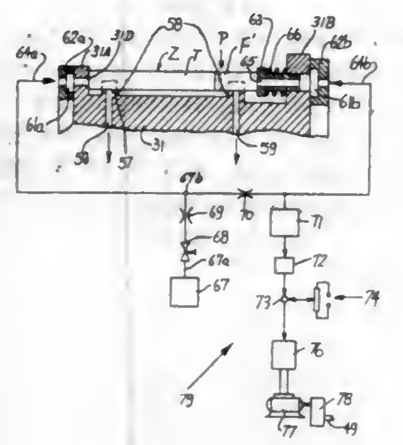
Günter Wahle, Reinbek; Uwe Heitmann, Schwarzenbek; Erwin Oesterling, Hamburg, and Rolf Dahlgrün, Schwarzenbek, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. Kg., Hamburg, Fed. Rep. of Germany

Filed Oct. 11, 1977, Ser. No. 841,108

Claims priority, application Luxembourg, Oct. 13, 1976, 75989

Int. Cl.^{2} A24C *5/32*

U.S. Cl. 131—23 R **23 Claims**



11. In a machine for the production and/or processing of rod-shaped articles which constitute or form part of smokers' products and wherein a wrapper surrounds at least one rod-like filler, the combination of means for transporting a succession of wrappers along a predetermined path; adjustable perforating means adjacent to a portion of said path and being operative to make holes in successive wrappers; means for pneumatically monitoring the permeability of successive wrappers downstream of said perforating means, including means for generating first signals denoting at least the permeability of those portions of successive wrappers which are provided with holes in said portion of said path; means for furnishing a reference signal denoting the desired permeability of wrappers; means for comparing said first signals with said reference signal, including means for transmitting third signals denoting the differences between said first signals and said reference signal; and means for adjusting said perforating means in response to said third signals so as to increase the combined area of holes in the wrappers when the desired permeability exceeds the monitored permeability and vice versa.

4,193,410

APPARATUS FOR MAKING VENTILATED CIGARETTES

Robert E. Williams, Deptford, England, and Clifford R. Marritt, Richmond, Va., assignors to Molins, Limited, England

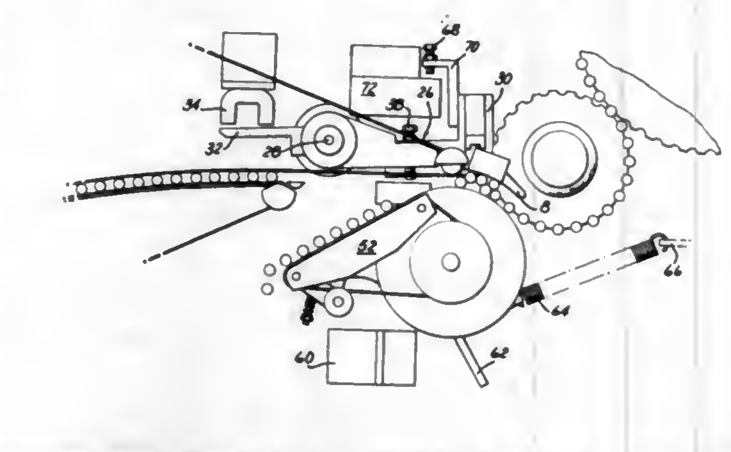
Filed Feb. 22, 1978, Ser. No. 880,104

Claims priority, application United Kingdom, Feb. 22, 1977, 7300/77

Int. Cl.^{2} A24C *5/60*

U.S. Cl. 131—170 R **10 Claims**

1. A cigarette perforating device comprising a pair of facing working members normally spaced apart by a distance equal to the diameter of a cigarette, means for feeding cigarettes into the space between the members, drive means for moving one of the members relative to the other so as to roll cigarettes between them, perforating means projecting from the surface of one of the members and arranged to puncture the wrappers of cigarettes as they are rolled between the members, movable mounting means for one of the said members, said mounting means being so arranged that the said one member can move away from its operative position; and releasable retaining means which normally retains the member in its operative position but responds to an increase in pressure, above a predetermined level, due to an incorrect feeding of the cigarettes by releasing the member so that it disengages from the cigarettes.



4,193,411

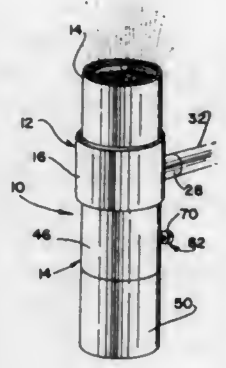
POWER-OPERATED SMOKING DEVICE

Ted V. Faris, Westminster, and Sanford W. French, IV, Costa Mesa, both of Calif., assignors to Raymond W. Reneau, Westminster, Calif.

Filed Jun. 13, 1977, Ser. No. 805,961

Int. Cl.^{2} A24F *1/10, 47/00*

U.S. Cl. 131—171 R **4 Claims**



1. A smoking device providing a regulated continuous flow of smoke therethrough, the device comprising:

a housing having an upper and lower section;

a bowl to receive tobacco therrein, said bowl being formed in said upper section of said housing;

an air chamber juxtaposed to said bowl and formed in said upper section to communicate with said bowl;

a cup member removably disposed in said bowl, said cup having a plurality of openings formed therein adjacent said air chamber in order to receive tobacco therein;

an outlet passage formed in said upper section and positioned to operably communicate with said air chamber;

fan means mounted in said housing and disposed to provide an air flow from said bowl and a discharge through said outlet passage, said means including a fan positioned within said air chamber and an electric motor supported with said housing;

a power supply means electrically connected to said fan means;

wherein said power supply comprises at least one battery mounted in said lower section of said housing;

and wherein said lower section thereof comprises an upper body member and a lower body member, said body members being removably attached to each other;

switch means electrically connected between said fan means and said power supply means, whereby said fan means is selectively operated to provide air flow through said smoking device.

4,193,412

ADDITIVE FOR SMOKING TOBACCO PRODUCTS, FILTER ELEMENTS THEREOF AND PROCESS FOR THE PREPARATION THEREOF

Ernst Heim, Denzlingen; Dieter Imbery, Emmendingen, and Bruno Kliemann, Freiburg im Breisgau, all of Fed. Rep. of Germany, assignors to Rhodia AG, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,400

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658479

Int. Cl.^{2} A24B *15/00, 15/027*

U.S. Cl. 131—264 **16 Claims**

1. An additive for smoking tobacco products and their filter elements, which is a member selected from the group consisting of (1) an intimate mixture of at least two highly dispersed metal oxides having a large specific surface area; (2) an intimate mixture of at least two highly dispersed metal oxyhydrates having a large specific surface area; (3) an intimate mixture of at least one highly dispersed metal oxide and at least one metal oxyhydrate both having a large specific surface area; (4) an intimate mixture of different forms of the same metal oxide; (5) an intimate mixture of different forms of the same metal oxyhydrate, the mixture exhibiting liquid-like properties anomalous for a mixture of solids, and specific properties of the mixture, such as the bulk density, the surface area, the flowability and the absorption capacity for gases and vapors not representing an additive value of the proportions of the mixing components, and the absorption capacity for toxic substances in the tobacco smoke being synergistically increased.

4,193,413

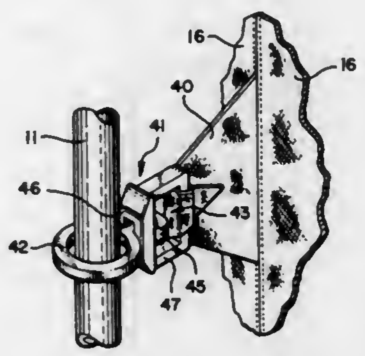
DISENGAGING CONNECTOR FOR ATTACHING FABRIC TO A TUBULAR SUPPORT MEMBER

Paul J. Watts, Sandy; Lynn D. Crawford, and Philip T. Nichols, both of Salt Lake City, all of Utah, assignors to American Ecosystems, Inc., Salt Lake City, Utah

Filed Oct. 10, 1978, Ser. No. 950,257

Int. Cl.^{2} A45F *1/04, 1/18*

U.S. Cl. 135—2 **7 Claims**



1. In a collapsible shelter of the umbrella-tent type wherein the shelter includes a foldable frame and a cover of sheet material affixed to the frame, with said frame comprising a plurality of support members for supporting said cover when said frame is erected, and means for slidably attaching intermediate portions of said cover to said support members, the improvement wherein said means for slidably attaching said cover to said support member comprises:

- a ring member circumscribing its respective support member and adapted for sliding movement along said support member;
- a stem projecting substantially radially outwardly from the ring member, said stem having a substantially square cross section;
- a pair of studs at the end of said stem extending from mutually opposite sides of said stem in a direction substantially perpendicular thereto;
- a locking connector made of a resilient material, said connector including a face portion having a thickness no greater than the length of said stem between said ring and said lugs, said face having a substantially rectangular opening therein, said opening having a width substantially the same as the thickness of said stem and a height sufficient so that the end of said stem with said lugs thereon can be inserted through said opening, said connector also having means for attaching the appropriate portion of said cover thereto,
- whereby said connector with cover attached can be releasably locked in engagement with said ring member by inserting the end of said stem with the lugs thereon through the opening in said connector and then turning the connector one-quarter turn to snap the stem into locking engagement therewith.

4,193,414

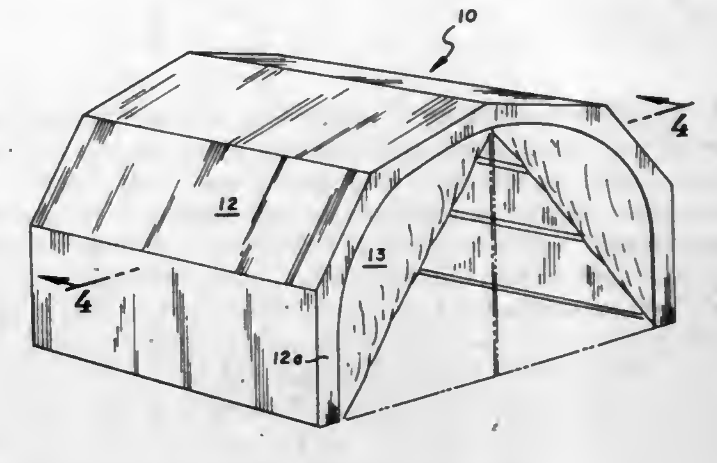
COLLAPSIBLE AND PORTABLE STRUCTURE

John E. Trochman, Delano, Delano, Minn. 55328

Filed Jun. 26, 1978, Ser. No. 918,959

Int. Cl.^{2} A45F *1/16*

U.S. Cl. 135—4 R **6 Claims**



1. A collapsible shelter structure including:

a. a front and rear foldable frame structure

b. a plurality of longitudinally extending connective members extending between and connecting said front and rear frame structures;

c. each of said front and rear foldable frame structures including a pair of support contacting, link sections and at least one scissor link structure connected to said support contacting links;

d. each of said support contacting links including a first link member having one end thereof arranged for engagement with a support surface and having an upper end and including a scissor link having a first end thereof pivotally connected to said first link in spaced relation to said upper end of said first link member, said scissor link providing a pivotal attachment means in spaced relation to said first end and spaced from the other end thereof;

e. each of said scissor link structures including a pair of link members arranged in side-by-side relation and pivotally connected to one another generally centrally thereof and having a first pivotal connective end arranged for and pivotally connected to said upper end of said first link member and a second pivotal connection arranged in spaced relation to the other end thereof for connection to said support contacting link;

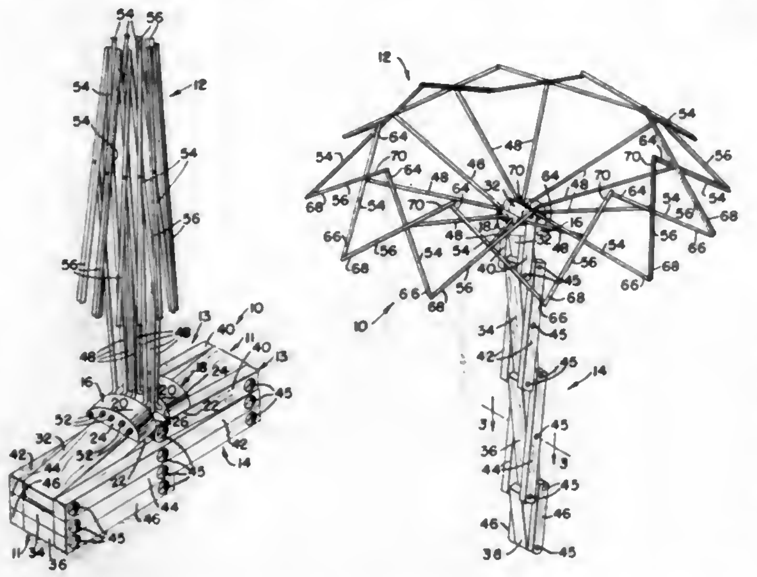
f. a covering material extending over and connected to the longitudinal struts of the structure;

g. a plurality of scissor link structures providing said front and rear foldable frame structures; and,

h. each of said links of said scissor structures including an extending portion from said second pivotal connection and the end of said link, said extending portion being arranged in abutting relation to the next adjacent link of the next adjacent scissor structure.

4,193,415
UMBRELLA CANOPY FRAME AND STAFF CONSTRUCTION

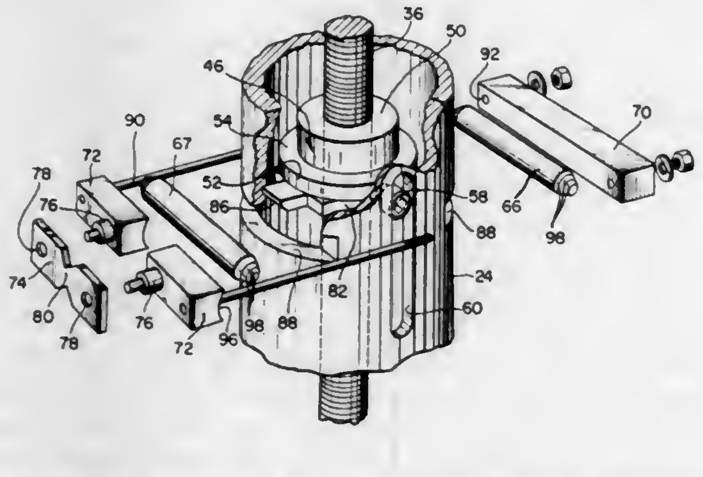
Terry Hermanson, c/o Mr. Christmas Incorporated, 41 Madison Ave., New York, N.Y. 10010
Filed Jan. 9, 1979, Ser. No. 2,060
Int. Cl.^{2} A45B *19/00*
U.S. Cl. 135—25 R **12 Claims**



1. Umbrella construction comprising first and second hub members in combination with canopy frame means and staff means, said hub members being spaced-apart from each other on opposite sides of said staff means independent of each other, and provided with a plurality of holes, said staff means including two series of links forming a lazy-tong device adapted to fold together into closed condition and to unfold into opened condition, said two series of links each having an upper link unit pivotally connected to the upper link unit of the other at the upper ends thereof when the staff means is in opened condition, one of said hub members being secured to the upper link unit of one of said series of links adjacent the upper end thereof, the other of said hub members being secured to the upper link unit of the other of said series of links adjacent the upper end thereof and on a side of said staff means opposite from said one of said hub members, said canopy frame means including a circumferentially extending series of pairs of ribs, each rib of said pairs being pivotally connected to the other at a point intermediate the opposite ends thereof, a plurality of spokes each having a radially inner end extending in a separate one of said holes of said hub members and a radially outer end pivotally secured to a separate pair of said ribs at said intermediate point thereof.

4,193,416
THERMAL RESPONSIVE VALVE

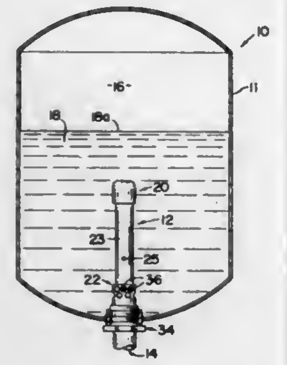
Richard S. Slawson, Barrington, R.I., assignor to G. W. Dahl Company, Inc., Bristol, R.I.
Filed Jan. 30, 1978, Ser. No. 873,737
Int. Cl.^{2} F16K *17/38*
U.S. Cl. 137—75 **17 Claims**



1. A thermal responsive valve comprising a valve body having a flow path therthrough, a member within said body movable between a first position wherein said flow path is open and a second position wherein said flow path is closed, means normally urging said movable member towards said second position, restraining means associated with said member for normally holding said member in said first position, said restraining means including movable means and retaining means for said movable means, said movable means normally positioned in blocking contact with said member so as to prevent movement thereof by said urging means, said retaining means having separate spaced portions normally in contact with said movable means and a separable link interconnecting said spaced portions and under tension thereby, at least one of said spaced portions mounted for outward deflection with respect to said movable means and movable to a second and further spaced apart position, whereby when said link separates due to a predetermined external condition, said spaced portions move to said second position thereof thus permitting said movable means to move with respect to said member and out of holding relationship therewith which in turn enables said urging means to move said member to said second position, said movable means comprising at least one elongated pin having a portion thereof disposed in lateral contact with and in the travel path of said member, said urging means continually urging said member against said pin, the movement of said spaced portions to said second position thereof adapted to release said pin so that said member can force such pin out of its travel path.

4,193,417
FLUID CHECK VALVE DEVICE

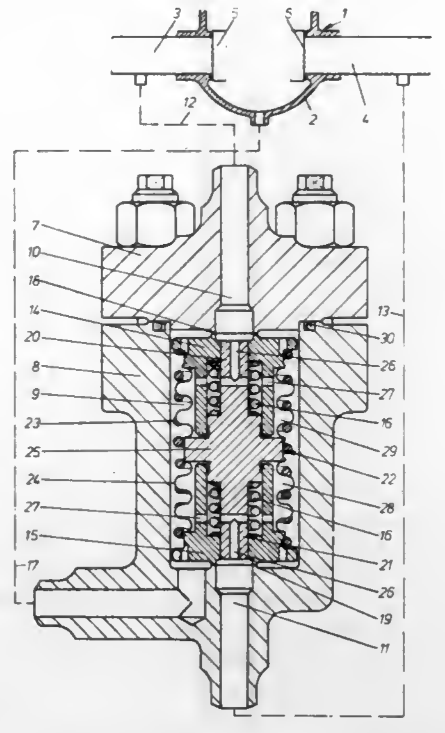
George F. Bowman, Apartado Postal 4141, San Jose, Costa Rica, and Kenneth A. Prescher, 834 E. River Dr., Tampa, Fla. 33617
Filed May 5, 1978, Ser. No. 903,067
Int. Cl.^{2} F04F *1/06*
U.S. Cl. 137—192 **5 Claims**



1. A fluid check valve device for use with a gas precharged fluid storage tank; said fluid check valve device comprising a hollow valve body operatively mounted within the precharged fluid storage tank, said hollow valve body having a float chamber formed therein and a lower check valve assembly disposed at the lower end thereof, said hollow valve body having at least one antivortex aperture formed on the lower portion thereof above said lower check valve assembly, said lower check valve assembly comprising a lower valve seat and lower float member disposed to move between a sealed and unsealed position relative to said lower valve seat, said lower float member moving from said unsealed position to said sealed position when the fluid level within the gas precharged fluid storage tank approaches said antivortex aperture, said hollow valve body further includes at least one float control aperture formed on the intermediate portion thereof in spaced relation relative to said antivortex aperture to control the rate of vertical movement of said lower float member in response to the fluid level within the gas precharged fluid storage tank such that as fluid is drawn from the precharged fluid storage tank said lower float member remains in the uppermost portion of said hollow valve body until the fluid level reaches said float control aperture causing said lower float member to rapidly accelerate downward to said sealed position.

4,193,418
ARRANGEMENT FOR PREVENTING EXCESS PRESSURE IN THE HOUSING OF SHUT-OFF VALVES

Walter Meyer, Duisburg, Fed. Rep. of Germany, assignor to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany
Filed Sep. 2, 1977, Ser. No. 830,313
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1976, 2651986
Int. Cl.^{2} F16K *17/02*
U.S. Cl. 137—118 **6 Claims**



1. An arrangement for the prevention of excess pressure comprising: an independent chamber; a shut-off valve with varying pressure load, said shut-off valve having a housing, two pipe sockets connected to said housing and facing each other and shut-off elements for closing said two pipe sockets; said independent chamber having two facing openings; pressure lines connecting said two facing openings to said pipe sockets; seal means and elastic elements for closing said openings; said elastic elements comprising bellow means; said seal means being connected gas-tight by said bellow means; said chamber having a space located outside said bellow means; an auxiliary pressure line discharging into said chamber space, said auxiliary pressure line being connected to the interior of said housing of said shut-off valve between said two pipe sockets; spring means; said seal means having elements urged apart by said spring means; and a center section located between elements of said seal means and connected to said seal means by said bellow means.

4,193,419
CONNECTOR APPARATUS FOR PRESSURIZED LINES

Alex Pellerito, 17740 NW. 17th Ave., Miami, Fla. 33054
Filed Apr. 4, 1978, Ser. No. 893,483
Int. Cl.^{2} F16K *13/00;* **F16L** *55/10*
U.S. Cl. 137—322 **3 Claims**

1. For a passageway, a normally closed valve device sized to companionately mate with and to be installed in the passageway, said valve device comprising:

a valve mechanism including a valve stem having a terminal end and a valve body, said stem normally extending axially away from the body, said valve mechanism being effective on axial movement of the stem toward the body to open a fluid flow path through the valve mechanism, nipple means to hold the valve mechanism in closing relation of the passageway;

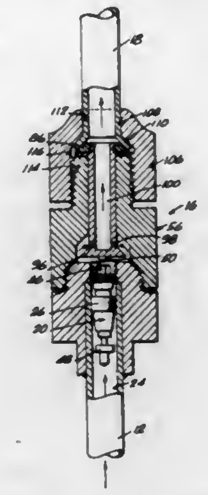
a fitting with a first axial through opening and said fitting having a first end and a second end, said fitting including means to connect to the means to hold the valve mechanism in closing relation of the passageway; and

said first end of said fitting being in fluid tight engagement with said means to hold; said fitting having an internal axially extending operating recess having a first end and a second end and extending axially away from said first end of said fitting, and said operating recess being about said stem;

said terminal end of said stem being normally at a first predetermined valve closed axial location within the recess spaced axially from the second recess end and movable in a direction axially away from the second end of the recess toward the first end of the recess to a second predetermined valve open axial location;

a valve operator of an axial length longer than the axial length of the through opening of the fitting from the recess to the second end of the fitting; said valve operator having a first end zone and a second end zone and comprising a tubular length defining a through passageway between the ends said first end zone defines a valve means, and said recess being in fluid communication with said through passageway;

said tubular length being sized for axial slidable movement in said axial through opening of said fitting and the first end zone of the valve operator being at all times in use in the recess between the second end of the recess and the first predetermined axial location and adjacent the terminal end of said valve stem, and the second end zone of the valve operator being at all times in use exterior of the second end of the fitting;



means slidably captivating the first end zone of the valve operator in the recess for sliding axial movement of the first end zone of the valve operator in the recess between the first and second recess ends to move the valve stem toward the valve body axially from said first predetermined axial location to said second predetermined axial location to open the valve mechanism, said recess and said axial through passageway being in fluid communication with one another when said second end zone of said valve operator is between said first axial location and said second axial location;

stop means captivating and limiting axial movement of the first end zone of the valve operator to a range of movement in said recess including the axial distance between said first and said second predetermined axial locations and said stop means being defined by the second end of said fitting and said second end zone;

guard means and orienting means on the second end of the fitting to mate with an axially movable valve operating member to apply axial force to move the operator toward the valve stem to open the valve mechanism opening a flowthrough path through said opening which is normally closed by said valve mechanism;

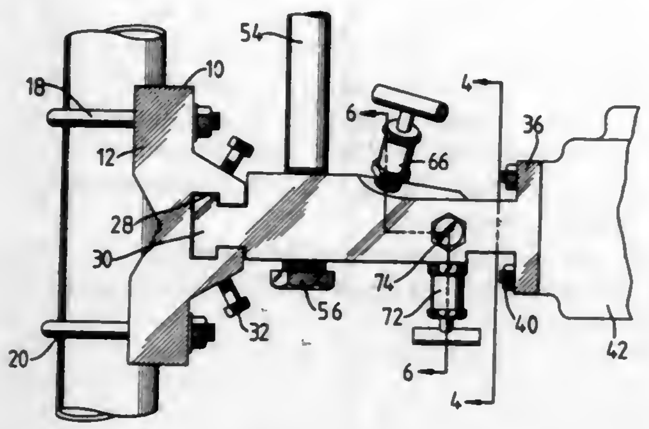
seal means between said fitting and said means to hold the valve mechanism in closing relation of the opening;

seal means are provided about said valve operator between said second end zone and the second end of said fitting; and

pipe means included in said device and said means to hold is fixedly secured to said pipe means and said passageway comprises an opening in said pipe means.

4,193,420
DIFFERENTIAL PRESSURE TRANSDUCER PROCESS MOUNTING SUPPORT AND MANIFOLD

John E. Hewson, 12226 Perthshire, Houston, Tex. 77024
Filed Mar. 2, 1978, Ser. No. 882,580
Int. Cl.² F16K *11/20*
U.S. Cl. 137—356 23 Claims



1. A mounting support for securing differential pressure sensing apparatus to a substantially rigid structure comprising:

a base member having attachment means for securing said base member to said substantially rigid structure, said base member defining mounting support connection means;

a support body having first and second connection means formed thereon, said first connection means receiving said differential pressure sensing apparatus;

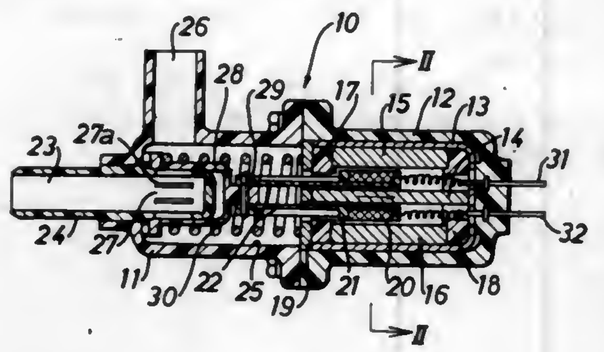
said second connection means being adapted to establish structural interconnection with said mounting support connection means for connecting said support body to said base member; and

said support body defining high and low range pressure transmission passage means for communication with high and low range pressure transmission passages of said differential pressure sensing apparatus and providing sole structural support for said differential pressure sensing apparatus.

4,193,421
ELECTROMAGNETICALLY OPERATED VALVE UNIT

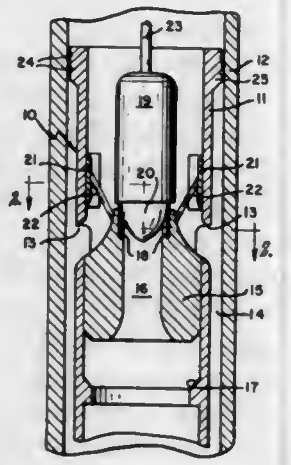
Naoji Sakakibara, Chiryu, and Nobuyuki Hashimoto, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed May 10, 1978, Ser. No. 904,371
Claims priority, application Japan, May 12, 1977, 52-60240
Int. Cl.² F16K *31/08*
U.S. Cl. 137—625.33 2 Claims

1. An electromagnetically operated valve unit comprising a housing having inlet and outlet ports; valve means disposed within said housing for controlling the quantity of fluid flow from said inlet port to said outlet port; and a moving-coil linear motor associated with said valve means for operating said valve means in response to an input current from an electric control circuit; wherein said valve means comprises a tubular valve seat united with said inlet port and having an axial slot to permit the flow of fluid therethrough, and a cup-shaped valve member slidable on said tubular valve seat to control the opening area of said axial slot and being loaded by a spring to normally close said axial slot, and wherein said linear motor comprises an armature of magnetic material secured within said housing and having opposed inner faces thereon, a pair of permanent magnets secured to each of the opposed inner faces of said armature and having the same polarity of the opposed inner faces thereof, a core of magnetic material positioned between said magnets and aligned with said inlet port, a bobbin of non-magnetic material movable on said magnetic core and operatively connected with said valve member, and a moving-coil wound on said bobbin and connected to said electric control circuit, said moving-coil producing electro-magnetic flux across magnetic flux of said magnets to provide a linear force on said bobbin.



4,193,422
ANNULAR FLOW DIVERTER VALVE

Robert L. Rider, Walkersville, Md., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Nov. 24, 1978, Ser. No. 963,654
Int. Cl.² F16K *11/02*
U.S. Cl. 137—625.49 4 Claims



1. A valve for splitting a stream of fluid in a tube having a plurality of ports therein into two streams, one of which continues through the tube and the other of which continues outside the tube and for controlling the volume ratio of the outflowing streams comprising:

a toroidal baffle disposed in sliding engagement with the interior of said tube downstream of said ports,

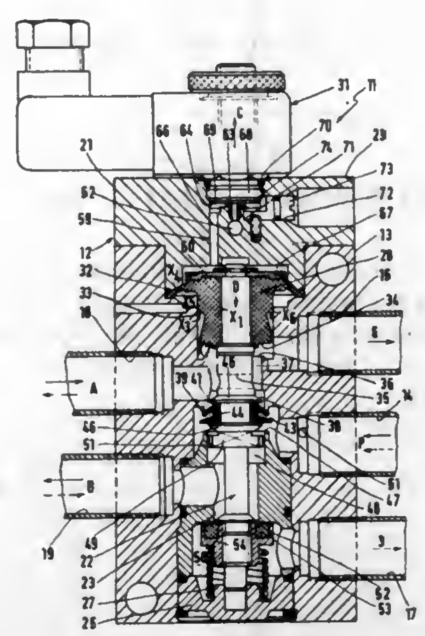
means for closing said ports operable with and attached to said baffle,

a servomotor having a bullet-shaped plug thereon disposed in the tube with the plug facing the toroidal baffle, and

drive rods connecting the servomotor to the toroidal baffle, the servomotor being adapted to move the baffle into mating engagement with the bullet-shaped plug and simultaneously move the gates away from the ports in the tube and to move the baffle away from the bullet-shaped plug and simultaneously move the gates across the ports in the tube.

4,193,423
MULTIWAY VALVE

Kurt Stoll, Lenzhalde 72, Esslingen, and Gerhard Hihn, Schurwaldstrasse 7, Berkheim, both of Fed. Rep. of Germany
Continuation of Ser. No. 744,271, Nov. 23, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 913,099
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1975, 2553250
Int. Cl.² F16K *11/02, 31/165, 31/02*
U.S. Cl. 137—625.64 14 Claims



1. A 5-way, 2-working position valve which includes:

means forming an elongated valve body having a longitudinal central valve bore therein, said valve body also including five axially spaced tapped bores opening into said valve bore, said five tapped bores including two consumer bores, one pressure supply bore and two pressure venting bores, a first consumer bore and a first venting bore comprising a first pair of tapped bores, said first consumer bore and said one pressure supply bore comprising a second pair of tapped bores, said one pressure supply bore and the second consumer bore comprising a third pair of tapped bores, and said second consumer bore and the second venting bore comprising a fourth pair of tapped bores, said valve body also including means forming a first valve seat located between said first pair of said tapped bores, means forming a second valve seat located between said second pair of said tapped bores, means forming a third valve seat located between said third pair of said tapped bores, and means forming a fourth valve seat located between said fourth pair of said tapped bores, said second and third valve seats being axially separated along the longitudinal dimension of said central bore a predetermined distance;

means forming an axially adjustable regulating member positioned for movement along the longitudinal dimension of said central bore from a first working position to a second working position;

means forming a single diaphragm sealingly attached to a first end of said regulating member, said diaphragm including a portion forming an elastically deformable annular radial flex portion which is fixedly positioned in contact with said valve body so as to suspend said diaphragm in said valve bore and which defines a chamber between said first end of said regulating member and said valve body, and a portion which forms both an elastically deformable annular axial projection having a sealing lip extending radially so as to slidingly contact said valve bore and a radial end face, said end face of said single diaphragm being engageable with the means forming said first valve seat when said regulating member is in its second working position to prevent fluid communication between said first pair of said tapped bores;

means forming a further seal member attached near the second end of said regulating member, said seal member having a radial end face engageable with said means forming the fourth valve seat to prevent fluid communication between said fourth pair of said tapped bores when said regulating member is in its first working position;

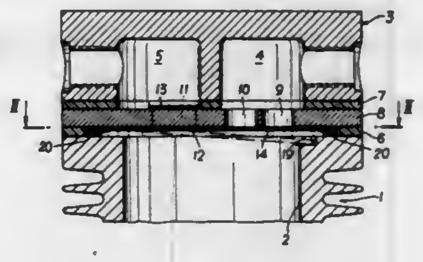
a Vee-shaped double-seat sealing member attached to said regulating member at point separated from said annular axial projection portion of said single diaphragm and between said second and third valve seat-forming means, said double seat sealing member comprising a ring gasket having sealing lips around its radial outer periphery extending from a root portion, the sealing lips being elastically deformable in the directions of axial movement of the regulating member;

said Vee-shaped double-seat sealing member having an axial length equal to about said predetermined distance between said second and third valve seat-forming means so that said sealing lips will be capable of simultaneously contacting both said means forming said second valve seat and said means forming said third valve seat when said regulating member is between said first and second working positions, the respective lips of said sealing member contacting respective second or third valve seat-forming means and thus alternatively preventing fluid communication between said second pair of tapped bores or said third pair of tapped bores when said regulating member is respectively in its first and second working positions; and

spring means positioned between said second end of said regulating member and said valve body for biasing said regulating member into its first working position, said second working position being established against the biasing of said spring by pressure medium flowing into said chamber between said first end of said regulating member and said valve body.

4,193,424
LAMINA VALVE FOR RECIPROCATING COMPRESSORS

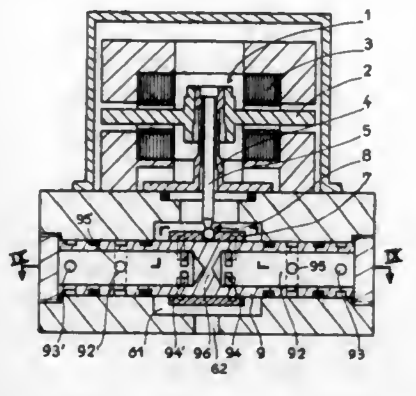
Hans Hrabal, Vienna, Austria, assignor to ENFO Grundlagen Forschungs AG, Aargau, Switzerland
Filed Oct. 4, 1977, Ser. No. 839,189
Claims priority, application Austria, Oct. 6, 1976, 7423/76
Int. Cl.² F16K *15/14*
U.S. Cl. 137—855 3 Claims



1. In a compressor having a cylinder containing a cylinder bore, a cylinder head, a seating plate disposed between said cylinder and said head and having at least one port therein, a gasket of a first predetermined thickness disposed between said plate and said cylinder, and a lamina valve between said plate and said cylinder and lying inwardly of said gasket, said valve bearing against a surface of said seating plate for closing said port and being movable away from said port for opening same, the improvement wherein said valve comprises a lamina plate having opposed ends bridging said cylinder bore and being clamped in place at said ends, said lamina plate having a second predetermined thickness less than said first thickness and having resilient projections at at least one of said ends, said projections extending away from said surface of said seating plate and toward said cylinder, said projections having a thickness at least equal to said first thickness of said gasket and bearing against an end surface of said cylinder, said surfaces lying

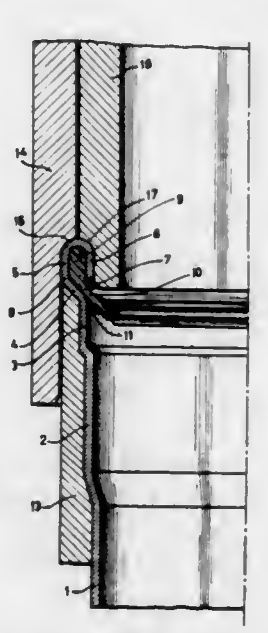
parallel to one another, whereby said projections compensate for any difference in thickness between said lamina plate and said gasket and further prevent any shifting of said lamina plate relative to said seating plate when said seating plate is clamped down over said cylinder.

4,193,425
ELECTROHYDRAULIC SERVO-VALVE
Geoffroy de la Bouillerie, Paris, France, assignor to Societe d'Optique, Precision Electronique et Mecanique-Sopelem, Paris, France
Filed Jul. 26, 1977, Ser. No. 819,614
Claims priority, application France, Aug. 20, 1976, 76 25314
Int. Cl.² F16K *31/10*
U.S. Cl. 137—861 **11 Claims**



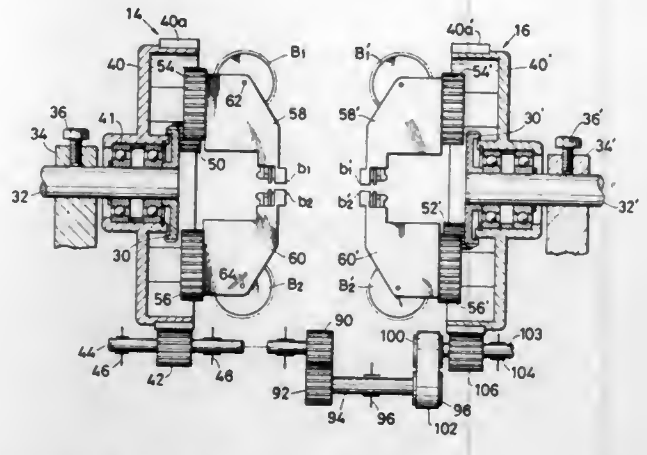
1. An electrohydraulic servo-valve comprising a body with a torque motor comprising: permanent magnet means associated with coils for receiving control currents and a movable armature connected to a spring attached to said body and to a spindle which oscillates in a plane; a liner fixed in said body having an outer cylindrical bearing surface and an inner duct for a fluid and at least one opening enabling a substantially radial flow of fluid from said inner duct; a sleeve having a cylindrical bore engaged with minimum clearance on said outer bearing surface of said liner, for controlling the effective area of said opening and an articulation connecting said sleeve to the end of said spindle to thereby oscillate said sleeve.

4,193,426
PLASTIC SOCKET PIPE PART
Adolf Irmer, Geeste, Fed. Rep. of Germany, assignor to Wavin B.V., Zwolle, Netherlands
Filed Apr. 21, 1978, Ser. No. 898,688
Int. Cl.² F16L *47/00*
U.S. Cl. 138—109 **3 Claims**



1. A plastic pipe socket part comprising a first widening, a second widening adjoining the first widening and having an internal diameter exceeding the diameter of the first widening, wherein the second widening extends into a third widening having substantially the same wall thickness but having an internal diameter exceeding the diameter of the second widening, an end part of said third widening being rebent in spaced but substantially parallel relation to an intermediate part thereof, sealing means of substantially J-configuration in cross section and having a head portion disposed in said space, and a sealing sleeve portion extending in the direction of said second widening, whereby to form a retaining ring, the terminus of the rebent portion being disposed in proximity to the plastic pipe socket part a distance less than the thickness of the head of said sealing means whereby to retain said head portion in said space while permitting said sealing sleeve portion to extend therefrom.

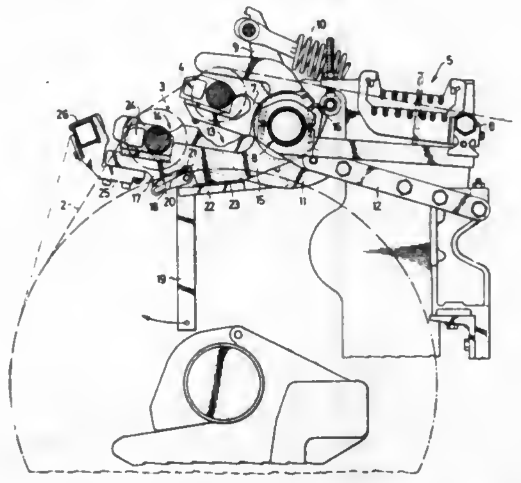
4,193,427
SELVAGE FORMING SYSTEM OF SHUTTLELESS LOOM
Akio Shindo, Fuchu, and Shinji Mizunaga, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Japan
Filed Jul. 20, 1978, Ser. No. 926,238
Int. Cl.² D03D *47/40*
U.S. Cl. 139—54 **8 Claims**



1. A selvage forming system of a shuttleless loom, forming first and second rigid selvage structures at both sides of a fabric, respectively, comprising:
- first binding means for binding the first end portions of weft yarns constituting the first selvage structure of the fabric by twisting a first pair of binding yarns having inherent twist, putting the first end portion of each weft yarn between the two binding yarns;
- second binding means for binding the second end portions of the weft yarns constituting the second selvage structure of the fabric by twisting a second pair of binding yarns having inherent twist in the same direction as said first pair, putting the second end portion of each weft yarn between the two binding yarns, said second binding means having the same construction as the first binding means and being located symmetrically opposite to said first binding means;
- driving means for driving said first and second binding means so that the two binding yarns from the first binding means and the two binding yarns from said second binding means are twisted in the same direction so as to increase the inherent twist of each binding yarn.

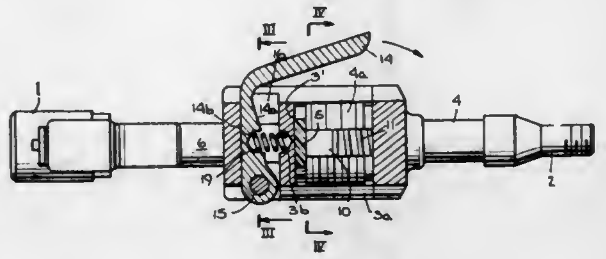
4,193,428
LOOM HAVING AN ADJUSTABLE DEFLECTION BEAM
Hans Demuth, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed Feb. 28, 1978, Ser. No. 882,114
Claims priority, application Switzerland, Mar. 9, 1977, 2933/77
Int. Cl.² D03D *49/22*
U.S. Cl. 139—114 **11 Claims**

1. In a loom, the combination comprising
- a frame having means for mounting a warp beam thereon;
- a tensioning beam mounted on said frame for imparting tension to a plurality of warp threads passing from a warp beam;
- a deflection beam mounted on said frame upstream of said tensioning beam relative to the warp threads passing from the warp beam; and



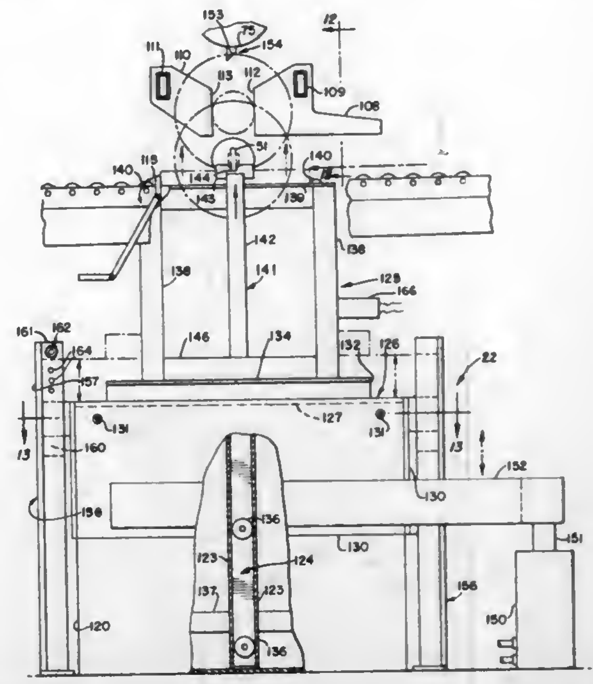
- means mounted on said frame for moving said deflection beam to adjust said deflection beam independently relative to said tensioning beam.

4,193,429
PNEUMATIC TIRE INFLATION AND METHOD
André M. Devienne, Compiegne; Gilbert L. Igea, Clairoix, and Jean-Pierre L. Bernard, Melicocq, all of France, assignors to Uniroyal, Clairoix, France
Filed May 16, 1977, Ser. No. 797,149
Claims priority, application France, Jun. 24, 1976, 76 19262
Int. Cl.² B65B *3/04*
U.S. Cl. 141—4 **3 Claims**



1. A method of inflating a pneumatic tire equipped with an inflatable, annular, inner tube, inflatable tube means surrounding said inner tube, first valve means intercommunicating and connecting said inner tube and said tube means to one another, said first valve means being adapted to open to allow the flow of a pressurized pneumatic fluid therethrough from said inner tube to said tube means, said first valve means being further adapted to close in response to a drop in pressure in said tube means below the pressure existing in said inner tube, and second valve means operatively associated with said inner tube for facilitating the inflation of said inner tube and of said tube means via said first valve means, said method comprising the steps of:
- (a) gradually inflating said inner tube via said second valve means at a specified intermediate rate and to a specified intermediate pressure that is below a specified ultimate pressure to which said inner tube is to be finally inflated to so that said tube means is also inflated to said specified intermediate pressure via said first valve means; and thereafter
- (b) suddenly continuing inflating said inner tube to said specified ultimate pressure via said second valve means at a rate in excess of said specified intermediate rate and at a pressure in excess of said specified intermediate pressure at which said inner tube is first gradually inflated to, thereby, cause said first valve means to close and terminate the communication between said inner tube and said tube means.

4,193,430
METHOD AND APPARATUS FOR FILLING CONTAINERS WITH A RELATIVELY VISCOUS MATERIAL
Forrest H. James, Jr., and Ira J. Silberman, both of Opelika, Ala., assignors to Diversified Products Corporation, Opelika, Ala.
Filed Oct. 18, 1977, Ser. No. 843,267
Int. Cl.² B65B *3/04, 43/54;* **B65G** *3/12*
U.S. Cl. 141—12 **15 Claims**



1. A method for filling a plurality of containers with a relatively viscous material, each of said containers having a filling opening in the periphery thereof, comprising:
- (a) providing a plurality of containers to be filled;
- (b) filling said containers with said viscous material, said filling comprising inserting a nozzle into each of said openings, said nozzle being in fluid flow communication with a dispensing hopper holding a supply of said viscous material, simultaneously, repetitiously agitating and vibrating said viscous material inside said hopper by independent means to induce a uniform and continuous flow of said viscous material from said hopper through said nozzle and into one of said containers, and vibrating said containers simultaneously with said simultaneous agitation and vibration of said viscous material to ensure that said containers are completely filled with said viscous material; and
- (c) further comprising the step of transporting said containers on a plurality of carriers supported on a conveying means through said filling step wherein said inserting of said filling step comprises raising each of said carriers off of said conveying means until each of said openings engages one of said nozzles.

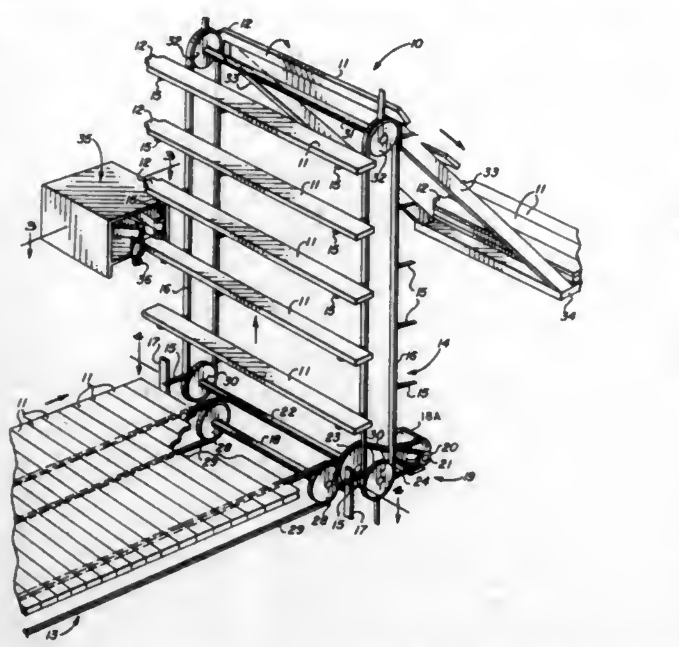
4,193,431
FENCE SLAT CUTTING METHOD AND APPARATUS
Paul R. Wood, 3602 N. 35th Ave., Phoenix, Ariz. 85017
Filed May 17, 1978, Ser. No. 906,821
Int. Cl.² B27C *5/00*
U.S. Cl. 144—134 C **2 Claims**

1. An apparatus for cutting the ends of slats for wooden fence use comprising:
- a first endless conveyor means for sequentially aligning and moving a plurality of juxtapositioned wooden slats along a given path onto a second endless laterally positioned conveyor means,
- said second endless conveyor means aligned at the discharge

end of said first conveyor means for sequentially moving the slats along a given path in a horizontal position through an end forming means for the slats,

said end forming means for the slats compising a pair of spaced relatively adjustably positioned rotating cutter blade means for simultaneously machining between them different corresponding edges of like ends of the slats as they are sequentially moved by said second conveyor means in substantially a vertical direction between said cutter blade means,

said blade means being spaced from each other a distance less than the width of the slats with at least one of said cutter blade means being journaled on a pivotally mounted arm for adjustably positioning it relative to the other cutter blade means for varying the machine design configuration of the end of the slats,



the blades of said cutter blade means rotating about a shaft substantially perpendicular to the direction of movement of the slats through said cutter blade means, whereby the surfaces of the slats are milled away by the blades,

a pair of electric motor means each connected to a different one of said blade means for rotation thereof independently of any means for moving said first and second conveyor means, and

means arranged at the end of said second conveyor means for receiving the slats machined by said apparatus.

4,193,432
SELF-STEERING APPARATUS FOR SHIPS

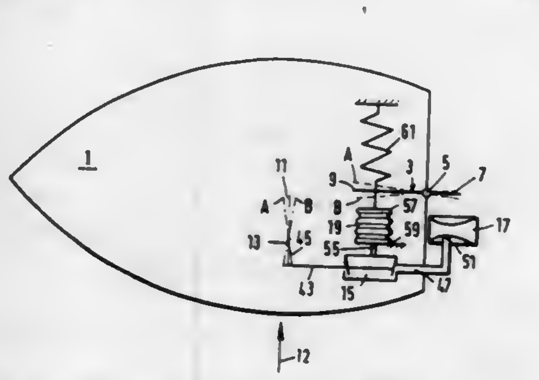
Jürgen Schuster, Munich, Fed. Rep. of Germany, assignor to C. Plath, Hamburg, Fed. Rep. of Germany

Filed Dec. 13, 1977, Ser. No. 860,091

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656839

Int. Cl.² B63H *25/04*

U.S. Cl. 114—144 C **8 Claims**



7. An automatic steering device for a ship having a rudder, comprising:

means for sensing a change in the direction of an apparent wind relative to a desired ship's heading; and

a linear actuator coupled directly to said rudder for applying rudder corrections, said linear actuator being controlled by said wind sensing means, the stroke of said linear actuator being proportional to a change in the direction of the relative wind.

said linear actuator being a collapsible chamber having a movable end wall that is coupled directly to said rudder, and a stationary end wall that is fastened to said ship;

a proportioning valve means is coupled to the interior of said chamber and actuated by said wind sensing means, for creating a pressure differential between the interior and exterior of said chamber the pressure differential being proportionate to the sensed change in direction of the apparent wind said proportioning valve means being further coupled by an actuating member to a lever of said wind sensing means.

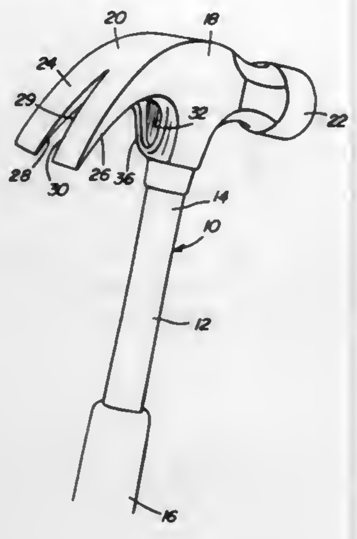
4,193,433
NAIL HOLDING HAMMER

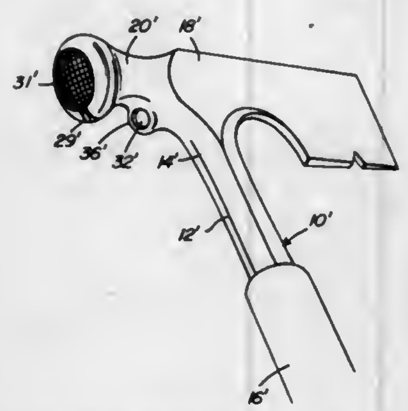
Jack R. Sickler, P.O. Box 20803, Pioneer Station, Billings, Mont. 59104

Filed Jun. 20, 1978, Ser. No. 917,304

Int. Cl.² B25C *1/00*

U.S. Cl. 145—30 R **2 Claims**





1. In combination with a claw hammer including an elongated handle and an elongated transverse head on one end of said handle with said handle projecting outwardly from one side of said head, one end of said head including an endwise outwardly facing abutment surface generally centered relative the longitudinal center axis of said head and for impacting with a nail to be driven into a workpiece, the other end of said head including endwise outwardly divergent and projecting curved claws curving outwardly from said one side of said head toward the other end of said handle and defining an inwardly tapering crotch therebetween terminating inwardly adjacent said center axis, said head also including a lateral projection extending outwardly of said one side defining a seat surface spaced inwardly of said claws, facing along a path extending outwardly of said other end of said head through said crotch and adapted to receive the head of a nail thereagainst extending along said path, said crotch being positioned relative to said

path for wedgingly receiving the midportion of the shank of a nail extending along said path and having its head end seated against said seat surface, said seat surface being substantially planar and normal to said path, said head defining a substantially V-shaped curb projecting outwardly from said seat surface, bounding the latter from three adjacent sides and opening away from said other end of said handle, said curb including a rounded apex portion and inner surfaces disposed at substantially right angles to said seat surface and said curb being free of any portions thereof overlying the area of said seat surface bound by said curb which might act to "catch" on a head portion of a nail engaged with said seat surface to restrict movement of said head portion away from said seat surface after the remote end of the nail has been initially forced into a workpiece.

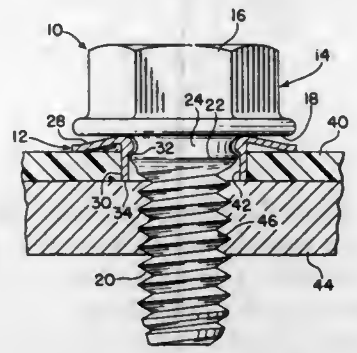
4,193,434
PREASSEMBLED FASTENER UNIT FOR CLAMPING PLASTIC WORKPIECES

David P. Wagner, Geneva, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 10, 1978, Ser. No. 932,744

Int. Cl.² F16B *39/26*

U.S. Cl. 151—38 **13 Claims**



1. A fastener unit including a washer member and a headed rotary threaded fastener which is preassembled with said washer, said fastener unit adapted for use with an upper, apertured, workpiece of predetermined thickness which is subject to cold flow or creep in load bearing applications, said washer member including an axially extending sleeve of substantially uniform wall thickness and predetermined axial extent, a radially outwardly and downwardly directed spring flange extending from the uppermost extremity of the sleeve, the outermost periphery of said flange spaced downwardly a predetermined distance from the innermost periphery, said outermost periphery of said flange spaced upwardly a predetermined distance from the lowermost extremity of said sleeve, the thread impressions on the shank of the rotary threaded fastener being of predetermined crest and root diameters, the uppermost extremity of said thread impressions being spaced a predetermined axial distance from the lower bearing surface of the head to create an unthreaded shank portion, said distance being less than the predetermined axial extent of the sleeve so that at least a portion of the thread impression extends upwardly within the sleeve when in preassembled condition, the inner periphery of the sleeve being of a diameter greater than the crest diameter of the thread impression on the shank, an annular protuberance formed on said unthreaded shank portion having a predetermined height said protuberance presenting a diameter greater than said crest diameter, a radial inwardly extending protuberance means of very limited axial extent formed adjacent the juncture of the sleeve with the flange of said washer and creating a constricted aperture in the sleeve of a diameter less than the diameter of the annular protuberance on the shank but greater than the crest diameter of the thread impression, the predetermined length of said unthreaded shank portion being substantially equal to the height of the annual protuberance of the fastener plus the axial extent of the washer protuberance.

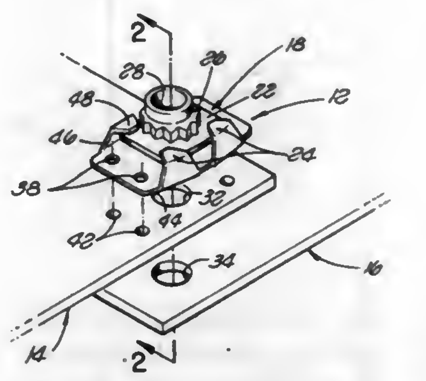
4,193,435
FLOATING NUT RETENTION SYSTEM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; James F. Charles, Norco, and Harry A. Theakston, Tustin, both of Calif.

Filed Aug. 31, 1978, Ser. No. 938,582

Int. Cl.² F16B *37/06*

U.S. Cl. 151—41.76 **1 Claim**



1. A floating nut retention system comprising:

a nut having an internally threaded central aperture;

an inner retainer plate having a flat bottom surface and an opening through said plate, said nut being secured to said inner retainer plate with said nut aperture and said inner retainer plate opening being fixedly aligned therewith,

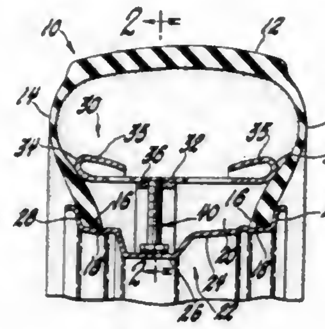
an outer retainer member formed of a base plate having ends, an opening therein and a flat planar surface in said base plate disposed adjacent to the bottom surface of said inner retainer plate, said base plate having a pair of opposed side edges;

securing means for retaining said inner retainer plate adjacent to said outer retainer member with said opening substantially aligned while enabling the inner retainer plate to float with respect to said outer retainer member, said securing means being provided by a pair of wall structures integrally formed at each of said opposed side edges of said base plate, each wall structure being formed by an upwardly extending leg having an arcuately curved inner surface and extending generally transverse to the plane of said base plate with the maximum distance between said opposing curved surfaces at the center thereof and a foot portion on each leg extending inwardly toward the opposing wall structure and over said inner retainer plate thereby limiting movement of said inner retainer plate in the direction perpendicular to the plane of said base plate, said inner retainer plate being tapered from a maximum width at the center thereof to a minimum width at the ends thereof, said maximum width exceeding the distance between the upstanding legs of said wall structures at each end of said base plate to thereby prevent said inner plate from being removed from the outer retainer member when moved in a plane parallel to the plane of said base plate;

and load bearing surface means provided by said curved inner surfaces and adapted to engage the side edges of the inner retainer plate, said outwardly curved side edges of the inner retainer plate being curved to mate with the load bearing surfaces whereby the area of restraining surface increases with increasing torque and adapted to provide a significant bearing contact area when torque is applied during the installation or removal of a bolt extending through said openings of the inner retainer plate and said outer retainer member in threaded engagement with the nut.

4,193,436
RUN-FLAT TIRE HAVING INTERNAL SUPPORT MEANS

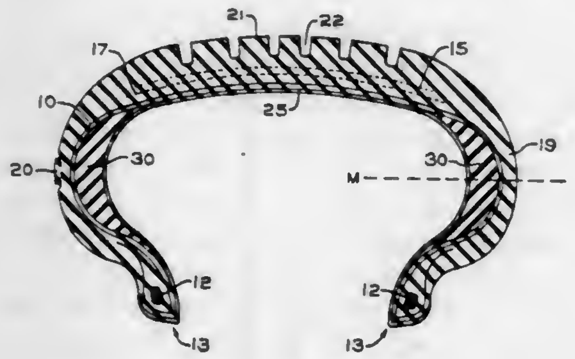
Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 27, 1978, Ser. No. 881,165
Int. Cl.^{2} B60C *17/04*
U.S. Cl. 152—158 **5 Claims**



1. For use within a pneumatic tire including a carcass having an outer tread portion, oppositely disposed sidewalls, a bead adjacent each inner sidewall end, and an annular opening between the beaded ends, on a vehicle wheel having an annular drop center rim with outer rim flanges formed on oppositely disposed sides thereof for retaining said beaded ends of said tire in sealing engagement therewith when said tire is inflated; a tire stabilizer comprising load support ring means concentric with said rim and disposed within said carcass intermediate said oppositely disposed sidewalls and radially outwardly of said rim, and a plurality of spaced substantially radially oriented support means, said support means being arcuately spaced from one another having open space therebetween, each of said support means having one end thereof operatively connected to said drop center rim and the other end thereof operatively connected to said load support ring means and cooperating with said wheel to provide the sole radial support of ring means and for retaining the latter in position to support said outer tread portion should said tire become deflated.

4,193,437
SELF SUPPORTING TIRE

Joe A. Powell, Norton, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Sep. 16, 1977, Ser. No. 833,789
Int. Cl.^{2} B06C *17/00;* **C08L** *7/00, 9/00, 9/06*
U.S. Cl. 152—330 RF **12 Claims**



1. In a self supporting tire comprising two spaced inextensible beads, a ground contacting tread portion, a pair of individual sidewalls extending radially inward from the axial outer edges of said tread portion to join the respective beads, a carcass portion, and a pair of integral inner sidewalls disposed inwardly of said carcass portion and extending radially outward from a point near said beads to a point beyond the axial outer edges of said tread, the improvement consisting in the inner sidewall being formed of a nonstaining composition comprising:

(a) from about 50 to about 95 parts by weight of at least one elastomer selected from the group consisting of natural rubber and cis-polyisoprene,

(b) from about 5 to about 50 parts by weight of at least one elastomer selected from the group consisting of styrene-butadiene and cis-polybutadiene,

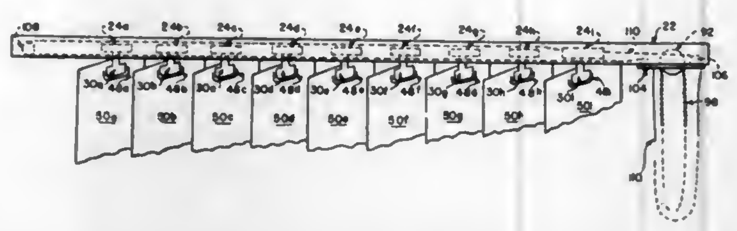
(c) from about 25 to about 80 parts by weight of carbon black per 100 parts by weight of rubber, wherein said carbon black has a dibutyl phthalate absorption value greater than about 80 and a particle size less than about 50 milli-microns, and

(d) sufficient curing agents to effect vulcanization;

wherein said inner sidewall composition when vulcanized has a 300% modulus of at least 1800 psi, a hardness of at least 60 Shore A durometer, and a heat buildup value less than about 60° F. as measured by the Goodrich Flexometer.

4,193,438
VERTICAL-BLIND-LIKE MODULAR ASSEMBLY

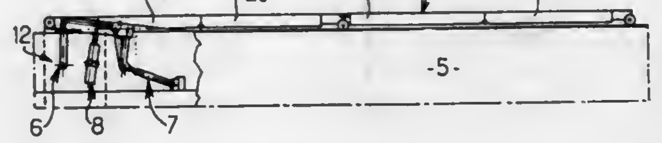
Ronald Pastore, Bishop Rd., Bedford, N.Y. 10506
Filed Sep. 13, 1978, Ser. No. 941,943
Int. Cl.^{2} E06B *9/26*
U.S. Cl. 160—166 A **17 Claims**



1. A vertical-blind-like modular assembly comprising a plurality of adjacent individually removably mountable substantially parallel alignable blind members; first means for moving said blinds towards each other and away from each other in order to vary the effective area covered by said plurality of adjacent blinds; a plurality of longitudinally movable removably mountable blind carrier members, a channel means for removably retaining each of said blind carrier members; each of said blind carrier members comprising a pivotally mountable removable holder vertically extending therefrom with respect to the direction of longitudinal movement of said blind carrier members and a common alignable aperture longitudinally extending through each of said carrier members; each of said blind holders including a hook-like portion; each of said blind members including an aperture therein adjacent one end thereof for enabling insertion of said hook-like portion therethrough for removably retaining said blind member thereon while enabling both pivotal and longitudinal movement thereof; a plurality of removably mountable link members interconnecting said plurality of carrier members for enabling linked movement thereof; a common shaft member extending through said aligned longitudinal aperture in each of said plurality of carrier members; said linked carrier members being longitudinally slidably movable along said common shaft by said first means; said shaft including a common longitudinally extending keyway; each of said carrier members including a first bevel gear means mountable in said keyway for simultaneous rotation therewith and a second bevel gear means disposed in meshing relationship with said first bevel gear means and substantially normal thereto for driving rotation thereby as said common keyway is rotated with said common shaft; said second bevel gear means being operatively connected to said blind holder for simultaneously rotating said blind holder with said second bevel gear means for pivoting said blind removably retained thereon as said second bevel gear means rotates; a removably mountable common control housing; a common gear means disposed at one end of said common shaft in said common control housing; a common spring-biased slip clutch member disposed in said control housing; a worm gear means disposed in said control housing in meshing relationship with said common gear means for driving said common gear means as said worm gear means is rotated; and a cord-like member removably mountable on said slip clutch member for rotating said slip clutch member by movement thereof, said cord-like member and slip clutch member comprising a pulley, said spring-biased slip clutch member being removably engageable with said worm gear means and normally spring-biased into engagement therewith, said slip clutch member being automatically disengageable when said slip clutch member is rotated while rotation of said common shaft keyway is prevented by prevention of rotation of any of said second bevel gear means and automatically engageable into said engagement when said slip clutch member is rotated and said prevention of rotation is not present, whereby each of said blinds may be individually replaced in situ without disassembling said entire assembly and said plurality of blinds will maintain their substantially parallel alignment even during attempted pivotal movement while an obstruction prevents such pivotal movement of any one of said plurality of blinds.

4,193,439
DEVICE FOR OPERATING HATCH COVERS OR THE LIKE COMPOSED OF PANELS

Henri Kummerman, Geneva, Switzerland, assignor to MacGregor International S.A., Basel, Switzerland
Filed Dec. 7, 1977, Ser. No. 858,349
Claims priority, application France, Dec. 9, 1976, 76 37111; Nov. 30, 1977, 77 36151
Int. Cl.^{2} B63B *19/20*
U.S. Cl. 160—188 **20 Claims**



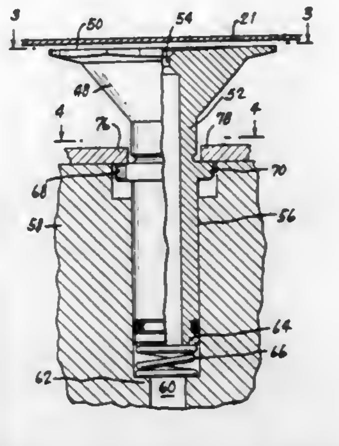
1. Operating apparatus for a folding cover system for a shipboard hatch coaming or the like having two parallel side walls and two end walls, the system including at least three rectangular cover panels, each panel being hingedly connected at one edge to an adjacent edge of the next panel, and a first one of the panels being hingedly connected at the edge opposite said one edge to a fixed support adjacent to one end wall of the coaming, the operating apparatus being actuable for moving the panels between a covering position in which the cover panels rest substantially in a common plane on the rim of the coaming and a stowage position in which the panels are folded together about said hinged connections to a substantially upright position adjacent to said one end wall of the coaming and including operating means for pivoting the first panel about the fixed support to an approximately upright position, thereby at least partially folding the second panel against the first panel, and means for folding the third cover panel about its hinged connection with the second panel, wherein the means for folding the third panel comprises:

at least one lever mounted for pivoting about an axis adjacent and parallel to said one end wall of the coaming, the lever having a bearing means with a surface spaced from the pivot axis for slidably contacting the under surface of a portion of the third cover panel at a location spaced from the hinged connection between the third and second panels when said first and second panels are in said at least partly folded upright position, and

actuating means, hingedly connected to the lever at an actuating point spaced from the pivot axis, for pivoting the lever into contact with the third panel and then folding said panel upward toward the folded second panel about the hinged connection between said panels, with the surface of said bearing means being free to slide against the under surface of said portion of the third panel as said third panel is being folded upward against the second panel.

4,193,440
BELT-COOLING AND GUIDING MEANS FOR THE CONTINUOUS BELT CASTING OF METAL STRIP

Herbert J. Thorburn, and John A. Tracy, both of Kingston, Canada, assignors to Alcan Research and Development Limited, Montreal, Canada
Filed Sep. 1, 1978, Ser. No. 938,885
Int. Cl.^{2} B22D *11/06*
U.S. Cl. 164—432 **16 Claims**

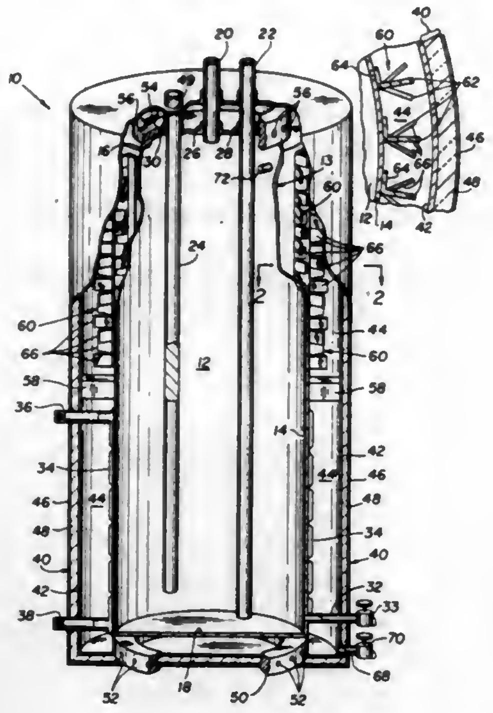


1. A belt cooling and guiding unit for continuous casting apparatus where liquid metal is cast between a pair of movable heat-conducting belts to discharge as solidified strip, said apparatus including a base structure having passages for delivering liquid coolant to a multiplicity of such units which collectively face the reverse surface of at least one belt to provide a layer of liquid coolant at said surface, comprising means providing a substantially flat guiding face having a hexagonal contour around a transverse axis and apertured for projecting liquid coolant against said reverse belt surface, means for supporting said first-mentioned means in registration with one of said base passages for coolant supply, said supporting means including means resiliently urging said first-mentioned means toward said belt surface, and mutually engageable retaining elements respectively associated with said first-mentioned means and arranged to be held with the base structure, said first-mentioned means being rotatably and longitudinally movable relative to said axis and said elements being constructed and arranged so that from a position of engagement to hold the first-mentioned means against axial displacement by the resilient means, said elements can be disengaged by depressing the first-mentioned means against said resilient means and rotating it whereby it can be removed axially, said hexagonal face being shaped so that it and like hexagonal faces can completely cover a belt-facing area with narrow openings between adjacent hexagonal edges for return of liquid coolant projected against the belt surface through the hexagonal faces, said retaining elements being mutually shaped so that in their engaged, holding position the aforesaid unit is held with its hexagonal face edges in closely aligned spacing next to the said adjacent hexagonal edges of said like hexagonal unit faces, and so that when the elements are disengaged by depressing and rotating the first-mentioned means, the hexagonal face edges of the aforesaid unit are in another position for like closely aligned spacing with the adjacent hexagonal edges of the adjacent hexagonal unit faces, to permit axial removal of the aforesaid unit through the hexagonally defined opening between the hexagonal faces of the adjacent units.

4,193,441

VARIABLE CAPACITY THERMAL STORAGE SYSTEM EMPLOYING THERMAL SWITCHING

Robert P. Scaringe, 1709 Tibbits Ave., Troy, N.Y. 12180
Filed Dec. 30, 1977, Ser. No. 865,943
Int. Cl.^{2} F28D *21/00*
U.S. Cl. 165—32 **16 Claims**



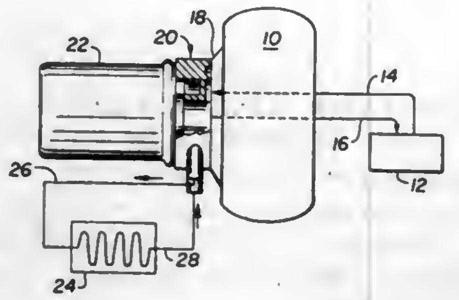
1. In a device for heating a liquid and for storing thermal energy to maintain a heated condition of the liquid, said device being adapted for use with a source of heat,
  - a reservoir for holding a quantity of the liquid to be maintained in a heated condition and having a thermally-conductive outer wall,
  - heat exchanger means connected with the source of heat and positioned exterior to and in thermal communication with at least a portion of said reservoir to enable the transfer of thermal energy from the source of heat to the liquid in said reservoir so as to cause the elevation of the temperature of the liquid,
  - and a thermal medium positioned against at least a portion of said reservoir outer wall in direct thermal communication with both said reservoir and said heat exchanger means, said thermal medium being initially in a low thermal conductivity solid state in which said medium acts as a thermal insulator and having a triggering temperature at which said medium reversibly melts to a substantially increased thermal conductivity liquid state while absorbing thermal energy and storing the same as the latent heat of fusion of said medium,
  - such that the continued transfer of additional thermal energy through said heat exchanger means to the liquid after the temperature of the liquid in the reservoir has been elevated to said triggering temperature results in the absorption and storage in said thermal medium of said additional thermal energy as the latent heat of fusion thereof so as to substantially maintain the liquid at said triggering temperature, whereby when the temperature of the liquid drops below the triggering temperature of said medium the said additional energy stored in said medium at the latent heat of fusion thereof is then released and transmitted to the liquid so as to maintain the liquid at substantially the triggering temperature of the medium.

4,193,442

DUAL BIMETAL RELIEF VALVE

David R. Vian, 849 S. Church St., Lodl, Calif. 95240
Filed Mar. 19, 1979, Ser. No. 21,747
Int. Cl.^{2} G05D *23/08*
U.S. Cl. 165—35 **10 Claims**

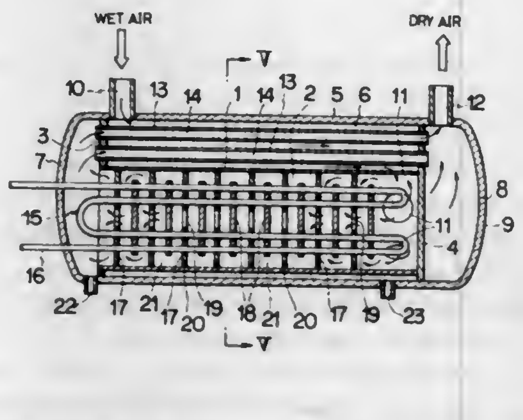
6. in combination with a fluid cooling element and a barrel-type fluid filter in a closed circuit system having a fluid reservoir, an apparatus for connecting said fluid reservoir with said filter and said cooling element, said apparatus comprising:
  - a body member for sealably coupling said filter to said fluid reservoir; and a curvilinear leaf member comprising a strip of resilient material having an obverse face and a reverse face; said body member comprising:
  - (a) means defining passage centrally located therein between said filter element and said fluid reservoir;
  - (b) an outlet port coupled to said filter for directing fluid from said body member to said filter;
  - (c) a recess formed in said body member about said central passage in fluid communication in said outlet port;
  - (d) a first inlet port having a first valve seat in fluid communication with said recess; and
  - (e) a second inlet port having a second valve seat in fluid communication with said recess, said second valve seat being disposed to face said first valve seat on opposing sides of said recess;
  - said leaf member comprising means extending substantially along one plane perpendicular to its faces about an arc of approximately three-quarters of a circle within said recess and having an anchor to said body member at a first end displaced from a center of radius of said arc, said leaf member having said obverse face and said reverse face approximately normal to a radius of said arc at a region approximately three-quarters of a circle radially displaced from said anchor, said obverse face and said reverse face defining opposing first and second valve gates, said first valve gate being disposed to abut to said first valve seat and said second valve gate being disposed to abut to said second valve seat upon displacement of said first gate away from said first valve seat.



4,193,443

HEAT EXCHANGER FOR COOLING SYSTEM COMPRESSED AIR DEHUMIDIFIERS

Kazuyuki Nanaumi, and Koji Baba, both of Susaka, Japan, assignors to Orion Machinery Co., Ltd., Nagano, Japan
Filed Aug. 9, 1978, Ser. No. 932,323
Claims priority, application Japan, Nov. 28, 1977, 52/158289[U]; Dec. 29, 1977, 52/176709[U]
Int. Cl.^{2} F28B *1/00*
U.S. Cl. 165—66 **6 Claims**

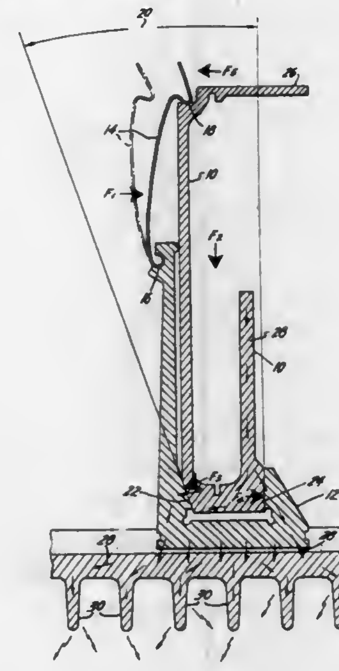


1. A heat exchanger for cooling system compressed air dehumidifiers comprising: an inner body; an outer body forming a casing for said heat exchanger; a precooling passage formed between said inner body and said outer body; a dehumidifying passage defined within said inner body; a cooler within said dehumidifying passage, said cooler being mounted within said inner body eccentrically relative to said outer body which forms the casing of said heat exchanger; an air supply port provided in said outer body through which compressed air flows into said precooling passage from one end thereof; a communicating opening provided in said inner body through which compressed air flowing into said precooling passage is led into said dehumidifying passage from one end thereof; an air discharge port provided in said outer body; and a plurality of heat transmitting pipes extending through the interior of said precooling passage and forming air flow passages which guide compressed air from said dehumidifying passage to said air discharge port provided in said outer body through ends thereof closer to said port; said heat transmitting pipes operating to effect heat exchange between the air flowing into said precooling passage through said air supply port and air which flows through said heat transmitting pipes from said dehumidifying passage to said discharge port.

4,193,444

ELECTRICAL MOUNTING MEANS FOR THERMAL CONDUCTION

Robert L. Boyd, Woodcliff Lake; David C. Hamilton, Ridgewood; Wilmer E. Wood, Fair Lawn; Joseph Fleming, Ramsey, all of N.J., and Raymond Wegmann, Stroudsburg, Pa., assignors to Ramsey Controls, Inc., Mahwah, N.J.
Filed Feb. 16, 1978, Ser. No. 878,341
Int. Cl.^{2} H01L *23/40*
U.S. Cl. 165—76 **15 Claims**

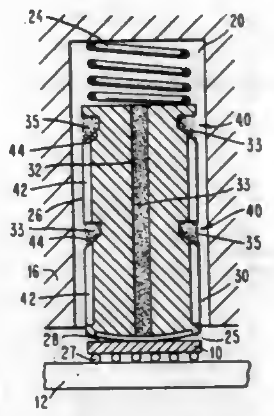


1. An electrical mounting and thermal conduction means, comprising:
  - (a) a support element having a generally U-shaped interior surface, the base of the exterior of said support element being in thermal contact with a heat dissipating surface;
  - (b) a carrier element having a generally U-shaped exterior surface, said surface having a cross-section of smaller dimension than that of said U-shaped surface of said support element, said carrier element being nestable within said support element; and
  - (c) locking means removably securable to adjacent arm members of each of said support and carrier elements for maintaining said support and carrier elements in selective securement to each other.

4,193,445

CONDUCTION COOLED MODULE

Richard C. Chu; Un-pah Hwang, and Robert E. Simons, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 29, 1978, Ser. No. 920,904
Int. Cl.^{2} H01L *23/42*
U.S. Cl. 165—79 **12 Claims**



1. In a conduction cooled module for cooling electronic chips having at least one piston located in a housing cylinder forming an annular interface between the piston wall and the corresponding cylinder wall and having an end of each piston bearing against a corresponding chip to be cooled forming an interface therebetween;
  - said piston having a top and bottom surface and an outer wall and an opening extending from the top to the bottom surface;
  - radial grooves extending from the bottom end of the opening to near the periphery of the bottom surface of said piston;
  - at least one circumferential groove located in the outer wall of said piston;
  - vertical grooves extending downward from said circumferential grooves until they intercept another circumferential groove or terminate near the bottom surface of said piston which contacts the chip;
  - a low melt point heat conductive material located in the opening in said piston;
  - a ring of said low melt point heat conductive material located in each of said circumferential grooves;
  - means for heating the module above the melting temperature of said material so that said material flows from the opening in said piston along said radial grooves and fills the interface between said piston and chip and flows from said circumferential grooves into said annular interface and along said vertical grooves and fills the annular interface between said piston and cylinder wall, thereby lowering the interface resistances and enhancing the cooling heat transfer.

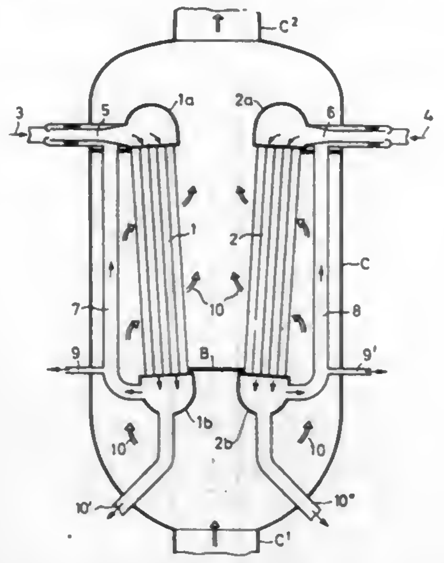
4,193,446

INTERMEDIATE STEAM SUPERHEATER

Ingemar Greis, Sturefors, and Lars-Olof Ingesson, Linghem, both of Sweden, assignors to Stal-Laval Apparat AB, Linkoping, Sweden
Filed Aug. 18, 1977, Ser. No. 825,775
Claims priority, application Sweden, Aug. 20, 1976, 7609256
Int. Cl.^{2} F28B *9/02*
U.S. Cl. 165—108 **1 Claim**

1. A fluid heater comprising a casing having an inlet and an outlet and through which via the casing a flow of fluid to be heated is passed, said casing containing at least one heat exchanger comprising a bundle of tubes forming unrestricted flow passageways and having an inlet manifold for one of their ends and an outlet manifold for the other of their ends, the inlet manifold having an inlet for steam and the outlet manifold having discharging means for discharging steam condensate therefrom, so that the steam passes through the bundle of tubes to heat the fluid passed through the casing with steam conden-

sate forming in the tubes flowing through the tubes and outlet manifold to said discharging means, said heat exchanger normally being subject to substantially complete steam condensation in some of its said tubes and to free passage of uncondensed steam through others of its tubes; wherein the improvement comprises a recirculating means for sucking steam from said outlet manifold and without flow restriction forcing it into said inlet manifold at a flow rate recirculating the steam through said bundle of tubes at a flow rate flushing condensate from the tubes and recirculating the uncondensed steam through the tubes substantially until condensed, said heat exchanger being positioned with its inlet manifold higher than its outlet manifold, and said tubes extending downwardly from the inlet manifold to the outlet manifold, said outlet manifold forming means for separating steam from said condensate and connecting the separated steam to said recirculating means and said condensate to said discharging means, said recirculating means including a means for discharging an amount of steam from the recirculating steam and which is small in volume as compared to the volume of the recirculating steam, thereby reducing the concentration of any non-condensable gas in the recirculating steam and which gas may have been included by the steam supplied to the inlet of said inlet manifold of the heat exchanger.



4,193,447
HEAT EXCHANGER FOR A HIGH TEMPERATURE REACTOR

Robert Fah, Seuzach, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

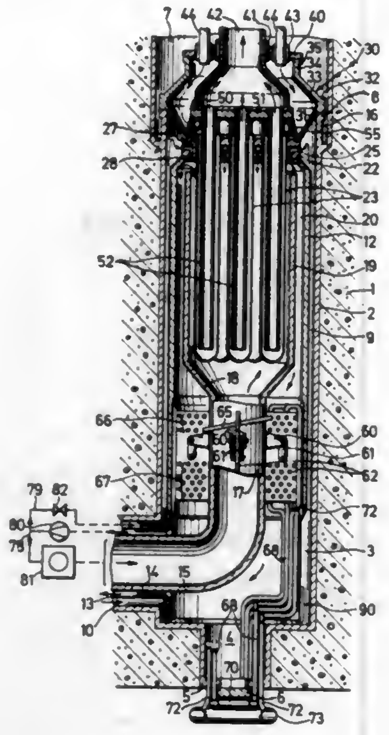
Filed Dec. 19, 1977, Ser. No. 862,003

Claims priority, application Switzerland, Dec. 21, 1976, 16079/76

Int. Cl.² F28F *9/22;* **F28B** *1/02;* **G21C** *19/28*

U.S. Cl. 165—145 **6 Claims**

1. A heat exchanger for a high temperature reactor comprising
   a casing;
   a first heating surface including a tube plate spaced from said casing to define a gap therebetween, a nest of blind tubes extending within said casing and terminating in said tube plate, and a plurality of inner tubes, each said inner tube extending concentrically within a respective blind tube to define a flow path having parallel sections for a flow of a secondary gas;
   a feed pipe disposed coaxially of said next of blind tubes for supplying a flow of hot primary gas over said nest of blind tubes for heat exchange with the secondary gas, said pipe having a funnel-shaped widened portion connected to said casing;
   a jacket extending from said tube plate in concentric spaced relation to said casing and to said feed pipe to define an annular passage for the flow of primary gas downstream of said gap and said first heating surface; and
   a second heating surface located between said feed pipe and said jacket in said annular passage below said widened portion for heating a working medium in heat exchange relation with the flow of primary gas.



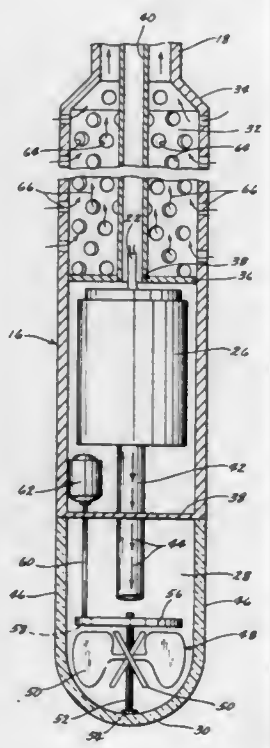
4,193,448
APPARATUS FOR RECOVERY OF PETROLEUM FROM PETROLEUM IMPREGNATED MEDIA

Calhoun G. Jeambey, 7485 E. Kenyon Ave., Denver, Colo. 80237

Filed Sep. 11, 1978, Ser. No. 941,122

Int. Cl.² E21B *43/24*

U.S. Cl. 166—60 **6 Claims**



1. An apparatus for the recovery of petroleum from petroleum impregnated media having an opening therein, comprising,
   an elongated shell for insertion into said opening, said shell having a trailing end and a leading end, and being connected at its trailing end to an oil passage conduit
   said elongated shell including a microwave dispersing chamber and a microwave transparent portion around said chamber, said shell being adapted for insertion into said opening,
   a microwave generating means,
   guide means for guiding microwaves from said microwave generating means into said microwave dispersing chamber
   a microwave mixer comprising a plurality of movable microwave deflecting blades positioned to intercept, deflect and disperse substantially all microwaves through the microwave transparent portion of said shell and substantially throughout the surrounding oil impregnated media adjacent said transparent portion of said shell
   said shell including a petroleum recovery chamber and a plurality of openings through said shell for communication of heated pertroleum from said media into said recovery chamber.

4,193,449
VALVE OPERATING CIRCUIT

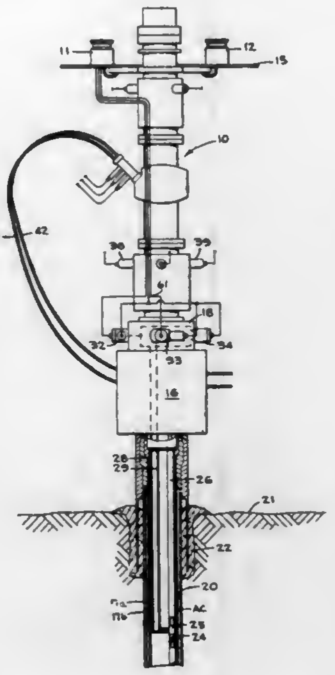
Glen E. Lochte, Houston, and Lionel J. Milberger, Spring, both of Tex., assignors to FMC Corporation, San Jose, Calif.

Filed Jun. 5, 1978, Ser. No. 912,275

Claims priority, application United Kingdom, Aug. 12, 1977, 33848/77

Int. Cl.² E21B *33/03, 43/00*

U.S. Cl. 166—72 **13 Claims**



1. A hydraulic valve operating circuit for opening and closing a downhole safety valve, said circuit connected for use with a source of pressurized hydraulic fluid and a downhole safety valve mounted in a petroleum well having a wall, said safety valve including a valve actuator having an inlet port, said well including block valves mounted to a christmas tree atop said well to connect the safety valve actuator to an outside hydraulic presssure source and to a pressure sink while isolating the safety valve from the outside environment, said circuit comprising:
   a normally closed block valve connected between said source of hydraulic fluid and said inlet port of said safety valve actuator;
   means for mounting said block valve in the wall of the well between the inside of said well and the outside of said well;
   means for opening said block valve in response to an increase in pressure from said source of fluid; and
   valve means for relieving the fluid pressure at said inlet port of said actuator when said block valve is closed, said valve means being coupled to said inlet port of said safety valve actuator.

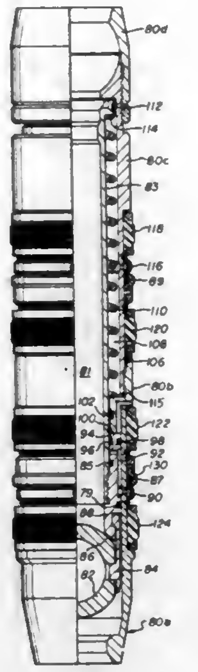
4,193,450
SURFACE CONTROLLED SUBSURFACE SAFETY VALVE

Ernest P. Fisher, Jr., Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 13, 1978, Ser. No. 960,168

Int. Cl.² E21B *43/12*

U.S. Cl. 166—155 **10 Claims**



1. A surface controlled subsurface safety valve comprising:
   housing means for defining a flow path,
   closure means for controlling flow through said flow path,
   operator means longitudinally movable with respect to said housing means for moving said closure means and having a first position wherein said closure means closes said flow path and having a second position wherein said closure means opens said flow path,
   control fluid pressure responsive means for moving said operator means from said first position to said second position when affected by fluid pressurized above a selected value,
   balance fluid pressure responsive means for pressure balancing said operator means with respect to hydrostatic fluid pressure,
   resilient urging means for urging said operator means longitudinally within said housing means to move said closure means to its first position,
   a control fluid pressure chamber associated with said control fluid pressure responsive means for receiving control fluid,
   a variable capacity balance fluid pressure chamber associated with said balance fluid pressure responsive means for receiving balance fluid,
   a fixed capacity zone exposed to balance fluid pressure,
   means for providing a fluid seal between said control fluid pressure chamber and said variable capacity balance fluid pressure chamber and said fixed capacity zone exposed to balance fluid pressure, and
   means for directing well bore pressure only to said variable capacity balance fluid pressure chamber rather than to said control fluid pressure chamber.

4,193,451
METHOD FOR PRODUCTION OF ORGANIC PRODUCTS FROM KEROGEN

Thonet C. Dauphine, Acton, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Continuation of Ser. No. 696,976, Jun. 17, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 845,504

Int. Cl.² E21B *43/24, 43/26*

U.S. Cl. 166—248 **11 Claims**

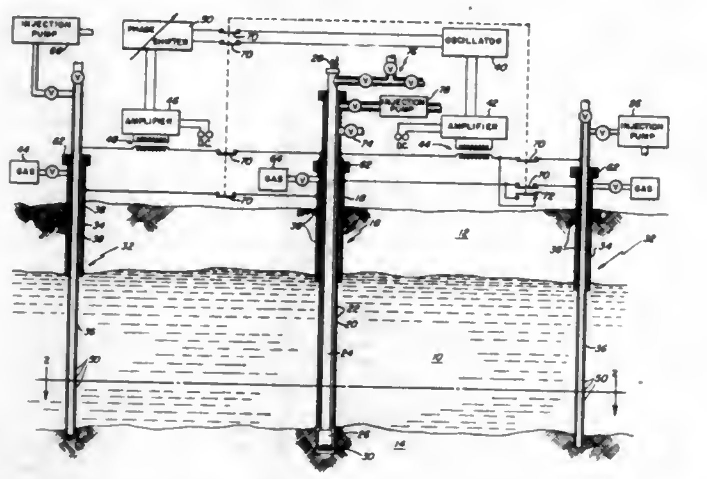
1. The method of producing organic liquid and gaseous

products having low pour points from kerogen contained in a subsurface body of oil shale comprising the steps of:

heating regions of said kerogen in said body to temperatures in the range between 200° C. and 360° C. where kerogen will convert to liquid and gaseous products by subjecting said oil shale to a time varying electric field while producing substantial pressure in fissures produced in said body;

allowing sufficient time to pass to allow substantial conversion of said kerogen to said products; and

collecting said products through said fissures.



4,193,452

WATERFLOODING EMPLOYING THICKENED AQUEOUS LIQUIDS

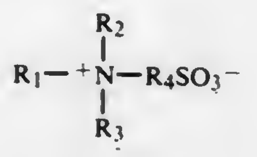
Peggy M. Wilson, and Julie Pao, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,590

Int. Cl.^{2} E21B *43/22*

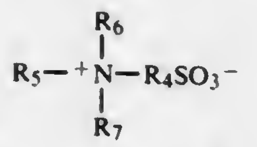
U.S. Cl. 166—274 **6 Claims**

1. In a method for the recovery of oil from a subterranean oil reservoir penetrated by spaced injection and production systems wherein an aqueous fluid is introduced into the reservoir via said injection system to displace oil to said production system, the improvement comprising employing as at least a portion of the fluid introduced into said injection system an aqueous liquid which is thickened by the addition of a C_5–C_8 alkanol and a surface-active amphoteric sulfonate characterized by the formula:



$$R_1-{}^{+}\overset{\overset{\displaystyle R_2}{|}}{\underset{\underset{\displaystyle R_3}{|}}{N}}-R_4SO_3^{-}$$

or



$$R_5-{}^{+}\overset{\overset{\displaystyle R_6}{|}}{\underset{\underset{\displaystyle R_7}{|}}{N}}-R_4SO_3^{-}$$

wherein:

R_1 is a hydrocarbyl group containing from 8 to 26 carbon atoms,

R_2 and R_3 are each independently a hydrocarbyl group containing from 1 to 8 carbon atoms or an alkoxy group containing from 2 to 10 carbon atoms and having a ratio of carbon atoms to oxygen atoms within the range of 2 to 3,

R_4 is an aliphatic group containing from 1 to 6 carbon atoms, and

R_5, R_6, and R_7 are aliphatic hydrocarbyl groups containing in combination a total number of carbon atoms within the range of 17 to 24 and at least two of R_5, R_6, and R_7 containing at least 8 carbon atoms,

said alkanol being present in a concentration to provide a ratio, R_a, of the volume amount of alkanol to the weight amount of amphoteric sulfonate within the range of 0.1–0.6.

4,193,453

METHOD FOR CONSOLIDATING SAND OR WATER CONTROL IN SUBTERRANEAN FORMATIONS

Herbert S. Golinkin, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 807,969, Jun. 20, 1977, Pat. No. 4,137,182. This application Jul. 26, 1978, Ser. No. 928,110

Int. Cl.^{2} E21B *33/13*

U.S. Cl. 166—295 **1 Claim**

1. A method for water control in subterranean formations or and consolidating sand in incompetent subterranean formations comprising the steps of:

(1) contacting the said subterraneous formations with an aqueous fluid composition containing water, a soluble polymer selected from the group consisting of the polymeric salts of ammonia, sodium and potassium salts of acrylamide: methacrylate copolymer, said copolymer, having a weight ratio of from about 50 to 90 weight percent acrylamide and from about 10 to 50 weight percent methacrylate, and said copolymer having a molecular weight sufficient to provide a brine viscosity of at least 1.8 centipoises (measured in Cannon viscometer) when dissolved in a concentration of about 500 ppm in an aqueous brine containing from about 3650 to 3750 ppm sodium chloride and from about 365 to 375 ppm calcium chloride made with deionized water, a chromium ion of a water-soluble trivalent chromium salt in an amount sufficient to cross-link said copolymer, said copolymer in an amount sufficient to increase viscosity of said fluid as a gel to a certain initial amount, a carbonate ion in an amount sufficient to actuate rapid formation of said gel upon addition of said chromium salt to said copolymer, an oxalate ion of a water soluble oxalate salt in an amount sufficient to stabilize said gel against syneresis upon standing and heating, said gel being formulated without a breaker component,

(2) applying sufficient pressure to consolidate sand in incompetent formations or to control water in subterraneous formations,

(3) maintaining said pressure while injecting said aqueous liquid into said formations.

4,193,454

SUPER-ACTIVE CLAY CATALYST AND USE THEREOF

Theodore P. Goldstein, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 666,838, Mar. 15, 1976, Pat. No. 4,078,991. This application Dec. 27, 1977, Ser. No. 864,573

Int. Cl.^{2} C10G *13/04, 23/02;* **E21B** *43/22, 43/24*

U.S. Cl. 166—302 **22 Claims**

1. In a method for treating a clay material which comprises contacting said clay mateial located under the surface of the earth with solution containing cations selected from the group consisting of transition metal ions, hydrogen ions, aluminum ions, ions of metals from Group IIB of the Periodic Table of Elements and a combination thereof with each other to effect ion exchange of said clay material with said ions, the improvement comprising using a clay material in the raw state as found in nature or as synthesized which has not been exposed to a temperature exceeding about 100° C. prior to and during said contact with said solution and therafter exposing said exchanged clay material to a temperature of at least about 50° C. but not exceeding about 250° C.

19. An ion-exchanged clay material formed of a clay material in the raw state as found in nature or as synthesized, said clay material having been treated while located under the surface of the earth by contacting with a solution containing cations selected from the group consisting of transition metal ions, hydrogen ions, aluminum ions, ions of metals from Group IIB of the Periodic Table of Elements and mixtures thereof to effect an ion exchange of said clay material, said clay material having been exposed to a temperature not exceeding 100° C. prior to or during said treatment with said solution, said clay material after treatment with said solution having been exposed to a temperature within the range of about 50° C. to 250° C.

4,193,455

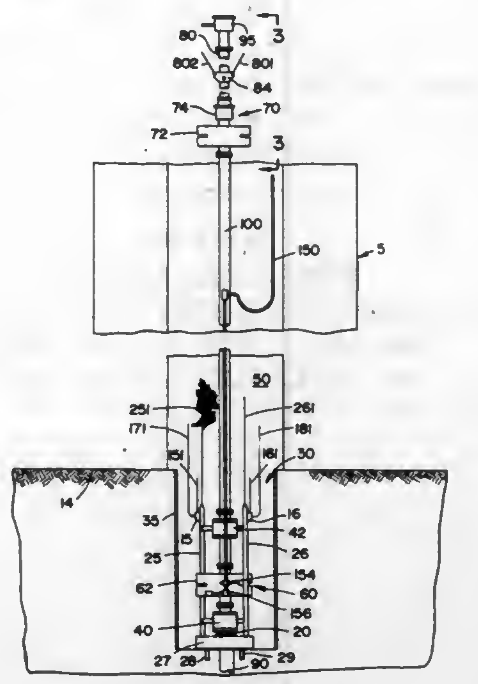
SPLIT STACK BLOWOUT PREVENTION SYSTEM

Riddle E. Steddum; Donald R. Ray, and Bruce L. Crager, all of Houston, Tex., assignors to Chevron Research Company, San Francisco, Calif.

Filed Apr. 14, 1978, Ser. No. 896,264

Int. Cl.^{2} E21B *7/12*

U.S. Cl. 166—359 **3 Claims**



1. A blowout prevention system for a movable offshore structure positioned on a subsea bottom above a well site in a body of water which may contain moving ice masses that could force the structure off location, comprising:

a subsurface blowout preventer stack at the subsea bottom having double shear rams for sealing a well;

a first means at the subsea bottom for disconnectably connecting a riser to said subsurface blowout preventer stack;

a subsea wellhead;

a second means at the subsea bottom for connecting said subsurface blowout preventer stack to said subsea wellhead, said subsurface blowout preventer stack, said first and said second means and said wellhead located in a chamber in the subsea bottom having a depth substantially greater than the combined height of said subsurface blowout preventer stack and said first and said second means so that said subsurface blowout preventer stack and said first and said second means are protected from damage due to ice masses contacting the subsea bottom in the vicinity of the well site;

a riser extending from the structure down to the subsea bottom and into said chamber and disconnectably connected at its lower end by said first means to said subsurface blowout preventer stack so that said riser may be connected into and disconnected from said subsurface blowout preventer stack;

a surface blowout preventer stack connected to said riser for providing means for controlling the well, said surface blowout preventer stack including a spherical blowout preventer connected at its lower end to the upper end of a double pipe ram blowout preventer;

a telescopic joint connected to said riser to permit vertical movement of said riser;

retrieval means connected to said telescopic joint for raising said riser out of said chamber and into the structure;

control means in the structure for selectively operating the shear rams of said subsurface blowout preventer stack to seal the well and said first means to connect and disconnect said riser;

kill and choke lines extending from the structure to said subsurface blowout preventer stack;

at least one choke valve positioned below said shear rams of said subsurface blowout preventer stack so as to be in communication with the well even after said shear rams have closed, said choke valve connected to said choke line; and

at least one kill valve positioned below said shear rams of said subsurface blowout preventer stack so as to be in communication with the well even after said shear rams have closed, said kill valve connected to said kill line.

4,193,456

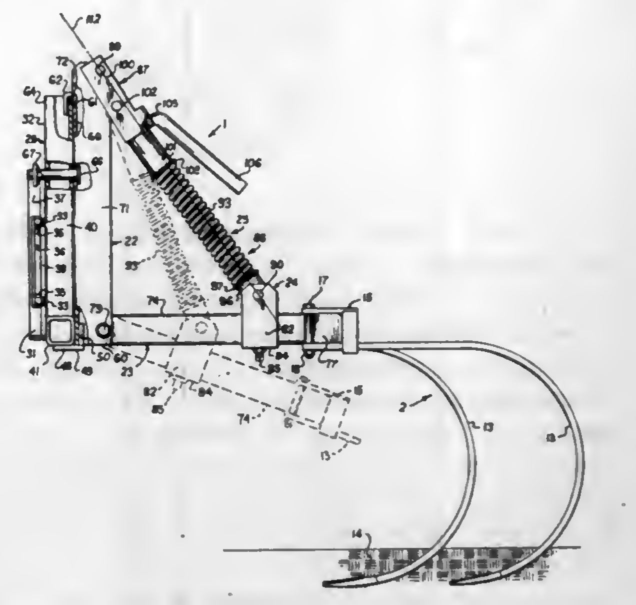
BIASED AGRICULTURAL IMPLEMENT

Dale E. Ankenman, Rte. 1, Almena, Kans. 67622

Filed Apr. 17, 1978, Ser. No. 897,030

Int. Cl.^{2} A01B *37/00, 35/24*

U.S. Cl. 172—272 **8 Claims**



1. An implement for mounting a soil engaging tool on mobile agriculture equipment comprising:

(a) an upper and a lower pivoting means adapted for connection to said agricultural equipment;

(b) a trailing arm pivotally attached to said lower pivoting means and having a free end, said soil engaging tool being attached to said free end;

(c) a sloping extensile arm having an upper portion attached to said upper pivoting means and a lower portion;

(d) a sleeve member slidable along said trailing arm and pivotally attached to said extensile arm lower portion;

(e) fastening means adjustably securing said sleeve member in a desired position along said trailing arm, whereby said soil engaging tool is adjustable to a selected depth in the soil;

(f) stop means restricting the maximum length of said extensile arm;

(g) biasing means engaging and biasing said extensile arm upper and lower portions apart whereby said trailing arm and said soil engaging tool attached thereto are biased in a generally downward direction until said stop means is engaged;

(h) said extensile arm upper portion including an upper section and a lower section pivotally connected therebetween;

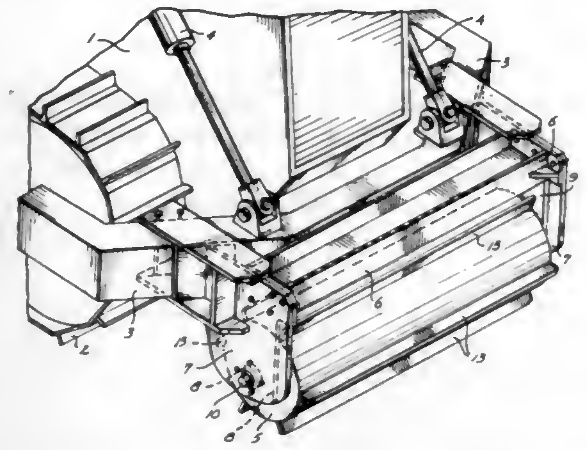
(i) first locking means whereby said upper and lower sections can be locked in an elongate position thereby lowering said soil engaging tool and engaging same with said soil by lengthening said extensile arm upper portion; and

(j) second locking means whereby said upper and lower sections can be locked in side by side position thereby raising and disengaging said soil engaging tool from said soil by shortening said extensile arm upper portion; and wherein:

(k) said first and second locking means in combination with said hinged upper and lower sections comprise an over center locking mechanism.

4,193,457
CUTOVER LAND RESTORER

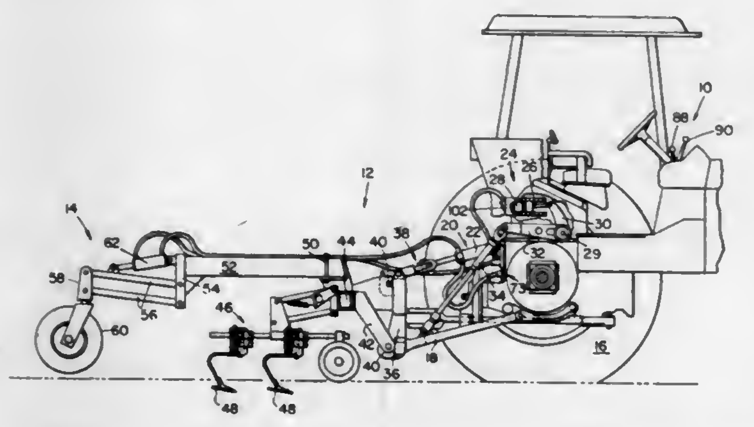
James H. Sphar, Silver Lake, Oreg.
Filed Jan. 12, 1978, Ser. No. 868,972
Int. Cl.² A01B *29/04*
U.S. Cl. 172—276 **2 Claims**



1. A cutover land restorer comprising a crawler tractor, an axially elongated roller having elongated slash-breaking cleats arranged with their lengths extending longitudinally of said roller, each cleat projecting outwardly from the circumference of said roller a distance approximately equal to one-third of the roller radius and the radius of said roller is between nine inches and eighteen inches, said roller having a circumferential wall extending between circumferentially adjacent cleats, and means for mounting said roller on said tractor for rotation about a horizontal axis extending transversely of said tractor with said cleats consecutively engaging the ground approximately on the same level as the tracks of said crawler tractor, and said mounting means being operable to press said roller against the ground, the circumferential spacing between adjacent cleats being a plurality of times as great as the radial width of said cleats for rolling said circumferential wall of said roller between said cleats on the ground.

4,193,458
TRACTOR AND IMPLEMENT AND HYDRAULIC SYSTEM THEREFOR

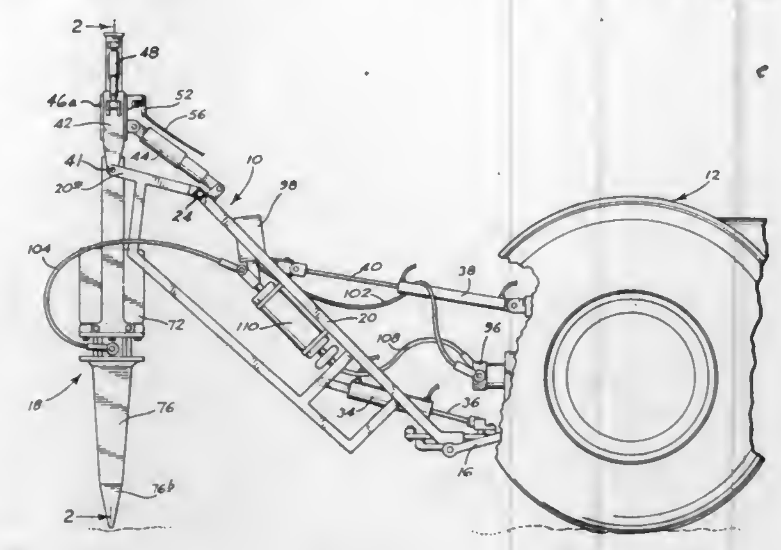
Harry M. Meinert, Des Moines, and John D. Long, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Jun. 5, 1978, Ser. No. 912,555
Int. Cl.² A01B *63/22*
U.S. Cl. 172—328 **8 Claims**



1. In an improved tractor and implement arrangement comprising: a tractor having a three-point hitch including a pair of pivotally-mounted trailing lower draft links and a pivotally-mounted upper link, means operatively connected to and for raising and lowering the lower draft links including a single-acting rockshaft hydraulic cylinder, a hydraulic fluid reservoir, a source of hydraulic fluid pressure connected with the reservoir, and a control valve coupled with the source and reservoir and having two outlets, said valve operative to direct the flow of hydraulic fluid through either outlet either from the source or to the reservoir; an implement including a toolbar carried by the three-point hitch, a trailing lift assist wheel, a lift assist frame rotatably supporting the wheel for vertical movement relative to the toolbar, and a double-acting lift assist hydraulic cylinder between the implement and wheel for vertically moving the wheel; a single-acting hydraulic cylinder operatively coupled with the upper link of the tractor; first fluid line means coupled with one outlet of the control valve and connecting the hydraulic link cylinder and one end of the lift assist hydraulic cylinder in parallel; and second fluid line means coupled with the other outlet of the control valve and connecting the other end of the lift assist hydraulic cylinder in parallel with the rockshaft hydraulic cylinder.

4,193,459
POST-HOLE DRIVER

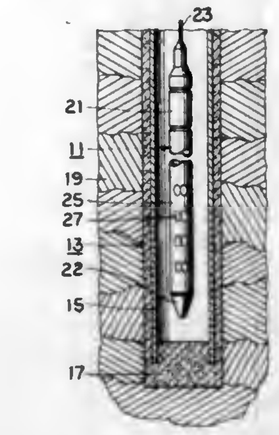
William J. Engstrom, 5608 E. 96th St., Puyallup, Wash. 98371
Filed Mar. 7, 1978, Ser. No. 884,138
Int. Cl.² E21C *11/02;* **E21B** *11/02*
U.S. Cl. 173—43 **5 Claims**



1. A post hole driver comprising:
(a) an elongated frame,
(b) frame mounting means comprising a draw bar arranged for attachment to a vehicle for pivotal movement about a horizontal axis relative to the vehicle, a cross bar connected to said one end of the frame and mounted on the draw bar for pivotal movement about an axis perpendicular to said horizontal axis, first extensible power means arranged to be connected at one end to the vehicle and at the opposite end to the frame for pivoting the latter about said horizontal axis, and second power means operatively interengaging the frame and draw bar for pivoting the frame about said perpendicular axis,
(c) universal pivot means comprising a yoke member connected pivotally to the said opposite end of the frame on a pivot axis extending transversely of the frame, and a bearing member connected pivotally to the yoke member on a pivot axis extending transversely of the frame and perpendicular to the first named pivot axis,
(d) an elongated shaft supported by the bearing member,
(e) a reciprocating drive hammer,
(f) a reciprocating drive hammer guide extending downward from the shaft guiding the hammer,
(g) an elongated hollow bit extending downward from the drive hammer and dimensioned to penetrate the ground to the desired depth of a post hole,
(h) an extensible fluid pressure piston-cylinder unit in the hollow bit engaging the drive hammer for alternately lifting and dropping the latter,
(i) the assembly of shaft, hammer, hammer guide and bit being suspended by the bearing member and yoke by gravity, whereby to position the bit for forming a vertical post hole in the ground irrespective of the angular disposition of the vehicle,
(j) a first shock absorber interconnecting the frame and yoke for resisting movement of the yoke relative to the frame,
(k) a second shock absorber interconnecting the bearing member and yoke for resisting movement of the bearing member relative to the yoke, and
(l) latch means releasably interengaging the bearing member and the shaft and operable upon release to allow the bit to move downward by gravity for engagement of its lower end with the ground.

4,193,460
PERFORATING GUN WITH PAIRED SHAPED CHARGER VERTICALLY SPACED

Bruce Gilbert, 2508 Durham, Brownwood, Tex. 76801
Filed Jul. 17, 1978, Ser. No. 925,369
Int. Cl.² E21B *43/117*
U.S. Cl. 175—4.6 **6 Claims**

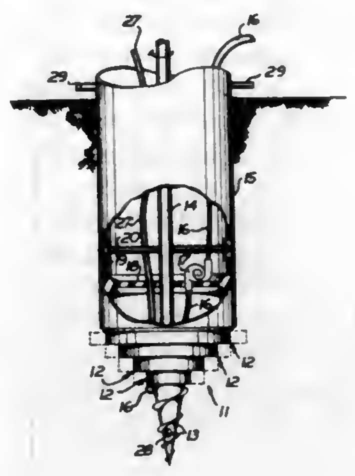


1. An improved perforating gun for perforating earth formations through a well casing wall with explosive jet charges, comprising:
a straight metal tube;
a rectangular bar extending substantially the length of the tube and secured inside the tube; and a plurality of bracket means for securing the charges to the bar in horizontal pairs that are vertically spaced apart each charge in each pair being in substantial contact with the other charge in the pair, the bracket means orienting all of the charges in the same direction and locating each charge within a pair so that its axis lies in a common plane with the other charge in the same pair, the common plane being perpendicular to the longitudinal axis of the tube;
the tube being of the type that will withstand disintegration when the charges are initiated allowing it to be retrieved to the surface;
the gun being adapted to be coupled to a decentralizer means for placing the gun in contact with a portion of the well casing wall, and including alignment means coupled to the bar for assuring that the charges all face the portion of the wall that the gun is contacting.

4,193,461
MEANS AND METHOD FOR FORMING AND ENLARGING HOLES IN SOIL

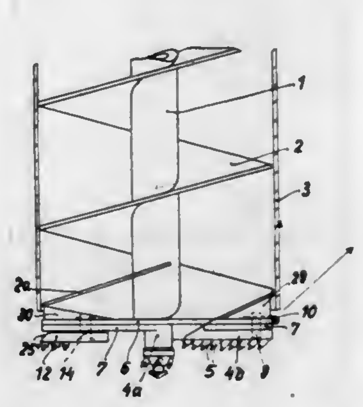
Bruce A. Lamberton, Berea, and Eduardo W. Bindhoff, Fairview Park, both of Ohio, assignors to Intrusion-Prepakt, Inc., Cleveland, Ohio
Filed Feb. 13, 1978, Ser. No. 877,091
Int. Cl.² E21B *11/02*
U.S. Cl. 175—19 **8 Claims**

1. A tool for forming or enlarging a hole in soil or similar earthen materials comprising a shaft having a bottom end adapted to be lowered into a hole as it is formed, a first ram assembly having a circular periphery of larger diameter than the cross-section of said shaft, concentrically mounted on said shaft near the bottom end thereof, said first ram assembly comprising at least one ram shoe moveable from a retracted position where the ram shoe forms a sector of the circular periphery of said first ram assembly, to an extended position where at least a portion of the ram shoe is disposed at a point which is a finite radial distance beyond the circular periphery of said first ram assembly, the generatrix of such points defining a first periphery of soil compaction, and means for moving said ram shoe between said retracted and extended positions, a second ram assembly mounted on said shaft above said first ram assembly having a circular periphery which is equal to or slightly less than said first periphery of soil compaction, said second ram assembly comprising at least one ram shoe moveable from a retracted position where the ram shoe forms a sector of the circular periphery of said second ram assembly, to an extended position where at least a portion of the ram shoe is disposed at a point which is a finite radial distance beyond the circular periphery of said second ram assembly, the generatrix of such points defining a second periphery of soil compaction.



4,193,462
ROTARY BORING HEAD

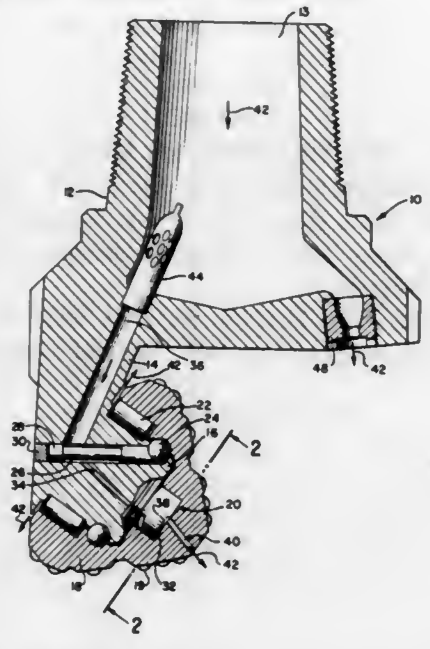
Kurt Blaschke, Saarbrücken-Dudweiler, and Josef Roob, St. Wendel, both of Fed. Rep. of Germany, assignors to Stahl- und Apparatebau Hans Leffer GmbH, Saarbrucken-Dudweiler, Fed. Rep. of Germany
Filed Mar. 2, 1978, Ser. No. 882,879
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2709030
Int. Cl.² E02D *17/14*
U.S. Cl. 175—292 **3 Claims**



1. A rotary boring head for boring holes in earth and rock formations and for use in connection with one or more bore tubes each having an end face, the rotary boring head comprising:
a helical screw;
a base plate at one end of said helical screw and disposed therebelow;
said helical screw and said base plate together partially defining a generally wedge-shaped space therebetween;
a rotatable chisel support coupled with said base plate;
a plurality of chisels on said support;

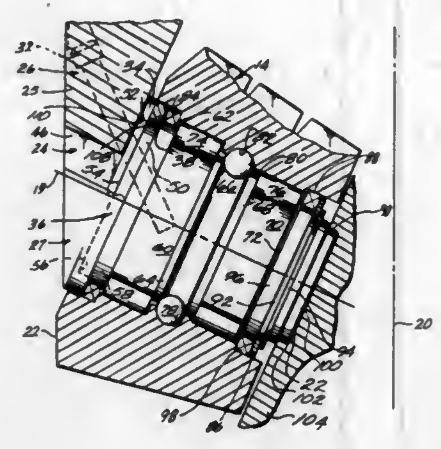
a pivotal wing mounted on said chisel support by a pivot shaft disposed parallel to the axis of rotation of said chisel support;
a plurality of chisels on said pivotal wing, said chisels on said wing being capable of cutting freely when said pivotal wing is swung into a radially outward working position in relation to said chisel support;
an abutment for limiting movement of said pivotal wing;
said pivotal wing being swingable into an inner rest position upon reversal of the direction of rotation of the boring head, which reversal takes place when the boring head is to be withdrawn from the bore hole;
said pivotal wing including on a radially outwardly disposed side wall thereof a return rail portion which is inclined upwardly in the boring direction for assisting swing back of said pivotal wing by impingement of said return portion on loosened earth or rock and/or the end face of the lowermost bore tube during withdrawal of the rotary boring head out of the bore hole; and
a generally wedge-shaped wall covering said generally wedge-shaped space in the region of said pivot shaft which mounts said pivot wing, said wall sealing against the ingress of earth masses and lumps of rock into said generally wedge-shaped space, said wall extending axially and in a circular arc.

4,193,463
DRILLING BIT FLUID-COOLED FRICTION BEARING
Robert F. Evans, La Habra, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Apr. 27, 1977, Ser. No. 791,626
Int. Cl.² E21B *9/10*
U.S. Cl. 175—337 10 Claims



1. A drill bit comprising:
a body having a bearing spindle mounted thereon;
a cutter rotatably mounted on said spindle with a portion of the cutter mounted directly on a cylindrically-shaped portion of the spindle forming a friction bearing for the cutter, the circumferential part of said cylindrically-shaped portion forming a radial friction bearing surface for said cutter, and the end face of said cylindrically-shaped portion forming a thrust bearing for said cutter, said friction bearing having a loaded zone and a non-loaded zone when said friction bearing is subjected to a load, said loaded zone being in surface to surface contact with said cutter;
fluid ducting means in said spindle for transmitting fluid to cool the spindle and the cutter and including a passage in said cylindrically-shaped portion forming the loaded zone of the friction bearing, said passage extending across said radial friction bearing surface and onto said end face and terminating near the center of said end face; and
means defining a hole through said cutter in communication with said passage at the center of said end face and with said fluid ducting means through said passage and extending to the cutter exterior so that a substantial and continuous coolant flow through the spindle and cutter can be maintained.

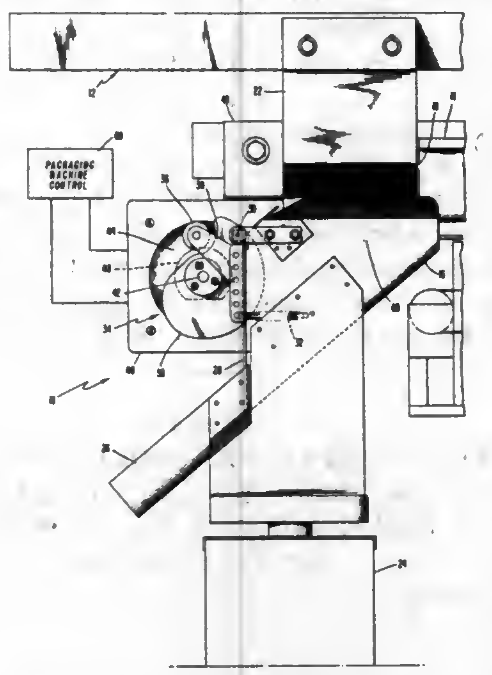
4,193,464
REPLACEABLE SHIRTTAIL
Robert L. Dixon, Brea, Calif., assignor to Smith International, Inc., Irvine, Calif.
Filed May 8, 1978, Ser. No. 903,811
Int. Cl.² E21B *9/08*
U.S. Cl. 175—364 18 Claims



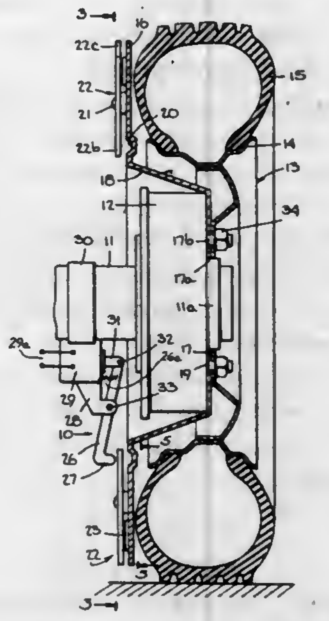
1. In an earth boring tool of the type having a rotary cutter, a shirttail having a base to protect the rotary cutter from the wall of a bore being formed in the earth, and an axis of rotation, an improvement comprising:
a journal forming a rotational axis of the cutter;
means for mounting the cutter on the journal for rotation about the rotational axis of the cutter, such means including bearing means between the cutter and the journal;
means for removably mounting the journal and cutter to the balance of the tool such that the cutter rotates at an acute angle to the wall of the bore with only a portion of the cutter intersecting the wall and with the balance of the cutter being radially inward of the wall, such mounting means including a yoke, the yoke having radially spaced-apart legs, the leg of the larger radius having an end surface with a radial component and an acircular in cross section notch in the end surface, the journal having an acircular in cross section lug received by the notch, whereby the journal cannot rotate with respect to the leg;
means for preventing the journal from rotating with respect to the yoke;
seal means between the bearing means and the yoke leg of larger radius; and
means for removably mounting the shirttail to the balance of the tool to protect the cutter from the wall of the bore, the base of the shirttail shielding the cutting means.

4,193,465
SCALE HOPPER DOOR MECHANISM
Nelson R. Henry, Decatur, Ga., assignor to The Woodman Company, Inc., Decatur, Ga.
Filed Jan. 27, 1978, Ser. No. 872,945
Int. Cl.² G01G *13/16;* B67D *3/00*
U.S. Cl. 177—108 7 Claims

1. A scale hopper door mechanism for controlling flow of loose product from a scale hopper in a packaging machine, said mechanism comprising a pivoted door, means biasing said door towards its closed position, a cam follower carried by said door, and a rotary cam acting in combination with said cam follower to force said door open against the influence of said biasing means, said rotary cam being mounted independently of the scale hopper, and said rotary cam having a profile such that said cam follower is not in contact with said rotary cam while product is being weighed in the scale hopper.

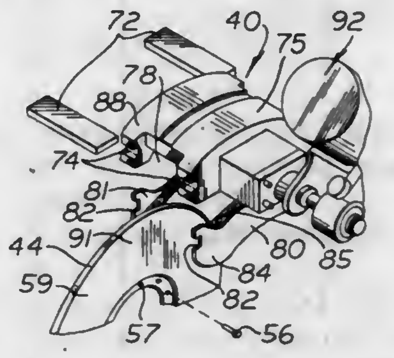


4,193,466
TRACTION-ENHANCING DEVICE FOR AUTOMOTIVE VEHICLE DRIVE WHEELS
Fernando Arberman, 64-11 99th St., Rego Park, N.Y. 11374
Filed Feb. 8, 1979, Ser. No. 10,308
Int. Cl.² B60B *15/00*
U.S. Cl. 180—15 8 Claims



1. A traction-enhancing device for an automotive vehicle having a drive wheel axle and a tired drive wheel mounted thereon, said device comprising:
an annular disc having an outer diameter less than that of the tread of the tire when the same is properly fully inflated, and means for mounting said annular disc on said drive wheel axle inboard of said drive wheel and for joint rotation with said drive wheel, said annular disc being provided, between and concentric with its inner and outer peripheral edges, with an annular groove formed on that face of said annular disc to be directed inboard of the vehicle when said annular disc is mounted on said drive wheel axle;
at least one traction element rockably mounted on said annular disc at said face of the latter for angular movement relative to said annular disc and between a rest position and a working position, said traction element having a foot portion projecting toward said outer peripheral edge of said annular disc and a cam portion projecting toward said inner peripheral edge of said annular disc, said foot portion being dimensioned to extend beyond the ground-engaging tread surface of a fully inflated tire associated with said annular disc when said traction element is moved to said working position, and said cam portion being dimensioned to overlie said annular groove when said traction element is in said rest position;
resilient means interconnected between said annular disc and said traction element for biasing the latter toward said rest position thereof;
an abutment member having a tip end region dimensioned to fit smoothly slidably into said groove, and means for supporting said abutment member for reciprocal movement of said tip end region thereof between protracted and retracted positions relative to said annular disc, said supporting means being adapted, when mounted on the vehicle, to dispose said tip end region of said abutment member in position to enter and be received in the nadir of said groove upon said tip end region being moved to said protracted position thereof; and
operating means for effecting said reciprocal movement of said tip end region of said abutment member;
said cam portion of said traction element and said abutment member, upon protraction of said tip end region of the latter into said groove and concurrent rotation of said annular disc with a vehicle drive wheel when the tread of the tire on the latter is located on a slippery surface on the ground, coating whenever said cam portion comes into engagement with said tip end region, to move said traction element out of said rest position and to shift said foot portion thereof so as to project beyond the tire tread and engage the ground for providing a temporary increase in traction and a small degree of vehicle momentum to enable the vehicle to escape from said slippery surface.

4,193,467
PARKING BRAKE MOUNTING
Gerald P. Simmons, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 13, 1977, Ser. No. 859,360
Int. Cl.² B60T *1/06;* F16D *65/12*
U.S. Cl. 180—271 7 Claims



1. In a braking system for a vehicle having a frame with a pair of spaced apart side walls, an engine carried by the frame, a drive line running from the engine to a differential, a pair of wheels carried on an axle extending from said differential and being driven by said drive line, in combination, a brake assembly acting on said drive line to stop rotation of said drive line and said wheels, a crossbeam extending between the side walls of said frame, a brake disc encircling said drive line and being rigidly attached to said drive line, said brake assembly being mounted on said crossbeam and having a caliper straddling one portion of said brake disc, said caliper being slidably mounted on said crossbeam for movement parallel to said drive line, said caliper having spaced apart brake shoes with one shoe aligned with one portion of one face and the other shoe aligned with the opposite portion of the other face of said brake disc, actuator means on said brake assembly for urging said brake shoes into contact with said brake disc and for releasing said brake shoes from said contact with said brake disc.

4,193,468

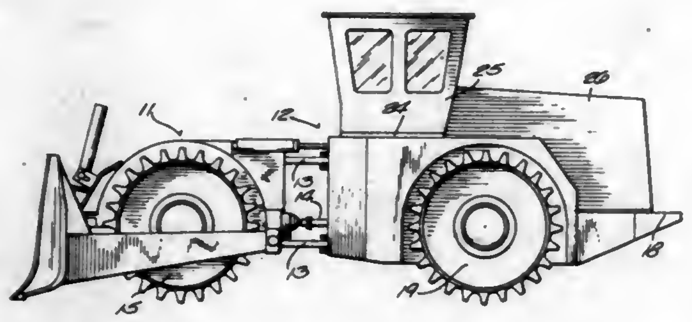
COMBINATION VEHICLE UNDERPAN AND MAINTENANCE PLATFORM

Charles F. Riddle, Brookfield, Wis., and Paul E. Ritchey, Madison, Ind., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Aug. 23, 1978, Ser. No. 936,165

Int. Cl.^{2} B62D *25/20*

U.S. Cl. 180—89.17 **6 Claims**



1. A relatively large, self-propelled machine including a frame having lower plates which define an opening for access to and entry into the interior of the frame from the underside thereof for servicing the operating components of the machine positioned in said interior, an underpan which is selectively movable vertically to upper and lower positions respecting the frame, in the upper position the underpan being disposed to close said opening and being essentially flush with said plates for sliding over projecting objects over which the machine passes, and actuating means positioned within the interior of said frame and supported thereby and connected to said underpan for raising and locking the underpan in the described upper position and for lowering the underpan to a lower position where it may lie on the ground beneath the machine and where being spaced below the frame it provides entry to the interior of the frame through said opening, said underpan having upper edges which are smoothly rounded so as to present no sharp edges to the mechanic in making such entry and a top side which is smooth and may be readily wiped clear of oil and debris by the mechanic in making such entry, the top side of said underpan being flat and when spaced below the frame such that it serves as a platform on which a mechanic may lie or stand while servicing the operating components of the machine positioned therein.

4,193,469

VEHICLE ATTACHMENT FOR INCREASING ADHESION TO THE SUPPORTING SURFACE BY SUCTION FORCE

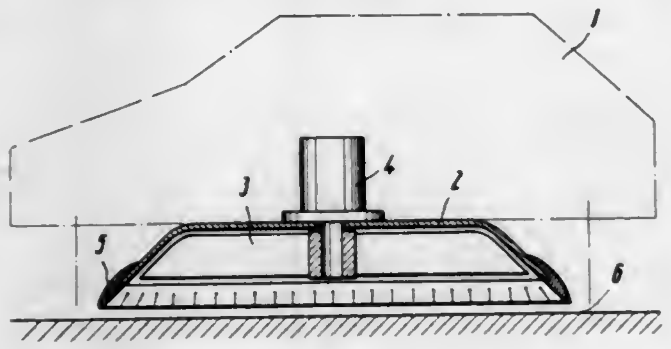
Dieter Graf, Lupsteiner Weg 4, 1 Berlin 37, Fed. Rep. of Germany

Filed Dec. 27, 1977, Ser. No. 864,547

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1977, 2700395

Int. Cl.^{2} B60B *39/00*

U.S. Cl. 180—164 **7 Claims**



1. An apparatus for generating traction of a vehicle to a driveway surface by generating a suction force between said vehicle and said driveway surface, said apparatus including:

a hood having an opened bottom and means for firmly mounting said hood to said vehicle to define a gap between the rim of said hood and said driveway surface;

a wheel having radially extending blades rotatably mounted within said hood such that the axis of rotation of said bladed wheel is perpendicular to said driveway surface, and

means for driving said bladed wheel,

wherein at least a partial vacuum is created only under the entire hood through centrifugal force generated by the rotating wheel, said centrifugal force initially acting upon said air under said hood and expelling it radially therefrom, said centrifugal force further acting upon air entering said gap and expelling it radially therefrom.

4,193,470

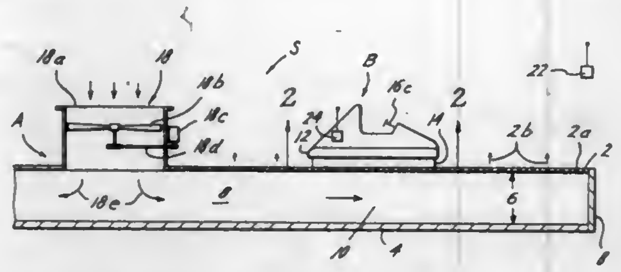
FLUID PROPELLED VEHICULAR SYSTEM

Russell J. Logan, 29007 Atherstone, Spring, Tex. 77373

Filed Nov. 13, 1978, Ser. No. 959,511

Int. Cl.^{2} B60V *1/04*

U.S. Cl. 180—117 **19 Claims**



1. A fluid propelled vehicular system comprising:

a pressurized fluid delivery assembly having a support floor elevated from a support base and a perimeter barrier forming an enclosure for pressurized fluid received from a suitable source, said support floor having a plurality of openings across the surface thereof to permit the passage of pressurized fluid therethrough;

a vehicle body having a platform portion and a skirt portion, said platform portion and skirt portion forming a fluid receiving chamber, said skirt having a surface area to respond to the force exerted by upwardly directed pressurized fluid thereagainst, said skirt having an outlet adjacent said chamber permitting pressurized fluid to exit from said chamber, to cause movement of said vehicle body over said support floor; and

a rudder means having a movable vane rotatably mounted in said outlet to control the direction of movement of said vehicle body by controlling the direction of exit of fluid from said chamber.

4,193,471

POWER STEERING CONTROL WITH MAINTENANCE OF HYDRAULIC BLOCKING OF POWER CYLINDER

Armin Lang, Schwabisch-Gmund, Fed. Rep. of Germany, assignor to Patentburo Zahnradfabrik Friedrichshafen AG., Friedrichshafen, Fed. Rep. of Germany

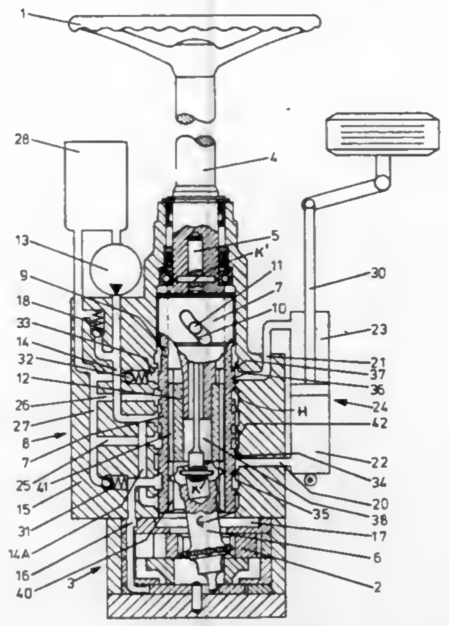
Filed Jan. 5, 1978, Ser. No. 867,300

Int. Cl.^{2} B62D *5/08*

U.S. Cl. 180—154 **5 Claims**

1. In a booster steering system of the kind described comprising a flow control valve means having a valve sleeve (**7**) and housing (**15**) each having grooves effecting coacting lands and being relatively movable responsive to operator control from a neutral position to selectively open and close gaps for controlling flow of pressure and exhaust fluid with respect to the pressure chambers (**22, 23**) of a double acting power steering cylinder (**24**) having a piston between said pressure chambers, and comprising in said system a tank (**28**) source of fluid and said system having connection means for fluid flow responsive to relative position of said valve sleeve and housing; and means (**5, 10, 11**, etc.) for providing return movement between said valve sleeve and said housing to said neutral position following operator controlled movement thereof from said neutral position;

the improvement wherein said valve sleeve and housing have a pair of overlappable coacting lands (**37**) disengaged in said neutral position to effect an open gap operative to permit communication between one (**23**) said pressure chamber and said tank via said connection means with a one way check valve (**32**) blocking said communication to said tank but openable by suction from said pressure chamber to permit flow from said tank to said pressure chamber to maintain said one pressure chamber fluid filled in the event of leakage therefrom, said valve sleeve and housing having a pair of coacting overlapping lands effecting a closed gap (**35**) in said valve sleeve neutral position to block flow through said connection means from the other pressure chamber (**22**) to said tank, whereby said pressure chambers are hydraulically blocked in any steering operated position or neutral position when said valve sleeve is in neutral position.



4,193,472

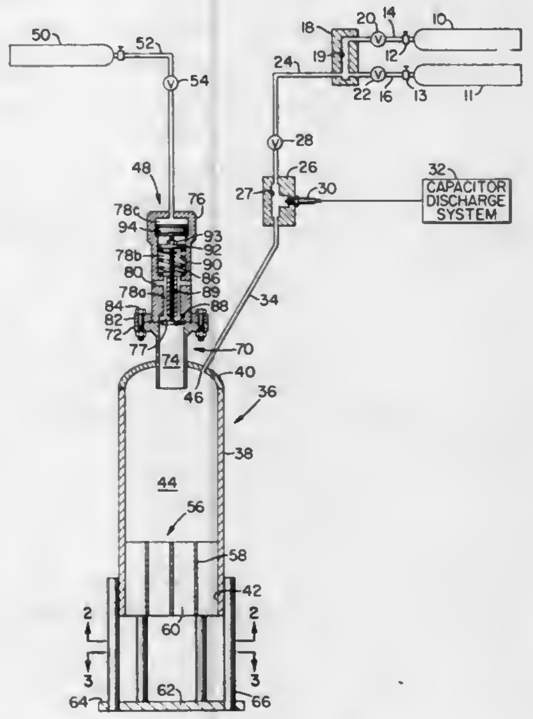
OPEN-ENDED SEISMIC SOURCE

Robert A. Kirby, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jul. 21, 1978, Ser. No. 926,671

Int. Cl.^{2} G01V *1/38, 1/10*

U.S. Cl. 181—118 **16 Claims**



1. An apparatus for generating pulses in a liquid medium, said apparatus comprising:

a barrel defining a chamber which holds gas and which has an outlet communicating between the chamber and the medium;

means for abruptly increasing the pressure of the gas in the chamber so that at least some of said gas escapes from the chamber through the outlet into the medium and creates a pulse in the medium; and

a reaction plate having a face and being connected to the barrel and disposed outside the barrel adjacent to and spaced from the outlet so that gas escaping through the outlet impinges upon the face of said reaction plate, said face having a surface area greater than the cross-sectional area of said outlet,

whereby the recoil of the barrel caused by the escaping gas is reduced.

4,193,473

REFRACTIVE STIGMATIC SYSTEM FOR ELASTIC SURFACE WAVES

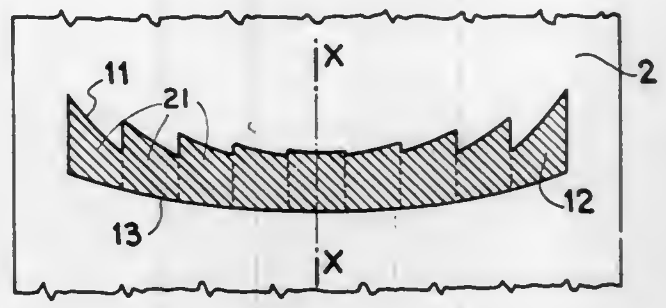
Pierre Hartemann, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 520,203, Nov. 1, 1974, abandoned. This application Jul. 7, 1977, Ser. No. 813,650

Claims priority, application France, Nov. 2, 1973, 73 39082

Int. Cl.^{2} G10K *11/00*

U.S. Cl. 181—176 **9 Claims**



1. A refractive stigmatic system for the directive transmission of elastic surface waves, said system comprising: a substrate having a surface for propagating said elastic surface waves, and at least one refractive zone located in said surface; the velocity of propagation of said elastic surface waves in the extent of said refractive zone differing by a predetermined amount from that encountered in the neighboring regions of said surface; means for imparting a bending to the paths of travel followed by said elastic surface waves including a string of elementary tapered zones formed in said refractive zone; the mean paths of travel located midway between the limits of each said elementary zones being substantially equal from one of said elementary zones to the next for equalizing the attenuation undergone by said elastic surface waves upon being refracted by said refractive zone, the respective widths of said elementary zones measured along said string being greater than a multiple of the wavelength of said elastic surface waves upon which said bending is imparted.

4,193,474

SOUND INSULATING UNIT AND SOUND BARRIER

Katsuyuki Okubo, Osaka; Nobuyasu Ueda, Hyogo, and Tetsumi Ono, Chiba, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

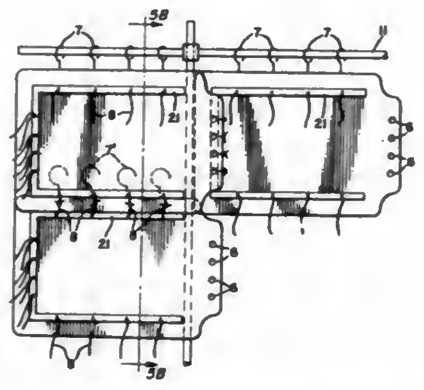
Filed Apr. 11, 1978, Ser. No. 895,391

Int. Cl.^{2} E04B *1/343, 1/82;* C04B *43/00*

U.S. Cl. 181—287 **14 Claims**

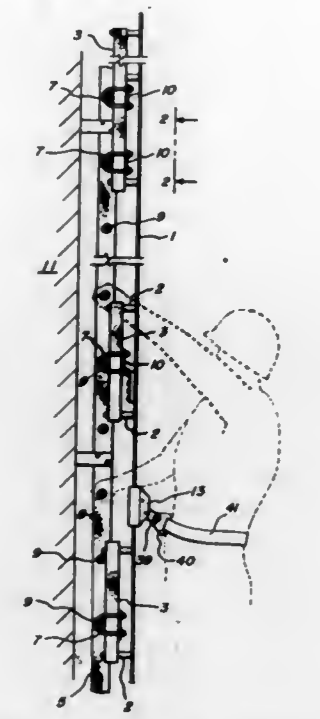
1. A sound insulating unit comprising:

a flexible sheet of a polymeric material and a high density inorganic material, said inorganic material being in the form of a powder or fiber, said sheet having a surface density of at least 2.0 Kg/m^2, and means for connecting and detaching said unit to at least another of said unit, said connecting and detaching means affixed to said unit, wherein said connecting and detaching means being adapted for overlapping of the edges of said units being connected to each other and preventing sound leakage from the overlapping portion.



4,193,475
RIGID RAIL SAFETY DEVICE

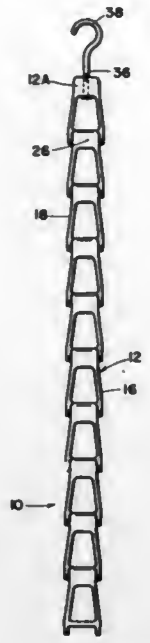
Robert P. Sweet, and Daniel L. Stember, both of Red Wing, Minn., assignors to D B Industries, Inc., Red Wing, Minn.
Continuation-in-part of Ser. No. 680,281, Apr. 26, 1976, Pat. No. 4,071,926, which is a continuation-in-part of Ser. No. 468,568, May 9, 1974, Pat. No. 3,979,797. This application Nov. 23, 1977, Ser. No. 854,152
Int. Cl.² E06C *5/36;* **A62B** *1/16;* **E06C** *7/18;* **F16G** *11/00*
U.S. Cl. 182—8 **13 Claims**



1. A safety rail system for mounting on a ladder, said system comprising:
- an elongated rail having a substantially rectangular cross-section and being relatively thin whereby when said rail is installed with the elongation parallel to the longitudinal extent of the ladder, said rail may be easily bent about an axis parallel to the ladder rungs so as to follow ladder contours;
- at least one mounting bracket for attachment to a plurality of said rungs;
- means for attaching each said mounting bracket to a plurality of said rungs, said attaching means being infinitely adjustable along the length of said mounting bracket, and
- means for securing said rail to said brackets, in spaced relationship outwardly from said ladder and said brackets, said securing means comprising:
  - a plurality of bolts, said bolts having tapered heads;
  - a corresponding plurality of tubular spacers each of said spacers having a bore sized to accommodate one of said bolts, each of said spacers being of such length and diameter so as to allow a safety clamp to substantially encircle said safety rail;
- said safety rail having a plurality of spaced countersunk holes to accommodate said bolt heads flush with the surface of said rail, thereby presenting a plane surface for gripping engagement; and
- said spacers being located between said mounting brackets and said rail, said bolt heads being located in said countersunk holes, said bolts fastening said rail to said brackets with said spacer bores accommodating said bolt therebetween.

4,193,476
LINK LADDER

Jerry D. Emmons, Box 53, Ochelata, Okla. 74051
Filed Sep. 11, 1978, Ser. No. 941,232
Int. Cl.² E06C *1/36, 1/52, 5/30*
U.S. Cl. 182—164 **5 Claims**

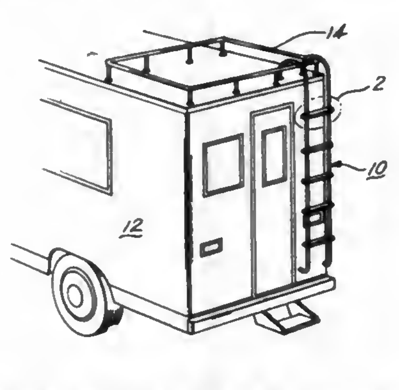


1. A collapsible ladder comprising a plurality of link members pivotally secured in end-to-end relation abutment, means provided on each link member for cooperating with the adjacent link member to preclude relative rotation therebetween in one direction, arcuate means provided on each link member for cooperating with the adjacent link member for facilitating relative rotation therebetween in an opposite direction for collapsing of the ladder during periods of non-use, engagement means provided on at least one link member for securing the ladder during periods of use, and wherein each link member is substantially A-shaped configuration whereby the head of the "A" of one link may be disposed between the legs of the adjacent link member for securing the links in said end-to-end relation, and wherein the cross bar of the "A" of each link member provides a rung for the ladder.

4,193,477
LADDER STRUCTURE

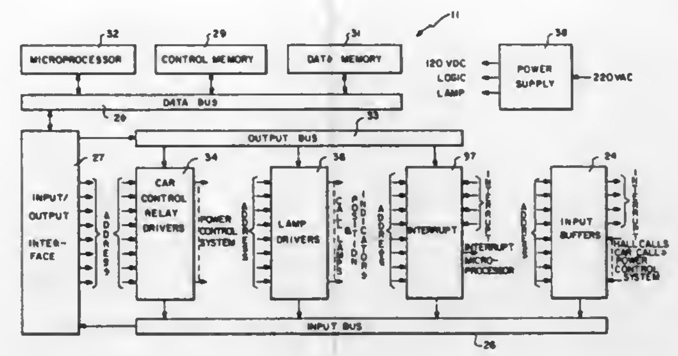
Wayne R. Broyles, Elkhart, IN, assignor to Ronald A. Minichillo, Elkhart, Ind., a part interest
Filed Sep. 25, 1978, Ser. No. 945,434
Int. Cl.² E06C *5/02, 7/08*
U.S. Cl. 182—194 **7 Claims**

1. A ladder structure comprising two spaced, vertical side rails, a plurality of vertically spaced step units mounted on said side rails, each step unit including a horizontally disposed step having longitudinal slots extending inwardly from each end of said step for receiving said side rails and having downwardly extending side walls and inwardly extending flanges at the lower edge thereof forming laterally spaced grooves, separate end caps on the ends of said step for closing the ends of said slots, each of said end caps having portions for seating in said grooves when said caps are secured to the ends of said step, and screw means extending through the respective side rails and into said step to secure said step to said side rails.



4,193,478
ELEVATOR CONTROL SYSTEM AND METHOD

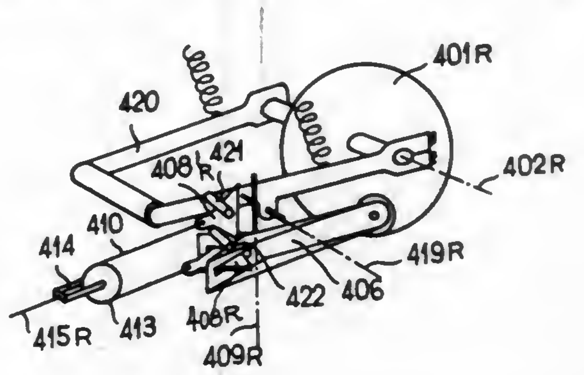
Vernon P. Keller; Don B. Alley, both of Sacramento, and Steven T. Majoewsky, Placerville, all of Calif., assignors to Elevator Industries, Sacramento, Calif.
Filed Apr. 26, 1977, Ser. No. 791,157
Int. Cl.² B66B *1/16*
U.S. Cl. 187—29 R **22 Claims**



1. An electronic control system for controlling indicator and drive components for an elevator in a hoistway responsive only to control output signals of a relatively high predetermined voltage level resulting from elevator car command and status inputs at said high voltage level, said command and status inputs being responsive to and dependent on the command for the status of said elevator at any given time in its operation, comprising
- input buffer means located in a remote vicinity of said hoistway and coupled to receive the command and status inputs for converting all of the latter to input data at a relatively low predetermined voltage level,
- means for receiving output data all of which is at said low voltage level and converting the latter to said high voltage level control output signals in response thereto,
- interface means for receiving and transmitting said input and output data therethrough,
- a data memory coupled to said interface means to receive and store said input data,
- a program memory coupled to said interface means and having a plurality of program instructions therein,
- a data processor providing serial functions coupled to said program and data memories and said interface means, said data processor operating in continuous cycles, each in accordance with a predetermined program routine to determine the status of said input data, to store said input data in said data memory, to fetch stored input data in accordance with said program, to formulate output data in accordance with said program and fetched stored input data, and to transfer said output data through said interface means to said means for receiving output data for providing said control output signals and controlling said indicator and drive components, whereby each system input is read during each program routine cycle, and each system output is set or reset as appropriate during the same cycle.

4,193,479
BRAKING ARRANGEMENT AND BRAKE, PARTICULARLY FOR TWO-WHEELED VEHICLES

Jean-François Quilici, Saint Cloud, France, assignor to Renault Moteurs Developpement, Boulogne-Billancourt, France
Filed Dec. 14, 1977, Ser. No. 860,482
Claims priority, application France, Dec. 14, 1976, 76 37582
Int. Cl.² B60T *1/06*
U.S. Cl. 188—2 A **4 Claims**



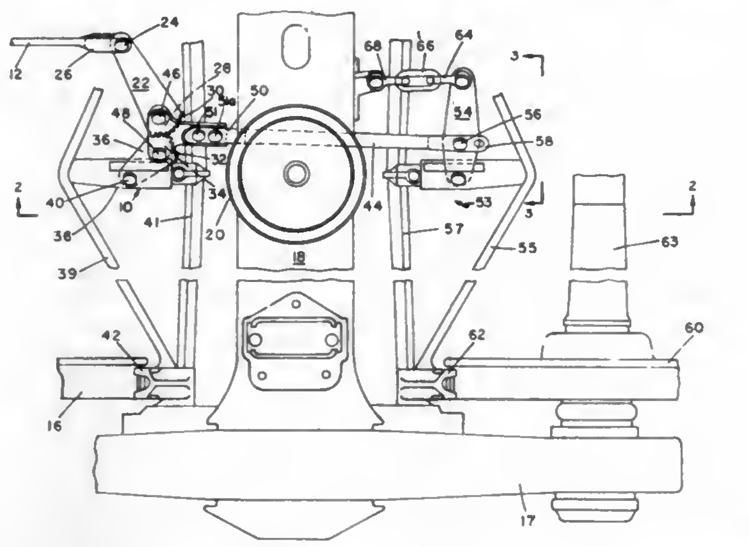
1. A disk brake for vehicles equipped with a system of coordinated braking of the front and rear wheels which comprises:
- a disk brake associated with a wheel of the vehicle and extending from a hub part of said wheel;
- a caliper holder including only a first and second friction pad mounted thereon and disposed one on each side of the disk so as to always contact said disk upon engagement of said friction pads with said disk;
- means for controlling the clamping of the disk between the friction pads;
- means for pivoting the caliper holding the pads onto an element of the vehicle frame, outside the periphery of the disk and parallel to the axis thereof;
- means for controlling the radial displacement of the caliper operatively associated with said pivoting means so as to obtain a variation in the distance between the friction pads and the axis of the disk as a linear function of the clamping force including
- a cam for controlling the radial displacement of the caliper interposed between the caliper and a frame carrying the caliper; and
- a first and second stop attached to the vehicle frame and the lining holder caliper such that the cam controlling the radial displacement of the caliper is interposed between said first and second stop.

4,193,480
RAILWAY CAR BRAKE RIGGING

Lowell L. Malo, St. Peters, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Jun. 28, 1978, Ser. No. 920,311
Int. Cl.² B61H *13/04*
U.S. Cl. 188—52 **9 Claims**

1. A brake rigging for a railway car comprising: a top rod extending over an inner truck axle; said inner axle attached at opposite ends thereof to inner wheels; said top rod connected to a gear means located between said inner axle and a truck bolster; said gear means including a first gear lever having a curved segment end portion with gear teeth thereon which engage gear teeth on a curved segment portion of a second gear lever; said first and second gear levers lying in a common plane which is obliquely oriented relative to said inner axle; said second gear lever connected to an inner brake beam having shoes thereon and said inner brake beam extending between said inner wheels; inner connecting means attached to at least one of said first and second gear levers and connected to a first end of a longitudinally extending bottom connection which extends through said truck bolster; said bottom connection having an opposite end with outer connecting means for attaching said bottom connection to an outer brake means having shoes thereon for applying the brakes to a pair of outer

wheels; whereby when said top rod is moved longitudinally of the car, said first and second gear levers are moved toward said inner axle, which moves said inner brake beam shoes into engagement with said inner wheels and prevented further inward movement of said second gear lever; and whereby further inward movement of the top rod results in relative rotation between said first and second gear levers and movement of said bottom connection outwardly through the bolster to move said outer brake beam outwardly to apply the outer brake shoes to said outer wheels.



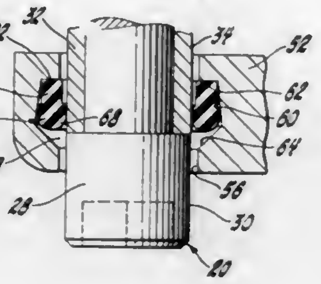
4,193,481
DRAG FREE SLIDING CALIPER DISC BRAKE BUSHING

Langley H. Wunderlich, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 25, 1978, Ser. No. 927,855

Int. Cl.² F16D ***65/54***

U.S. Cl. 188—71.8 **4 Claims**



1. In a drag-free sliding caliper disc brake having
a cylindrical support member;
a caliper housing member having a cylindrical opening therethrough through which said support member extends;
one of said members having a groove formed therein defined by a bottom wall and side walls and opening toward the other of said members within said cylindrical opening; the improvement comprising:
an annular resilient rubber-like bushing received in said groove, said bushing having a toroidal main body engaging said groove bottom wall and the cylindrical surface of said other member in a grip-slip relation, said bushing having a series of circumferentially spaced resilient protrusions extending from said main body in an axial direction and normally engaging one of said groove side walls and radially spaced from said other member so as to have no radial loading thereon;
said bushing protrusions being axially compressed upon brake actuation by sliding movement of said caliper housing member relative to said support member in the brake actuating direction, said bushing protrusions upon brake release expanding axially and moving said caliper housing member relative to said support member in the brake releasing direction until there is no brake drag, said bushing main body slipping relative to said other member during brake actuation only when the sliding movement is sufficient to require adjustment of the brake release position of said caliper housing member relative to said support member.

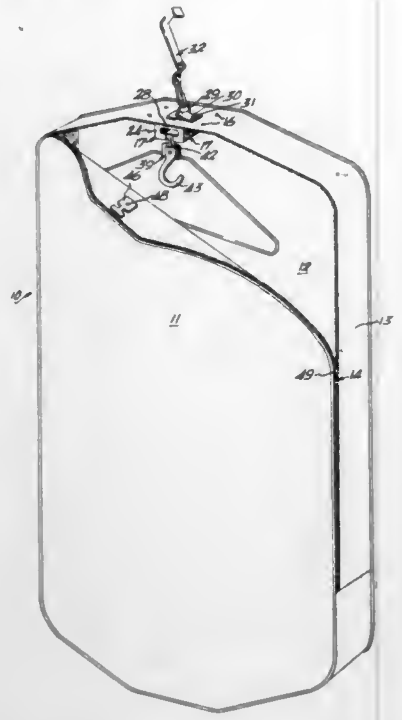
4,193,482
GARMENT BAG HANGER ASSEMBLY

William Koff, 2100 S. Ocean La., Fort Lauderdale, Fla. 33316

Filed Apr. 30, 1979, Ser. No. 34,406

Int. Cl.² A45C ***13/00***

U.S. Cl. 190—41 B **10 Claims**



1. A garment bag hanger assembly comprising, in combination, a garment bag having elongated, flexible front and back panel members, a peripheral gusset interconnecting said front and back panel members and defining therewith an interior garment enclosing chamber, a hanger member for hangingly supporting garments, a hanger slide support member fixed with respect to the inside of a central top portion of said gusset, said hanger slide support member comprising a front-to-back, slotted base portion and an upstanding front wall portion having a through opening communicating with said base portion slot, said through opening comprising a relatively wide upper end portion, said hanger comprising at its upper end a slide member receivable through said front wall portion through opening and defining a first laterally extending portion seatable and slidable along the front-to-back slotted base portion of said hanger slide support member, means for separating an upper portion of said front panel member at its line of juncture with said peripheral gusset to permit access to said interior garment enclosing chamber, a keeper member secured to an inside central portion of said front panel member, said keeper member being receivable through said front wall portion through opening and defining a second laterally-extending portion seatable upon the front-to-back slotted base portion of said panel slide support member.

4,193,483
LATCH OPERATED COIL SPRING CLUTCH

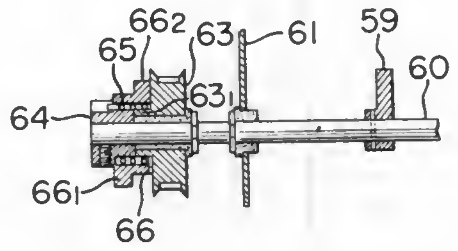
Masao Ariga, Kawasaki; Hiroyuki Hattori, Inagi; Katsuichi Shimizu, Hoya; Hirotoshi Kishi, Tokyo; Hiroshi Ogawa, Kawasaki; Takahiko Amanuma, Tokyo; Kazumi Umezawa, and Seiji Sagara, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1977, Ser. No. 841,209

Claims priority, application Japan, Oct. 22, 1976, 51-127493

Int. Cl.² F16D ***13/08***

U.S. Cl. 192—26 **2 Claims**



1. A spring clutch device comprising:
a driving side clutch shell;
a driven side clutch shell opposed to and coaxial with said driving side clutch shell;
a clutch spring disposed in a tight manner over said two clutch shells;
a stop member disposed coaxially with said clutch shells and engaged with one end of said clutch spring to control the action of said clutch spring, said stop member having projections formed on the circumference thereof in an axially and circumferentially staggered relationship; and
a control member selectively displaceable to axial positions corresponding to said axially staggered projections to selectively contact said projections to thereby control the engagement and disengagement thereof with said driven side clutch shell.

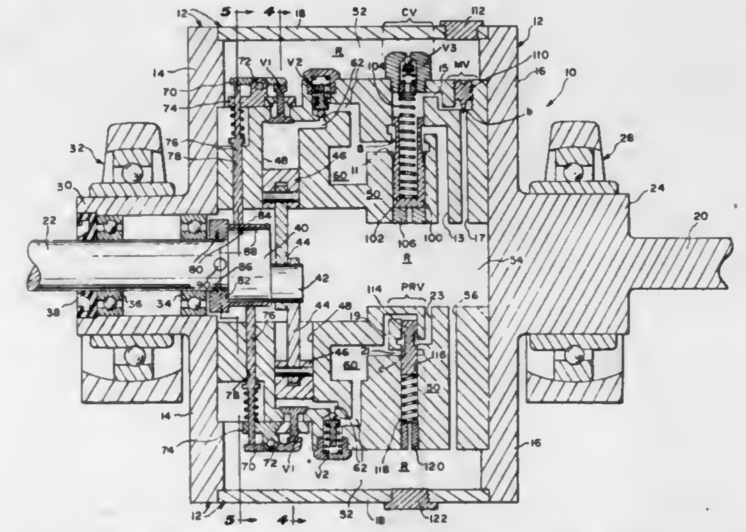
4,193,484
ROTARY HYDROSTATIC COUPLING

Samuel A. Collier, 1714 S. Olive, Pittsburg, Kans. 66762

Filed Apr. 6, 1978, Ser. No. 893,949

Int. Cl.² F16D ***31/00, 43/284***

U.S. Cl. 192—60 **16 Claims**



1. A hydrostatic coupling comprising a casing establishing an internal fluid reservoir including a peripherally disposed outer annular reservoir space and a centrally disposed inner reservoir space in communication with said outer space, a coaxial drive shaft carried by the casing, a driven shaft axially aligned with said drive shaft and projecting into said inner reservoir space in sealed relationship, radially disposed cylinders interiorly of the casing for rotation bodily therewith, means within the casing establishing a fixed volume manifold intermediate said outer and inner reservoir spaces and having plural channels leading therefrom to the reservoir, a crank head on said driven shaft, a piston for each cylinder reciprocable between inner and outer positions, an inflow check valve effective between each cylinder and the outer reservoir space for admitting centrifugally pressurized fluid to the cylinder for charging purposes to drive the piston to its inner position, an outflow check valve effective between each cylinder and the manifold, and valve means for controlling the flow of fluid through said channels and effective to variably bleed fluid from the manifold to the reservoir, and means responsive to rotation of the driven shaft relative to the drive shaft and engageable with the inflow valve for controlling the operation of the latter.

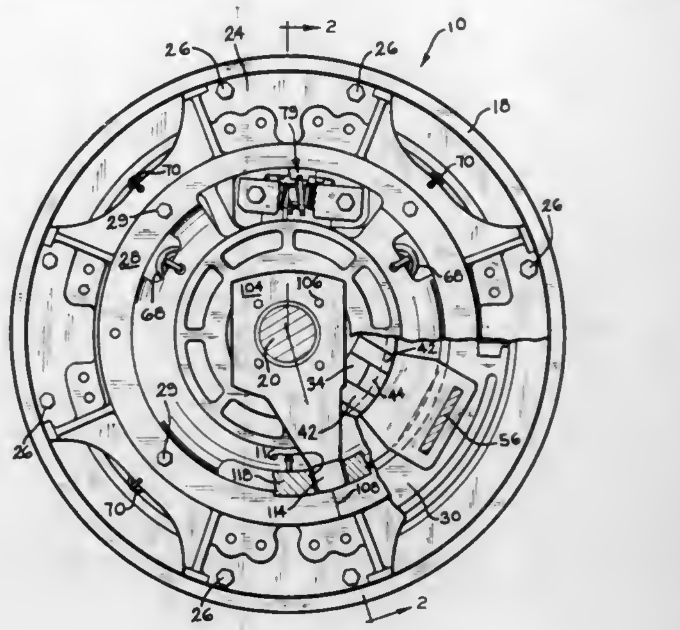
4,193,485
AIR PRESSURE LOADED CLUTCH

Marvin D. Johns; Gordon W. Denton, both of Fort Wayne, and Ronald E. Heymann, Auburn, all of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 29, 1977, Ser. No. 865,542

Int. Cl.² F16D ***25/08***

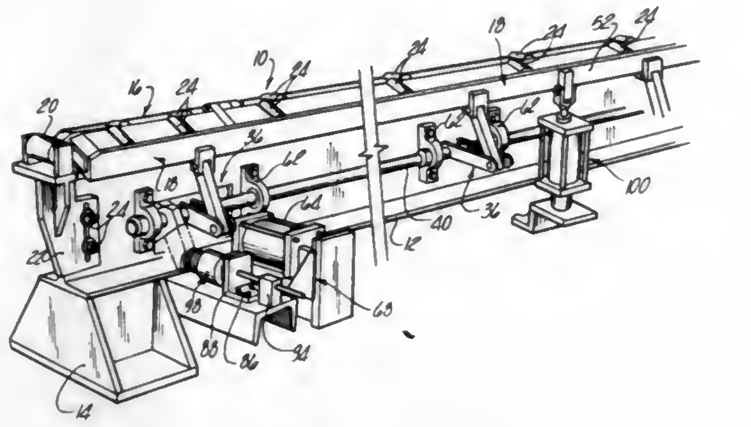
U.S. Cl. 192—85 CA **4 Claims**



1. In a friction clutch adapted to drivingly connect rotatable drive and driven members, a cover secured to the drive member for rotation therewith, a pressure plate rotatably drivable by the cover and axially movable relative thereto, the pressure plate selectively engageable with the driven member, pivotable levers disposed between the cover and pressure plate for moving the pressure plate axially relative to the cover, and a collar rotatably drivable by the cover and axially movable relative thereto, the collar selectively engageable with the levers for effecting pivotal movement thereof; the improvement comprising a non-rotatable hydraulic unit including:
a housing supported by the cover,
a piston assembly supported by the collar,
a sliding connection interconnecting said housing and said piston assembly, said sliding connection including an axially extending tongue on said piston assembly slidably received in said groove,
an expansible diaphragm secured to said housing and engageable with said piston assembly,
a pressure chamber between said diaphragm and said housing,
porting in said housing for pressurizing said pressure chamber, and
means for biasing the collar toward the cover.

4,193,486
DOUBLE DUMP RUNOUT TABLE

Alexander Borzym, Dearborn, and John J. Borzym, Birmingham, both of Mich., assignors to Alpha Industries, Inc., Novi, Mich.
Filed Mar. 19, 1979, Ser. No. 21,539
Int. Cl.² B65G *13/00*
U.S. Cl. 193—35 R **15 Claims**

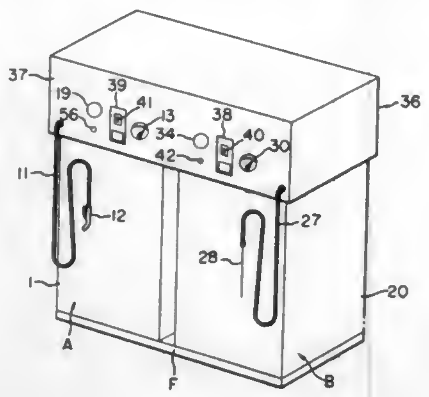


1. A runout table comprising:
a table frame;
a pair of elongated Vee side assemblies extending away from each other and along the length of said machine frame to form a supporting surface;
means mounting said respective Vee sides for pivotal movement with respect to said machine frame from an up position extending upwardly to form a V-shaped receiving surface, to respective down positions whereat each of said Vee side assemblies is inclined downwardly below the horizontal to enable the workpiece to move by gravity laterally off said runout table;
means for positioning each of said Vee side assemblies in said up and down positions, respectively, about said pivotal support means, said means including respective rocker shafts extending downwardly down the length of and parallel to said Vee side assemblies;
a plurality of linkages interconnecting said respective rocker shafts and said Vee side assemblies, whereby the rotative position of said rocker shaft controls the inclination of said respective Vee side assemblies;
means for positioning said respective rocker shafts in positions corresponding to said up and down position of said Vee side assemblies.

4,193,487
COMBINED NEW OIL VENDING AND WASTE OIL REMOVING APPARATUS

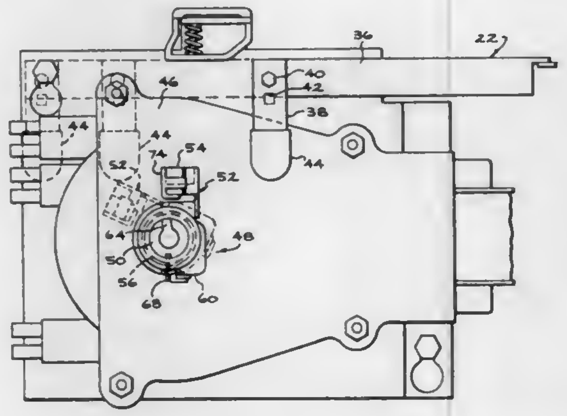
Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya, Japan
Filed Mar. 29, 1978, Ser. No. 891,489
Claims priority, application Japan, Oct. 25, 1977, 52-127839
Int. Cl.² G07F *15/12;* **F16N** *33/00*
U.S. Cl. 194—9 T **10 Claims**

1. A combined new oil vending and waste oil removing apparatus comprising:
a waste oil removing device having a waste oil reservoir for storage of waste oil, a waste oil metering tank for metering the quantity of waste oil to be removed from an external oil reservoir, and a waste oil removing circuit for removing waste oil from said external oil reservoir into said waste oil reservoir;
a fresh oil feeding device having a fresh oil reservoir for storage of fresh oil, a fresh oil metering tank for metering the quantity of fresh oil to be fed therefrom to said external oil reservoir, and a fresh oil feeding circuit for feeding fresh oil from said fresh oil reservoir to said external oil reservoir;
a control device for controlling the operations of said waste oil removing device and said fresh oil feeding device, said control device including a first control means with a first coin slotter for controlling the operation of said fresh oil feeding device, and a second control means with a second coin slotter for controlling the operation of said waste oil removing device;
a feed pipe connected to said fresh oil reservoir for supplying fresh oil, and a two-way changeover valve included in said feed pipe for the opening and closing thereof;
a fresh oil level detector in said fresh oil reservoir, said detector including a rod portion vertically disposed in said fresh oil reservoir, a pair of first and second limit switches mounted on said rod portion, and a float member fitted over said rod portion for vertical sliding movement therealong, whereby when the oil level in said fresh oil reservoir rises above an upper limit, said first limit switch is actuated by said float member to change over said two-way valve for closure of said feed pipe, whereas when the oil level in said fresh oil reservoir falls below a lower limit, said second limit switch is acutated by said float member to produce an alarm signal for warning to the exterior of the shortage of fresh oil within said fresh oil reservoir.



4,193,488
COIN-OPERATED WASHING MACHINE CYCLE TIME REDUCER

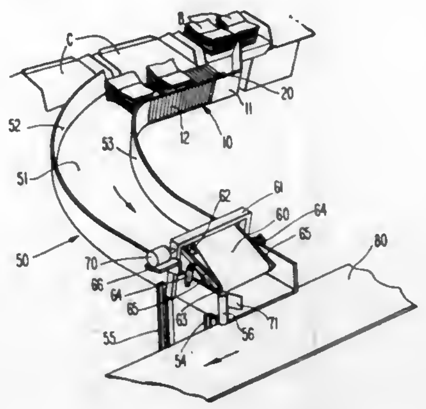
John W. Baum, Fisherville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Jun. 8, 1978, Ser. No. 913,922
Int. Cl.² G07F *5/10*
U.S. Cl. 194—9 T **2 Claims**



1. In a coin-operated clothes washing machine of the type having a coin-operated mechanism, said coin-operated mechanism including a coin slide assembly adapted to be reciprocated after deposit of the correct coinage for operation of the clothes washing machine and further including a timer mechanism adapted to be set by reciprocation of said coin slide assembly by means including an actuation arm rotated by reciprocation of said coin slide assembly, wherein said actuation arm includes diverging wing portions, in combination:
a cycle time reducer shim mounted to said coin operated mechanism and interengaging with said coin slide assembly and said actuation arm to cause further advancement of the position of said actuation arm upon reciprocation of said coin assembly with said shim in position, and wherein said cycle time reducer shim is formed with engagement tabs snap-fitted over said diverging wing portions of said actuation arm to secure said shim to said actuation arm, whereby said cycle time of said clothes washing machine is shortened by advancement of said timer mechanism.

4,193,489
EXIT CONVEYOR SYSTEM FOR NEWSPAPER MAIL ROOM

Paul Siniscal, Hollis, N.H., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Nov. 14, 1977, Ser. No. 851,452
Int. Cl.² B65G *47/24*
U.S. Cl. 198—406 **5 Claims**

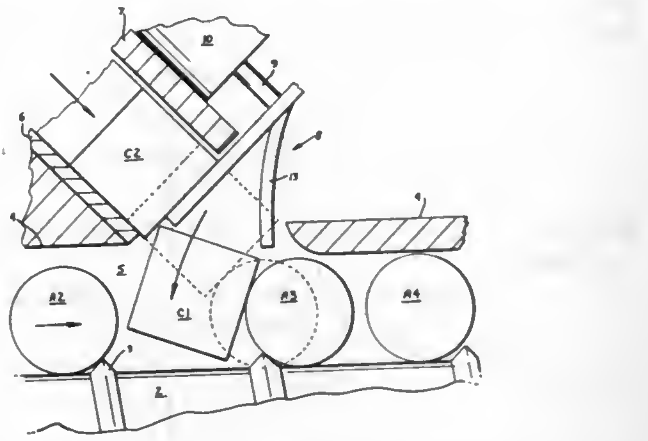


2. An exit conveyor system for handling bundles of newspapers in a newspaper mail room, said system including a bundle-spacing section comprising:
(a) a first series of power-driven rollers on which said bundles are received and conveyed;
(b) a final series of power-driven rollers for receiving and advancing bundles conveyed through said first series;
(c) means defining a common friction drive belt for rotationally driving said first and final series of rollers;
(d) a slow-down section intermediate said first and final series of rollers having;
 (i) retardation means defining roller members with resistance means for resisting rotation thereof;
(e) a bundle turning section operatively associated with said final series of rollers defining an off-center endless belt having a width not greater than one half of the long dimension of a newspaper in the bundle including:
 (i) driving means for advancing said bundles at a speed greater than that provided by said final series of rollers to effect angular rotation thereof.

4,193,490
COLLATING APPARATUS

Jack S. Cooley, Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed May 22, 1978, Ser. No. 908,402
Int. Cl.² B65G *47/04*
U.S. Cl. 198—451 **4 Claims**

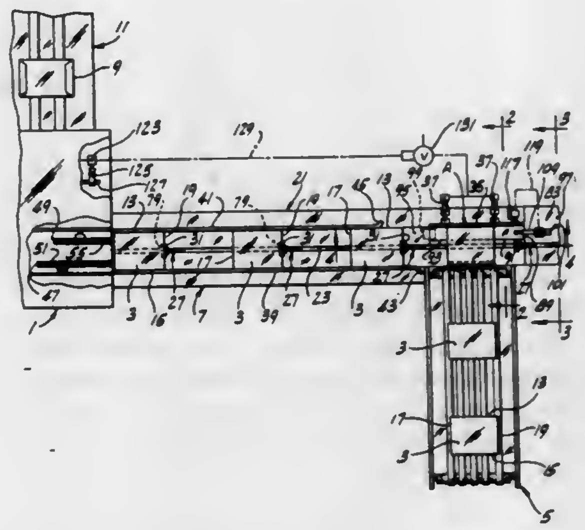
1. Collating apparatus for inserting cubes into a moving row of cylindrical articles, said apparatus comprising a screw conveyor arranged to receive cylindrical articles and having a thread pitch which increases in the direction of article movement so as to establish spaces between predetermined articles, an auxiliary conveyor disposed at an acute angle to said screw conveyor and arranged to feed a continuous supply of cubes to said screw conveyor, the outfeed end of said auxiliary conveyor being disposed adjacent the part of said screw conveyor at which said spaces are sufficiently large to accommodate entry of a cube thereinto, and a movable cam disposed adjacent the outfeed end of said auxiliary conveyor and arranged to accommodate synchronous movement of a cube into the adjacent one of said spaces, said cam being rotatable and being provided with a guide portion for facilitating entry of a cube into one of said spaces and said cam being provided with a holding portion for engaging and holding a cube against movement along said auxiliary conveyor during entry of a preceding cube into one of said spaces and said cam being provided with



a clearance passage between said holding portion and said guide portion which accommodates movement of a cube off of said auxiliary conveyor while a succeeding cube is in engagement with said holding portion of said cam.

4,193,491
APPARATUS FOR FEEDING STACKS OF SHEETS, SUCH AS REAMS OF PAPER

Robert C. James, and Lloyd Kovacs, both of Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.
Filed Jun. 6, 1978, Ser. No. 912,953
Int. Cl.² B65G *37/00*
U.S. Cl. 198—476 **9 Claims**



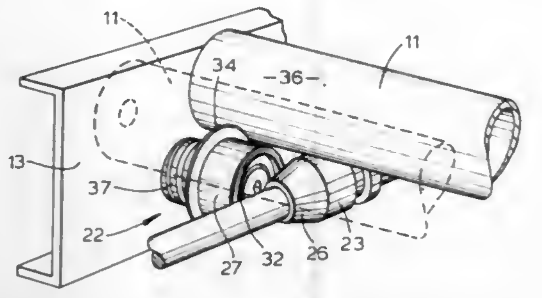
1. Apparatus for feeding stacks of sheets, such as reams of paper or the like, comprising flight conveyor means for pushing the stacks forward, said flight conveyor means comprising a table having an upper surface on which stacks may slide, the table having a relatively narrow slot extending in the direction of feed, endless conveyor means having flights spaced at intervals along its length and extending outwardly therefrom for pushing the stacks along the table, said conveyor means having an upper reach extending under the table in the direction of feed and movable in the direction of feed, each flight having a relatively narrow section adapted, in its travel with the upper reach of the conveyor means, to extend up through said slot, and a relatively wide pusher face adapted, as the flight moves forward with the upper reach of the conveyor means, to travel over the table and push a stack forward on the table, each flight having a foot extending forwardly from its said pusher face adapted, in the travel of the flight with the upper reach of the conveyor means, to travel at a level for supporting the stack being pushed forward by said face, stacks being fed on to

the table to a dwell position between successive flights for support by the table at a level below said level of said foot, and means for lifting a stack in its said dwell position to a level at which the lower surface of at least a portion of the stack is above said level of said foot for entry under the lifted stack of the foot of the flight coming into engagement with the trailing side of the stack, the stack being supported on said foot as said flight travels forward.

4,193,492
LINE SHAFT DRIVE FOR POWERED ROLLER CONVEYOR

Theodore A. Hammond, 3575 - 52nd St., SE., Kentwood, Mich. 49508

Filed Sep. 15, 1977, Ser. No. 833,584
Int. Cl.^{2} B65G *13/06, 13/04*
U.S. Cl. 198—781 **20 Claims**



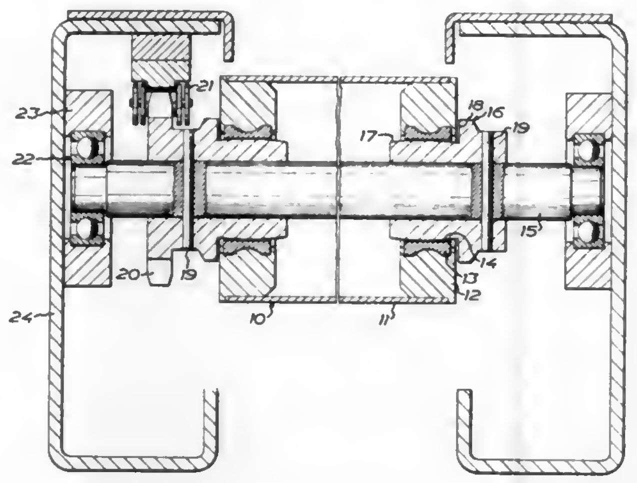
1. In a powered roller conveyor having a frame, a plurality of elongated conveyor rolls supported on said frame for rotation about respective first axes, said rolls being spaced at regular intervals in the longitudinal direction of the conveyor, and drive means for causing powered rotation of said conveyor rolls, said drive means including line shaft means extending longitudinally of said conveyor, said line shaft means being rotatable about a second axis which extends longitudinally of said conveyor and transversely with respect to said first axes, and a plurality of intermediate friction-type drive mechanisms connected between said line shaft means and said conveyor rolls for transmitting driving rotation therebetween, comprising the improvement wherein each said intermediate drive mechanism consists solely of a single friction drive roller supported for rotation about a third axis which is approximately parallel with but spaced from a respective one of said axes, said friction drive roller being disposed in direct frictional driving engagement with both said line shaft means and at least one of said conveyor rolls, said friction drive roller having a first toothless annular surface thereon directly disposed solely in frictional driving engagement with said one conveyor roll, said drive roller having a second toothless annular surface thereon directly disposed solely in frictional driving engagement with said line shaft means, one of said surfaces being a peripheral surface which faces radially outwardly of said drive roller, the other of said surfaces facing axially outwardly from one end of said drive roller, and biasing means for urging the friction drive roller into frictional driving engagement with said line shaft means.

4,193,493
ROLLER CONVEYOR

Kjell G. Ekstrand, Ystad, Sweden, assignor to Transportteknik Gunnar Ekstrand AB, Sweden

Filed Oct. 18, 1977, Ser. No. 843,258
Claims priority, application Sweden, Oct. 19, 1976, 7611577
Int. Cl.^{2} B65G *13/06*
U.S. Cl. 198—781 **4 Claims**

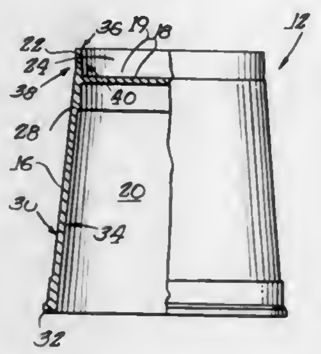
1. In a roller conveyor, a pair of side frame members, roller shaft bearings on said side frame members, substantially rigid roller shafts journaled on said bearings, solid comparatively thick and rigid bearing pieces fixed on each roller shaft in axially spaced relationship, a relatively less rigid conveyor roller for each roller shaft and having end bearing elements which are axially thick and rigid and engaged supportively with said bearing pieces each end bearing element having an outer end face defining one end face of said conveyor roller and extending axially inwardly thereof to a point near the inner end of one bearing piece, each end bearing element including a bearing insert having a cylindrical bore, the engaging surface of each bearing piece being axially elongated and extending therefor said cylindrical bore of the bearing insert and being gently arched axially of the conveyor roller and said bore, and said insert and at least the arched engaging surface portion of each bearing piece being formed of specifically different compatible low friction materials.



4,193,494
CUP AND PACKAGE OF CUPS

John F. Green, Wood Dale, Ill., assignor to Compact Industries, Inc., Schaumburg, Ill.

Filed Aug. 28, 1978, Ser. No. 937,077
Int. Cl.^{2} B65D *62/00, 85/72, 21/02*
U.S. Cl. 206—217 **6 Claims**



1. A package of nested disposable cups with deliquescent or hygroscopic material for use in dispensing beverages or food products comprising:

a plurality of disposable cups telescoped together into a nested stack, each of said cups being one piece and formed of foamed polystyrene plastic material and having a substantially frusto-conical, thick side wall with an interior foamed polystyrene surface for engaging said material, each of said cups having a rim at the upper end of said side wall defining an opening into said cup, each of said cups further having a planar bottom wall integrally joined to said side wall to define thereabove a food storage and liquid mixing chamber and a base wall integrally joined to said bottom wall and extending downwardly approximately 0.3 to 0.5 inch from said bottom wall to define therewith a cap seat and a bottom downwardly opening enclosure for being filled with the material while inverted, the outer side of said frusto-conical side wall extending in a continuous taper to said planar bottom wall; each of said base walls having an outer side offset radially inwardly of its side wall at a location beneath said planar bottom wall; said base walls having a cross-sectional thickness greater than the cross-sectional thickness of its side wall;

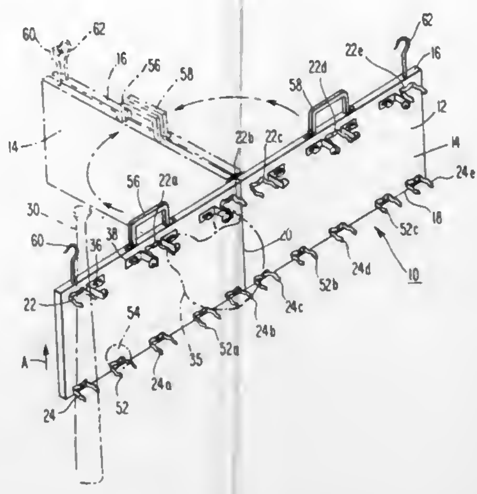
said side walls of said adjacent nested cups having a shoulder means integrally formed on the interior of the adjacent nested cup side wall for supporting said base wall above the bottom wall of the adjacent nested cup to provide a sealed enclosure bounded by said bottom walls, said base wall and the portions of side wall of the adjacent nested cup between said bottom walls; said shoulder means being spaced above said bottom wall by a distance not substantially greater than the depth of said downwardly opening enclosure;

a measured quantity of product in said sealed enclosure; and means for applying an endwise pressure to said stack to maintain said sealed enclosure.

4,193,495
PORTABLE SPORTS EQUIPMENT ORGANIZER

Ronald Keeley, 6602 Hagerman St., Philadelphia, Pa. 19135

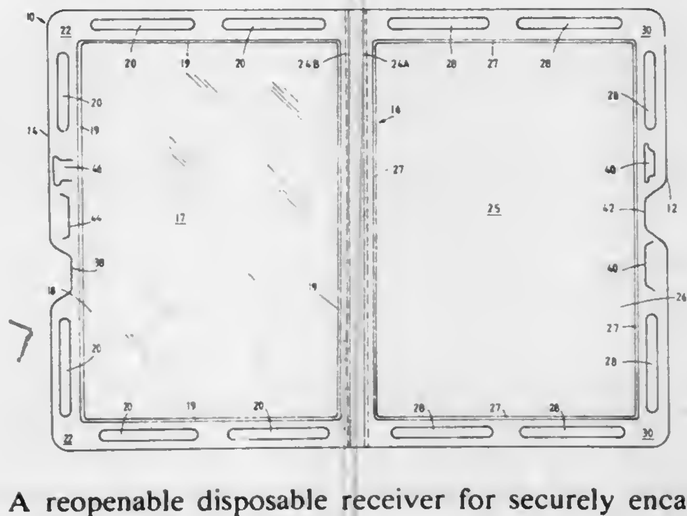
Filed Sep. 6, 1978, Ser. No. 940,074
Int. Cl.^{2} B65D *85/00;* **A47F** *7/00, 5/08*
U.S. Cl. 206—315 R **17 Claims**



1. An apparatus for supporting, transporting and storing equipment used in baseball, softball, or similar games, said apparatus comprising:
- a. a support member;
- b. means for removably attaching at least one bat to said support member; and
- c. means for removably attaching at least one helmet to said support member.

4,193,496
DISPOSABLE RECEIVER

Don C. Barratt, 4704 Butterfield Dr., Arlington, Tex. 76017
Continuation-in-part of Ser. No. 928,251, Jul. 26, 1978, Pat. No. 4,167,230. This application Oct. 20, 1978, Ser. No. 952,968
Int. Cl.^{2} A61L *17/02*
U.S. Cl. 206—380 **21 Claims**



1. A reopenable disposable receiver for securely encasing sharps for disposal, comprising:

(a) a bottom tray having a bottom wall with side walls extending upwardly from said bottom wall and a flange extending outwardly around the upper periphery of said side walls;

(b) a top cover having a bottom wall with side walls extending upwardly from said bottom wall and a flange extending outwardly around the upper periphery of said side walls;

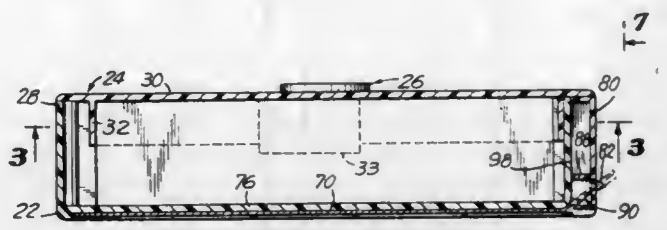
(c) wherein said tray is hingedly connected to said cover such that said cover may be placed over and nested into said tray with the bottom wall of said cover in close proximity to the bottom wall of said tray to securely encase sharps therebetween; and

(d) a plurality of retaining means types integrally formed into said flanges as indentations of opposite cooperating geometries for retaining said tray and said cover in the nested position via a hierarchy of retaining means.

4,193,497
STORAGE AND SHIPPING CONTAINER

Peter McDermott, Irvington, and Lazzaro A. Fattori, Woodcliff Lake, both of N.J., assignors to Plastic Reel Corporation of America, Carlstadt, N.J.

Filed Mar. 14, 1978, Ser. No. 886,369
Int. Cl.^{2} B65D *85/67, 11/16*
U.S. Cl. 206—387 **12 Claims**



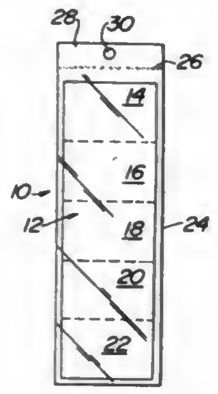
1. A resilient plastic storage and shipping container for an article comprising first and second separable halves and means for releasably securing together said first and second halves, said first half having a first panel forming one side of said container and means for positioning the article on said first panel with all edges of said first panel extending beyond the article, said second half having a second panel forming the other side of said container and a resilient peripheral outer wall forming the end walls of said container, said first and second panels overlying one another in spaced relation when said halves are secured together, said peripheral outer wall having a free edge proximate but disengaged from said first panel when said havles are secured together, said peripheral outer wall being spaced from said positioning means and the article whereby blows and shocks applied to the end walls of said container during shipping will be absorbed by resilient deflection of said peripheral outer wall and will not be transmitted to the article.

4,193,498
MULTIPLE BOOKLET AND METHOD OF MAKING THE SAME

Sidney Rowling, Wynnewood, Pa., assignor to Spot-O-Gold Corporation, Philadelphia, Pa.
Continuation-in-part of Ser. No. 662,749, Mar. 1, 1976, which is a continuation of Ser. No. 541,307, Jan. 15, 1975, abandoned. This application Apr. 19, 1978, Ser. No. 897,873
Int. Cl.^{2} B65D *75/40;* **B42D** *1/00*
U.S. Cl. 206—494 **10 Claims**

1. An article of manufacture comprising a plurality of booklets interconnected end to end in the form of a bookstrip, each booklet being printed with different images on the pages thereof, said bookstrip having only fold lines along one edge and the pages thereof being free from any fasteners, said strip having fold lines and two free edges along the opposite edge

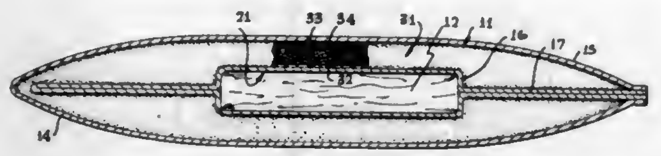
thereof, said booklets being connected end to end and separable by perforation lines, said perforation lines including slits



substantially longer than the length of the tabs interconnecting the booklets.

4,193,499
PREFABRICATED UNITARY PACKAGE WHICH WHEN SEALED AND IRRADIATED CONFORMS CLOSELY TO CONTENTS AND BECOMES IMPACT-ABSORBING

Theodore W. Lookholder, 1262 Barrington, Apt. 304, Los Angeles, Calif. 90025
Filed Apr. 18, 1979, Ser. No. 31,175
Int. Cl.^{2} B65D *81/12, 85/30*
U.S. Cl. 206—524 **24 Claims**



1. A prefabricated unitary protective package for articles, comprising:

a container having an outer wall and a conformable inner wall and adapted to sealably enclose such articles;

the outer and inner walls being permanently presealed to each other about their mutual peripheries, defining a permanently presealed chamber between the outer and inner walls; and

expandable material presealed in the chamber between the two walls and adapted to be expanded to an impact-absorbing state and thereby to force the inner wall conformingly against such articles.

4,193,500
BY-PASS DOOR ASSEMBLY

Victor J. Scott, Spring Lake, Mich., assignor to Leigh Products, Inc., Coopersville, Mich.
Division of Ser. No. 764,344, Jan. 31, 1977, Pat. No. 4,123,874. This application Mar. 2, 1978, Ser. No. 882,595
Int. Cl.^{2} B65D *69/00, 71/00*
U.S. Cl. 206—577 **4 Claims**

1. A kit usable with a rectangular panel to form a sliding door closure, said kit comprising:

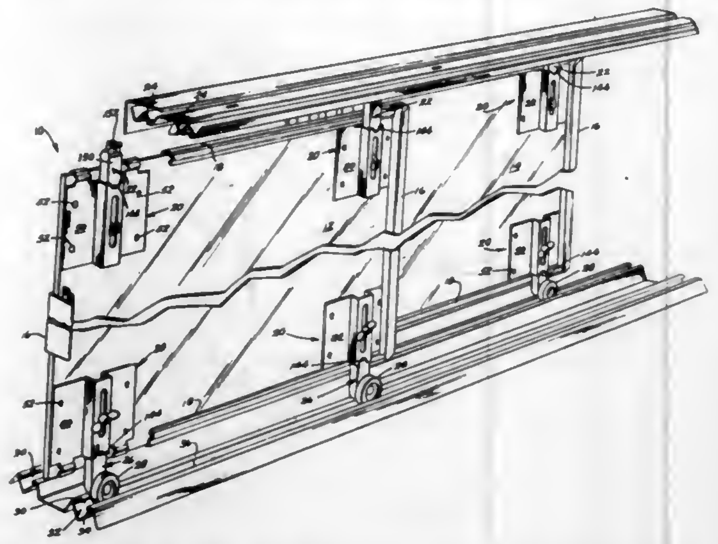
an upper trackway securable to the header of a door opening;

a lower trackway securable to the threshhold of a door opening;

a pair of stiles, each adapted to snap fit over a lateral edge of the rectangular panel, said stiles each being an elongated, slot free member having spaced front and rear walls joined by a side wall to define a panel receiving channel, said rear wall including a first portion angled with respect to said side wall towards said front wall, a second portion angled with respect to said first portion towards said side wall, a curved portion integral with said second portion and engaging the inner surface of said side wall, a third portion integral with said curved portion and angled away from said side wall and parallel to said second portion, and a fourth reverse bent portion angled towards said front wall and said side wall and terminating in a sharp edge disposed within said channel;

a pair of trim pieces, each adapted to snap fit over a transverse edge of said panel to frame said panel in conjunction with said stiles, said trim pieces each being an elongated slot free member having spaced front and rear walls joined by a base wall to define a channel, said rear wall defining an elongated, semi-circular groove;

a plurality of corner brackets, each corner bracket including a central housing and outwardly extending wings, said wings each including tabs positioned so that said bracket is securable to said stiles and said panel by snapping said tabs under said stile rear wall reverse bent portion, said brackets further including an L-shaped tab extending from a transverse edge of one of said wing members, said tab defining a semi-circular bead, said trim member snapping over said tab and capturing said bead within said elongated groove;

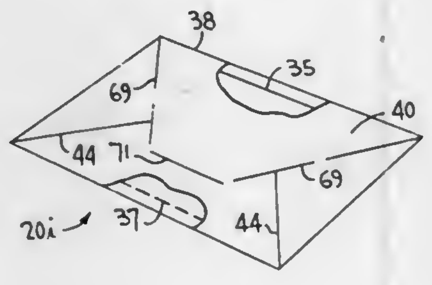


a pair of roller means each including a roller adapted to engage one of said trackways for supporting the framed panel in a top hung or bottom roller configuration, said roller means being adjustably positionable within said bracket housing; and

a pair of guide means each adjustably positionable within said bracket housing for engaging one of said trackways and guiding said sliding door closure.

4,193,501
ENVELOPE ASSEMBLY

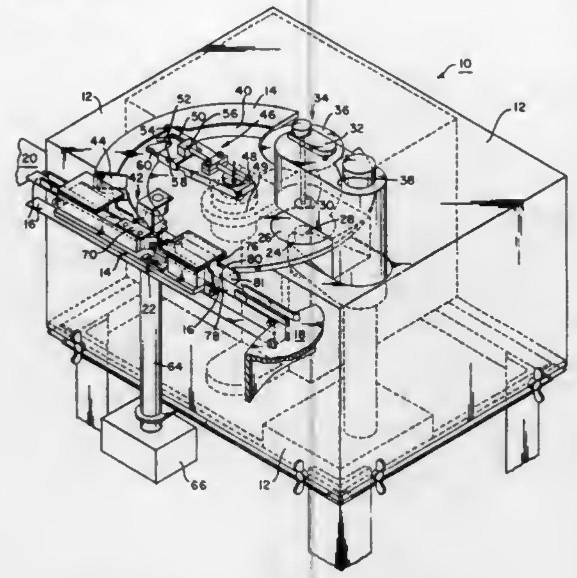
Robert H. Allen, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Sep. 23, 1977, Ser. No. 835,959
Int. Cl.^{2} B65D *27/34, 27/10*
U.S. Cl. 206—610 **8 Claims**



1. A stuffed, sealed envelope assembly, comprising, superimposed front and back plies, adhesive means securing said plies together along marginal edges thereof to form an envelope pocket within the assembly, insert material disposed within said pocket and being removably attached along one marginal edge thereof to said plies, means lying adjacent one of said marginal edges of said plies for opening said pocket and exposing said insert material for extraction therefrom, said means comprising at least one cut line extending through only one of said plies and defining a pocket access opening, said cut line lying near one end of another marginal edge of said insert material, said adhesive means securing said plies together along said one marginal edge thereof comprising a stream of releasable glue to thereby further comprise said means for opening and exposing, said cut line partially delimiting a portion of said one ply which may be separated along said another marginal edge from the remainder of said one ply upon insertion of an opener through said access opening, the other of said plies being completely devoid of any means facilitating opening of said pocket, whereby said pocket may be opened and said insert material exposed for extraction therefrom as said portion is separated from said remainder of said one ply upon application by the opener of a force causing the separation after the opener is inserted through said access opening.

4,193,502
PELLET DIMENSION CHECKER

Anthony R. Marmo, Cheswick, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 29, 1977, Ser. No. 792,290
Int. Cl.^{2} B07C *5/09, 5/16*
U.S. Cl. 209—555 **11 Claims**



1. A pellet dimension checker comprising:

a housing;

delivery means disposed near said housing for conveying a pellet to and from said housing;

a platform having a hole therein mounted on said housing and adjacent to said delivery means for supporting said pellet;

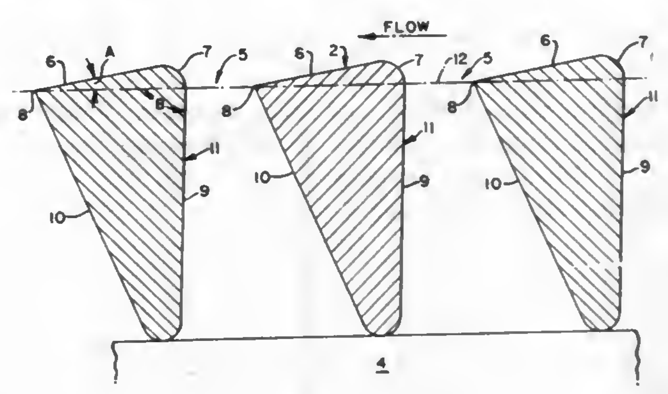
a transfer arm mounted on said platform and having a first end rotatably attached to said platform and having a second end extending near said delivery means for engaging said pellet which has been conveyed by said delivery means and for transfering said pellet along said platform by rotating about said first end;

length determining means mounted on said platform for measuring the length of said pellet when said pellet has been positioned therein by said transfer arm; and

weight determining means mounted on said platform for measuring the weight of said pellet when said pellet has been positioned therein by said transfer arm, said transfer arm returning said pellet to said delivery means when said length determining means and said weight determining means have determined that the length and weight of said pellet are within predetermined limits and said transfer arm positioning said pellet over said hole in said platform when said pellet is determined not to be within said predetermined limits.

4,193,503
SLURRY SCREEN

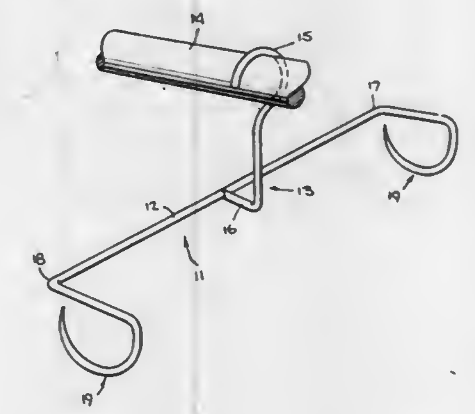
James D. Connolly, 410 Johnston St., Princeton, W. Va. 24740
Filed Jul. 17, 1978, Ser. No. 925,637
Int. Cl.^{2} B07B *1/12*
U.S. Cl. 209—393 **6 Claims**



1. A slurry screen for separating fibrous and other solids from a slurry flowing longitudinally of the screen on and rearwardly along a flow surface thereof, comprising parallel spaced screen wires disposed transversely of said screen and interconnected by underlying spaced tie rods disposed longitudinally of said screen, said screen wires together forming said flow surface, each wire having downwardly converging leading and trailing sides and a rearwardly declined flat top bounded rearwardly by a sharp trailing edge for directing slurry flowing thereacross to a front of a succeeding wire, and a cylindrically convex leading edge on each wire extending between and merging tangentially with said leading side and top thereof for receiving and directing upwardly onto said top part of the slurry passed to said wire from a preceding wire.

4,193,504
HANGER FOR HANGING FABRIC

Milton Berkowitz, 500 E. 85 St., New York, N.Y. 10028
Continuation of Ser. No. 668,928, Mar. 22, 1976, abandoned. This application Mar. 28, 1978, Ser. No. 890,923
Int. Cl.^{2} A47F *7/00*
U.S. Cl. 211—119 **7 Claims**



1. A hanger for use in hanging fabric comprising:

a longitudinally extending main member;

a first support member connected to one end of said main member at a point of attachment;

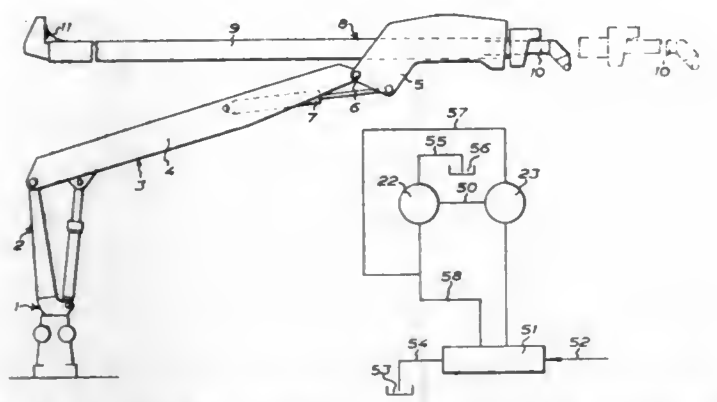
a second support member connected to the other end of said main member at a point of attachment;

a first mounting member rigidly connected to said first support member;

a second mounting member rigidly connected to said second support member, said first and second mounting members each extending substantially downwardly from the support member to which it is connected and thereafter upwardly toward the point of attachment of the support member to which it is connected, and said first and second mounting members each terminating in a pointed end portion disposed adjacent to the point of attachment of the support member to which it is connected, whereby the pointed end portion can pierce the fabric and whereby said first and second support members shield the pointed end portions.

4,193,505
ARRANGEMENT IN A HYDRAULICALLY OPERATED CRANE

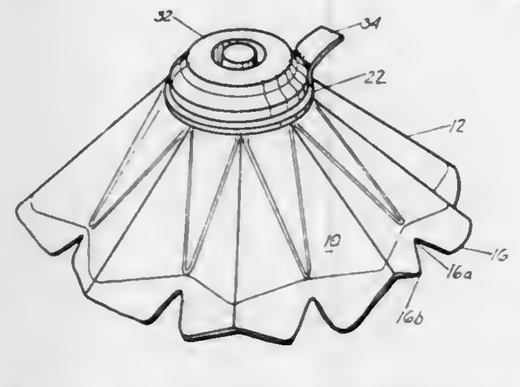
Lars H. Sätterberg, Partille, and Hans Eliasson, Vindeln, both of Sweden, assignors to Jonsereds AB, Partille, Sweden
Filed Mar. 14, 1978, Ser. No. 886,500
Claims priority, application Sweden, Mar. 21, 1977, 7703196
Int. Cl.^{2} B66C *23/06*
U.S. Cl. 212—55 **2 Claims**



1. A hydraulically operated crane comprising a supporting crane section, an outer boom displaceably supported and guided in said supporting crane section, an inner boom displaceably supported and guided in said outer boom, hydraulic drive means disposed at the outer side of said supporting crane section and including at least one hydraulic motor, transmission means for moving said booms with respect to each other and to said supporting crane section, a guide member on the other boom, and at least one flexible hose or line extending from said supporting crane section over said guide member on the outer boom into said outer boom at the rear end thereof and into the inner boom at the rear end of the inner boom and on to the front end of the inner boom, said hydraulic drive means for moving said two booms in operation effecting displacement of said inner boom by a distance equal with respect to displacement of the outer boom as this latter boom is moved with respect to said supporting crane section, wherein the outer boom movable in said supporting crane section is extensibly positioned in opposite directions to either side of the supporting crane section by means of said hydraulic drive means and a part of said transmission means which acts between said hydraulic drive means and said outer boom.

4,193,506
DISPOSABLE INFANT NURSER

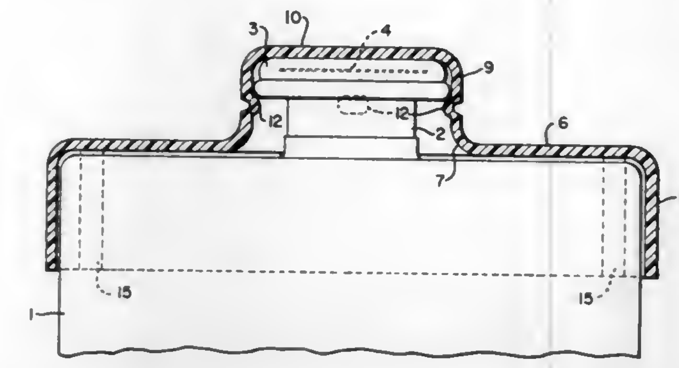
Dean D. Trindle, and John S. Amneus, both of Cincinnati, Ohio, assignors to Procter & Gamble Company, Cincinnati, Ohio
Filed May 15, 1978, Ser. No. 906,122
Int. Cl.^{2} A61J *9/08*
U.S. Cl. 215—11 C **22 Claims**



1. A disposable infant nurser comprising a pliable container bag formed of first and second superposed sheets of resilient, liquid-impermeable film material secured together along their mating peripheral edges, said edges having a corolla-like configuration of alternating inward and outward scallops; an orifice positioned centrally of said first sheet; a relatively rigid, upstanding circular neck extending outwardly from said orifice and secured to said first sheet circumferentially of said orifice, said neck including means for holding said nurser projecting radially outwardly adjacent the base of said neck; apertured nipple means releasably secured to said neck; and a removable cover overlying said nipple means and holding it in retracted position substantially within the confines of said neck.

4,193,507
COVER FOR BREATHING APPARATUS CANISTER

Layton A. Wise, Washington, and Robert F. Menold, Monroeville, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Feb. 9, 1979, Ser. No. 10,600
Int. Cl.^{2} B65D *41/18*
U.S. Cl. 215—12 R **5 Claims**



1. The combination with a breathing apparatus canister having a top wall with an upwardly extending neck encircled at its upper end by a sealing ring and with the neck closed by a seal, of a protective cover for the canister comprising a body portion of substantially the same shape as the top wall of the canister and provided with a central opening through which said neck extends, a skirt extending downwardly from said body portion around the upper part of the canister in close proximity thereto, a circular side wall extending from said body portion upwardly around said neck, and a top wall joined to said side wall and covering said ring and seal, said side wall being provided at circumferentially spaced intervals with inwardly projecting detents underlying portions of the sealing ring to hold the cover in place, said detents being sufficiently yieldable to permit the cover to be applied and pulled off the canister manually.

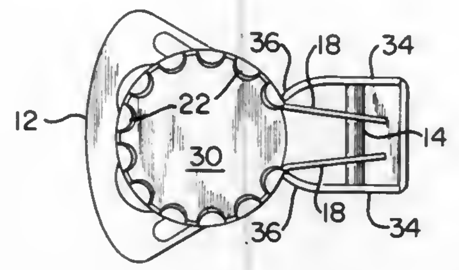
4,193,508
CAP REMOVER AND CLOSURE

Imre Cziraki, 15611 Sunflower La., Huntington Beach, Calif. 92647
Filed Apr. 26, 1977, Ser. No. 791,138
Int. Cl.^{2} B65D *45/32*
U.S. Cl. 215—226 **3 Claims**

1. In a replacement closure for use on the end of a container neck, such as that of a bottle having an annular end against which an original closure cap gasket is adapted to sealingly engage and a ridge surrounding the neck adapted to be engaged by the original cap, such as a crown or threaded cap, for maintaining the original closure cap in its sealing engagement, comprising; a cup shaped member including a circular band portion adapted to extend partially around the outer end of said neck having a plurality of angular spaced jaws for engaging said ridge and having a gasket therein for sealingly engaging said annular end of the neck when the jaws are moved radially inwardly, said band portion terminating in a pair of generally parallel outwardly projecting spaced wings adapted

to be moved toward and away from each other, the jaws adapted to engage the ridge when moved toward each other and effect sealing by the gasket and adapted to release engagement of the jaws from the ridge when moved away from each other, a lever having one end pivotally connected to the wings and swingable between a first limit position extending outwardly from the wings, and a second limit position in which its other end lies on top of the cup-shaped member, the lever having a pair of cams engagable with outwardly facing portions of the wings for moving same toward each other when the lever is swung toward its second limit position and for locking same against retrograde movement, the improvements, in combination, comprising;

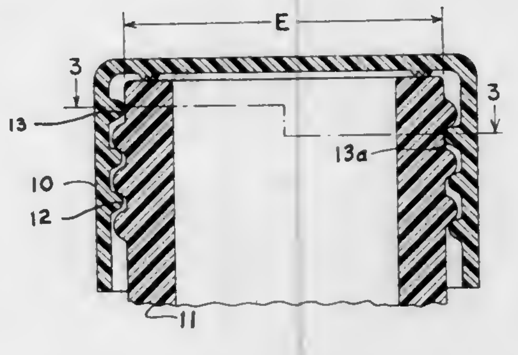
(a) said jaws being bent angularly inwardly to cammingly engage beneath said annular end,



(b) said spaced wings being flat,
(c) said lever being blanked from flat sheet metal with parallel spaced bends normal to the blank, and pivotally connected to the wings, the spaced bends having projections therefrom bent angularly inwardly toward each other, their terminal ends being engagable with the flat wings immediately adjacent their junctures with the band portion,
(d) said lever including: a third cam formed as a bend normal to the plane of the blank at one end thereof engagable with inwardly facing portions of the flat wings adjacent their junctures with the band portion for moving same away from each other when the lever is swung toward its first limit position to aid in removal of the replacement closure from the container.

4,193,509
CLOSURE HAVING HIGH RETENTION TORQUE CHARACTERISTICS

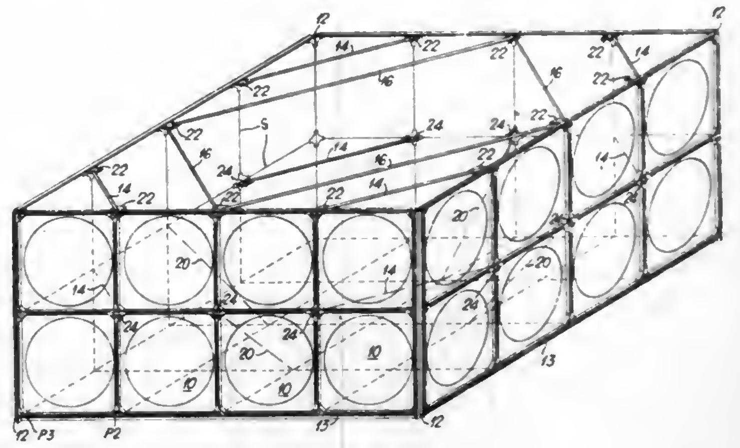
C. E. Lee Dunn, Jr., Toccoa, and Carl A. Miller, Cornelia, both of Ga., assignors to The AFA Corporation, Miami Lakes, Fla.
Filed Aug. 30, 1978, Ser. No. 938,198
Int. Cl.^{2} B65D *41/04*
U.S. Cl. 215—330 **17 Claims**



1. A threaded cylindrical closure, having a closed top, for a standard threaded container, said closure having a first portion of the closure's thread increased in depth, the base of said thread being at a substantially constant radial distance from the cylindrical axis of said closure, and the said portion located on the closure on its uppermost thread with respect to the closure's top.

4,193,510
LIQUID STORAGE TANK

Sidney Weston, Sedgley, England, assignor to Northern Engineering Industries Limited, Gateshead, England
Filed Dec. 8, 1977, Ser. No. 858,490
Claims priority, application United Kingdom, Jan. 11, 1977, 986/77
Int. Cl.^{2} B65D *7/02;* **G65D** *7/00;* **B65D** *7/42*
U.S. Cl. 220—5 A **10 Claims**



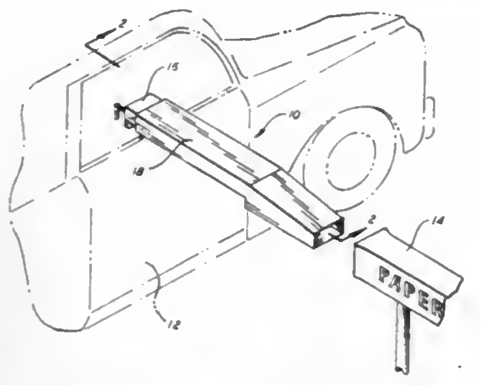
1. A liquid storage tank having a floor and walls each made up of rectangular moulded panels of reinforced synthetic plastic material, each said panel comprising a wall the periphery of the panel at the corner of the wall being relieved, the wall having at the periphery thereof a flange integral therewith extending away therefrom and the wall having at least one stiffening formation integral therewith, said panels in each said wall and in said floor being secured together by first securement means engaging adjacent flanges of said panels, said tank further comprising auxiliary members each occupying a space defined by adjacent corners of said panels, each said auxiliary member having formation means restricting relative displacement of respective flanges of adjacent panels transversely of said adjacent panels, at least certain of said auxiliary members each having integral lug means positioned within said tank, said tank further comprising bracing means positioned wholly within said tank secured within said tank by second securement means to said lug means of said certain auxiliary members, and said tank further comprising seal element means held compressed by said first securement means in sealing relationship with said adjacent panels between adjacent flanges thereof and held compressed between said auxiliary members and respective surrounding panels in sealing relationship therewith by said first securement means.

4,193,511
APPARATUS FOR MANUAL MANIPULATION OF ARTICLES

Gilbert L. Taber, R.D. 2, Lockpit Rd., Clyde, N.Y. 14433
Filed May 12, 1978, Ser. No. 905,218
Int. Cl.^{2} A47F *1/12;* **B65G** *11/14*
U.S. Cl. 221—66 **8 Claims**

1. Apparatus for manually manipulating articles from a first to a second location comprising:
(a) fixed support means;
(b) a first, hollow, tubular section attached to said fixed support means and having a first open end positioned at said first location, and a second open end;
(c) a second, hollow, tubular section mounted upon said first member for telescoping movement between retracted and extended positions with respect thereto and having a first open end communicating with said second open end of said first member, and a second open end positioned at said second location; and
(d) plunger means mounted for longitudinal sliding movement with respect to both of said tubular sections and having a first end positioned for manual manipulation at said first location and a second end positioned within said

second section for movement between a retracted position therein and an extended position substantially adjacent said second end of said second section, whereby a succession of articles may be manually inserted in said first end of said first section, each article being moved by the successively inserted articles through said first and second sections until one article is positioned for contact by said second end of said plunger means and movement thereby to and out of said second end of said second section as said plunger means is moved from said retracted to said extended position.



4,193,512

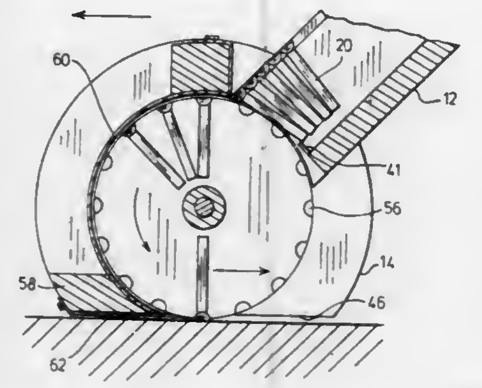
DEVICE FOR ARRANGING PLAYING ELEMENTS

Gordon D. Buxton, and John W. Buxton, both of 94 Mosedale Cres., Willowdale, Ontario, Canada (M2J 3A4)

Filed May 1, 1978, Ser. No. 901,844

Int. Cl.² B65G ***29/02, 59/06;*** **A63H** ***33/00***

U.S. Cl. 221—185 **3 Claims**



1. A device for arranging playing elements in an upstanding disposition on a surface, with predetermined spacings between adjacent ones of said playing elements, said device comprising:

a playing element storage means in the form of an open channel having suspension means for receiving and suspending therein a plurality of playing elements in inverted disposition and in substantial alignment with one another;

a rotatable member disposed adjacent to the storage means and rotatable with respect thereto, the rotatable member being adapted to roll across said surface, and having the form of a centrally journalled wheel structure comprising a wheel housing fixedly secured secured to the storage means and two parallel spaced apart circular discs, of substantially the same radius and mounted for rotation relative to the storage channel, about their common center axis;

said wheel housing further including a liner structure extending around a part of the circumference of the discs and in close proximity to the edges thereof;

playing piece receiving means adapted to receive a playing piece from the storage means in response to rotation of the rotatable member with respect to the storage means, and release the playing piece in upstanding disposition on the surface as a result of rolling the rotatable member across said surface, said playing piece receiving means comprising suspending formations in the form of indentations at the peripheral edges of said discs, said indentations being provided in axially registered pairs, one on each disc, adapted to receive therein lateral, non-circular cross-sectioned projections of one end of a body portion of a playing piece, so as to suspend the playing piece between the discs;

said liner structure being disposed sufficiently closely to the peripheral edge of the discs to prevent substantial angular movement of the projections of the playing piece received in said indentations, relative to the discs as the discs rotate.

4,193,513

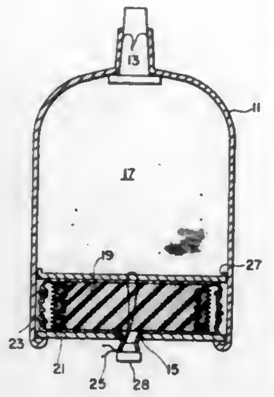
NON-AEROSOL TYPE DISPENSER

Glen C. Bull, Jr., P.O. Box 686, Alexandria, Va. 22313

Filed Apr. 19, 1977, Ser. No. 789,004

Int. Cl.² G01F ***11/00***

U.S. Cl. 222—1 **15 Claims**



1. The method of dispensing material from a container having an orifice by means of an expandable member comprising the steps of,

disposing within the container a combination spring and compressable mass of cellular intersticed material having the property of changing volume between expanded and compressable conditions within the container from substantially the entire volume of the container to a fraction of its volume;

compressing the spring and mass to produce a void space within the container;

filling the void space within the container with material to be dispensed;

releasing the spring and mass for simultaneous expansion of the combination of the spring and compressable mass to fill the void replacing dispensed material and thereby to force material through said orifice, wherein the spring cooperates with the mass and supplies thereto additional expansion force asserted against the materials,

enclosing the spring and mass together with the plate in an impermeable plastic bag having a venting portion exposed to the atmosphere via an opening in the container evacuating the bag when the spring and mass are compressed, sealing the vent with a cap to maintain the spring and mass in a compressed state, and releasing the cap to vent air into the bag thereby to release the spring and mass for expansion of volume by entry of air thereinto thereby producing a force for dispensing of material through said orifice.

4,193,514

LIQUID AND GAS DISPENSING VALVE

Hall Langstroth, 1454 Alegriano Ave., Coral Gables, Fla. 33146

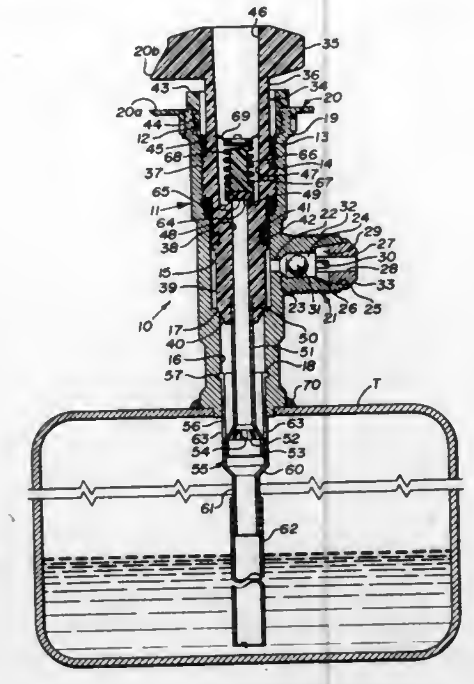
Filed Dec. 15, 1978, Ser. No. 969,857

Int. Cl.² B65D ***83/14***

U.S. Cl. 222—4 **10 Claims**

1. A liquid and gas dispensing valve for pressurized supply tanks comprising, in combination, an integrally-formed, elongated valve body member having an end-to-end through opening, an annular valve seat intermediate the ends of said through opening, said through opening being internally threaded near one end of said valve body member, an elongated, cylindrical

valve stem member receivable in said through opening and having an externally-threaded portion interthreadingly engagable with said internally-threaded portion of said valve body member, the inner end portion of said valve stem member defining an annular tip portion seatable on said annular valve seat, said valve body member comprising an outwardly-extending dispensing port having an internal bore communicating with said through opening in said valve body member at a position therealong between said annular valve seat and said internally-threaded portion, an elongated, tubular, inner sleeve member coaxially secured at one end to said inner end portion of said valve stem member and extensible outwardly of the other end of said valve body member, a tubular outer sleeve member, means securing one end portion of said outer sleeve member within said through opening of said valve body member at said other end thereof, in coaxial relation with respect to said inner sleeve member and extending outwardly thereof, peripheral side wall through opening means in the said outer sleeve member for the through flow of pressurized gas to be dispensed, said inner sleeve member at its outer end being formed with an increased-diameter cylindrical portion substantially circumjacent interior wall portions of said outer sleeve member and being operative to gradually block said through opening means in said outer sleeve member upon said valve stem member being unscrewed with respect to said valve body member from the seated position with respect thereto, said inner sleeve member being provided, inwardly of said increased-diameter portion thereof, with through opening means to permit the flow of pressurized liquid therethrough from the outer end of said outer sleeve member.



4,193,515

LIQUID PROPORTIONING DEVICE WITH INSUFFICIENT SUPPLY AND FLOW VALVES

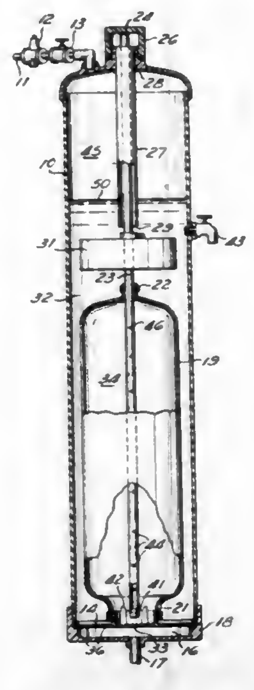
Chester A. Purdy, R.F.D. No. 1, Belmont, Wis. 53510

Continuation-in-part of Ser. No. 663,513, Mar. 6, 1976, abandoned. This application Jul. 7, 1977, Ser. No. 813,535

Int. Cl.² B67D ***5/34***

U.S. Cl. 222—57 **20 Claims**

1. A liquid proportioning apparatus for dispensing a liquid concentrate diluted with a liquid diluent comprising a diluent reservoir for a supply of diluent, a concentrate reservoir for a supply of concentrate in fluid pressure communication with said diluent, and metering means for receiving diluent from said diluent reservoir and concentrate from said concentrate reservoir and for mixing them in desired porportions, and control means in response to sufficient levels of one of said liquids in said reservoirs to allow continuous dispensing of said liquid concentrate diluted with said liquid diluent in said desired proportions and operable in response to an insufficient level of said one of said liquids within its reservoir to terminate flow of the other of said liquids, said reservoir which contains said other liquid being a flexible container located within the reservoir which contains said one liquid, said metering means includes an orifice open to said other liquid, a filler tube is provided to supply said other liquid to said flexible container, and the lower end of said filler tube operates to engage and close said orifice when said control means responds to an insufficient supply of said one liquid.



4,193,516

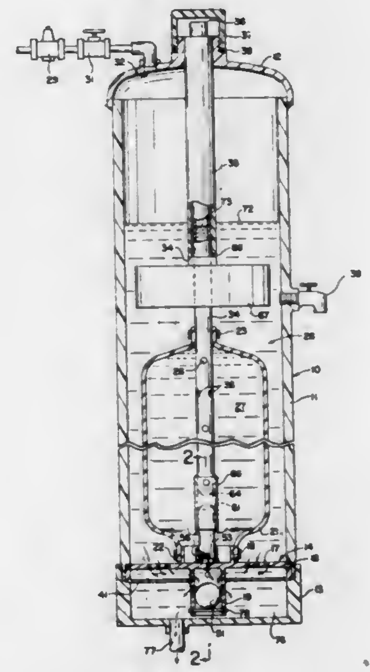
LIQUID PROPORTIONER FOR MIXING TWO LIQUIDS IN A PREDETERMINED RATIO

Chester A. Purdy, and George A. Purdy, both of Belmont, Wis., assignors to Purdy Proportioners, Ltd., Belmont, Wis.

Filed Jun. 23, 1977, Ser. No. 809,456

Int. Cl.² B54D ***35/22***

U.S. Cl. 222—57 **20 Claims**



1. A proportioner for mixing two liquids in a first substantially predetermined ratio over a substantial range of flow rates comprising first and second separate chambers each adapted to contain one of said two liquids, means adapted to maintain said liquids in said first and second chambers at substantially the same pressure, a mixing chamber maintained at a pressure lower than the pressure in said first and second chambers when said proportioner is operating, a first orifice system including a plurality of first orifices connected in parallel between said first chamber and said mixing chamber, a second orifice system including a plurality of second orifices connected in series between said second chamber and said mixing chamber, each

of said first orifices having a hydrodynamic equivalent value which is greater than the hydrodynamic equivalent value of the said second orifice system by a positive ratio, the number of said first orifices times each of their positive ratios equaling said first predetermined ratio, the number of said first orifices divided by one being substantially less than said first predetermined ratio, said proportioner including an orifice assembly having an orifice plate and a tubular portion, said first orifices being formed in said orifice plate and a plurality of said second orifices being mounted in said tubular portion, said tubular portion being centrally located within said proportioner, a vertically extending filler tube being provided to allow addition of liquid to said second chamber, said filler tube being provided with a cylindrical end telescoping over said tubular portion and laterally locating said tubular end while allowing vertical movement of said filler tube.

4,193,517

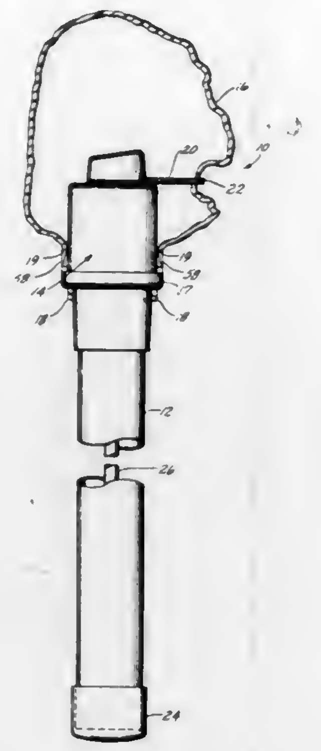
WATER SQUIRT CANE HAVING MOVABLE FIGURE AS ACTIVATOR

Warren N. Fetty, and Rosabelle Fetty, both of Altadena, Calif., assignors to Wham-O Mfg. Co., San Gabriel, Calif.

Filed Sep. 6, 1977, Ser. No. 830,840

Int. Cl.^{2} B05B *17/00*

U.S. Cl. 222—78 **12 Claims**



1. A hand operated water squirt cane comprising:
an elongated hollow shaft;
a reciprocal plunger pump mounted at the top of the shaft, the pump including an accumulator, a pump operating lever operatively linked to the accumulator, a spray head incorporated into the operating lever, an inlet communicating with the accumulator and an outlet communicating with the spray head;
a head reciprocally mounted at the top of the cane enclosing the pump;
means for filling the interior of the shaft with water;
elongated conduit means communicating between the hollow interior of the shaft and the inlet to the pump;
aperture means communicating with the pump outlet; and
hollow tubular means communicating between the aperture means and the exterior of the head whereby reciprocating hand operations of the pump causes intermittent squirts of water to be emitted from the top of the cane.

4,193,518

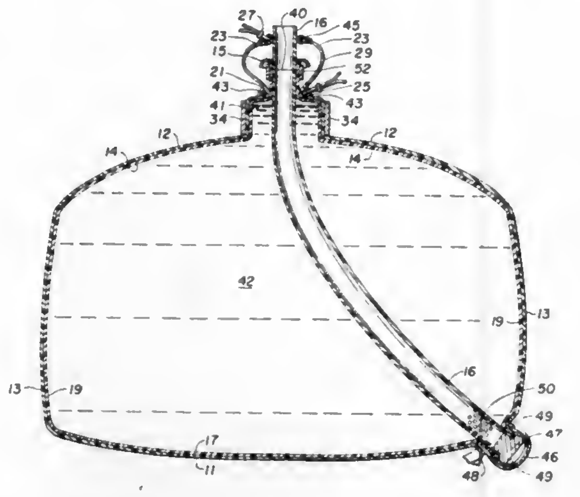
PORTABLE WATER CARRIER AND DISPENSER

William A. Holmes, 209 Highland Ave., Piedmont, Calif. 94611

Filed May 4, 1977, Ser. No. 793,678

Int. Cl.^{2} B65D *37/00;* A45F *3/20*

U.S. Cl. 222—105 **11 Claims**



1. A portable water carrier and dispenser, comprising:
a bag-like enclosure having an open ended side wall and a bottom portion defining a predetermined volume, said enclosure formed of flexible substantially non-elastic material;
a reservoir member removably disposed within the enclosure, said reservoir member being formed of flexible material adapted to receive and retain water and provided with a configuration having volumetric dimensions at least as large as the predetermined volume of the enclosure such that when containing water the reservoir member will be supported by the side and bottom walls of the enclosure;
siphon means to establish fluid communication with the reservoir member for allowing water contained in the reservoir member to be siphoned therefrom, the siphon means including a flexible tube having one end extending into and removably attached to the bottom of the reservoir member;
a first closure member fabricated from an elongate elasticized material that is multiply-wrapped and releasably attaches circumferentially about the flexible tube at a predetermined point along said tube, the reservoir being gathered about the flexible tube by the first closure member to establish a water-impervious seal between the flexible tube and the reservoir;
second and third closure members releasably attached to the flexible tube in juxtaposed relation to the first closure member and said first closure member being interjacent said second and third closure members, the enclosure being gathered about and held to the flexible tube by the second and third closure members; and
a pair of shoulder straps connected to the enclosure for mounting the water carrier and dispenser on the back of a person.

4,193,519

LIQUID DISPENSING CLOSURE HAVING CAPILLARY BORES

Werner F. Dubach, Butzackerstrasse 10, CH-8304 Wallisellen, and Hansruedi Kessler, Bahnofstrasse 10, CH-8215 Hallau, both of Switzerland

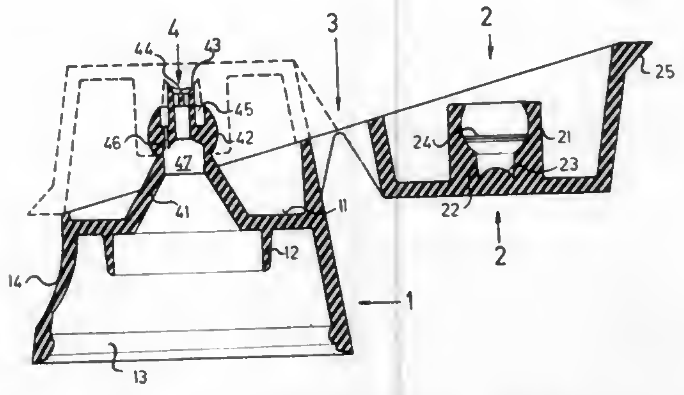
Filed Dec. 13, 1977, Ser. No. 860,407

Claims priority, application Switzerland, Dec. 15, 1976, 15755/76

Int. Cl.^{2} B67D *3/00*

U.S. Cl. 222—111 **18 Claims**

1. A plastic closure for a liquid holding container comprising a body and cap, said body being adapted to be secured to the container and including a tip having an outlet bore therethrough, the bore having an inner end and an outer end, said closure being characterized by:
said tip including a tubular part surrounded by an annular bulge, said part and bulge defining an annular channel therebetween adjacent the distal end of the tip, said bore extending through said part and including a central opening intermediate said ends, said bore decreasing in size from said inner end to said outer end whereby as liquid is expelled from the container and flows out through the bore the flow velocity is increased from the inner end to the outer end, said tip including capillary bores extending from said channel to said central opening through which air flows inwardly as the liquid is so expelled and is expelled along with the liquid; and
said cap having a member adapted to fit about said tip and engage said bulge.



4,193,520

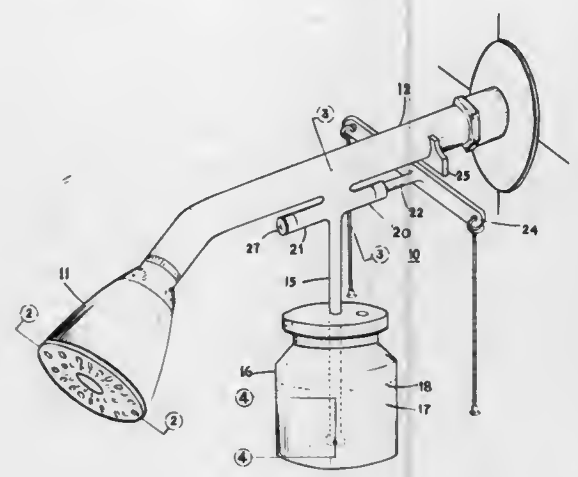
DEVICE FOR ADDING SOAP TO SHOWER WATER

Robert Duffield, R.D. #2, New Alexandria, Pa. 15670

Filed Aug. 31, 1977, Ser. No. 829,213

Int. Cl.^{2} B67D *5/60*

U.S. Cl. 222—133 **2 Claims**



1. A device for adding soap to shower water comprising:
a. a sleeve member open on one end, situated in a water source leading to a shower nozzle, said open end directed toward the shower nozzle;
b. a depending tube member connected to the sleeve member;
c. a liquid soap container attached to the tube member, one end of the tube member being situated preferrably below the level of liquid soap in the container;
d. means for drawing soap through the depending tube member by harnessing the negative pressure, relative to the atmosphere, of the sleeve member when water is flowing through the water source;
e. said means for drawing soap further comprising:
  a first control member situated on the depending tube member;
  a second control member situated within the first control member and having an aperture positioned within the depending tube member, said second control member being rotatable within the first control member to permit either the unobstructed or obstructed flow of soap through the depending tube member determined by the position of the aperture when rotated;
  a rope member attached to the second control members to assist a user in rotating the control member;
  a stop member situated on the water source placed above the rope member in a manner to permit the rotation of the control member so that unobstructed flow exists through the aperture and depending tube member when desired and;
  means for controlling the volume of soap flowing through the depending tube member and connected to it.

4,193,521

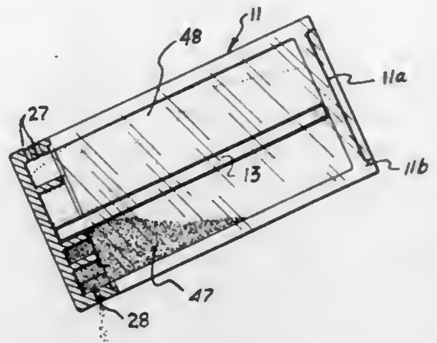
DUAL CONDIMENT DISPENSER

William E. Bounds, 23790 Hawthorne Blvd., Torrance, Calif. 90505

Filed Jun. 5, 1978, Ser. No. 912,733

Int. Cl.^{2} A47G *19/24*

U.S. Cl. 222—142.4 **6 Claims**



1. A condiment dispenser for separately dispensing two different condiments, comprising:
a container member having side and bottom wall portions,
a divider wall extending longitudinally from the bottom to the top of the container, dividing the container into first and second compartments, and
a cap member removably fitted over the top of said container, said cap member having a side wall portion which extends axially from the top edge of the container and a top wall portion extending between the top edges of the side wall portion, said side wall portion having first and second aperture means formed therein located above the first and second compartments respectively, and a first and second block-shaped baffle member formed in said cap member opposite said first and second aperture means respectively, each of said baffle members comprising end and side walls forming a chamber having an open bottom so as to provide fluid communication between the chambers of said first and second baffle members and said first and second compartments respectively, and a deflector member forming the inner surface of the end wall of the chamber and having a triangular cross-section with the apex of said triangle being directly opposite the associated aperture means, said deflector member being non-apertured such that the flow of condiment therethrough is prevented,
whereby when condiment is purposely dispensed from one of said compartments, condiment in the other of said compartments is deflected so that it tends not to be dispensed inadvertently from its associated aperture means.

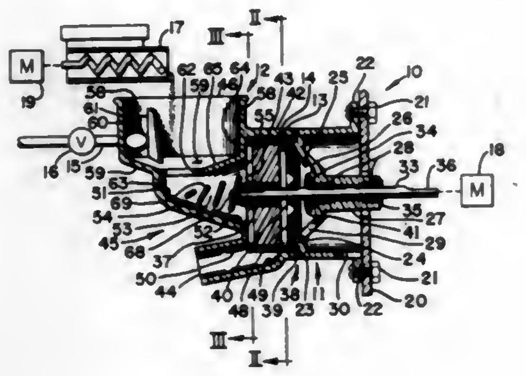
4,193,522
DISPENSING MACHINE MIXING DEVICE AND HOUSING THEREFOR

Loren C. Edelbach, Maple Grove, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed Jul. 27, 1978, Ser. No. 928,761

Int. Cl.² B67D *5/60*

U.S. Cl. 222—145 **20 Claims**



1. A dispensing machine mixing device for the mixing together of concentrate and diluent, comprising:
- (a) first and second end walls and a tubular wall therebetween, said walls enclosing and defining a beverage mixing chamber therewithin;
- (b) means within the mixing chamber for effecting turbulent mixing motion therein;
- (c) a funnel having an upright wall, a lower wall extending downward from the upright wall, and an outlet port through the lower wall and in fluid communication with the mixing chamber, and
- (d) a common wall portion in said mixing chamber first end wall, said common wall portion is common to and is part of said funnel upright wall, said funnel being materially integral with said first end wall and being vertically overlapped against said mixing chamber by virtue of and at said common wall portion.

4,193,523
PLANTING MACHINE FOR POTATOES, BULBS OR SIMILAR SEED CROP

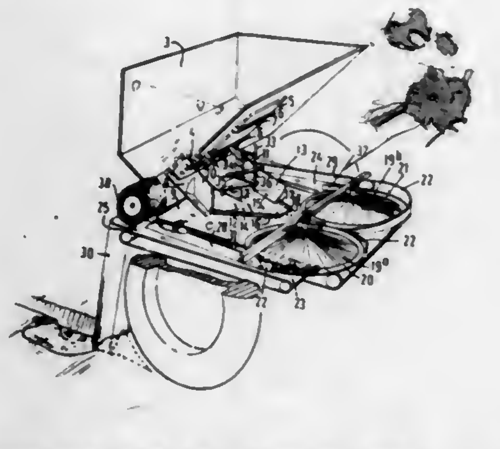
Nicolaas P. Koning, Reviusstraat 118, Alkmaar, Netherlands

Filed Feb. 21, 1978, Ser. No. 879,513

Claims priority, application Netherlands, Feb. 21, 1977, 7701847

Int. Cl.² B67D *5/52;* **A01C** *9/08*

U.S. Cl. 222—254 **13 Claims**



1. A planting machine for potatoes, bulbs or similar seed crop comprising a hopper and a conveying and distributing device adjoining an outlet port of said hopper for feeding the potatoes or the like to the planting foot, characterised in that the conveying and distributing device is formed by a conveyor belt extending beneath the outlet port of the hopper and having above the conveyor belt two discs rotating in opposite senses and being located side by side adjacent one another, said discs having the shape of an obtuse cone with an adjoining, annular, flat outer rim located just above the conveying surface of the belt, the adjacent parts of the discs moving in the same direction as the conveyor belt, said discs being surrounded on the side remote from the hopper through a circumferential angle of about 180° with a slight interspace by an upright rim, and at the opposite sides of the conveyor belt conveying members are arranged to be movable in opposite direction to that of the conveyor belt, said conveying members having pick-up ends lying beneath the outer rims of the respective discs and delivery ends lying above the planting foot, there being provided pick-up members on said conveying members causing the potatoes or the like lying on the flat rim portion of each disc to slide off the disc onto the conveying members wherein the linear circumferential speed of the discs exceeds the linear speed of the conveying members.

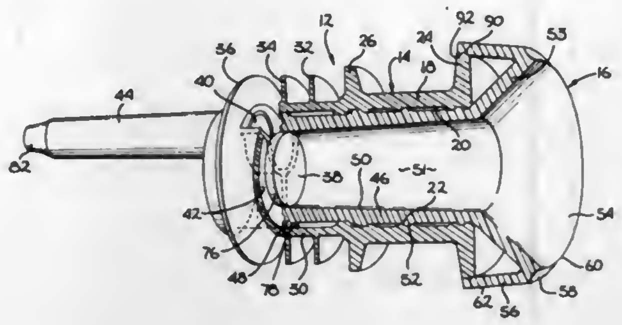
4,193,524
DISPENSING DEVICE WITH TWO-WAY FLOW CHARACTERISTIC AND HALF TWIST CLOSURE

Thomas W. Fleming, 1623 Manning Ave., Los Angeles, Calif. 90024

Filed Mar. 13, 1978, Ser. No. 886,051

Int. Cl.² B67D *3/04*

U.S. Cl. 222—484 **5 Claims**



1. A dispensing device for a container comprising:

a first member adapted to be disposed in a passageway of a content carrying container, said member having a generally tubular body with two sections, the first section including an internally extending thread and at least one externally extending relatively rigid flange, and the second section including internal means for forming a content passageway and a plurality of external relatively flexible flanges; and

a second member adapted to cooperatively operate with said first member, said second member having two sections, a first section being generally tubular and having a smooth internal surface, a sealing end surface and an externally extending thread for engaging the internally extending thread of the first member and being moveable there along; and a second section having a funnel shaped surface contiguous with the smooth internal surface of said first section and an annular leg for forming an operating surface, said second member being moveable between a closed position in which said sealing end surface engages said internal passageway forming means for blocking the flow of content, and an opened position in which said second member is moved along said threads to disengage said sealing end surface and said passageway forming means to allow content flow; and

said annular leg and funnel shaped surface intersect to form an edge, said annular leg including an annular concave surface adjoining said edge.

4,193,525
BICYCLE ATTACHED BEVERAGE CONTAINER CARRIER

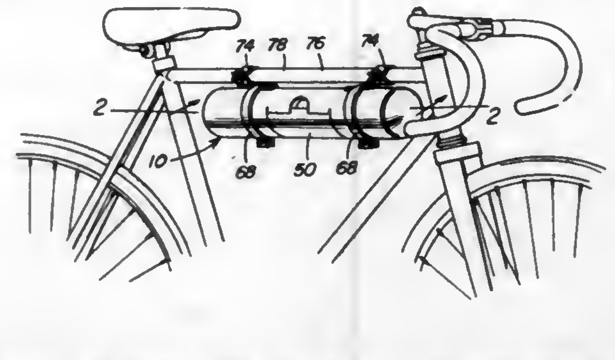
Garold L. Sommers, 1770 Whitney, Idaho Falls, Id. 83401

Filed Jul. 5, 1978, Ser. No. 922,362

Int. Cl.² B65D *11/02;* **B62J** *7/02*

U.S. Cl. 224—35 **7 Claims**

1. A small personal sized beverage container carrier for containing and insulating elongated beverage containers against ambient heat transfer relative thereto, said carrier comprising loosely telescopingly related inner and outer cylindrical shells defining an annular space between the opposing outer and inner surfaces thereof, said inner and outer cylindrical shells having radially registered substantially rectangular openings formed through corresponding wall portions thereof intermediate the opposite ends thereof and with said openings oriented longitudinally of said shells, one of said shells including generally radially projecting integral flange means extending about the corresponding opening and at least substantially bridging the radial spacing between said wall portions, said outer shell including end walls closing the opposite ends thereof outwardly of the corresponding ends of said inner shell, said inner shell including closure walls closing the opposite ends thereof inwardly of said end walls, insulation disposed between the opposing outer and inner surfaces of said shells and end and closure walls, a heat insulative partial cylindrical door hingedly supported from said carrier and swingable between open and closed positions providing unobstructed access through and closing said openings, one of the shells including radially extending circumferentially spaced ribs spanning the radial spacing between said one shell and the other shell.



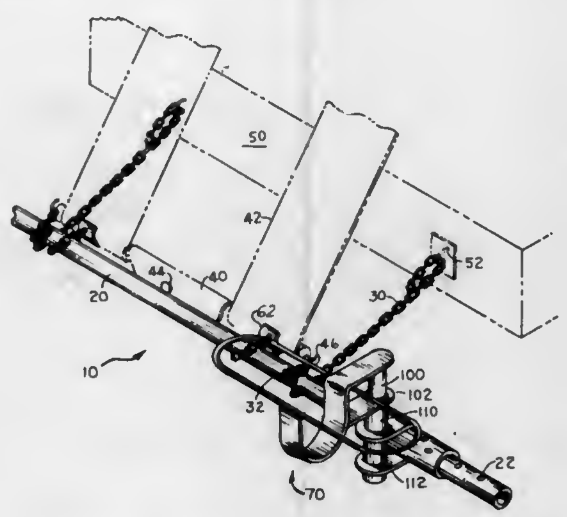
4,193,526
TWO-WHEELED VEHICLE CARRIER

Donald D. Rosmarinofski, 13 Blue Jay Rd., Lynnfield, Mass. 01940

Filed Jul. 27, 1977, Ser. No. 819,399

Int. Cl.² B60R *9/10*

U.S. Cl. 224—273 **4 Claims**



1. A two-wheeled vehicle carrier for a vehicle having a tow-bar comprising:
- (a) carry-bar means detachably connecting with and substantially horizontal to said tow-bar and having at each end thereof a pair of series of horizontal adjustment slots wherein one series of said horizontal adjustment slots is located on one side of said carry-bar means and is directly above the other series of said horizontal adjustment slots located on the other side of said carry-bar means;
- (b) a pair of ring means mounted to the back portion of said vehicle having a tow-bar;
- (c) a pair of chain members having a plurality of links and fixedly mounted to said carry-bar means on one end then extending to said tow-bar and detachably connecting to the ends thereof, each of said chain members further extendable to said ring means and therethrough and back upon itself and having an open link on the other end thereof to interconnect with a link thereof to lock said chain member in the desired position to take up slack and prevent swaying of said two-wheeled vehicle carrier when in use;
- (d) a pair of wheel cradle means detachably and pivotally mounted to said carry-bar means and having a substantially horizontal loop member to encircle the bottom of a wheel of said two-wheeled vehicle and further having a substantially vertical metal strip fixedly mounted on one end to the outside of said substantially horizontal loop member and extending downwardly therefrom to a rounded portion thereof and then upwardly to the inside of said substantially horizontal loop member and then to said mounting means to rest the wheel of said two-wheeled vehicle thereon and having a substantially round coupling rod means fixedly mounted to each of said wheel cradle means,
- (e) a pair of mounting means detachably and pivotally connecting said pair of wheel cradle means to said carry-bar means, each of said mounting means including an annular sleeve member having a pair of a series of mounting holes wherein one series of said mounting holes is located on one side of said annular sleeve member and the other series of said mounting holes is located on the opposite side of said annular sleeve member, each said annular sleeve member adapted to be fitted over an end of said carry-bar means and slidably adjustable over the pair of horizontal adjustment slots associated with that end of said carry-bar means, a substantially round coupling rod receiving slot fixedly mounted to each of said annular sleeve members and adapted to be pivotable around the circumference of said receiving slot;
- (f) detachable locking pin means adapted to be fitted through said annular sleeve member mounting holes and said horizontal adjustment slots of said carry-bar means so as to lock the annular sleeve member onto said carry-bar means;
- (g) a pin means welded to and transfixing said carry-bar means and having a concavely tapered end thereof adapted to and abutting said tow-bar to align and stabilize said carry-bar means.

4,193,527
TRANSPORT DEVICE FOR A BORDER-PERFORATED STRIP-LIKE WEB OF DATA RECORDING MATERIAL

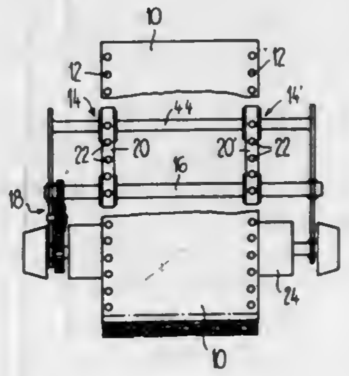
Albert Rutishauser, Rutihofstrasse 40, 8713 Verikon, Switzerland

Filed Apr. 4, 1978, Ser. No. 893,536

Claims priority, application Switzerland, Apr. 7, 1977, 4415/77

Int. Cl.² G03B *1/30*

U.S. Cl. 226—74 **14 Claims**



1. In a transport device for transporting a strip-like web of

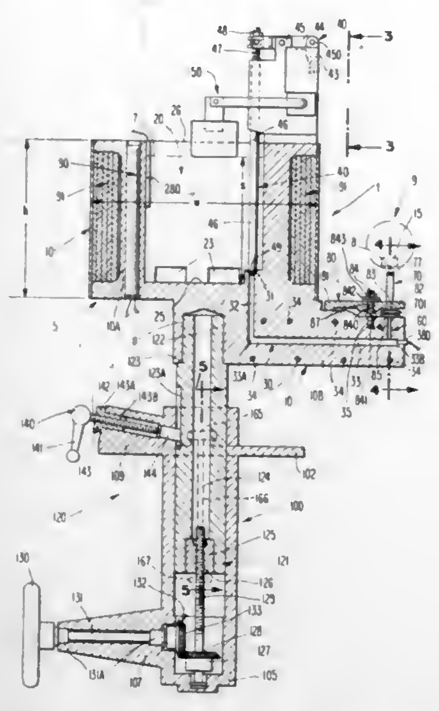
data recording material having perforations and including an endless transport belt having projecting pins for engaging said perforations and being trained around two wheels at least one of which is a drive wheel, the improvement comprising:
- said drive wheel having a plurality of sprockets, and
- each said pin having a recess for driving engagement by a said sprocket,
- said sprockets and recesses being configured relative to each other to effect a substantially frictionless relative rolling motion as between any said sprocket and recess at least as they engage and disengage.

4,193,528
APPARATUS FOR DELIVERY OF SOLDER

James R. Early, Rosemont, Pa., and Donald C. Lobach, Marlton, N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Apr. 11, 1978, Ser. No. 895,400
Int. Cl.^{2} B23K *1/08*

U.S. Cl. 228—37 **14 Claims**



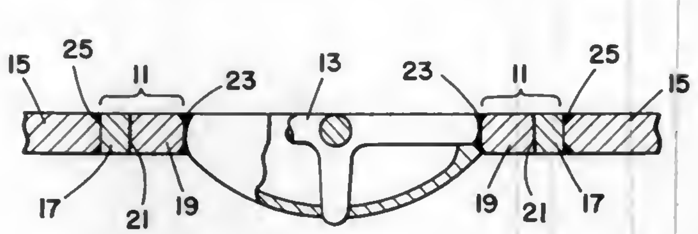
1. A solder delivery apparatus for delivery of molten solder to an applicator for soldering the side seams of can bodies moving in a predetermined path comprising:
- a one-piece housing having a unitary body portion having first and second sections;
- first means including a crucible formed in said first section of said unitary body portion for continuously melting and uniformly heating the molten solder and maintaining same for continuous delivery therefrom all in a manner which substantially eliminates the formation of hot spots and temperature gradients within said first means and said molten solder;
- a solder gate in fluid communication with said crucible and located in said second section of said unitary body portion of said one-piece housing forming a unitary channel to carry said molten solder therethrough, said solder gate having a mouth communicating with said crucible and positioned above the floor of said crucible to provide unimpeded gravity delivery of said molten solder therefrom;
- second means for uniformly heating and maintaining said molten solder within said unitary channel in a manner which substantially eliminates the formation of hot spots and temperature gradients; and
- applicator means in fluid communication with said channel for delivering a predetermined charge of molten solder to said side seams of can bodies and having third means associated therewith for uniformly heating said applicator means in a manner which substantially eliminates the formation of hot spots and temperature gradients in said applicator means and said molten solder therein.

4,193,529
METHOD FOR INTERCONNECTING DISSIMILAR METALS WELDING TO AN EXPLOSIVELY BONDED BIMETALLIC COUPLING

Charles B. Dick, Port Orchard, Wash.; Curtis L. Knutson, Tulsa, Okla.; Frederick W. Jones, Upper Marlboro, and Richard D. Ireland, Chevy Chase, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 761,917, Jan. 24, 1977, Pat. No. 4,099,661. This application Mar. 13, 1978, Ser. No. 885,422
Int. Cl.^{2} B23K *28/02*

U.S. Cl. 228—107 **3 Claims**



1. The method of connecting a first member made of a first material to a second member made of a second material comprising the steps of:
- (a) explosively bonding a third member made of said first material to a fourth member made of said second material;
- (b) welding said first member made of said first material to said third member made of said first material;
- (c) welding said second member of said second material to said fourth member made of said second material; and
- (d) configuring said third and said fourth member as uniform annuli, said third member interior to and concentric with said fourth member and the exterior surface of said third member explosively bonded along its entire length to the interior surface of said fourth member.

4,193,530
METHOD OF SOLDERING TINPLATE CAN BODIES WITH A SULFUR RESISTANT TIN-ALLOY SOLDER

Edward W. Holmes, Darien, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed May 16, 1978, Ser. No. 906,392
Int. Cl.^{2} B22D *11/126*

U.S. Cl. 228—263 **3 Claims**

1. A method of soldering the side seams of tinplate can bodies which comprises
- providing a sulfur-resistant solder consisting essentially of about 0.1 to about 0.5 percent by weight indium, about 0.1 to 0.5 percent by weight bismuth, the remainder being tin,
- maintaining the solder in a molten condition,
- applying the molten solder to the side seam of the can body to provide the side seam with a layer of the solder.

4,193,531
PACKING FOR EGGS

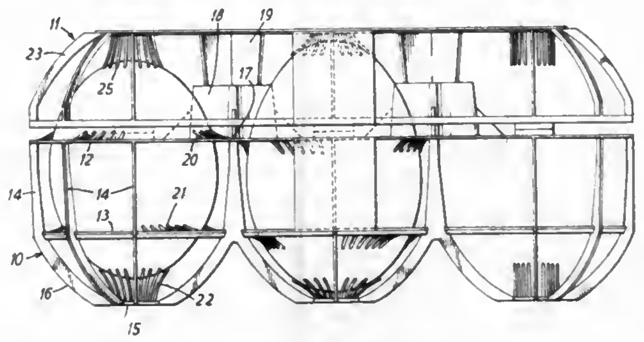
Marc Saby, Villa Maeva, Domicile les Parcs de St. Tropez, France

Filed Mar. 3, 1978, Ser. No. 883,097
Claims priority, application France, Mar. 8, 1977, 77 07731
Int. Cl.^{2} B65D *45/00*

U.S. Cl. 229—2.5 EC **4 Claims**

1. A packing for the transportation of eggs, comprising:
- (a) a base having a plurality of integrally formed receptacles,
- (b) a lid having the same number of integrally formed receptacles and positioned to coincide with those in the base,
- (c) a first annular series of radially inwardly extending flexible filaments disposed within each of said receptacles in the base,
- (d) a second annular series of radially inwardly extending flexible filaments disposed within each of said base receptacles and located above said first series,

- (e) a plurality of upwardly extending filamental support elements within the receptacles in the base, and
- (f) a plurality of downwardly extending filamental elements fixed to the tops of the insides of the receptacles in the lid, whereby the two annular series of flexible filaments whilst permitting entry of the eggs restrict movement of the eggs in the horizontal direction and said upwardly and downwardly extending filaments restrict movement in the vertical direction, said packing being stackable with like packings when in the open position, wherein the filaments of the first annular series are angularly offset from those of the second series in plan thereby to facilitate stacking of empty packings.

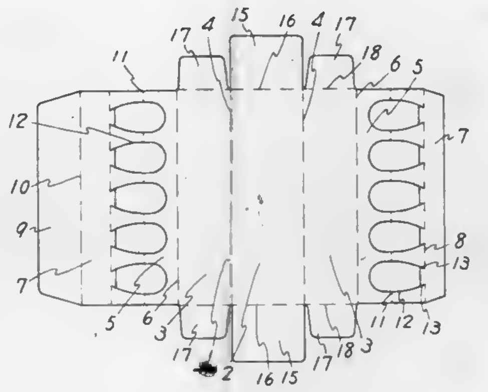


4,193,532
CONTAINER WITH AN INTERNAL DIVIDER

Hachiro Okubo, Osaka, Japan, assignor to Kinki Printing Company, Ltd., Osaka, Japan

Filed Jun. 21, 1978, Ser. No. 917,651
Int. Cl.^{2} B65D *5/50*

U.S. Cl. 229—28 R **2 Claims**



1. A container with a dividing device formed from a single bent blank, comprising:
- (a) flat central dividing means;
- (b) v-shaped inner side walls, said side walls having openings therein for holding objects such as bottles, said side walls being positioned with their apexes opposed to each other and the edges of said side walls spaced from said flat central dividing means for holding said objects firmly between said side walls and said central dividing means; and
- (c) an outer casing in which said bent blank is positioned.

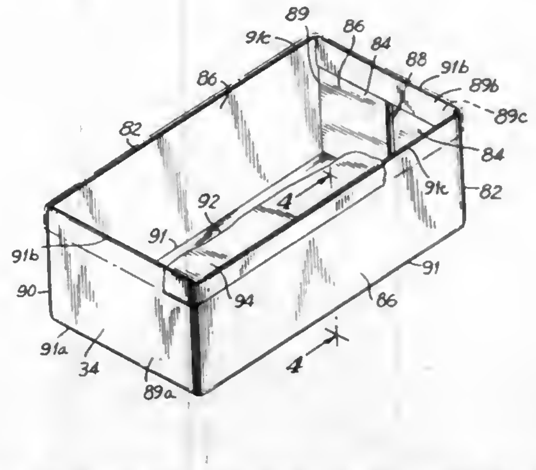
4,193,533
BOX CONSTRUCTION

Kenneth B. Schulman, New York, N.Y., assignor to Millen Industries, Inc., New York, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,334
Int. Cl.^{2} B65D *5/22*

U.S. Cl. 229—34 R **1 Claim**

1. A box structure formed from a blank covered on one side thereof with a first paper wrap, the box structure comprising a substantially flat central portion, side walls adjacent to and substantially perpendicular to a first pair of opposite edges of the central portion, each of said side walls comprising a double layer of material formed by folding a marginal portion of the blank onto itself such that the first paper wrap covers the interior surfaces of said walls, each of said side walls also having a pair of double layer and extensions of substantially the same size and adapted to be sent inwardly and joined to form the interior end walls of the box, each of said interior end walls having an upper portion and a lower portion, and exterior end walls adjacent to and substantially perpendicular to a second pair of opposite edges of the central portion, each said pair of double layer end extensions being joined to form an interior end wall of the box at substantially the midpoint of the adjacent exterior end wall of the box, each of said exterior end walls including an end wall lip adapted to be bent inwardly over and to cover the upper portion of each of said interior end walls to form a box having the first paper wrap extending over the entire exterior surface of the box and continuing over each interior end wall of the box and along the interior surface of each of said side walls to one edge of said first pair of opposite edges of the central portion of the box.

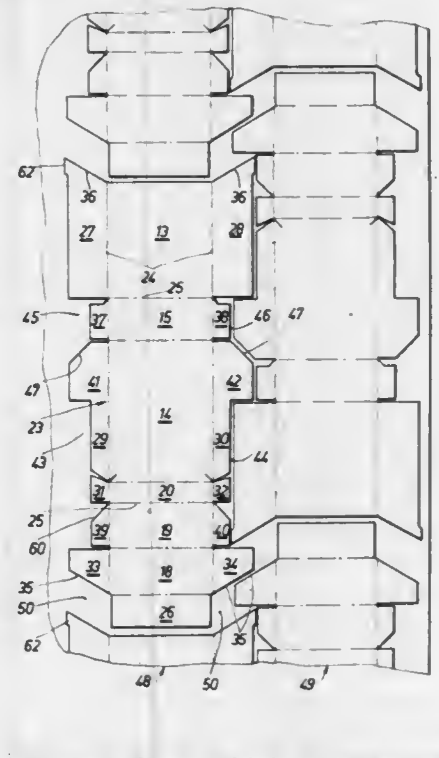


4,193,534
FOLDABLE BLANKS AND STRIPS FOR THE PRODUCTION OF FLIP-TOP CIGARETTE BOXES

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 961,074
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757251
Int. Cl.^{2} B65D *5/34*

U.S. Cl. 229—44 CB **20 Claims**



1. A material blank from which a rectangular box of the hinged lid or flip-top type may be folded, said blank including longitudinally successive surface areas defined by fold lines

and comprising front, floor and back walls of a main box portion and back, ceiling and front walls of a hinged lid, and laterally projecting side flaps, lid side flaps, floor corner flaps and lid corner flaps adapted to form main box portion side walls and lid side walls by their overlapped folding, characterized by: a portion of inner side flaps (**29,30**) connected to the back wall (**14**) and directed toward the lid (**11**), inner lid side flaps (**31,32**) connected to the sides of the back lid wall (**20**) and lid corner flaps (**39,40**) connected to the upper lid wall (**19**) having a total length at least as great as the length of outer side flaps (**27,28**) connected to the front wall (**13**), and a narrower width than the outer side flaps (**27,28**) and lid side flaps (**33,34**), and wherein end elements (**41, 42;53,54**) of the inner side flaps (**29,30**) directed toward the floor wall (**15**) have the same width as the box side walls (**16,17**).

4,193,535

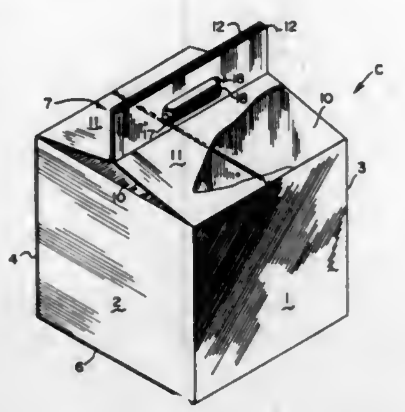
BULK MATERIALS CONTAINER FORMED FROM SUBSTANTIALLY RECTANGULAR BLANK

Harold J. Griffith, Galesburg, Ill., assignor to Alton Box Board Company, Alton, Ill.

Filed Sep. 18, 1978, Ser. No. 942,926

Int. Cl.² B65D *5/10, 5/46*

U.S. Cl. 229—52 B **4 Claims**



1. An enclosed container for holding bulk materials, such as candy or the like, and being formed from a blank that is substantially rectangular in dimensions, comprising, said container being folded from paperboard stock and formed having front, side, rear walls, and a bottom wall, all of said front, side, and rear walls being connected together along their sides with the bottom wall securing along their downward edges to provide a container formed from a substantially rectangular blank, and openable cover means for the container that insures the carrying capabilities and its prompt opening during usage, said cover means including a first pair of flaps, one flap foldably connected to the upper edge of one of each side wall and normally folded over into closure, a second pair of flaps, one of each second flap foldably connected to the upper edge of said front and rear walls and normally folded over into closure and in overlying relationship with the said first pair of flaps, hand panels foldably connecting to each of the second pair of flaps, each hand panel comprising a pair of handle flaps, one of each handle flaps connecting to the upper edge of a flap of the said second pair of flaps substantially along its entire width, the other handle flap being arranged above one of the first pair of flaps and having a width substantially equivalent thereto, said other handle flap being connected upon a side edge thereof to the side edge of the first handle flap and being folded over into contiguity therewith to form a doubly reinforced hand panel, therebeing hand slots formed through each handle flap and with said slots being in registry, and each hand panel being folded over into adjacency in the formed container with the respective hand slots being aligned to accommodate the facile insertion of the hand therethrough.

4,193,536

COOLING STRUCTURE FOR A CENTRIFUGE

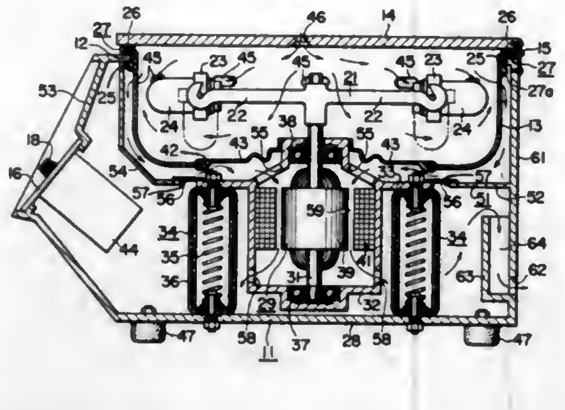
Tokihito Kubota, Tokyo, Japan, assignor to Kabushiki Kaisha Kubota Seisakusho, Tokyo, Japan

Filed Sep. 15, 1978, Ser. No. 943,268

Claims priority, application Japan, Sep. 24, 1977, 52/128750[U]

Int. Cl.² B04B *15/02*

U.S. Cl. 233—11 **14 Claims**



1. A cooling structure for a centrifuge comprising:
- an outer casing;
- an inner housing mounted in the outer casing;
- a rotor disposed in the inner housing;
- a motor comprising a motor frame disposed in the outer casing under the inner housing, said motor including a shaft for driving the rotor;
- exhaust ports formed in the peripheral wall of the inner housing for exhausting therefrom gas blown off by the rotation of the rotor;
- a lid covering the inner housing and having an intake for drawing gas into the inner housing as gas is exhausted from said inner housing through said exhaust ports;
- a guide provided around the inner housing for guiding the gas exhausted from the exhaust ports to the upper end of the motor; and
- means defining a gas passage through said motor for passing the gas guided to the upper end of the motor into the motor through holes made in said motor frame adjacent the upper end thereof and exhausting the gas from the motor through holes made in said motor frame adjacent the lower end thereof.

4,193,537

CENTRIFUGAL SEPARATOR WITH PRESEDIMENTATION MEANS

Berth I. A. Bodelson, Tullinge, and Mats B. Nordenberg, Tumba, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

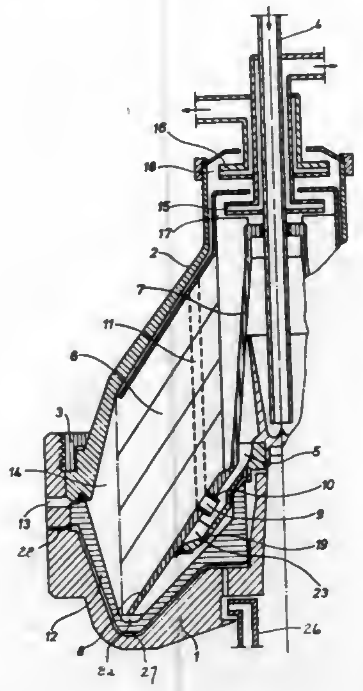
Filed Oct. 23, 1978, Ser. No. 953,933

Claims priority, application Sweden, Nov. 1, 1977, 7712307

Int. Cl.² B04B *1/14*

U.S. Cl. 233—20 A **5 Claims**

1. A centrifugal separator comprising a rotor forming a separating space and also a peripheral space for receiving separated sludge from the separating space, the rotor having peripheral outlets for discharging the separated sludge, a valve bowl movable axially in the rotor to open and close said sludge outlets, a stack of conical separation disks in said separating space, the rotor having a central inlet chamber for receiving a sludge-containing mixture to be centrifuged, a distributor forming a conical wall having openings through which said inlet chamber is connected to said separating space, the rotor also having opposed annualar surfaces fixed relative to the rotor and forming between the surfaces an annular slot through which said inlet chamber is connected to said peripheral sludge space independently of said wall openings, there being a presedimentation space located radially outward from said openings and leading from said inlet chamber to said annular slot, and annular flexible valve means for said slot, said valve means being fixed to the rotor and having one side directed toward the presedimentation space and an opposite side directed toward the peripheral sludge space, said valve means being operable to close said slot when subjected to substantially equal liquid pressures on said sides thereof and to open said slot upon creation of a substantial pressure difference on said sides in response to opening of said sludge outlets.



4,193,538

APPARATUS FOR SEPARATING AND MEASURING SAMPLE COMPONENTS

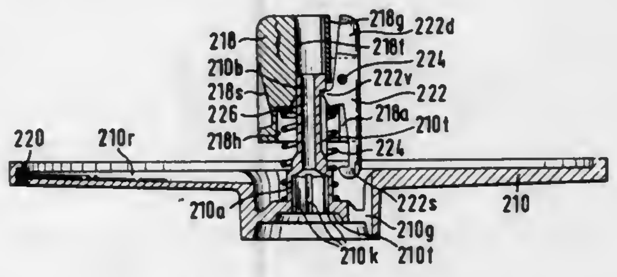
Gerhard Schwarz, Munich, Fed. Rep. of Germany, assignor to Compur-Electronic Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 902,684

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722322

Int. Cl.² B04B *5/00*

U.S. Cl. 233—26 **6 Claims**



1. A centrifugal device for analyzing samples, comprising a driving shaft (**212**), a coupling part (**216**) fixed to said shaft, said coupling part having axially extending coupling teeth (**216***k*), a plate shaped rotor (**210**) for receiving capillary tubes arranged radially on the rotor to enable centrifugal force to be applied to the contents of such tubes, said rotor having a central opening for receiving said coupling part and having coupling grooves (**210***k*) mating with said coupling teeth of said coupling part when said rotor is seated on said coupling part, said rotor being removable in an axial direction from said coupling part, a fixing part (**218**) movable axially with respect to said shaft, said fixing part having portions for engaging and holding the inner ends of capillary tubes arranged radially on said rotor, a spring (**224**) tending to move said fixing part axially away from said rotor, and a locking lever (**222**) pivotally mounted on said fixing part and having a nose (**222***s*) for engaging a portion of said coupling part to latch said fixing part in an operative position close to said rotor against the force of said spring.

4,193,539

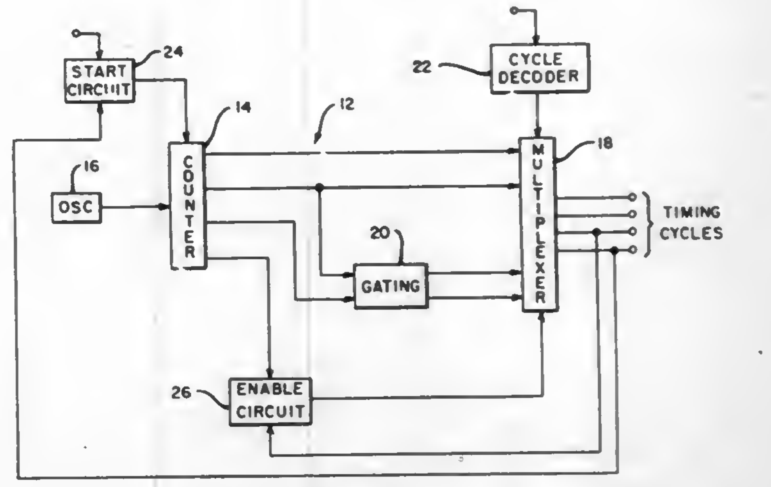
SIGNAL GENERATOR

Rodney V. Bowman, and Martin H. Francis, both of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 7, 1977, Ser. No. 849,383

Int. Cl.² H03K *23/02, 21/12*

U.S. Cl. 235—92 NG **17 Claims**



1. Control signal generating means capable of generating a plurality of different timing cycles comprising:
- multi-stage shift register means having outputs from a plurality of said stages;
- at least one selectively effective delay means interposed between successive stages of said shift register means;
- start means coupled to said shift register means for initiating and disabling operation of said shift register means;
- means for clocking said multi-stage shift register means;
- multiplexer means to which a plurality of said outputs from various stages of said shift register means are applied and from which said timing cycles are taken; and
- selection means for controlling said multiplexer means to select desired outputs from the shift register means for application to a utilizing device.

4,193,540

APPARATUS FOR AND METHOD OF AUTOMATICALLY IDENTIFYING BARRELS

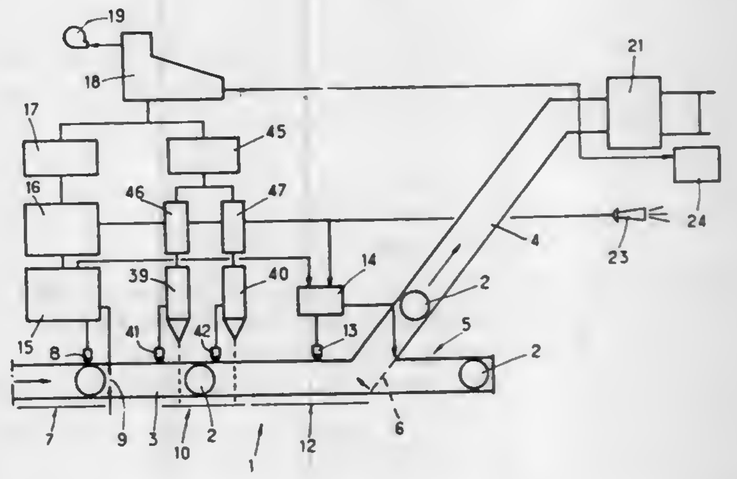
Roland Dougados, Strasbourg; François Pierrot, Souffelweyersheim, and Remy Wagner, Strasbourg Meinau, all of France, assignors to Brasseries Kronenbourg, France

Filed Mar. 23, 1978, Ser. No. 889,495

Claims priority, application France, Jun. 21, 1977, 77 19550

Int. Cl.² G06K *7/10;* **G01D** *21/04;* **G06K** *9/00*

U.S. Cl. 235—454 **6 Claims**



1. Apparatus for automatically identifying barrels having machine readable codes on an end face thereof comprising a main conveyor for conveying the barrels therealong in a vertical orientation while exposing the code bearing end faces thereof, a secondary diversion conveyor extending from the

main conveyor and separated therefrom by a barrier, a flow control assembly associated with the main conveyor comprising an entry door and a passage detector controlling movement of the barrels through the entry door, a barrel detection region downstream of the flow control assembly with two spaced detectors for scanning and reading the code on the upper faces of the barrels, which latter carry a plurality of identification labels bearing identical codes with at least two of said labels on each barrel oriented at an angle of about 45° relative to each other, the said detectors being disposed above the barrels in a position such that the scan of one detector is spaced from the scan of the other detector by a distance greater than the diameter of the barrel face and said spaced scans converge at an angle of about 45° to provide omnidirectional reading of said labels, said detectors being connected to an interface and an information processing unit for controlling operation of the entry door and the barrier.

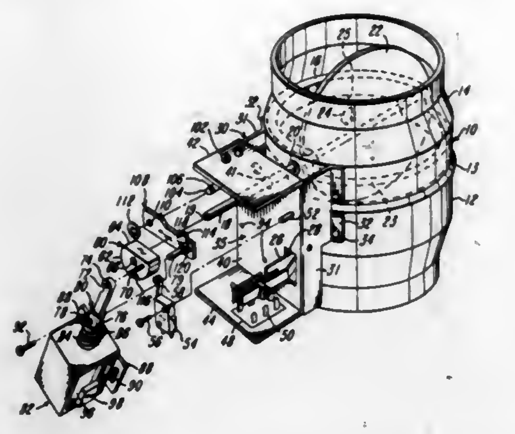
4,193,541
DAMPER LATCH

A. Lee Scheidweiler, Englewood, Ohio, assignor to Energy Vent, Inc., Dayton, Ohio

Continuation of Ser. No. 890,082, Mar. 27, 1978, abandoned. This application Sep. 28, 1978, Ser. No. 946,594

Int. Cl.^{2} G05D ***23/00***

U.S. Cl. 236—1 G **11 Claims**



1. In a mechanism for positioning a damper member between respective positions opening and substantially closing a flue, said mechanism comprising motive means having an armature, means eccentrically linking said armature to a rotatable cam member drivingly engaged to said damper member, and yieldable means opposing movement of said armature in a first direction for returning said armature in an opposite direction upon de-energization of said motive means; the improvement wherein said cam member has first latching means, and including a latch member and means coupling said latch member to said armature, said latch member having second latching means cooperating with said first latching means to latch said cam member and therewith said damper member following movement of said armature in one of said directions, one of said latching means comprising a latching slot and the other of said latching means comprising a detent.

4,193,542
THERMOSTATIC VALVE

Erwin Knauss, Gundelsheim, Fed. Rep. of Germany, assignor to Braukmann Armaturen A.G., Rothrist, Switzerland

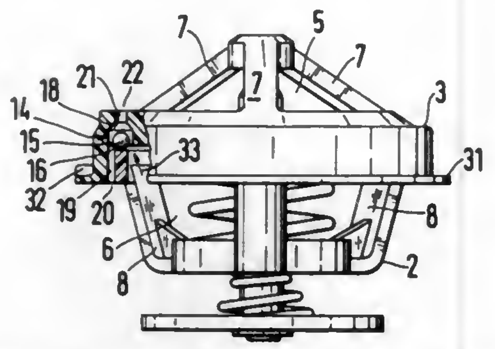
Filed Dec. 13, 1977, Ser. No. 860,062

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657512

Int. Cl.^{2} F01P ***7/02***

U.S. Cl. 236—34.5 **8 Claims**

1. A thermostatic valve for controlling liquid flow comprising a housing formed of first and second interconnecting parts providing a first chamber in which is located a first valve seat and co-operating valve plate operable by a thermostatic element located in said first chamber to permit liquid flow therethrough past said valve plate, first and second passages in said interconnected parts forming an inlet and an outlet respectively to said first chamber, a second chamber formed by said interconnected parts, exterior of said first chamber, said second chamber being intermediate of said inlet and said outlet, a closing float element contained in said second chamber, a second valve seat in said second chamber forming an exit from said outlet, said closing float element being engageable with said second valve seat, the arrangement being such that liquid flow through said second chamber will have said closing float element to engage with said second valve seat but during disengagement of said closing float element from said second valve seat, air may vent from said inlet to said outlet through said second chamber.



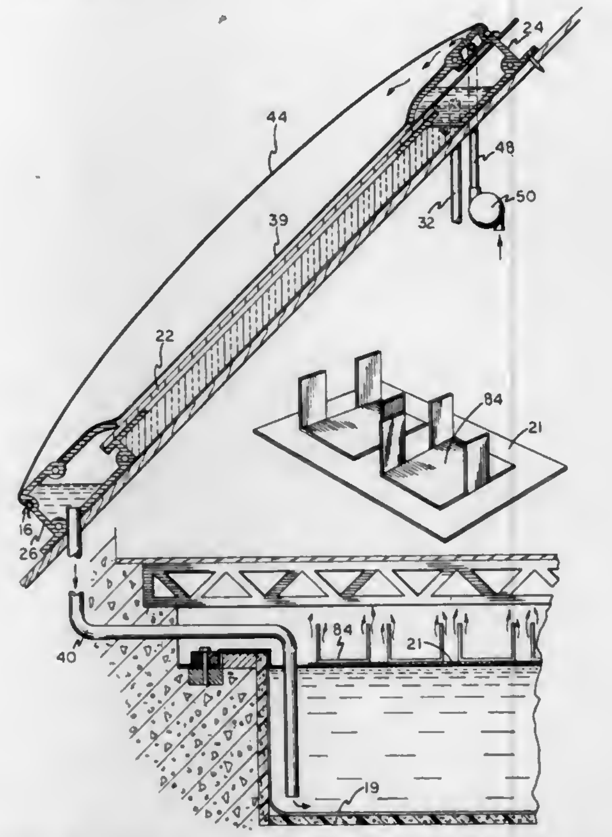
4,193,543
SOLAR HEATING SYSTEM

Eric A. Viesturs, 680-B Heritage Village, and Gundar E. Viesturs, Oak Hill Dr., both of Southbury, Conn. 06488

Filed Feb. 23, 1978, Ser. No. 880,379

Int. Cl.^{2} F24D ***11/00***

U.S. Cl. 126—430 **5 Claims**



1. A solar heating system for a building having an inclined roof, side walls and a removable sectional bottom floor, said system comprising:

- a closed hollow water proof chamber disposed below said bottom floor, said chamber being partially filled with water and containing air;
- a solar heat collector disposed in the roof, said collector having upper and lower spaced horizontal hollow members and a flat collector sheet having a roughened black top surface inclinedly disposed therebetween, the upper member having a water inlet and an elongated horizontal opening, the horizontal opening extending along the length of the upper member adjacent the sheet, said lower member having a water outlet and an elongated horizontal slot, said slot extending along the length of the lower member adjacent said sheet;
- first means interconnecting said chamber and said water inlet to pump water from said chamber to said inlet, said water flowing out of said horizontal opening over said sheet for collection in said lower member, the water being heated by solar action as it flows over said sheet;
- second means interconnecting said water outlet to said chamber to drain said heated water into said chamber;
- a slidable perforated plate extending through said upper member and said opening, said plate being slidable to any position between fully closed and fully open to regulate the flow of water through said opening accordingly, and thus regulate the temperature of the water heated by flow along said plate;
- a flexible transparent plastic cover;
- third means detachably securing said cover to said upper and lower members, said cover extending over said sheet to protect same for external weather conditions; and
- fourth means to introduce air under pressure between said cover and said sheet to inflate said cover.

4,193,544
RAIL CLIP ASSEMBLIES

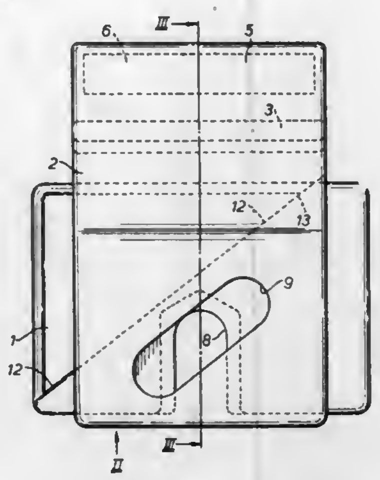
Ian M. Marchant, Ashtead, and Warwick S. Faville, London, both of England, assignors to Kins Developments Limited, Epsom, England

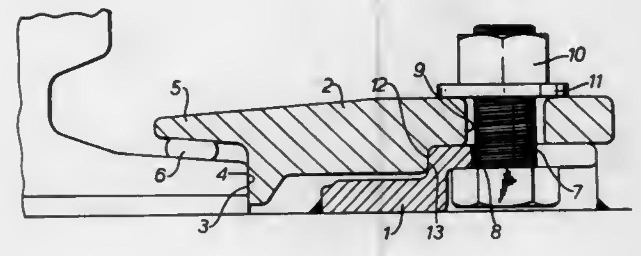
Continuation of Ser. No. 700,811, Jun. 29, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,591

Claims priority, application United Kingdom, Jun. 30, 1975, 27516/75

Int. Cl.^{2} E01B ***9/00***

U.S. Cl. 238—347 **11 Claims**





1. A rail clip assembly for securing a rail to a support, said assembly comprising: a first part to be fixed relative to the rail support adjacent the rail and having a first face adapted to face the rail and extend generally parallel thereto, and a second face extending from said first face away from said rail in a direction inclined at an acute angle to the longitudinal direction of the rail; a second part adapted to overlie said first part and having first and second relatively inclined faces, said first and second faces being on a portion of said second part which in use extends between said second face of said first part and said rail with the first face of said portion being in abutment with a longitudinally extending face of the rail and with the second face of said portion being in abutment with said second face of said first part in all relative positions of said parts for transmitting to said first part laterally directed forces applied to said second part by the rail, fixing means for fixing said second part to said first part independently of fixing of said first part to said rail support, said fixing means including a member having an enlarged head for engagement in said first part and a shank, said parts each having an aperture therein which align with each other and through which said shank of said fixing member extends when said second faces are in abutment, said aperture in said second part being elongated in a direction parallel with the direction of extent of the second face of said second part to enable said parts to assume different relative positions when said shank extends through said aperture and while said abutted faces remain in abutment, said aperture in said first part extending at its lower end into a recess dimensioned to receive said enlarged head of said fixing member and communicating through a slot, constituting an extension of said aperture, with an opening whereby said head of said fixing member can be engaged with said first part with said shank extending through said aperture therein after said first part has been fixed to the rail support, said aperture and slot in said first part extending in a direction inclined to said direction of the second face of said first part such that when said first and second parts are assembled with the second faces thereof in abutment, said fixing member extends through said aligned apertures therein but is prevented by said second part from moving through said slot in said first part.

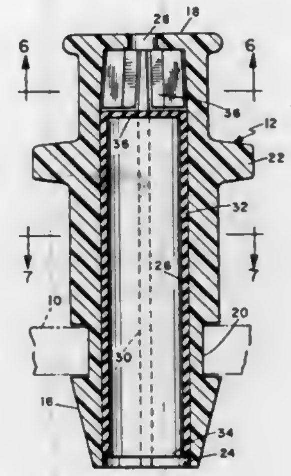
4,193,545
PRESSURE COMPENSATING EMITTER

Glenn G. Havens, La Mesa, Calif., assignor to Bayshore Creative Products, Inc., National City, Calif.

Filed Aug. 7, 1978, Ser. No. 931,922

Int. Cl.^{2} B05B ***1/30, 15/02***

U.S. Cl. 239—109 **15 Claims**



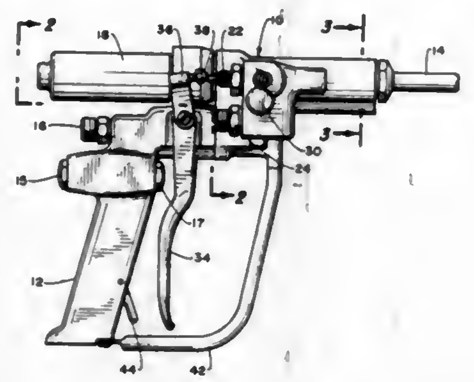
1. A pressure compensating emitter for irrigation systems comprising:

- a generally cylindrical body member having a longitudinal bore defining a passageway therethrough with an inlet port at one end of the body for mounting in a conduction line and an end wall including means defining an outlet port in the wall at the other end of the body for distributing a controlled flow of water therefrom,
- spacing rib means extending inward from said end wall along the bore,
- a flexible imperforate substantially cylindrical boot having an outer diameter substantially equal to that of said longitudinal bore mounted in said passageway and having an open end at said inlet port end of said body and a closed end at the outlet port end of said body in engagement with and supported away from said end wall by said spacing rib means, and
- elongated rib means extending along said passageway between the walls of said boot and said bore for biasing and supporting the wall of said boot adjacent said rib away from the wall of said bore for maintaining a flow path between said inlet port and said outlet port.

4,193,546
HIGH-VISCOSITY VOLUME BALANCING MIXING HEAD

Robert D. Hetherington, Sunland, and David W. Goelz, Burbank, both of Calif., assignors to Poly-Glas Systems, Sun Valley, Calif.

Filed Sep. 19, 1977, Ser. No. 834,037
Int. Cl.^{2} B05B *15/02*
U.S. Cl. 239—112 **18 Claims**



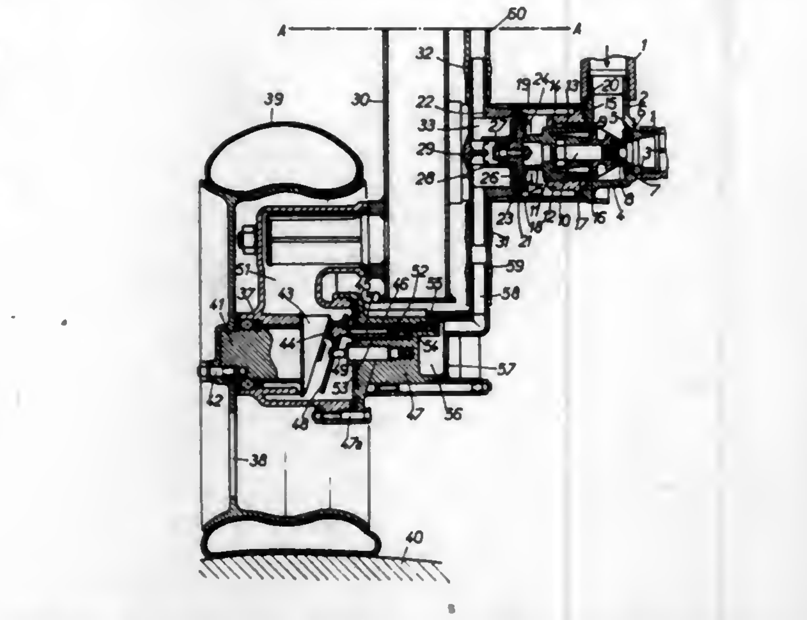
1. An apparatus for mixing and dispensing a plurality of reactive components comprising:
- a body;
- a mixing chamber in said body having an inlet and exit ports;
- a nozzle secured in said exit port;
- a pair of component inlet ports in said body;
- a pair of passageways intersecting at the inlet to said mixing chamber connecting said inlet ports to said mixing chamber;
- a pair of valves in said passageways near said intersection of said passageways for controlling the flow of material to said mixing chamber;
- means to connect component supply hoses directly to said body through said inlet ports, whereby the reactive components are closely coupled to said pair of valves and said mixing chamber;
- a third inlet port;
- a third passageway connecting said third inlet port to said first pair of passageways intermediate said pair of inlet ports and said mixing chamber; and
- valve means in said third passageway whereby said body may be flushed with cleaning materials after use.

4,193,547
MOBILE APPARATUS FOR SPREADING LIQUIDS AT A CONSTANT VOLUME PER UNIT SURFACE AREA

Vincent P. M. Ballu, Epernay, France, assignor to Tecnoma, Epernay, France

Filed Sep. 25, 1978, Ser. No. 945,790
Claims priority, application France, Sep. 26, 1977, 77 28895
Int. Cl.^{2} B05B *9/06*
U.S. Cl. 239—156 **7 Claims**

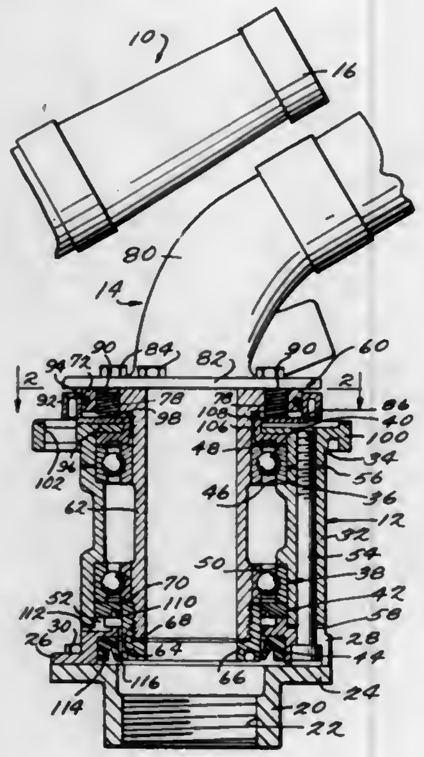
1. Mobile apparatus for spreading a constant volume of liquid per unit area of surface in spite of variations in speed of travel, comprising a spreading liquid circuit, an auxiliary liquid circuit, a pressure regulator connected in the spreading circuit for regulating the liquid pressure therein in response to said auxiliary liquid circuit, a bracket, a tubular arm pivotally mounted at one end on said bracket, said auxiliary circuit being located in said arm, said arm being adapted to serve as a reservoir for the liquid of the auxiliary circuit, a sensing wheel mounted on said arm, adapted to be rotated by engagement with its periphery at a speed proportional to the speed of travel and coupled to the auxiliary circuit to control the liquid pressure therein, a hollow support at the other end of the tubular arm on which the sensing wheel is mounted and a pump mounted on the support and adapted to be directly driven by the sensing wheel, the hollow support providing communication between the pump and the reservoir in the arm.



4,193,548
HIGH CAPACITY SPRINKLER HEAD WITH IMPROVED BRAKE MECHANISM

Larry P. Meyer, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Oct. 18, 1978, Ser. No. 952,608
Int. Cl.^{2} B05B *3/02, 3/14*
U.S. Cl. 239—230 **11 Claims**

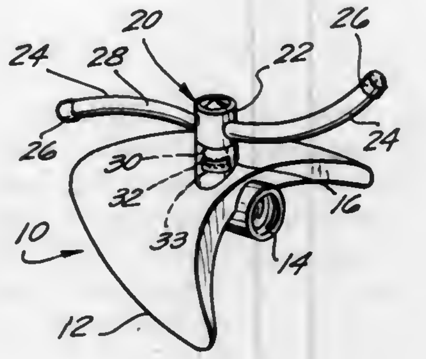


1. A step-by-step rotary sprinkler head comprising:
- a stationary annular housing assembly having a lower portion adapted to be fixedly connected in communicating relation with respect to a source of water under pressure,
- an annular mounting member supported within the upper end portion of said stationary annular housing for rotational movement about a generally vertically extending axis generally coextensive with the annular axis of said housing assembly,
- said mounting member having a first set of at least three equally annularly spaced threaded stud receiving holes extending vertically therein, a second set of at least three equally annularly spaced stub shaft receiving holes extending vertically therein and a third set of at least three equally annularly spaced coil spring receiving holes extending vertically therein,
- an annular brake member having at least three equally annularly spaced stub shafts extending vertically upwardly therefrom and slidably mounted within said second set of holes, said annular brake member having a downwardly facing annular brake surface thereon,
- means in the upper portion of said stationary housing assembly providing a fixed upwardly facing annular brake surface disposed in engaged relation with said downwardly facing annular brake surface,
- a sprinkler body assembly carried by said mounting member and fixedly secured thereto by bolts extending therethrough and threadedly engaged within said first set of holes,
- at least three equally annularly spaced coil springs mounted within said third set of holes having their lower ends engaged with said annular brake member so as to resiliently urge the downwardly facing brake surface thereof into engaged relation with said upwardly facing brake surface with a constant spring force, and
- means for communicating said sprinkler body assembly with said stationary housing assembly in fluidtight communicating relation therewith.

4,193,549
ARM/ROTOR HUB ASSEMBLY

Joseph Gladstone, Teaneck, N.J., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Jul. 24, 1978, Ser. No. 927,103
Int. Cl.^{2} B05B *3/06*
U.S. Cl. 239—251 **19 Claims**



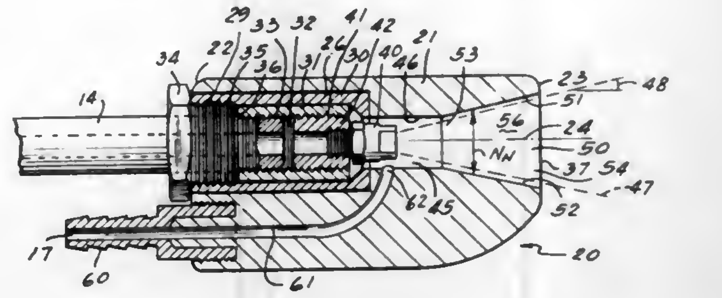
1. An arm/rotor hub assembly comprising
- A. a hollow rotor adapted to receive a plurality of transversely-extending arms, said rotor having an open end, an opposite end, and a sidewall intermediate said ends, said sidewall defining a like plurality of apertures therethrough;
- B. a plurality of hollow arms, each of said arms passing through a corresponding one of said apertures and having one end thereof extending outwardly of said rotor in a generally transverse direction and the other end thereof disposed within said rotor, said other end being flared outwardly to a diameter greater than that of said corresponding aperture and having a portion thereof at least partially disposed intermediate said corresponding aperture and said open rotor end.

4,193,550
CHEMICAL INJECTION HEAD

David L. Juttelstad, Gayville, and Philip Johnson, Vermillion, both of S. Dak., assignors to Dura Corporation, Southfield, Mich.

Filed Sep. 28, 1977, Ser. No. 837,182
Int. Cl.^{2} B05B *7/30*
U.S. Cl. 239—314 **1 Claim**

1. A high-pressure liquid injection head for mixing and jetting a stream of liquid carrier and a potentially corrosive liquid chemical as a cleaning compound, said head comprising:
- a nozzle body having an input for a relatively inert pressurized liquid carrier and having formed therein:
  - an outlet channel having rectangular cross-section and having walls diverging in a downstream flow direction and terminating in an outlet through which the mixed compound is discharged in the form of a jet stream,
  - a cylindrical suction chamber having an upstream termination communicating with said carrier input and having a downstream termination communicating directly with a smallest upstream end of said outlet channel and having a cross-sectional area substantially greater than the area of said aperture,
  - a liquid chemical inlet passage in communication with the suction chamber at a first point upstream of said aperture with a liquid chemical source;
- a nozzle removably mounted in said nozzle body and connected to said carrier input and extending a distance into said suction chamber in axial alignment with said aperture and terminating in said chamber downstream of said first point



- said nozzle having diverging interior walls forming a channel diverging at a same angle as said outlet channel, and
- said nozzle terminating in said chamber a distance from said aperture such that a jet stream emitted from said spray nozzle directed at said aperture has a cross-section smaller than said aperture when said stream reaches the aperture;
- said pressurized jet stream through said suction chamber creating a pressure drop therein to draw said liquid chemical from said chemical source into said suction chamber at said first point for mixing therein with said carrier jet stream, the resulting carrier-chemical mixture being expelled through said outlet channel in the form of a diverging jet stream having substantially no contact with said channel walls, thereby to safeguard the operating components of the spray head against corrosion and to apply the carrier-chemical mixture to an object to be cleaned with high impact scrubbing action.

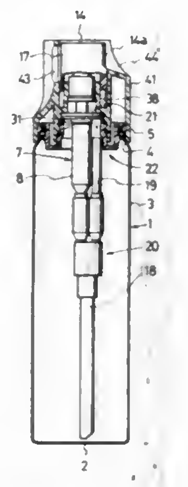
4,193,551
MANUALLY OPERABLE ATOMIZER

Tadao Saito; Takamitsu Nozawa; Haruo Tsuchida; Shigeo Iizuka, and Takayuki Goto, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1978, Ser. No. 911,353
Claims priority, application Japan, Mar. 16, 1978, 53/33629[U]
Int. Cl.^{2} B05B *9/043*
U.S. Cl. 239—333 **6 Claims**

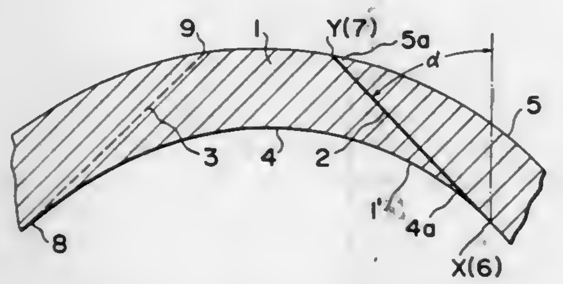
1. A manually operable atomizer of the type having a container containing a liquid to be atomized, an atomizing means adapted to be held by the neck opening portion of said container, said atomizing means including a pressurizing chamber defined by a cylinder and a piston which are adapted to make a pumping action, an atomizing head through which said piston is depressed and actuated, and a nozzle through which said liquid pressurized in said pressurizing chamber is atomized, comprising:
- a connecting member disposed in said neck opening portion of said container and having an inner peripheral wall and an outer peripheral wall connected to each other at their lower ends, said connecting member having a first flange formed at the upper end of said outer peripheral wall and

adapted to rest on the top brim of said neck opening portion, the upper end of said inner peripheral wall constituting an annular supporting surface, said connecting member having a first annular protrusion formed on the outer peripheral surface of said inner peripheral wall of said member, and a second annular protrusion formed on the outer peripheral wall below said first flange for engagement with the inside top rim of the container; a holding member attached to said neck opening portion of said container and having a second flange adapted to face said annular supporting surface of said connecting member, a first cylindrical portion adapted to be fitted to the outer peripheral surface of said inner peripheral wall of said connecting member, and an over cap adapted to cover



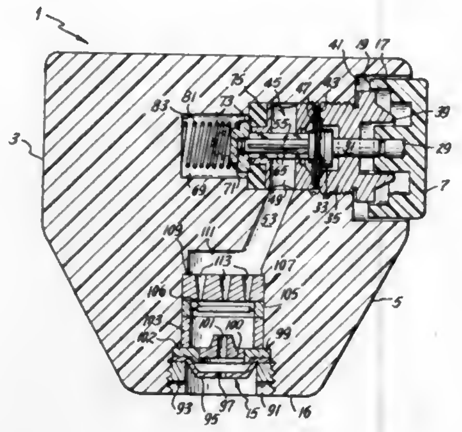
said atomizing head, said over cap having a third annular protrusion formed at its lower end portion and adapted for engagement with a top brim of said neck opening portion, said over cap further having a window formed at its portion corresponding to said nozzle of said atomizing head, said holding member having a fourth annular protrusion formed on said first cylindrical portion of itself for engagement with the first annular protrusion; a third flange extending laterally from the outer periphery of said cylinder and adapted to be cramped between said second flange and said annular supporting surface; and an annular packing adapted to be interposed between said annular supporting surface and said third flange; whereby said atomizing means are stably held, and are easily removed from the container and assembled.

4,193,552
LIQUID SPRAYER PIPE WITH INCLINED SLITS
Ken-ichi Ishikawa, 66-2 Nukatani 2-Chome, Kanazawa, Ishikawa Prefecture, Japan
Filed Aug. 25, 1978, Ser. No. 936,881
Claims priority, application Japan, Nov. 12, 1977, 52-125230
Int. Cl.² B05B *1/14, 1/30*
U.S. Cl. 239—533.13 **10 Claims**



1. A liquid sprayer pipe made of flexible material with a plurality of liquid spraying slits through the wall thereof providing liquid passageways for the passage of liquid flowing through the pipe from an inlet on the inner surface of the wall to an outlet on the outer surface of the wall, said slits being arranged parallel to the direction of liquid flow in said liquid spraying pipe and inclined with respect to said inner and outer surfaces at an angle of up to 45°.

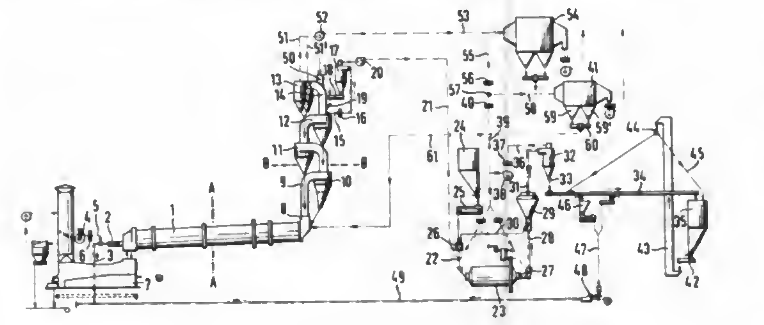
4,193,553
HAND-HELD SHOWER HEAD
Charles M. Kelly, 1016 St. Margarets Dr., and Francis C. Keffer, 1168 Summit Dr., both of Annapolis, Md. 21401
Filed Nov. 7, 1977, Ser. No. 849,213
Int. Cl.² B05B *1/18*
U.S. Cl. 239—586 **7 Claims**



1. A hand-held shower head comprising:
(a) a housing to be held in the hand, said housing having a side, a rear and a front,
(b) an inlet positioned in said side,
(c) an outlet spray nozxle in said front,
(d) a passage in said housing connecting said inlet to said spray nozzle,
(e) an opening substantially on a radius in said side,
(f) a push-button actuator reciprocating in said side opening and having a portion extending into said housing, said housing including rigid means therein cooperating with at least two portions on said actuator for limiting the inward reciprocal movement of said actuator in said side opening,
(g) a valve positioned in said passage and operatively connected to said actuator including:
  (1) a normally closed movable valve member at least partially biased in the closed position against a valve seat by pressure exerted by water entering through said inlet,
  (2) a plunger connected to said movable valve member, and
  (3) sealing means cooperating with said plunger.

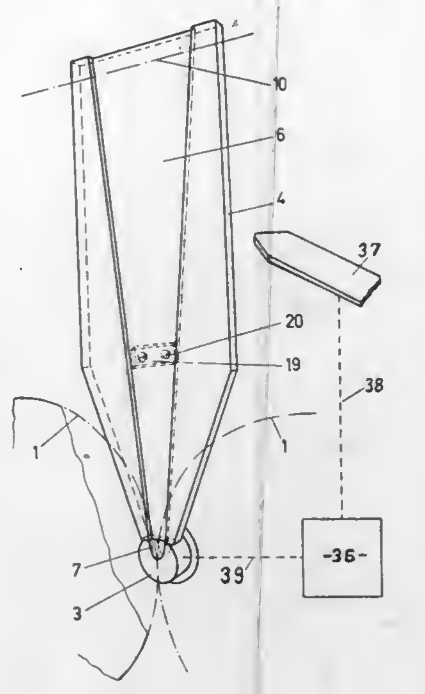
4,193,554
METHOD AND APPARATUS FOR THE DRYING AND FINE-GRINDING OF COAL
Jakob Ansen, Cologne; Horst Herchenbach, Troisdorf; Helmut Wustner, Cologne, and Heinz Fasbender, Krefeld, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany
Filed Oct. 10, 1978, Ser. No. 949,953
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745424
Int. Cl.² B02C *23/00*
U.S. Cl. 241—19 **15 Claims**

1. A method for the drying and pulverizing of coal for the supply of coaldust for the firing of a related installation which supplies a heated, essentially inert, gas bearing mineral dust to the pulverizing apparatus comprising the steps of:
mixing the coal with a part of the inert gas
pulverizing the coal
separating the pulverized coal into dry coaldust and an exhaust gas carrying a residue of coal dust
mixing a part of the exhaust gas with a part of the inert gas to make the coal dust bearing exhaust gas substantially less combustible
filtering the coal dust from the resultant mixed gas



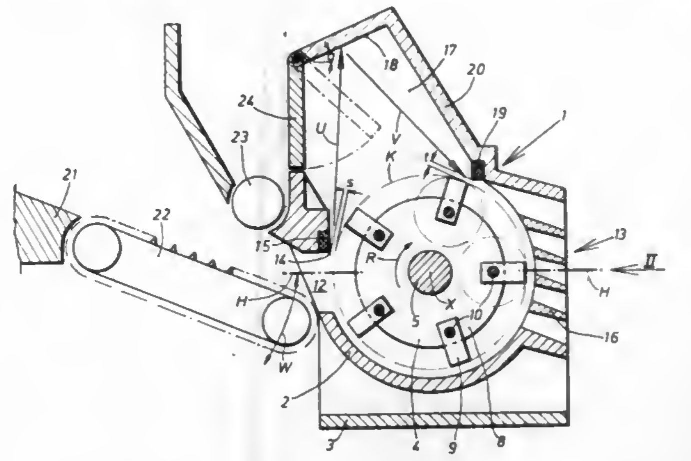
supplying the filter residue, the coal dust removed from the mixed gas, to the related installation as additional fuel.

4,193,555
ROLL MILL FOR FEEDING MATERIAL TO THE ROLL GAP
Edgar Ruegger, Arnegg, Switzerland, assignor to Gebruder Buhler AG, Uzwil, Switzerland
Filed Jun. 19, 1978, Ser. No. 917,315
Claims priority, application Switzerland, Jun. 24, 1977, 7766/77
Int. Cl.² B02C *4/02*
U.S. Cl. 241—37 **9 Claims**



1. Roll mill comprising: a paif of rolls forming a roll gap therebetween, a lateral gap seal device at each end of said pair of rolls, each said gap seal device including a sealing pin and a sealing member, means for pressing said gap seal device against said ends, each gap seal device including a flow guide for guiding the flow of material supplied to said roll gap, each said flow guide extending near said roll gap and stopping short of said roll ends outwardly of said roll ends, each said sealing pin sealing said roll gap in the region of the nip of said roll gap and said sealing member being disposed above said pin to define and seal a path of the flow of said material, said sealing member having an elongate recess extending at least approximately at right angles to the axes of said rolls, and said elongate recess being of a depth in the axial direction determined to guide flow of said material to the region of ends of said gap, said pin having a recess formed as a prolongation of said elongate recess and extending near said roll gap, said two recesses communicating with one another and together forming said flow guide, said guide being adapted to guide flow of material into said roll gap in the regions of said roll ends from beyond the ends of said rolls outwardly of said roll ends.

4,193,556
HAMMER MILL
Wilhelm Linnerz, Kaarst, and Egbert Hemscheidt, Mulheim, both of Fed. Rep. of Germany, assignors to Lindemann Maschinenfabrik GmbH, Düsseldorf, Fed. Rep. of Germany
Filed Mar. 9, 1978, Ser. No. 884,848
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713177
Int. Cl.² B02C *13/09*
U.S. Cl. 241—186 R **15 Claims**

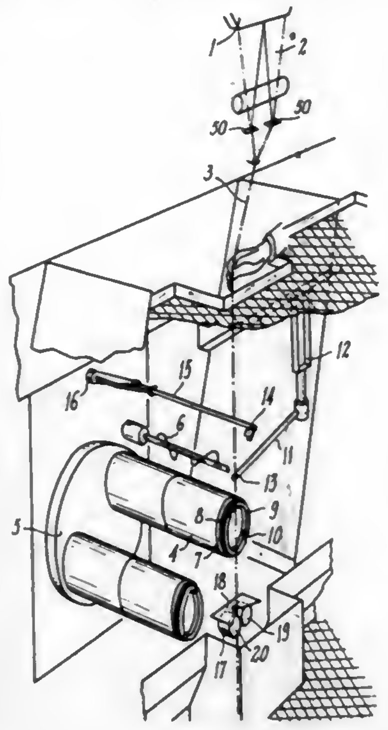


1. A hammer mill assembly for comminuting scrap material comprising a housing, rotor supported within said housing for rotation about a substantially horizontal axis, hammer means on said rotor for comminuting scrap material in said housing, said hammer means defining during rotation of said rotor a striking circle representing the radially outermost point reached by said hammer means, means defining a scrap material inlet and a scrap material outlet for said housing, and wall means defining a reverberation chamber adjacent the periphery of said rotor, said reverberation chamber being arranged to open inwardly of said rotor and being located with said scrap material outlet arranged immediately forwardly thereof taken in the direction of rotation of the rotor, said reverberation chamber having a forward termination point which is the forwardmost portion of said wall means taken relative to the direction of rotation of said rotor, said forward termination point being spaced a predetermined distance from said striking circle to form a first gap therebetween, said gap being determined in accordance with a degree of comminution of said scrap material desired to be achieved in said hammer mill at said forward termination point, said material inlet being defined with an uppermost termination edge spaced a predetermined second gap from said striking circle of said rotor, said second gap being determined in accordance with a degree of comminution of said scrap material desired to be achieved by said hammer mill at said uppermost termination edge.

4,193,557
STRAND ATTENUATION AND WINDING APPARATUS
Giuseppe-Fabrizio M. Mclan, Chambery, and Jean R. Nicouland, Challe-les-Eaux, both of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France
Division of Ser. No. 630,925, Nov. 11, 1975, Pat. No. 4,040,572.
This application Aug. 5, 1977, Ser. No. 822,208
Claims priority, application France, Nov. 13, 1974, 74 47434
The portion of the term of this patent subsequent to Aug. 9, 1994, has been disclaimed.
Int. Cl.² B65H *54/02*
U.S. Cl. 242—18 A **7 Claims**

1. Apparatus for attenuating and winding continuous strand drawn from a bushing directly onto winding sleeves mountable on and adapted to extend lengthwise over a portion of a rotating collet comprising, a collet mounted for rotation about the longitudinal axis thereof and adapted for receiving a winding sleeve thereon, a face on one end of the collet disposed substantially normally to the axis of rotation of the collet, strand pulling means for drawing the strand from the bushing across

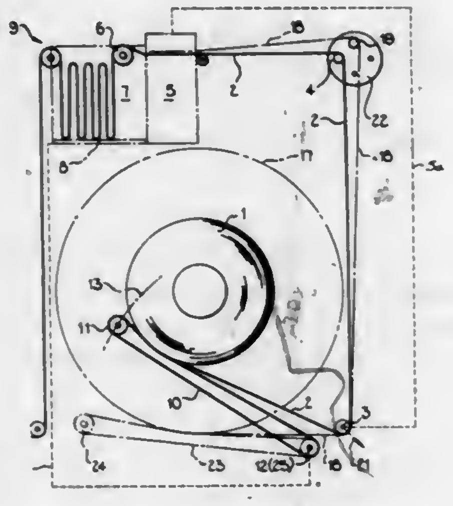
and into engagement with the end face of the collet with portions of the strand extending beyond two points on the periphery of said end face, strand engaging means comprising a multiplicity of angularly displaced strand catching devices associated with said face for engaging portions of the strand



brought into proximity to the face at at least two spaced apart points, means for guiding the strand onto the portion of the collet adjacent said face, and means for shifting the strand axially of the portion of the collet adjacent the face and onto a winding sleeve mounted on the collet after said collet has reached operating speed.

4,193,558
CONTINUOUS WEB SUPPLY APPARATUS

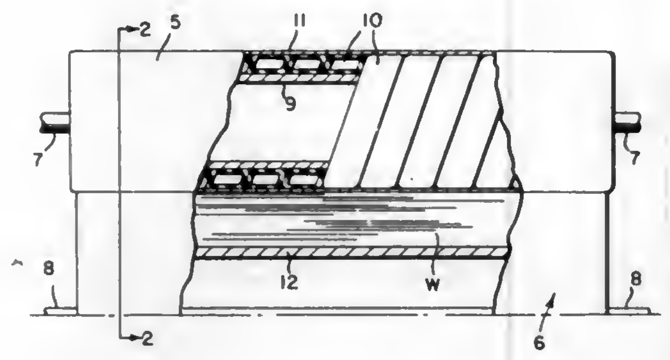
Desmond W. Molins, London, England, assignor to Molins Limited, London, England
Filed Sep. 11, 1978, Ser. No. 941,339
Claims priority, application United Kingdom, Sep. 23, 1977, 39637/77
Int. Cl.² B65H *19/16;* B31F *5/00*
U.S. Cl. 242—58.4 **11 Claims**



1. Apparatus for supplying continuous web to a consuming machine, comprising means for rotating a reel of web to deliver web therefrom, a splicing unit, a buffer reservoir, and a rotary feed device arranged to receive web delivered from the reel and drive the web past the splicing unit into the reservoir, wherein the rotary feed device is arranged to operate at a speed higher than that at which web is delivered from the reel and to exert a non-positive grip on the web so that, whenever the web is stopped, the rotary feed device slips relative to the stationary web.

4,193,559
FILM WEB WINDING ASSEMBLY

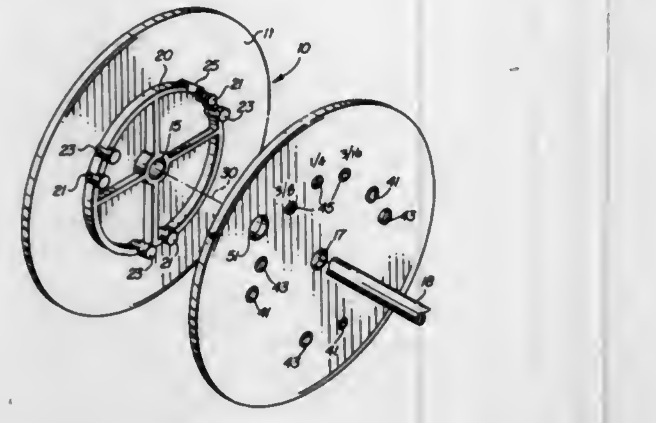
Raymond M. Ballard, Lancaster, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 7, 1978, Ser. No. 894,550
Int. Cl.² B65H *17/02*
U.S. Cl. 242—67.1 R **15 Claims**



1. A film web winding assembly consisting essentially of:
(a) a winding roll with
  (i) a core and
  (ii) a plurality of layers of film web wound thereon,
(b) a layon roll in nip contact with the winding roll, having a constant circumference, and comprising
  (i) an incompressible core
  (ii) a volumetrically compressible resilient cushion element on the core and
  (iii) a flexible, inextensible, outer covering on the cushion element, the outer surface of the outer covering exerting a substantially equal pressure against the winding roll along the entire length of the winding roll.

4,193,560
ADJUSTABLE WIDTH SPOOL

Herbert F. Diegel, 1524 E. Culver, Phoenix, Ariz. 85006
Filed Apr. 18, 1979, Ser. No. 31,004
Int. Cl.² B65H *75/18*
U.S. Cl. 242—71.9 **8 Claims**

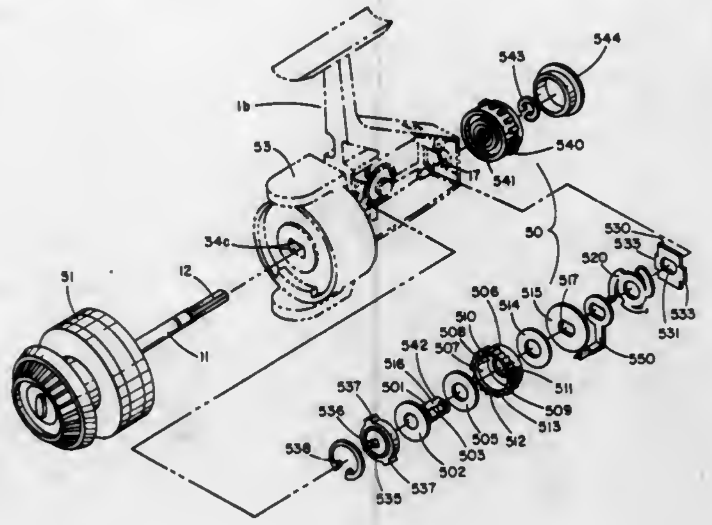


1. An adjustable width spool to be rotatably mounted on a shaft for receiving and supporting a roll of flexible material comprising:
a. a first and a second flat plate having opposing flat surfaces and each having a central opening therein for receiving said shaft to rotatably support said plates;
b. said first flat plate having:
  i. a spacer ring positioned concentrically to said shaft and extending a first predetermined distance perpendicularly from the opposing surface of said first flat plate toward the opposing surface of said second flat plate for receiving and supporting said roll of flexible material;
  ii. a plurality of spacer pins extending a second predetermined distance greater than said first predetermined distance perpendicularly from its opposing surface toward the opposing surface of said second flat plate;
  iii. a registration pin extending a distance greater than said

predetermined distances perpendicularly from its opposing surface toward the opposing surface of said second flat plate;
c. said second flat plate having:
  i. a plurality of spacer openings corresponding in number to said plurality of spacer pins and positioned to permit said pins to pass through said openings when said pins and openings are aligned;
  ii. a plurality of registration openings positioned to permit said registration pin to pass through any of said openings when said registration pin and a registration opening are aligned;
d. said plates positionable in either of two positions relative to each other:
  i. the first position defined by abutting contact between said spacer ring and the opposing surface of said second flat plate, by the extension of said spacer pins into said spacer openings, and by the extension of said registration pin into one of said registration openings;
  ii. the second position defined by abutting contact between said plurality of spacer pins and the opposing surface of said second flat plate, and by the extension of said registration pin into a different one of said registration openings.

4,193,561
CLICKER DEVICE FOR FISHING REEL

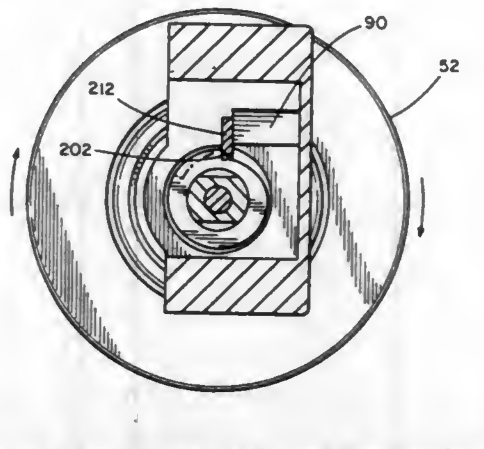
Roy E. Stiner, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Aug. 10, 1978, Ser. No. 932,463
Int. Cl.² A01K *89/02*
U.S. Cl. 242—84.51 A **5 Claims**



1. In an open face sprinning reel used for casting a bait attached to a fishing line and for retrieving the bait and fishing line after casting, the reel having a housing, a center shaft mounted in the housing, a spool mounted on the shaft for holding the fishing line, a handle and gear train assembly mounted in the housing, a rotor coaxially mounted on the shaft and rotatable by cooperative movement of the handle and assembly, and a movable bail mounted on the rotor having an open casting position and a closed retrieving position, limited rotation of the spool being desirable when retrieving the bait with the fish caught thereon, a free-floating drag assembly having a cup mounted on a drag adjustment screw,
an improved click signal device for indicating when the spool is rotating comprising:
  (a) a serrated tooth-shaped exterior surface on the cup, and
  (b) a clicker mounted on the screw and comprising a washer base with an L-shaped arm, one leg of the L secured to the washer and extending radially therefrom, the second leg projecting longitudinally such that the free end is in operable contact with the serrated tooth-shaped surface, whereby the arm vibrates making a clicking sound when the cup rotates.

4,193,562
ANTI-REVERSE DEVICE FOR FISHING REEL

Richard L. Gifford, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Aug. 11, 1978, Ser. No. 932,844
Int. Cl.² A01K *89/01*
U.S. Cl. 242—84.2 G **11 Claims**



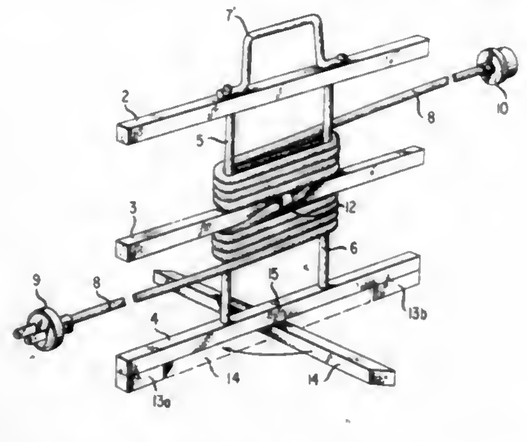
1. In an open face spinning reel used for casting a bait attached to a fishing line and for retrieving the bait and fishing line after casting, the reel having a housing, a center shaft mounted in the housing, a spool mounted on the shaft for holding the fishing line, a pinion gear assembly rotatably journaled near the center and in the forward portion of the housing, the pinion gear assembly coaxial with the center shaft and having a bearing stud at one end and a threaded portion at the other end, a handle and gear train assembly mounted on the housing and operable with the pinion assembly, a rotor mounted on the threaded portion of the pinion assembly and rotatable by cooperative movement of the handle and gear train and pinion assembly, and a moveable bail mounted on the rotor having an open casting position and a closed retrieving position, preselected stopped counterclockwise rotation of the rotor provides a self-centering rotor position for opening the bail mechanism comprising;
  (a) a ratchet mounted on the central portion of the pinion gear assembly and rotatable therewith,
  (b) an arm pivotably mounted in the housing, the arm having a rearward end and a forward pawl end, the pawl end in operable association with the ratchet and adjacent thereto, and
  (c) means for assisting the movement of the rearward end of the arm to an upper or lower position which in turn moves the pawl in an opposite lower or upper position, in the lower position the pawl end engagable with the ratchet:
    (1) to prevent the rotation of the rotor in a counterclockwise direction when the reel is viewed from the spool, and
    (2) to provide location of the bail in the most advantageous position for pivoting to the casting position,
  and with the pawl end in the upper position the rotor is free to rotate counterclockwise.

4,193,563
APPARATUS FOR CARRYING AND DISPENSING CABLE

Carmen Vitale, 86 Montgomery St., Bloomfield, N.J. 07003
Filed Dec. 1, 1977, Ser. No. 856,340
Int. Cl.² B65H *39/00*
U.S. Cl. 242—85 **5 Claims**

1. A frame for storing and dispensing electrical cable or the like which comprises in combination:
  a grid of electrically insulated material formed by three substantially colinear bars rigidly fixed in substantially parallel equally spaced-apart relation by a pair of transverse parallel rungs symmetrically disposed in spaced-apart relation between opposite ends of said bars, thereby forming between them when said frame is in an upright position an upper section and a lower section each form-

ing a discrete winding area, each of which includes a central portion between opposite open ends, said upper section and said lower section each constructed to serve as a spool for separately winding opposite ends of said cable from the central section outward, and



means for securing a central section of said cable to the central portion of the middle one of said three colinear bars, whereby the cable on one side of the secured central section of said cable is capable of being wound on one of said discrete areas and the cable on the other side of the secured central section of said cable is capable of being wound on the other of said discrete areas.

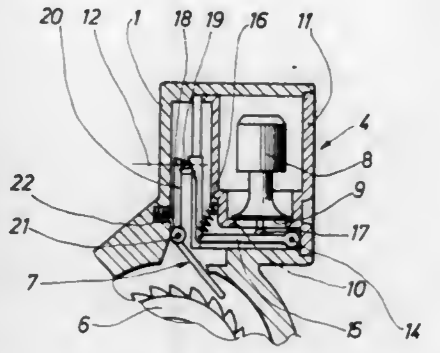
4,193,564
LOCKING DEVICE IN CONNECTION WITH SAFETY BELTS

Stig M. Lindblad, Stockabo, S-44020 Vargarda, Sweden

Filed May 8, 1978, Ser. No. 903,654

Int. Cl.² A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **5 Claims**



1. A locking device for a safety belt retractor for use in vehicles and comprising a band reel rotatably journalled in a housing, a band connected with one end to the band reel, spring means arranged to wind up the band on the band reel, a ratchet wheel rotatable together with the band reel, a pawl arranged to be movable between a releasing position and a locking position to release and lock the ratchet wheel, respectively, activating means comprising a body of inertia, arranged to move between an inactive position and an activated position, and a transmission mechanism connected to the body of inertia and to the pawl, a housing portion for supporting the body of inertia and the transmission mechanism, said housing portion being mounted in said housing in one chosen position among different alternative angular positions relative to a pivot axis extending transversely to the rotating axis of the band reel, the transmission mechanism including a transmission element which is pivotally journalled in the housing portion and provided with a guiding surface which is inclined relative to a radial plane through said pivot axis of the housing portion and provided with a contact surface by means of which the guiding surface is in contact with a portion of the pawl, said portion of the pawl being movable in the direction of said pivot axis thereby moving the pawl, the transmission element being movable between two positions under the influence of the body of inertia with the guiding surface movable substantially transversely to said pivot axis, whereby said contact surface moves along said guiding surface and said portion of the pawl is displaced substantially in the direction of the pivot axis resulting in said pawl being moved between locked and released positions respectively.

4,193,565
SEATBELT RETRACTOR

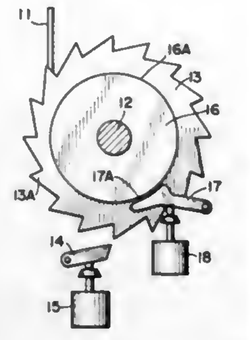
Keiichi Tamura, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Nov. 14, 1978, Ser. No. 960,596

Claims priority, application Japan, Nov. 16, 1977, 52-154748[U]

Int. Cl.² A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **5 Claims**



1. A seatbelt retractor wherein the wind-out operation of a webbing to be wound by a take-up shaft which is locked through the operation of an acceleration sensor in an emergency of a vehicle, characterized in that said retractor comprises a vibration sensor for sensing the vibrations caused to the vehicle and a frictional clutch mechanism to be operated by said vibration sensor for braking the wind-up operation of the webbing.

4,193,566
WEBBING RETRACTOR FOR SEATBELT SYSTEM

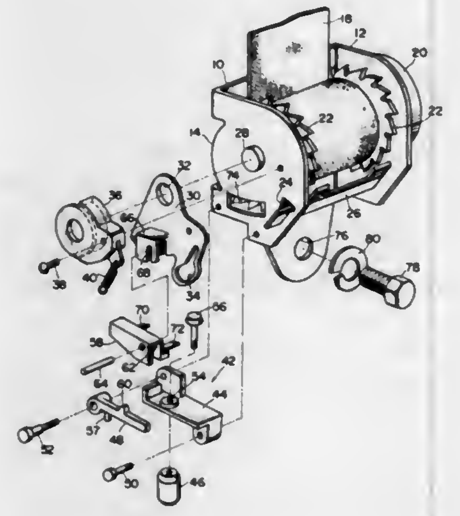
Mitsuo Inukai, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Dec. 28, 1978, Ser. No. 974,008

Claims priority, application Japan, Dec. 29, 1977, 52-176264[U]; Dec. 29, 1977, 52-176265[U]

Int. Cl.² A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **10 Claims**



1. A seatbelt system comprising:

a takeup shaft pivotally supported by a frame for winding up a webbing for restraining an occupant;
a ratchet wheel solidly secured to said takeup shaft;
a lock bar supported by said frame and engaging said ratchet wheel when oscillated, to thereby prevent the takeup shaft from being wound out;
a working plate pivotally supported by the frame and oscillating said lock bar when oscillated;
an acceleration detector;
a balancer mounted on said acceleration detector and having a pair of pawls extending longitudinally in parallel to the axis of said ratchet wheel, said pair of pawls being adapted to engage said ratchet wheel in response to the detection by said acceleration detector of acceleration; and
guide means mounted on said working plate for guiding said pair of pawls in the direction of being engaged with said ratchet wheel to thereby impart the turning force of the ratchet wheel, which is received by said pawls, to said working plate to provide an oscillating force to cause said lock bar to engage said ratchet wheel to thereby prevent said takeup shaft from being wound out.

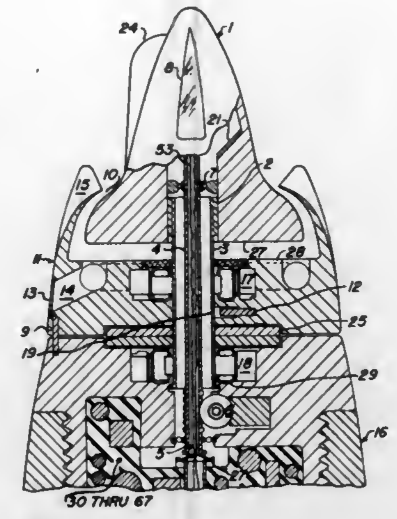
4,193,567
GUIDANCE DEVICES

Lewis C. McCarty, Jr., Scarborough-on-Hudson, N.Y., assignor to Novatronics, Inc., Pompano Beach, Fla.

Filed Jul. 17, 1962, Ser. No. 210,443

Int. Cl.² F42B *15/18*

U.S. Cl. 244—3.16 **12 Claims**



1. A guidance system mounted on a projectile comprising first and second sections mounted on the projectile to rotate about the longitudinal axis thereof, means for rotating said first section when the projectile is in flight, sensor means including a part removed from the longitudinal axis of the projectile rotatable with said first section for receiving emanation from a target and emitting a signal pulse in response thereto when the said part is facing the target and the longitudinal axis of the projectile and the target lie in a straight line, means including said second section for applying a steering force to the projectile at a point rotatable with said second section and directed perpendicularly to the longitudinal axis of the missile, means for rotating said second section when the projectile is in flight, means for generating a position pulse when said first and second sections are in such relation that the steering force tends to steer the missile in the direction in which said part is facing and means responsive to coincidence of said signal and position pulses for deactivating said means for rotating said second section.

4,193,568
DISC-TYPE AIRBORNE VEHICLE AND RADIAL FLOW GAS TURBINE ENGINE USED THEREIN

Norman L. Heuvel, 14723 SE. 263rd, Kent, Wash. 98031

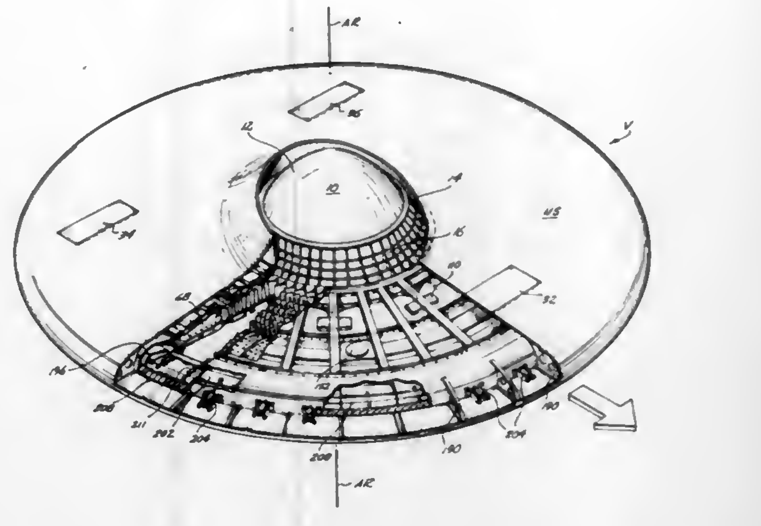
Continuation-in-part of Ser. No. 702,523, Jul. 6, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,673

Int. Cl.² B64C *29/04;* **F02C** *3/14*

U.S. Cl. 244—23 C **27 Claims**

1. In a disc type airborne vehicle having a central section including a cockpit area, jet engine means annularly surrounding said cockpit area, and thrust ducting means in a duct section annularly surrounding said jet engine means, the improvement wherein said jet engine means is characterized by:

(a) an annular compressor section having decreasing side wall members in the radial dimension wherein air is compressed under action of a plurality of counter-rotating compressor blades and delivered to an annular diffuser zone;
(b) air intake means of a radial length at least about one-third the radial length of said engine, disposed within said central section, said air intake means being in constant communication with said compressor section and delivering a supply of air thereto, said supply of air continuously impinging upon the entire width of said plurality of compressor blades;
(c) an annular combustion chamber including upper and lower counter-rotating combustion chamber walls having air delivery openings therein, with said annular diffuser zone delivering compressed air directly into said combustion chamber and around said counter-rotating combustion chamber walls and into said combustion chamber through said air delivery openings in said counter-rotating combustion chamber walls;
(d) means for continuously delivering fuel directly into said combustion chamber for admixture therein with the compressed air delivered thereto from said compressor section annular diffuser zone;
(e) an annular turbine section wherein counter-rotating turbine blades are driven by combustion products exhausting in radial flow from said combustion chamber; and
(f) means delivering the exhaust gases discharging from said turbine section to said duct section.



4,193,569
PROCESS AND APPARATUSES FOR LANDING AIRCRAFT ON WATER COVERED LANDING SURFACES

William B. Nichols, Apt. #102, 2700 SW. 16th, Amarillo, Tex. 79102

Continuation of Ser. No. 657,557, Feb. 12, 1976, abandoned.

This application Sep. 19, 1977, Ser. No. 834,646

Int. Cl.² B61D *47/00;* **B64D** *33/04*

U.S. Cl. 244—100 R **9 Claims**

1. Process of landing an airplane with landing wheels on a solid landing surface covered with a layer of water while passing all of the exhaust gases from two engines of the airplane, each of said two engines located laterally of the fuselage of said airplane with one of said engines in each side of said fuselage, and moving the center of said airplane in a first, longitudinal direction, said process comprising the steps of

(1) passing all said exhaust gases directly from said two engines to impinge upon said landing surface at an impingement area extending transversely to said first longitudinal direction, and forming and maintaining a first side portion of a transversely extending and forwardly pointed V-shaped curtain of gas with a front surface that, on one

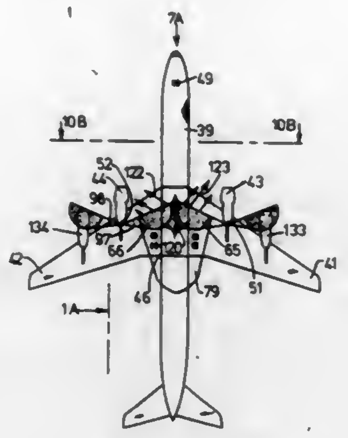
side of said fuselage, extends upwardly from one side of said impingement area on said landing surface to an engine on said one side of said fuselage, said one side of said impingement area being spaced transversely from said one engine and, on the other side of said fuselage, another side portion of said transversely extending V-shaped curtain of gas having a front surface which extends upwardly from another side of said impingement area on said landing surface to a second of said engines on said other side of said fuselage and said other side of said impingement area being spaced transversely from said second engine and,

on said one side of said fuselage said front surface of said one side portion of said transversely extending curtain of gas extends centrally and forwardly, from a lateral edge of said impingement area located to the front of and outboard of a first one of said landing wheels of said airplane located on said one side of said fuselage, along a continuous front edge of said impingement area to a front central portion thereof on said landing surface further forward of and central of said first landing wheel and under the fuselage of said airplane,

and is there continuous with said another side portion of the front surface of said transversely extending V-shaped curtain of gas on the other side of said fuselage, said another side portion of said front surface of said transversely extending curtain of gas extends forwardly and centrally from a lateral edge of said impingement area located to the front and outboard of a second one of said landing wheels of said airplane located on said other side of said fuselage, along a continuous front edge of said impingement area to a front central area portion thereof on said landing surface further forward of and central of said second landing wheel and under the fuselage of said airplane,

said impingement area having, on each side of the fuselage of the airplane, a rear inboard edge which has an outboard portion that is spaced forward of said landing wheel on each side of said fuselage and a central portion located inboard of said landing wheels,

(2) displacing the water of said layer of water, by said curtain of gas, from a longitudinally extending path of said wheels and forming a dry surface behind said rear edge of said impingement area of said gas curtain while moving said airplane and gas curtain forward at a sufficiently high rate of speed to maintain said landing wheels in direct contact with said solid landing surface and passing laterally from the lateral edges of said gas curtain, at points lateral of each of said first and second landing wheels, water from said layer of water theretofore in advance of said gas curtain on said solid landing surface.



4,193,570

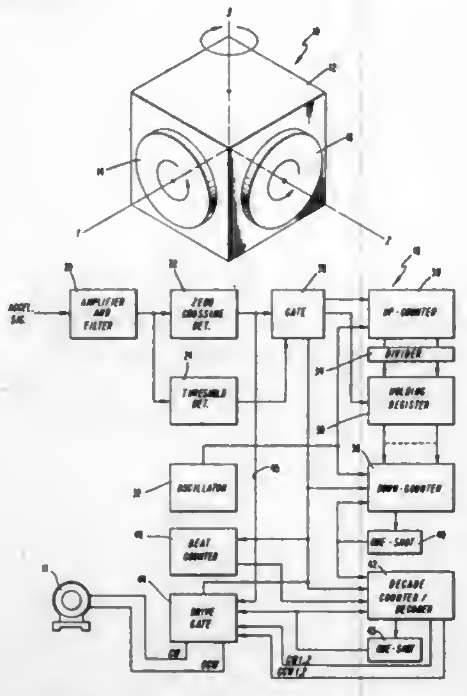
ACTIVE NUTATION CONTROLLER

Henry C. Hoffman, Baltimore, and James H. Donohue, Ellicott City, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 19, 1978, Ser. No. 897,830

Int. Cl.^{2} B64G *1/20*

U.S. Cl. 244—165 **5 Claims**



1. A system for controlling nutation in a spinning body, comprising:

a flywheel having an axis of rotation perpendicular to the nominal spin axis of said body;

motor means for rotating said flywheel;

an angular accelerometer having an input axis perpendicular to the spin axis of said body and to the axis of rotation of said flywheel;

means for monitoring an output signal generated by said angular accelerometer, said monitoring means including;

means for generating an accelerometer threshold voltage, and

means for comparing said accelerometer output signal with said threshold voltage;

means for detecting zero crossover points of said accelerometer output signal;

means for detecting predetermined portions of positive and negative half cycles of said accelerometer output signal, said predetermined detecting means and said zero crossover points detecting means being operative only when said comparing means indicates that said accelerometer output signal is greater than said threshold voltage; and

means responsive to said last two means for controlling said motor means to selectively damp or build nutation.

4,193,571

SUSPENSION SYSTEM

Karl Bula, Seuzach, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 26, 1977, Ser. No. 845,783

Claims priority, application Switzerland, Oct. 28, 1976, 13585/76

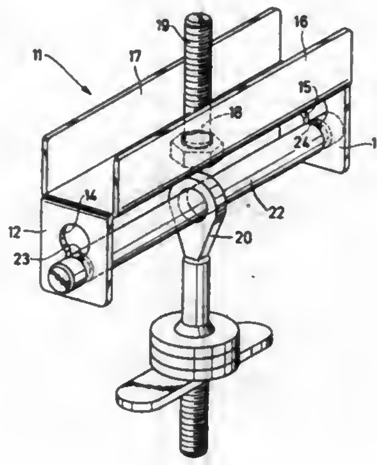
Int. Cl.^{2} B42F *13/00*

U.S. Cl. 248—343 **12 Claims**

1. A suspension system comprising

a one part holder adapted to be fixed to one of a wall and a ceiling, said holder having at least two apertures therein disposed in opposition to each other; each said aperture having a constricted section and a widened section above said constricted section; and

a support bar having a widened portion sized to pass longitudinally through a widened section of one of said apertures and a constricted portion sized to fit transversely into said constricted section of said one aperture to lock said support member in said holder.



4,193,572

HOLDER FOR HOLDING TEMPERATURE DETECTING DEVICE EMPLOYED IN MICROWAVE OVENS

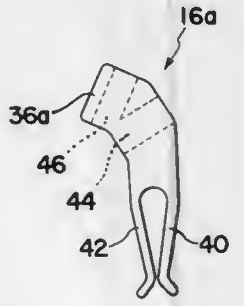
Masao Horiuchi, Tenri, and Yasuyuki Motozuka, Kashiwara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 6, 1977, Ser. No. 794,653

Claims priority, application Japan, May 12, 1976, 51/54635

Int. Cl.^{2} F16M *13/00*

U.S. Cl. 248—535 **11 Claims**



1. A probe holder for firmly holding a probe on a container supporting an item being cooked in a microwave oven, said holder comprising:

a body portion formed of a material having a low dielectric loss;

arm member means, formed of the same material as said body portion and extending from an upper end thereof, said arm member means comprising at least two arm members resiliently urged toward each other, said two arm members having formed therein a plurality of pairs of opposed, facing recesses, said pairs of recesses being formed in said arm members to extend at different angles; and

leg member means, extending from a lower second end of said body portion opposite said arm members, for securely fitting said body portion and said arm members to a container, said leg member means comprising at least two leg members resiliently urged toward each other and adapted to be fitted on opposite sides of the container to thereby be urged toward the container.

4,193,573

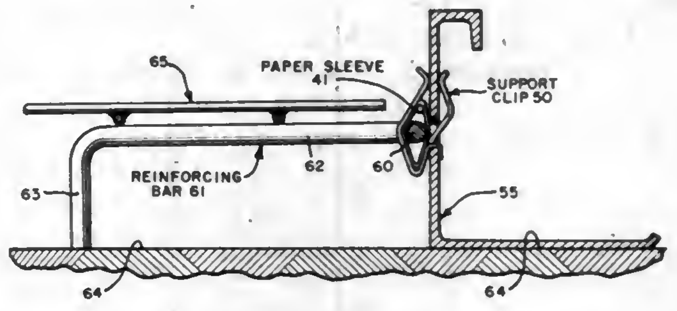
CLIP-AND-SLEEVE ARRANGEMENT FOR USE WITH PAVING FORM AND TIE BAR

Walter F. Kinnucan, Jr., 140 Blackstone, LaGrange, Ill. 60525

Filed Jul. 25, 1978, Ser. No. 927,891

Int. Cl.^{2} E01C *19/50*

U.S. Cl. 249—9 **12 Claims**



1. The combination of a paving form containing apertures and:

a support clip, having hanger and restraining portions for retaining the clip in one of the form apertures, and a support portion connected between the hanger and restraining portions;

a tie bar, having a first leg and a second leg extending at substantially right angles to the first leg; and

a protective sleeve, substantially enclosing one leg of the tie bar and received in the support portion of the support clip, which sleeve is formed of a material readily broken open to expose the tie bar after concrete is poured on the other side of the sleeve.

4,193,574

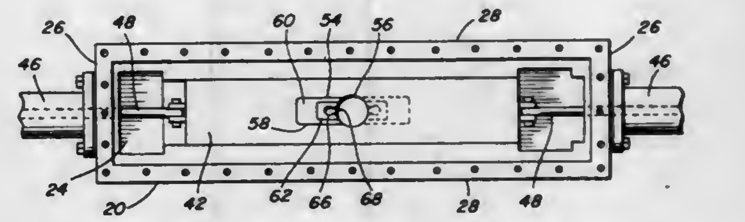
WELL SHUT OFF DEVICE

Johney H. Barnes, and Lucynda D. Barnes, both of 1463 Hartnell, Space 25, Redding, Calif. 96001

Filed Oct. 27, 1978, Ser. No. 955,170

Int. Cl.^{2} E21B *33/06;* F16K *3/00*

U.S. Cl. 251—1 A **2 Claims**



1. A well shutoff device including a hollow closed casing having vertically spaced upper and lower walls provided with vertically registered passages formed therethrough relative to which axially spaced lower and upper ends of vertically spaced well casing sections may be sealingly secured, a pair of vertically superposed control plates slidingly mounted within the housing between the upper and lower walls thereof for inverse shifting toward and away from one pair of opposite side walls of the casing between a second pair of opposite casing side walls, each of said plates having a keyhole opening formed therethrough, said openings facing in opposite directions and including large diameter partial cylindrical first ends and small diameter partial cylindrical second ends opening into the first ends, said plates being shiftable relative to each other and said housing between first positions with said second ends of said keyhole openings registered in a complementary manner to form a small diameter bore registered and coaxial with said passages, second positions with said first ends registered in a complementary manner to form a large diameter bore registered with and coaxial with said passages and third positions with said openings completely out of registry with each other and said openings and said passages closed by said control plates, said upper wall of said housing being removably secured to the remainder of said housing, said keyhole opening second ends being defined by replaceable inserts removably

received in smaller dimensioned ends of said openings, said inserts each being constructed of slightly deformable and resilient material and defining a restrictive neck passage communicating the corresponding keyhole first and second ends.

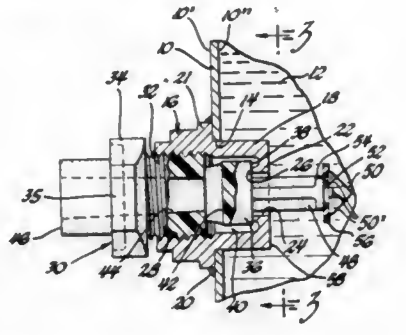
4,193,575
RADIATOR DRAIN ASSEMBLY

Carlton M. Burgess, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 3, 1978, Ser. No. 921,796

Int. Cl.^{2} B65D *41/04*

U.S. Cl. 251—144 **2 Claims**



1. In a drain closure of the type having an internally threaded support body with a drain opening therein which is adapted to be attached in the wall of a liquid container, an elongated valve member with an externally threaded portion engaged with the threaded portion of the support body and having an internal flow passage therein, an improved retention means comprising:

- a stem portion integral with the valve member and configured to permit its extension through said drain opening and including an intermediate portion thereof configured in association with the drain opening to allow fluid flow between the stem and the support body;
- an end of said stem portion having an enlarged head portion with a diameter providing a close fit through said drain opening and a small diameter portion inward therefrom having a circumferential groove adjacent to the head portion, an elastomeric washer member seated in said groove and having an outer diameter larger than the diameter of the drain opening, the diameter of said inward stem portion adjacent said groove and washer therein providing clearance to accommodate the thickness of said washer without substantial compression as it is folded back over the stem during insertion of the enlarged head through the drain opening, the diameter of the enlarged head being slightly smaller than said drain passage but sufficient to prevent withdrawal of the elastomeric washer without substantial compression of the washer material against the enlarged head portion thereby preventing easy and inadvertent removal of the valve without a significant removal force.

4,193,576
SELF-FLUSHING BALL SEAL DISCONNECT

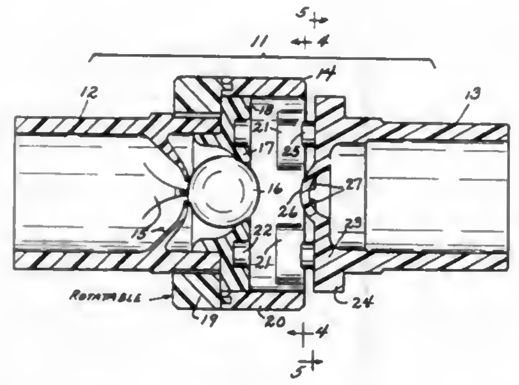
Jack E. White, Carson City, Nev., assignor to J & D Enterprises, Carson City, Nev.

Continuation-in-part of Ser. No. 865,923, Dec. 30, 1977. This application Oct. 31, 1978, Ser. No. 956,982

Int. Cl.^{2} F16L *37/28*

U.S. Cl. 251—149.6 **23 Claims**

1. A self-flushing disconnect coupling assembly for liquid flow systems comprising: an inlet conduit portion adapted to be connected to a liquid supply line; a valve seat on said inlet conduit portion; a movable valve element in said inlet conduit portion sealingly engageable with said seat; spring means in the inlet conduit portion bearing on said valve element and urging it toward said seat, said spring means being integral and unitary with said inlet conduit; an outlet conduit portion; means to detachably couple said outlet conduit portion to said inlet conduit portion, said coupling means including mating means on said inlet and outlet conduit portions; and means to allow flushing of the conduit portions including the mating means during uncoupling and re-coupling, comprising an unseating projection on said outlet conduit portion engageable with said valve element to unseat it responsive to the coupling of said outlet conduit portion whereby said unseating projection unseats said valve element to allow escape of liquid thereby providing flushing of the conduit portions and mating means during uncoupling and re-coupling.



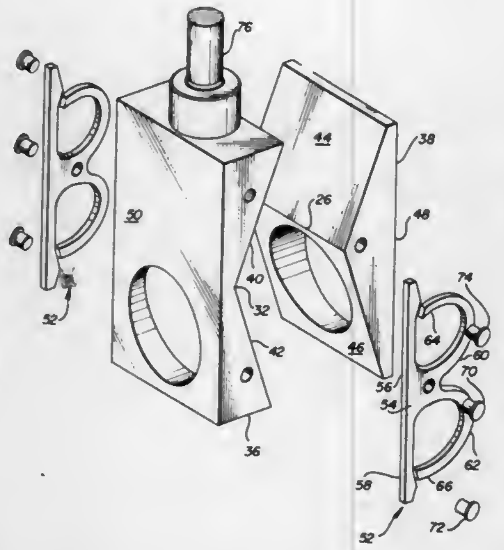
4,193,577
EXPANDING GATE VALVE WITH AXIALLY FLEXED SPRING PLATE

Willard E. Kemp, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,844

Int. Cl.^{2} F16K *25/00*

U.S. Cl. 251—167 **10 Claims**



1. In a gate valve of the type wherein a gate assembly is linearly reciprocable between open and closed positions at the ends of its strokes and in each such end position is transversely expandable to seal a pair of opposed seats of a fluid passageway interrupted by a valve operating chamber in which such gate assembly is disposed and operates, such gate assembly consisting of a gate member and a segment member which nest together to form a rectangular block having opposed and parallel outside sealing surfaces facing said opposed seats, the gate and segment members having interfacing complementary inner wedging surfaces effectively operable upon a relative displacement between such members in the direction of travel of the assembly to expand the assembly against the seats,

- the improvement comprising a spring plate secured to one of the side surfaces of said gate and segment members, said spring plate having a central body portion rigidly secured to the segment member at its midlength, an elongated base member extending in both directions from the bottom of said center body portion and passing under a pair of opposed pins secured to said gate member and disposed at equal distances from its midlength point, and a pair of curved spring fingers extending in opposite lengthwise directions from the top of said center body portion and curving toward said pair of pins in the gate member and terminating in free ends, said free ends being flexed toward the center body portion of the spring plate and held in flexure against said pins, one of said spring fingers being further flexed when the wedging expansion of the gate assembly decreases the spacing between said midlength of the segment and the gate pin against which said finger is initially flexed.

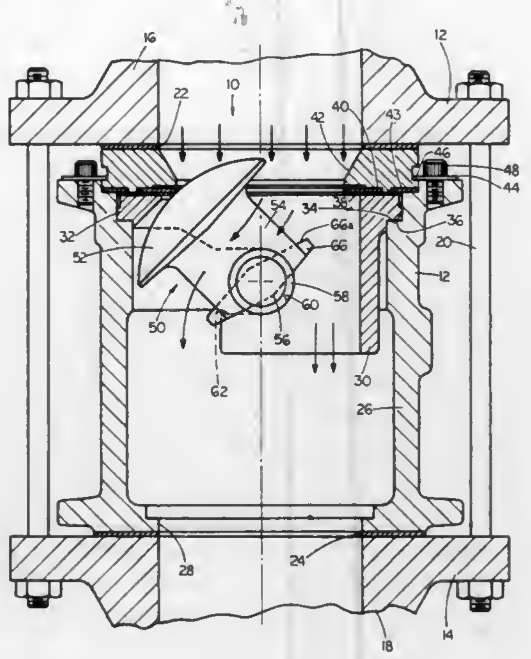
4,193,578
LOW TORQUE CONTROL VALVE

Richard S. Brumm, Orinda, Calif., assignor to Cashco, Incorporated, Ellsworth, Kans.

Filed Nov. 14, 1977, Ser. No. 851,500

Int. Cl.^{2} F16K *1/18*

U.S. Cl. 251—283 **6 Claims**



1. A rotary valve comprising:

a housing;

means in said housing forming an upstream flow passagewas;

- a plug, circular in outline and having an upstream surface thereon extending across said passageway when in a maximum blocking position;
- sealing portions of said upstream surface being spherical;
- shaft means carried on said plug and rotatably mounted in said housing for turning said plug between said maximum blocking position and a full open position 90 degrees therefrom;
- said upstream surface being displaced from the axis of said shaft means so that a flow stream through said housing impinging thereon will bias said plug away toward said full open position through the full movement in any position thereof away from said maximum blocking position;
- a pair of arms extending generally radially from said shaft means supporting said plug; and
- a vane extending between said arms to be exposed to a flow stream through said housing;
- said vane being tilted about an axis parallel to the axis of said shaft means in the direction opposite to plug opening movement so that impingement of said flow stream thereon biases said plug away from said full open position in any position of said plug away from said maximum blocking position.

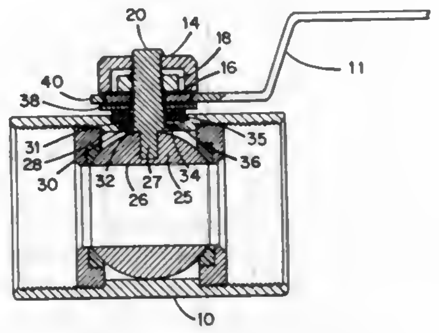
4,193,579
DETACHABLE HANDLE FOR CONTROL DEVICES

Roger G. Massey, Exeter, N.H., assignor to Parker & Harper Mfg. Co., Inc., Worcester, Mass.

Filed Nov. 8, 1977, Ser. No. 849,678

Int. Cl.^{2} F16K *31/60*

U.S. Cl. 251—288 **3 Claims**



1. A valve assembly with a detachable handle comprising:

(a) A valve body;

(b) a valve stem that extends inside said valve body and is secured in place by a first nut screwed onto said stem at the exterior of said valve body;

(c) an indexing member positioned over said stem under said nut, said indexing member having a depending tab mating with indexing stops in said valve body;

(d) a detachable handle mating with the periphery of said indexing member in a single position relative to said indexing member by means of an aperture and a slot extending from said aperture to accomodate said depending tab; and,

(e) a second nut with skirts extending past the periphery of said first nut so as to secure said handle in place while enveloping said first nut, whereby said first nut secures said stem and said indexing member in place independently of said handle and said second nut permits said handle to be secured or detached independently of said indexing member.

4,193,580
PLUG VALVE

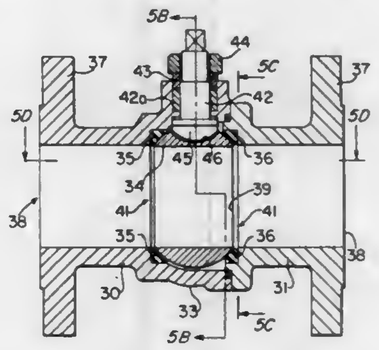
Lewis H. Norris, Brighton, and Charles H. Dykes, Lindfield, both of England, assignors to Worchester Controls AG, Zug, Switzerland

Filed Apr. 1, 1977, Ser. No. 783,899

Claims priority, application United Kingdom, Apr. 6, 1976, 13847/76

Int. Cl.^{2} F16K *5/00*

U.S. Cl. 251—309 **53 Claims**



1. In a plug valve of the type comprising a casing adapted to be connected to a pipe line and having a valve chamber and inlet and outlet openings for defining a fluid flow path through said chamber, a plug being mounted in said chamber and having a fluid flow passageway extending through said plug, said plug being rotatable in said chamber about an axis of rotation extending transverse to said fluid flow path and transverse to the direction of extension of said passageway for selectively moving said plug between an open position in which said passageway is disposed along said fluid flow path between said inlet and outlet openings and a closed position in which said

passageway is disposed transverse to said flow path, seal means being provided adjacent at least one side of said plug for providing a fluid seal between said casing and an exterior surface portion of said plug located between the opposing ends of said passageway when said plug is in its said closed position, the improvement wherein said plug is of elongated configuration extending along a central axis transverse to said fluid flow path, said central axis being the axis of rotation of said plug, every section of said plug orthogonal to said central axis of said plug being substantially circular, the shape of said elongated plug being such that the exterior surface of said plug is generated by rotation of a line, extending generally in the direction of extension of said central axis and spaced from said central axis, about said central axis wherein said line of generation has convexly curved line segments at its opposing ends which direct the opposing ends of said line of generation in a smoothly curved configuration toward said central axis and wherein said convexly curved line segments are interconnected to one another along said line of generation by an intervening line segment of such configuration that the entire line of generation, constituting said convexly curved line segments and said intervening line segment, is noncircular and the overall length of said plug is greater than the sum of the radii of said convexly curved line segments, the cross-sectional shape of said passageway in planes transverse to the direction of extension of said passageway through said plug being elongated in the direction of elongation of said plug, said seal means being supported by said casing in surrounding relation to one of said openings, said seal means comprising a single continuous resilient seat of elongated closed loop configuration, the direction of elongation of said closed loop seat configuration extending generally in the same direction as the central axis of said plug, said seat being shaped and dimensioned to engage and conform to said exterior surface portion of said plug along a continuous noncircular band of discrete width shaped to define curved sections at the opposing ends of said band which extend over the end portions of the plug defined by said convexly curved line segments and merge smoothly into intervening band sections having shapes different from those of said curved end sections of said band.

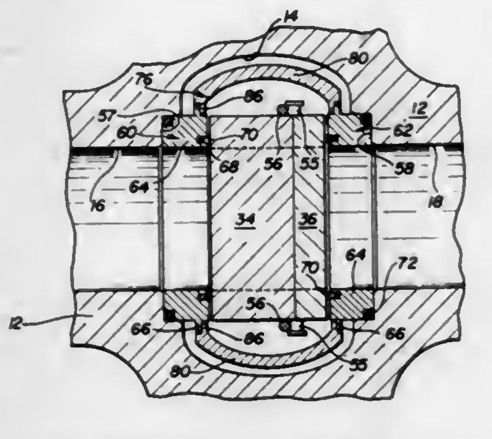
4,193,581
CAGE FOR GATE VALVES AND METHOD OF ASSEMBLY

Barney A. Eilers, Missouri City, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 19, 1978, Ser. No. 917,037

Int. Cl.² F16K *3/00*

U.S. Cl. 251—328 **4 Claims**



1. A gate valve structure comprising:

a valve body having a valve chamber therein and axially aligned inlet and outlet flow passages communicating with the valve chamber;

a bonnet connected to an upper end of the valve body;

an open-ended cage received within the valve chamber, said cage having a pair of generally parallel sides spaced by ends extending between the sides, said sides each having an opening therein in alignment with said flow passages;

an expanding gate assembly mounted within the cage closely adjacent the generally parallel sides for movement between open and closed positions relative to the flow passages;

and an annular seat within each opening around the adjacent flow passage and having a face seal for sealing against the gate assembly, said seats being mounted for limited longitudinal movement relative to the cage, said cage having means to stop the inward movement of the seats to maintain a predetermined minimum clearance between the seats.

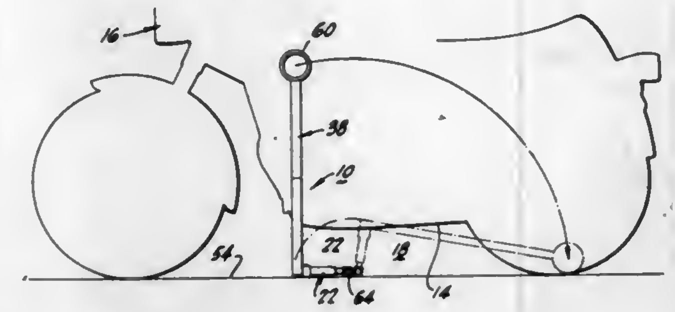
4,193,582
JACK FOR LIFTING OBJECTS

Roger P. Neilsen, 2943 Hillegass, Berkeley, Calif. 94705

Filed Jul. 19, 1978, Ser. No. 925,950

Int. Cl.² B66F *7/22*

U.S. Cl. 254—131 **12 Claims**



1. A jack for lifting an object particularly a motorcycle and the like from a ground surface comprising:

a. cross member adapted to span the underside of the object;

b. a pair of substantially parallel legs, angularly fixed to said cross member and spaced along the span of said cross member, said cross member and said legs forming a support member;

c. a lever arm detachably connectable to said support member in at least two juxtaposed positions adapted for movement from an upright position to a position where at least a portion of said lever arm contacts the ground surface, said lever arm having a first end portion connected to said support member and a second end portion having a ring whose diameter exceeds the width and breadth of said lever arm, the axis of said ring being oriented substantially parallel to the ground surface; and

d. means for utilizing the weight of the object being lifted to urge said contact of said at least a portion of said lever arm with the ground surface.

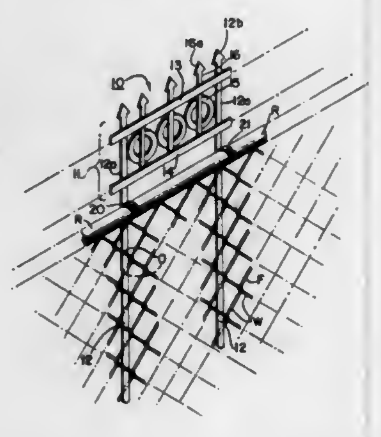
4,193,583
CHAIN LINK FENCE EXTENSION

Russell L. Witt, P.O. Box 94044, Houston, Tex. 77018

Filed Jan. 11, 1979, Ser. No. 2,634

Int. Cl.² E04H *17/00*

U.S. Cl. 256—11 **6 Claims**



1. An extension to be applied to the top of a chain link type

of fence for raising its height, the fence including a fabric of wires interlinked in zig-zag configuration and defining multiple adjacent vertical openings extending through the links between the wires, the extension comprising:

a panel portion to be located in a vertical plane above the chain link fabric to extend the height of the fence thereabove;

a mounting leg portion extending downwardly from the panel portion parallel to said vertical plane and comprising vertically elongated leg means having opposed front and rear surfaces and opposed side surfaces mutually spaced to slide into and snugly fit within vertical openings of the fabric and be supported thereby;

abutment means fixed to and extending transversely from the leg means adjacent to the panel portion and disposed to overlie the top of the fence and prevent further downward sliding of the leg means in the openings of the fabric; and

some of said leg surfaces having detent means shaped to slide downwardly past the zig-zag fabric wires defining the openings when the leg means are inserted therein, but said detent means being operative to resist upward withdrawal of the leg means from the fabric.

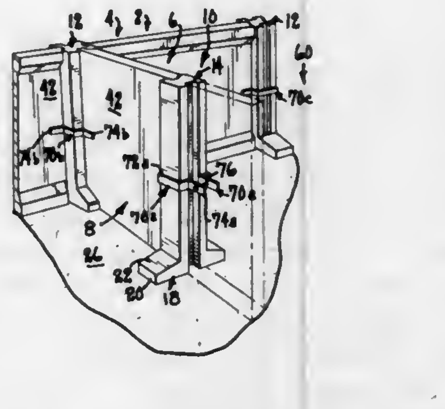
4,193,584
LIVESTOCK FENCE

Joseph H. Wieser, Maiden Rock, Wis., assignor to Wieser's Concrete Products, Inc., Maiden Rock, Wis.

Filed Aug. 2, 1978, Ser. No. 930,405

Int. Cl.² E04H *17/14*

U.S. Cl. 256—19 **10 Claims**



1. An improved fence for containing livestock, which comprises:

(a) a plurality of spaced pre-cast concrete posts, wherein each post includes an enlarged base of sufficient size such that the posts are suited to be free-standing on top of the ground;

(b) a plurality of pre-cast concrete panels, wherein each panel is suited to be received between any two adjacent posts;

(c) means for confining each panel between the two adjacent posts such that the panel is held against lateral movement and the weight of the panel is not transferred to the posts but is substantially borne by the ground; and

(d) means for securing each of the panels against longitudinal movement relative to the posts such that the panels are held confined between the posts to maintain the integrity of the fence, wherein the securing means comprises a strap loosely surrounding each post and having the ends thereof affixed to a face of the panels adjacent the posts.

4,193,585
HANDRAIL ASSEMBLY FOR CURVED STAIRCASE

Roger Eandi, 4201 Bemis, Oakland, Calif. 94605

Filed Nov. 14, 1977, Ser. No. 850,925

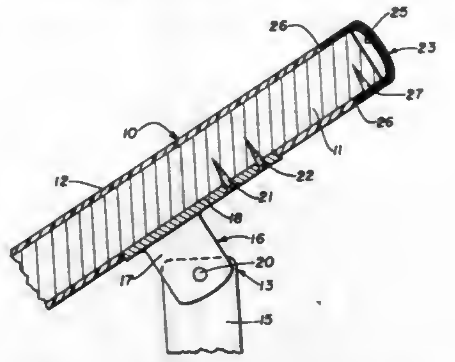
Int. Cl.² E04H *17/14;* E06C *7/18*

U.S. Cl. 256—65 **13 Claims**

1. A handrail assembly for a curved staircase comprising a plurality of baluster means having support means to support a cylindrical handrail and means to accept a connector, and having means to fix said baluster means at a predetermined height above said staircase,

a stranded cylindrical aluminum cable coated with flexible plastic material, said coated cable having an outside diameter at least 0.75 inches, and

said cable being fastened to each of said support means with a connector.



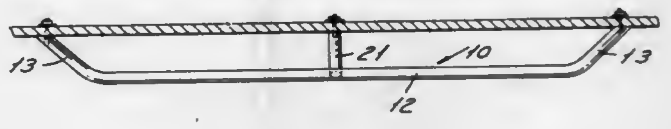
4,193,586
HAND RAIL

Torbett B. Guenther, Plymouth, Mich., assignor to C. D. Sparling Company, Plymouth, Mich.

Continuation-in-part of Ser. No. 654,183, Feb. 2, 1976. This application Nov. 30, 1977, Ser. No. 855,882

Int. Cl.² E04F *11/18*

U.S. Cl. 256—69 **32 Claims**



1. In a hand rail, the combination comprising

a wall,

a hand rail comprising a length of tubular material including a central portion and end portions extending from said central portion at an obtuse angle,

said end portions having free ends defining a plane which is at an acute angle to the plane of said central portion and end portions,

said ends of said end portions engaging said wall,

means for fastening said rail to said wall at said ends of said end portions comprising an insert in each end portion,

a fastener extending therefrom through said wall,

said insert being molded in situ, said fastener extending through an opening in said end portions into said wall.

4,193,587
RECOIL SPRING ASSEMBLY

Lawrence R. Cline, Oswego, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 23, 1978, Ser. No. 953,828

Int. Cl.² F16F *1/06*

U.S. Cl. 267—170 **4 Claims**

1. A spring recoil assembly for use in a crawler type track roller frame comprising:

elongated tubular housing (**28,46**) having opposed open ends and defining a spring receiving space;

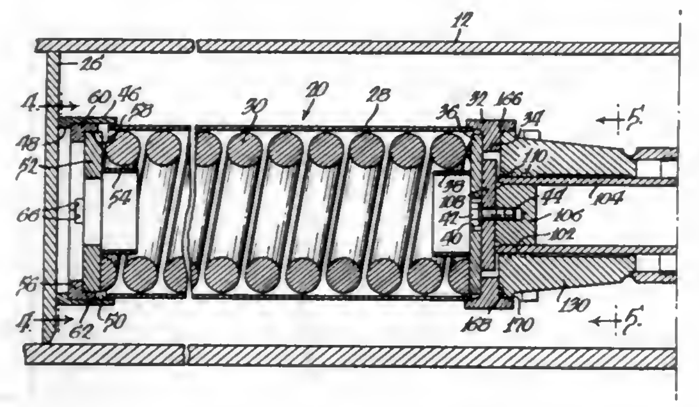
a stop (**36**) at least partially closing one of said ends;

a compression coil spring (**30**) within said space and abutting said stop;

radially inwardly directed lip means (**48**) on the other end of said housing means and having an inner diameter greater than that of said spring;

an additional stop (**52**) within said other end and together with said first stop sandwiching said spring within said space, said additional stop having a periphery sized to

freely pass into said space through said other end past said lip means; and
a retainer (60,62) within said space between said additional stop and said lip means and abutting at least said lip means,

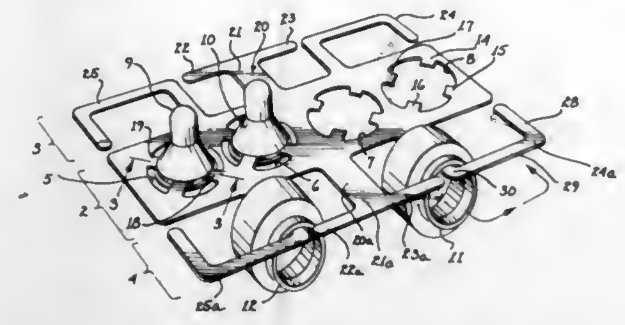


said retainer having a diameter greater than said inner diameter and at least one retaining portion smaller than said additional stop periphery said retainer comprising two elements each having an arcuate outer periphery of about 180°.

4,193,588

NIPPLE AND COLLAR RETAINER

Robert G. Doneaux, 1137 E. Orange, Tempe, Ariz. 85281
Filed May 9, 1977, Ser. No. 794,824
Int. Cl.^{2} B25B *11/00*
U.S. Cl. 269—47 **5 Claims**



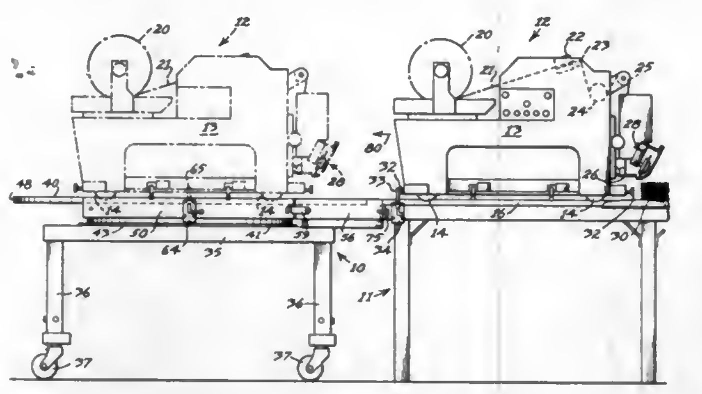
1. A retaining member for supporting baby bottle nipples and collars in automatic dishwashers, said member comprising in combination:
a. a planar member;
b. a first section developed as part of said planar member for detachably supporting the nipples, said first section including at least one aperture for receiving an individual one of the nipples, each said aperture including an inwardly extending tab for bearing against the surface of and supporting an aperture inserted one of the nipples; and
c. a second section developed as part of said planar member for detachably supporting the collars, said second section including at least one arm means for penetrably supporting an individual one of the collars.

4,193,589

TURNTABLE FOR CLOTH SPREADING MACHINE

Cecil S. Frederick, Nashville, Tenn., assignor to Cutters Exchange, Inc., Nashville, Tenn.
Filed Aug. 2, 1978, Ser. No. 930,178
Int. Cl.^{2} B65H *29/46*
U.S. Cl. 270—31 **3 Claims**

1. A turntable adapted to abut the end of a cutting table having first and second longitudinal tracks spaced equidistantly on opposite sides of a longitudinal center line along the cutting table and adapted to support a cloth spreading machine having at least one track wheel adapted to roll along either of the longitudinal tracks, comprising:
(a) a frame having an end portion adapted to abut the end of a cutting table,
(b) a rotary platform adapted to support a cloth spreading machine,
(c) bearing means supporting said rotary platform upon said frame for rotation about a vertical rotary axis,
(d) said frame end portion having a first end track and a second end track parallel to each other and adapted to align with the respective first and second longitudinal tracks on the cutting table when said end portion abuts the end of the cutting table and when said rotary axis is in alignment with the longitudinal center line,
(e) a straight platform track having opposite ends on said rotary platform and spaced from said rotary axis a distance equal to half the spacing between said first and second end tracks, so that said straight platform track may be aligned end-to-end with said first end track in one rotary transfer position of said rotary position, and may be aligned end-to-end with said second end track in another rotary transfer position of said rotary platform, for the transfer of the cloth spreading machine, having a track wheel, between the cutting table and said rotary platform, when said end portion abuts the end of a cutting table and said rotary axis and the longitudinal axis are aligned,



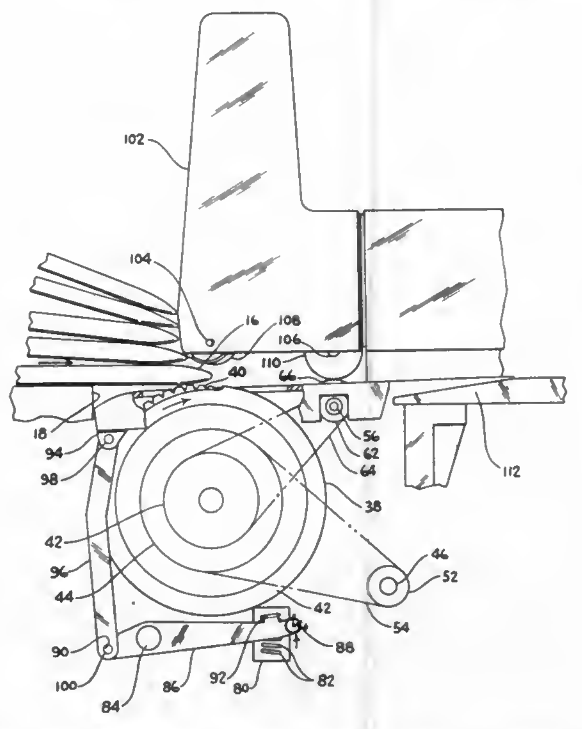
(f) latch means on each of said first and second end tracks and on opposite ends of said platform track for latching one end of said platform track against said first end track in said one transfer position and for latching the opposite end of said platform track against said second end track in the other of said transfer positions.

4,193,590

SHEET SEPARATOR AND FEEDING APPARATUS

James G. Mongagnino, Monroe, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Jan. 16, 1978, Ser. No. 869,483
Int. Cl.^{2} B65H *3/06*
U.S. Cl. 271—119 **2 Claims**

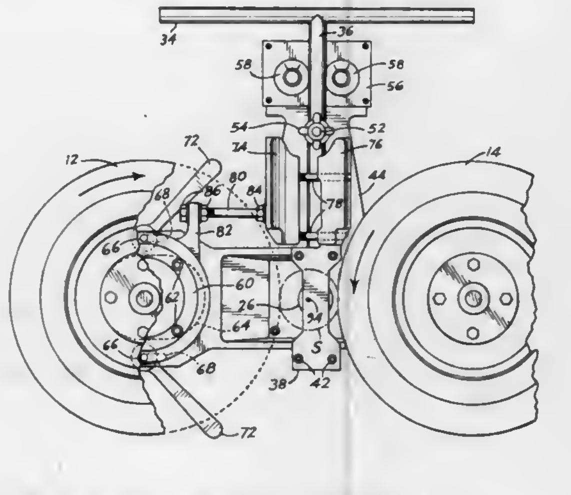
1. A sheet separator and feeding apparatus comprising: a housing, a generally longitudinally disposed feed deck pivotably supported at one longitudinal end by said housing and having an opening therein, means for horizontally supporting said feed deck at the other longitudinal end, said supporting means including a first link rotatably supported within said housing, a second link having first and second ends, said first end being pivotably supported by said feed deck and said second end being pivotably attached to the first end of said first link and detent means supported by said housing and in engagement with the second end of said first link for holding said second end of said first link in a plurality of positions, a shaft rotatably received within said housing below said feed deck, a first roller secured upon said shaft and having a portion received within said opening, a second roller spaced relative to said first roller, said first and second rollers being in a generally common vertical plane, and means for rotating said shaft.



4,193,591

ADJUSTABLE BALL PROJECTING DEVICE

John K. Paulson, 14390 SW. Uplands Dr., Lake Oswego, Oreg. 97034
Filed May 11, 1978, Ser. No. 904,872
Int. Cl.^{2} F41B *15/00*
U.S. Cl. 272—78 **5 Claims**

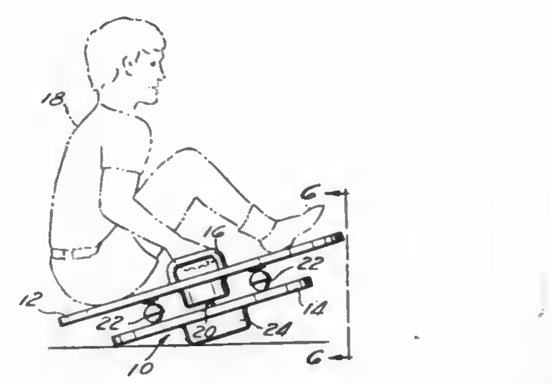


1. A ball projecting device, comprising:
(a) a base member,
(b) a pair of ball projecting members having confronting ball-engaging surfaces spaced apart laterally for gripping a ball between them, at least one of said members being driven for moving its ball-engaging surface in a ball projecting direction,
(c) mounting means interengaging the base member and ball projecting members for lateral adjustment of at least one of said members relative to the other for varying the spacing between said confronting surfaces,
(d) a ball feed chute including a pair of laterally disposed separate segments, and
(e) coupling means connecting said lateral segments each with a different one of said ball projecting members for varying the width of the feed chute simultaneously with varying the spacing between said confronting surfaces.

4,193,592

ROCKING, TURNING TOY

Raymond L. Bishow, 61 N. Laurel St., Ventura, Calif. 93003
Filed Sep. 22, 1978, Ser. No. 944,990
Int. Cl.^{2} A63B *23/00;* B62B *11/00*
U.S. Cl. 272—114 **10 Claims**

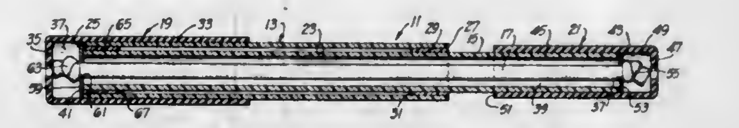


1. A toy to be located and operated on a supportive surface comprising:
a planar base upon which the user is to be located on the upper surface thereof, a shaft connected to said base and extending from the lower surface thereof;
a bottom member having a top surface and a bottom surface, said bottom member to be located adjacent said lower surface of said planar base but spaced therefrom, said shaft located within said bottom member permitting rotational movement between said planar base and said bottom member, said top surface being of an area less than said lower surface of said planar base;
low frictional rolling means located between said lower surface of said planar base and said upper surface of said bottom member, said planar base being rotatable upon said bottom member by said low frictional rotational rolling means; and
an enlarged protuberance attached to said bottom surface, said enlarged protuberance being spaced from the periphery of said bottom member, said enlarged protuberance to be in continuous contact with and rockingly move upon the supportive surface with the maximum tipping rocking movement being defined when the peripheral edge of said bottom member contacts the supportive surface.

4,193,593

ARM AND WRIST EXERCISER

Bradford W. Wilson, 1642-A Coriander, Costa Mesa, Calif. 92626
Filed Jun. 27, 1977, Ser. No. 809,977
Int. Cl.^{2} A63B *21/00*
U.S. Cl. 272—137 **7 Claims**



1. An exercising device comprising:
outer and inner tubes, each of said tubes having a first end portion and a second end portion, said inner tube being at least partially within said outer tube, said tubes being capable of being manually grasped and pulled generally axially from a collapsed position to an extended position;
means for preventing said tubes from being pulled generally axially apart beyond said extended position;
an elongated resilient element extending at least part way through the inner member;
first means for attaching the elongated resilient element to said inner tube adjacent the first end portion thereof;
releasable means for attaching the elongated resilient element to the inner tube adjacent the second end portion

thereof at least when said tubes are in the collapsed position; and

said releasable means including means responsive to movement of said tubes from the collapsed position toward the extended position for releasing the elongated resilient element from the second end portion of said inner tube and attaching the elongated resilient element to the outer tube adjacent the second end portion thereof whereby the elongated resilient element can be forcibly resiliently elongated in pulling said tubes from the collapsed position to the extended position and can resist the movement of said tubes from the collapsed position to the extended position.

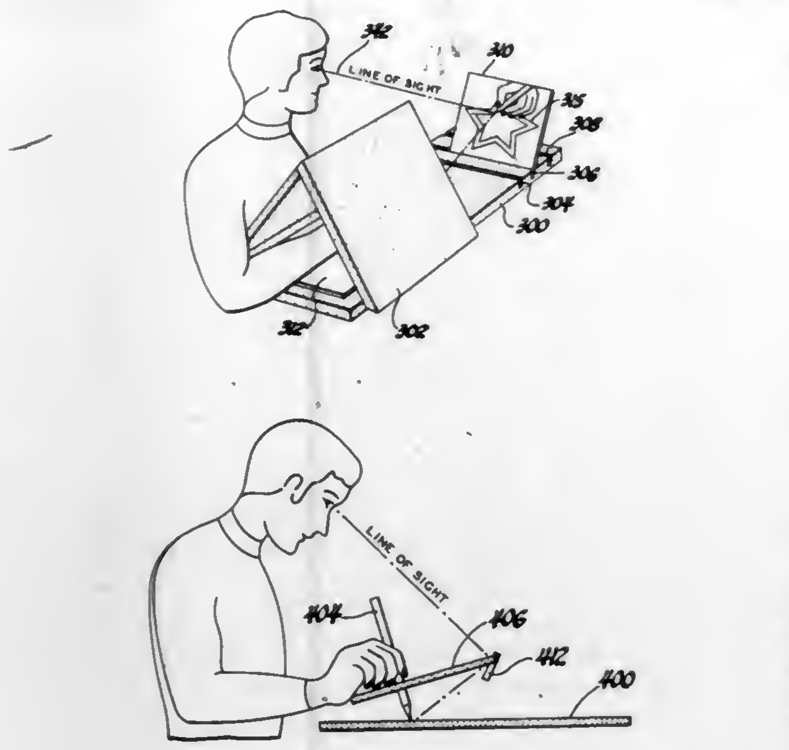
4,193,594
PARLOR GAME

Waldemar B. Schwauss, P.O. Box 21, Hornepayne, Ontario, Canada (POM 1ZO)

Filed Feb. 6, 1978, Ser. No. 875,186

Int. Cl.^{2} A63F *9/06*

U.S. Cl. 273—1 R **5 Claims**



1. A parlor game comprising:
a playing board having a design;
reflective means mounted adjacent the playing board to form a mirror image of the design;
a marking instrument having a marking end for a player to trace the design; and
a shield mounted on the marking instrument so as to be movable therewith, and so disposed between the player's eyes and the design whereby the player can view the marking end of the marking instrument only through the reflective means.

4,193,595
RHYTHMIC EXERCISING APPARATUS

Seiji Abe, Oume, Japan, assignor to Kabushiki Kaisha Nihon Kensho, Tokyo, Japan

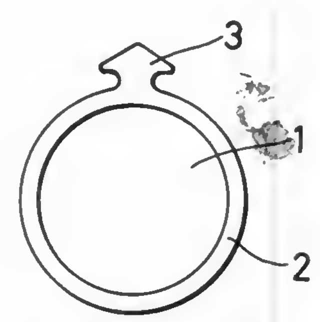
Filed Mar. 20, 1978, Ser. No. 888,694

Claims priority, application Japan, Mar. 23, 1977, 52-34283[U]

Int. Cl.^{2} A63F *9/00*

U.S. Cl. 273—1 R **3 Claims**

1. A rhythmic exercising apparatus used by being placed on a floor, including: an annular body circular in shape formed with a hole sufficient to receive a foot; an index member shaped as an arrow, integral of said body to provide means for



defining an orientation of said body; said annular body and index member being rectangular and flat in cross-section.

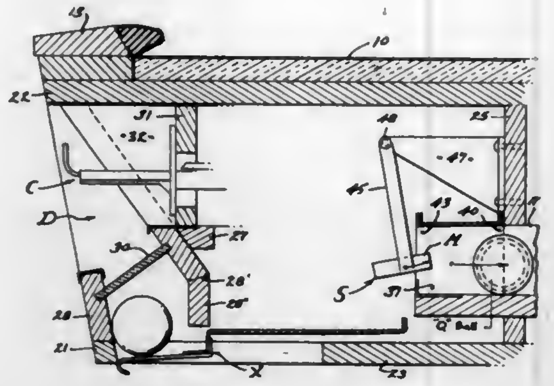
4,193,596
POOL BALL SEPARATOR

Raymond J. Baker, Corner of Palamino Dr. & Matson Rd., Merlin, Joseline County, Oreg. 97532

Filed Jun. 23, 1978, Ser. No. 918,340

Int. Cl.^{2} A63D *15/00*

U.S. Cl. 273—11 C **12 Claims**



1. A pool table ball separator for separating a magnetic "Q" ball from non-magnetic playing balls including, a pool table having pockets, a magnetic "Q" ball, a plurality of non-magnetic playing balls, a playing ball and a "Q" ball crib, a ball run leading from each of said table pockets to said playing ball crib, a return ball run opening into and leading from one side of said first mentioned ball run to said "Q" ball crib, and separator means comprising a free swinging magnet positioned on the other side of said first mentioned ball run and adjacent said opening into said first mentioned ball run for attraction to only said magnetic "Q" ball moving along said first mentioned ball run and to strike the same and direct it into said return ball run opening whereby it will roll along said return ball run and into said "Q" ball crib.

4,193,597
COMBINATION VEHICLE AND LAUNCHER TOY ASSEMBLY

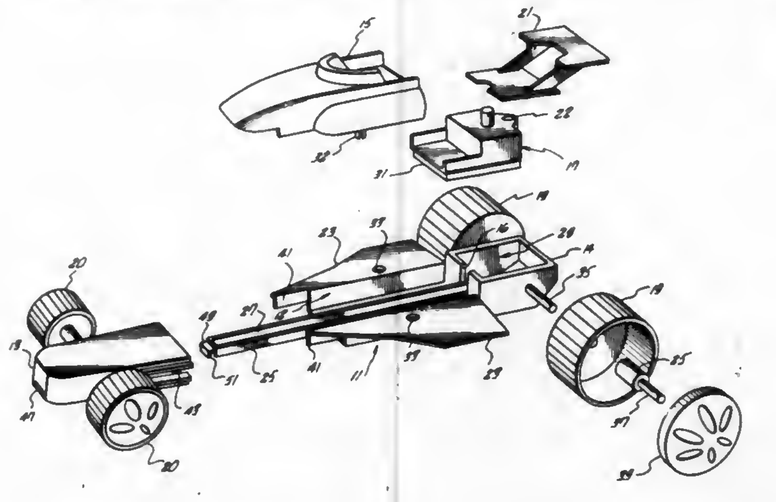
Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1977, Ser. No. 791,568

Int. Cl.^{2} A63H *33/06*

U.S. Cl. 273—405 **6 Claims**

1. A plurality of toy elements comprising:
first means including a plurality of removably attachable elements for forming a first vehicle, the elements including a nose element detachable from the first vehicle;
second means configurable from said first means for forming an ejection device, said second means comprising hammer means slideably mounted in a first said element, means for biasing said hammer means toward a first position, and means for retaining said hammer means in a position displaced against said bias and for releasing said hammer means such that said bias force returns said hammer means to said first position, the ejection device adapted to secure the nose element and launch the nose element when the nose element is detached from the first vehicle, and



third means configurable from said first means for forming a top spinning and launching mechanism and for forming a mounting for said mechanism.

4,193,598
VIDEO GAME SYSTEM

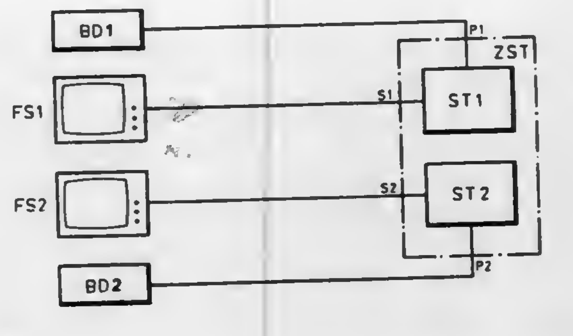
Jens Freese, Am Sandberg 92, Frankfurt am Main, Fed. Rep. of Germany (6000Ffm)

Filed Mar. 10, 1978, Ser. No. 885,250

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711421

Int. Cl.^{2} A63F *9/22*

U.S. Cl. 273—313 **3 Claims**



1. A video game system for simulating the functions of vehicles or groups of vehicles represented by spots on the screens of a plurality of television sets or projectors respectively controlled by and associated with individual control sets, said system comprising means connecting both said control sets and television sets or projectors to a common central control means, said central control means limiting the appearance of a respective vehicle or group of vehicles exclusively to the screen of the television set or projector associated therewith when the respective vehicles or groups of vehicles are positioned beyond an assumed field of visibility (horizon) relative to each other, said central control means causing both vehicles or groups of vehicles to appear on both said screens when their respective positions are within the assumed field of visibility relative to each other.

4,193,599
REEL SPINNING AND STOPPING DEVICES

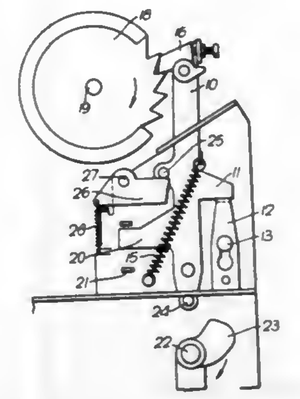
Joseph R. Heywood, Kingsgrove, Australia, assignor to Heywood Design Pty. Ltd., Kingsgrove, Australia

Filed Nov. 13, 1978, Ser. No. 960,479

Int. Cl.^{2} A63F *5/04*

U.S. Cl. 273—143 R **3 Claims**

1. A device in which a plurality of reels carrying representations of symbols, letters, numbers or other indicia on their peripheries are assembled linearly spaced alongside each other and are free to rotate independently of each other wherein each reel has attached to its side and concentric with its axis a toothed sprocket having one tooth for each symbol represented on the periphery of the reel, the provision of means mounted adjacent each reel for both spinning the reel and stopping it including pawl means engageable between any pair of teeth of the toothed sprocket, lever means to which said pawl means is attached, solenoid controlled trigger means



arranged to hold said lever means in position in which said pawl means is engaged with the toothed sprocket, spring means arranged to cause said pawl means to move to rotate the toothed sprocket on actuation of said solenoid controlled trigger means, means to disengage said pawl means from said toothed sprocket and rotatable cam means arranged to restore said lever means and said pawl means to said position to stop rotation of said toothed sprocket.

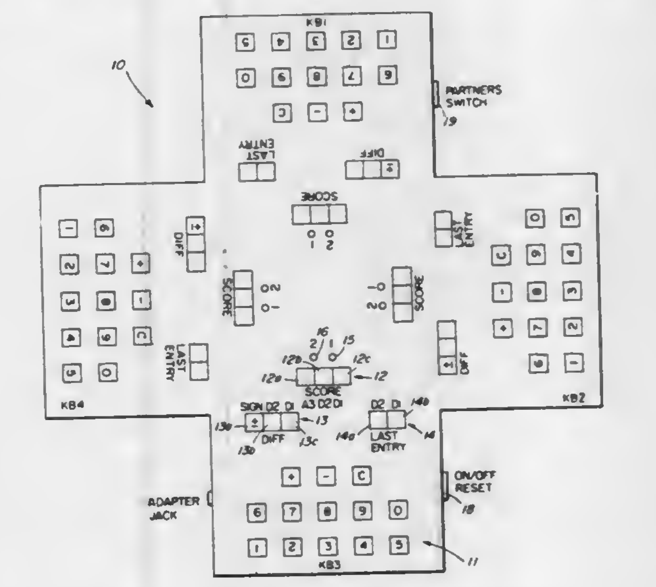
4,193,600
CRIBBAGE SCORING DEVICE

Roy Armstrong, Waltham, Mass. 02135, and William M. Kahn, Brookline, Mass., assignors to Roy Armstrong, Waltham, Mass.

Filed Dec. 19, 1977, Ser. No. 861,613

Int. Cl.^{2} A63F *1/18*

U.S. Cl. 273—148 R **16 Claims**



8. A cribbage board scoring device comprising;
means defining a playing surface having at least first and second player stations,
first and second keyboard input means associated, respectively, with the first and second stations,
means responsive to said first and second input means for providing respective first and second cumulative counts,
first and second means associated, respectively, with the first and second stations for displaying each cumulative count to provide cumulative scoring information for each player,
means responsive to said first and second cumulative counts for providing a difference count and the polarity thereof respresentative of the difference between the scores between players continuously during the game,

and first and second means associated respectively, with the first and second stations for displaying the difference count along with a polarity indication,

a positive polarity of one station indicating a difference gain and a negative polarity at the other station indicating a difference loss.

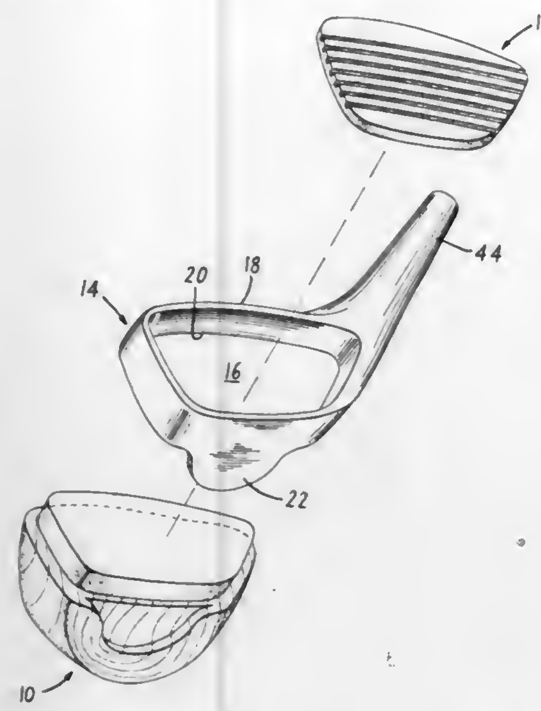
4,193,601
SEPARATE COMPONENT CONSTRUCTION WOOD TYPE GOLF CLUB

Walter L. Reid, Jr.; Ralph L. Delano, both Mattapoisett, and John W. Jepson, Marion, all of Mass., assignors to Acushnet Company, New Bedford, Mass.

Filed Mar. 20, 1978, Ser. No. 887,883

Int. Cl.^{2} A63B *53/04*

U.S. Cl. 273—167 R **7 Claims**



1. A method for producing a wood type golf club head comprising a plurality of individual components which mate together, at least one of said individual components being of metal, and at least another of said individual components being of wood having at least one surface coating thereon, said method comprising:

(a) separately forming the individual components;

(b) separately final finishing each component prior to assembly thereof into the golf club head, said final finishing including the application of at least one said surface coating on the wood component; and

(c) assembling the final finished individual components into a final finished golf club head.

4. A final finished wood type golf club head comprising a plurality of individual components which mate together, at least one of said individual components being a metal reinforcing collar, and at least another of said individual components being a wood club head block having at least one surface coating thereon, and each of said individual components having been final finished prior to assembly thereof into the final finished golf club head.

4,193,602
BOARD GAME

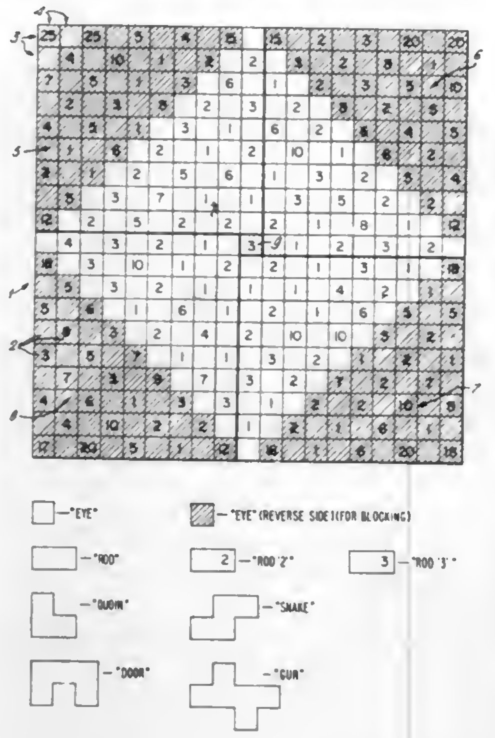
Christopher M. Eliot, 55A, Frogmore St., Abergavenny, Gwent, Wales, and Edward B. Taylor, Eastbourne, England, assignors to Christopher Mark Eliot, Sussex, England

Filed May 17, 1978, Ser. No. 906,488

Claims priority, application United Kingdom, Aug. 5, 1977, 32971/77; Oct. 19, 1977, 43480/77

Int. Cl.^{2} A63F *3/00*

U.S. Cl. 273—236 **7 Claims**



1. Apparatus for playing a board game, said apparatus comprising:

a. a board,

b. said board having a surface provided with a playing area having an array of playing positions,

c. said positions being arranged in a series of rows and columns, and at least some of said playing positions having a number inscribed thereon,

d. a number of sets of playing pieces,

e. each of said playing pieces having one of a number of different shapes,

f. each of said shapes being arranged so as to cover, substantially exactly, a whole number of said playing positions on said playing area,

g. each of said different shapes covering a different number of said playing positions, and each of said sets including at least one piece of each of said different shapes,

h. and said playing area defining an inner and an outer arena, said inner and outer arenas being distinguishable one from the other, and

i. and said numbers on said playing positions in said outer arena comprising a total greater than those on said playing positions in said inner arena.

4,193,603
SEALING SYSTEM FOR A TURBOMACHINE

Vijay K. Sood, Murrysville, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,125

Int. Cl.^{2} F16J *15/40*

U.S. Cl. 277—3 **12 Claims**

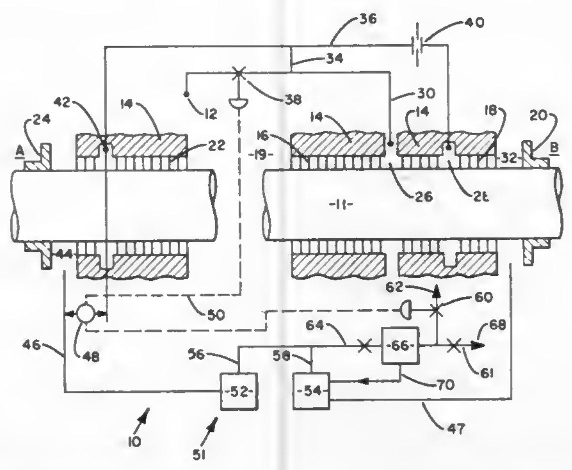
1. A seal system for a turbomachine comprising:

a first pressure reducing seal for reducing the pressure of a process fluid flowing therethrough;

first conduit means for delivering a first portion of the fluid to a first relatively low pressure operating region;

second conduit means for delivering a second portion of the fluid to a sealing region operating at a pressure somewhat higher than the pressure of the first operating region;

a second pressure reducing seal in fluid flow communication with the sealing region and a second operating region having a pressure intermediate the sealing region and the first operating region; and



flow regulating means for selectively regulating the flow of fluid between the sealing region and the first operating region to maintain the fluid pressure differential between the sealing region and the second operating region at a substantially predetermined magnitude.

4,193,604
MEANS FOR CARRYING A CABLE THROUGH A WALL

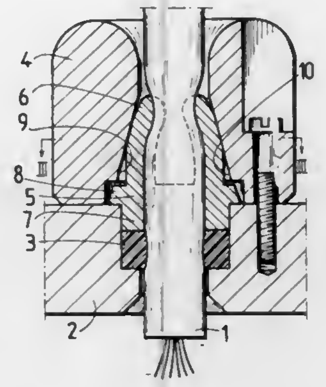
Hannu Sarvanne, Vantaa, Finland, assignor to Oy. E. Sarlin Ab, Helsinki, Finland

Filed Sep. 21, 1978, Ser. No. 945,194

Claims priority, application Finland, Mar. 17, 1978, 780855

Int. Cl.^{2} F16B *7/02*

U.S. Cl. 277—117 **1 Claim**



1. An apparatus for carrying a cable through a wall, such as a motor wall, comprising: a sealing ring encircling said cable disposed between said motor wall and said cable to form a water tight condition therebetween; an elongated clamping member, said clamping member is in proximity to said sealing ring, abutting said wall to surround said cable, said clamping member being further defined by integral gripping portions to engage said cable, said gripping portions having outer sloping surfaces; and an outer sleeve; said outer sleeve is disposed about said clamping member and is provided with interior sloping surfaces for co-action with said sloping surfaces of said clamping member to urge said gripping elements into gripping engagement with said cable when said clamping member is tightened.

4,193,605
SEAL FOR DAMPER BLADES

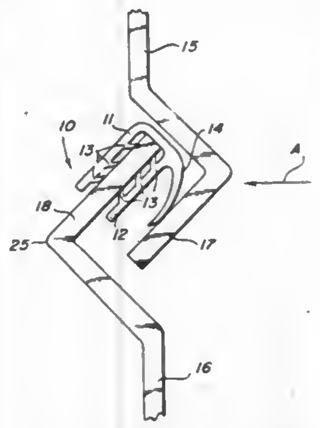
Louis Josephson, Yonkers, N.Y., assignor to American Hardware & Paint Co., Inc., Elizabeth, N.J.

Filed May 5, 1978, Ser. No. 903,153

Int. Cl.^{2} F16J *15/32*

U.S. Cl. 277—184 **6 Claims**

1. A damper having a plurality of pivoted blades adapted to have their edge portions overlap when the damper is in its closed position, one of said edge portions at each overlapping position being inserted into the open end of an elongated U-shaped strip formed of rigid material of U-shaped cross-section, said U-shaped strip providing side walls the interior of at least one of which carries resilient teeth pointed toward the closed portion of the U, said strip having a resilient sealing member in the form of a flexible flap extending away from said strip and terminating at one side of said strip, said strip being carried by the blade edge remote from the intended air flow through the damper and said flap engaging the edge portion of the adjoining blade at the overlap position so that air tending to move through said damper will bias said flap toward said adjoining blade to strengthen the seal.



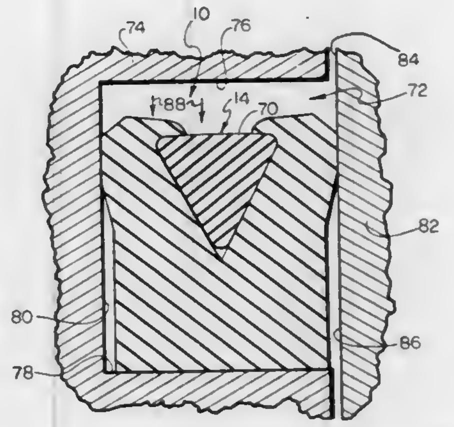
4,193,606
MACHINERY SEAL

Dennis H. Iverson, 3557 Suniland Dr., Salt Lake City, Utah 84109

Continuation of Ser. No. 682,121, Apr. 30, 1976, abandoned. This application Jun. 15, 1978, Ser. No. 915,803

Int. Cl.^{2} F16J *15/32*

U.S. Cl. 277—205 **5 Claims**



1. A composite seal assembly comprising:

an annular elastomeric boot having a central axis and having: A base portion having a flat front and parallel radially backwardly extending inner and outer side walls,

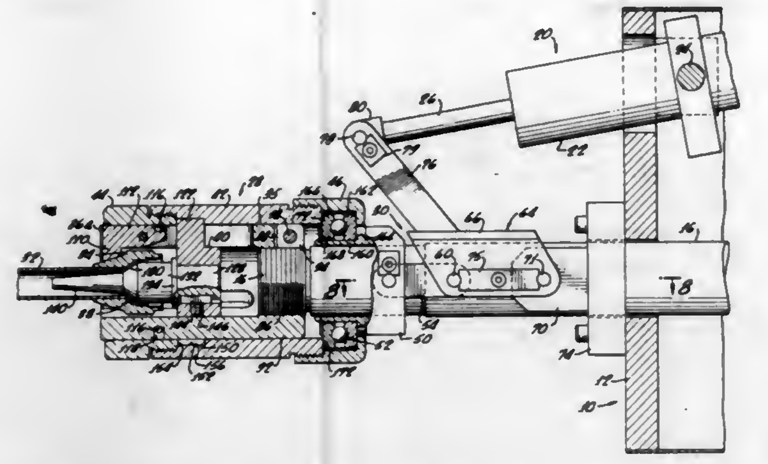
a bifurcated portion contiguous with and inclined backwardly radially away from the parallel inner and outer base side walls a given distance and then reversibly beveled backwardly radially toward the parallel inner and outer base side walls to form radially inner and outer annular pointed sealing lips which intersect in a plane perpendicular to the central axis,

an annular generally V-shaped groove having the wide section thereof annularly opening through the rear of the boot in the bifurcated portion opposite the flat front of the base portion such that said wide section of the groove and said inner and outer annular pointed sealing lips are in substantially the same plane,

a pair of annular ribs contiguous with the reversely beveled portion of the sealing lips forming the rearmost portion of the boot and having flat undersides overlying the V-shaped groove restricting the annular opening thereof, and

a wedge shaped annular elastomeric expander having flat sides and dimensions slightly larger than the space defined by the V-shaped groove and overlying annular ribs and having the widest portion adapted to fit into the widest portion of the V-shaped groove said wedge shaped expander being deformed into the V-shaped groove such that the greatest mass of the expander is just forward of the annular ribs and in a plane substantially even with the sealing lips causing the sealing lips to be biased apart and having the flat underside of each overlying annular rib firmly engaged with a corresponding flat surface of the wedge shaped expander thereby constraining the expander from backward axial movement out of the V-shaped groove, said expander being positioned in said groove such that the back surface of said expander is forward of the back surface of the overlying ribs.

4,193,607
CHUCK WITH OPPOSED GRIPPING
John Pearson, Garden Grove, and Homer L. Eaton, Leucadia, both of Calif., assignors to Eaton-Leonard Corporation, Carlsbad, Calif.
Filed Mar. 30, 1978, Ser. No. 891,922
Int. Cl.^{2} B23D *31/40*
U.S. Cl. 279—1 DC **25 Claims**



1. A rotatable chuck for grasping the end of a hollow elongated member having a flared end and a fitting thereon and exerting both radial and axial compressive force thereon comprising,

a rotatable shaft,

a plurality of clamps movably mounted on said shaft for pressing the outside of said member at said end thereof radially and axially inwardly,

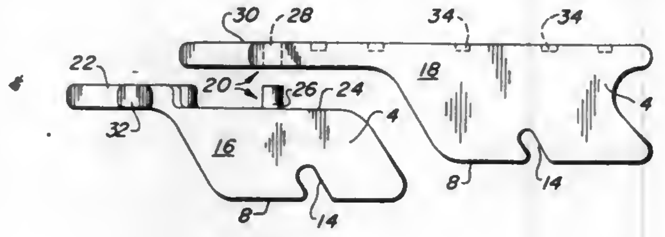
a pilot slidably mounted on said shaft and having a tapered end for pressing radially and axially outwardly against said member in radial and axial opposition to said clamps, said pilot having a radially projecting tongue on a rear portion thereof,

a sleeve slidably mounted on said shaft, said sleeve including first means for engaging said tongue to press said pilot axially and including second means for engaging said clamps to press said clamps inwardly, and

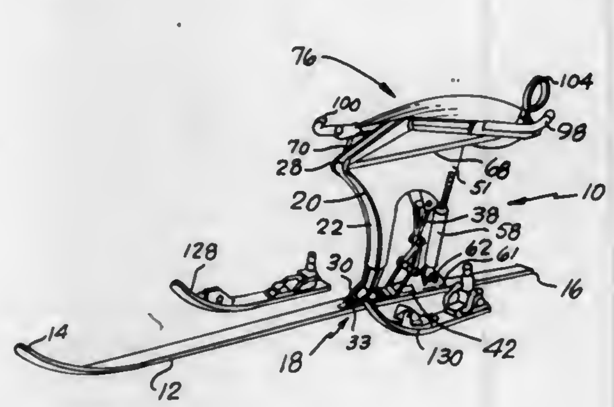
means for driving said sleeve into engagement with said tongue and clamps for pressing said pilot axially and radially outwardly against said member in opposition to said clamps.

4,193,608
COMBINATION WAGON AND SLED
Arthur S. Gunderson, P.O. Box 215, Minooka, Ill. 60447
Filed Sep. 15, 1978, Ser. No. 942,575
Int. Cl.^{2} B62B *13/18*
U.S. Cl. 280—8 **10 Claims**

1. Combination sled and wagon comprising a cargo transportable vehicle having first and second side means, cargo carrying deck means for supporting a cargo thereon between said first and second side means, runner means disposed on said first and second side means, said side means having open ended slots therein, and wheel means having axle means adapted to be disposed in said slots and adapted to be removed therefrom, including an axle shaft, said slots having a narrow width corresponding to the diameter of said axle shaft, said wheel means being operative to support said vehicle when said axle means are disposed in said slots, said runner means being operative to support said vehicle when said axle means are removed from said slots, said open ended slots being inclined in the direction of forward movement of said vehicle to minimize drag and to facilitate forward movement thereof on a surface when said runner means are in sliding contact with said surface, said cargo carrying deck means being wide enough to support a person lying thereon.



4,193,609
SKI DEVICE
Fred L. Bissett, 1300 Florence St., Aurora, Colo. 80010
Filed Mar. 17, 1978, Ser. No. 887,789
Int. Cl.^{2} B62B *13/00*
U.S. Cl. 280—12 K **26 Claims**



1. A ski device, which comprises:

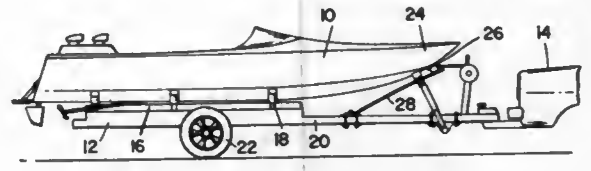
an elongated runner;

seating means pivotally mounted at its forward end to said runner;

anti-sway means pivotally mounted between said seating means and said runner; and

shock-absorbing means pivotally mounted between and extending downwardly and forwardly form the rear portion of said seating means to said runner, wherein the distance between the pivotal mount of said forward end of said seating means to said runner and the pivotal mount of said shock-absorbing means to said runner is approximately the same as the distance between the front and rear foot bindings of a regular, foot-mounted ski.

4,193,610
SHOCK ABSORBING DEVICE FOR AUTOMOBILE BOAT TRAILERS
David C. Miller, III, P.O. Box 92, Petaluma, Calif. 94952, assignor to David Charles Miller, III, Petaluma, Calif.
Continuation of Ser. No. 762,984, Jan. 27, 1977, abandoned. This application Jul. 20, 1978, Ser. No. 926,351
Int. Cl.^{2} B60P *3/10*
U.S. Cl. 280—414 R **3 Claims**



1. A shock absorbing device for use on an automobile boat trailer having a frame carrying a boat which comprises:

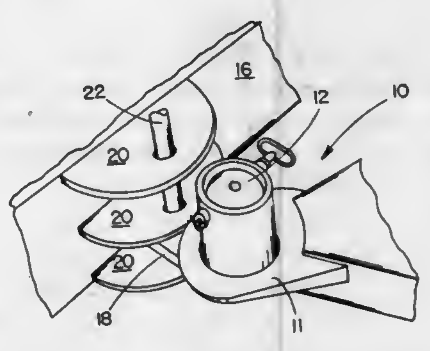
a flexible floating bar secured at one end to the frame and having a receptacle near its other end adapted to be removably secured to the bow of the boat carried on said trailer;

a boat engaging assembly carried on the floating bar near said receptacle and having a bow pad supporting the bow of said boat; and

a pair of automotive type shock absorbers straddling the floating bar, each being attached at its lower end to the frame and being attached at its upper end to one side of the boat engaging assembly to control flexure of the floating bar within predetermined limits, each of said shock absorbers providing a resilient force which tends to maintain contact between said bow pad and bow, said floating bar being resiliently flexed to apply tension to the bow of the boat through said receptacle;

whereby said flexible floating bar and shock absorbers interact applying tension and compression forces respectively to the bow of the boat while simultaneously permitting shock absorbing motion of both said receptacle and bow pad.

4,193,611
TRAILER HITCH ADAPTER
Harold E. Fisk, 3211 Hayes St., Marne, Mich. 49435
Filed Oct. 11, 1978, Ser. No. 950,267
Int. Cl.^{2} B60D *1/14*
U.S. Cl. 280—415 A **20 Claims**



1. An adapter for coupling a lunette-type trailer hitch ring to a ball-type tow hitch comprising:

an elongate cylindrical post for axially receiving a lunette-type hitch ring therearound;

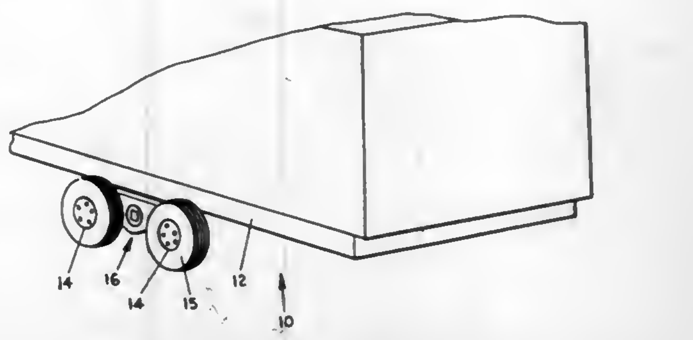
an axially extending aperture disposed in said cylindrical post for receiving a ball-type trailer hitch therein;

a generally radially extending aperture extending through said cylindrical post;

a shaft for insertion in said radially extending aperture and pinning a ball thereto; and

means for preventing axial removal of the hitch ring comprising a pair of tubular members, each of said members being oppositely disposed, radially and outwardly extending from said cylindrical post to define said radially extending aperture and said means for preventing axial removal of the hitch ring.

4,193,612
ELASTOMERIC SUSPENSION SYSTEM FOR WHEELED VEHICLES
Lloyd D. Masser, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Jun. 19, 1978, Ser. No. 916,942
Int. Cl.^{2} B60G *11/60*
U.S. Cl. 280—681 **12 Claims**



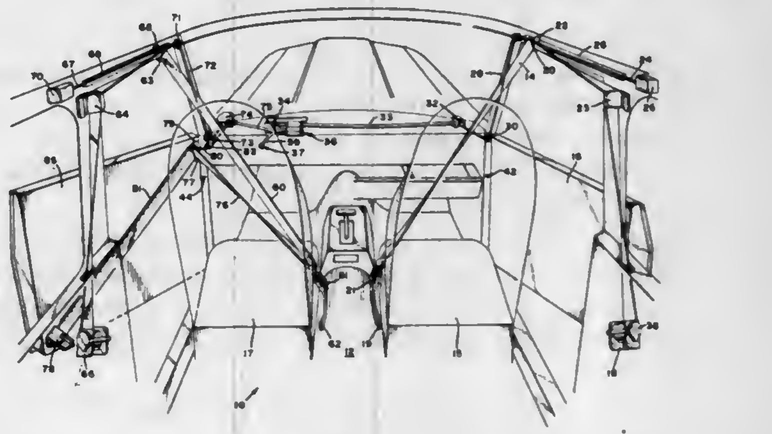
1. A suspension system for a wheeled vehicle comprising:

an elongated equalizer beam rockably mounted at a central portion thereof to a load-supporting member of the vehicle;

a pair of axles pivotably mounted to the equalizer beam through a rigid radius rod for vertical translational movement with respect to each end thereof; and

a cylindrical elastomeric spring means mounted between each axle and the equalizer beam and vertically above each axle to absorb jounce deflections of the axle with respect to the equalizer beam.

4,193,613
MOTORIZED PASSIVE SEAT BELT SYSTEM
Joseph M. Cachia, Knoxville, Tenn., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Filed Sep. 28, 1977, Ser. No. 838,800
Int. Cl.^{2} B60R *21/02*
U.S. Cl. 280—804 **8 Claims**



1. In a vehicle passive restraint system for automatically positioning a seat belt about a vehicle occupant and a motor for movement of a device unassociated with said passive restraint system, the improvement comprising:

winding means for moving said belt to a first, noninterfering position upon the opening of a door of the vehicle so as to permit free ingress to and egress from said vehicle by said occupant, said seat belt being movable to a second, occupant restraining position upon closing of said door;

means drivingly connecting said motor and said winding means when said door is opened;

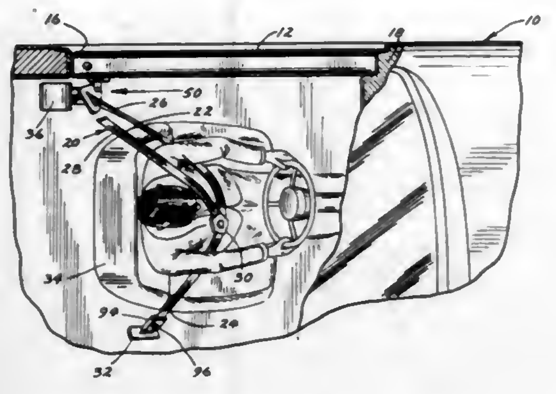
switch means responsive to the opening and closing of said door, said switch means being electrically connected to said motor means; and

said drivingly connected means including a gear box associated with said motor and including separate solenoids for each of said winding means and a solenoid for said unassociated device, said solenoid for said winding means being electrically connected to said winding means and said switch means and said solenoid for said device being electrically connected to said device, and wherein each of said solenoids is electrically connected to said motor means.

4,193,614
PASSIVE RESTRAINING BELT FOR SEATED VEHICLE OCCUPANT

Larry E. Felsing, Minneapolis, Minn., assignor to William A. Braddock, Minneapolis, Minn.

Continuation-in-part of Ser. No. 861,403, Dec. 16, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,163
Int. Cl.^{2} B60R *21/02*
U.S. Cl. 280—804 28 Claims

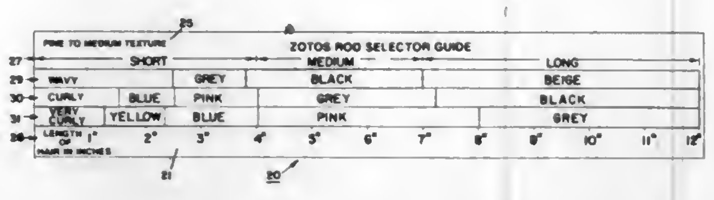


1. The combination with a vehicle having a body with a floor and provided with a door frame, a door hingedly mounted at a forward edge thereof with respect to said door frame and a vehicle seat accessible through said door frame, of a passive restraining belt arrangement, said restraining belt arrangement including:

A. a restraining belt comprising a two-piece lap belt portion and a shoulder belt portion;
B. a lockable inboard lap belt retractor mounted adjacent the vehicle floor body, rearwardly of the vehicle seat and inboard of it;
C. a lockable outboard lap belt retractor mounted in an outboard structural portion of the vehicle body rearwardly of the seat, outboard of it and adjacent a rear edge and a bottom edge of the door frame;
D. a lockable shoulder belt retractor mounted to the vehicle body rearward of the seat and adjacent the rear edge and an upper edge of the door frame;
E. said lap belt portion including a first inboard lap belt piece having a first end thereof received by said inboard lap belt retractor and a second outboard lap belt piece having a first end thereof received by said outboard lap belt retractor;
F. said shoulder portion having a first end thereof received by said shoulder belt retractor;
G. means for fastening second ends of said inboard lap belt piece, said outboard lap belt piece and said shoulder belt portion to each other;
H. an upper track mounted in an outboard edge portion of the vehicle roof and extending from a rear end portion positioned adjacent said shoulder belt retractor to a front end portion positioned adjacent a forward edge of the door and door frame;
I. a lower track mounted in a lower edge portion of said vehicle door adjacent the seat and extending from a rear end portion positioned adjacent said outboard lap belt retractor when said door is closed to a front end portion positioned adjacent the forward edge of said door and door frame;
J. an apertured outboard lap belt holder encompassing said outboard lap belt piece and means supporting said holder for movement along said lower track;
K. an apertured shoulder belt holder encompassing said shoulder belt portion and means for supporting said holder for movement along said upper track; and
L. means to move said belt holders from rear end portions of said tracks to front end portions thereof upon the opening of said door, and to move said holders from the front end portions of said tracks to the rear end portions thereof upon the closing of the door.

4,193,615
ROD SELECTOR GUIDE

Sharon S. Memmott, Cincinnati, Ohio, assignor to Zotos International, Inc., Darien, Conn.
Filed May 30, 1978, Ser. No. 910,284
Int. Cl.^{2} B42D *15/00*
U.S. Cl. 283—1 A 12 Claims



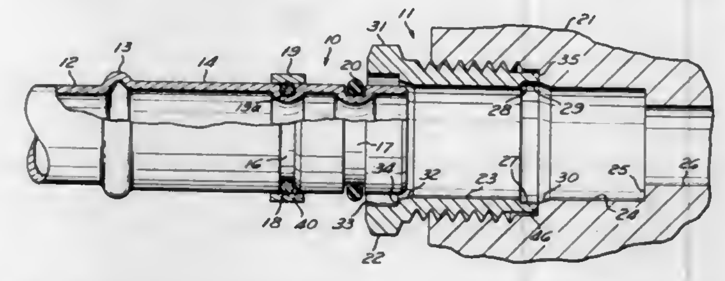
1. A rod selector guide for assisting hairdresser to select an optimum rod diameter for use in permanent hair waving, the rod selector guide comprising a hand-holdable instrument incorporating an information display having

A. first indicia representing alternative hair textures;
B. second indicia representing alternative curl configurations;
C. third indicia
  a. representing various hair lengths, and
  b. cooperatively associated with the second indicia in the information display; and
D. fourth indicia
  a. representing alternative rod diameters, and
  b. positioned in the information display in cooperative association with the second and third indicia,

whereby the optimum rod diameter for any curl configuration at any hair length is readily determinable.

4,193,616
QUICK CONNECT FITTING

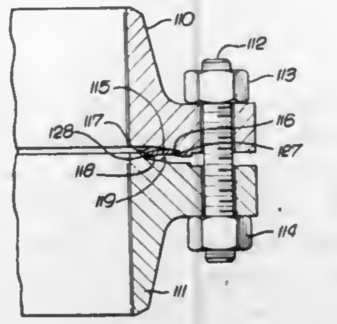
Charles R. Sarson, Euclid, and Richard C. Acker, Chagrin Falls, both of Ohio, assignors to Dana Corporation, Toledo, Ohio
Filed May 18, 1978, Ser. No. 906,940
Int. Cl.^{2} F16L *37/08*,
U.S. Cl. 285—39 14 Claims



1. A quick connect coupling providing a body assembly having a tube end receiving passage with a seal portion and a radially extending wall for positioning a lock ring, and a tube, said tube having a peripheral groove, a snap lock ring bridging between said groove and said radially extending wall operating to lock said end portion in said passage when said end portion is assembled in said passage, seal means separate from said lock ring providing a fluidtight joint between said end portion and body assembly, said body assembly including a body member and a nut threaded to said body member, said radially extending wall being formed on said nut substantially adjacent the inner end thereof, said nut having a counterbore at its inner end, said radially extending wall being provided by the inner end of said counterbore, said nut being threaded to the body member until the inner end of said nut bottoms on said body member, said groove having a side wall adapted to engage said ring and apply outwardly directed radial pressure and axially directed longitudinal pressure to said ring to urge said ring into longitudinal contact with radially extending wall and to urge said ring away from the bottom of said groove upon the application of an axially outwardly directed pulling force on said tube, said lock ring being held within said groove prior to insertion into said passage by a circumferential band slidable along said tube and assembly, said band having an outside diameter greater than the diameter of said tube end receiving passage so that said band is removed from engagement with said lock ring as the lock ring enters the passage.

4,193,617
SEALED CONNECTION

Gifford L. Hitz, 1661 Bel Air Rd., Los Angeles, Calif. 90024
Division of Ser. No. 892,745, Apr. 3, 1978. This application Jul. 24, 1978, Ser. No. 927,634
Int. Cl.^{2} F16L *23/00*
U.S. Cl. 285—336 1 Claim

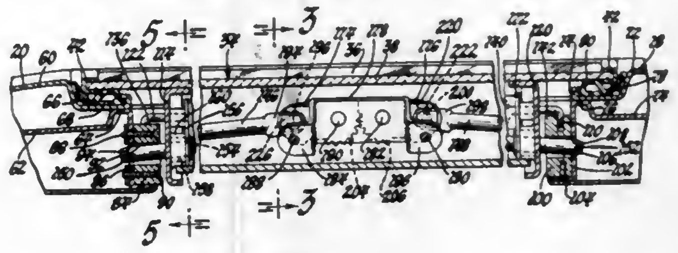


1. In a sealed connection for two pipe members defining an axis, the combination comprising

(a) a generally radially facing first annular shoulder at the end of one of the pipe members, and a generally radially facing second annular shoulder at the end of the other of the pipe members, the first and second shoulders respectively facing radially outwardly and inwardly, said pipe member ends closely facing one another axially,
(b) and an annular, diaphragm type metallic seal having one edge adjacent said first shoulder and another edge adjacent said second shoulder, said seal in unstressed condition having arcuate cross sections in axial radial planes and extending between said two edges, said second radially facing shoulder being offset axially relative to said first radially facing shoulder when the ends of the pipe members are interengaged, whereby relative closing together of the pipe ends effects over-center flexing of the seal extending between said shoulders to tightly and annularly engage at least one of said member ends and to tightly interengage said edges with the respective shoulders,
(c) said pipe member ends having stop surfaces which interengage, radially inwardly and outwardly of said shoulders, to limit said closing together of the pipe ends and to enclose the seal,
(d) said one member forming a recess into which said second shoulder is received, and said other member forming a recess into which said first shoulder is received, when said stop shoulders are interengaged,
(e) said members having frusto-conical walls respectively extending away from said shoulders and adjacent opposite faces of the seal to confine the seal when the stop shoulders interengage,
(f) substantially the entire side of the seal facing one pipe member being concave toward that pipe member, and substantially the entire side of the seal facing the other pipe member being convex toward that pipe member.

4,193,618
LATCH MECHANISM FOR REMOVABLE ROOF CLOSURE

Charles H. Lee, Almont, and Harry H. Fetters, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 12, 1977, Ser. No. 859,289
Int. Cl.^{2} E05C *9/04, 5/00*
U.S. Cl. 292—7 4 Claims



1. A latch mechanism for securing a removable roof closure panel in a vehicle body roof opening comprising:

first and second keepers mounted on the vehicle body at opposite sides of the roof opening;
first and second latch bolts movably mounted on the closure panel and having first end portions adapted for respective latching engagement with the keepers upon extension away from one another and unlatching disengagement from the keepers upon retraction toward one another;
first and second locating members mounted on the closure panel and respectively engageable with the first and second keepers to locate the closure panel longitudinally and transversely of the roof opening and transversely align the latch bolts with the keepers, said locating members being longitudinally adjustable on the closure panel to adjust the longitudinal position of the closure panel;
first and second operating levers having first ends pivotally mounted on the closure panel for movement about spaced axes and having second ends respectively pivotally connected with second end portions of the first and second latch bolts to extend and retract the latch bolts upon rotation of the operating levers;
means for rotating one of the levers;
and intermeshing gear teeth provided on the first and second operating levers to simultaneously rotate the second lever with the first lever, the levers rotating oppositely of each other between a latching position wherein the levers are located generally colinear with each other and with the latch bolts to effect extension of the latch bolts and latching engagement thereof with the respective keepers, and an unlatching position wherein the levers are located generally parallel to one another and normal to their respective latch bolts to effect retraction of the latch bolts and unlatching disengagement thereof from the respective keepers.

4,193,619
DOOR LATCH

Torsti T. T. Jerila, Rowland Heights, Calif., assignor to Acme General Corporation, San Dimas, Calif.
Filed May 15, 1978, Ser. No. 906,261
Int. Cl.^{2} E05C *1/06*
U.S. Cl. 292—168 35 Claims

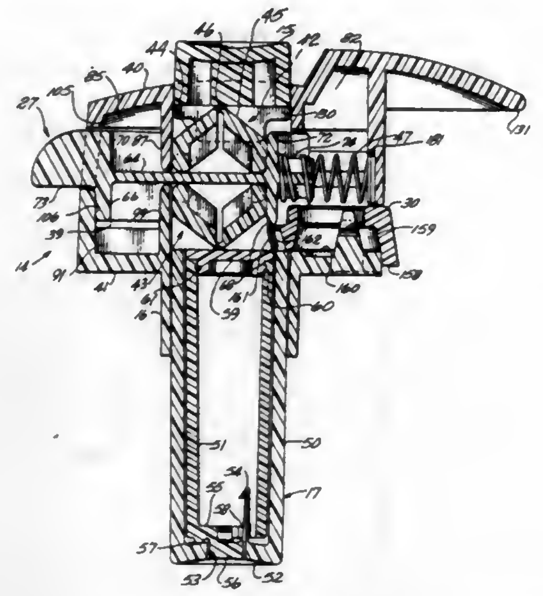
1. A door latch comprising:

a housing;
a slidable latch bolt disposed within the housing, the latch bolt being slidable between an extended position in which a portion of the latch bolt lies outside the housing, and a retracted position in which said portion of the latch bolt lies at least partially inside the housing;

spring means for biasing the latch bolt into its extended position;

a movable latch bolt actuating button accessible from the outside of the housing; and

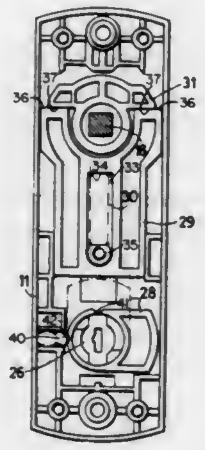
a linkage disposed in the housing between the housing, the button, and the latch bolt, the linkage bearing against the housing, the button, and the latch bolt without attachment to the housing, the button, or the latch bolt to slide the latch bolt into the retracted position in opposition to the spring means responsive to movement of the actuating button.



4,193,620

DOOR LATCH

Franco Giussani, Via Oslavia, 80, Desio (Milan), Italy
Filed Jan. 26, 1978, Ser. No. 872,657
Claims priority, application Italy, Jan. 26, 1977, 19659 A/77
Int. Cl.² E05C *1/12*
U.S. Cl. 292—169.17 **7 Claims**

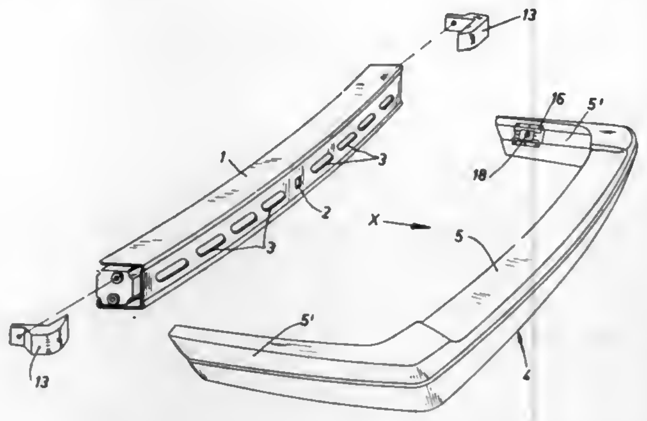


1. A door lock comprising inner and outer means for attachment at inner and outer surfaces of a door, latching means between said attachment means for latching a door to an associated door jamb, rod means for operating said latching means from the exterior of said inner and outer attachment means, locking means for selectively permitting and preventing rotation of said rod means from a door latching position to a door unlatching position, said locking means including a locking slide mounted for sliding movement upon one of said inner and outer attachment means generally transversely toward and away from said rod means, means normally biasing said locking slide in a direction toward said rod means and away from said locking tab, means mounting a locking tab for pivoting movement about an axis generally parallel to the axis of said rod means between a first position at which said tab prevents sliding movement of said locking slide away from said rod means and consequently locks said rod means in said door latching position and a second position at which said tab permits sliding movement of said locking slide away from said rod means and consequently unlocks said rod means in said door unlatching position, and means for operating said locking tab from both the exterior and interior of an associated door.

4,193,621

BUMPERS FOR MOTOR VEHICLES

Rolf Peichl, and Günter Kaulmann, both of Osnabrück, Fed. Rep. of Germany, assignors to Wilhelm Karmann GmbH, Osnabrück, Fed. Rep. of Germany
Filed Mar. 27, 1978, Ser. No. 890,453
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715986
Int. Cl.² B60R *19/06*
U.S. Cl. 293—142 **20 Claims**

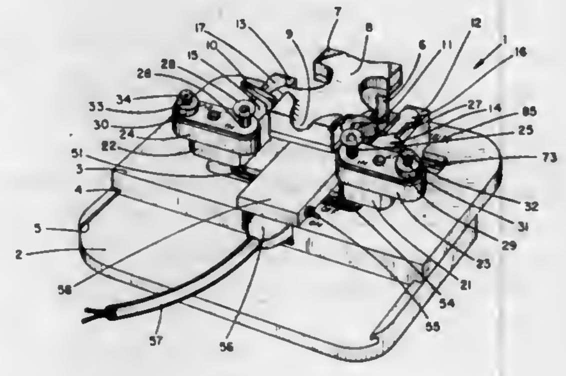


1. A bumper for a motor vehicle having a U-shaped shield with a transverse portion attached to said bumper, central securing means between the bumper and the shield which is laterally stable in position, a plurality of further securing means which are laterally displaceable to a limited extent, said securing means supporting the shield for displacement in the longitudinal direction of the vehicle towards the bumper, said shield having lateral end portions disposed in relation to the bumper to extend round the sides of the vehicle, said shield being flexible and being comprised of at least one piece of resiliently material.

4,193,622

APPARATUS FOR INSERTING AND REMOVING CONTACT LENSES

David C. Overman, 4525 W. Twain Ave., #262, Las Vegas, Nev. 89103
Filed Jun. 15, 1978, Ser. No. 915,591
Int. Cl.² A61F *9/00*
U.S. Cl. 294—1 CA **9 Claims**

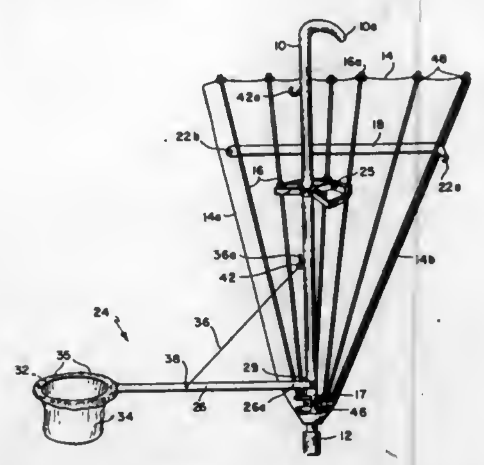


1. Apparatus for inserting and/or removing contact lenses comprises a base, forehead rest means for receiving and supporting the forehead of a user in a downwardly facing position, a pair of lens resting means for holding a contact lens in a substantially horizontal plane for insertion, mounting means for each of said lens resting means for removing said lens resting means between an operative position and an inoperative position, and a pair of lid-opening means mounted between the forehead rest means and the lens resting means.

4,193,623

CONCEALED DEVICE FOR REMOVING ANIMAL DROPPINGS

Marlene L. Forsythe, 11 Wiswall Cir., Wellesley, Mass. 02181; Amelia Laughlin, and Wayne Laughlin, both of 19 N. Main St., Muncy, Pa. 17756
Filed Jan. 22, 1979, Ser. No. 5,217
Int. Cl.² A47F *13/06*
U.S. Cl. 294—1 BB **7 Claims**



1. A device for removing animal litter comprising

A. an elongated handle,

B. an elongated arm,

C. means for pivotally connecting one end of the arm near the lower end of the handle so that the arm is swingable between a raised position wherein it lies adjacent to the handle and a lower position wherein it is oriented more or less horizontally,

D. bag securing means affixed to the opposite end of the arm, the total length of the arm and bag-securing means being less than that of the handle,

E. means operable adjacent the upper end of the handle for swinging the arm between its two positions,

F. a flexible shroud having a lower end secured near the lower end of the handle and having an upper end which extends above the bag-securing means when said arm is in its raised position, and

G. means for supporting the upper end of the shroud so that the shroud can be retained in a closed position wherein the shroud encircles and conceals the arm and bag-supporting means or an open position wherein said shroud reveals said arm and bag-supporting means.

4,193,624

PORTABLE WASTE CONTAINER

David J. Kerr, 536 Belgrove Dr., Kearny, N.J. 07032
Filed Oct. 21, 1977, Ser. No. 844,462
Int. Cl.² A47K *13/06*
U.S. Cl. 294—19 R **4 Claims**

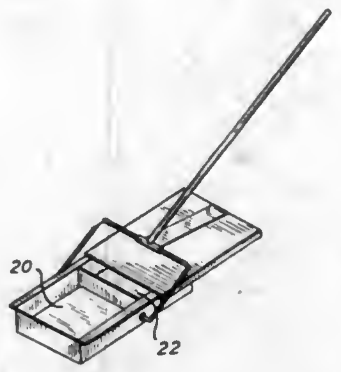
1. Apparatus for collecting animal waste products comprising:

a tray, said tray including a generally rectangular bottom wall, a first pair of parallel side walls secured to said bottom wall along opposed edges thereof, a second pair of parallel side walls secured to said bottom wall along opposed edges thereof, said pairs of side walls being secured to each other along their respective lines of intersection, said bottom wall and said opposed pairs of side walls cooperating to define a main chamber open at its top and further including a partition wall extending between and secured to said first pair of side walls, said partition wall for dividing said main chamber into a waste compartment and a deodorant compartment;

cover means for selectively covering and uncovering said waste compartment and said deodorant compartment of said tray;

handle means pivotally secured to said tray for supporting said tray in carrying said tray from place to place for use; and

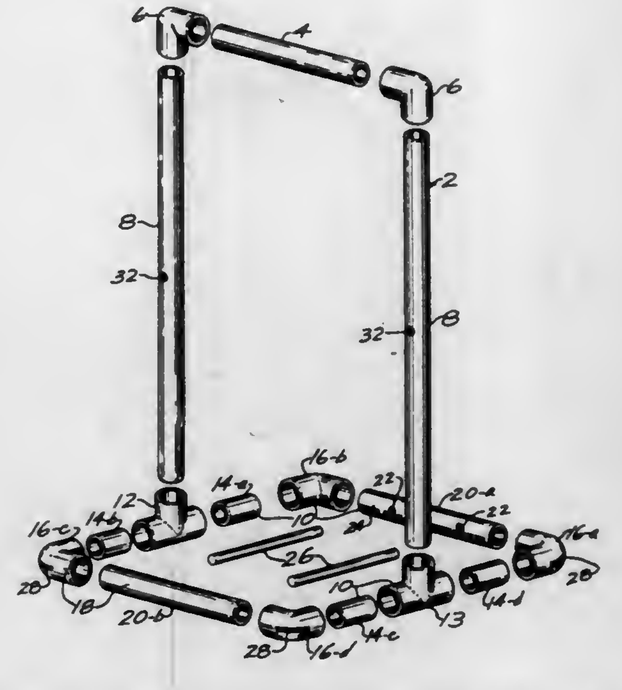
link means connected to said handle and said cover means, said link means for causing displacement of said cover means for said tray between covering and uncovering positions in response to rotation of said handle means.



4,193,625

BALL RETRIEVING AND STORAGE BAG

Ned H. Nelson, 9829 NE. 5th, Bellevue, Wash. 98004
Filed Dec. 12, 1977, Ser. No. 859,383
Int. Cl.² A63B *57/00*
U.S. Cl. 294—19 A **8 Claims**



1. An apparatus for retrieving and storing a tennis ball, said apparatus comprising:

a. a base comprising a frame;

b. a member in said frame;

c. the dimension between said frame and said member being less than the diameter of a tennis ball to prevent the tennis ball being pulled through said base by gravity;

d. said frame may be positioned over said tennis ball and then forced over said tennis ball so as to squeeze said tennis ball between said member and said frame and into said apparatus;

e. an enclosing means positioned above said frame and for storing said tennis ball;

f. a handle connecting with said frame;

g. said frame comprising a first, second, third and fourth right angle elbow, a first and a second Tee, a first and a second long pipe, a first, second, third and fourth nipple;

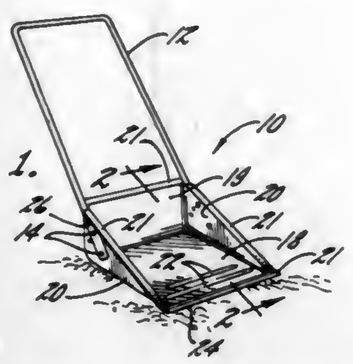
h. said first right angle elbow connecting with said first long pipe and said first long pipe connecting with said second right angle elbow and said second right elbow connecting with said first nipple and said first nipple connecting with said first Tee and said first Tee connecting with said second nipple and said second nipple connecting with said third right angle elbow and said third right angle elbow connecting with said second long pipe and said second long pipe connecting with said fourth right angle elbow and said fourth right angle elbow connecting with said third nipple and said third nipple connecting with said second Tee and said second Tee connecting with said fourth nipple and said fourth nipple connecting with said first right angle elbow to form a frame enclosing an open area;

i. a first member and a second member connecting with said first long pipe and said second long pipe; and,

j. the distance between said members and the distance between said member and said Tee being less than the diameter of the tennis ball to prevent the tennis ball being pulled through said base by gravity.

4,193,626
SNOW SCOOP

James Vondracek, 2630 Wallace Dr., Flossmoor, Ill. 60422
Filed May 10, 1978, Ser. No. 904,526
Int. Cl.^{2} E01H *5/02*
U.S. Cl. 294—54 **6 Claims**

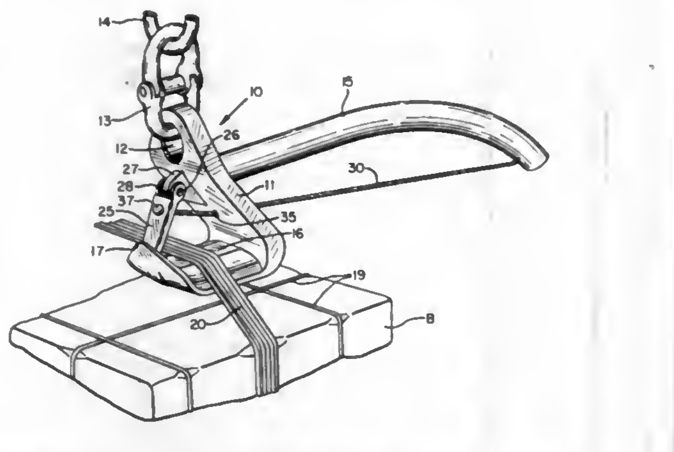


1. A scoop for clearing snow from surfaces such as sidewalks, driveways and the like comprising a one-piece stamped body formed with a bottom panel, rear panel and side panels connecting said rear and bottom panels to form a snow receiving area, a generally U-shaped handle formed with a pair of legs, means connecting said handle legs to said side panels whereby manual pushing of said handle imparts horizontal movement to said body along the surface to be cleared, said bottom panel being formed with a forwardly extending reinforcing flange along its forward end, said side panels being formed with flat, outwardly extending reinforcing flanges along their upper edges which extend forwardly to join with said reinforcing flange for said bottom panel, said reinforcing flanges being in a common plane disposed at an angle of between 15° and 30° to said bottom panel and the surface to be cleared for increasing the rigidity of said body and facilitating shearing of snow from said surface, and said flange for said bottom panel extending forwardly from said bottom panel and terminating with a flange that is parallel and slightly below the plane of said bottom panel to form a leading edge of said scoop body.

4,193,627
LIFTING HOOK WITH SAFETY LATCH

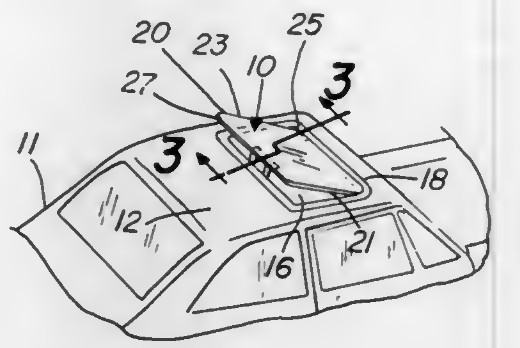
Albert W. Cranston, Oregon City, and William J. Rowell, Clackamas, both of Oreg., assignors to Cranston Machinery Co., Inc., Oak Grove, Oreg.
Filed Jul. 10, 1978, Ser. No. 922,831
Int. Cl.^{2} B66C *1/36*
U.S. Cl. 294—82 R **5 Claims**

1. A lifting hook comprising a shank portion having a lifting connection in one end thereof, a hook portion on the other end of said shank portion projecting from one side of said shank portion, a safety latch arranged to close the gap between said shank and the point of the hook, an elongated handle rigidly mounted at one end on the opposite side of said shank, and a latch release member, said latch release member comprising a flexible tension member suspended between the opposite end of said handle and said shank portion and extending along said handle in spaced relation to a gripping portion of said handle so that an operator can grasp the handle alone to manipulate the hook without releasing the latch or can include said tension member in his grasp of the handle to release the latch while manipulating the hook.



4,193,628
BAYONET STRUCTURE FOR DETACHABLE SUNROOF

Norman L. Sorensen, Detroit, Mich., assignor to Wisco Corporation, Ferndale, Mich.
Continuation-in-part of Ser. No. 820,105, Jul. 29, 1977. This application May 25, 1978, Ser. No. 909,386
Int. Cl.^{2} B60J *7/08*
U.S. Cl. 296—137 B **6 Claims**



1. A removable, transparent panel for the roof of a vehicle, said panel having a hinged edge and an opening edge;

said opening edge having a separable fastener for joining said opening edge of said panel to a section of a frame extending about an opening in said roof;

said separable fastener having a handle member supported to the underside of the panel adjacent an edge thereof, said handle member being adapted for motion between a first position, wherein said opening edge of said panel adjacent to said handle member is forced into engagement with said frame, and the second position, wherein said opening edge is spaced with respect to said frame, said handle member being separable from said frame;

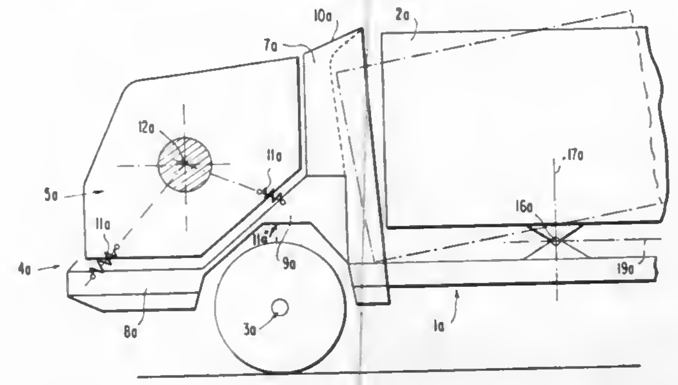
said hinged edge having bayonets which are attached to said hinged edge at one end, while the other ends of said bayonets pivot against a recessed section on said frame;

each of said bayonets having at said other ends an upright projection cooperating with said recessed section to hold each bayonet in hinged contact with said frame for a predetermined amount of rotation; and

said one end and said other end of said bayonets being connected by a bottom wall, said bottom wall being reinforced along each edge by a pair of upright walls, said upright walls having a maximum height near said one end and tapering toward said other end, said upright walls being spaced apart from said one end.

4,193,629
TRUCK WITH DRIVER CAB

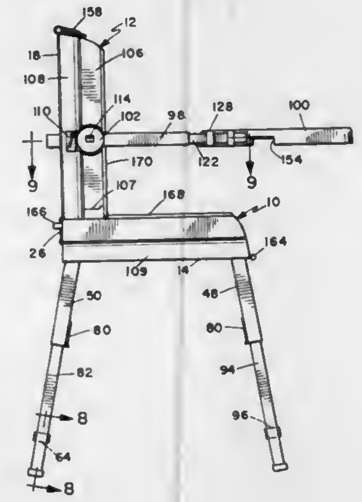
Josef Merkle, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 19, 1978, Ser. No. 897,693
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717661
Int. Cl.^{2} B62D *25/00, 35/00*
U.S. Cl. 296—190 **30 Claims**



1. In a truck of the type having a driver cab resiliently mounted upon a vehicle frame, said driver cab having an operator's compartment having at least one seat in addition to control and operating elements, the improvement wherein said driver cab resiliently mounted on said frame comprises an operating unit, containing essentially only said operator's compartment, and a receiving unit containing any driver's cab mounted auxiliary units in the nature of wind deflectors, engine accessories and the like, and wherein said operating unit is elastically suspended upon said receiving unit for independent movement relative thereto.

4,193,630
SELF CONTAINING COLLAPSIBLE HIGH CHAIR

Blake H. Steele, 323 Westlake St., Cartago, Calif. 93520
Filed Sep. 5, 1978, Ser. No. 939,279
Int. Cl.^{2} A47C *4/00*
U.S. Cl. 297—17 **13 Claims**



1. A self-containing collapsible high chair, comprising:

a hollow seat having an open lower side;

a hollow back having an open rear side;

the lower portion of said seat and the rear portion of said back having corresponding interfitting peripheral edges;

hinge means connecting said back to said seat for movement between an erected position with the back substantially upright on the upper rear portion of the seat, and a closed position with the seat and back joined at said interfitting edges and forming a closed case;

a pair of front legs and a pair of rear legs having hinged connections to said seat to move between an extended position inclined outwardly from the seat and a retracted position within the hollow seat;

each of said hinged connections including a support member fixed to the seat and a bearing block pivotally mounted on the support member on an axis extending substantially from front to rear of the seat, each one of the legs being pivotally attached to one of the bearing blocks on an axis perpendicular to the pivotal axis of the bearing block;

each of said legs having a telescopic lower portion;

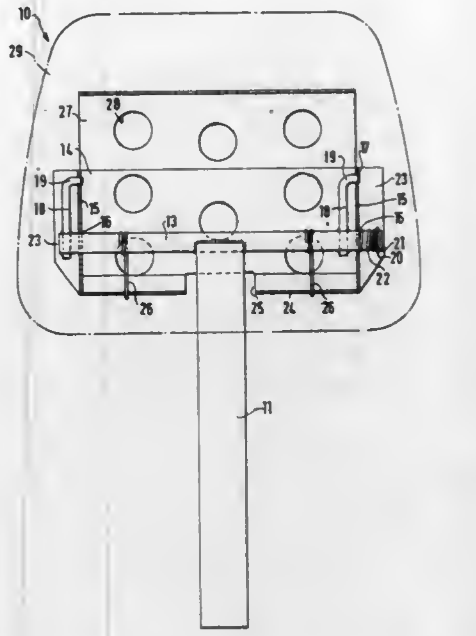
a cross brace secured between the telescopic portions of each pair of legs and being adjustable to hold the legs apart in the extended position and to hold the legs in substantially parallel position for retraction into the seat;

arms adjustably mounted on said back and extending forwardly therefrom above the seat; and

a tray detachably secured to said arms.

4,193,631
HEAD/NECK SUPPORT FOR VEHICLE SEATS

William J. Hobley, Coventry, and William I. M. Rollason, Balsall Common, Nr. Coventry, both of England, assignors to Chrysler United Kingdom Limited, London, England
Filed Mar. 23, 1978, Ser. No. 889,546
Claims priority, application United Kingdom, Mar. 25, 1977, 12764/77
Int. Cl.^{2} A47C *1/10*
U.S. Cl. 297—408 **10 Claims**

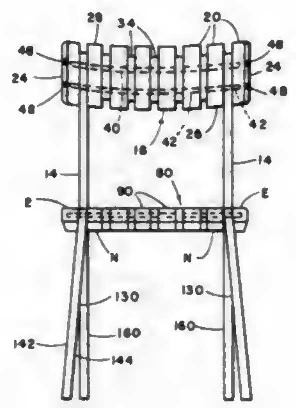


1. A head/neck support for a vehicle seat having a seat back comprising a post for mounting on the seat back, a spindle fixed to one end of the post and extending tranversely to the post, a head/neck rest having a rigid supporting frame including a pair of spaced walls provided with holes which receive and mount the frame on the spindle for rotational movement with respect to the spindle and for free axial sliding movement of the frame along the spindle, each of said walls having a plurality of apertures spaced in an arc around the spindle hole, two pins fixed to and extending radially of the spindle at spaced locations along the spindle and having projecting detents at their radially outer ends facing in one direction along the spindle to engage in selected apertures in the two respective walls of the rigid supporting frame to hold the frame against rotation and spring means acting between the frame and the spindle for biassing the frame along the spindle in a direction to hold the detents in engagement with the respective apertures in the walls, the head rest being adjusted by axial bodily movement of the frame along the spindle against the action of the spring means to release the detents from the apertures and then rotated to the required position and released to return the frame axially along the spindle and re-engage the detents with apertures in the walls corresponding to the new attitude of the head rest.

4,193,632

FURNITURE UNIT

B. Carson Russell, 12821 Marcy St., Omaha, Nebr. 68154
Filed Sep. 27, 1978, Ser. No. 946,122
Int. Cl.^{2} A47C *1/12*
U.S. Cl. 297—446 **18 Claims**



1. A furniture unit comprising a substantially horizontal supporting surface assembly having spaced substantially parallel elongated slats,

spacers disposed between and holding apart adjacent ones of said slats,

some of said spacers being short-spacers as measured vertically,

other ones of said spacers being legs and longer vertically than said short-spacers,

said legs comprising first and second pairs of legs downwardly extending from said supporting surface and disposed one pair adjacent each end of certain ones of said slats whereby one pair of legs define right legs and the other pair of legs define left legs,

said first legs being disposed opposite each other on a first line transverse to said slats,

said second legs being disposed opposite to each other along a second line transverse to said slats,

said second legs being spaced along said slats from said first legs,

said short-spacers defining first and second short-spacers disposed between the legs of said first and second pairs of legs respectively,

first and second pairs of elongated connectors extending through said first and second pairs of legs respectively and also extending through said first and second short-spacers respectively,

the two connectors of each of said pairs of legs being spaced apart laterally of each other,

said legs and said short-spacers having horizontally extending holes extending transversely therethrough receiving said connectors respectively.

4,193,633

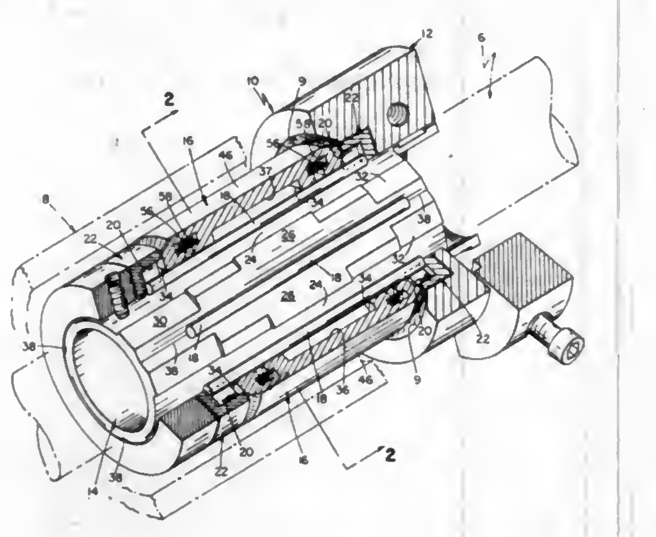
CORE CHUCK

Blaine Potter, Sharon, Mass., assignor to Double E Company, Inc., Brockton, Mass.
Filed Dec. 16, 1977, Ser. No. 861,451
Int. Cl.^{2} B23B *31/40*
U.S. Cl. 279—2 R **14 Claims**

10. In a core chuck comprising an interior member having a longitudinal axis, n jaws generally surrounding the interior member, a plurality of circumferentially-spaced rollers radially intermediate the jaws and the interior member, and a plurality of camming surfaces projecting radially inwardly from said jaws and radially outwardly from said interior member, said rollers engaging said camming surfaces, that improvement wherein:

each of said camming surfaces is defined by moving a straight line which extends parallel to the axis of the interior member simultaneously radially and circumferentially such that the surface thus defined is convex outwardly relative to said longitudinal axis;

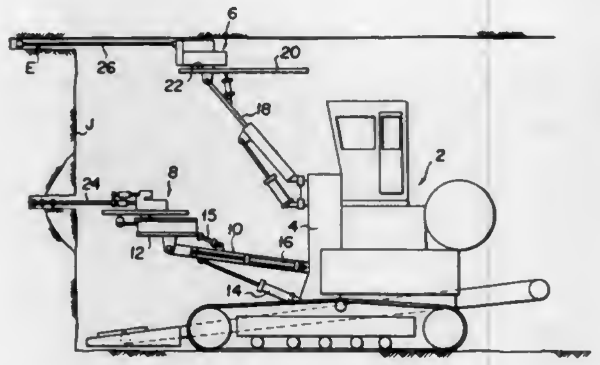
each of said jaws defines at least one said interior camming surface; and, said interior member defines at least n circumferentially spaced said exterior camming surfaces.



4,193,634

METHOD AND APPARATUS FOR EXCAVATION

Joji Nakamura, Kamakura, and Kihachiro Furumi, Hiratsuka, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Dec. 5, 1977, Ser. No. 857,755
Int. Cl.^{2} E21C *25/60*
U.S. Cl. 299—17 **13 Claims**



1. A method of excavating a tunnel, shaft, channel or the like comrising the steps of:

(a) digging a hole in a rock bed or in the ground;

(b) inserting a rod of a fracturing apparatus in said hole, said rod having a communication hole formed therein in the axial direction, nozzle means formed at the leading end thereof and sealing means positioned both ahead of and behind said nozzle means, said fracturing apparatus having a water reservoir and a hydraulic booster;

(c) allowing pressurized water to spout from said nozzle means in the form of water jet so as to produce annular grooves in said hole impinged by the water jet, the pressurized water being introduced into said nozzle means from said water reservoir through said communication hole by the action of said hydraulic booster;

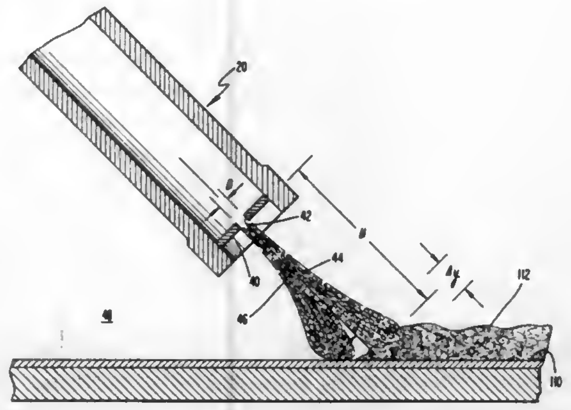
(d) sealing a space around said nozzle means radially defined by the outer periphery of said rod and an inner peripheral wall of said hole and axially defined by said sealing means positioned ahead of and behing said nozzle means; and

(e) spouting pressurized water from said nozzle means into said space thereby making a crack in said rock mass, said crack being started from said annular grooves in said hole, the water pressure of this step being less than that of step (c) so that the rock mass can be fractured along said crack by continuously spouting pressurized water into said space.

4,193,635

CONTROLLED CAVITATION EROSION PROCESS AND SYSTEM

Alagu P. Thiruvengadam, 10509 William Tell La., Columbia, Md. 21044, and Ambrose A. Hochrein, Jr., 18521 Kilt Ter., Olney, Md. 20832
Filed Apr. 7, 1978, Ser. No. 894,557
Int. Cl.^{2} E21C *25/60;* B08B *3/12*
U.S. Cl. 299—17 **17 Claims**



1. A method of selectively removing material from a solid body comprising the steps of:

positioning an orifice of a predetermined size at a distance from the material to be selectively removed;

generating a fluid flow through the orifice such that the cavitation number at the orifice exceeds the cavitation inception number for that orifice and such that a submerged cavitating flow field having bubbles is established in a body of the fluid between the orifice and the material to be removed;

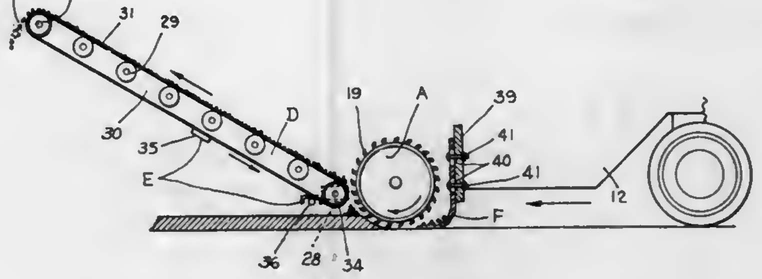
adjusting the flow velocity through the orifice to provide a selected cavitation intensity that exceeds the threshold erosion intensity of the material to be selectively removed; and

allowing the bubbles to collapse adjacent to the material to be removed to selectively loosen and remove the material.

4,193,636

ASPHALT PAVING PLANER WITH CONVEYOR FORWARDLY OF CUTTING DRUM

Herbert E. Jakob, 8 Pritchard La., Taylors, S.C. 29687
Filed Jul. 10, 1978, Ser. No. 922,962
Int. Cl.^{2} E01C *23/09*
U.S. Cl. 299—39 **6 Claims**



1. A self-propelled wheeled apparatus including a chassis for removing a thickness of asphalt paving and the like drivable in a forward direction comprising:

a drum having spaced cutting elements thereon rotatably carried by said chassis extending below and in longitudinal alignment therewith;

means carried by said chassis for driving said drum;

a power operated conveyor having a charging point ahead of said drum in alignment therewith and adjacent thereto for receiving asphalt cuttings from said drum and the cutting elements carried thereby;

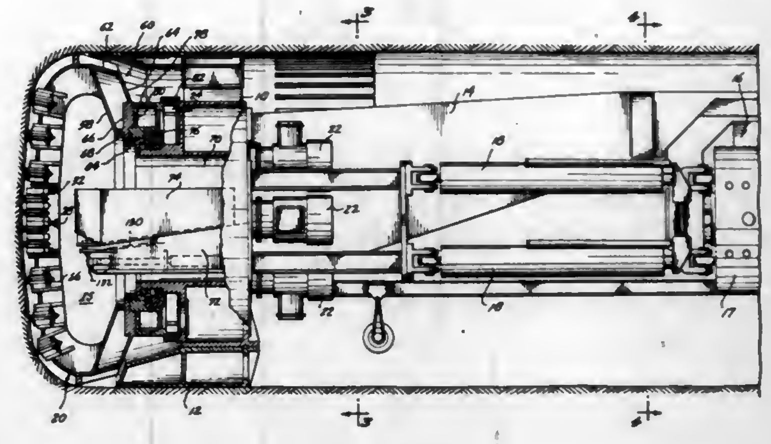
means carrying said conveyor so as to extend upwardly and forwardly from said drum so as to discharge said cuttings into a truck moving forwardly in front of said wheeled apparatus; and

a vertically adjustable scraper means carried adjacent said drum on a side of said drum opposite said conveyor.

4,193,637

ROTARY CUTTERHEAD FOR AN EARTH BORING MACHINE

Barry A. Spencer, Redmond, Wash., assignor to The Robbins Company, Seattle, Wash.
Filed Aug. 7, 1978, Ser. No. 931,384
Int. Cl.^{2} E21C *25/16*
U.S. Cl. 299—56 **13 Claims**



1. A main frame for a rotary cutterhead of an earth boring machine, said main frame comprising:

an annular box beam by which the cutterhead is mounted onto an earth boring machine, for rotation about an axis of rotation;

a box-like hub structure comprising peripheral wall means defining a center space;

a plurality of radial spoke beams having inner ends which are integrally connected to the peripheral wall means of the hub structure and outer ends which are integrally connected to the annular box beam, each said radial spoke beam comprising a pair of spaced apart side plate members;

roller cutter mounts within said radial spoke beams comprising wall members which extend transversely of the radial spoke means and are integrally connected at their ends to the spaced apart side plate members, to also function as structural brace members for the radial spoke beams;

wherein the cutter mounts are adapted for installation and removal of roller cutters from the rear side of the cutterhead, and

wherein said main frame is configured to provide an interior space for a workman which is large enough to provide room for installation and removal of roller cutters from behind the cutterhead.

4,193,638

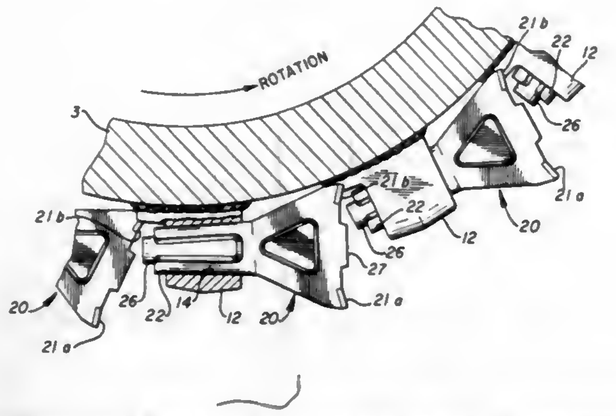
MULTIPLE TIP CUTTING BIT FOR ROTARY DRUM-TYPE CUTTER

William G. Heckenhauer, Bucyrus, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.
Filed May 12, 1978, Ser. No. 905,616
Int. Cl.^{2} E21C *35/18*
U.S. Cl. 299—89 **7 Claims**

1. A multiple tip cutting bit, for a rotary drum-type cutter laced with bit holders each of which has a tapered socket extending generally tangential to the drum surface, comprising:

a tapered shank adapted to seat snugly in the matching socket of one of the bit holders; and

a head integrally joined to the shank and having at least two diverging walls extending away from the shank, the divergent ends of said walls forming a face lying in a plane perpendicular to the centerline of the shank and having a cutting tip at the outer edge of each divergent wall, wherein said cutting tips are symmetrically and equidistantly spaced about the projected centerline of the shank, and

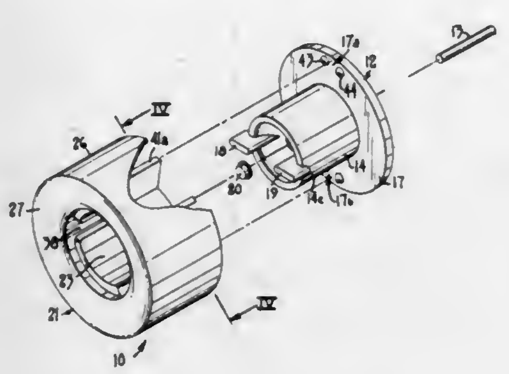


wherein the shank has a cross-sectional shape corresponding to the pattern formed by said cutting tips such that the bit can be indexed in its holder to place any selected one of said cutting tips in the operative position where it alone will come in contact with the workpiece as the cutter rotates.

4,193,639
MOUNTABLE WHEEL FOR TOY VEHICLE

Ronald R. Pauly, Mound; Thomas W. Good, Long Lake; John D. Hastings, Eden Prairie, and Kevin D. Ryan, Minneapolis, all of Minn., assignors to Tonka Corporation, Spring Park, Minn.

Filed Apr. 21, 1978, Ser. No. 899,102
Int. Cl.^{2} B60B *5/02;* **A63H** *17/26*
U.S. Cl. 301—9 DH **8 Claims**



1. An easily mountable and demountable wheel for use on toy vehicles, said wheel comprising:

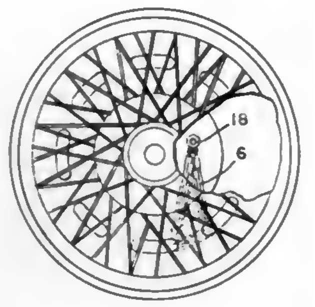
a. first wheel hub means adapted for rotatable mounting on an axle, said first wheel hub means including a cylindrical portion, a resilient, radially-extending disc-like portion disposed at one end of said cylindrical portion and laterally-extending flange means disposed at the other end of said cylindrical portion, said laterally-extending flange means being axially aligned with said cylindrical portion, said disc-like portion including first snap lock means; and

b. second wheel means having a portion simulating a tire, said second wheel means having a cylindrical opening defined therein for reception of the cylindrical portion of said first wheel hub means, said opening including recessed portions through which said flange means may axially move when mounting and demounting said second wheel means from said first wheel means, said second wheel means including second lock means for cooperation with the first lock means to prevent unintended rotation of said second wheel means with respect to said first wheel means, whereby said second wheel means may be held on said first wheel means entrapped between said flange means and said disc-like portion.

4,193,640
HUB CAP LOCKING DEVICE

Sylvanus B. Jones, Jones' Hill - 16 Bausum Dr., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 852,815, Nov. 11, 1977, abandoned. This application Nov. 8, 1978, Ser. No. 958,803
Int. Cl.^{2} B60B *7/00*
U.S. Cl. 301—37 AT **1 Claim**

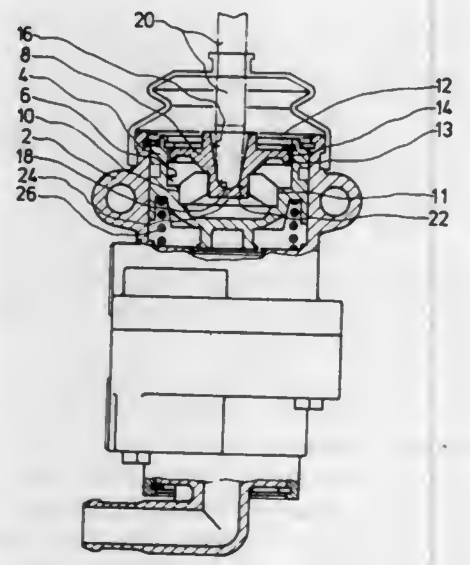


1. A hub cap locking device used to secure hub caps to the wheel adapters of vehicles comprising a metallic linkage enclosed in a protective flexible cover having a locking disc on each end with an aperture in the center of said disc to accommodate one bolt of a plurality of bolts on said wheel adapter and having affixed to both ends of said cable and overlapping said disc a metallic latch slidably mounted on a small metallic rectangular plate; said plate having flanges to retain said latch; said latch having a small rectangular aperture through its center through which is mounted to the said small rectangular plate a circular-flare headed locking screw the mounting of the latch being such that a bevelled edge of the said sliding latch can be guided tightly between the threads of said bolt on the wheel adapter and the locking screw can then be turn to lock said sliding latch against the said small rectangular plate whereby both said locking discs of the hub cap locking device can be secured to the said bolt on the wheel adapter after the hub cap locking device has been threaded through apertures of the inner rim of the hub cap or has been threaded through a hooked apparatus on the hub cap having sufficient length and flexibility in movement to allow the hub cap to be affixed securely to the rim of the wheel of the vehicle.

4,193,641
BRAKE VALVE

Erich Reinecke, Beinhorn, Fed. Rep. of Germany, assignor to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 924,279
Int. Cl.^{2} B60T *17/00*
U.S. Cl. 303—50 **3 Claims**



1. A brake valve device comprising:

(a) a casing;

(b) a valve-actuating piston axially spring-biased in one direction in said casing toward a limit position and having a coaxial stepped bore therein having a closed end oppositely disposed to an open end thereof;

(c) an annular spring seat member coaxially slidably disposed in a larger-diameter portion of said stepped bore adjacent the open end thereof;

(d) an annular spring member coaxially compressibly disposed within said valve-actuating piston with one end resting against an annular shoulder formed in said bore adjacent the closed end thereof,

(e) said spring seat member having an axial extension extending from a lower side thereof through a concentric opening in said spring member toward said closed end of said bore and having an annular shoulder against which the other end of said spring member rests to form an annular juncture therewith,

(f) spring seat member also having formed coaxially therein a funnel-shaped recess with the smaller-diameter end thereof forming a spherically-shaped bottom extending into and formed in said axial extension below said annular juncture;

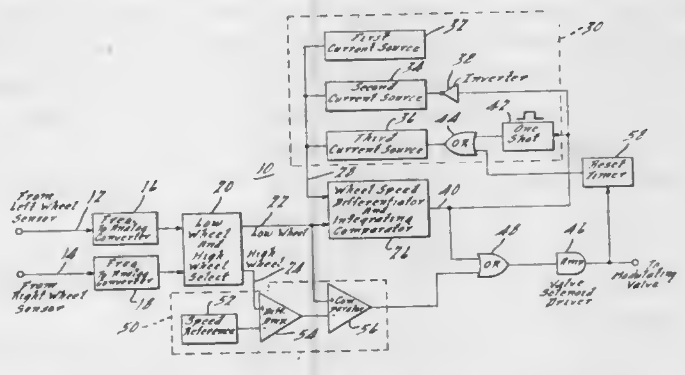
(g) an axially movable push rod extending into said funnel-shaped recess with a free end thereof resting against said spherically-shaped bottom thereof for applying actuating force to said spring seat member for effecting axial movement of said actuating piston through said spring member; and

(h) an annular guide flange formed on the end of said valve seat member opposite said axial extension for guiding movement of the valve seat member in said bore, said guide flange having a spherically-shaped peripheral surface for facilitating movement thereof against the wall of said bore.

4,193,642
SKID CONTROL SYSTEM

Roger L. Miller, Ann Arbor, Mich., assignor to Kelsey Hayes Co., Romulus, Mich.

Continuation of Ser. No. 482,449, Jun. 24, 1974, abandoned. This application Jan. 13, 1976, Ser. No. 648,786
Int. Cl.^{2} B60T *8/08*
U.S. Cl. 303—97 **35 Claims**



1. A skid control system for a vehicle having at least one wheel and a brake for said wheel comprising:

wheel deceleration detecting means for providing a current representative of the deceleration of at least one wheel;

reference generating means for generating a reference current of a first predetermined magnitude to represent a first rate of decline of said wheel speed including means for altering the magnitude of said reference current in response to an output signal to a reference current of a second predetermined magnitude to represent a second rate of decline of said wheel speed so that said reference current of said first and second predetermined magnitudes represents a predetermined wheel deceleration profile having said first and second rates of decline of said wheel speed;

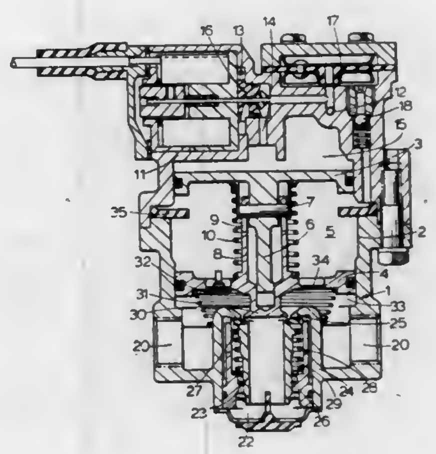
comparator means for comparing said current representative of wheel deceleration and said reference current for providing said output signal upon the attainment of a predetermined relationship therebetween to cause said reference generating means to alter the magnitude of said reference current, said comparator means subsequently comparing said current representative of said wheel deceleration and said reference current of said first and second predetermined magnitudes for providing a subsequent output signal upon the attainment of said predetermined relationship between said current representative of wheel deceleration and said reference current of said first and second predetermined magnitudes, said comparator means being responsive to the degree that said current representative of wheel deceleration and said reference current depart from said predetermined relationship therebetween in a manner so as to be approximately responsive to the degree that the wheel deceleration departs from said predetermined wheel deceleration profile for terminating said further output signal; and

brake modulating means operative with said comparator means so that said brake is not modulated responsive to the provision of said first-mentioned output signal but is modulated responsive to the provision of said subsequent output signal, said brake modulating means being further responsive to the termination of said subsequent output signal for terminating the modulation of the brake.

4,193,643
ANTI-SKID VEHICLE BRAKING SYSTEMS

Frederick J. Knight, Leamington Spa, England, assignor to Girling Limited, Birmingham, England

Filed Jul. 13, 1978, Ser. No. 924,298
Claims priority, application United Kingdom, Jul. 13, 1977, 29335/77
Int. Cl.^{2} B60T *8/02*
U.S. Cl. 303—118 **7 Claims**



1. A fluid-pressure operated anti-skid braking system for a vehicle comprising a wheel brake, a supply of operating fluid for actuating said brake, fluid-flow control means interposed between said supply and a connection to said brake and through which said operating fluid is supplied to said brake, means responsive to a skid signal for operating said valve means to relieve the brake pressure of said fluid supplied to said wheel brake at a skid point when the skid signal exceeds a predetermined value, a housing, and means in said housing defining a memory chamber for storing a memory pressure dependant upon a brake pressure occurring at said skid point to provide a changeover point between first and second stages of brake re-application, said first stage comprising the re-application of said operating fluid from said supply until an intermediate pressure less than the pressure at said skid point is attained at the changeover point, and said second stage comprising the continued re-application of said supply of operating fluid at a reduced rate of pressure increase, wherein said memory pressure is utilised to determine the magnitude of a force for operating said control valve means itself during said first and second successive stages of brake re-application, and wherein a movable wall in said housing defines at least a part of said memory chamber and is operatively connected to said valve

means, said movable wall having a first side which is exposed at all times to pressure in said memory chamber and a second opposite side which is exposed to said connection to said brake.

4,193,644
SERVO CONTROL SYSTEM

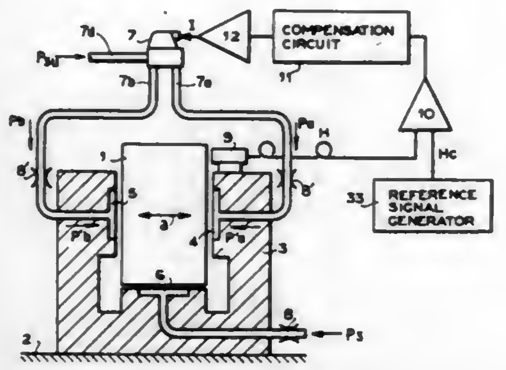
Masakazu Miyashita, Kokubunji, and Akira Kanai, Higashiyamato, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1978, Ser. No. 890,908

Claims priority, application Japan, Apr. 7, 1977, 52-39738; Apr. 26, 1977, 52-48028

Int. Cl.² F16C *35/00*

U.S. Cl. 308—9 **6 Claims**



1. A servo control system with closed loop control means for correcting a displacement of a member caused by an external force, said system comprising:

(a) base means as a foundation;

(b) supporting means secured to said base means for supporting said member;

(c) first and second hydrostatic pads provided on said supporting means for hydrostatically supporting said member with said supporting member;

(d) a displacement detector detecting an amount of the displacement of said member relative to said supporting means and transmitting a position reading signal;

(e) a reference signal generator generating a reference position signal;

(f) a differential amplifier connected to said displacement detector and said reference signal generator for transmitting a difference signal between said position reading signal and said reference position signal;

(g) servo amplifier connected to said differential amplifier for amplifying said difference signal of said differential amplifier; and

(h) a servovalve supplying an operating pressure corresponding to said difference signal delivered from said differential amplifier to said first and second hydrostatic pads.

4,193,645
PLAIN BEARINGS

Dennis S. Baker, High Wycombe, and Glyndwr J. Davies, London, both of England, assignors to Glacier Metal Company, Limited, Middlesex, United Kingdom

Continuation of Ser. No. 736,337, Oct. 28, 1976, abandoned, which is a division of Ser. No. 620,754, Oct. 8, 1975, Pat. No. 4,015,949, which is a continuation of Ser. No. 402,334, Oct. 1, 1973, abandoned. This application Oct. 10, 1978, Ser. No. 950,052

Claims priority, application United Kingdom, Jun. 13, 1973, 28054/73; Jul. 4, 1973, 31969/73; Aug. 30, 1973, 40801/73

Int. Cl.² F16C *9/00*

U.S. Cl. 308—23 **2 Claims**

1. In a plain bearing for use in an internal combustion engine, which is lubricated with a lubricant consisting of an oil, the improvement which comprises a steel backing having adhered thereto a soft bearing layer of an alloy selected from the group consisting of copper/lead, lead/bronze, aluminum/tin and aluminum/silicon, and having adherent on said bearing layer a protective overlay of polyphenylene sulfide.

4,193,646
FLYWHEEL WITH SPRING LOADED BEARING

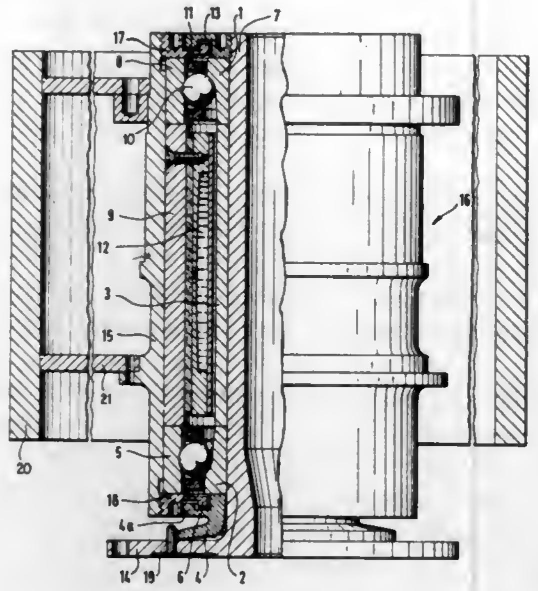
Gerhard Röckl, Gaiberg; Gerhard Nieder, Walldorf, and Hans-Holger Schulz, Neckarsteinach, all of Fed. Rep. of Germany, assignors to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,448

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1976, 2652846

Int. Cl.² F16C *33/80, 35/00, 39/02*

U.S. Cl. 308—187.1 **4 Claims**



1. In a flywheel including a hub sleeve, a stationary core surrounded by the hub sleeve and a bearing unit having first and second ends and including axially spaced first and second rolling-element bearings situated at the first and second ends, respectively, of the bearing unit, each rolling-element bearing having an inner ring supported on the core and an outer ring in engagement with the hub sleeve; an inner spacer sleeve disposed between the inner rings and surrounding the core and an outer spacer sleeve disposed between the outer rings and surrounding the inner spacer sleeve and clamping means axially urging the inner rings against the inner spacer sleeve and the outer rings against the outer spacer sleeve with a predetermined axial force; the improvement comprising a radial terminal flange forming part of said core and being situated adjacent said second end of said bearing unit; and further wherein the improvement in said clamping means comprises

(a) a first clamping arrangement for urging said outer rings against said outer spacer sleeve; said first clamping arrangement including

  (1) a first clamping ring threadedly held in an inner face of said hub sleeve at said first end of said bearing unit; said first clamping ring engaging said outer ring of said first rolling-element bearing;

  (2) a second clamping ring threadedly held in an inner face of said hub sleeve at said second end of said bearing unit; said second clamping ring engaging said outer ring of said second rolling-element bearing; and

(b) a second clamping arrangement for urging said inner rings against said inner spacer sleeve; said second clamping arrangement including

  (1) a third clamping ring threadedly held in an outer face of said core at said first end of said bearing unit; said third clamping ring engaging said inner ring of said first rolling-element bearing;

  (2) an axially yielding, relatively rigid spring element engaging said terminal flange and a radial face of said inner ring of said second rolling-element bearing; said spring element being substantially unyielding to said predetermined axial force and yielding to axial forces derived from vibrations imparted to said flywheel.

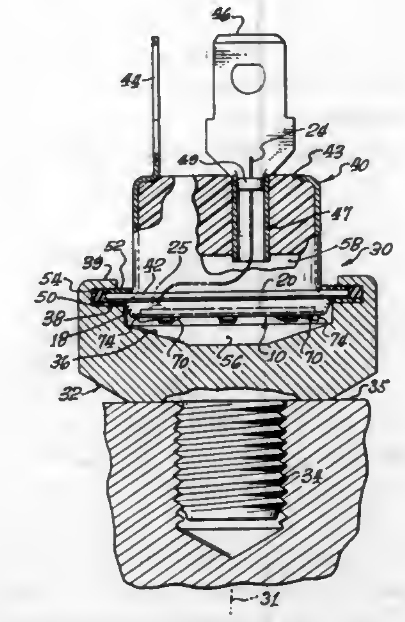
4,193,647
PIEZOELECTRIC CERAMIC TRANSDUCERS WITH UNIFORM RESONANT FREQUENCY

Joe F. Guess, Cedar Rapids, Iowa, and William J. Gastmeier, Stratford, Canada, assignors to Telex Communications, Inc., Minneapolis, Minn.

Filed Sep. 11, 1978, Ser. No. 941,024

Int. Cl.² H01L *41/10*

U.S. Cl. 310—324 **9 Claims**



1. Piezoelectric transducer including a diaphragm member having a central circular diaphragm portion carrying a concentrically mounted piezoelectric ceramic sensor, and having a peripheral portion adapted to be rigidly mounted on housing structure with the diaphragm portion and sensor free to vibrate in normal mode at a resonant frequency; characterized in that

the sensor diameter is variable from unit to unit within a predetermined range of diameters,

and said transducer includes means for locally stiffening the diaphragm member with respect to said normal mode of vibration at a limited annular zone which includes and is predominantly limited to the annular zone between the maximum and minimum diameters corresponding to said range of variability of said sensor,

the normal mode resonant frequency of the so stiffened diaphragm portion and sensor being substantially independent of said variations of sensor diameter.

4,193,648
MUSIC-BOX CASING

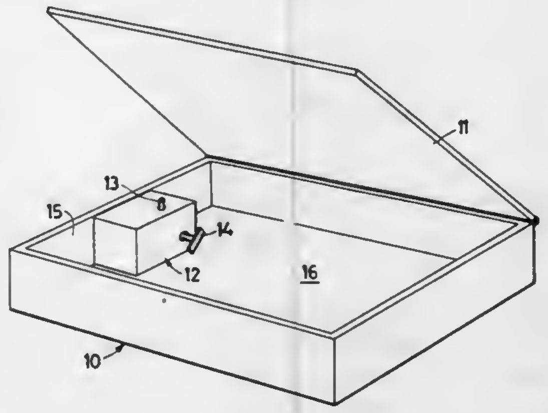
Antonio Gargiulo, Sorrento (Napoli), Italy

Filed Apr. 21, 1978, Ser. No. 898,881

Claims priority, application Italy, Apr. 22, 1977, 22730 A/77

Int. Cl.² A47B *81/06;* **G10F** *1/06*

U.S. Cl. 312—9 **4 Claims**



1. A music box casing assembly comprising: a mounting plate adapted to be fixed by fastening members to a vertical supporting surface; and a casing including an L-shaped base plate having a bottom wall for supporting a clock-work, music-producing mechanism and a rear wall, the rear wall and the mounting plate having complementary slidably engaged flanges and guideways such that the base plate is releasably connected to the mounting plate and may be removed therefrom by relative sliding movement, said casing further including a lid forming with the base plate a parallelepipedal box, the lid having holes therethrough for allowing passage of a starter pushbutton and a winding key of a music-producing mechanism and the lid and the base plate having complementary slidably engaged abutments and undercuts such that the lid is releasably connected to the base plate and may be removed therefrom by relative sliding movement.

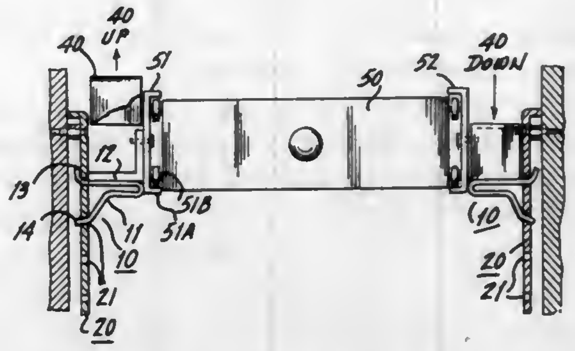
4,193,649
ANTI-TILT BRACKET AND CLIP ASSEMBLY FOR ADJUSTABLE DRAWERS OR SIMILAR ARTICLES

Zev Sharon, 1447 Kimberly Dr., Lakewood, N.J. 08701

Filed Jan. 22, 1979, Ser. No. 5,603

Int. Cl.² A47B *88/00;* **A47G** *29/02*

U.S. Cl. 312—346 **8 Claims**



1. A bracket and clip apparatus for slidable recessed drawers or similar articles comprising in combination:

(a) a surface bracket having a plurality of slots on a surface thereof, said slots separated one from the other by a predetermined distance,

(b) a clip and bracket assembly comprising a bottom portion having a first transverse projection for coacting with any given one of said slots in said bracket, said transverse projection extending from a medial region of said bottom portion with said medial region having a downward arcuate section terminating in a second projection located relatively in the same plane as said first projection to coact with another slot in said bracket with said medial region extending relatively transverse to said bracket when said projections are accommodated by said slots, an upstanding bracket flange rigidly secured to said medial region at a given distance from said first projection and adapted to support a slidable channel assembly,

(c) a counterbalance, member positioned about said upstanding flange and said surface bracket to prevent tilting of said clip and bracket assembly to thereby prevent said projections from inadvertently disengaging from said slots when said bracket flange is supporting a slidable channel assembly.

4,193,650
ADJUSTABLE SHELF DEVICE

James A. Gray, Edina, and Randall V. Lindfors, Minneapolis, both of Minn., assignors to Zero-Max Industries, Inc., Minneapolis, Minn.

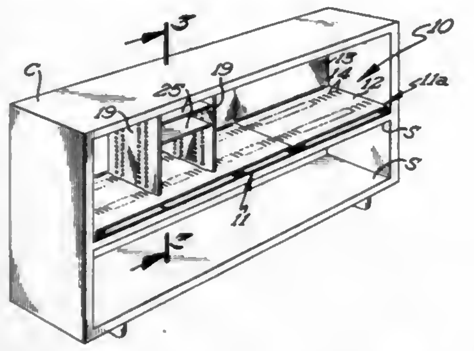
Filed Jul. 19, 1978, Ser. No. 925,949

Int. Cl.² A47B *45/00*

U.S. Cl. 312—205 **7 Claims**

1. A longitudinally, adjustable shelf device, comprising:

a pair of elongate shelf structures each including a horizontal shelf member and a vertical shelf member integral with a longitudinal edge of the associated horizontal shelf member and being disposed in substantially right angular relationship thereto, the horizontal and vertical shelf structure being disposed in overlapped relation respectively with the horizontal and vertical shelf members of the other shelf structure, each of said vertical shelf members having an offset portion extending longitudinally thereof, said offset portion of each vertical shelf member having a plurality of longitudinally spaced apart openings therein, said shelf structure being longitudinally adjustable relative to each other to thereby adjust the overall length thereof,



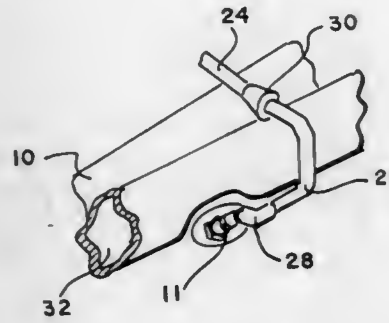
each shelf structure having a plurality of longitudinally spaced apart openings therein, each opening in the overlapped portion of one shelf structure being disposed in registering relation with an opening in the overlapped portion of the other shelf structure,

a plurality of substantially flat, rigid, vertical dividers each projecting into an opening in a vertical shelf member to orient each divider into vertical relation, and secure the latter to the shelf structure.

4,193,651

IGNITION WIRE IMPROVEMENTS

Bill J. Hays, 10582 Palladium Ave., Garden Grove, Calif. 92640
Filed Oct. 19, 1978, Ser. No. 952,851
Int. Cl.^{2} H01T *13/04*
U.S. Cl. 339—28 **6 Claims**



1. An ignition conductor for an internal combustion engine having hot surface protrudances adjacent to spark plugs which comprises an assembly of a spark plug terminal connector interconnected to a major length of a flexible, insulated, non-self-supporting conductor distally bearing a distributor terminal by a shorter length from 4 to about 16 inches of a malleable, self-supporting, solid core, insulated conductor formed into a self-supporting shape to pass about, in spaced-apart relationship, said hot surfaces.

4,193,652

CARPET SAMPLE DISPLAY CASE

Joseph E. Brown, Jr., Little Rock, Pulaski, Ark. 72202
Filed Jan. 4, 1978, Ser. No. 867,187
Int. Cl.^{2} A47B *81/00, 97/00*
U.S. Cl. 312—280 **17 Claims**

1. A carpet sample display case, comprising,

a body that is substantially rectangular in plan, and includes four upstanding walls arranged in two opposed pairs consisting of a pair of opposed side walls, and a front wall paired with a back wall, that define an upwardly open display space among them;

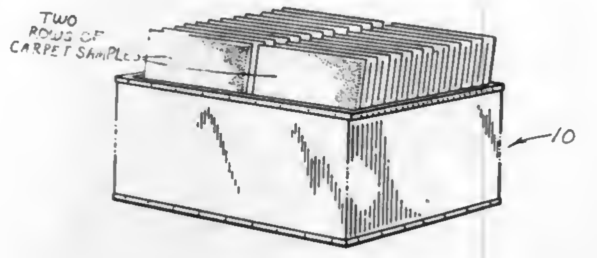
said walls having an upper edge extending perimetrically of the body;

a rectangular rim of reinforcing material mounted upon said upper edge and extending perimetrically of the body;

means securing said reinforcing rim in place upon said upper edge;

a plurality of substantially parallel partitions arranged in a front-to-back series in said display space so as to, with said upstanding walls, divide said space into a front-to-back series of upwardly open compartments, each for receiving at least one carpet sample for projection upwardly therefrom for more casual inspection and for free withdrawal by upward sliding from the respective compartment for more particular inspection;

means securing each partition in place with respect to the body;



the reinforcing rim being a metal fitting, generally of constant transverse section except at four sites where four lengths thereof are joined at respective corners;

the fitting in transverse section having at least one leg in facial confrontation with said four upstanding walls at the upper edge thereof;

the fitting having a second leg in facial confrontation with said four upstanding walls at the upper edge thereof, in opposition to said one leg, said upper edge being received between said one leg and said second leg;

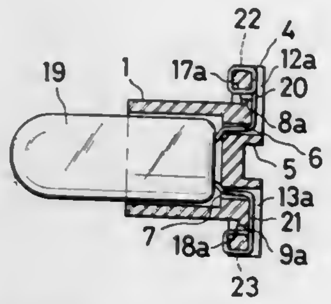
said means securing said reinforcing rim in place upon said upper edge comprising fasteners secured through the respective of said walls and both said legs; and

the same said fasteners also proceeding through means defining ears at opposite ends of each of said partitions and thereby providing said means securing each partition in place.

4,193,653

SOCKET FOR MOUNTING AN ELECTRIC LAMP ON A PRINTED CIRCUIT BOARD

Masanobu Aizawa, Yokohama, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Sep. 6, 1978, Ser. No. 940,158
Claims priority, application Japan, Jan. 20, 1978, 53-5271[U]; Jan. 20, 1978, 53-5272[U]; **Jan. 23, 1978, 53-6603[U]**
Int. Cl.^{2} H01J *5/50;* **H05K** *1/12*
U.S. Cl. 339—17 D **7 Claims**



1. An electric lamp socket for mounting an electric lamp having a plurality of lead wires on a printed circuit board having electrically conductive sections comprising:

a cylindrical drum having inner and outer walls and first and second ends, said first end defining a socket to receive said electric lamp, said second end comprising a flange portion having opposing front and rear surfaces, said front surface

of said flange portion facing the direction of insertion of said electric lamp into said socket, said flange portion having a plurality of holes therein which extend from said front flange surface to said rear flange surface;

a plurality of first projections on said front flange surface, each first projection being located between two of said holes extending through said front flange; and

a plurality of second projections on the outer wall of said cylindrical drum adapted to secure said printed circuit board between said second projections and said flange portion;

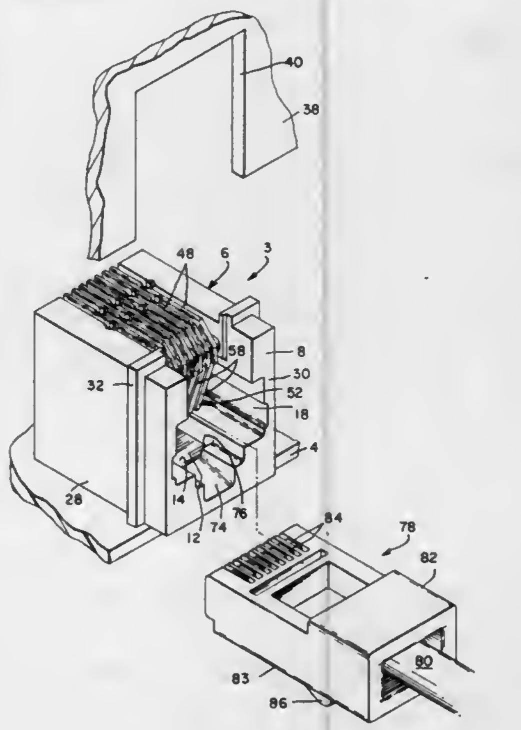
said holes being arranged such that upon insertion of said electric lamp into said socket, each of said plurality of lead wires thereof passes from said front flange surface to said rear flange surface through respective holes of said plurality of holes, said each of said lead wires then running along said rear flange surface and passing through other respective holes leading from said rear flange surface to said front flange surface, said lead wires each then passing over and on said respective first projections on said front flange surface, and then each lead wire being inserted into another of said holes leading from said front flange surface toward said rear flange surface, each of said lead wires then being bent back along said rear surface;

whereby upon mounting said electric lamp socket to said printed circuit board by securing said printed circuit board between said second projections and said flange portion, said lead wires are each forcibly electrically contacted with respective electrically conductive sections of said printed circuit board.

4,193,654

ELECTRICAL CONNECTOR RECEPTACLES

Donald W. K. Hughes, Mechanicsburg, and Ronald W. Myers, Landisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 940,536, Sep. 8, 1978. This application Dec. 7, 1978, Ser. No. 967,441
Int. Cl.^{2} H01R *13/54;* **H05K** *1/12*
U.S. Cl. 339—17 LC **7 Claims**



1. An electrical connector receptacle of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a plurality of electrical conductors in side-by-side spaced-apart relationship, each of said conductors comprising a contact spring extending from one of said internal sidewalls at a location adjacent to said plug-receiving end diagonally into said opening and towards the opposite internal sidewall, and each conductor having a lead portion extending from said plug-receiving end through said housing between said one internal sidewall and the adjacent external sidewall and towards said rearward end, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact spring portions of said conductors, said connector receptacle being characterized in that:

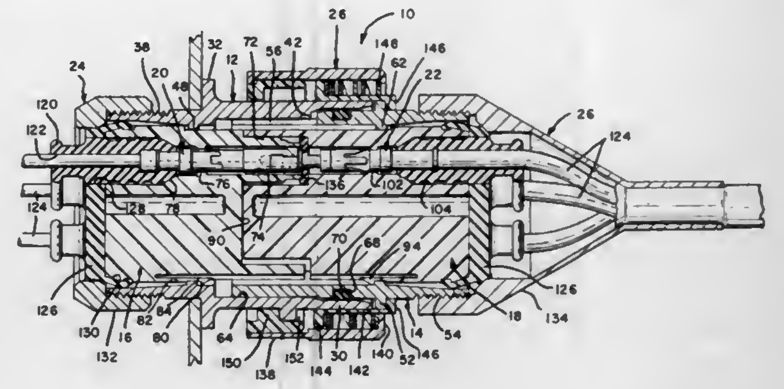
said adjacent external sidewall and said rearward end have a plurality of side-by-side channels therein, said channels in said rearward end being in alignment with said channels in said adjacent external sidewall, and

each of said conductors comprises a single elongated strip of stamped and formed sheet metal, an intermediate section of said strip being disposed in one of said channels in said adjacent external sidewall, said strip being bent at said rearward end and extending across said rearward end in one of said channels in said rearward end, said strip being reversely bent at said plug-receiving end and having a first end portion extending into said plug-receiving opening, a second end portion of said strip extending beyond the other one of said external sidewalls, said first end portion constituting said contact spring, said intermediate portion and said second end portion constituting said lead portion.

4,193,655

FIELD REPAIRABLE CONNECTOR ASSEMBLY

Henry O. Herrmann, Jr., Mt. Joy, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jul. 20, 1978, Ser. No. 926,581
Int. Cl.^{2} H01R *13/04, 23/02*
U.S. Cl. 339—31 R **13 Claims**



7. An environmentally sealed electrical connector member comprising:

a shell member of substantially cylindrical profile adapted to mate with a further shell member, said member having keying means and a profiled axial bore extending therethrough;

an insert member having an external profile adapted to be received within said profiled axial bore and a plurality of terminal receiving passageways extending therethrough, said insert member and said axial bore having polarizing means allowing mounting of said insert member in said axial bore with a member of predetermined orientations;

a like plurality of terminals each received in a respective passageway, each said terminal each having a mating portion, a mounting portion engagable in said passageway, and a conductor engaging portion and

means to environmentally seal the rear end of said shell including a boot member engaging each conductor leading to a respective terminal, a rear gasket engaging a rear portion of said insert and having a planar portion with a plurality of bores, each receiving one of said boots therein in sealing engagement, and an integral annular sleeve portion, and

compressive ring means engagable with the rear end of the shell and adapted to apply pressure to said gasket with said planar portion forming a first seal between said gasket and each said boot member, a second seal between said gasket and the respective compressive ring and said sleeve portion forming a third seal between said shell and the respective insert received therein;

interfacial seal means providing sealing between face portions of mating inserts; and

annular sealing means providing sealing between mating shells.

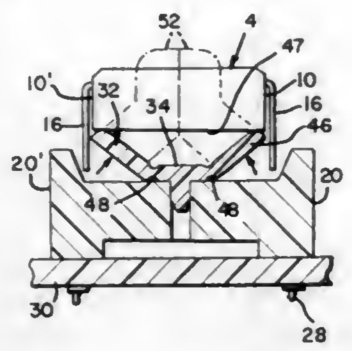
4,193,656
EXTRACTION DEVICE FOR EXTRACTING A DIP FROM A DIP HEADER

John A. Ward, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 20, 1978, Ser. No. 972,119

Int. Cl.^{2} H01R *13/62*

U.S. Cl. 339—45 M **9 Claims**



5. In combination with a DIP and a DIP header, a molded one-piece plastic extraction device for removing said DIP from said DIP header, said DIP comprising a rectangular body having a row of leads extending from each of two opposite side edges thereof normally of the plane of said body, said DIP header comprising an insulating housing having a DIP receiving surface having two rows of lead-receiving openings therein, said leads extending into said openings,

said extraction device comprising a normally flat rectangular member disposed between said DIP and said DIP receiving surface, said rectangular member having a width which is substantially equal to the width of said DIP and less than the distance between the rows of leads extending from said DIP, said member having movable portions which are arcuately movable away from said surface, said movable portions being symmetrically located with respect to said rows of leads whereby upon arcuate movement of said movable portions away from said DIP receiving surface, said DIP is moved normally of its own plane away from said DIP receiving surface,

said movable portions having projecting portions which extend beyond one end of said DIP and said DIP header, integral actuator lever means on said projecting portions, said actuator lever means being effective upon movement thereof to move said movable portions arcuately away from said DIP receiving surface whereby,

upon manipulation of said levers, said movable portions of said member move away from said DIP receiving surface and said DIP is pushed away from said header.

4,193,657
ELECTRICAL CABLE TERMINATION

Ralph W. Slone, 12615 S. Groveside, La Mirada, Calif. 90638

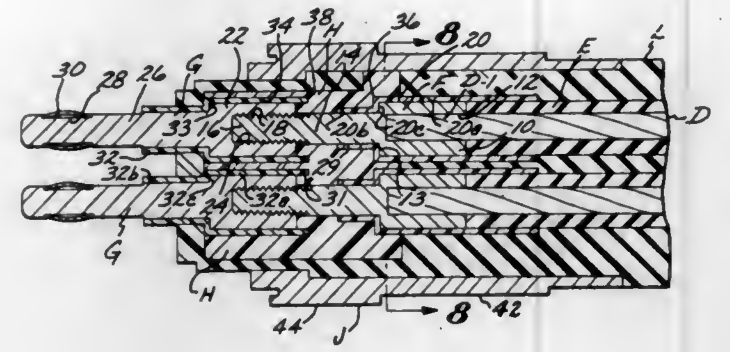
Filed Jul. 28, 1978, Ser. No. 929,039

Int. Cl.^{2} H01R *13/40, 21/02*

U.S. Cl. 339—63 M **3 Claims**

1. In combination with a multj-conductor metallic armored electric cable that has had the metallic armor removed from an end portion thereof to expose a plurality of spaced electrical conductors that are enveloped in separate electrical insulating covers that have end portions thereof removed to expose sections of the bare conductors, a termination for said armored electric cable, said termination including:

- a. a plurality of metallic connectors, each of said connectors including a first tubular rearward portion, an elongate first extension projecting forwardly from said rearward portion, said first rearward portion and first extension defining a first body shoulder at their junction, said first extension having external threads on a forward section thereof, and each of said connectors having one of said bare sections of one of said conductors inserted within said first rearward tubular portion and metalically bonded thereto;
- b. a plurality of metallic terminals, each of said terminals including an internally threaded second rearward portion, a second elongate extension projecting forwardly from said second portion and defining a second circular body shoulder at the junction therewith;
- c. a plurality of first electrical insulating tubular sleeves that are removably mounted on said connectors to envelop a part of said first extensions, all of said first rearward portions, and said first tubular sleeves extending rearwardly over said insulating covers rearwardly of said bared end sections;
- d. a plurality of second electrical insulating tubular sleeves that are removably mounted on said terminals to envelop a rearward part of said second extensions and all of said second rearward portions;



- e. a retainer formed from an electrical insulating material that has a plurality of circumferentially spaced, parallel sets of axially aligned bores and counterbores therein that at their junctions define inwardly extending abutments, with each of said sets having one of said connectors and terminals and associated first and second sleeves partially disposed therein and held in a fixed longitudinal position in said retainer by said external threads on said first extension threadedly engaging said internal threads in said second tubular end to hold said first and second sleeves in pressure contact with said retainer;
- f. a metallic pot head that includes a tube that has a transverse flange secured to a forward end thereof, said tube having said retainer disposed therein with said second extensions of said terminals projecting forwardly from said flange;
- g. a generally cylindrical body of polymerized electrical insulating material that fills said tube and envelops said retainer and first and second sleeves and extends rearwardly to the forward edge of said metallic armor not removed from multi-conductor cable; and
- h. replaced metallic armor that envelops said body of electrical insulating material rearwardly of said tube, with said forward end of said replaced metallic armor bonded to a rearward portion of said tube and a rearward portion of said replaced metallic armor bonded to the forward portion of said metallic armor not removed from said multi-conductor metallic armored cable.

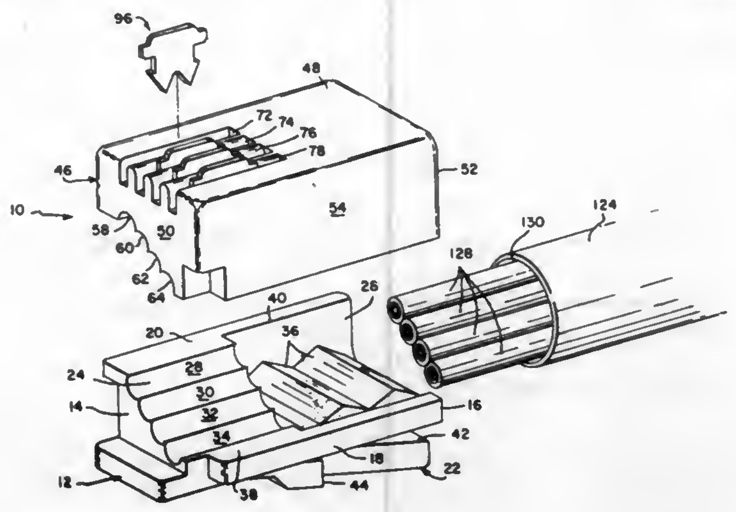
4,193,658
MODULAR TELEPHONE PLUG

Larry E. Dittmann; Robert M. Koch, both of Harrisburg; Van K. Webster, Camp Hill, and Edwin T. Harris, Middletown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 27, 1978, Ser. No. 900,468

Int. Cl.^{2} H01R *13/38*

U.S. Cl. 339—97 P **1 Claim**



1. A modular telephone plug formed from two separate components, comprising:

- a. a first component, molded from an insulating material, being generally rectangular with one side wall being longer than the opposite side wall, thereby providing an inclined surface, said inclined surface having a plurality of longitudinally extending grooves thereon, and a plurality of slots extending from the grooves to the surface opposite said inclined surface, said slots being adapted to receive insulated wire-piercing terminals therein; and
- b. a second component, molded from an insulating material, being generally rectangular with one side wall being longer than the opposite side wall, thereby providing an inclined surface, said inclined surface having a plurality of longitudinally extending grooves thereon, said first and second components being oriented so that upon bonding the two together to form said plug, the inclined surfaces are conformably mated with the respective grooves forming circular passageways adapted to contain telephone wires therein for termination by inserting insulated wire piercing terminals through said slots.

4,193,659
DEVICE FOR CONNECTING AN AUTOMOBILE HEADLAMP TO A PRINTED CIRCUIT

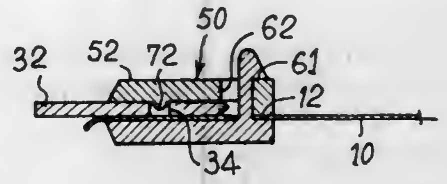
Alain Deverrewaere, La Varenne, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Oct. 4, 1978, Ser. No. 948,562

Claims priority, application France, Oct. 12, 1977, 77 30698

Int. Cl.^{2} H01R *13/54*

U.S. Cl. 339—17 D **9 Claims**



1. A connection device for ensuring the mechanical and electrical connection of an automobile headlamp, comprising at least one flat connecting pin, with a flexible printed supply circuit, comprising, for each pin of the lamp to be connected, a clip constituted by two homologous parts connected by a hinge and adapted to cooperate with each other along a plane of tightening, these two homologous parts comprising on their inner face means for positioning the pin inside the clip, means for retaining the printed circuit inside the clip, means for closing the clip ensuring its tightening so that the printed circuit is applied along the whole length of the pin of the lamp.

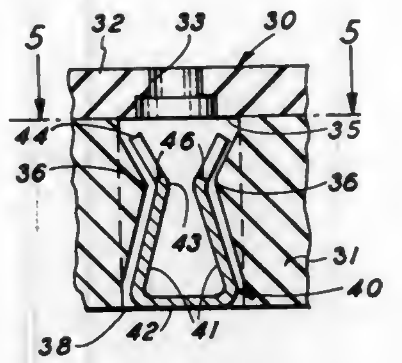
4,193,660
ELECTRICAL CONTACT ASSEMBLY

Frank C. Jaconette, Trumbull, Conn., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

Continuation-in-part of Ser. No. 875,212, Feb. 6, 1978, abandoned. This application Dec. 15, 1978, Ser. No. 969,730

Int. Cl.^{2} H01R *13/12*

U.S. Cl. 339—191 R **28 Claims**



1. A female electrical contact assembly having a contact pocket defined by a sidewall, a front end and a rear end, the front end having an opening therein for receiving a male contact, the pocket having a longitudinal axis and housing a female contact including a base member and at least one elongate contact arm having a rearward portion extending from the base member toward the front end of the pocket, the rearward portion of said contact arm being inclined inwardly from the base member toward said longitudinal axis to provide a region wherein electrical contact is made with the male contact inserted into the opening, a frontward portion of said contact arm diverging outwardly from the region to a position rearwardly of the opening for guiding the tip of the male contact into the region, wherein the improvement comprises; a contact arm abutment mounted on the pocket sidewall and having a part thereof opposite the contact arm and extending inwardly of said frontward portion thereof substantially in said region for restraining outward displacement of said contact arm, said frontward portion of said contact being open to pass said abutment part when the contact arm is inserted into the pocket through the rear end thereof with the frontward contact portion leading the rearward contact portion.

4,193,661
OPTICAL MULTICHANNEL COUPLER

Luigi d'Auria; Jacques Dubos, and Andre Jacques, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 24, 1978, Ser. No. 899,587

Claims priority, application France, Apr. 29, 1977, 77 12954

Int. Cl.^{2} G02B *5/16*

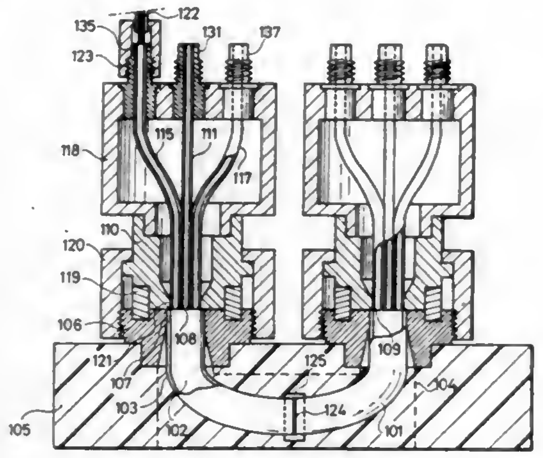
U.S. Cl. 350—96.16 **4 Claims**

1. A multichannel coupler for coupling a plurality of input optical fibers to a plurality of output optical fibers, which comprises:

a mixing fiber U-shaped for having its two ends substantially in a same plane, and divided into two parts; a cut substantially perpendicular to the axis of said mixing fiber separating said two parts, and two opposite surfaces ending respectively said two parts delimiting said cut; and at least one of said surfaces being ground with a grain size approximately equal to 9.5 μm;

a ring for holding end-to-end said two opposite surfaces and preventing extraneous foreign bodies from being introduced into said cut;

means for coupling said input optical fibers to one of said parts; and

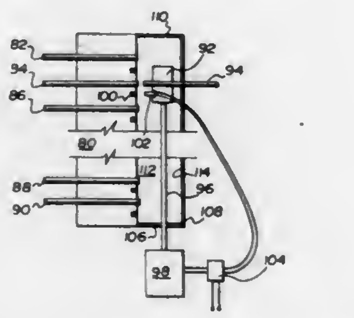


means for coupling said output optical fibers to the other of said parts.

4,193,662
BROADBAND SWITCHING SYSTEM UTILIZING OPTICAL FIBER WAVEGUIDES

Elmer H. Hara, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jul. 26, 1978, Ser. No. 928,123
Claims priority, application Canada, Aug. 9, 1977, 284353
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.15 **13 Claims**



1. An optical-fiber switch for use in switching a plurality of optical signals which are capable of being modulated with a broadband radio frequency signal, said switch comprising:

(a) a plurality of optical-fiber means for feeding respective optical signals to a plurality of fixed positions associated with respective optical-fiber means;

(b) a further optical-fiber means having one end which is movable between a plurality of selective positions adjacent and facing said plurality of fixed positions;

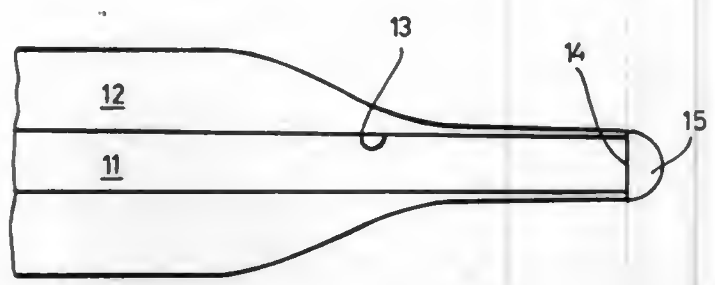
(c) driving means for moving said further optical-fiber means between said plurality of selective positions to selectively feed said optical signals between one of said plurality of optical-fiber means and said further optical-fiber means; and

(d) a plurality of light emitting positioning means each located adjacent a respective one of said plurality of fixed positions, and a light sensitive element adjacent said further optical-fiber means to receive light from said light emitting means, said light sensitive element being associated with said driving means to selectively align said further optical-fiber means with one of said fixed positions associated with respective said light emitting positioning means.

4,193,663
COUPLING-EQUIPPED LIGHT GUIDE

Christian Timmermann, Eschollbrucken, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 853,138, Nov. 21, 1977, Pat. No. 4,137,060, which is a continuation-in-part of Ser. No. 816,892, Jul. 18, 1977, abandoned. This application Nov. 16, 1978, Ser. No. 961,126
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.18 **12 Claims**

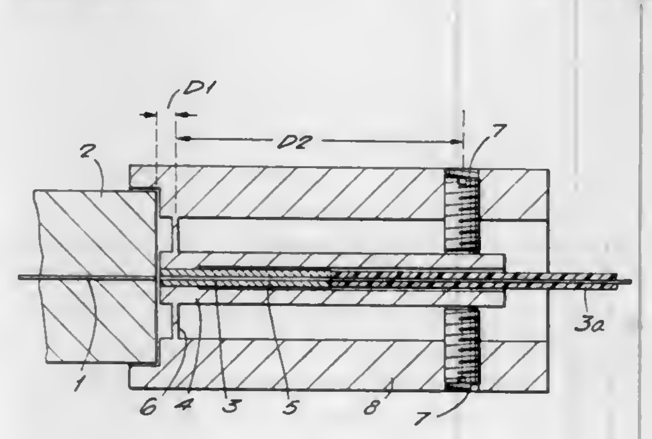


1. Filamentary light guide with a coupling to couple the light guide to a radiator, having a core (**11**) and a lensatic end comprising a light guide fiber (**11, 12, 13**) having a portion adjacent the end thereof in which the cross section of the light guide fiber is reduced to almost the core (**11**) and leaving an interface (**13**); and, as a separate element, an essentially semi-spherical lens (**15**) attached to the end surface of the light guide fiber, said lens having a cross-section shape adjacent the end of the fiber which is similar to the reduced cross section of the light guide fiber adjacent said end, and being of a material having a lower melting point that that of the filament.

4,193,664
OPTICAL FIBER CONNECTOR

George Ellwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 776,785, Mar. 11, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,249
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96.21 **4 Claims**



1. An optical fiber connector assembly comprising:

a first connector element adapted to have an optical fiber mounted therein with its end flush with an end face of said first element;

said first element having two longitudinally extending flats on its outer surface, said flats intersecting so as to define a V;

a second connector element adapted to have an optical fiber mounted therein and having an extension portion projecting toward said first element when said elements are to be mated;

said extension portion having a cut-away part with a V-shaped internally-contained recess so dimensioned as to snugly receive said V defined by said flats on said first element;

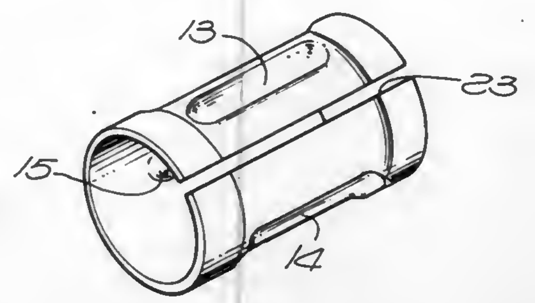
said second element also having latch means engaging said first element when said elements are mating with said V defined by said flats of said first element mounted in the V-shaped recess of said second element; and

fine adjustment means is provided on one of said elements for precisely laterally adjusting the fiber end thereof with respect to the fiber end of the other element.

4,193,665
FIBER OPTIC CONTACT ALIGNMENT DEVICE

Bruce K. Arnold, El Toro, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 1, 1976, Ser. No. 662,732
Int. Cl.² G02B *5/16*
U.S. Cl. 350—96.22 **3 Claims**



1. In a fiber optic cable connector, a device for effecting lateral alignment of a pair of abutting generally cylindrical fiber optic cable termination pins in light transmission relationship, comprising:

an elongated, generally tubular, relatively thin-walled, member having a mid-region and two end portions, said mid-region having not more than one longitudinally extending narrow slot therein whereby said mid-region has a substantially continuous perimeter, said end portions being each sized to receive a corresponding one of said pins, said pins being inserted therein and abutting within said mid-region;

termination pin alignment means comprising a plurality of resilient, radially, inwardly formed wall portions within said mid-region of said member defining a restricted bore therein, said wall portions being uniformly circumferentially spaced from each other, the transverse cross-section of said pins in said mid-region being greater than the cross-section of said restricted bore whereby said wall portions deflect radially outwardly when said pins are inserted in said restricted bore, the remaining perimeter of said member at said mid-region thereof being arranged and shaped to assume a position of compensatory deflection upon outward deflection of said wall portions, said inwardly formed wall portions thereby exerting resilient, radially inward forces against said pins, at least at the location of said abutting, causing said pins to be precisely laterally aligned; and

said inwardly formed wall portions being inwardly curved sides of said mid-region of said member, said mid-region being of generally triangular cross-section, the centers of the three sides thereof exerting inwardly directed alignment forces against said pins at least adjacent to said abutting location.

4,193,666
DISPLAY COLLIMATOR SYSTEM INCLUDING A STANDBY RETICLE ARRANGEMENT

Yves Cojan, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 12, 1978, Ser. No. 905,435
Claims priority, application France, May 17, 1977, 77 15050
Int. Cl.² G02B *27/02*
U.S. Cl. 350—174 **6 Claims**

1. A collimator system for a head-up display comprising: a device for displaying luminous objects on the screen of a cathode-ray tube;

an optical collimator assembly to project an image of said objects to infinity;

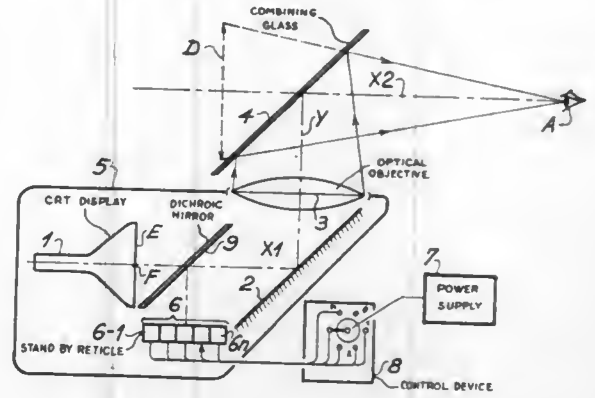
a semi-transparent combining glass to allow the image to be viewed superimposed on the external surroundings; and

a standby reticle arrangement comprising:

at least one reticle disposed laterally to the tube;

dichroic mirror means for transmitting to the optical assembly radiation coming from said screen of said tube and that coming from said standby reticle arrangement;

a power supply for supplying said standby reticle arrangement; and

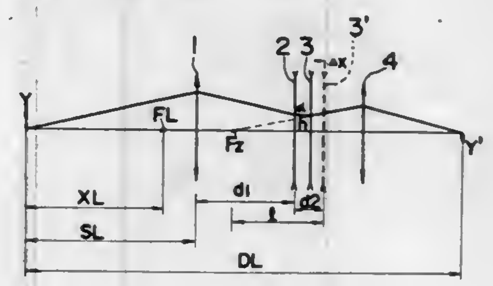


control means for selectively powering portions of said reticle arrangement to produce a corresponding reticle image which is moveable in a predetermined direction, said reticle arrangement being entirely static, and including a plurality of n elements which are juxaposed corresponding to said direction, said control means comprising a switch device having n positions coupling said supply to said n elements separately, each such element being of one and the same common shape representing a portion of said reticle to be projected, and each position of said switch corresponding to a predetermined position for said moveable image of said reticle in said shift direction.

4,193,667
ZOOM LENS SYSTEM CAPABLE OF CONSTANT MAGNIFICATION PHOTOGRAPHY

Mitsuo Yasukuni, Sakai; Toshinobu Ogura, Tondabayashi; Takanobu Omaki, Sennan, and Masahide Tanaka, Toyonaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 28, 1978, Ser. No. 937,276
Claims priority, application Japan, Sep. 1, 1977, 52-105764
Int. Cl.² G02B *15/17, 7/10*
U.S. Cl. 350—187 **8 Claims**



1. A zoom lens system capable of constant magnification photography comprising:

a variator lens group for varying the focal length of the lens system by the axial movement;

a compensator lens group for controlling the position of an image formed by the system by axial movement thereof;

first means for connecting the movement of the compensator lens group with that of the variator lens group in a first predetermined relationship so that the position of an image of a fixed object is maintained within a predetermined depth of focus during the variation of the focal length in a normal zooming mode of operation; and

second means for connecting the movement of the compensator lens group with that of the variator lens group in a second predetermined relationship so that the position of an image of a moving object is maintained within a predetermined depth of focus in response to any variation of the focal length to offset any change in magnification due to a change in the photographing distance of the moving object to provide a constant magnification photography mode.

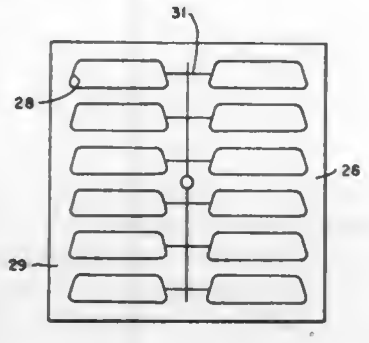
4,193,668
MIRROR CONSTRUCTION AND METHOD FOR MAKING THE SAME

James R. Skinner, Saratoga, Calif., assignor to M. U. Engineering & Manufacturing, Inc., Mountain View, Calif.

Filed Jun. 28, 1978, Ser. No. 920,139

Int. Cl.^{2} G02B *17/00*

U.S. Cl. 350—281 **8 Claims**



1. In a mirror construction, a transparent member formed of plastic having first and second planar surfaces, first and second transparent laminates formed of plastic film bonded respectively to said first and second surfaces of said member and providing outer plastic surfaces, a reflecting layer formed on one of said outer plastic surfaces and an abrasion resistant coating formed on the other of said outer plastic surfaces.

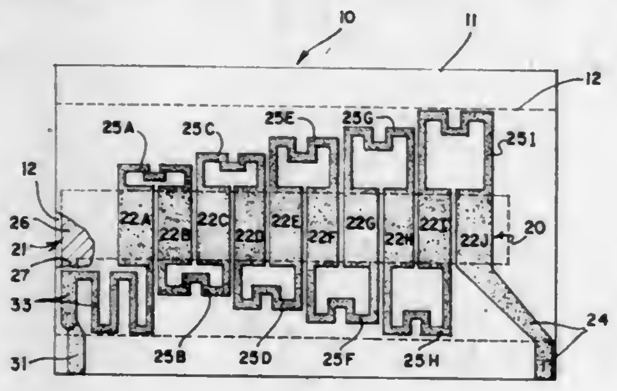
4,193,669
LIQUID CRYSTAL DEVICE FOR DIRECT DISPLAY OF ANALOG INFORMATION

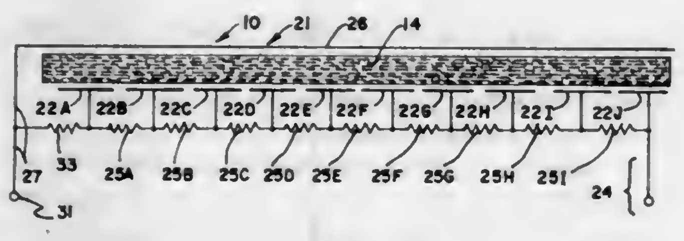
Kenneth J. Richardson, Hudson, Ohio, assignor to Crystaloid Electronics Company, Stow, Ohio

Filed Jun. 29, 1977, Ser. No. 811,308

Int. Cl.^{2} G02F *1/13*

U.S. Cl. 350—334 **9 Claims**





1. A liquid crystal device for the display of analog information in images and patterns and whose operational power is furnished by a signal containing the analog information, comprising:

- a front and a back transparent plate,
- a layer of liquid crystal material sandwiched between said front and back transparent plates,
- transparent conducting means applied to selected portions of the side of both said front and back transparent plates adjacent said liquid crystal material including at least two physically separate, distinct segments applied to one said transparent plate and at least one conducting plate applied to the opposite said transparent plate,
- means for having a voltage gradient impressed transversely across said transparent plate on which said distinct segments are applied including a resistor network formed out of the same material utilized to form said distinct segments and located on said transparent plate on which said distinct segments are applied, said resistor network having at least one physically separate, distinct resistor interposed between each said distinct segment such that said liquid crystal device has only two terminals, and
- resistor means formed out of the same material utilized to form said distinct segments and connected between one end of said resistor network and said conducting plate,
- the signal containing the analog information connected to said two terminals, such that the operational power of the device is furnished by the signal containing the analog information.

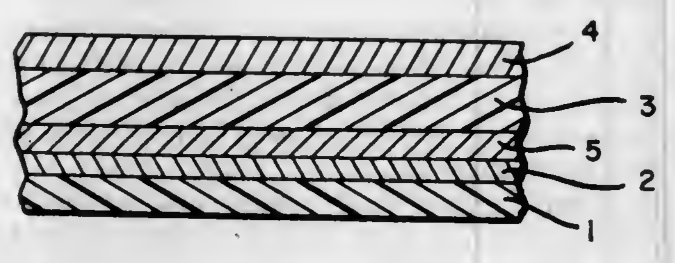
4,193,670
ELECTROCHROMIC DEVICES HAVING PROTECTIVE INTERLAYERS

Robert D. Giglia, Rye, N.Y., and Richard H. Clasen, West Redding, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 8, 1977, Ser. No. 849,387

Int. Cl.^{2} G02F *1/17*

U.S. Cl. 350—357 **18 Claims**



1. In an electrochromic device which comprises an electrode and a counterelectrode and disposed therebetween a layer of persistent electrochromic material and an ion-conductive, electrically insulating layer of polymeric electrolyte material, said layers disposed in said device for reversible ionic conduction across the layers between said electrode and counterelectrode whereby said persistent electrochromic layer is changeable between colored and clear states, the improvement comprising a first electrically insulating film layer of an inorganic compound of thickness in the range from about 100 to 1500 Angstroms, thick enough for electronic insulation, but not so thick as to impair ionic conduction across the thickness of said film, contacting the surface of said layer of electrolyte material nearest said electrochromic layer.

4,193,671
IDENTIFYING MEANS FOR POLYMERIC CONTACT LENSES

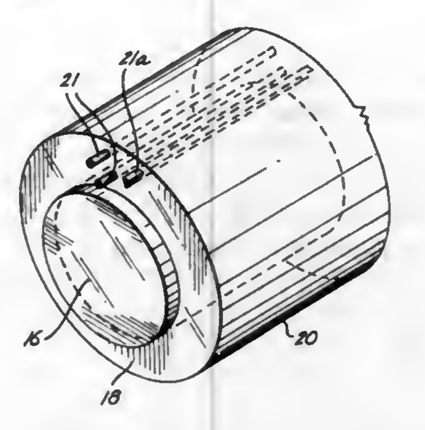
Charles E. Erickson, Bellevue, and Amar N. Neogi, Seattle, both of Wash., assignors to Precision Cosmet Corp., Minneapolis, Minn.

Filed Nov. 20, 1978, Ser. No. 962,058

The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.

Int. Cl.^{2} G02C *7/04*

U.S. Cl. 351—160 H **11 Claims**



1. A polymeric contact lens blank structure comprising a substantially cylindrical button having at least one identification means positioned therein, said means being compatible with the polymer system forming said button and being machinable along with said button to form a contact lens said means being spaced inwardly from the peripheral edge of said button and extending through the entire thickness thereof in a direction sustantially parallel to its axis.

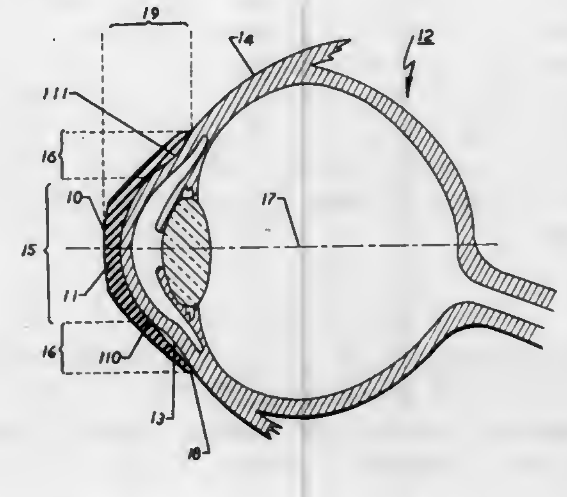
4,193,672
CONTACT LENS WITH IMPROVED INTERIOR SURFACE

Wayne E. Trombley, and Ronald G. Seger, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 25, 1978, Ser. No. 945,728

Int. Cl.^{2} G02C *7/04*

U.S. Cl. 351—160 R **14 Claims**



1. A contact lens having an interior surface which comprises:

- (a) an optical zone with a radius of curvature substantially equal to the radius of curvature of the cornea of the eye to be fitted at its optical centerline; and
- (b) a curved peripheral section extending between the optical zone and the edge of the lens, the peripheral section describing an arc which is tangent to the optical zone at its edge,

whereby the lens demonstrates central and edge contact on the eye with tearfilm clearance there between and with tearfilm exchange upon blinking.

4,193,673
DIGITAL SHUTTER CONTROL CIRCUIT

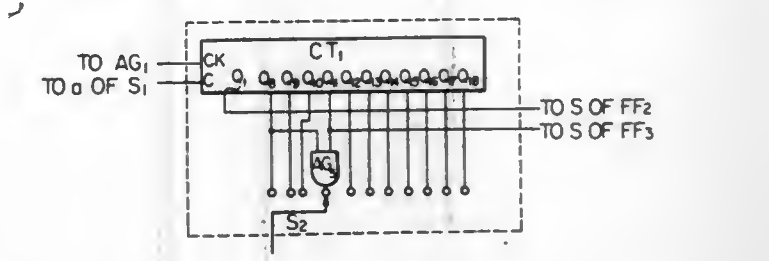
Yasuo Ishiguro; Kenji Wakazono, and Toshihisa Saito, all of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan

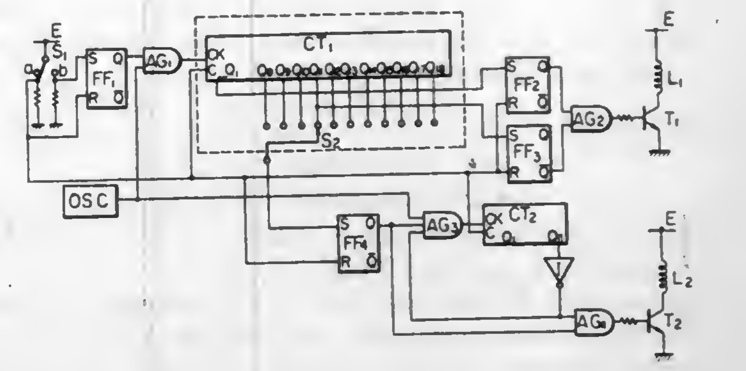
Filed Jun. 7, 1978, Ser. No. 913,348

Claims priority, application Japan, Jun. 10, 1977, 52-67982

Int. Cl.^{2} G03B *7/08*

U.S. Cl. 354—23 D **6 Claims**





1. Digital shutter control circuit for an electric shutter having electrically operable shutter opening means and electrically operable shutter closing means, said digital shutter control circuit including a binary counter circuit having a plurality of output stages each adapted to issue an output signal upon activation thereof by a reference clock pulse generating circuit triggered by release means of said shutter simultaneously with the activation of said shutter opening means, each of said output signals corresponding to the respective one of series of exposure times set in said shutter represented in terms of 2^n where n is an integer, and a selector circuit selectively connectable to selected one of said output stages and connected to said shutter closing means, thereby permitting the desired exposure time selected from said plurality of output signals connected to said selector circuit to be obtained by the activation of said shutter closing means, wherein the improvement comprises an AND circuit having its inputs connected to at least two output stages selected from said plurality of output stages and its output adapted to be selectively connectable to said selector circuit, thereby permitting an intermediate exposure time to be obtained by connecting said output to said selector circuit which exposure time is other than any of said series of exposure times.

4,193,674
MICROFILM CAMERA ATTACHMENT

Jeffrey B. Landa, Microfilm Associates Co., Inc., 7101 York Ave. S., Edina, Minn. 55435

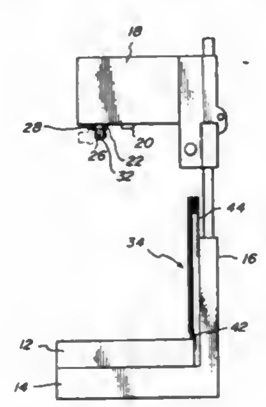
Filed Jun. 28, 1978, Ser. No. 919,818

Int. Cl.^{2} G03B *7/00*

U.S. Cl. 354—59 **2 Claims**

1. In combination with a camera designed for use with a standard film said camera being of the type having a lens and photocell which opens a shutter until a predetermined quanta of light from the subject area has entered said photocell, said predetermined quanta being nonadjustable; a photocell intake modifying device comprising:

- a neutral density filter having an operative position located in the optical path between the subject area and said photocell, said filter being of a density sufficient so that by the time said predetermined quanta of light has entered said photocell, said shutter has been open long enough so that a film slower than said standard film may be properly exposed; and



a cylindrical tube hingedly attached to said camera adjacent said photocell and having an axis coincident with said optical path, said tube being of a length and diameter so that only light incident from the subject area to be photographed will enter said photocell.

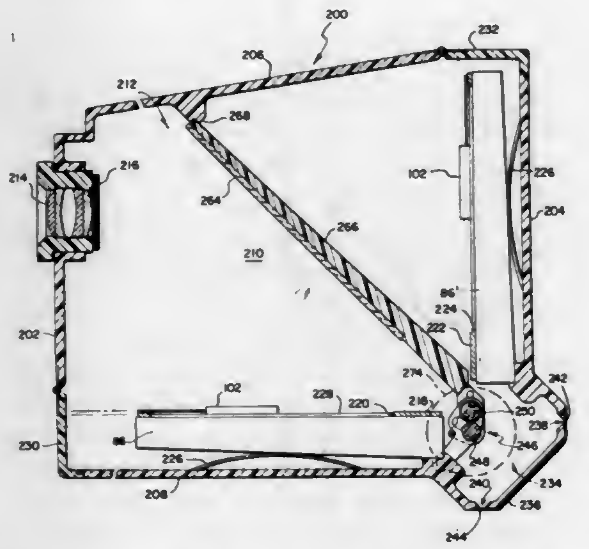
4,193,675
PHOTOGRAPHIC CAMERA

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 529,904, Dec. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 428,454, Dec. 26, 1973, abandoned. This application Aug. 15, 1977, Ser. No. 824,415

Int. Cl.^{2} G03B *17/52, 19/06*

U.S. Cl. 354—86 **2 Claims**



1. Photographic apparatus of the self-developing type for use with film units requiring an even number of geometrical reversals and with film units requiring an odd number of geometrical reversals to provide a geometrically non-reversed positive image in the film unit, comprising:

means defining first and second chambers for locating film units in position for exposure;

pressure-applying means including at least two juxtaposed members for spreading a processing fluid across a photosensitive layer of the film unit as it is moved therebetween subsequent to exposure;

lens means for geometrically reversing an image of a subject along two orthogonal axes;

optical means for geometrically reversing the image of the subject along only one of said orthogonal axes;

means for changing the relative position of said lens means and said optical means between a first orientation wherein said lens means and said optical means are in optical alignment with each other when the film unit requires an odd number of geometrical reversals and a second orientation wherein said lens means and said optical means are out of optical alignment with each other when the film unit requires an even number of geometrical reversals; and

means for mounting at least one of said juxtaposed members for movement between a first position wherein it cooperates with the other member to receive an exposed film unit therebetween as it is moved away from its exposure position within said first chamber and a second position wherein it cooperates with said other member to receive an exposed film unit therebetween as it is moved away from its exposure position within said second chamber.

4,193,676
DATA PHOTOGRAPHIC DEVICE FOR CAMERA

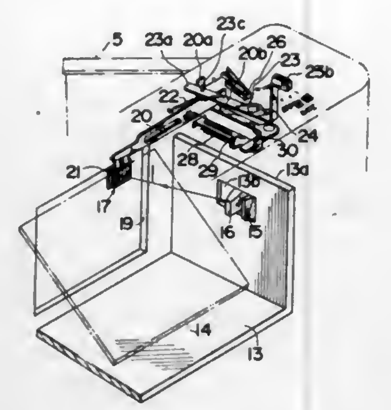
Hiroshi Ueda, Nara; Mitsuru Saito, Kaizuka; Yasuhiro Nanba, Osaka, and Yoshio Kuramoto, Toyonaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1978, Ser. No. 922,406

Claims priority, application Japan, Jul. 6, 1977, 52-89880[U]; Jul. 6, 1977, 52-89881[U]; **Jul. 6, 1977, 52-89882[U]**

Int. Cl.^{2} G03B *17/24, 19/12;* **G05D** *25/00*

U.S. Cl. 354—106 **17 Claims**



1. In a camera including a camera body having a focal plane and an objective lens having an optical axis perpendicular to said focal plane:

means for producing illuminated data;

light projector means for directing and focusing an image of said illuminated data onto said focal plane along an optical axis which is at a predetermined angle to said objective lens optical axis; and

an object light incidence intercepting means intercepting the light path of said projected image and positioned substantially parallel to said focal plane and including a plurality of side by side elements arranged such that each of them allows the passage therethrough of said data image light from said projector means to said focal plane, but intercepts the passage of said object light directed toward that portion of said focal plane on which said data image is projected.

4,193,677
WARNING CIRCUIT IN AN AUTO-CONTROLLED FLASHLIGHT PHOTOGRAPHING DEVICE

Hiroshi Hasegawa, Tokyo, and Kunihiro Nakano, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 28, 1978, Ser. No. 929,040

Claims priority, application Japan, Jul. 29, 1977, 52/101805[U]; May 8, 1978, 53-60787[U]

Int. Cl.^{2} G03B *15/05, 17/18*

U.S. Cl. 354—127 **4 Claims**

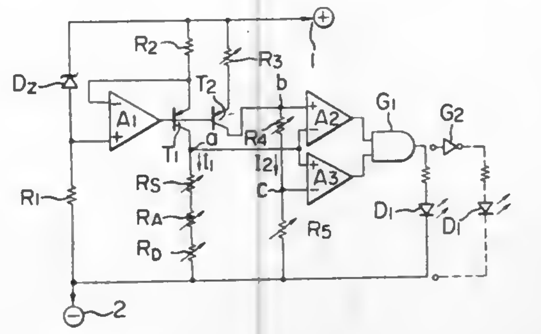
1. A warning circuit in an auto-controlled flashlight device comprising:

(i) a first circuit including a first variable resistor (R_D) whose resistance value is variable in accordance with the logarithm of the object distance, a second variable resistor (R_A) whose resistance is variable in accordance with the logarithm of the aperture value and a third variable resistor (R_S) whose resistance value is variable in accordance with the logarithm of the film sensitivity, the first, second and third resistors being connected in series;

(ii) a constant current source (A_1, D_Z, R_1, R_2, T_1) for generating a constant current;

(iii) a junction (a) between said first circuit and said constant current source, at which junction is generated an output voltage corresponding to a guide number determined in accordance with the object distance, aperture value and film sensitivity, when a current from the constant current source flows through said first circuit;

(iv) a second circuit (R_1, D_Z, A_1, R_3, T_2, R_4, R_5) for generating a maximum voltage corresponding to the maximum value of the quantity of light emitted by the auto-controlled speed light and a minimum voltage corresponding to the minimum value of the quantity of light emitted by the auto-controlled speed light;



(v) Comparator means for comparing the output voltage of said first circuit with said maximum voltage and said minimum voltage and generating a first signal when said output voltage is in the range of said maximum voltage and said minimum voltage value but generating a second signal when said output voltage is beyond said range; and

(vi) a light emitting display element turned on in response to the first signal from said comparator means.

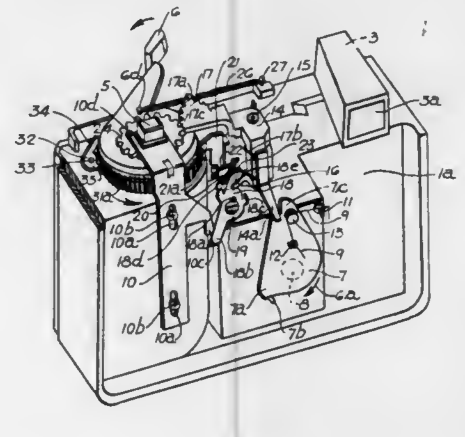
4,193,678
SHUTTER STRIKER COCKING MECHANISM

Kwok In Son, Hong Kong, Hong Kong, assignor to W. Haking Enterprises Limited, Hong Kong

Filed Jul. 31, 1978, Ser. No. 929,523

Int. Cl.^{2} G03B *17/42, 9/10*

U.S. Cl. 354—204 **22 Claims**



1. In a camera including a shutter member, a striker member adapted to be moved from an initial position to a fully cocked position and then released to strike the shutter member to cause the shutter member to move momentarily away from the lens opening of the camera, a film winding member adapted to communicate a film feeding force to a strip of photographic film, film feeding and striker member cocking means including a manually operable member to be coupled in drive transmitting relation with said film winding member and said striker member, and manually operable striker member release means for releasing said cocked striker member, the improvement in mechanism for interconnecting said manually operable member and said film winding and striker members, said mechanism comprising: drive gear means for moving said striker member from said initial to said fully cocked position during only part of the movement of said manually operable member during a film winding operation, said striker member including a gear segment including a toothed portion provided with teeth meshable with gear teeth of a first portion of said drive gear means to effect the movement of said striker member from said initial to said fully cocked positions and a dead motion portion free of gear teeth so that further movement of said drive gear means will not move said striker member beyond said fully cocked position, said striker member being held in said fully cocked position by the engagement of said gear segment with said drive gear means, transmission means connecting said manually operable member with said film winding member and said drive gear means, and disengaging means responsive to operation of said striker release means for disengaging said gear segment of the striker member from said drive gear means, to release said striker member from said cocked position.

4,193,679
ELECTROPHOTOGRAPHIC APPARATUS COMPRISING IMPROVED IMAGING SYSTEM

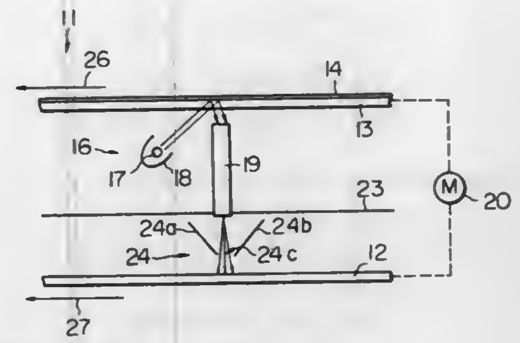
Manabu Mochizuki; Kohji Suzuki; Hajime Oyama, and Teruyuki Ohnuma, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

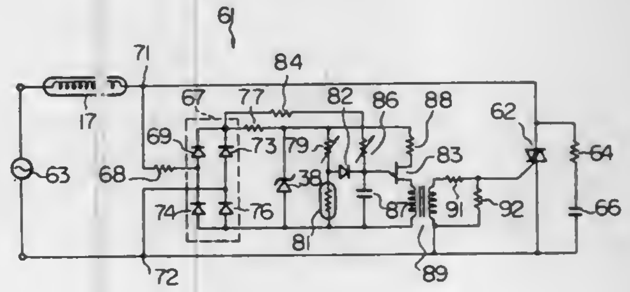
Filed Aug. 23, 1977, Ser. No. 827,055

Claims priority, application Japan, Aug. 24, 1976, 51-100859

Int. Cl.^{2} G03B *27/00, 27/76*

U.S. Cl. 355—1 **5 Claims**





1. An electrophotographic apparatus comprising in combination:

a photoconductive member;

an original document carrier for supporting an original document;

a light source comprising an illumination lamp for illuminating the document.

an optical fiber array including a row of focussing optical fibers operatively disposed between the document carrier and the photoconductive member for focussing a light image of the document on the photoconductive member;

means for producing relative movement between the document carrier, fiber array and photoconductive member to scan the document;

means defining an exposure aperture between the fiber array and the photoconductive member, the width of the aperture being sufficiently large that the intensity of the light image is substantially uniform; and

control means for adjusting the intensity of the light source and thereby the intensity of the light image, said control means comprising a triac operatively connected to the lamp and phase control means for adjusting the firing angle of the triac, said phase control means comprising a unijunction transistor operatively connected to the triac and signal producing means for applying a varying electrical signal to the unijunction transistor.

4,193,680

TRANSFER SHEET DRYING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

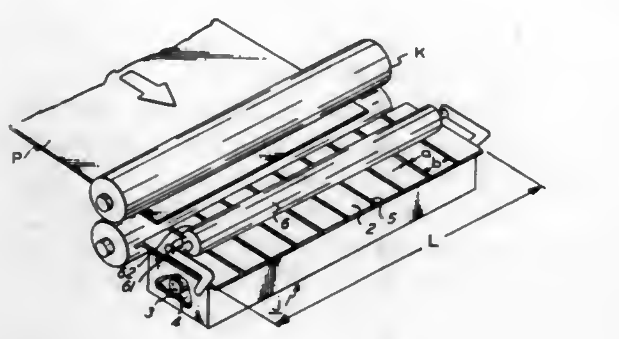
Akira Yoshikawa, and Kouichi Aota, both of Ebina, Japan, assignors to Rank Xerox Limited, London, England

Filed Jun. 28, 1977, Ser. No. 810,812

Claims priority, application Japan, Nov. 16, 1976, 51-152788[U]

Int. Cl.² G03G ***15/00***

U.S. Cl. 355—3 R **3 Claims**



1. Reproduction apparatus comprising:

a photosensitive drum;

means for forming a latent image on said drum;

means for rendering said image visible with a transferable powder;

sheet means to which said visible image is transferred;

means for conveying said sheet means from a sheet means supply into contact with said drum whereby said image is transferred to said sheet means;

means for conditioning said sheet means one at a time prior to their contact with said drum to thereby enhance image transfer thereto; said means for conditioning said sheet means being disposed between said sheet means supply and said drum and comprising means for differentially drying said sheets in a direction perpendicular to the direction of movement thereof and extending across the width of said sheet means, said means for differentially drying said sheet means comprising a heating plate and a roller between which said sheets move, said plate being provided with a plurality of grooves extending in the direction of movement of said sheet means.

4,193,681

LIQUID FEEDING DEVICE

Koichi Tanigawa, and Takayuki Ishihara, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 918,924

Claims priority, application Japan, Jun. 30, 1977, 52-78402
Dec. 29, 1977, 52-160897

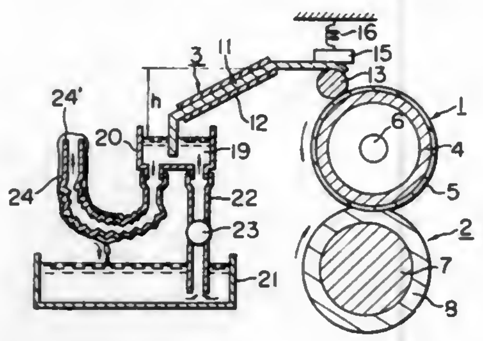
U.S. Cl. 355—3 FU **11 Claims**

1. An image fixing device for fixing a powder image on an image holding member comprising:

first and second rollers at least one of which is heated, said rollers being adapted to grip and transport therebetween an image holding member and fix a powder image held thereon; and

liquid feeding means for feeding offset preventing liquid to said first roller, said liquid feeding means including:

a reservoir for storing the offset preventing liquid, liquid holding means for absorbing the offset preventing liquid within said reservoir through capillary action and holding it, liquid applying means, in contact with said liquid holding means and said first roller, for receiving the offset preventing liquid from said liquid holding means and applying it to said first roller, and liquid level control means for lowering, during a non-feeding period of the offset preventing liquid, the level of the offset preventing liquid to a level to increase the vertical distance between the level of the offset preventing liquid and the contact position between said liquid holding means and said liquid applying means, and raising the level to a level, during a feeding period of the offset preventing liquid, to reduce said vertical distance.



4,193,682

APPARATUS FOR DEVELOPING LATENT IMAGES OF X-RAYED OBJECTS

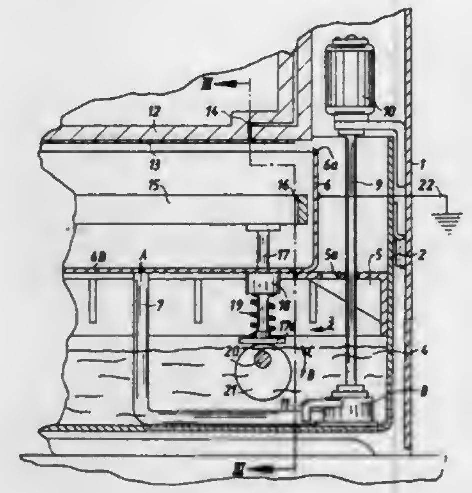
Jürgen Müller, Munich; Josef Pfeifer, Unterhaching; Alfred Rheude, Munich; Rolf Erckel, Munich; Heinrich Färber, Munich, and Bernhard Zrenner, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,516

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2733072

Int. Cl.² G03G ***15/10***

U.S. Cl. 355—10 **15 Claims**



1. In an apparatus for treating latent images on receptor sheets with a liquid developer, particularly for developing latent images on dielectric receptor sheets which were exposed to object-modulated X-rays in an ionography imaging chamber, the combination of carrier means for advancing receptor sheets along a predetermined path; a source of liquid developer; a developing electrode adjacent to a portion of said path and having a plurality of channels; means for conveying liquid developer from said source and through said channels toward said portion of said path so that the liquid developer contacts and treats the latent images on receptor sheets advancing along said path to transform the same into developed images; and means for selectively varying the contrast and edge effect of the developed images, including means for moving said electrode in directions toward and away from said portion of said path.

4,193,683

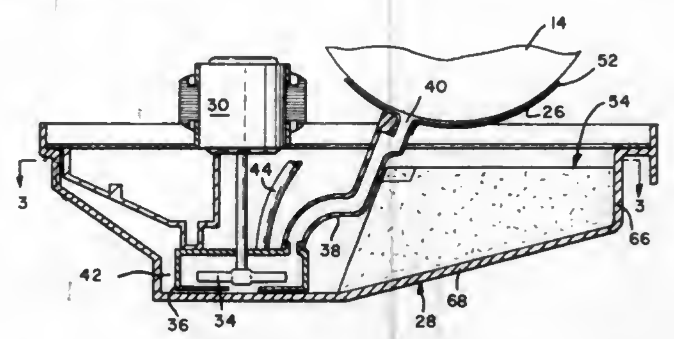
METHOD AND APPARATUS FOR FILTERING DEVELOPING LIQUID IN A PHOTOCOPIER

Fred R. Langner, 12211 N. 82nd St., Scottsdale, Ariz. 85260

Filed Aug. 21, 1978, Ser. No. 935,660

Int. Cl.² G03G ***15/10***

U.S. Cl. 355—10 **7 Claims**



1. A photocopy machine wherein a working fluid is applied to a developing device in a developmental process, the machine comprising a container for receiving the working fluid which has been used in the developmental process; means for pumping the working fluid from the container to the developing device; and a filter trough for removing impurities and gel from the working fluid, said filter trough being disposed within said container in the path of gravity flow of working fluid from the developing device back to the container so that the filter trough collects such returned working fluid, the filter trough comprising an integral body of foamed polyurethane plastic having a generally rectangular horizontal cross-section, an open top, a side wall extending around the trough, a bottom wall and an overflow channel in the top of the side wall, the interior surfaces of the body defining an interior low point located below the upper surface of the working fluid in the container when the photocopy machine is in use, the trough forming a filter including a permeable thick collecting body extending from adjacent the low point upwardly toward the top of the trough for removing impurities and gel from the working fluid, said low point defining a location in the trough for collection of excess gel.

4,193,684

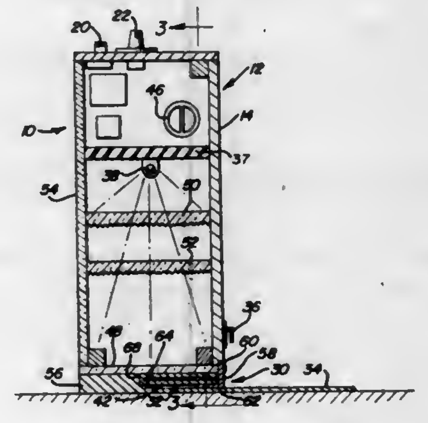
PHOTOGRAPHIC PRINTING AND PRINT IDENTIFYING APPARATUS

Alvin H. Armstrong, 438 W. Pasadena Ave., Clewiston, Fla. 33440

Filed May 12, 1978, Ser. No. 905,553

Int. Cl.² G03B ***27/52, 17/24***

U.S. Cl. 355—40 **13 Claims**



1. Apparatus for marking a photographic medium in a dark room, including a substantially opaque enclosure having an exposure window, a light masking element, holder means connected to the enclosure in operative relation to the exposure window for positioning the light masking element in alignment with the window, and lamp means mounted within said enclosure in spaced relation to the window for projecting a light image through the masking element onto the exposed medium, said holder means including a slotted formation opening on one side of the enclosure for slidably received the masking element, said enclosure including a translucent wall located transversely of said one side.

4,193,685

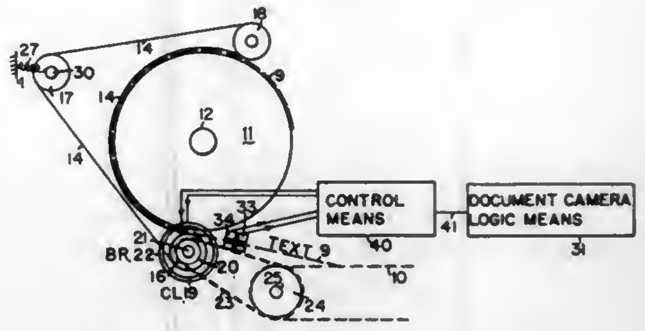
FIXED MESSAGE CARRIER

Michael W. Rudy, Thousand Oaks; Edward J. Kramer, Canoga Park; Martin M. Bondar, Northridge, and Ronald L. Whitney, Reseda, all of Calif., assignors to Terminal Data Corporation, Woodland Hills, Calif.

Filed Mar. 30, 1979, Ser. No. 25,430

Int. Cl.² G03B ***27/52***

U.S. Cl. 355—41 **12 Claims**



1. A fixed message carrier apparatus for a document camera system, which system has system-operating logic means (**31**) and document transport means (**10**), comprising;

(a) a fixed message carrier transport (**11, 14**),

(b) control means (**40**) to reversibly move a fixed message carrier document (**9**)

from a home position upon said carrier transport toward and away from a photographing position upon said document transport means (**10**),

(c) position sensor means (**33** &/or **34**) attached to said fixed message transport and connected to said control means to sense the position of said fixed message document, and

(d) inter-connection means (**41**) connecting said document camera system logic means (**31**) to said control means (**40**)

to enable reversible movement of said fixed message carrier document from said home position toward said photographing position upon command from said system-operating logic means (**31**).

4,193,686

COUNTING CIRCUIT FOR DETERMINING THE INCOMING FREQUENCY OR RECEIVED CHANNEL IN A HIGH-FREQUENCY SUPERHET RECEIVER

Otto Klank, Arpke, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Fed. Rep. of Germany

Filed Dec. 7, 1977, Ser. No. 858,176

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2655947

Int. Cl.² H04B ***1/06***

U.S. Cl. 455—154 **13 Claims**

1. A superheterodyne receiver comprising:

means to receive a desired signal occupying a pre-determined band of frequencies identified by a first carrier frequency;

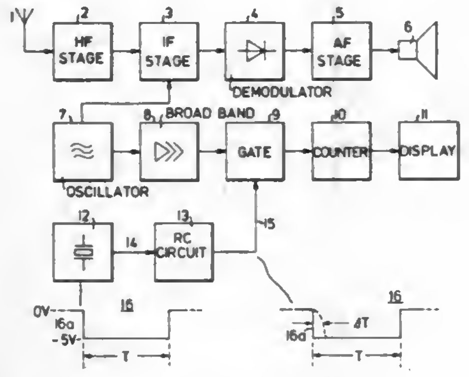
an intermediate frequency stage comprising fixed-tuned filter means to determine an intermediate frequency band that can pass through said intermediate frequency stage, said band being identified by an actual intermediate carrier frequency;

local oscillator means tunable to a frequency that differs from the first carrier frequency by the intermediate carrier frequency to shift said desired signal from said pre-determined band to said intermediate frequency band;

counter means to count oscillations from said local oscillator for a pre-determined interval of time;

means to modify the count of said counter by a fixed count corresponding to a nominal intermediate carrier frequency;

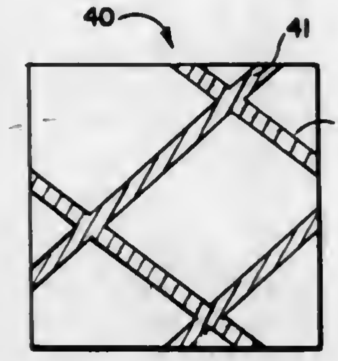
numerical display means to display the final number counted by said counter means during said intervals; and



adjustable means to set the length of said interval according to the actual intermediate carrier frequency so that the actual number counted during said interval corresponds to the first carrier frequency, whereby said display means displays the correct numerical value of said first carrier frequency to the degree of accuracy permitted by said final number counted.

4,193,687
HIGH RESOLUTION ALIGNMENT TECHNIQUE AND APPARATUS

John P. Reekstin, Orange; Sigfried G. Plonski, Santa Ana, and Addison B. Jones, Yorba Linda, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jun. 5, 1978, Ser. No. 912,612
Int. Cl.^{2} G01B *11/27*
U.S. Cl. 356—150 **11 Claims**



1. Apparatus for high precision alignment of a mask and a substrate in the manufacture of microelectronic devices comprising,

first pattern means comprising a plurality of northogonal lines and spaces which form a first grid,

each of said lines and spaces of said first pattern means having a first prescribed width,

second pattern means comprising a plurality of n−2 orthogonal lines and spaces which form a second grid,

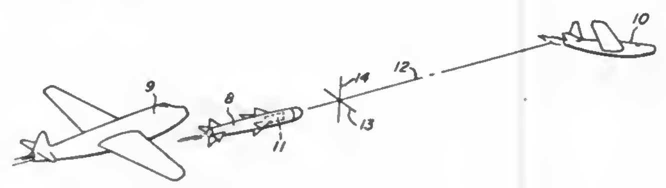
each of said lines and spaces of said second pattern means having a second prescribed width,

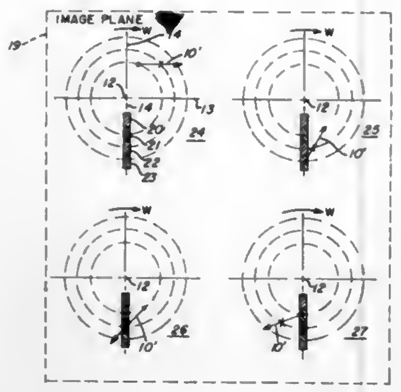
one of said first and second pattern means formed on said mask and the other of said first and second pattern means formed on said substrate,

said first and second pattern means adapted to produce moire images as a function of the relative alignment of said first and second pattern means on said mask and substrate.

4,193,688
OPTICAL SCANNING SYSTEM

Robert A. Watkins, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 28, 1970, Ser. No. 84,711
Int. Cl.^{2} F41G *7/00*
U.S. Cl. 356—152 **7 Claims**





1. An optical scanning system for determining the angular orientation of a point source of radiating electromagnetic energy relative to the boresight axis of such system, comprising:

(a) an optical arrangement for focusing a portion of the radiating electromagnetic energy into an imaged point on an image plane, the distance of such imaged point from the boresight axis being proportional to the magnitude of the angular orientation of the point source from such axis;

(b) a set of detector elements, each one of such detector elements therein being responsive to the focused electromagnetic energy and being disposed in the image plane along a common axis radial from such boresight axis, each detector element being at a different predetermined distance from the boresight axis;

(c) a scanning mechanism for generating a relative rotation about the boresight axis between the imaged point and each one of the set of detector elements; and

(d) processor means, coupled to each detector element and to the scanning mechanism, adapted to determine the sense and magnitude of the angular orientation of the point source from the boresight axis by determining:

(1) the amount of the relative rotation when a detector element responds to the focused electromagnetic energy; and

(2) which one of such detector elements is responsive.

4,193,689
ARRANGEMENT FOR LOCATING RADIARING SOURCES

Jean-Claude Reymond, and Jean-Luc Hidalgo, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Jul. 25, 1978, Ser. No. 927,821
Claims priority, application France, Jul. 29, 1977, 77 23442
Int. Cl.^{2} G01B *11/26*
U.S. Cl. 356—152 **7 Claims**

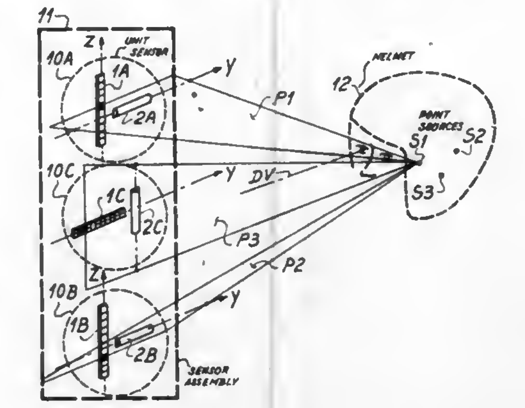
1. A sensor system for the spatial location of radiation sources comprising:

first, second and third unit sensors, each such unit sensor including:

an optical device of the cylindrical lens type for focusing light radiation incoming from a point source defining a plane of reception of said light radiation passing through said source and the longitudinal optical axis of said optical device, and

a linear array of photosensitive elements for developing detection signals responsive to said light radiation, said elements positioned in the corresponding focal plane of said optical device at an angle with respect to said longitudinal axis,

said first, second and third unit sensors having arrays arranged in a plane, the arrays of said first and second sensors being aligned in a first cartesian reference direction and the array of said third sensor being oriented in a second cartesian reference direction and situated between said first and second unit sensors,

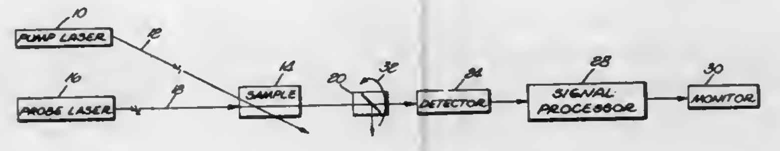


circuit means for processing said detection signals of said detecting arrays to identify respectively the rank position of the elements activated by said radiation; and

ancillary calculating means for calculating the spatial location of said source common to said planes from the identification.

4,193,690
HETERODYNE DETECTION OF COHERENT RAMAN SIGNALS

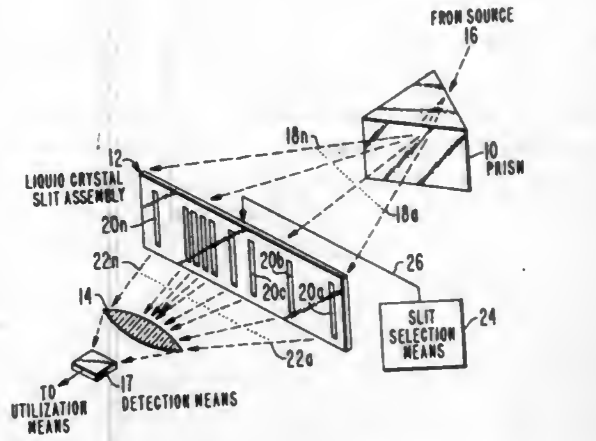
Marc D. Levenson; Gary L. Eesley, both of Los Angeles; William M. Tolles, Carmel, and Jin-Joo Song, Whittier, all of Calif., assignors to University of Southern California, Los Angeles, Calif.
Filed Oct. 19, 1977, Ser. No. 843,611
Int. Cl.^{2} G01J *3/44*
U.S. Cl. 356—301 **39 Claims**



1. In a method for detecting coherent Raman signals from a Raman active sample comprising the steps of irradiating said sample with a radiation output of a pump laser having a frequency w_1, irradiating said sample with a radiation output of a probe laser having a predetermined polarization and a frequency w_2, w_1-w_2 approximately a Raman mode frequency of said sample thereby resulting in a first portion of said probe laser output shifting polarization by 90 degrees as it passes through said sample, directing said probe laser output and said pump laser output into said sample whereby to intersect each other within said sample, filtering said probe laser output after passing through said Raman active sample whereby to pass only radiation having a predetermined polarization, and detecting said passed radiation, the improvement comprising the step of optically heterodyning said first portion of said probe laser output with a second laser output portion thereby obtaining a heterodyned cross-term signal linearly proportional to the Raman cross-section of said sample.

4,193,691
SPECTROMETER

Earl J. Fjarlie, Kingston, Canada, assignor to RCA Corporation, New York, N.Y.
Filed May 2, 1977, Ser. No. 792,676
Int. Cl.^{2} G01J *3/28*
U.S. Cl. 356—330 **14 Claims**



1. In a spectrographic analysis system in which a spectrum derived from a sample under test in projected onto a slit assembly, the assembly including slits positioned to pass only those spectral lines of interest in the measurement of the concentration of one of a number of different substances which may be present in the sample, the improvement comprising:

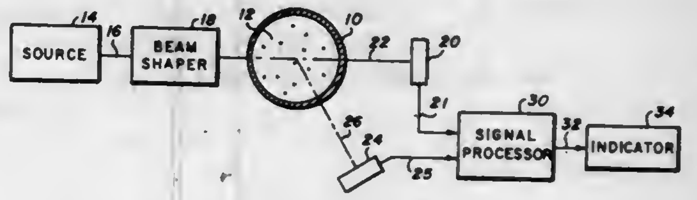
said slit assembly comprising a liquid crystal cell with electrodes at opposite surfaces of the cell for defining the slits in response to voltages applied thereto; and

control means connected to said slit assembly for applying voltages to said electrodes for producing a selected one of a plurality of possible slit patterns, that one pattern being appropriate to the analysis of the particular substance of interest in the sample,

said control means including modulating means for generating a slit modulating signal and for applying said slit modulation signal to a selected group of said slits to generate a modulated selected spectrum for opening the slits at the modulation frequency, and output means including detecting means for detecting said modulated spectrum, and means responsive to said detected modulated spectrum applied as an input thereto for generating said spectrum signal as an output thereof.

4,193,692
METHOD AND APPARATUS FOR THE OPTICAL MEASUREMENT OF THE CONCENTRATION OF A PARTICULATE IN A FLUID

William H. Wynn, Hillsborough, Calif., assignor to Monitek, Inc., Redwood City, Calif.
Filed Jun. 7, 1978, Ser. No. 913,356
Int. Cl.^{2} G01N *15/06*
U.S. Cl. 356—341 **5 Claims**



1. The method of measuring the concentration of a particulate in a fluid by optical means utilizing a beam of optical radiation, comprising the steps of:

deriving a first electrical signal "D" commensurate with the optical radiation transmitted through the particulate containing fluid;

deriving a second electrical signal "S" commensurate with the optical radiation scattered by the particulate containing fluid;

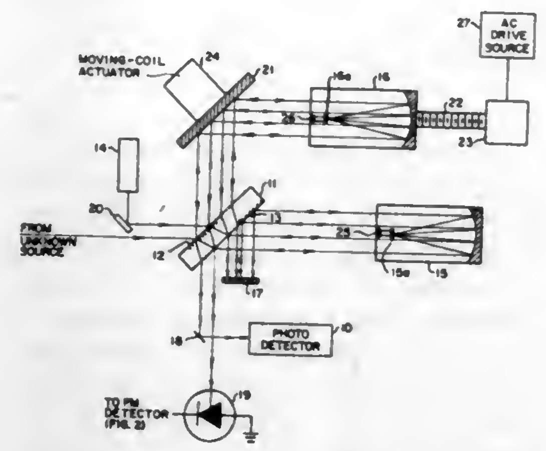
deriving a third electrical signal "R" which is equal to the ratio of S/[D+KS], where K is a constant; and

selecting the constant K such that the relationship between C and R is substantially linear, where C is commensurate with the concentration of the particulate contained within the fluid.

4,193,693
VELOCITY SERVO FOR CONTINUOUS SCAN FOURIER INTERFERENCE SPECTROMETER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Rudolf A. Schindler, Sierra Madre, Calif.

Filed Feb. 24, 1978, Ser. No. 880,729
Int. Cl.^{2} G01B *9/02*
U.S. Cl. 356—346 **9 Claims**

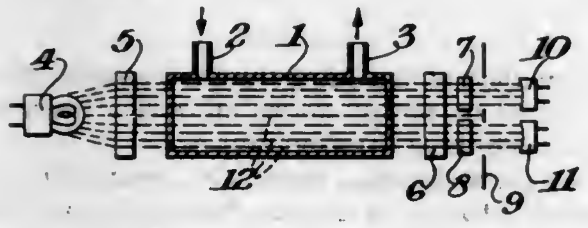


1. In a continuous scan Fourier interference spectrometer of the double-pass type having two cat's-eye retroreflectors and an open-loop, lead-screw drive system for one retroreflector to continuously vary the length of one optical path relative to another optical path through the other retroreflector, the combination comprising a source of a reference beam of known wavelength, said reference beam being directed through said spectrometer, means for detecting the rate of interference fringes of said reference beam as said one retroreflector is driven to vary the length of said one optical path, and for producing an error signal proportional to deviation of said rate with respect to a predetermined rate, and means responsive to said error signal for compensating any deviation of the rate of variation of the path length difference between said one optical path relative to the other optical path from said predetermined rate as said lead-screw drive system continues to vary the length of one optical path relative to the other.

4,193,694
PHOTOSENSITIVE COLOR MONITORING DEVICE AND METHOD OF MEASUREMENT OF CONCENTRATION OF A COLORED COMPONENT IN A FLUID

Charles R. Smith, 421 Westminster, Wenonah, N.J. 08090

Filed Jul. 3, 1978, Ser. No. 921,746
Int. Cl.^{2} G01N *21/04;* G01J *21/02*
U.S. Cl. 356—407 **4 Claims**



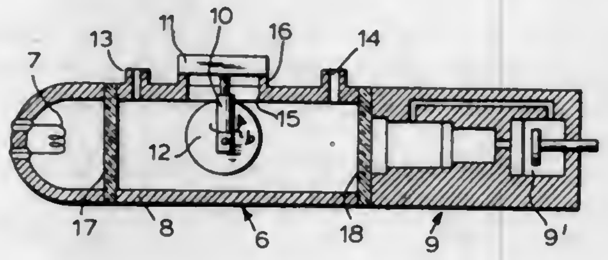
1. A device for measuring the concentration of a colored component contained in a flowing fluid comprising:

a. a light source;
b. a first frosted lens;
c. a transparent sample cell containing inlet and outlet ports;
d. a second frosted lens;
e. a first and second filter;
f. a sight mask; and
g. a first and second photosensor such that, as said fluid containing said colored component flows through said sample cell, light from said light source is directed through said first frosted lens, then through the sample cell, then through said second frosted lens, then a portion of the light is directed through said first filter and another portion of said light is directed through said second filter, then said portions of light are directed through said sight mask such that light passing through said first filter is directed to said first photosensor and light passing through said second filter is directed to said second photosensor, said first filter being a filter which absorbs light which is absorbed by the colored component being monitored and which passes substantially all other light, said second filter being one which passes light absorbed by said colored component and absorbs substantially all other light, and electronic means for measuring the difference in potential between the outputs of said first and second photosensors, which difference is generated by and is a function of the concentration of said colored component in said fluid.

4,193,695
SPECTROGRAPHIC APPARATUS WITH CHOPPER MEANS LOCATED IN THE SAMPLE CELL

Kennosuke Kojima; Takao Imaki, and Kozo Ishida, all of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Jan. 26, 1978, Ser. No. 872,586
Claims priority, application Japan, Feb. 12, 1977, 52-14471
Int. Cl.^{2} G01J *3/48*
U.S. Cl. 356—418 **5 Claims**

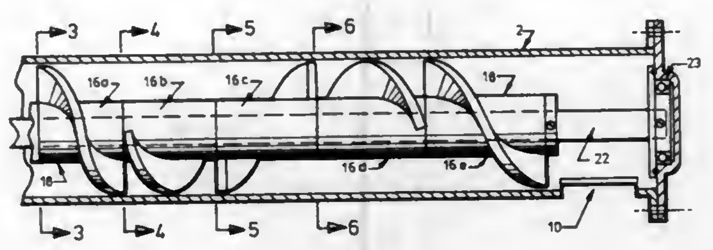


1. An optical system for a single cell, single beam spectroscopic analyzer comprising a single light source, a single detector positioned to receive light from the light source and a single sample cell connected between the light source and the detector for containing a material to be spectroscopically analyzed and for passing light from the light source therethrough to said detector, said light source, detector and sample cell lying along an axis and having radial dimensions which are substantially the same, said system having no air gap between the light source and the detector, and a chopper means having at least one chopper element in said sample cell, a shaft in said cell on which said chopper element is mounted and extending perpendicularly to the path of light between the light source and the detector, said chopper element having a dimension perpendicular to said axis which is no greater than that of said light source, detector and sample cell, said shaft extending out of said cell, and motor means operatively connected to said shaft for rotating said chopper element around the axis of said shaft, only said motor means being outside the outer periphery of said light source, said detector and said sample cell, said chopper element being in the path of the light between the light source and the detector and having a structure for passing substantially all of the light of at least one frequency from said light source to said detector when it is in one rotational position, and for passing substantially no such light when it is in a second rotational position about 90° from said first rotational position.

4,193,696
MIXING APPARATUS

Theodore Van Heel, and Henry Van Heel, both of Narre Warren, Australia, assignors to Burgos Pty. Limited, Melbourne, Australia

Filed May 25, 1978, Ser. No. 909,690
Claims priority, application Australia, May 26, 1977, PD0245
Int. Cl.^{2} B28C *5/14*
U.S. Cl. 366—66 **4 Claims**

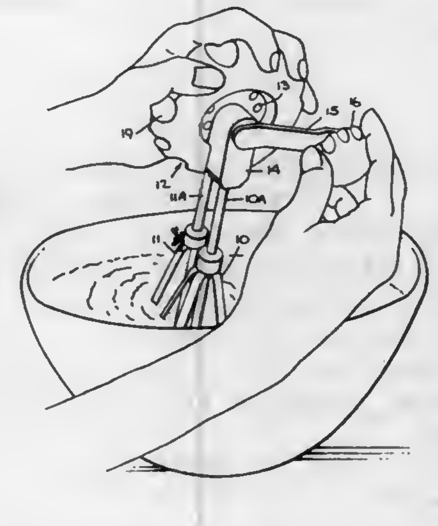


1. Mixing apparatus for mixing pulverent material with a liquid to make concrete, the apparatus comprising a first and a second casing; first mixing means mounted in said first casing for mixing pulverent material; means for interconnecting an outlet of said first casing with an inlet of said second casing so that mixed material can pass from said first casing into said second casing; means for connecting said second casing to a source of liquid; second mixing means mounted in said second casing for mixing a liquid with material passing into said second casing from said first casing thereby making concrete; one of said first and second casings having a cylindrical inner surface and one of said first and said second mixing means comprising a screw member mounted within its respective casing for rotation relative thereto about an axis which is coaxial with the axis of its inner surface, said screw member including a plurality of intercoupled segments, each of said segments having a single axially extending portion defining a flight formed in the shape of 150° to 210° of a full turn of a helical screw having a leading and a tailing portion, the flights being arranged such that the tailing portion of one flight overlaps, as viewed axially, the leading portion of the next succeeding downstream flight by 60° to 120°, so that mixing occurs upon rotation of said screw member.

4,193,697
EGG BEATER

Sam Lebowitz, New York, N.Y., assignor to Copco, Inc., New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,459
Int. Cl.^{2} A47J *43/10*
U.S. Cl. 366—129 **2 Claims**



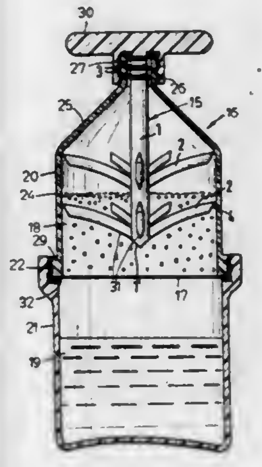
1. An egg beater comprising:

A. a manually-cranked drive wheel mounted on an axle and having opposed gear faces;
B. a pair of pinions engaging the gear faces and keyed to hollow shafts supporting intermeshing beater elements, whereby turning of the wheel results in rotation of the elements in opposite directions;
C. a doughnut-shaped housing formed of complementary front and rear half sections encasing said wheel and said pinions and provided with bearings for said wheel axle to support said axle on an axis extending transversely through the center of the housing, said rear half having a bearing into which one end of the axle is journaled, the other end of the axle passing through a journal box projecting laterally from and integral with the front half section and being connected to a crank arm having a knob at its free end, said housing being shaped and dimensioned to be received in the palm of one hand of an operator and having a scalloped periphery to define finger depressions for said hand to function as the beater handle, the rear section of the housing being cupped in the palm, the other hand engaging said knob and cranking said wheel, said axis passing through said palm whereby the beater may be held steady to resist forces seeking to displace it; and
D. a yoke for supporting said beater elements and provided with rods which extend through said hollow shafts and are anchored in said housing.

4,193,698
DEVICE FOR RUPTURING A FRANGIBLE PARTITION BETWEEN SEPARATE CHAMBERS IN A CONTAINER

Veit Gartner, Westendstrasse 19c, D-8202 Bad Aibling, Fed. Rep. of Germany

Continuation of Ser. No. 851,816, Nov. 16, 1977, abandoned. This application Feb. 7, 1979, Ser. No. 10,269
Int. Cl.^{2} B01F *11/00;* B65D *23/04*
U.S. Cl. 366—130 **11 Claims**



1. In combination with a container comprising substantially concentric upper and lower container members which cooperate with a partition member to define upper and lower compartments for separate storage of different materials that are to be mixed with one another shortly before use, said upper container member having a side wall portion that extends upward from said partition member and having a downwardly displaceable top portion,

a rupturing and agitation device characterized by:

A. a shaft long enough to extend through at least a substantial part of the distance from said downwardly displaceable top portion of the container to said partition member, said shaft being slender along its length so as to be spaced radially a substantial distance from said side wall portion of the upper container member, said shaft
    (1) having a substantially sharp point at a lower end thereof whereby said partition member can be pierced, and
    (2) having an upper end portion cooperable with said downwardly displaceable top portion of the upper

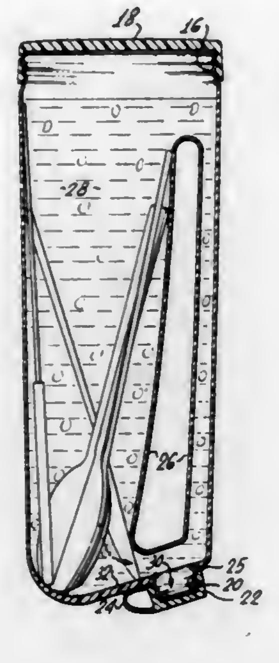
container member to be moved downward by downward displacement thereof; and

B. at least three vanes secured to said shaft near the lower end thereof,
  (1) each of said vanes projecting substantially radially from the shaft through at least a substantially major part of said distance to said side wall portion so that the vanes can cooperate with said side wall portion in confining the shaft against substantial tilting out of coaxial relation to the container as the shaft is moved down to pierce the partition member,
  (2) said vanes being formed to cooperate with said point on the shaft in rupturing the partition member upon downward axial displacement of the shaft in the container, and
  (3) each of said vanes being further formed to impart substantial turbulence to material flowing in directions parallel to the shaft, so that after rupture of the partition member the vanes can serve as baffles which stir and break up the contents of the container when the container is shaken.

4,193,699
WASHER AND CARRIER FOR ELONGATED OBJECTS

Drew O. Haygeman, 704 Silver Spur Rd., Rolling Hills, Calif. 90274, and Robert M. Haygeman, 801 Gwenn St., Springdale, Ark. 72764

Filed Apr. 5, 1978, Ser. No. 893,765
Int. Cl.² B08B *3/04*
U.S. Cl. 366—130 **3 Claims**

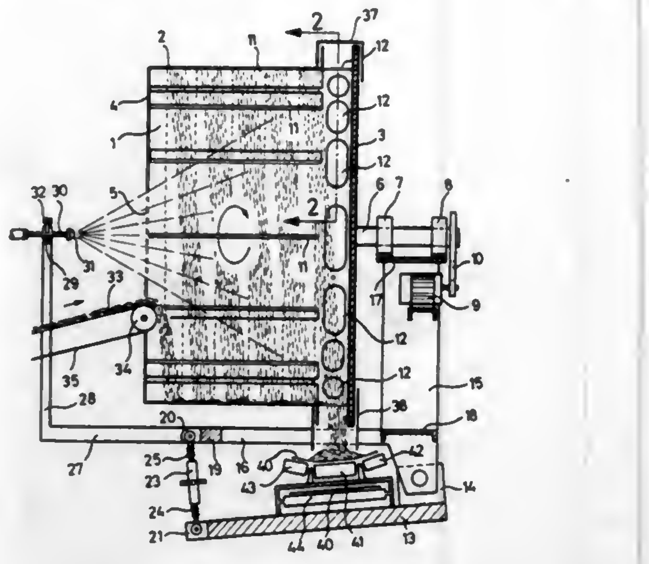


1. A container for cleaning and storing elongated objects comprising:
  a generally cylindrical, elongated, hollow body portion;
  a wall means extending generally along the length of said body portion, spaced from the outermost surface of said body portion and cooperating therewith to form a handle, said wall means and the remainder of said body means forming a treatment zone for cleaning and storing said elongated objects;
  a first opening at one end of said body portion through which said elongated objects may be inserted into and removed from said treatment zone;
  a second opening in the other end of said body portion adjacent said wall means, said second opening cooperating with said wall means to prevent said elongated objects from passing from said treatment zone through said second opening;
means threadably received over said first opening for selectively opening and closing said first opening; and
means secured to said body portion for selectively opening and closing said second opening.

4,193,700
CONTINUOUS-FLOW MIXER FOR THE GLUING OF LOOSE CHIPS OF WOOD, FIBERS, OR OTHER PARTICLES

Walter Wirz, Thalwil, Switzerland, assignor to Peter Fahrni, Kilchberg, Switzerland

Filed Jan. 2, 1979, Ser. No. 527
Int. Cl.² B01F *9/06, 15/02*
U.S. Cl. 366—156 **8 Claims**



1. A continuous flow mixer for the gluing of loose chips of wood, fibers or other particles which are intended for the manufacture of pressed bodies comprising:
  a generally cylindrical hollow drum rotatably mounted around an axis which is oblique with respect to the horizontal, said drum having an inlet end and an outlet end, said inlt end being positioned at a higher level than said outlet end, said drum further including a plurality of driver elements disposed on the inner surface of said drum, said drum further including a header connected to one end thereof;
means for rotating said drum, said means coupled to said header;
means for supplying the particles to be treated to said inlet end;
means for removal of said treated particles from said outlet end; and
a pressure nozzle acting substantially in the direction of the axis of the drum for the spraying of a glue into said hollow drum, said nozzle being disposed adjacent said inlet end and above said particle supply means, whereby when said particles are fed into said rotating drum by said particle conveying means, said particles are conveyed by said driver elements to the upper portion of said drum whereat said particles fall downwardly through the interior of said drum in a veil-like cloud, said particles being sprayed by said glue from said nozzle as they fall, said treated particles progressively migrating to said outlet end preparatory to exiting the drum.

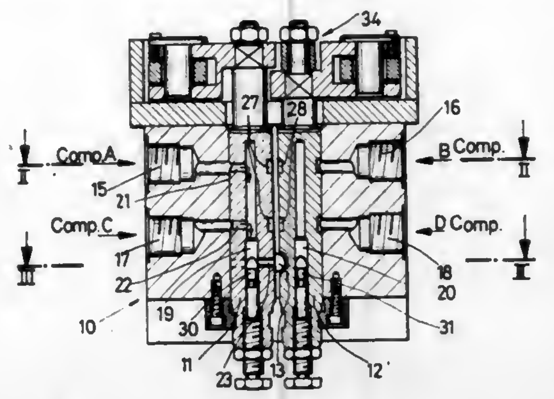
4,193,701
MIXING HEAD FOR A PLURALITY OF FLUID COMPONENTS

Freidrich Koch, Achim; Ralf Ludwig, Fribourg; Herbert Gunther, Oyten, and Günter Rebers, Achim-Baden, all of Fed. Rep. of Germany, assignors to Desma-Werke GmbH, Achim bei Bremen, Fed. Rep. of Germany

Filed Aug. 25, 1978, Ser. No. 936,658
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741554
Int. Cl.² B01F *5/02*
U.S. Cl. 366—159 **12 Claims**

12. A fluid component mixing head apparatus, comprising:
(a) a housing block,

(b) a pair of valve spools rotatably disposed side-by-side in parallel bores defined in the block,
(c) two pairs of axially spaced fluid component supply passages defined in the block and respectively communicating with each valve spool bore,
(d) an axial pre-mixing bore defined in each valve spool,
(e) two pairs of radial passages individually defined in each valve spool respectively communicable with the supply passages and extending into the pre-mixing bores,
(f) a final mixing chamber defined in the block and communicating with each valve spool bore,

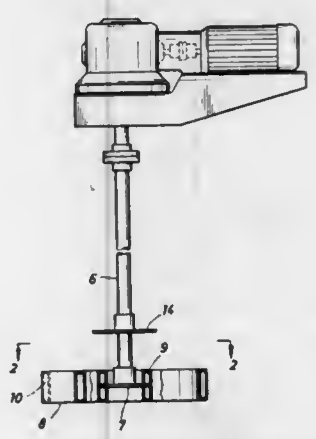


(g) a radial outlet nozzle defined in each valve spool extending into a pre-mixing bore and communicable with the final mixing chamber,
(h) a return passage defined in the block for each of the four fluid components,
(i) a partial circumferential groove defined in each valve spool, surrounding each radial passage, and selectively communicable between each supply passage and each return passage, and
(j) means for rotating the valve spools in unison between fluid component mixing positions and return positions.

4,193,702
JET MIXER AND METHOD

Philip E. Davis, 5451 Appleblossom, Friendswood, Tex. 77546

Filed Sep. 20, 1978, Ser. No. 944,007
Int. Cl.² B01F *13/00, 5/12, 7/00*
U.S. Cl. 366—343 **19 Claims**

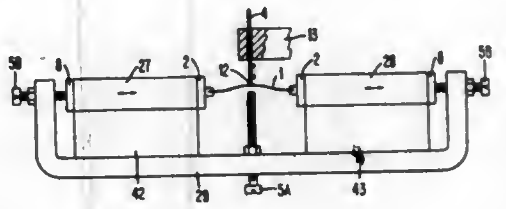


1. A jet impeller mixer-agitator adapted for immersion in a body of fluid comprising:
  (1) a shaft adapted for rotation by a power source,
  (2) a hub on said shaft connected for rotation therewith, and
  (3) at least one tubular blade connected to said hub for rotation therewith, and extending substantially radially from said shaft, said tubular blade having at least one fluid entrance opening facing substantially in the direction of rotation, at least one fluid exit opening facing substantially in a non-direction of rotation, and at least one fluid passage in flow communication with the fluid entrance opening and the fluid exit opening.

4,193,703
MATRIX PRINTER WITH PIEZOELECTRICALLY DRIVEN PRINTING NEEDLES

Walter Sakmann, Herrenberg, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 11, 1978, Ser. No. 868,561
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710935
Int. Cl.² B41J *3/10*
U.S. Cl. 400—124 **2 Claims**

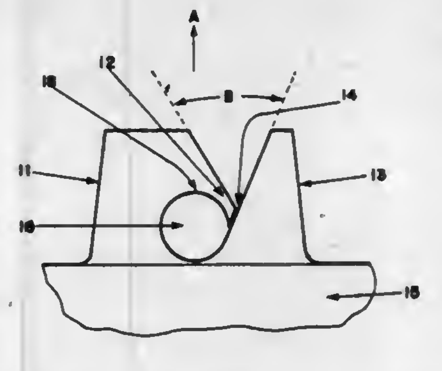


1. In a matrix printer having piezoelectrically driven printing elements, the improvements comprising:
  a buckling compression column spring;
  at least one piezoelectric crystal arrangement provided with electrical contacts for electrical control of the expansion of said crystal arrangement;
  means for coupling the expansion of said crystal arrangement to said spring along the line of the axis of said spring to create a buckling thereof; and
  a movable printing element supported adjacent to the central portion of said spring to be deflected therewith when said spring buckles;
  said buckling spring being arranged between two piezoelectric crystal arrangements acting at opposite ends thereof.

4,193,704
FASTENER FOR WIRE BOUND MEDIA

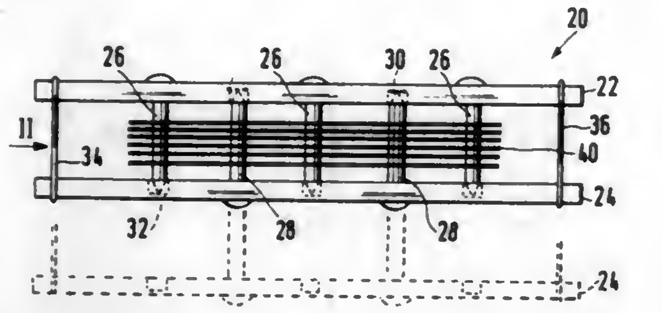
Scott Miller, Stratford, Conn.; Thomas Bushman, Dover, Mass.; Kurt Kruger, Monroe, and Kenneth Van Dyck, Westport, both of Conn., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Aug. 21, 1978, Ser. No. 935,208
Int. Cl.² B42F *3/06*
U.S. Cl. 402—19 **21 Claims**



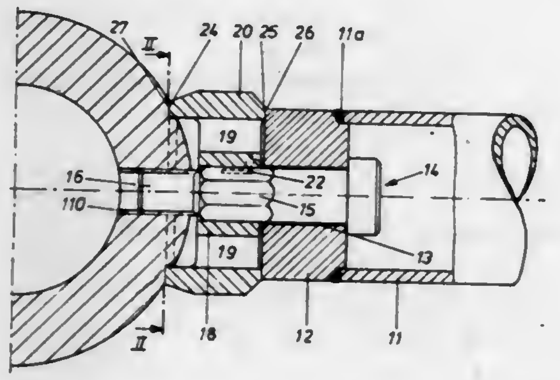
1. A member for removable attachment to a binder comprising
  a tab and a backing spaced therefrom;
  said tab having a hook which defines an aperture with said backing and is bendable out of the plane of the member for receiving and engaging the binder;
  said backing having an edge that extends diagonally tangential from the aperture and defines an open gap terminating in an open notch at the outer edge with respect to said tab for the passage of the binder into said aperture.

4,193,705
SUSPENSION DEVICE
Geoffrey D. Field, 3 Pillans Rd., Rosebank, Cape Town, South Africa
Filed Aug. 29, 1977, Ser. No. 828,669
Claims priority, application South Africa, Aug. 27, 1976, 765163
Int. Cl.² B42F *3/04; 15/06, 13/14*
U.S. Cl. 402—46 **4 Claims**



1. A suspension device for vertical suspension of sheets, such as drawing sheets, which includes
- (a) two hollow elongated bars, each bar having a longitudinal slot the sides of which are shaped to retain a block longitudinally slidably inside the bar;
- (b) a number of blocks independently slidably provided in each bar;
- (c) at least one pin allocated to each block, each pin being connected at one end to its block and the pin passing through the longitudinal slot of the bar in which its block is slidably provided with its opposite free end being directed towards the longitudinal slot of the other bar, each pin being adapted to be inserted through one of a series of holes provided along edges of sheets so that the sheets can suspend from the pins;
- (d) locating means provided on each bar for receiving and locating the free ends of the pins of the other bar; and
- (e) locking means for releasably holding the two bars in a locked position in which the free ends of the pins are located in the associated locating means.

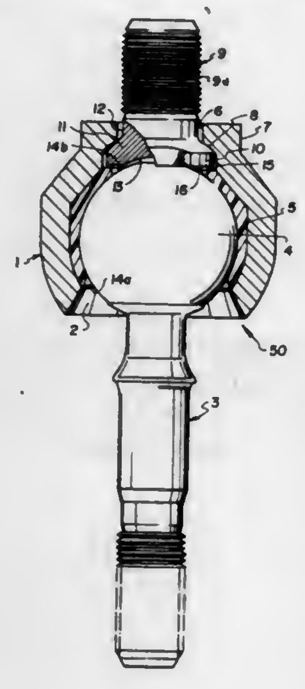
4,193,706
BOLT CONNECTIONS BETWEEN TUBULAR RODS AND JUNCTIONS IN THREE-DIMENSIONAL FRAMEWORKS
Helmut Eberlein, Wurzburg; Hermann Quenzel, Lengfeld, and Otto Kornberger, Hettstadt, all of Fed. Rep. of Germany, assignors to Mero-Raumstruktur GmbH & Co. Wurzburg, Fed. Rep. of Germany
Filed Aug. 10, 1978, Ser. No. 932,611
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736635
Int. Cl.² B25G *3/00*
U.S. Cl. 403—19 **5 Claims**



1. In a bolt connection between a tubular rod and a junction of a three-dimensional framework having a threaded bore, wherein a threaded bolt insertable into the threaded bore of the junction is rotatably and axially displaceable within a bore in a connecting element secured to the end of the tubular rod, the head of the bolt being disposed on the side of the connecting element away from the junction and within the tubular rod, and wherein a drive sleeve is disposed and secured between an annular support surface around the threaded bore of the junction and the adjacent end face of the connecting element, the drive sleeve being mounted on the shank of the threaded bolt projecting from the connecting element in an axially displaceable manner but secured against rotation relative to the bolt, the improvement wherein:

the connecting element (**12**) is cylindrical and the outer diameter thereof corresponds substantially to that of the tubular rod (**11**), the drive sleeve (**17**) comprises a hub-part (**18**) surrounding the shank of the bolt and a felly-like annular part (**20**) around the hub-part (**18**) and spaced from it, said hub and felly-like parts being connected by spoke-like means (**19**), and wherein the smallest outer diameter of the annular part (**20**) is equal to or greater than that of the tubular rod (**11**) and the connecting element (**12**).

4,193,707
AXIAL BALL AND SOCKET JOINT
Hans-Jürgen Doden, Lemförde, Fed. Rep. of Germany, assignor to Lemförder Metallwaren AG, Fed. Rep. of Germany
Filed Mar. 31, 1978, Ser. No. 892,071
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 7713390[U]
Int. Cl.² F16C *11/00;* **F16D** *1/12*
U.S. Cl. 403—140 **4 Claims**



1. An axial ball and socket joint particularly for a steering suspension of motor vehicles, comprising a one-piece joint housing having a first end with a first opening therethrough and an opposite end with a second opening therethrough and having an interior partially spherical surface between said first and second openings, a joint pin extending through said first opening and having a spherical ball head portion disposed within said housing, means journalling said ball head for universal pivotal movement in said housing over said spherical surface, said housing having a rim edge around the second opening extending outwardly from said spherical surface with an inturned edge on the interior of the housing adjacent the opening having a partially spherical underface opposite to and spaced from said ball head, a connecting cap screw extending into the interior of said housing through said second opening and having a shank portion fixedly connected to the steering suspension and a head portion larger than said shank portion spaced from said ball head with a spherically curved intermediate segment portion disposed between said head portion and said shank portion and bearing against the spherical underface of said housing, said head portion having an exterior face with a partial concave spherical recess facing said ball head into which said spherical ball head is engageable, whereby said shank portion once fixedly connected to the steering suspension becomes fixed with respect to said joint housing with the engagement between said spherically curved intermediate segment portion and said spherical underface becoming fixed and preventing stresses in the ball and socket joint due to misalignment of said shank and joint pin and inaccuracies in the abutting surface of the ball and socket joint

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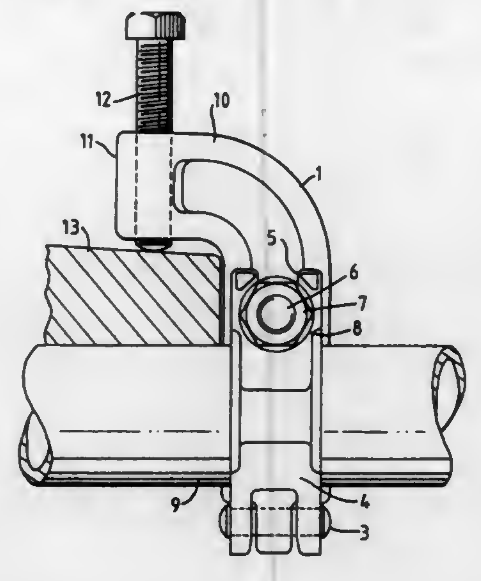
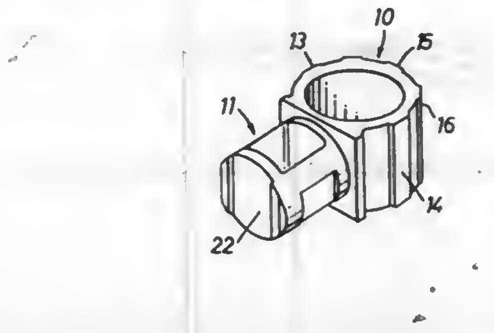
4,193,708
GIRDER CLAMP
Roger M. Kitchen, Sheffield, and Frank Lister, Halifax, both of England, assignors to Deborah Services Limited, Wakefield, England
Filed Sep. 5, 1978, Ser. No. 939,223
Claims priority, application United Kingdom, Sep. 19, 1977, 38960/77; May 22, 1978, 38960/78
Int. Cl.² F16B *7/08*
U.S. Cl. 403—188 **10 Claims**



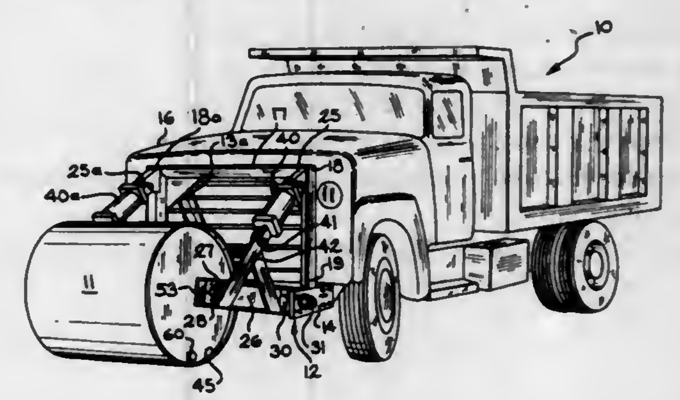
1. A fitting adapted to be secured to a length of scaffold tube for clamping said scaffolding tube to the horizontal flange of a flanged girder, said fitting comprising:
- a main body, the major length of which extends in the vertical direction,
- a clamp pivotally mounted on said main body,
- said clamp and main body being so configured as to cooperatively receive and clamp therebetween said length of scaffold tube,
- substantially horizontally disposed first fastening means for releasably securing said clamp to said main body,
- a portion of said main body extending, at a position remote from the pivotal connection of said clamp, in a direction substantially perpendicular to the major length of said main body,
- said main body and clamp being secured to said scaffold tube at a position adjacent an edge portion of said girder flange such that said portion of said main body overlies the upper surface of said horizontal flange of said flanged girder, and
- second fastening means operatively cooperable with said main body for engaging said horizontal flange of said girder,
- whereby, as said second fastening means is tightened with respect to said main body, said length of scaffold tube and said flanged girder are moved relative to each other so as to be tightly clamped together.

4,193,709
TUBE END FIXTURES
Roger L. Crook, Andover, England, assignor to Martin-Thomas Limited, South Way, England
Filed May 25, 1978, Ser. No. 909,408
Claims priority, application United Kingdom, Jun. 2, 1977, 23412/77
Int. Cl.² F16B *7/00*
U.S. Cl. 403—191 **6 Claims**



1. A fixture comprising
- (a) a first tube engaging portion, and
- (b) a second tube engaging portion in the form of a shank integral with said first tube engaging portion
- (c) said first tube engaging portion and said shank are formed together as a section of an extrusion
- (d) and said shank is of generally circular shape formed by machining a rectangular extruded shape, the axis of the circular shank being at right angles to the axis of the first tube engaging portion.

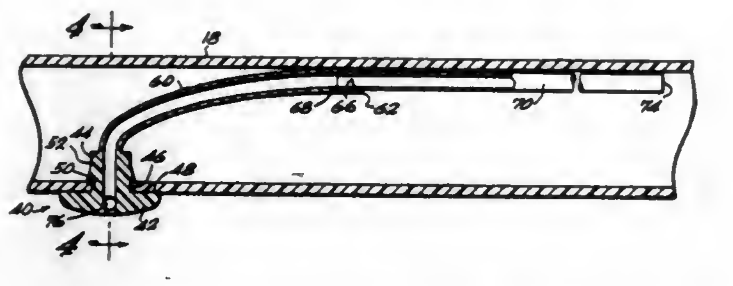
4,193,710
TRUCK MOUNTED ROLLER
Anthony Pietrowski, 509 Superior St., Genoa, Ohio 43430
Filed Jun. 22, 1978, Ser. No. 918,066
Int. Cl.² E01C *19/26*
U.S. Cl. 404—128 **2 Claims**



1. A road-rolling machine comprising a truck having front wheels and a front end, a roller support structure attached to said truck at said front end, a cylindrical roller having an axis of rotation with two ends, means connecting said roller to said support structure to rotate about said axis with said axis normally extending transverse said truck, said support structure including means for raising and lowering said roller relative to said truck front end such that said front end is weighted at least partially upon said roller when said roller is lowered and upon said front wheels when said roller is raised, and means for driving said truck when said roller is raised or lowered, said support structure including means for shifting only one end of said axis of said roller relative to said truck front end for steering said truck when said roller is in a lowered position.

4,193,711
FLOW CONTROL VALVE FOR SUBSURFACE IRRIGATION SYSTEM

Sergio Riusech, 2970 NW. 27 St., Miami, Fla. 33142
Filed Jan. 2, 1979, Ser. No. 193
Int. Cl.^{2} E02B *13/00;* **B02B** *1/20*
U.S. Cl. 405—39 **6 Claims**



1. For use in pipes of a subsurface water distribution irrigation system, a valve means to control water flow through downwardly facing, similar sized, longitudinally spaced holes along the pipes,

said valve means comprising:

an integral plastic member including a foot and a leg,

said foot comprising a body having an outer and an inner exterior surface and side faces between the surfaces and said body having a hole extending from the first face toward but not to the second face and a laterally extending port in each side face communicating with the hole,

said inner face being sized to nest in covering relation of one of the holes in the pipe with the hole in the body in registry with one of the holes in the pipe,

said leg being tubular and extending from the body in fluid communication with the body hole, said leg having an upper relatively thick portion of an axial length substantially less than the inside diameter of the pipe and said upper relatively thick portion being connected to the body, and a lower relatively thin portion extending from the relatively thick portion to a terminal end,

the length of said leg being substantially greater than the inside diameter of the pipe, said relatively thin portion being bendable and said leg being sized for insertion into one of the pipe holes, whereby water passing from the interior of the pipe through the leg is adapted to be dispersed laterally through the foot ports,

a seat comprising a sealing means at the juncture of the upper leg portion and the inner foot face to sealingly nest about the margin of one of the pipe holes, and

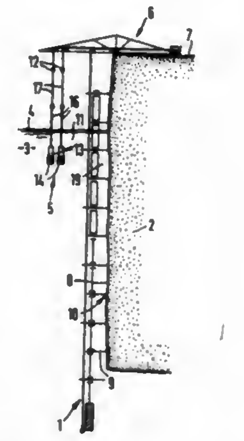
a preselected tubular length connected to the terminal end of the leg, and

means for interconnecting the tubular length to the leg.

4,193,712
WALL FOR PROTECTING TABULAR ICEBERGS AGAINST THE MECHANICAL EFFECTS OF WAVES

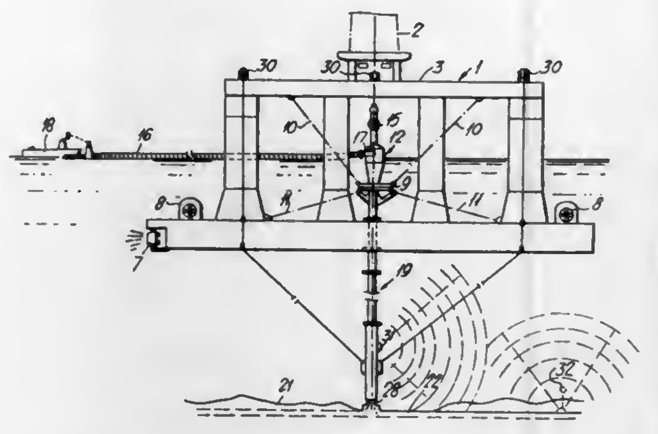
Georges L. Mougin, Paris, France, assignor to ITI Limited, Paris, France
Filed Apr. 24, 1978, Ser. No. 899,252
Claims priority, application France, Apr. 22, 1977, 77 12180
Int. Cl.^{2} E02B *1/00*
U.S. Cl. 405—52 **8 Claims**

1. A protective side structure for an iceberg, to provide protection against the mechanical effects of waves and swell, comprising a thermal protective wall for retaining a layer of sea water between it and a side face of the iceberg, and a mechanical protective wall including at least two separate curtains for retaining at least one layer of sea water between it and said thermal protective wall, subject to smaller variations in amplitude than the surrounding sea water outside the protective wall, said mechanical protective wall including ballast located at the bottom edge thereof.



4,193,713
METHOD AND APPARATUS FOR COVERING OR FILLING A TRENCH ON THE SEA BOTTOM

Hadriaan van Nes, Spydeberg, Norway, assignor to A/S Akers Mek. Versted, Oslo, Norway
Filed Jun. 5, 1978, Ser. No. 912,750
Int. Cl.^{2} B63B *35/04*
U.S. Cl. 405—159 **4 Claims**

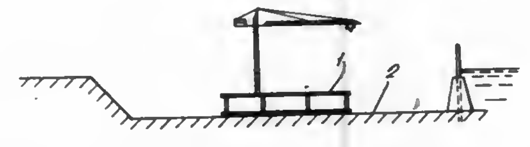


1. A method of covering and filling a trench for an oil and/or gas conduit on the sea bottom, using a surface vessel which is retained in position over the trench by means of positioning equipment, while filling material is released downwardly towards the trench and sea bottom from the vessel, comprising supplying filling material heavily mixed with water to the surface vessel from a store via a hose, reducing the amount of water with the filling material in a separator aboard the vessel, and conveying the filling material downwardly to the trench and sea bottom via a tube whose mouth is retained adjacent to the trench and sea bottom.

4,193,714
METHOD FOR ERECTING A DECK ON A MARINE STRUCTURE

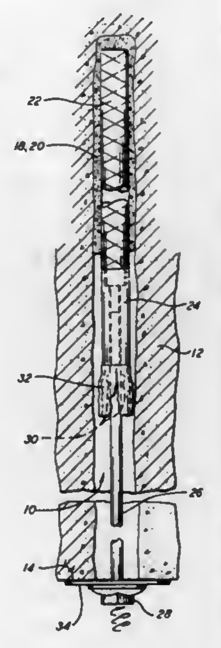
Trygve Gjerde, Jar, Norway, assignor to A/S Hoyer-Ellefsen; Ing. T. Furuholmen and Ing. F. Selmer A/S, all of Oslo, Norway
Filed Jul. 24, 1978, Ser. No. 927,001
Int. Cl.^{2} E02B *17/00*
U.S. Cl. 405—204 **4 Claims**

1. A method for mounting a deck superstructure, comprising at least one concrete girder, on a supporting structure intended to operate in marine surroundings, the supporting structure comprising at least one column extending above sea level, said method comprising the steps of bringing at least one section of the deck superstructure which includes the at least one concrete girder into position relative to the column; hoisting the at least one section of the deck superstructure up into a final position by means of cables and a jacking system; and tensioning the cables upon arrival of the at least one section of deck superstructure in the final position thereof, the lower end of the cables being permanently anchored to the at least one concrete girder while the upper ends of the cables is connected to hoisting and tensioning means arranged on top of the column; the lower part of the cables being arranged within the at least one concrete girder in such a way that the cables, upon tensioning thereof subsequent to the arrival of the at least one section of the deck superstructure at the final position thereof, form an integral part of the static system of the deck superstructure thereby providing both vertical and shear reinforcement.



4,193,715
MINE ROOF SUPPORT METHOD AND APPARATUS

George S. Vass, Summersville, W. Va., assignor to The Eastern Company, Naugatuck, Conn.
Filed May 12, 1978, Ser. No. 905,124
Int. Cl.^{2} E21D *20/02*
U.S. Cl. 405—261 **9 Claims**



1. Apparatus for installation in a drill hole in a rock formation to fracture a resin cartridge and mix the contents thereof, said apparatus thereafter being firmly anchored in the drill hole by the hardened resin mixture and serving to reinforce the rock formation, said apparatus comprising:

(a) an elongated anchor bar;

(b) means carried by one end of said bar, and having an internally threaded portion coaxial with said bar, said bar and said bar-carried means including means limiting the extent to which said bar and bar-carried means may be relatively rotated in one direction;

(c) an elongated bolt having a head at one end and threaded from the other end for a portion of its length for advance into said internally threaded portion of said bar-carried means;

(d) at least one fixed element extending radially outward from said bolt at a predetermined distance from the end of said threaded portion;

(e) a hollow collar having an axial length less than said predetermined distance and greater than the distance from said fixed element to said threaded portion of said bolt, and an axial bore or larger radius than said bolt and smaller than the radial distance by which said fixed member extends outwardly therefrom; and

(f) one of said fixed element and said collar being breakable upon application to said bolt of a predetermined torque for threaded advancement into said internally threaded portion with said collar encircling said bolt between said bar-carried means and said fixed element while said bar is held rotationally stationary.

4,193,716
IMPERMEABLE WALL CONSTRUCTION

Ugo Piccagli, 4511 Harry's La., Dallas, Tex. 75229
Filed Jan. 13, 1978, Ser. No. 869,330
Int. Cl.^{2} E02D *3/12*
U.S. Cl. 405—267 **5 Claims**

1. In a method of constructing an impermeable wall in the ground having no joints therein, the improvement comprising the steps of:

excavating at least one portion of trench in the ground at a width and depth required for the wall,

replacing excavated material from the trench with bentonite-water slurry,

after completing excavation of the one portion of trench, replacing a predetermined amount of the bentonite-water slurry with cement by pumping out the bentonite-water slurry from at least one portion of trench into a mixer where the cement is added and the slurry fed back into the one portion,

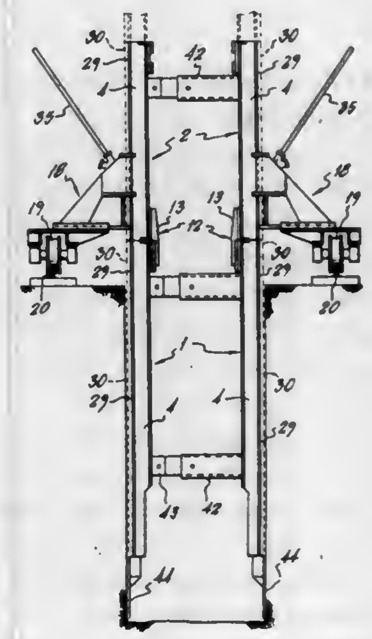
mixing the cement with the remaining bentonite-water slurry in the one portion of trench to produde an evenly mixed cement-bentonite-water slurry,

after the cement-bentonite-water slurry has gelled but not hardened, repeating the above steps on further portions of trench adjacent to previously excavated portions of trench until the completed trench is the required length and full of evenly mixed cement-bentonite-water slurry,

and allowing the cement-bentonite-water slurry to harden and form a single impermeable wall.

4,193,717
SHORING ASSEMBLY FOR A TRENCH OR HOLE

Thomas P. Treacy, 56 Scribers La., Hall Green, Birmingham 28, England
Filed Mar. 6, 1978, Ser. No. 883,938
Claims priority, application United Kingdom, Mar. 5, 1977, 9380/77
Int. Cl.^{2} E02D *19/00*
U.S. Cl. 405—283 **18 Claims**



1. A shoring assembly for supporting the sides of a trench or hole in the ground comprising two vertical shoring sheets engaging with opposite sides of the trench or hole, a respective

substantially vertically extending rack provided on each of said sheets, a respective jack for raising and lowering each sheet, a jacking head of each jack, a base of each jack secured to the respective jacking head, each jacking head being engaged with the respective rack, each base being independently supported on the surface of the ground adjacent to the trench or hole, means holding said sheets apart, a respective guide means provided on each sheet and extending parallel to the respective rack, a respective guide member secured to the respective jacking head and co-operating with the respective guide means whereby each jack is restrained from moving horizontally relative to the respective sheet.

4,193,718

EARTH RETAINING WALL OF VERTICALLY STACKED CHEVRON SHAPED CONCRETE BLOCKS

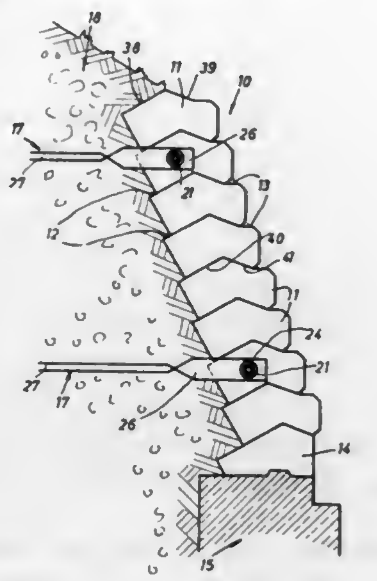
York A. Wahrendorf, Brunswick; Herbert K. Frenzel, Bremen; Adolf K. Ambrosch, Weiterstadt, all of Fed. Rep. of Germany; Knud A. Rasmussen, Roskilde, Denmark; Horst Seibert, Giessen-Wieseck, and Horst J. Dieckmann, Twistringen, both of Fed. Rep. of Germany, assignors to SF-Vollverbundstein-Kooperation GmbH, Bremen, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,284

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1977, 2731228

Int. Cl.^{2} E02D *29/02*

U.S. Cl. 405—286 **2 Claims**



1. A retaining wall for the limitation and containment of sloping earth banks and the like including a plurality of individual moulded blocks of concrete or the like arranged in horizontal courses vertically stacked one above the other, characterized by:

(a) each block being generally chevron-shaped with a convex, angled upper surface and a concave, correspondingly angled lower surface, with the upper surfaces of the blocks in the intermediate courses being matingly received in the lower surfaces of the blocks in a course immediately above,

(b) the opposite sides of each block facing towards and away from the earth bank being oriented in downwardly converging planes so that the upper surface of each block is wider than its lower surface,

(c) the wider upper surfaces of the blocks in each intermediate course defining upwardly facing shoulders that project outwardly both towards and away from the earth bank from the edges of the narrower lower surfaces of the blocks in the course immediately above, and

(d) the shoulders that project outwardly away from the earth bank being defined by generally horizontal surfaces disposed at an inclined angle to the adjacent upper surfaces of the blocks, to thereby provide outwardly extending steps.

4,193,719

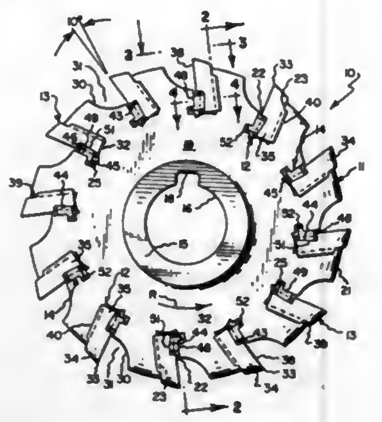
CUTTING TOOL

Ronald R. Oaks, North Tonawanda, N.Y., assignor to Niagara Cutter Inc., North Tonawanda, N.Y.

Filed Apr. 17, 1978, Ser. No. 896,738

Int. Cl.^{2} B26D *1/12*

U.S. Cl. 407—49 **9 Claims**



1. A cutting tool, comprising:

a body having opposite side faces and a slot therebetween bounded by spaced and facing leading and trailing wall surfaces separated by an intermediate base surface;

a blade arranged in such body slot and having leading and trailing blade surfaces, one of which engages one of said body wall surfaces, said blade having an inner end face opposing said body base surface;

a wedge arranged in said body slot between said blade and the other of said body wall surfaces and having leading and trailing wedge surfaces, one of which engages such other body wall surface and the other of which engages the other of said blade leading and trailing wall surfaces;

the opposed and contacting surfaces between said wedge and blade being inclined so that relative movement therebetween urges said blade toward said body base surface and also toward said one of said body wall surfaces, said opposed and contacting surfaces of said wedge and blade having a first taper inclining away from said body base surface toward said one blade surface and also having a second taper inclining away from one of said body wall surfaces toward the other thereof; and

means provided on said body slot and wedge for preventing movement of said wedge in a direction away from said body base surface.

7. A rotary form-relieved inserted-blade cutting tool, comprising:

a body having opposite side faces joined by a circular peripheral surface and provided with at least one slot extending between such body side faces and opening to such body peripheral surface;

said body slot being bounded by spaced and facing leading and trailing wall surfaces separated by an intermediate base surface;

one of such body wall surfaces having a retaining groove recessed therein extending from one of said body side faces toward the other;

a blade arranged in said body slot and having leading and trailing blade surfaces, one of which engages that one of said body wall surfaces unprovided with said retaining groove;

said blade having a radially inner end face opposing such body base surface;

a cutting edge on said blade arranged radially outwardly of said body peripheral surface and formed by the outer edge of a flat portion on such blade leading surface;

said blade having a radially-relieved peripheral surface on the trailing side of said cutting edge which constantly remains radially outwardly of said body peripheral surface and in cross-section has the same profile as said cutting edge in a plane parallel to said flat portion;

said blade being resharpenable by grinding said flat portion;

spaced raised locating shoulders on one of said blade surfaces and having a spacing therebetween corresponding to the thickness of said body between its said side faces and embracing a proximate portion of said body;

a wedge arranged in said body slot between said blade and that one of said body wall surfaces provided with said retaining groove and having leading and trailing wedge surfaces, one of which engages such one of said body wall surfaces and the other of which engages the opposing one of said blade surfaces;

said wedge having a retaining lug received in said retaining groove to prevent movement of said wedge radially outwardly;

the opposed and contacting surfaces of said wedge and said blade being tapered so that relative movement therebetween urges said blade radially inwardly and also circumferentially toward that one of said body wall surfaces unprovided with said retaining groove, said opposed and contacting surfaces between said wedge and blade lying in a plane inclined both radially and axially of the cutter, such radial inclination being away from said body base surface toward that one of said blade surfaces which engages that one of said body wall surfaces unprovided with said retaining groove, and such axial inclination being away from one of said body wall surfaces toward the other thereof.

4,193,720

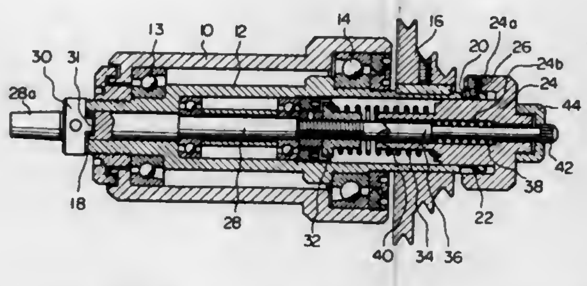
CRITICAL TORQUE DETECTOR

Kenji Machida, 2-12 Miyamoto-Cho, Itabashi-ku, Tokyo, Japan

Filed Aug. 15, 1977, Ser. No. 824,655

Int. Cl.^{2} B23B *47/24*

U.S. Cl. 408—11 **1 Claim**



1. An apparatus for detecting the critical torque imposed on a rotating drill, comprising:

a rotating input member,

an output member for supporting said drill and connected in a flexible driving connection with said rotating input member, and

means for detecting the difference in rotational speed between said input and output members, when said drill is subjected to a torque greater than the predetermined critical torque,

said rotating input member including;

a rotating sleeve having a pulley keyed thereon,

a plug member inserted in said sleeve and connected by a pin selectively engaging with said sleeve, and

a coil spring connecting said sleeve with said output member,

said output member including;

a spindle for supporting a drill at its forward end, said spindle having a socket member fixed thereon and connected by said spring with said rotating sleeve, and cam surfaces at its rear end, and

said detecting means including;

a reaction rod which is disposed within said plug member so as to be movable longitudinally and rotatable conjointly with said plug member, and is urged toward said output spindle to engage with said cam surfaces of said spindle, and

switch means located adjacent to one end of said reaction rod so as to be contacted by said reaction rod when moved longitudinally.

4,193,721

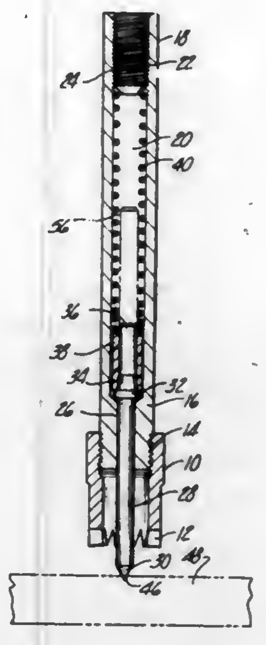
ARBOR FOR ANNULAR HOLE CUTTER

Everett D. Hougen, G-5072 Corunna, Flint, Mich. 48504

Continuation-in-part of Ser. No. 962,952, Nov. 22, 1978, abandoned. This application Jan. 18, 1979, Ser. No. 4,330

Int. Cl.^{2} B23B *47/00, 51/04*

U.S. Cl. 408—68 **19 Claims**



1. In an arbor for an annular cutter of the type having means at its upper end for mounting the arbor on a rotary driven spindle and means at its lower end for mounting an annular cutter thereon, said arbor having an axial bore therein extending to the lower end thereof, a pointed pilot pin slideable axially in said bore and adapted to extend outwardly from the lower end of the arbor so that its pointed end projects axially beyond the lower end of the cutter, a compression spring in said bore biasing the pilot pin axially to said projected position, the pilot pin being retracted axially inwardly in said bore in response to the cutter penetrating into a workpiece to compress the spring and thereby increase the biasing force thereof on the pilot pin, that improvement which comprises, a resiliently deformable plastic sleeve movable axially in said bore with said pilot pin under the bias of said spring, means for expanding said plastic sleeve radially outwardly into tight frictional engagement with said bore for opposing to a high degree the biasing force of said spring on the pilot pin whereby said frictional engagement prevents the spring from expanding freely when the leading edge of the cutter penetrates through the bottom face of the workpiece.

4,193,722

MACHINE FOR MANUFACTURING VARIABLE RATIO RACKS

Arthur E. Bishop, 17 Burton St., Mosman, N. S. W. 2088, Australia

Filed Feb. 27, 1978, Ser. No. 881,911

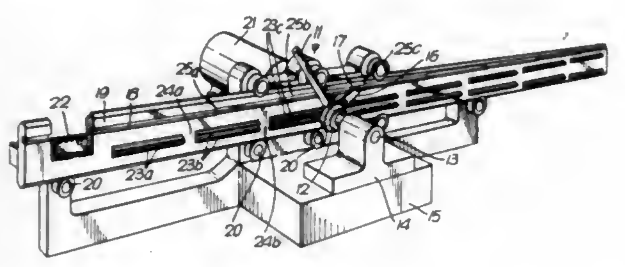
Claims priority, application Australia, Feb. 28, 1977, PC9216

Int. Cl.^{2} B23D *37/06;* **B23F** *1/08*

U.S. Cl. 409—59 **3 Claims**

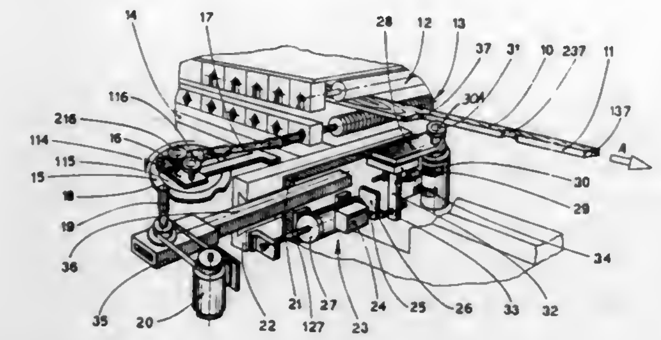
1. A machine for manufacturing variable ratio steering gear racks having teeth in two groups arranged symmetrically about a central point on the rack, said machine comprising a base, a holding fixture to hold at least one rack blank having a longitudinal axis and indexable about a second axis passing at right angles to the longitudinal axis of the rack blank through said central point of a rack blank held in said fixture, a broach carrying member, a plurality of pairs of broach blades spaced apart at length along said broach carrying member, means for producing relative movement between said broach carrying

member and said holding fixture, said pairs of blades being arranged to cut sequentially pairs of corresponding teeth of said groups of teeth simultaneously on the occurrence of said relative movement, means to hold said holding fixture correctly indexed during the cutting of teeth, means to index said holding fixture about said second axis after each pair of corresponding teeth has been cut preparatory to the cutting of a succeeding pair of teeth.



4,193,723
TEMPLATE CUTTING DEVICE

Renzo Novello, Manzano, and Elvio Bottussi, Medeuzza, both of Italy, assignors to Fratelli Novello S.p.A., Manzano, Italy
Filed Sep. 15, 1977, Ser. No. 833,681
Claims priority, application Italy, Sep. 22, 1976, 83444 A/76
Int. Cl.² B23C *1/18*
U.S. Cl. 409—122 **7 Claims**



1. A template cutting device for transferring onto a template the lateral profile of an elongated shaped sample piece, comprising:

frame means;

a sensing device on said frame means including a support member supported for movement toward and away from said lateral profile on said sample piece;

drive means on said frame means directly operatively drivingly engaging said sample piece to effect a movement of said sample piece relative to said frame means and substantially perpendicularly to the path of movement of said sensing device, said sensing device including a contour following member mounted on said support member and engaging said lateral profile of said sample piece;

support means supporting said template for rotatable movement about a fixedly located axis in correspondence to the movement of said sample piece; and

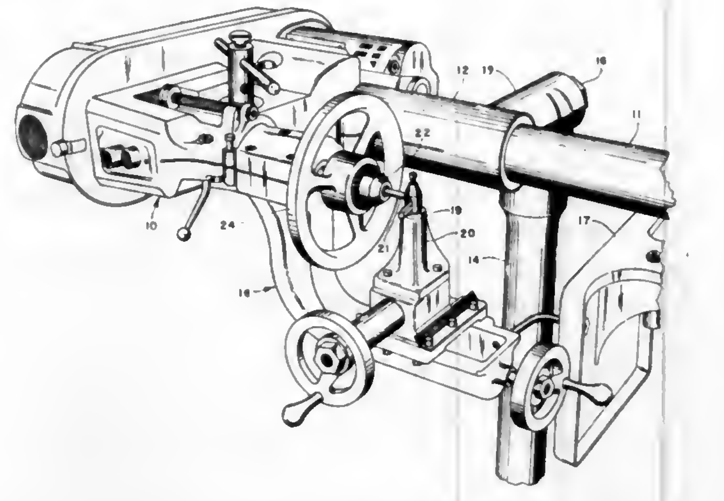
cutting tool means mounted on said support member and movable therewith in cutting relationship with a lateral edge of said template,

whereby the movement of said sample piece controls the movement of said cutting tool means.

4,193,724
TORSIONAL VIBRATION DAMPENER

Glenn B. Morse, 328 Morris Ave., SE., Grand Rapids, Mich. 49503
Filed Dec. 26, 1978, Ser. No. 972,957
Int. Cl.² B23Q *5/22*
U.S. Cl. 409—141 **8 Claims**

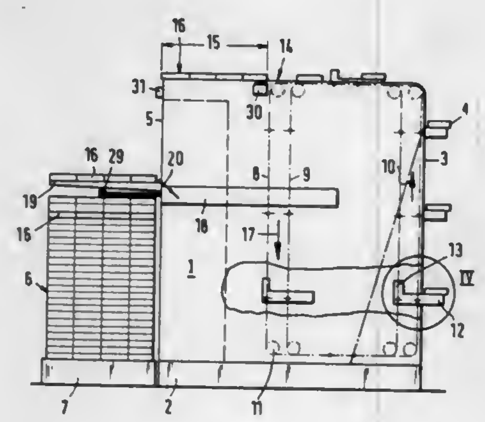
1. In combination with a machine having a frame and a spindle assembly rotatably mounted in said frame, said spindle assembly including a chuck, a torsional vibration dampener comprising:



flywheel means mounted on said chuck for at least limited relative rotation with respect thereto and with respect to said machine about the axis of rotation of said spindle assembly.

4,193,725
STACKING DEVICE FOR ROD-LIKE OR BOARD-SHAPED GOODS

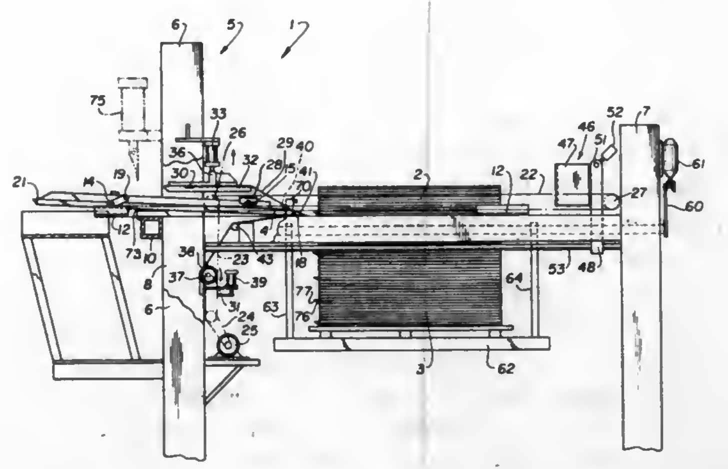
Heinz Schiepe, and Ulrich Pfeiffer, both of Berlin, Fed. Rep. of Germany, assignors to Firma Heinz Schiepe, Grosshandel und Generalvertretung fur Holzbearbeitungsmaschinen, Berlin, Fed. Rep. of Germany
Filed Jul. 24, 1978, Ser. No. 927,508
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2735469
Int. Cl.² B65G *57/02*
U.S. Cl. 414—83 **7 Claims**



1. A stacking device for rod- or board-shaped products, comprising: stacking carts; upright stands with a rear side; said stacking carts traveling vertically on said upright stands and having horizontally traveling support arms mounted thereon parallel-guided engaging members; storage area means; said engaging members having fixed stop means and receiving said products at the rear side of said upright stands below the level of the storage area, then elevating them to said level and pushing said products onto said storage area, said storage area being located on top of said upright stands and extending by the width of a stacked row beyond a distance traversed by said fixed stop means on top side of said upright stands; said stacking carts, with said support arms retracted and projecting over an upper edge of said stacking carts, being vertically movable underneath said storage area means for lifting a stacked row of said products; the support arms are then extended and said stacking carts are lowerable with said stacked row so that said stacked row may be deposited on a stack by retraction of said support arms.

4,193,726
APPARATUS FOR HANDLING OF FLAT GOODS

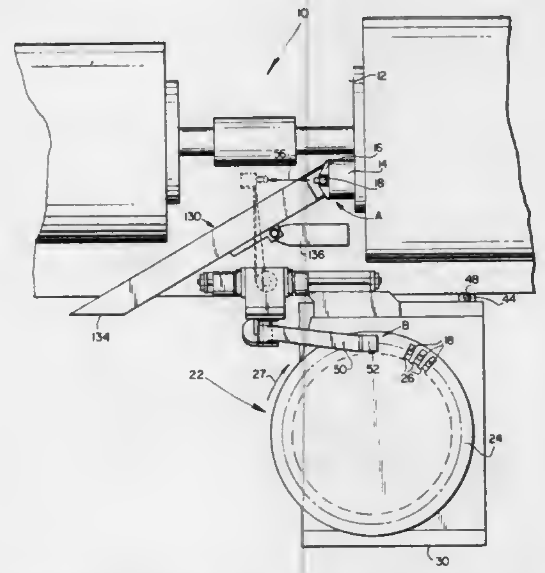
Ernst Spengler, Heusenstam by Frankfurt, Fed. Rep. of Germany, assignor to Stanztechnik GmbH R & S, Frankfurt, Fed. Rep. of Germany
Filed Jun. 1, 1978, Ser. No. 911,337
Int. Cl.² B65G *59/02*
U.S. Cl. 414—114 **8 Claims**



1. An apparatus for handling portions of a stack of sheet or panel goods, comprising machine frame means, carrier means, means supporting said carrier means for horizontal movement in said machine frame means, stack support means operatively arranged relative to said machine frame means for cooperation with said carrier means, and cover means arranged for cooperation with said carrier means in such a manner that upon moving said carrier means into said stack, part of said cover means that is in contact with the portion of said stack, that is being separated from the stack, is stationary relative thereto.

4,193,727
WORKPIECE STORING AND HANDLING APPARATUS

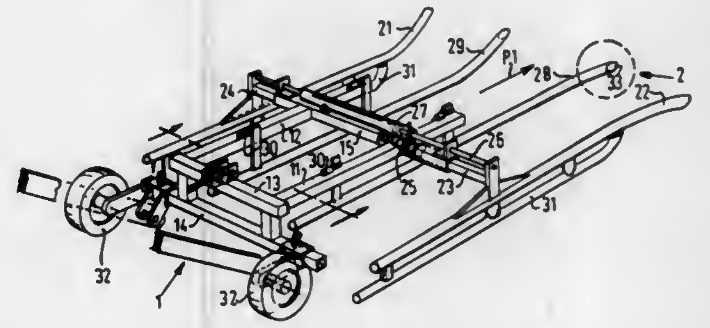
Wolfgang Kesselring, Torrington, Conn., assignor to Jamieson Manufacturing Company, Inc., Torrington, Conn.
Filed Mar. 2, 1978, Ser. No. 882,947
Int. Cl.² B65G *47/90*
U.S. Cl. 414—223 **19 Claims**



1. A workpiece storing and handling apparatus adapted for use with a multiple work holder machine wherein the work holders are indexible successively in a first substantially vertical planar path through a plurality of stations at least one of which is a machining station and at least one of which is a transfer station, and wherein the work holders have alternative hold and release conditions for transferring a workpiece; said workpiece storing and handling apparatus comprising a magazine having a plurality of workpiece receivers for storing a plurality of like workpieces, means for indexing the magazine to successively move said receivers through a plurality of stations in a second substantially horizontal planar path displaced approximately 90 degrees from the planar path of said machine work holders, at least one of said receiver stations being a workpiece transfer station, a workpiece transfer arm having a free end portion swingable through an arc between a first transfer position adjacent said receiver transfer station and an intermediate ready position spaced from said work station and an intermediate ready position spaced from said work holder transfer station but in alignment therewith for linear movement toward and away from a second transfer position adjacent the station, a workpiece gripper at the free end portion of said transfer arm operable selectively to grip and release a workpiece for transport between said two transfer stations and for transfer thereat, and cooperative motion transmitting and power operating means operatively associated with an opposite end portion of said transfer arm, said motion transmitting means being operable by said power operating means to rotate said transfer arm about two discrete and angularly displaced axes in movement of its free end portion between said first transfer position and said ready position whereby said gripper at said free end portion of said arm is so oriented at said first transfer position as to face the plane of movement of the workpiece receiver stations and so oriented at said ready position as to face the plane of movement of said work holders, and said motion transmitting means being further operable by said power operating means to effect precise substantially horizontal linear movement of said free end portion of said arm and gripper between said ready position and said second transfer position adjacent said work holder transfer station, the orientation of said transfer arm fee end portion and gripper being fixed between said ready position and said second transfer position.

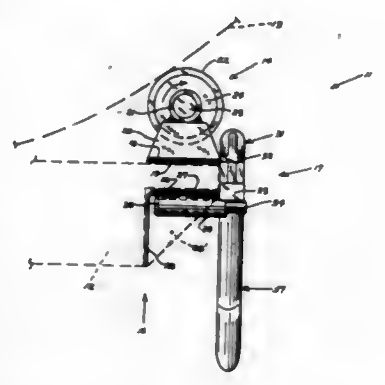
4,193,728
COLLECTING GROUPS FOR STRAW BALES AND LIFTING SAID GROUPS

Cornelis J. Steketee, 11, Korteweg, Driewegen, Netherlands
Filed Oct. 25, 1977, Ser. No. 845,218
Claims priority, application Netherlands, Nov. 10, 1976, 7612502
Int. Cl.² B60P *3/00*
U.S. Cl. 414—460 **5 Claims**



1. In a vehicle for picking up bales, a device for collecting groups of bales, comprising a horizontal frame and gripping members depending from said frame for gripping the bales, the gripping members being formed by a plurality of generally horizontally rod-shaped elements disposed in spaced, parallel relation to one another and the members being movable towards and away from one another in a direction transverse of the direction of the rods, means for driving at least one outermost gripping member in said transverse direction, and at least that intermediate gripping member adjacent the movable outermost member being pivotally mounted on the frame so as to be swingable inwardly and stop means for limiting outward return movement of said intermediate gripping member to a substantially vertical position.

4,193,729
ROLLER ATTACHMENT FOR A VEHICLE
Robert J. Winfield, R.R. #2, Davenport, Iowa 52804
Filed Jun. 26, 1978, Ser. No. 919,014
Int. Cl.^{2} B65F *3/14*
U.S. Cl. 414—532 **6 Claims**



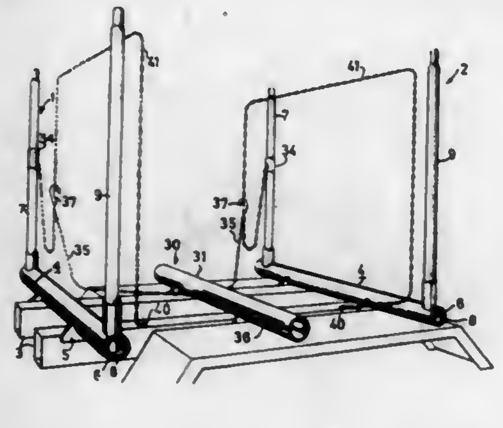
1. A roller attachment for a vehicle bed, said attachment comprising:

roller means for loading and unloading the bed;

support means having a reinforcement member; and

clamp means for selectively altering and locking the disposition of said roller means and said support means, said roller means being attached to said clamp means, said support means being pivotally attached to said clamp means, said clamp means being operable to increase the distance between said roller means and said support means thereby to effect disengagement from the bed, said clamp means being operable to decrease the distance between said roller means and said support means, the bed being disposed between said roller means and said support means, to effect engagement with, and locking onto, the bed.

4,193,730
DEVICE FOR TRANSPORT AND UNLOADING OF STACKED LOGS
Bengt A. Nordin, S-880 52 Hoting, Sweden
Filed Jun. 30, 1978, Ser. No. 920,996
Int. Cl.^{2} B60P *1/48*
U.S. Cl. 414—537 **9 Claims**



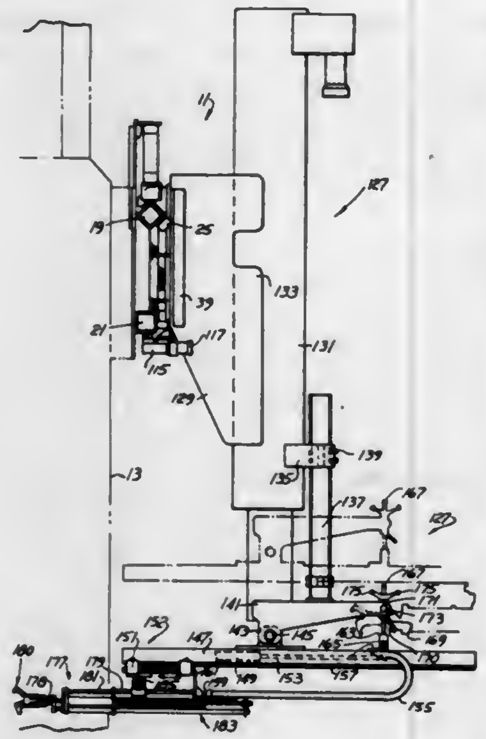
1. A device for transport of logs and the like, stacked on a support such as a timber truck, and for unloading said logs, said device comprising:

(a) at least two timber bunks secured to said support transversely of same and longitudinally spaced from each other, each of said timber bunks including a first and a second vertically upstanding stake for retaining said stacked logs and a transverse member interconnecting the bottom ends of said stakes, said transverse member being telescopically extendable to move said second stake away from said first stake and simultaneously swing said second stake from its vertically upstanding position to a downwardly inclined position;

(b) a second transverse member secured to said support intermediate said timber bunks and parallel thereto, said second transverse member being extendable in the same direction as the transverse members of said timber bunks, an elongate flexible member having opposite ends, one end of said elongate flexible member being anchored to each of said first stakes at a distance upwards from said support, and the other end thereof being connected to said second transverse member for substantially horizontal movement upon extension and retraction thereof, said flexible member having loose and tightened conditions and having such length as to extend in loose condition from said first end downwardly along and beneath said stacked logs when said second transverse member is retracted and to extend in a tightened condition between said ends when said second transverse member is extended, thereby forming a sloping ramp for unloading said logs from said support; and

(c) a second flexible member having opposite ends, connecting means provided on said support adjacent and inside the extendable end of each timber bunk for releasably securing one end of said second elongate flexible member extending therefrom upwardly over said stacked logs and having its other end releasably coupled to a corresponding one of the first said flexible member intermediate the ends thereof, so that said second flexible member can be tightened around said stacked logs by partial extension of said second transverse member.

4,193,731
ADJUSTABLE SHUTTLE MOUNT FOR PRESSES
John A. Blatt, Grosse Pte. Woods, and Gordon J. Fox, Mt. Clemens, both of Mich., assignors to Leland Francis Blatt, Grosse Point Shores, Mich.
Filed Jun. 28, 1978, Ser. No. 919,820
Int. Cl.^{2} B25J *9/00;* **B65G** *47/90*
U.S. Cl. 414—589 **7 Claims**



1. A horizontally adjustable shuttle mount comprising a main frame adapted for mounting upon and transversely of the column of a press having a bed and used in the manufacture of automotive, truck or refrigerator panels;

said frame including a pair of horizontal, vertically spaced tubes of square cross section, the upper tube having a pair of top walls inclined at 45 degrees with the vertical;

the lower tube having an upright side wall;

an upright carriage plate spanning said tubes and adapted to mount an automation unit for loading blanks and unloading pressed panels from the bed of said press;

a pair of longitudinally spaced bearing blocks mounted adjacent the upper end of said carriage plate;

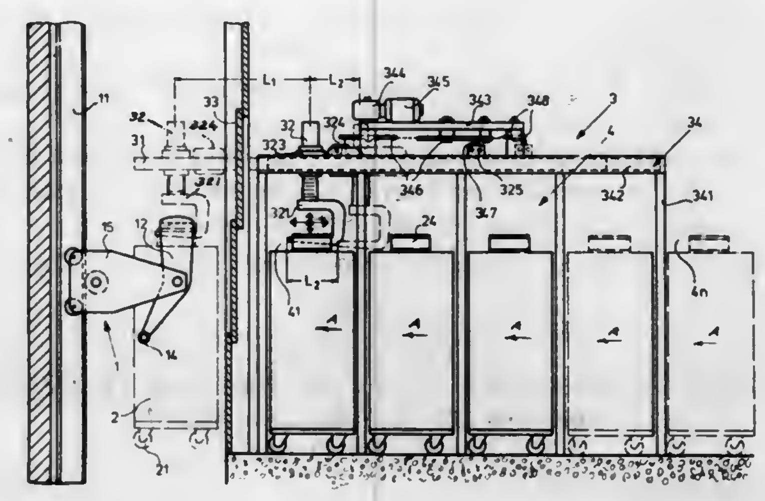
a pair of 90 degree related cam roller followers journalled upon each bearing block upon axes inclined at 45 degrees to the vertical supportably bearing upon said upper tube top walls;

a pair of longitudinally spaced bearing blocks mounted adjacent the lower end of said carriage plate;

a cam roller follower journalled upon each latter bearing block upon a vertical axis and operatively engaging said lower tube side wall;

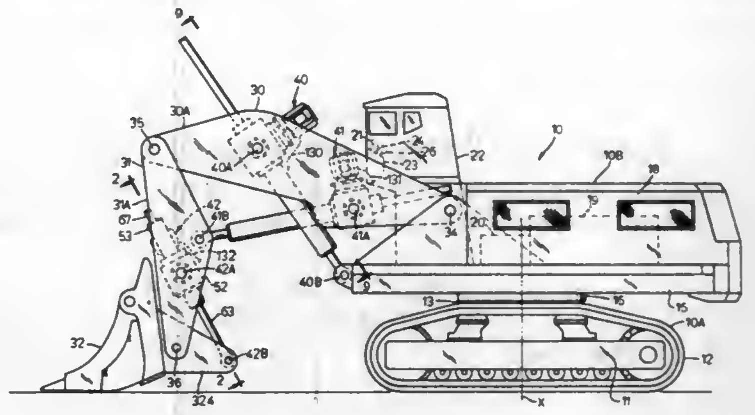
and power means on said frame and connected to said carriage plate for longitudinally adjusting said plate along said frame for pre-locating said automation unit upon and with respect to the press bed.

4,193,732
LOADING AND UNLOADING STATION FOR CONVEYORS WITH SUSPENDED TROLLEY DRIVING SYSTEMS
Klaus Vetter, Rastatt, Fed. Rep. of Germany, and Hermann Baudendistel, deceased, late of Rastatt, Fed. Rep. of Germany (by Rosemarie Baudendistel, heir), assignors to Stierlen-Maquet Aktiengesellschaft, Rastatt, Fed. Rep. of Germany
Filed Jan. 31, 1977, Ser. No. 764,086
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603303
Int. Cl.^{2} B66F *9/08;* **E04H** *6/06*
U.S. Cl. 414—609 **7 Claims**



1. A loading and unloading station for a conveyor with a trolley driving system which includes a plurality of deposit stations for respectively receiving containers, a transfer station having gate means operable to establish communication between said transfer station and said deposit stations, carriage means movable in said transfer station and adapted to receive and carry a container, and a grab movable from one of said deposit stations to said transfer station and vice versa, said grab additionally being movable vertically for selectively picking up a container at said transfer station and releasing it at said one deposit station and also for picking up a container at said deposit station and releasing it at said transfer station onto said carriage, horizontally displaceable means operatively connected to said grab for moving the latter from a deposit station next to said transfer station to said transfer station and vice versa, a chain drive operatively connected to said horizontally displaceable means for displacing the latter, rail means for guiding said grab along a horizontal path from said transfer station to the nearest deposit station and vice versa, and in which said chain drive includes: two rotatable sprocket wheels stationarily journalled and arranged in spaced relationship to each other, a chain looped around said sprocked wheels, a coulisse connected to said horizontally displaceable means, and a follower connected to said chain and movable in a direction transverse to said horizontal path of said grab, said coulisse being connected to said horizontally displaceable means.

4,193,733
HYDRAULIC EXCAVATOR MACHINE HAVING SELF-CONTAINED ELECTROHYDRAULIC POWER UNITS
Karl H. Ullmann, Dortmund, Fed. Rep. of Germany, assignor to Harnischfeger Corporation, West Milwaukee, Wis.
Filed May 17, 1978, Ser. No. 906,983
Int. Cl.^{2} E02F *9/22*
U.S. Cl. 414—694 **12 Claims**



1. A modular electrohydraulic high fluid pressure power unit for connection between a pair of relatively movable large components and operable to effect relative movement therebetween comprising:

a housing having a chamber therein defining a fluid reservoir and a pair of spaced apart openings on opposite sides of said chamber;

a pair of hydraulic rams mounted in said openings on said housing in parallel spaced apart relationship, each ram comprising a cylinder, a piston in said cylinder, and a piston rod connected to said piston and extending from said cylinder;

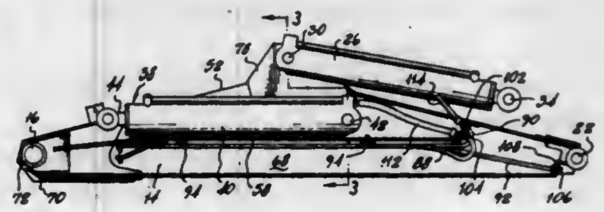
means mounted on said housing and on each piston rod for connecting said power unit to said pair of relatively movable components;

a reversible hydraulic pump mounted within said chamber of said housing for supplying fluid to operate said hydraulic rams;

an electric motor mounted on said housing between said pair of rams and connected to drive said pump;

and remotely controllable means on said pump for controlling said pump.

4,193,734
BOOM FOR BACKHOE WITH INTERNALLY DISPOSED HYDRAULIC FEED LINES
Derrick G. Williams, Sale, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Jun. 30, 1978, Ser. No. 921,030
Claims priority, application United Kingdom, Jul. 12, 1977, 29205/77
Int. Cl.^{2} E02F *3/85*
U.S. Cl. 414—694 **5 Claims**



1. A lifting machine boom having two side walls maintained in spaced relationship to each other by a bottom wall and a top wall, first pivot means at one end of the boom and second pivot means on the side walls for the purpose of attaching one end of a hydraulic actuator used for elevating the boom about said first pivot means, a first and second longitudinally extending chambers with said second pivot means within said second

chamber, and at least a first rigid pipe attached to said median well and arranged to run longitudinally of the boom within said first chamber from a first end located adjacent said one end of the boom to a second end located nearer the other end of the boom, said second end being provided for connection with said hydraulic actuator.

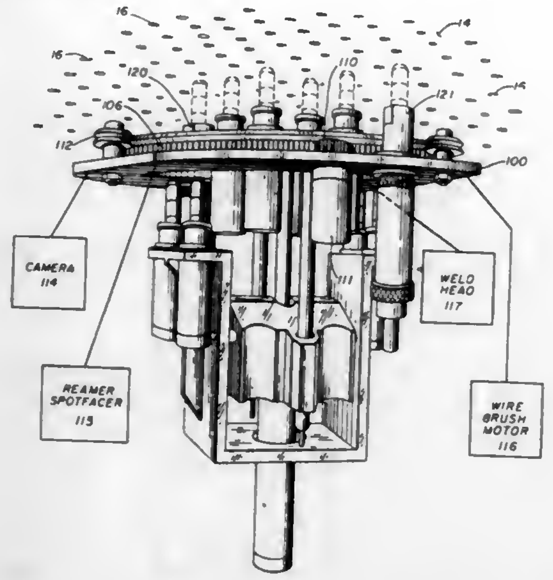
4,193,735
WORK TABLE FOR A STEPPED PLATFORM

Dennis E. Savor, Hixson, and James W. Hales, Harrison, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 24, 1978, Ser. No. 899,447

Int. Cl.^{2} F28G *15/04*

U.S. Cl. 414—744 **3 Claims**



1. In a surface traversing apparatus adapted to be supported near a member for traversing the surface of the member by stepwise motion, the surface traversing apparatus including base means, first and second anchor means each movably connected to the base means for stepwise lateral relative motion in different respective directions, the first and second anchor means being selectively engageable with the member for resisting lateral motion relative thereto, first and second actuating means operatively connected to the first and second anchor means respectively and to the base means for moving the respective first and second anchor means laterally relative to one another in discrete steps, means to alternately engage the first and second anchor means with the member while the other of the anchor means is disengaged from the member so as to transport the first and second anchor means laterally relative to the other of the anchor means by the first or second actuating means respectively to move the first and second anchor means to new relative positions, the improvement wherein,

a circular race is mounted on the base means with its center in substantial vertical alignment with the geometrical center of the base means,

a work table in the form of a circular flange and positioned concentric the race,

a plurality of guide wheels spaced at fixed positions between the race and table so as to enable the table to rotate relative the race in a plane parallel the surface of the member,

motor means connected between the race and table to rotate the table to selected positions relative to the surface traversed by the base,

and tools mounted at stations on the work table,

whereby each tool is positioned in a desired sequence over the same location on the surface of the member to carry out work on the same surface structure.

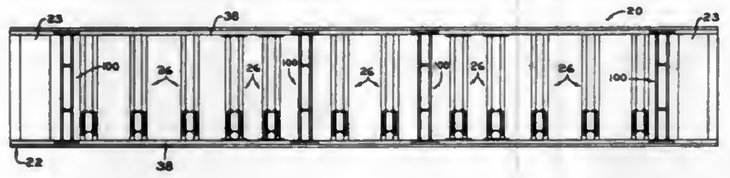
4,193,736
RAILWAY CAR LOOSE SHEET MATERIAL SHIPPING SUPPORT LOADING ARRANGEMENT

Ronald J. Thomaswick, Kittanning, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 634,688, Nov. 24, 1975, Pat. No. 4,127,071. This application Aug. 30, 1978, Ser. No. 938,209

Int. Cl.^{2} B60P *7/10;* **B61D** *3/08;* **B65J** *67/02, 69/00*

U.S. Cl. 414—786 **2 Claims**



1. A method of loading at least one article having a predetermined length and weight on a railcar having a pair of spaced longitudinal runners mounted on the bed of the railcar comprising:

positioning between the longitudinal runners a plurality of lateral deck runners spaced a distance less than the length of the at least one article for supporting the at least one article;

securing the lateral deck runners in position;

positioning a stanchion on selected ones of the lateral deck runners such that the combined weight of the at least one article supported by the stanchion and the stanchion have a center of gravity approximately at the longitudinal center of the railcar;

securing the stanchion in position to its respective lateral deck runner;

loading the at least one article on the lateral deck runners and respective stanchion; and

securing the at least one article in position to prevent longitudinal, vertical and lateral movement of the at least one article relative to the lateral deck runners.

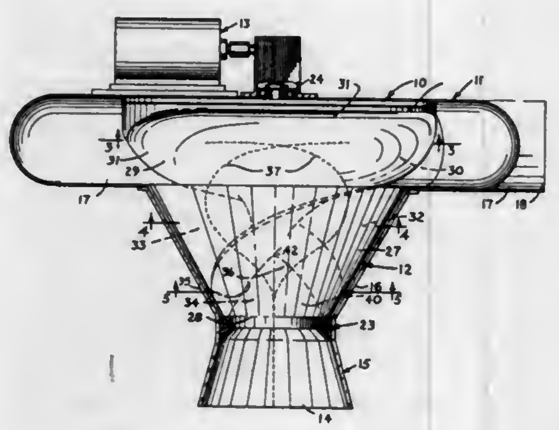
4,193,737
FISH PUMP

George H. Lemmon, Rte. 1, Box 218, Hagerman, Id. 83332

Filed Sep. 22, 1977, Ser. No. 835,677

Int. Cl.^{2} F04D *1/02*

U.S. Cl. 415—73 **1 Claim**



1. A fish pump for pumping live fish having a known maximum length, comprising:

a hollow casing having a forward end with an intake opening centered on a pump longitudinal axis and a rear end with an enlarged unobstructed angular volute channel formed therein communicating with a tangential discharge opening;

a mixed flow rotor mounted within the casing for rotation about the longitudinal axis in a desired angular direction, said rotor having an intake end adjacent the intake opening of the casing and a discharge end projecting into the rear end of the casing;

said rotor having at least two fish passageways formed therein that are symmetrical with respect to the longitudinal axis and are merged at the rotor intake end coaxially along the longitudinal axis to form an unobstructed recessed, axially-extending, inlet opening communicating with the casing intake opening to initially receive the fish therein in a substantially axial orientation as the rotor is rotated;

wherein the rotor inlet opening has axially extending leading edges that extend from a periphery of the rotor inlet opening rearward and radially inward to an apex along the longitudinal axis in which the apex is axially spaced along the longitudinal axis from the annular volute channel;

wherein the axially extending leading edges have smooth curved surfaces facing the direction of rotation of the rotor to guide the fish from the recessed rotor inlet opening into the fish passageways;

said fish passageways extending axially rearward and diverging radially outward through the rotor to tangentially directed, peripheral exit openings that progressively merge into the annular volute opening;

wherein the minimum cross-sectional dimensions of the rotor inlet opening, the rotor passageways and the rotor exit openings in conjunction with the annular volute channel are at least equal to one-half the known maximum fish length; and

wherein each of the fish passageways extends axially and radially in a helical-spiral path about the longitudinal axis in which the path has a progressively decreasing helical pitch that varies along a cycloid curve to initially receive the live fish in the axial recessed inlet opening in a substantially axial orientation and then axially and radially conveying the live fish from the inlet opening through the rotor passageway in a helical-spiral path about the longitudinal axis with the live fish progressively passing tangentially into the volute channel for tangential discharge from the pump through the tangential discharge opening.

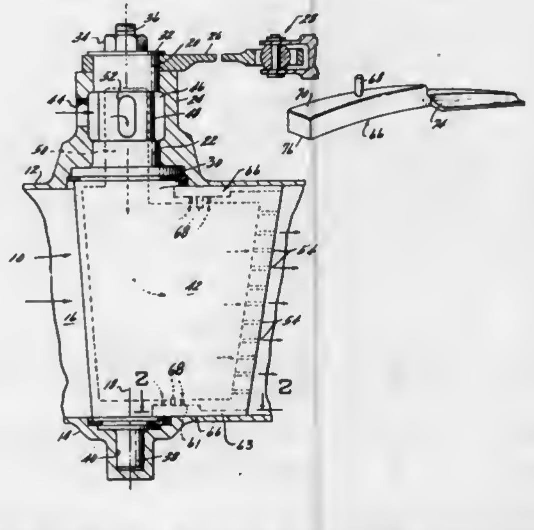
4,193,738
FLOATING SEAL FOR A VARIABLE AREA TURBINE NOZZLE

Delmer H. Landis, Jr.; Theodore T. Thomas, Jr., both of Loveland, and Charles J. Haap, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 19, 1977, Ser. No. 834,626

Int. Cl.^{2} F01D *9/02;* **F16J** *15/16*

U.S. Cl. 415—115 **5 Claims**



5. A turbomachinery vane having a tip, a pressure surface, a suction surface, a leading edge and a trailing edge for use in cooperation with a proximate flow path defining wall and having cooling air circulating through the interior thereof comprising:

a seal for disposition within a cavity formed within the tip proximate the wall wherein the cavity extends to the vane trailing edge and forms an opening through the vane pressure surface;

means communicating between the hollow vane interior and the cavity for directing a flow of air into the cavity, thereby urging the seal outwardly into contact with the wall; and

a seal surface comprising a portion of the seal extending laterally beyond the vane through the cavity opening in the vane pressure surface, and means for exposing said seal surface to the pressure of the turbine operating fluid to create a force thereon to further urge the seal outwardly into contact with the wall.

4,193,739
DEVICE FOR TURNING THE ROTOR OF A GAS TURBINE ENGINE

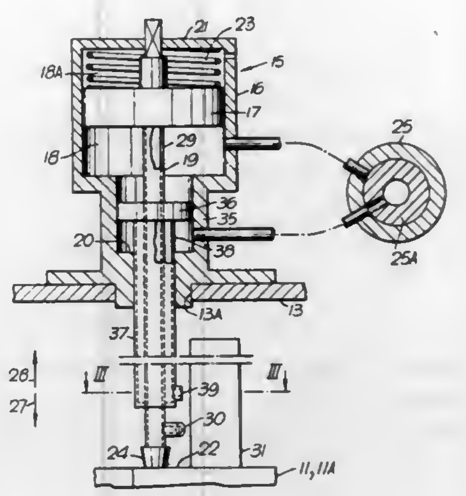
Desmond C. Lucey, Avon, England, assignor to Rolls-Royce Limited, London, England

Filed May 22, 1978, Ser. No. 908,454

Claims priority, application United Kingdom, Jun. 2, 1977, 23407/77

Int. Cl.^{2} F01D *25/34*

U.S. Cl. 415—118 **3 Claims**



1. Device for turning a rotor of a gas turbine engine comprising an engine casing a member insertable through an aperture in said casing of said engine into a position adjacent blades provided on the rotor, said member including means for directing a pressurised gas on to said blades so as to cause rotation of said rotor, and means for urging said member into friction engagement with the rotor for stopping thereof.

4,193,740
VIBRATION ISOLATOR FOR FLEXIBLE BLADED FAN

Herbert N. Charles, Chatham, Canada, assignor to Fram Corporation, East Providence, R.I.

Filed Mar. 15, 1978, Ser. No. 886,676

Int. Cl.^{2} F16D *3/64, 3/14;* **F04D** *29/20*

U.S. Cl. 416—132 A **8 Claims**

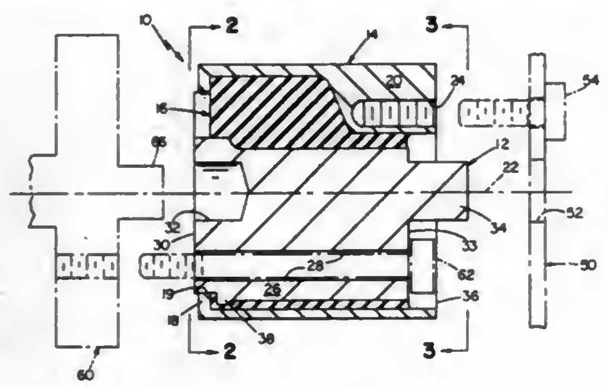
1. A fan and a vibration isolator in combination, comprising:

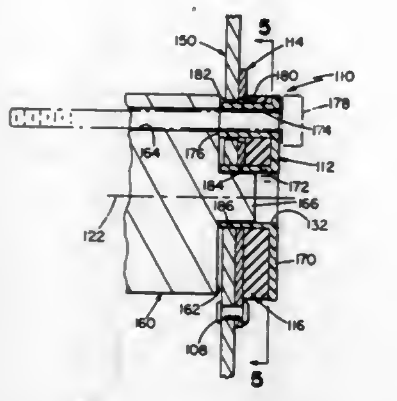
a first generally planar member having a fan attached thereto;

a second generally planar member adapted for connection to a fan driver;

a resilient member intermediate and arranged to transmit torque between said first and second planar members; and

alignment means, comprising a plurality of tubes projecting from one side of said second planar member through aligned openings in said first planar member such that there is no torque-transmitting contact between said tubes





and said first planar member, for aligning said isolator and said fan coaxially with said fan driver.

4,193,741

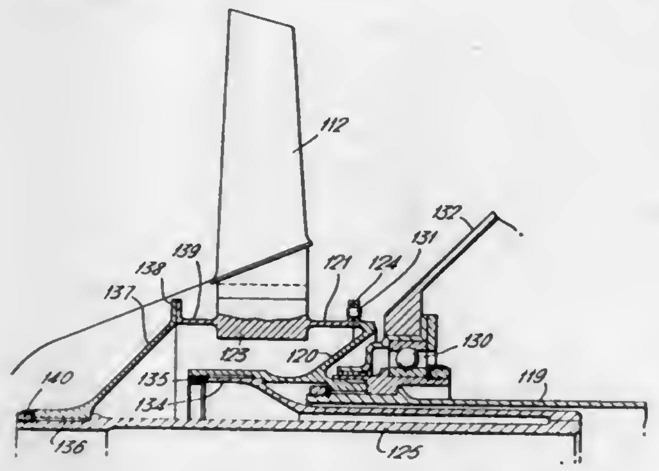
GAS TURBINE ENGINES

Henry R. Briggs, Bristol, England, assignor to Rolls-Royce Limited, London, England

Division of Ser. No. 748,371, Dec. 7, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,817

Int. Cl.² F01D *5/10*

U.S. Cl. 416—170 R **3 Claims**



1. A gas turbine engine comprising
a hollow main shaft,
a first mounting structure for supporting a rotor from the exterior of the shaft and including
a frangible driving connection which is dimensioned to fracture when transverse loads on the rotor exceed a predetermined magnitude, and
a second mounting structure which includes a tubular auxiliary drive shift connected at one end to rotate with said main shaft and extending through the hollow interior of said main shaft and through an end of said main shaft to the rotor to form a transversely flexible connection between said main shaft and said rotor.

4,193,742

VACUUM PUMP ASSEMBLY WITH BUILT-IN SHUTOFF VALVE

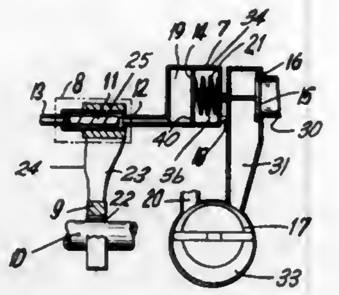
Klaus Fischer, Wetzlar; Helmut Flauger, Braunfels; Kurt Balzer, and Roland Fischer, both of Wetzlar, all of Fed. Rep. of Germany, assignors to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslar, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 625,717, Oct. 24, 1975, abandoned. This application Mar. 6, 1978, Ser. No. 883,792

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1974, 2451685

Int. Cl.² F04B *49/06*

U.S. Cl. 417—295 **6 Claims**



1. A vacuum pump assembly comprising: a vacuum pump including a suction port adapted to be placed in flow communication with a space to be evacuated; valve means for opening and closing said suction port; spring means biasing said valve means toward a position to open said suction port; and control means for applying to said valve means a closure pressure acting against said spring means to cause said valve means to close said suction port when said vacuum pump is stopped and for removing said closure pressure therefrom when said vacuum pump is started in order to permit opening of said suction port; said control means including auxiliary valve means operating to open and close in response to starting and stopping of said vacuum pump to control application of said closure pressure to said valve means, cylinder means, piston means operatively engaged within said cylinder means, connecting means joining said piston means with said valve means for effecting correlative movement therebetween, means enclosing a pump working volume within which said valve means and suction port are located, and passage means placing said pump working volume in flow communication with said cylinder means; said auxiliary valve means being connected to effect application of said closure pressure to said piston means within said cylinder means against the force of said spring means; said passage means being sized to permit said closure pressure to flow from within said cylinder means into said pump working volume after said valve means have closed said suction port thereby to effect a delay in the application of said closure pressure within said pump working volume to avoid introduction of said closure pressure into said pump working volume while said suction port is open.

4,193,743

OSCILLATORY PUMP FOR THE TRANSPORT OF VISCOUS MATERIALS

Heinz Bille, Unna, Fed. Rep. of Germany, assignor to Maschinenfabrik Walter Scheele KG, Unna-Massen, Fed. Rep. of Germany

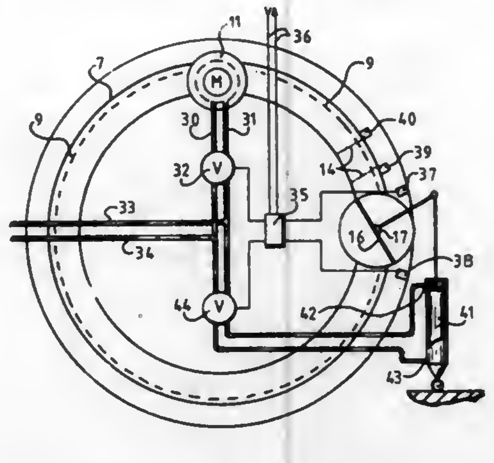
Continuation-in-part of Ser. No. 777,811, Mar. 15, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,853

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1976, 2611124

Int. Cl.² F04C *21/00;* **F04B** *15/02*

U.S. Cl. 417—481 **8 Claims**

1. A piston pump for the transport of viscous materials and, in particular, concrete, comprising:
a housing including a ring-shaped body having a U-shaped cross-section which has defined therein an annular-shaped working space, and a ring-shaped cover which closes said working space;
a piston, slidably mounted within said annular-shaped working space, for oscillating movement;
a pressure conduit and a suction conduit, each of which is communicative with said working space;
control means for connecting the portion of said working space which lies in front of the moving piston, to said pressure conduit and for simultaneously connecting the portion of said working space which lies in back of the moving piston, to said suction conduit, said control means including a member which is disposed in said annular-shaped working space; and
means for reversibly driving said piston so that said piston moves in an oscillating manner in said annular working space, reversing its direction when said piston nears said member of said control means disposed in said annular-shaped working space, said means for driving including a drive ring, slidably supported on the underside of said cover, to which said piston is secured, said piston projecting downwardly therefrom into said working space of said body.



4,193,744

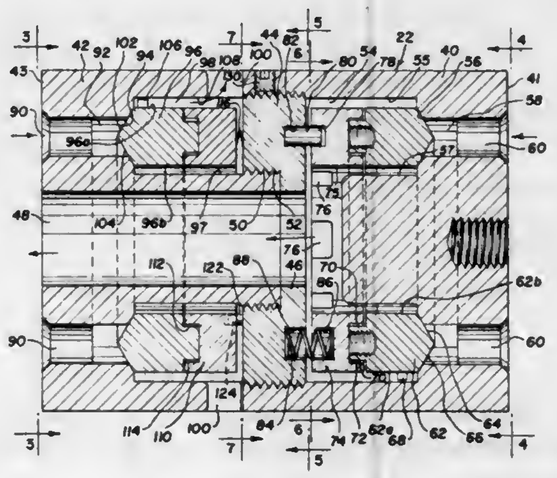
COMPRESSOR VALVE

William M. Spence, Kerens, Tex., assignor to Nipak, Inc., Dallas, Tex.

Filed Mar. 27, 1978, Ser. No. 890,243

Int. Cl.² F04B *39/10*

U.S. Cl. 417—567 **8 Claims**



1. In a compressor having a reciprocating piston slideably disposed in a compression chamber formed by a cylinder, said compression chamber having an inlet passage and an outlet passage, a valve disposed between said inlet and outlet passages comprising: a suction end body having an inlet communicating with the inlet in said compression chamber, said inlet communicating with an annular passage formed in said body which communicates with the compression chamber; a suction valve seat formed in said body formed between the inlet passage and annular passage; an annular suction valve disc disposed in said annular passage having an outer side spaced from the outer wall of said annular passage and an inner wall of said valve disc being spaced from the inner wall of said annular passage; means to urge said sucton valve disc into sealing relation with said suction valve seat; a suction dampening plate secured between said means to urge said suction valve disc in sealing relationship with said suction valve seat and said suction valve disc; a discharge valve body having an inlet communicating with said compression chamber said inlet communicating with an annular discharge passage formed in said discharge end body, said annular discharge passage communicating with the outlet of said compression chamber; a discharge valve seat formed between said inlet and annular passage in said discharge end body; a discharge valve disc having an outer side spaced from the outer wall of said annular discharge passage and an inner side spaced from the inner wall of said annular discharge passage; means to urge said discharge valve disc into sealing relation with said discharge valve seat, said discharge valve disc being adapted to move off of said discharge valve seat when gases are being compressed through said inlet in said discharge end body and said suction valve disc being adapted to be urged off of said suction valve seat when gases are being pulled through said compression chamber inlet to said compression chamber; and a discharge dampening plate secured between said discharge valve disc and said means to urge said discharge valve disc into sealing relationship with said discharge valve seat.

4,193,745

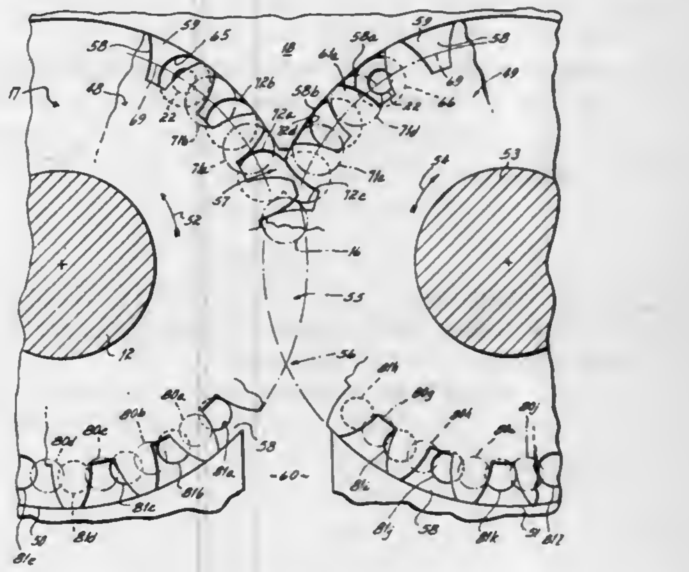
GEAR PUMP WITH MEANS FOR DISPERSING GAS INTO LIQUID

William M. Hamilton, Lorain; Charles H. Scholl, Vermilion; Jeffrey J. Kruke, Lorain, and Larry D. Akers, Vermilion, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Mar. 9, 1978, Ser. No. 884,826

Int. Cl.² F04C *1/08, 13/00, 11/00;* **B01F** *5/14*

U.S. Cl. 418—9 **17 Claims**



1. In a gear pump wherein a gas under pressure and a liquid are introduced into a pumping chamber, intermixed by the action of the gear teeth which mesh in intertooth spaces in said pumping chamber and the mixture is delivered to an outlet port,
mixing means for improving the dispersion of the gas in the liquid comprising,
a series of blind cavities formed in a surface which adjoins said chamber, said cavities opening to said chamber, said cavities being at spaced positions along the path of movement of the teeth of at least one of said gears, said teeth wiping across the respective cavities as the gear rotates, the intertooth spaces of said gear alternately connecting to and disconnecting from the cavities in sequence as the gear rotates, the cavities when connected to the respective intertooth spaces providing additional volume into which gas in the intertooth spaces can surge, thereby improving the dispersion of the gas in the liquid.

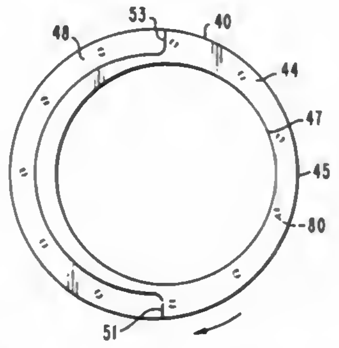
4,193,746
REVERSIBLE GEROTOR PUMP

Robert C. Aman, Jr., Minneapolis, Minn., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 16, 1978, Ser. No. 878,552

Int. Cl.^{2} F04C *1/06, 15/02*

U.S. Cl. 418—32 **3 Claims**



1. A reversible pump having a housing defining a generally cylindrical cavity, an internally-toothed rotor having a circular periphery and an eccentric meshing engagement with an externally-toothed gear, drive means extending into said housing for driving said gear and rotor, a collar member having a substantially cylindrical outer peripheral surface sized to be in close proximity to the cylindrical surface of the housing and having a planar lower surface adjacent the planar surface of a stationary member in the said cavity and defining a cylindrical opening on an axis eccentric from the outer peripheral surface, said opening sized to receive said rotor in a generally close fit and with said collar member rotatable within said housing through frictional engagement with said rotor, means for limiting the rotation of said collar member to a 180° arc for positioning the rotor axis within said opening relative to the gear axis to maintain delivery of a pumped fluid to a discharge opening in said pump and a plurality of discrete projections struck up from the normal planar surface of the member for limiting the surface area of contact between the member and the support surface and in turn thereby limiting the frictional engagement between said collar member and the planar stationary adjacent facing surface so as to be less than the frictional engagement between said collar and said rotor.

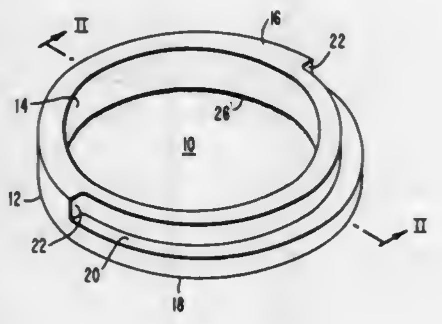
4,193,747
REVERSING PUMP ECCENTRIC MEMBER

Loyal V. Pittman, Bloomington, Minn., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 16, 1978, Ser. No. 887,282

Int. Cl.^{2} F04C *1/06, 15/02;* **F16C** *33/06*

U.S. Cl. 418—32 **3 Claims**



1. A reversing eccentric member for a pump or the like, said member defining a ring having an outer circular wall and an inner circular wall which are not concentric, a generally planar upper surface and a generally planar bottom surface, said bottom surface having an annular marginal area adjacent the inner circular wall projecting outwardly from the normal plane of the surface, said area having indentations forming channels extending completely across said area to enhance lubrication film shearing when said ring is rotated relative to a facing plate resulting in a raised bearing surface of reduced area and wherein said raised surface is substantially flat and in a plane perpendicular to said walls.

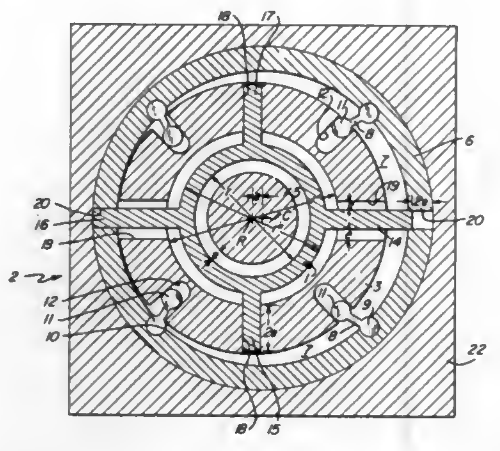
4,193,748
YOKE COUPLER FOR TWO ECCENTRICALLY ROTATING MEMBERS

James C. Swain, 3891 Mountview Rd., Columbus, Ohio 43220

Filed Jul. 13, 1978, Ser. No. 924,136

Int. Cl.^{2} F01C *1/00, 21/00;* **F03C** *3/00;* **F16D** *3/04*

U.S. Cl. 418—173 **1 Claim**



1. A fluid displacement device comprising:
a rotor having a drive shaft;
a cylindrical cam ring surrounding the rotor and eccentrically mounted with respect thereto;
a housing member rotatably carrying the cam ring;
a pair of side plates sealingly attached to the housing and having journal means therein for rotatably carrying the drive shaft;
a plurality of pumping vanes pivotally attached to the cam ring and having a sliding and pivotal interconnection to the rotor, forming a plurality of pumping chambers therebetween;
a coupling member interconnecting the rotor and the cam ring comprising:
a central hub circumscribing the drive shaft and carrying four outwardly projecting four-sided coplaner arms, and disposed in fluid sealing engagement between the out-facing side of said arms and hub and the in-facing side of one of said plates;
a pair of opposed slots disposed in the lateral side of the cam ring, each being respectively adapted to slidingly receive and in fluid sealing engagement with one of two opposed arms carried by said central hub.
a pair of opposed slots disposed in the lateral side of the rotor, each being respectively adapted to slidingly receive, and in fluid sealing engagement with, one of two opposed arms carried by said central hub.

4,193,749
SCREW BLOWER

Shuichi Yamazaki, Kamifukuoka, and Keisuki Ban, Fujimi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

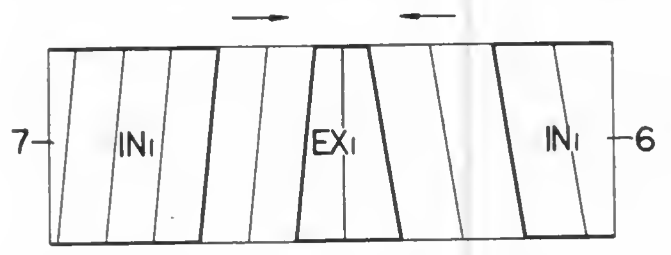
Filed Jan. 17, 1978, Ser. No. 870,255

Claims priority, application Japan, Jan. 27, 1977, 52/7994

Int. Cl.^{2} F04C *1/10*

U.S. Cl. 418—201 **6 Claims**

1. A screw blower comprising: a pair of rotary driving shafts disposed in parallel relation; means for rotatably driving the shafts in opposite directions; a pair of rotors having the same axial length secured to said shafts for rotation therewith, said rotors having respective teeth for meshing with one another; each of said teeth having a helix angle and meshing in male and female relationship with one another; an intake chamber for gases opening at the side of the teeth whereby the teeth disengage as the rotors rotate; an exhaust chamber for the gases opening at the side of the teeth, at which said teeth engage as the rotors rotate, the opening portion of said exhaust chamber extends over the entire length of said rotors; and a casing having a cylindrical inner peripheral surface surrounding said rotors in air-tight slidably engaging relation, said casing being discontinuous at said opening of said intake chamber and said opening of said exhaust chamber, such that grooves formed between said meshing teeth come into communication with said opening of said exhaust chamber at the same time when said grooves start to compress gases trapped in said grooves.



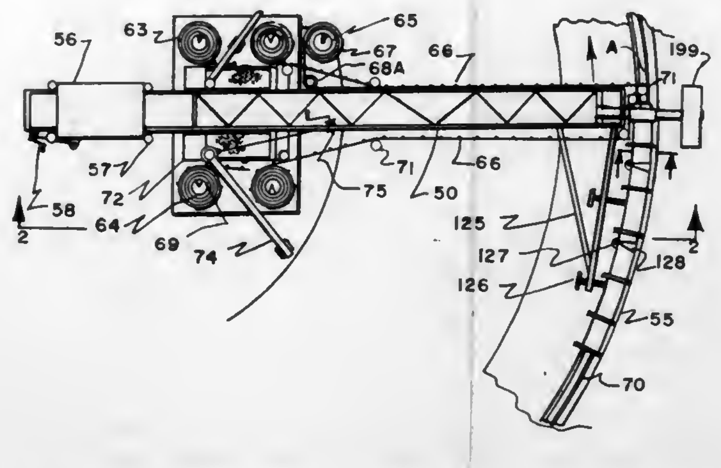
4,193,750
SELF-PROPELLED SLIP FORM MACHINE

Jay P. Nielson, 3490 Monte Verde Dr., Salt Lake City, Utah 84109

Filed Nov. 28, 1977, Ser. No. 855,167

Int. Cl.^{2} B28B *21/12*

U.S. Cl. 425—60 **24 Claims**



1. A self-propelled, slip form machine for casting and forming a concrete mix or the like in a continuous band, comprising a boom mounted for travel along a predetermined path; a slip form carried by an end of the boom and closed at its front, top, and sides by respective walls but open at its bottom and rear, thereby providing during use a pressure chamber for receiving the concrete mix; means for introducing a concrete mix or the like into the slip form; and means for exerting pressure against the front wall of said slip form from inside the pressure chamber through the intermediacy of the concrete mix deposited in said chamber, so as to advance said slip form and boom while forming the concrete mix.

4,193,751
MULTIPLE DISTRIBUTOR HEADS FOR LAYING DRY FIBERS

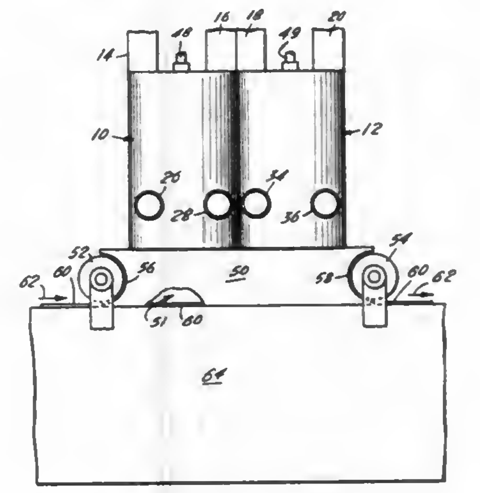
Fredric N. Miller, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jun. 15, 1978, Ser. No. 915,865

Int. Cl.^{2} B29J *5/00*

U.S. Cl. 425—83.1 **3 Claims**

1. Apparatus for disposing a uniform web of dry fibers on a forming-wire screen, comprising: a plurality of fiber distributors including housings disposed in side-by-side relationship with no gap therebetween and having bottom openings disposed in side-by-side relationship; foraminous screens extending over said openings; a forming tunnel disposed beneath said openings; a movable forming-wire screen disposed within said tunnel for travel therethrough sequentially beneath one then another of said openings; means for introducing dry fibers to said housings for discharge through said openings, and the screens extending thereover, onto said forming-wire screen as it is moved therepast; and sealing means on opposite ends of said tunnel accommodating movement of said forming-wire screen therethrough.



4,193,752
MANUFACTURE OF MARBLED DETERGENT BARS

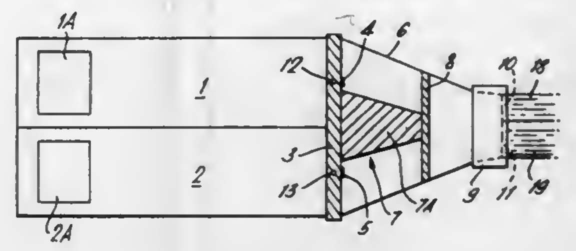
Leslie Hunt, Wirral; Ian T. Nicolson, Birkenhead, and Thomas M. Whitfield, Wirral, all of England, assignors to Lever Brothers Co., New York, N.Y.

Division of Ser. No. 779,774, Mar. 21, 1977, Pat. No. 4,162,288. This application Aug. 22, 1978, Ser. No. 935,825

Claims priority, application United Kingdom, Mar. 26, 1976, 12242/76

Int. Cl.^{2} B29F *3/12*

U.S. Cl. 425—131.1 **6 Claims**



1. Detergent processing apparatus suitable for the injection of liquid into a detergent mass comprising two extruders, a common extrusion cone into which the extruders open, apertured pressure plate areas between the extruders and the extrusion cone, an unapertured area between said apertured areas, liquid injection means positioned within or immediately downstream of the apertured plate areas, a partition extending downstream from the unapertured area, and side surfaces on the partition forming together with the inner surfaces of the extrusion cone separate compression volumes for each detergent stream.

4,193,753
APPARATUS FOR AUTOMATICALLY PRODUCING FLOWER-SHAPED DECORATIONS

Sunao Yoshioka, 576,, Oaza-Umebayashi, Nishi-ku, Fukuoka, Japan

Filed Dec. 28, 1978, Ser. No. 973,985

Int. Cl.^{2} B29F *3/04, 3/06*

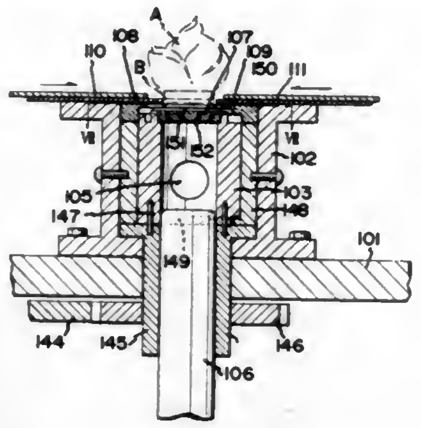
U.S. Cl. 425—311 **2 Claims**

1. Apparatus for automatically producing flower-shaped decorations comprising:
(a) a flower-forming casing fixedly mounted on a frame structure, said casing having both ends thereof open-ended,
(b) a cylinder rotatably encased in said casing, said cylinder

having a horizontal opening formed to a peripheral wall thereof,

(c) a raw material supply tank mounted on said frame structure,

(d) a communicating tube disposed between said casing and raw material supply tank for intermittently communicating an inner chamber of said cylinder and said raw material supply tank by way of said horizontal opening,



(e) a pattern plate mounted on said casing, said plate having a plurality of concentric flower-forming apertures,

(f) a piston rod elevatably disposed in said cylinder, for extruding a flower-shaped decoration through said apertures,

(g) a pair of stem-forming plates disposed on said pattern plate, said plates having semicircular notches at corresponding inner ends, and

(h) a pair of cutting-off plates disposed on said pattern plate.

4,193,754
VIBRATING APPARATUS FOR FORMING CONCRETE BLOCKS

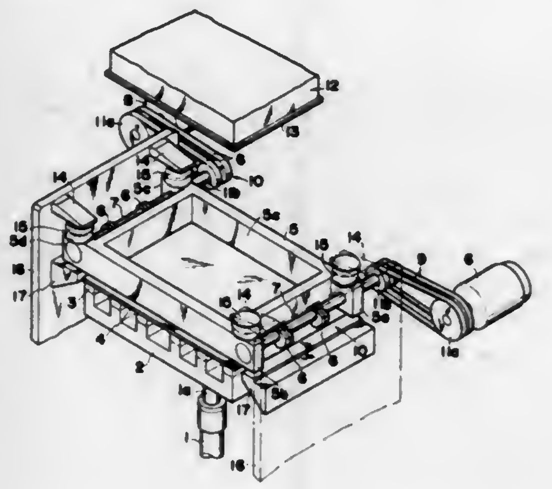
Yoji Sekiguchi, Maebashi, Japan, assignor to Katsura Machine Co., Ltd., Maebashi, Japan

Filed Jul. 21, 1978, Ser. No. 926,816

Claims priority, application Japan, Jul. 26, 1977, 52-89443

Int. Cl.² B28B *1/08*

U.S. Cl. 425—424 **6 Claims**



1. Vibrating apparatus for forming a concrete block comprising:

(a) a framework which has arms at opposite sides thereof and receiving blocks at a portion lower than said arms with a predetermined distance between said arms and said receiving blocks;

(b) a four-sided mold box for forming a concrete block;

(c) a receiving plate at the bottom of said mold box;

(d) a platform which has a resilient layer thereon, said mold box being vertically movable and held in position by said receiving plate and said platform;

(e) air spring means for resiliently pressing said mold box downwardly;

said air spring means having a plurality of bellows, each of which is disposed at the bottom of said arms of the framework, (f) a hydraulic cylinder means for pressing said platform and said receiving plate upwardly above said receiving blocks such that said receiving plate is closely contacted with said mold box against the resilient force of said air spring means;

(g) means for vibrating said mold box,

said means for vibrating the mold box having a shaft rotatably connected to said mold box, an eccentric weight member connected to said shaft, and driving device for rotating said shaft.

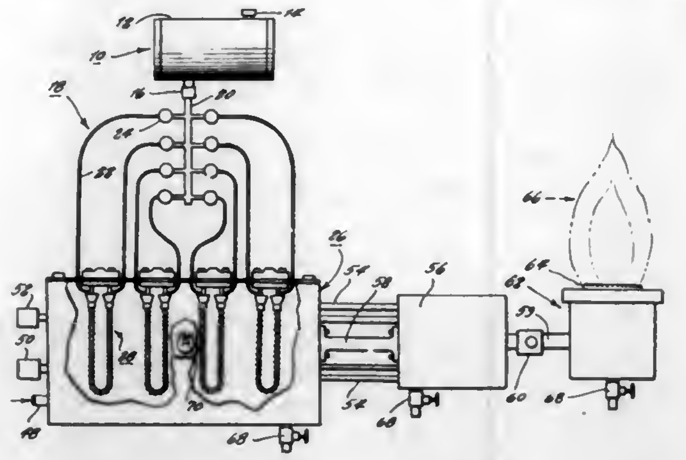
4,193,755
LIQUID TO GAS FUEL CONVERSION BURNER DEVICE

Vincent Guarnaschelli, Greenlawn, and Mitchell Reiss, Dix Hills, both of N.Y., assignors to R & G Energy Research Corporation, New York, N.Y.

Filed May 5, 1978, Ser. No. 903,089

Int. Cl.² F23D *11/44*

U.S. Cl. 431—207 **17 Claims**



15. A spiral heating element for use as a heating device for converting liquid fuel into fine fumes for use in a fuel burning apparatus, said spiral heating element comprising:

a heating element having a spiral path of stranded wire therearound, and receiving means coupled to said element for receiving the liquid fuel and directing it into said spiral path, whereby the liquid fuel flows through the stranded wire around said heating element until it is converted almost entirely into fine fumes.

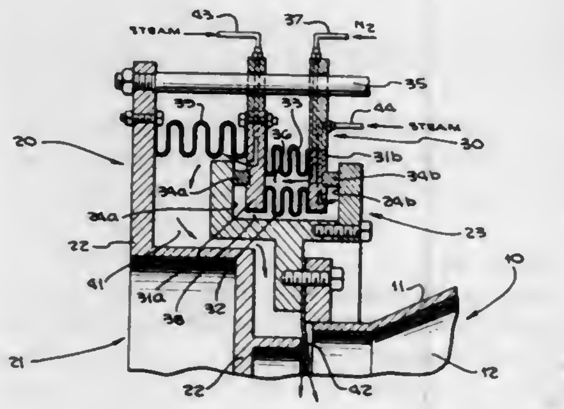
4,193,756
SEAL ASSEMBLY AND METHOD FOR PROVIDING A SEAL IN A ROTARY KILN

F. Roland Leon, Los Angeles, Calif., assignor to Tosco Corporation, Los Angeles, Calif.

Filed Mar. 8, 1978, Ser. No. 884,597

Int. Cl.² F27B *7/24*

U.S. Cl. 432—3 **16 Claims**



1. A seal assembly adapted for use with a rotary kiln, and adapted to provide a fluid-tight seal between the stationary members and the rotating members of the rotary kiln, comprising:

a rotating, outwardly-facing, substantially U-shaped annular rim integral with the rotating members of the rotary kiln and having two opposing rim surfaces; and

a stationary annular bellows chamber integral with the stationary members of the rotary kiln and disposed between the two opposing rim surfaces, and including means for providing a fluid-tight seal between the bellows chamber and the opposing rim surfaces so as to define a seal chamber.

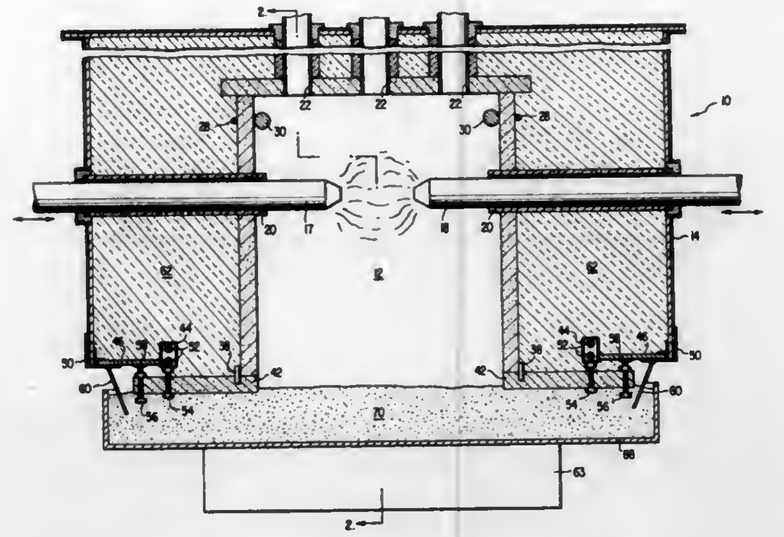
4,193,757
FURNACE CONSTRUCTION AND METHODS OF LOADING AND SEALING A COMBUSTION CHAMBER THEREIN

Samuel R. Elkins, Jr., Chamblee, Ga., assignor to Electro Minerals, Inc., Lawrenceville, Ga.

Filed Jul. 24, 1978, Ser. No. 927,292

Int. Cl.² F27D *1/16, 1/00;* H05B *7/18*

U.S. Cl. 432—3 **19 Claims**



13. A method of sealing refractory material to form refractory ingots which comprises the steps of

a. providing a furnace chamber within a furnace having enclosed side wall members and a top wall member,

b. arranging a group of graphite floor members with a central aperture therein,

c. positioning a refractory material within a container beneath said central aperture in said graphite floor members,

d. providing a downwardly extending skirt member constituting a sealing member from the superstructure of said furnace,

e. and elevating said refractory containing container sufficiently far to embed said skirt member within said refractory material thereby sealing the bottom of said furnace chamber.

4,193,758
GRANULAR BED HEATING METHOD

Don G. Peterson, Frisco, and Judson M. Harper, Fort Collins, both of Colo., assignors to Food Processes, Inc., Saginaw, Mich.

Division of Ser. No. 695,826, Jun. 14, 1976, Pat. No. 4,094,633. This application Oct. 31, 1977, Ser. No. 846,974

Int. Cl.² F27B *15/00*

U.S. Cl. 432—27 **5 Claims**

1. A method for heating a granulated product, said method comprising the steps of:

inputting a granulated heat transferring material into a rotatable heating bin;

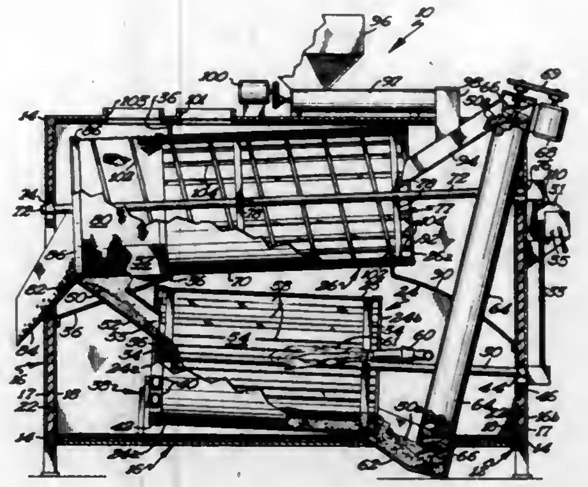
directly heating said granulated heat transferring material by directing heat into the interior of the rotatable heating bin;

raising said granular heat transferring material upward within said heating bin and dropping said heat transferring material through the highest heating zone within said heating bin in response to rotation of said heating bin as said heat transferring material moves longitudinally along said heating bin so as to increase heat transfer to said heat transferring material;

outputting heated granular material from said heating bin in response to rotation thereof;

inputting heated granular heat transferring material outputted from said heating bin into a rotatable product cooking bin;

inputting a granulated raw product to be heated into said rotatable cooking bin simultaneously with the step of inputting said granular heat transferring material thereto, thereby commingling said raw product with said heated



granular heat transferring material to facilitate heating of said raw product by exposure to said heated granular heat transferring material;

rotating said product cooking bin thereby transporting commingled heated granular heat transferring material and product therethrough;

separating heat transferring material from product and outputting heated product to a separate external station;

returning granular material separated from said product in said separation step into said rotatable heating bin thereby continuously recycling said granular heat transferring material; and

rotating said heating bin to again heat said granular heat transferring material to facilitate repetition of said process.

4,193,759
ROTARY KILN WITH A PLURALITY OF PLANETARY COOLING TUBES

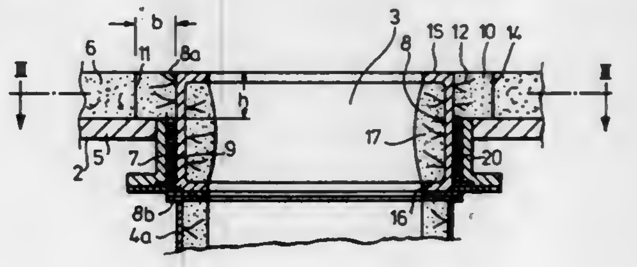
Jürgen Wurr, Ennigerloh; Antonius Vering, Ahlen, and Bodo Ermer, Sendenhorst, all of Fed. Rep. of Germany, assignors to Polysius AG, Neubeckum, Fed. Rep. of Germany

Filed Jan. 3, 1978, Ser. No. 866,559

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1977, 2702876

Int. Cl.² F27B *7/38*

U.S. Cl. 432—78 **15 Claims**



1. In a rotary kiln having a refractory lining, a plurality of discharge port openings, a corresponding plurality of planetary cooling tubes, and a corresponding plurality of intake sleeves connected one to each of said tubes and having a portion thereof extending into one of said openings, the improve-

ment comprising annular collars of refractory material separate from said lining and corresponding in number to the number of said sleeves, each of said collars encircling and being snugly fitted to the extending portion of one of said sleeves and being accommodated in an annular recess formed in said lining, each of said collars being flush with the surface of said lining; and hold-down members affixing each of said collars to said extending portion of its associated sleeve.

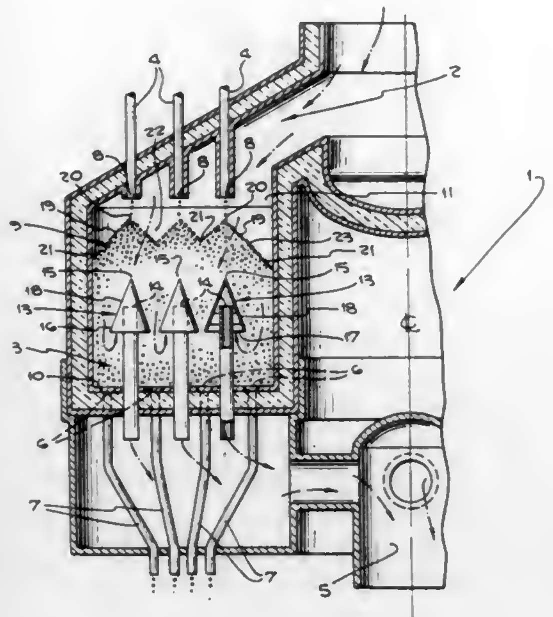
4,193,760
APPARATUS AND METHOD FOR HEATING A PLURALITY OF SOLIDS

R. Glenn Vawter, Northridge, and Charles S. Waitman, Hacienda Heights, both of Calif., assignors to Tosco Corporation, Los Angeles, Calif.

Filed Mar. 6, 1978, Ser. No. 883,386

Int. Cl.^{2} F28D *15/00*

U.S. Cl. 432—96 **9 Claims**



1. In a device for raising the temperature of a plurality of solids to a higher temperature having heating chamber means with at least one hot flue gas inlet for connection to a source of hot flue gas, at least one hot flue gas outlet, at least one solid inlet aperture for connection to a source of solids which are relatively cooler than said hot flue gas, said solids being fed into said heating chamber means and at least one solids aperture, the improvement comprising the provision of:

individual disengager means associated with said one hot flue gas outlet only such that solids are deflected by said disengager means only relative said one hot flue gas outlet and are prevented from entering said one hot flue gas outlet, and

means for coaxially mounting said one hot flue gas outlet downstream of and displaced from said one solids inlet aperture and means for positioning said disengager means intermediate the hot flue gas outlet and solids inlet aperture, whereby said disengager means is positioned within a direct flow path of said solids from said solids inlet aperture and thermal stressing of the individual disengager means possible wherein it is associated with a plurality of hot flue gas outlets is prevented.

4,193,761
KILN

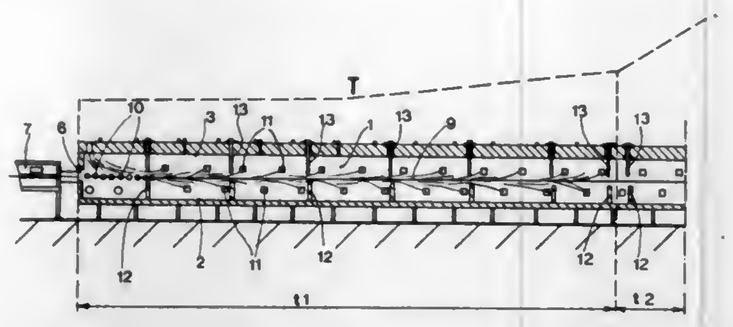
Enzo Mantegani, Via Clusone 2, Milano, Italy

Filed Sep. 29, 1978, Ser. No. 947,177

Claims priority, application Italy, Oct. 7, 1977, 28362 A/77; Jul. 10, 1978, 25490 A/78

Int. Cl.^{2} F27B *9/20*

U.S. Cl. 432—128 **11 Claims**



1. A kiln, comprising a hollow elongated housing having an upper wall and a lower wall spaced from each other defining therebetween the interior of said housing, an inlet for inserting items to be treated in said housing and an outlet for withdrawing the treated items from the housing; a first set of baffles spaced from one another along the length of said housing and mounted on said lower wall of said housing and extending towards said upper wall thereof; a second set of baffles spaced from one another along the length of said housing and mounted on said upper wall of said housing and extending towards said lower wall thereof, said first and second sets of baffles bounding between them a gap extending along the length of said housing, said gap defining a transport path for items to be treated, at least one set of baffles being adjustable so as to vary the width of the gap; and means for transporting the items to be treated through said gap from said inlet to said outlet of said housing.

CHEMICAL

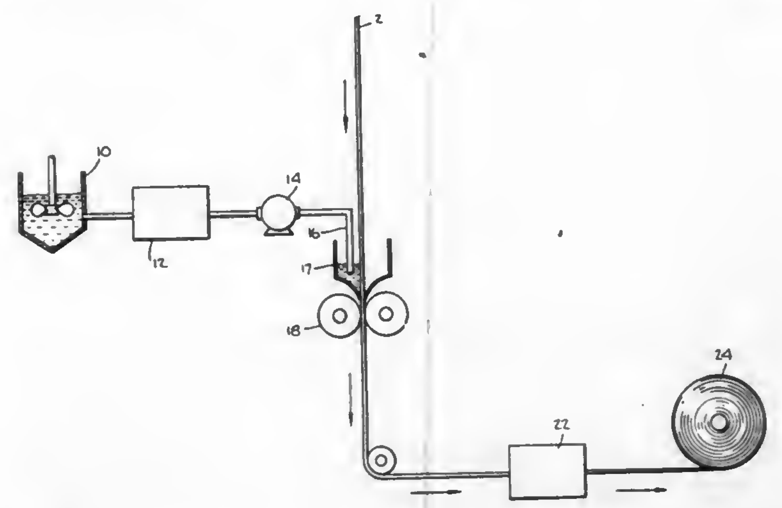
4,193,762
TEXTILE TREATMENT PROCESS

Chettoor G. Namboodri, North Augusta, S.C., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed May 1, 1978, Ser. No. 901,780

Int. Cl.^{2} D06B *1/00;* D06P *5/00*

U.S. Cl. 8—14 **9 Claims**



1. A process for applying a finishing treatment to a textile material which comprises

forming a stable foam composition which includes said finishing agent therein;

routing said textile material downwardly in a substantially vertical path through a pair of horizontally disposed pressure rollers;

maintaining a predetermined amount of said foam composition in a dam disposed along the vertical path of travel of said textile material at a point upstream of said pressure rollers;

routing said textile material in the proximity of said dam to apply said foam composition to at least one side of said downwardly moving textile material at a point prior to the passage of said textile material through said horizontally disposed pressure rollers;

and forcing the foam on the surface of the vertically disposed textile material into the material and collapsing the foam by means of said pressure rollers to effect penetration of said foam into said fabric.

4,193,763
DYEING AND PRINTING OF WATER-SWELLABLE CELLULOSE MATERIAL AND BLENDS THEREOF WITH SYNTHETIC FIBRES, BY MEANS OF DISAZO DYES DERIVED FROM AMINO-PYRAZOLE

Roberto Cipolli, and Gioacchino Boffa, both of Novara, Italy, assignors to Aziende Colori Nazionali Affini Acna S.p.A., Milan, Italy

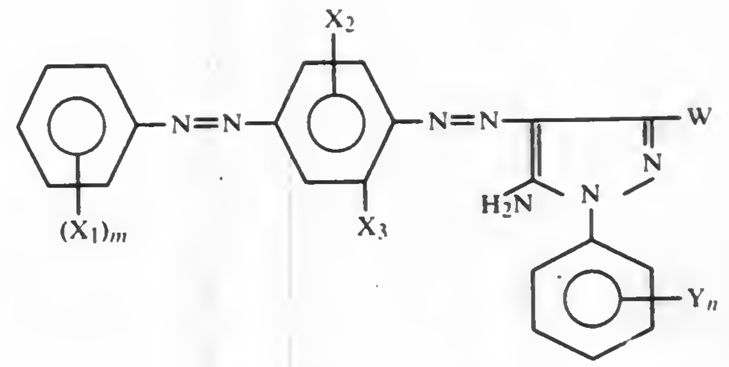
Filed Feb. 7, 1978, Ser. No. 875,937

Claims priority, application Italy, Feb. 7, 1977, 20004 A/77

Int. Cl.^{2} D06P *3/82*

U.S. Cl. 8—21 C **4 Claims**

1. Process for the dyeing and printing of fabrics comprised of water-swellable cellulose material and blends thereof with synthetic materials, said process comprising dyeing and printing the material in the presence of water and of a high-boiling solvent selected from the group consisting of polyols and ethers and esters thereof, said solvent being capable of maintaining cellulose in the swollen state at the application temperature, with disazo dyes having the general formula:



wherein:

X_1=hydrogen, alkyl having 1 to 4 carbon atoms or alkoxyl having 1 to 4 carbon atoms, chlorine, bromine, —CN, $—NHCOR_1$, —NHCO—Ar, —COOR, $—CON(R_1)_2$, and $—NO_2$;

X_2=hydrogen, alkyl having 1 to 4 carbon atoms or alkoxyl having 1 to 4 carbon atoms, chlorine, bromine, $—NHCOR_1$, —NHCO—Ar;

X_3=alkyl having 1 to 4 carbon atoms or alkoxyl having 1 to 4 carbon atoms, or $—NHCOR_1$ or —NHCO—Ar;

Y=H, alkyl having 1 to 4 carbon atoms or alkoxyl having 1 to 4 carbon atoms, chlorine, bromine;

W=hydrogen or alkyl C_{1-4};

R=an alkyl C_1–C_4;

R_1=hydrogen or alkyl C_1–C_4;

Ar=a substituted or unsubstituted phenyl; and

m and n are integers from 1 to 3.

4,193,764
FAT-LIQUORING COMPOSITIONS FOR LEATHER

Yoshikazu Murai; Okitsugu Tsuji, and Atsushi Sato, all of Yokohama, Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Filed May 4, 1978, Ser. No. 902,958

Claims priority, application Japan, May 10, 1977, 52-52652

Int. Cl.^{2} C14C *5/00, 11/00*

U.S. Cl. 8—94.22 **12 Claims**

1. A fat-liquoring composition for leather comprising 100 parts by weight of a non-prehydrolyzed neutralized polybutene sulfonation product, 1–100 parts by weight of a polybutene and 1–100 parts by weight of at least one fatty acid salt.

4,193,765
DRYCLEANING ASSEMBLY AND METHOD FOR REMOVING IMPURITIES AND RESIDUAL MOISTURE FROM AN ORGANIC DRYCLEANING SOLVENT

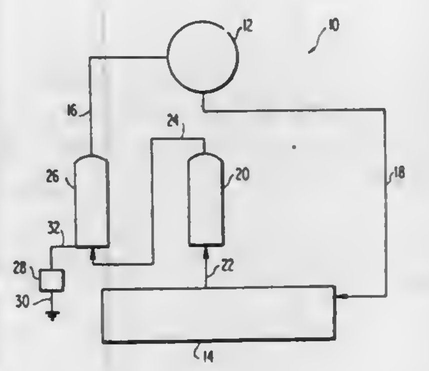
Herman R. Jackson, 1981 San Marco Blvd., Jacksonville, Fla. 32207

Filed Dec. 21, 1977, Ser. No. 862,882

The portion of the term of this patent subsequent to Mar. 7, 1995, has been disclaimed.

Int. Cl.^{2} D06L *1/10*

U.S. Cl. 8—142 **13 Claims**



1. A method for removing impurities and residual moisture from an organic drycleaning solvent comprising in sequence:

(a) adding to said solvent an unsubstituted or halogen-or alkyl-substituted aromatic hydrocarbon;
(b) circulating said aromatic hydrocarbon-containing solvent through a filter containing a solid acid, such that said solvent contacts said acid; and
(c) circulating said aromatic hydrocarbon-containing solvent through a second filter apparatus containing a chromate compound, said second filter apparatus being electrically grounded or attached to an electric ground via a DC power supply.

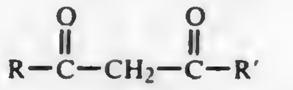
4,193,766

DEVICE AND METHOD FOR PREPARATION OF A CONTROL SOLUTION FOR KETONE DETERMINATION

Louis G. Daunora; Charles T. W. Lam, and Myron C. Rapkin, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 13, 1978, Ser. No. 959,693
Int. Cl.^{2} G01N *33/16, 21/48*
U.S. Cl. 23—230 R **25 Claims**

1. A device useful in the preparation of a ketone control solution, said device comprising a carrier vehicle incorporated with a predetermined quantity of a metal ion complex of a dione compound, said metal ion being aluminum (III), cobalt, copper (II), iron (III), magnesium, nickel or zinc, and said dione compound having the structure



$$R-\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{O}{\|}}{C}-R'$$

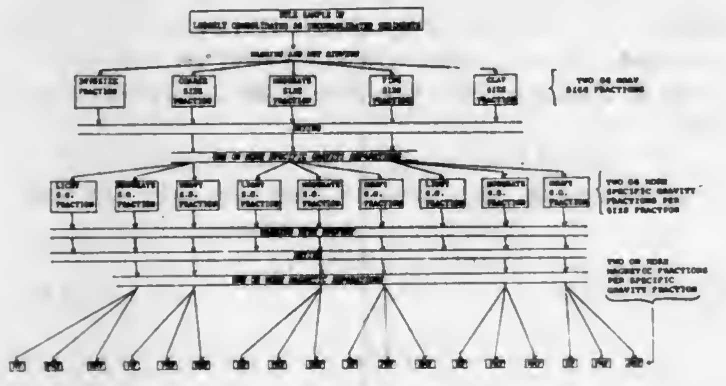
in which R and R', same or different, are alkyl groups having 1 to about 6 carbon atoms.

4,193,767

PARTICULATE MINERAL SEPARATION PROCESS

Charles E. Fipke, 263 Lake Ave., Kelowna, British Columbia, Canada

Continuation-in-part of Ser. No. 804,541, Jun. 8, 1977, abandoned. This application Oct. 26, 1978, Ser. No. 954,754
Int. Cl.^{2} G01N *33/24*
U.S. Cl. 23—230 EP **40 Claims**



1. In a mineral exploration survey wherein a sievable bulk sample of a sedimentary deposit containing a minute amount of an economic mineral is collected from a survey site, then processed and subsequently analyzed to detect the presence of said mineral, an improved method of processing said sample after said collection and prior to said analysis, said method comprising the steps of:
(a) washing and wet sieving the sample with water containing an additive to reduce particle cohesion, and thereby obtaining at least two size fractions of said sample;
(b) drying at least one of said size fractions; and
(c) separating with heavy liquid said last mentioned size fraction into at least two specific gravity fractions.

4,193,768

METHOD FOR PREPARING CORUNDUM PARTICLES

Naoaki Ohishi, Machida; Toshiaki Sakaida, and Mitsuru Hasegawa, both of Yokohama, all of Japan, assignors to Showa Denko K. K., Tokyo, Japan

Continuation of Ser. No. 703,228, Jul. 7, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 862,138
Claims priority, application Japan, Jul. 28, 1975, 50-91042
Int. Cl.^{2} B01D *9/02;* B01J *17/04;* C01F *7/02*
U.S. Cl. 23—301 **7 Claims**

1. A method for preparing corundum particles comprising adding fine seed crystals of corundum particles to solid alumina hydrate and subjecting the resulting mixture to a hydrothermal treatment by heating said mixture under pressure in water under conditions which suppress formation of new corundum crystal nuclei, to deposit corundum onto the surfaces of said fine seed crystals and thereby grow said corundum particles; wherein said conditions include:
(1) the total weight W_R, in grams, of said solid alumina hydrate when calculated as trihydrate and the surface area A_S, in square centimeters, of said fine seed crystals being such as to provide a ratio, W_R/A_S, of less than 0.05 g/cm^2, to ensure the deposition of said corundum on the surfaces of said fine seed crystals before the concentration of aluminate ions derived from said solid alumina hydrate in said water during said hydrothermal treatment, reaches a value sufficient to produce new corundum crystal nuclei;
(2) said solid alumina hydrate and said fine seed crystals being uniformly mixed prior to said hydrothermal treatment; and
(3) suppressing the convection current of said water to a minimum by packing said uniform mixture, in water, in a first container and placing said first container in a second larger container for said hydrothermal treatment;

and wherein the temperature and pressure of said hydrothermal treatment are 370° to 450° C. and 150 to 500 kg/cm^2, respectively.

4,193,769

ZNO DISPERSIONS BY DECOMPOSITION OF $ZNCO_3$

William J. Cheng, and David B. Guthrie, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Oct. 23, 1978, Ser. No. 953,983
Int. Cl.^{2} C01G *9/02*
U.S. Cl. 44—51 **6 Claims**

1. A process of preparing a stable, bright, clear, fluid zinc-containing dispersion which comprises decomposing $ZnCO_3$ to ZnO at a temperature between about 175° C. to about 450° C. in a dispersant-containing fluid, said fluid being a nonvolatile process fluid capable of being heated to the decomposition temperature of $ZnCO_3$, said dispersant being relatively stable under the high temperature conditions of this process and being capable of retaining the zinc compound formed by decomposition in stable suspension.

4,193,770

PREPARATION OF GASOLINE CONTAINING TERTIARYAMYL METHYL ETHER

John D. Chase, Oakville; Hanbury J. Woods, Campbellville, and Bruce W. Kennedy, Toronto, all of Canada, assignors to Gulf Canada Limited, Toronto, Canada

Continuation-in-part of Ser. No. 863,499, Dec. 22, 1977, abandoned. This application May 15, 1978, Ser. No. 905,903
Int. Cl.^{2} C10L *1/18*
U.S. Cl. 44—56 **16 Claims**

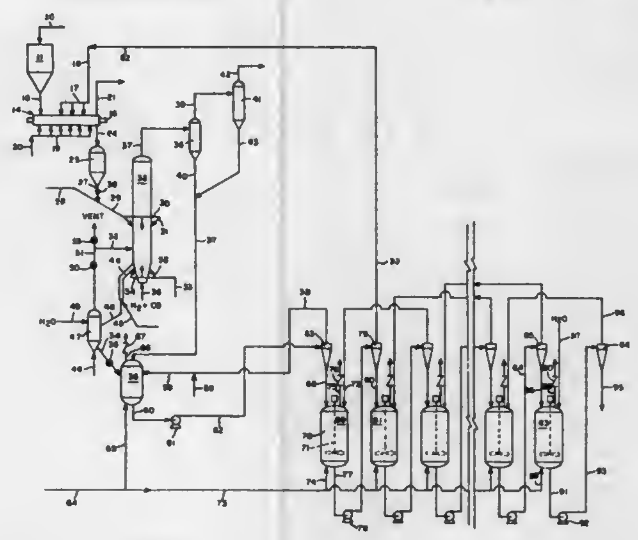
1. Process for preparation of gasoline containing tertiaryamyl methyl ether which comprises
1. separating, from lower and higher boiling compounds, an olefinic hydrocarbon portion boiling at atmospheric pressure in the range from 80° F. to 122° F. (27° C. to 50° C.) and containing a mixture of hydrocarbons having predominantly five carbon atoms each, of which hydrocarbons at least 10% are 2-methyl butenes,
2. passing the olefinic hydrocarbon portion, together with methanol in a proportion of from 0.5 to 3.0 mols of methanol per mol 2-methyl butenes present, into contact with a bed of solid acidic etherifying catalyst in a reactor at temperature in the range from 150° F. to 240° F. (66° C. to 116° C.) under pressure sufficient to maintain the passing material in the liquid phase, said contact being of sufficient duration to etherify from 15% to 60% of the 2-methyl butenes in the passing material during said contact,
3. passing a proportion of the effluent stream from said reactor to a distillation column wherein said proportion of effluent is fractionally distilled under reflux and wherein a bottom fraction containing substantially all the ethers entering the column is withdrawn from the bottom of the column and a distillate fraction is withdrawn from the top of the column,
4. blending said ether containing bottom fraction and any remainder of the effluent stream passing directly from said reactor into a gasoline product,
5. recycling a proportion of the distillate fraction from the top of the column to the reactor for additional contact with said catalyst, and
6. passing a proportion of said distillate fraction into said gasoline product when the entire effluent stream from the reactor is passed to the distillation column.

4,193,771

ALKALI METAL RECOVERY FROM CARBONACEOUS MATERIAL CONVERSION PROCESS

David W. Sharp, Seabrook; LeRoy R. Clavenna, Baytown, both of Tex.; Martin L. Gorbaty, Fanwood, N.J., and Joe M. Tsou, Galveston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 8, 1978, Ser. No. 903,635
Int. Cl.^{2} C10J *3/06*
U.S. Cl. 48—197 R **15 Claims**



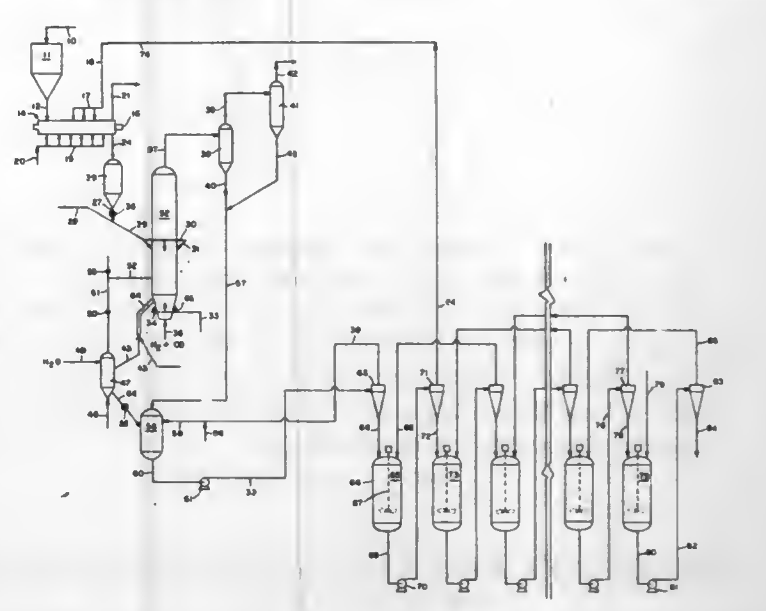
1. In a process for the conversion of a solid carbonaceous feed material in the presence of an alkali metal-containing catalyst into liquids and/or gases wherein said conversion takes place in a reaction zone to produce particles containing alkali metal residues, said particles are transferred to an alkali metal recovery zone where they are treated for the recovery of alkali metal constituents, and the recovered alkali metal constituents are used in said conversion process as at least a portion of the alkali metal constituents comprising said alkali metal-containing catalyst, the improvement which comprises:
(a) withdrawing and passing said particles from said reaction zone to said alkali metal recovery zone in the substantial absence of molecular oxygen during the entire period of said withdrawal and passage; and
(b) treating said particles throughout the entirety of said recovery zone in the substantial absence of molecular oxygen for the recovery of said alkali metal constituents.

4,193,772

PROCESS FOR CARBONACEOUS MATERIAL CONVERSION AND RECOVERY OF ALKALI METAL CATALYST CONSTITUENTS HELD BY ION EXCHANGE SITES IN CONVERSION RESIDUE

David W. Sharp, Seabrook, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 5, 1978, Ser. No. 912,610
Int. Cl.^{2} C10J *3/06*
U.S. Cl. 48—197 R **11 Claims**



1. In a process for the conversion of a solid carbonaceous feed material in the presence of an alkali metal-containing catalyst into liquids and/or gases wherein particles containing alkali metal residues are produced, the improvement which comprises:
(a) contacting said particles containing said alkali metal residues with a sufficiently concentrated aqueous solution of a calcium or magnesium-containing compound at a temperature below about 249° F. whereby calcium or magnesium ions from said calcium or magnesium-containing compound displace alkali metal ions held by ion exchange sites in said particles thereby producing an aqueous effluent containing alkali metal constituents and wherein said temperature is sufficiently below about 249° F. to substantially prevent the conversion of water-insoluble alkali metal aluminosilicates and other water-insoluble alkali metal compounds in said particles into water-soluble alkali metal compounds; and
(b) using said alkali metal constituents from said aqueous effluent produced in step (a) in said conversion process as at least a portion of the alkali metal constituents comprising said alkali metal-containing catalyst.

4,193,773

PROCESS FOR THE PARTIAL COMBUSTION OF PULVERIZED COAL

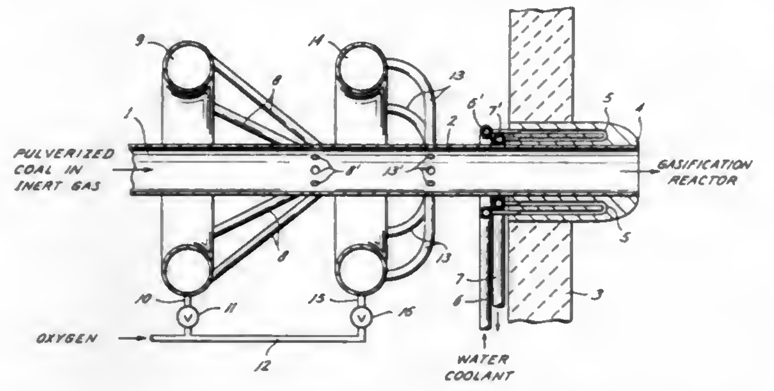
Gernot Staudinger, Amsterdam, Netherlands, assignor to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Filed Sep. 20, 1977, Ser. No. 834,890
Claims priority, application Netherlands, Sep. 23, 1976, 7610560
Int. Cl.^{2} C10J *3/50*
U.S. Cl. 48—210 **9 Claims**

1. A process for supplying pulverized coal for the partial combustion of pulverized coal in a gasification reactor, comprising the steps of:
mixing pulverized coal with a substantially inert carrier gas to form a fluidized stream;

flowing said fluidized stream of pulverized coal in the carrier gas into and through a burner for discharge into a gasification reactor; and

injecting at least some oxygen as separate jets directly into said fluidized stream of pulverized coal and carrier gas through separate holes in the burner before substantial burning of said pulverized coal and prior to discharge into



a gasification reactor, said oxygen is injected into the stream of pulverized coal at a velocity at least five times as large as the velocity of the stream of pulverized coal in order to double the velocity of the stream of pulverized coal, whereby complete mixing of the stream of pulverized coal with oxygen can be achieved substantially preventing detonation in the burner.

4,193,774

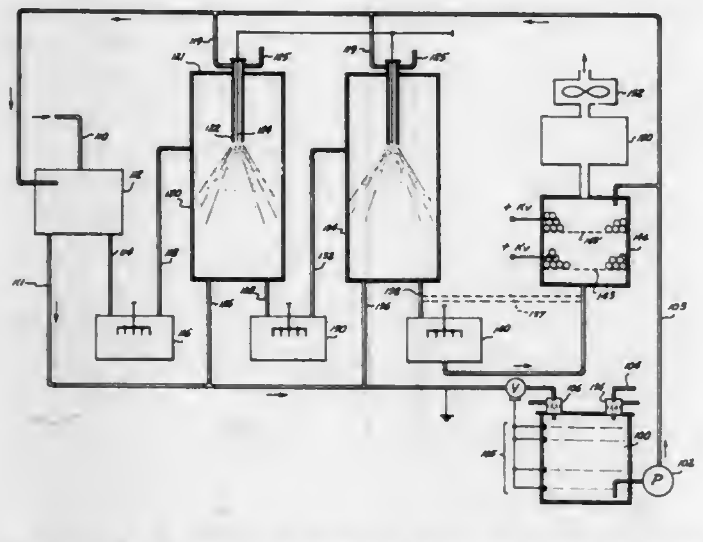
ELECTROSTATIC AEROSOL SCRUBBER AND METHOD OF OPERATION

Michael J. Pilat, 7306 57th Ave. NE., Seattle, Wash. 98115

Continuation of Ser. No. 752,988, Dec. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 492,157, Jul. 26, 1974, abandoned. This application Sep. 17, 1978, Ser. No. 926,126

Int. Cl.² B03C *3/16*

U.S. Cl. 55—10 **22 Claims**



1. A method of removing aerosol particles from a flowing gaseous stream comprising the steps of:

imposing a first electrostatic charge upon the particles contained in said flowing gaseous stream;

contacting the flowing gaseous stream with a spray of liquid, the droplets forming said spray having a second electrostatic charge thereon differing in potential from said first electrostatic charge, whereby a portion of said aerosol particles is collected upon said liquid droplets;

removing at least a portion of said liquid droplets upon which said aerosol particles have been collected from said gaseous stream;

passing said gaseous stream containing a reduced quantity of aerosol particles therein, and entrained liquid droplets, into a bubble-forming gas-liquid contact apparatus, wherein said gaseous stream forms bubbles and is intimately intermixed with scrubbing liquid supported upon said bubble-forming apparatus, said scrubbing liquid having a third electrostatic charge thereon opposite in polarity to said first electrostatic charge, whereby said particles and said liquid droplets are captured and removed from said gaseous stream; and

exhausting the scrubbed gaseous stream from said bubble-forming apparatus.

4. An electrostatic wet scrubber and collector assembly comprising:

means defining a spray chamber having an inlet and an outlet;

means positioned and arranged with respect to said spray chamber to impose a first electrostatic charge upon particulate matter contained in a gaseous stream entering said spray chamber;

liquid spray means in said spray chamber to inject droplets of a liquid into said chamber and means to impose on said droplets a second electrostatic charge of a differing potential from said first electrostatic charge, whereby said gaseous stream contains charged liquid droplets and charged particulate matter which are attracted toward each other;

a bubble scrubber means in fluid communication with said spray chamber having means to receive said gaseous stream from the outlet of said spray chamber and to cause said gaseous stream to flow upwardly, said bubble scrubber means comprising at least one bubble-forming means for supporting a bubble-forming liquid thereon positioned within a vertical tower;

means positioned and arranged with respect to said bubble scrubber means to impose a third electrostatic charge on said bubble-forming liquid; said third electrostatic charge being of a polarity opposite to at least one of said first and said second electrostatic charges;

means positioned and arranged with respect to said bubble-forming means to recycle said bubble-forming liquid including a sump and pump means.

4,193,775

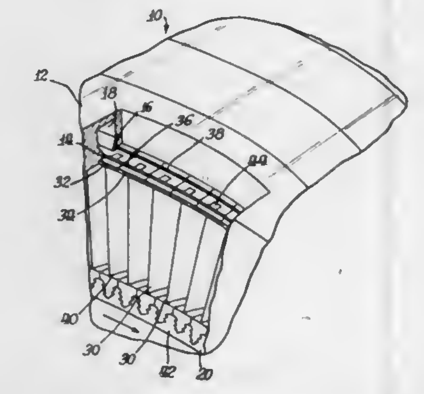
METHODS AND APPARATUS FOR SEPARATING GASES WITH VENTILATED BLADES

Chia-Gee Wang, P.O. Box 211, Millwood, N.Y. 10546

Continuation-in-part of Ser. No. 708,939, Jul. 27, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,515

Int. Cl.² B01D *59/20*

U.S. Cl. 55—17 **1 Claim**



1. A turbomechanical method for separating a gas mixture of different molecular weight components, on the basis of molecular weight of the components of the mixture, comprising the steps of

introducing the gas mixture into a separation zone, rotatably forcing a plurality of curved-surface blades into the gas mixture in the separation zone to accelerate the gas laterally of the direction of motion of the blades under non-turbulent flow conditions, said acceleration being along the axis of rotation of the blades, and to produce a density gradient in the laterally accelerated gas adjacent the curved surfaces of the blades forced into the gas mixture, and

separating a higher molecular weight fraction of said laterally accelerated gas immediately adjacent the curved surfaces of said blades to provide higher and lower molecular weight gas fractions by diverting said higher molecular weight gas fraction immediately adjacent the surfaces of said blades to the respective interiors of said blades through smooth, porous zones of said curved blade surfaces.

4,193,776

METHOD FOR THE PURIFICATION OF THE PROCESS CONDENSATE FROM SYNTHESIS GASES AND HYDROGEN PLANT

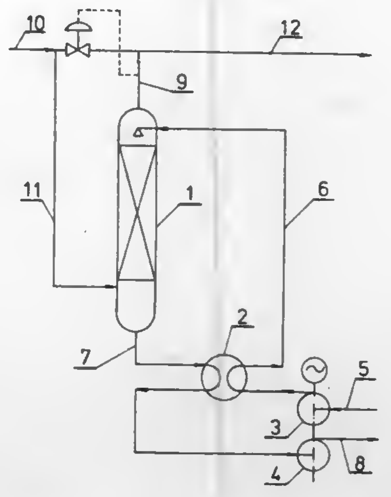
Tadeusz Wasala; Marek Dmoch, and Henryk Jozwiak, all of Pulawy, Poland, assignors to Instytut Nawozow Sztucznych, Pulawy, Poland

Filed Feb. 28, 1979, Ser. No. 16,313

Claims priority, application Poland, Mar. 3, 1978, 205094

Int. Cl.² B01D *19/00*

U.S. Cl. 55—49 **3 Claims**



1. In the invented method of purification of the process condensate from hydrogen and synthesis gas plants utilizing steam stripping, the stripping is carried out under pressure with a part or total amount of the process steam before it is used in the chemical process of conversion of the raw materials into hydrogen or synthesis gas and the total amount of steam leaving the stripping stage containing volatile products of degassing the process condensate is sent to the gas generating process.

4,193,777

PAINTING ROOM WITH RECOVERY ARRANGEMENT

Francois-Xavier J. de la Riviere, Paris, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jul. 5, 1978, Ser. No. 922,057

Claims priority, application France, Jul. 5, 1977, 77 20697

Int. Cl.² B01D *46/04*

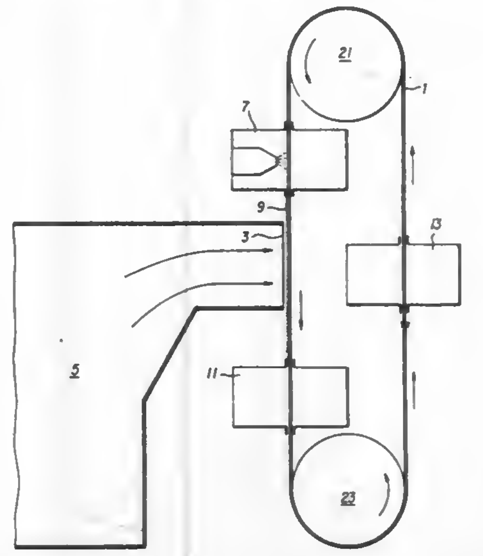
U.S. Cl. 55—96 **8 Claims**

1. A process for recovering particles of paint suspended in a gas, which comprises:

coating the surfaces of baffles with a material which is solid at the operating temperature of the painting environment and to which paint particles adhere, and having a melting point below 100° C.;

positioning said coated baffles in a sequence spaced apart from one another;

collecting paint particles suspended in a gas on said coated baffles by flowing said gas around said baffles to thereby saturate said coating with paint particles;



utilizing heat to melt said paint saturated coating; and removing said paint saturated coating from said baffles.

4,193,778

DEVICE FOR REMOVING DUST-SHAPED PARTICLES FROM AN AIR STREAM SERVING FOR THE VENTILATION OF MINES

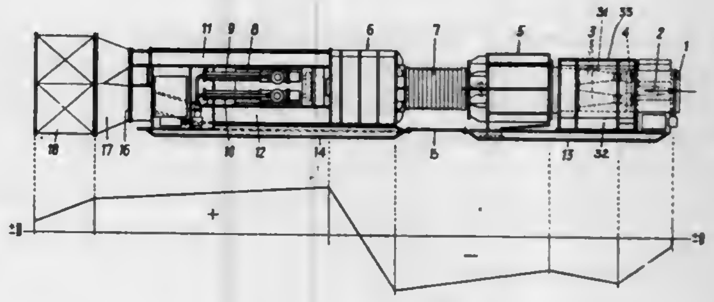
Emanuel Strahsner, and Alfred Zitz, both of Zeltweg, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke—Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Nov. 8, 1977, Ser. No. 849,617

Claims priority, application Austria, Nov. 12, 1976, 8432/76

Int. Cl.² B01D *45/12, 47/10, 50/00*

U.S. Cl. 55—238 **8 Claims**



1. A gas scrubber having an air inlet and an air exit, said scrubber comprising: a plurality of venturi tubes having upstream ends in communicating with the air inlet and having downstream ends, the venturi tubes being arranged parallel to each other; a centrifugal separator in communication with the downstream ends of the venturi tubes; blower means for drawing dust-laden air into the upstream ends of the venturi tubes and then into the centrifugal separator; nozzle means for introducing water into the air flowing through the venturi tubes; an inner tubular housing surrounding the venturi tubes; an outer tubular housing surrounding and spaced from the inner tubular housing so as to form a space between the housings; conduit means for conducting air from the blower means to said air exit; a funnel widening in the air flow direction so as to have an inlet end and an outlet end of larger cross section than the inlet end, the inlet end being connected to said air exit; and porous air filter material connected completely across the outlet end of the funnel.

4,193,779

AIR FILTERING APPARATUS

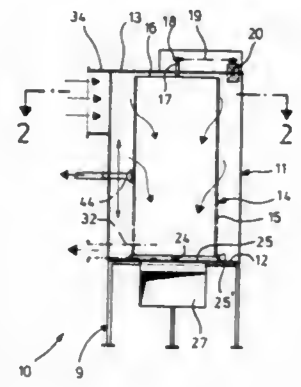
Dietmar Hencke, Moglingen, Fed. Rep. of Germany, assignor to LTG Lufttechnische GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,975

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802369

Int. Cl.^{2} B01D ***46/38***

U.S. Cl. 55—290 **16 Claims**



1. An air filter apparatus comprising:

a housing defining a vortex chamber;

a rotatable drum disposed in said vortex chamber and provided with a filter casing on its circumference for preventing the passage of fine dust therethrough but permitting the passage of clean air from the outside to the interior of said drum;

air transport means for generating a pressure drop across said apparatus to thereby cause transport of air through said filtering apparatus;

at least one air inlet for admitting contaminated air to said vortex chamber, said at least one air inlet terminating in said vortex chamber tangentially thereof for generating a rotary vortex flow of air in said vortex chamber;

at least one first air outlet from said vortex chamber for removing therefrom air carrying fibers and other contaminants which are large compared with fine dust, said at least one first air outlet leading out of said vortex chamber essentially tangentially therewith, said at least one air inlet being disposed in the vicinity of one of the axial ends of said vortex chamber while said at least one first air outlet is disposed in the vicinity of the opposite axial end of said vortex chamber;

at least one second air outlet defined by one end of said rotating drum and communicating with the interior of said drum, for carrying from said apparatus clean air which has passed inwardly through said fine filter casing on said drum; and

movable nozzle means for applying suction to the outside surface of said filter casing to remove therefrom accumulated fine dust particles.

4,193,780

AIR FILTER CONSTRUCTION

Worth Cotton, Jr., and A. Reese Hunter, both of Greensboro, N.C., assignors to Industrial Air, Inc., Greensboro, N.C.

Filed Mar. 20, 1978, Ser. No. 890,573

Int. Cl.^{2} B01D ***46/06, 46/40***

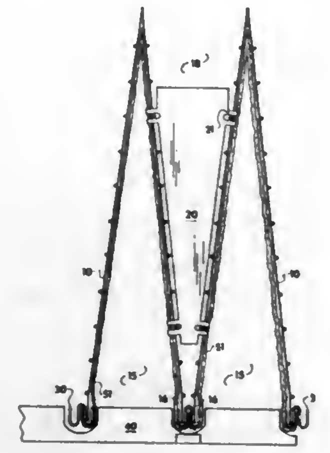
U.S. Cl. 55—378 **6 Claims**

1. An improved V-cell filter construction for emplacement within a walled conduit through which a contaminated air stream passes and comprising:

(a) a plurality of separate, V-shaped wire mesh members arranged in side-by-side relationship presenting a plurality of V-shaped cells extending across said walled conduit in the path of said air stream, each of said wire mesh members having lateral edges thereof positioned on the upstream side of said filter construction;

(b) a connecting means for engaging and holding in position the corresponding lateral edges of adjacent wire mesh members, said connecting means including a pair of spaced, outer trackways into which said lateral edges extend and means for retaining said lateral edges therein;

(c) a plurality of separate, fibrous, filter media members folded into a generally V-shape and of a size, shape, and number generally corresponding to the size, shape and number of said V-cells, one of said filter media members inserted into each of said cells;



(d) said connecting means further including a central trackway opening in the opposite direction from said outer trackways and of a width less than the combined thickness of two of said filter media members; and

(e) the lateral edges of each of said filter media members extending around the sides of said connecting means and into said central trackway and retained therein.

4,193,781

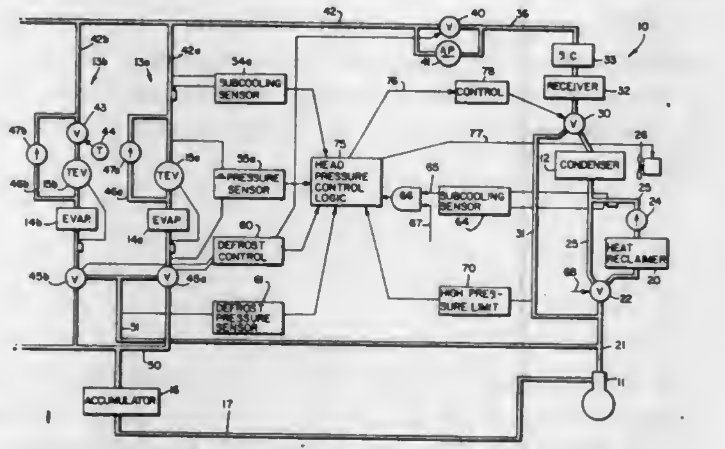
HEAD PRESSURE CONTROL FOR HEAT RECLAIM REFRIGERATION SYSTEMS

Kenneth E. Vogel, Mound, and Jerome D. Powlas, Minneapolis, both of Minn., assignors to McQuay-Perfex Inc., Minneapolis, Minn.

Filed Apr. 28, 1978, Ser. No. 900,992

Int. Cl.^{2} F25B ***41/00***

U.S. Cl. 62—81 **13 Claims**



1. A control system for a refrigeration system capable of different modes of operation, comprising:

(a) a plurality of sensing means operative for sensing conditions of the refrigeration system operation which are indicative of operation thereof in each of said modes;

(b) head control means operatively connected for controlling condensing temperature and pressure of the refrigeration system; and

(c) control means connected to said sensing means and to said head control means and operative to maintain refrigeration system pressure substantially at the optimum pressure requirement for the active mode having the highest pressure requirement.

4,193,782

DEVICE FOR DRAWING A GROUP OF CLADDED LIGHT CONDUCTING FIBERS

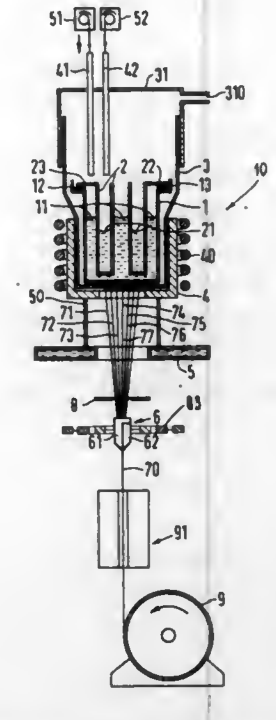
Hubert Aulich, Munich; Josef Grabmaier, Berg, and Karl-Heinz Eisenrith, Schliersee, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,176

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734152

Int. Cl.^{2} C03B ***37/02***

U.S. Cl. 65—11 R **9 Claims**



1. In a device for drawing a group of cladded light conducting fibers, each fiber having a core consisting of a first glass material and a cladding of second type of glass material, said device comprising a double crucible having an inner crucible with a bottom and an outer crucible with a bottom, the inner crucible receiving a melt of the first glass material for the core and the outer crucible receiving a melt of the second glass material for the cladding, the bottom of the inner crucible as well as the bottom of the outer crucible being provided with a multitude of nozzles with the central axis of each nozzle in the inner crucible being aligned with the central axis of a corresponding nozzle of the outer crucible, and said device including means for gathering the plurality of cladded fibers and coating the gathered fibers to form a bundle of coated, cladded fibers with the improvement comprising said inner crucible having an annular ring-shaped bottom with annular inner and outer walls, said inner crucible being disposed in the outer crucible with the ring-shaped bottom being parallel to the bottom of the outer crucible, and the nozzles being arranged on the bottoms of said crucibles on a circle concentric with the walls of the inner crucible so that the same temperature prevails for the glass melt present in the double crucibles being drawn through each nozzle.

4,193,783

METHOD OF TREATING A SILICON SINGLE CRYSTAL INGOT

Yoshiaki Matsushita, Toyko, Japan, assignor to VLSI Technology Research Association, Kawasaki, Japan

Filed Jun. 15, 1978, Ser. No. 915,870

Claims priority, application Japan, Jun. 15, 1977, 52/70625

Int. Cl.^{2} C03C ***15/00***

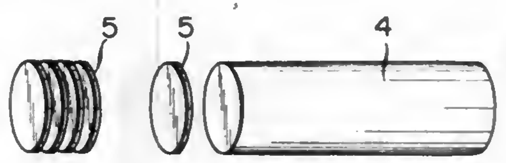
U.S. Cl. 65—31 **35 Claims**

1. A method of preparing silicon wafers from a silicon, single crystal ingot comprising the steps of:

purposely producing lattice strains in the surface of the silicon, single crystal ingot,

heating the ingot at least 15 hours at a temperature between 1,000° C. and 1,200° C.,

cooling the ingot



etching off the surface of the ingot to at least the depth that the lattice strains are purposely produced, and

cutting silicon wafers from the etched ingot.

4,193,784

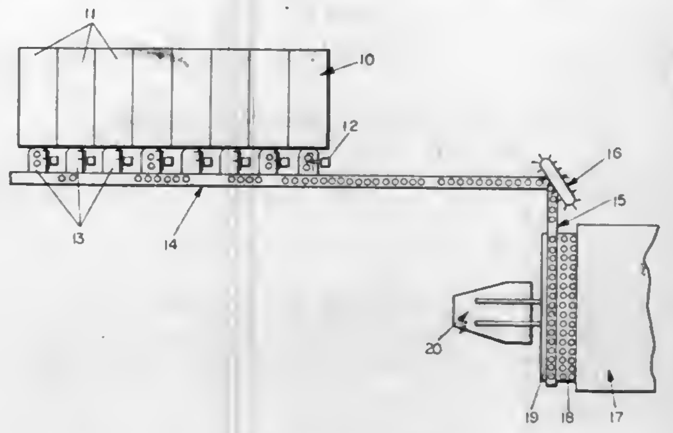
METHOD OF LOADING CONTAINERS INTO AN ANNEALING LEHR

Eustace H. Mumford, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 19, 1978, Ser. No. 952,749

Int. Cl.^{2} C03B ***9/14, 27/00***

U.S. Cl. 65—69 **4 Claims**



1. In the method of handling newly formed ware, produced by an inline, plural section glassware forming machine, from the forming machine to the machine conveyor and then to the lehr, the improvement in placing the ware on the machine conveyor comprising the steps of:

placing a first grouping of ware produced from a plural section bottle forming machine on the moving machine conveyor at equally spaced intervals in a single line, placing successive groupings of ware on said conveyor with a gap of predetermined length between each grouping, and transferring the ware and the gap from the machine conveyor to a cross-conveyor in front of the lehr whereby loading of the lehr by pushing the group of ware from the cross-conveyor into the lehr may be accomplished on groupings of ware which are separated by a cut-off gap.

4,193,785

GLASS SHEET BENDING MOLD APPARATUS

Harold A. Bailey, Genoa, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

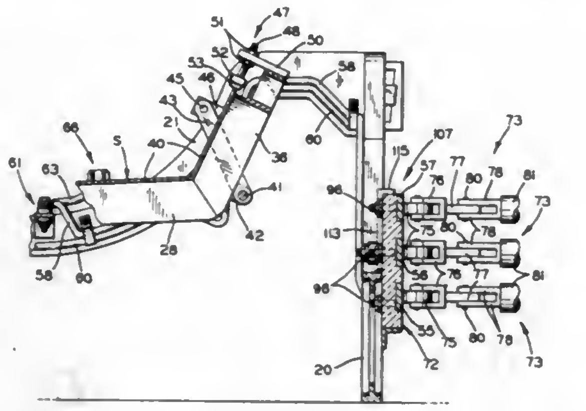
Filed Aug. 15, 1978, Ser. No. 933,712

Int. Cl.^{2} C03B ***23/02***

U.S. Cl. 65—285 **8 Claims**

1. Apparatus for bending a glass sheet to a relatively sharp angle by passing electric current through an electrically conducting path formed on the sheet to generate heat along said path and bend the sheet therealong comprising: a frame having opposite end members, an outline type bending mold supported on said frame and having a substantially continuous shaping surface formed thereon and conforming to the margin of the glass sheet to be bent, electrically conducting means including a plurality of bus bars mounted on one of said frame end members in spaced relation thereto for engagement by

electrically conducting probes, and a unitary, one-piece electrical insulating member substantially coextensive with said one end member and interposed between said one end member and said bus bars for electrically insulating the latter from said frame, said insulating member engageable with said bus bars along substantially the entire lengths thereof to provide support against inward deflection of said bus bars.



4,193,786

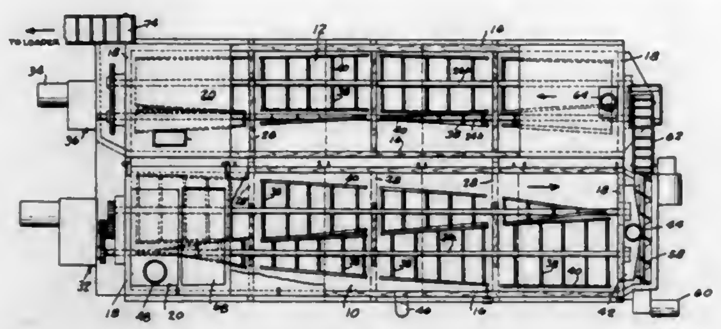
PROCESS AND APPARATUS FOR PRODUCING COMPOST

Joseph H. Brill, 5210 E. Deckerville Rd., Deckerville, Mich. 48427

Filed Apr. 28, 1977, Ser. No. 791,690

Int. Cl.^{2} C05F *11/08, 3/00*

U.S. Cl. 71—9 **10 Claims**



1. The method of producing a fermented product in a horizontally elongated chamber having a pair of rotatable shafts therein journalled on generally horizontally extending parallel axes which are spaced apart in a horizontal plane, each shaft having at least one row of radially projecting fingers thereon spaced along the axis of each shaft, said fingers being located and dimensioned relative to said chamber and the spacing of said shafts so that substantially the entire contents of the chamber are agitated by the churning and lifting action of the fingers when the shafts are rotated, which comprises:

(a) loading into said chamber a batch comprising a mixture consisting of about 40 to 60% animal waste and the remainder essentially a carbonaceous filler material, said mixture having a moisture content substantially higher than 50% by weight, said batch being of a predetermined volume such as to only partially fill said chamber and thereby provide a substantial air space throughout the length of the chamber above the level of the batch mixture therein;

(b) after loading, isolating said chamber from the surrounding atmosphere except for the hereinafter mentioned air flow;

(c) rotating the two shafts in opposite directions so that the fingers thereon travel through the mixture in a direction which tends to displace it from the opposite longitudinal sides of the chamber laterally inwardly and upwardly toward the longitudinal central portion of the chamber;

(d) rotating the shafts at a rate such that the mixture is progressively agitated by the circumferentially successive rows of fingers on each shaft about once every three minutes but not more than about once every one-half minute to thereby cause substantially all portions of the mixture to progressively come into intimate and relatively prolonged contact with the hereinafter mentioned air;

(e) while said shafts are rotating, conducting fresh air over the mixture through the entire length of said chamber at a rate of between about $\frac{1}{2}$ to $2\frac{1}{4}$ cubic feet per minute per hundred cubic feet of the batch mixture in the chamber, thereby causing fermentation of the mixture to proceed at such rate as to raise the temperature of the mixture to about 210° F. within a period of not more than about 18 hours without the application of external heat;

(f) continuing the flow of air and rotation of said shafts at said rates while and after the temperature thereof levels off at said elevated value to cool the moist fermented product so formed to a relatively low temperature approaching room temperature;

(g) drying the cooled moist product so formed to reduce its moisture content to a maximum of not more than about 50% by weight before substantial anaerobic decomposition of the fermented product occurs; and

(h) maintaining substantially the entire batch of said product in said dried condition until it is ready for use.

4,193,787

BENZODIOXANE HERBICIDES

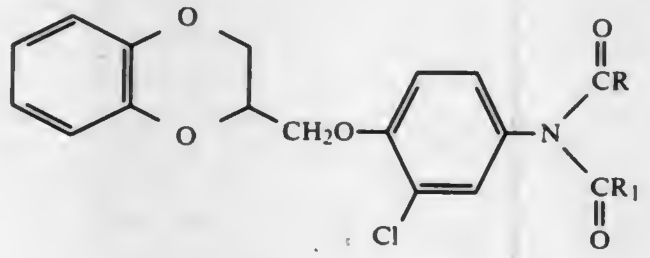
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 31, 1978, Ser. No. 938,605

Int. Cl.^{2} A01N *9/00;* C07D *319/20*

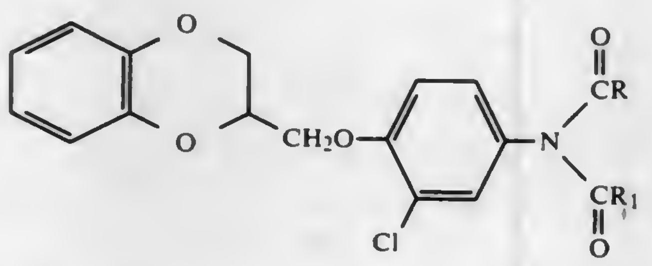
U.S. Cl. 71—88 **18 Claims**

1. A compound having the formula



wherein R and R$_1$ are independently selected from the group consisting of alkoxy having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms and alkyl having from 1 to 6 carbon atoms.

13. A method of controlling undesirable vegetation comprising applying to the locus thereof a post-emergent herbicidally effective amount of the formula



wherein R and R$_1$ are independently selected from the group consisting of alkoxy having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms and alkyl having from 1 to 6 carbon atoms.

4,193,788

N-(2-CHLORO-4-PYRIDYL)UREAS

Koichi Shudo, 2000-10-2-116 Kosugayacho, Totsukaku, Yokohama; Toshihiko Okamoto, 1-7-21 Shinoharakita, Kohokuku, Yokohama; Yo Isogai, 1-1-2-609, Kamiyoga, Setagayaku, Tokyo, and Soshiro Takahashi, 904-10, Oaza, Kamiokubo, Urawashi, Saitama, all of Japan

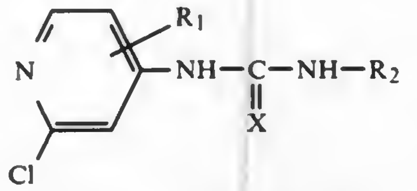
Filed Oct. 2, 1978, Ser. No. 947,468

Claims priority, application Japan, Oct. 8, 1977, 52-121285

Int. Cl.^{2} A01N *9/22;* C07D *401/12, 213/46, 213/52*

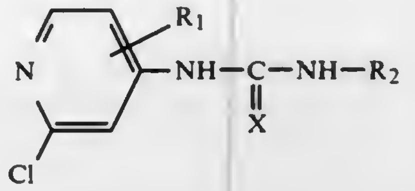
U.S. Cl. 71—94 **20 Claims**

1. A compound selected from the group consisting of N-(2-chloro-4-pyridyl)ureas of the following formula.



wherein R$_1$ represents hydrogen or alkyl of from 1 to 3 carbon atoms, inclusive; R$_2$ represents aryl selected from the group consisting of phenyl, pyridyl, naphthyl, and biphenyl, which may be substituted by alkyl of from 1 to 3 carbon atoms, inclusive; alkoxy; of from 1 to 3 carbon atoms, inclusive; hydroxyl or halogen; and X stands for oxygen or sulfur; and acid addition salts thereof.

5. An agricultural composition useful as a plant growth regulator comprising as active ingredient a compound selected from the group consisting of an N-(2-chloro-4-pyridyl)urea of claim 1, of the formula:



wherein R$_1$ represents hydrogen or alkyl of from 1 to 3 carbon atoms, inclusive; R$_2$ represents aryl selected from the group consisting of phenyl, pyridyl, naphthyl, and biphenyl, which may be substituted by alkyl of from 1 to 3 carbon atoms, inclusive; alkoxy of from 1 to 3 carbon atoms, inclusive; hydroxyl or halogen; and X is oxygen or sulfur; and an acid addition salt thereof, in an effective plant-growth regulating amount, together with an inert carrier or diluent.

4,193,789

HERBICIDAL DERIVATIVES OF N-ALKYLPROPANAMIDES

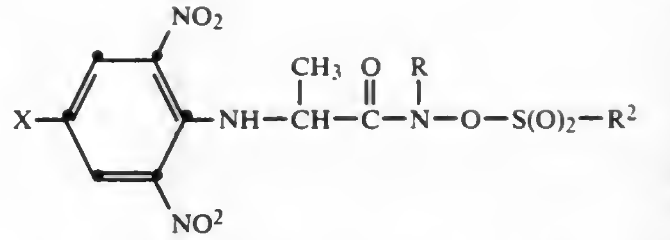
Ian D. Entwistle, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 910,404, Jun. 19, 1978, which is a continuation-in-part of Ser. No. 855,104, Nov. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 826,214, Aug. 19, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,336

Int. Cl.^{2} A01N *9/14*

U.S. Cl. 71—103 **7 Claims**

1. The racemic or the (d) form of a compound of the formula



wherein X is an alkyl group containing from 1 to 4 carbon atoms optionally substituted by halogen, an alkylsulfonyl group or a halogen atom; R is an alkyl group containing from 1 to 4 carbon atoms; and R^2 is an alkyl group containing from 1 to 6 carbon atoms optionally substituted by a halogen atom having an atomic number of from 9 to 35, inclusive, or a phenyl, benzyl, phenethyl or naphthyl group optionally ring-substituted by from 1 to 5 nitro groups, by alkyl or alkoxy groups containing from 1 to 4 carbon atoms and/or by halogen atoms having an atomic number of from 9 to 35, inclusive.

5. A method for controlling undesirable plant growth at a locus which comprises applying to the locus to be protected a herbicidally effective amount of a compound according to claim 1 or a composition thereof.

4,193,790

NOVEL HERBICIDALLY ACTIVE, NUCLEAR-SUBSTITUTED PHENOXY-PHENOXY-ALKANECARBOXYLIC ACID DERIVATIVES AND USE THEREOF FOR CONTROLLING GRASS-LIKE WEEDS

Otto Rohr, Therwil, Switzerland; Georg Pissiotas, Lörrach, Fed. Rep. of Germany, and Beat Böhner, Binningen, Switzerland, assignors to Ishihara Sangyo Kabushiki Kaisha Ltd., Osaka, Japan

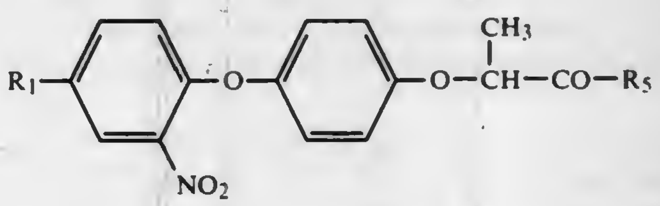
Division of Ser. No. 742,311, Nov. 16, 1976, Pat. No. 4,106,925. This application Jul. 19, 1978, Ser. No. 926,162

Claims priority, application Switzerland, Nov. 20, 1975, 15033/75

Int. Cl.^{2} H01N *9/24*

U.S. Cl. 71—116 **12 Claims**

1. 4-Phenoxy-α-phenoxy-alkanecarboxylic acid derivatives



wherein R$_1$ represents a halogen atom; and R$_5$ represents an OH group or an -O-cation group, said cation being a mono-or polyvalent cation of a herbicidally acceptable inorganic or organic base.

4,193,791

CONCENTRATION OF HYDRATED ALUMINUM OXIDE MINERALS BY FLOTATION

David Weston, Toronto, Canada, assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 736,466, Oct. 28, 1966, Pat. No. 4,113,466. This application Oct. 4, 1977, Ser. No. 838,445

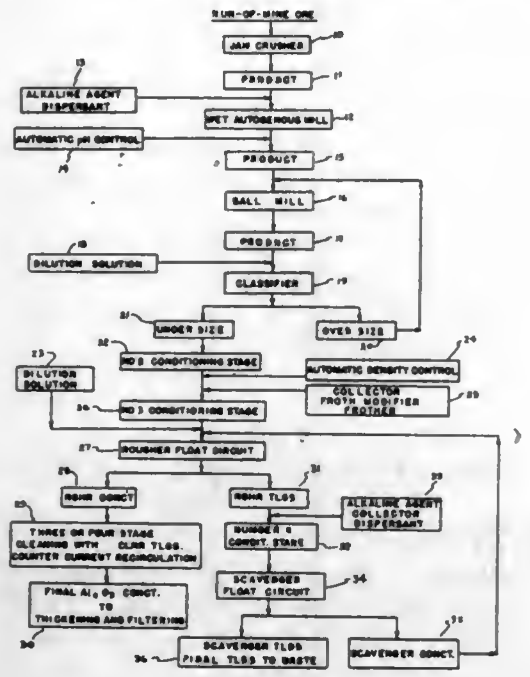
The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.

Int. Cl.^{2} B03D *1/02*

U.S. Cl. 75—2 **13 Claims**

1. A process for the concentration by flotation of hydrated aluminum oxide minerals from a hydrated aluminum oxide bearing raw material comprising: subjecting the said raw material to at least three stages of conditioning prior to rougher flotation, the said at least three stages of conditioning comprising: a wet grinding circuit in which the said raw material is

reduced to flotation feed size and form a resulting pulp, and is carried out in the presence of a member selected from the group consisting of a selected dispersing agent, alkaline dispersing agent, and mixtures thereof, in controlled amounts to effectively and beneficially disperse the solids contained in said pulp; subsequently subjecting the said pulp to a mechanical agitation conditioning stage in which the said pulp is mechanically agitation conditioned in the presence of at least an alkaline dispersing agent at an optimum pH point within the range of about 9.3 to 13.0 for a sufficient period of time to precipitate deleterious salts from the said pulp and further beneficially affect the surfaces of the said aluminum oxide minerals; subsequently subjecting the said mechanically agitation conditioned pulp to a further mechanical agitation conditioning stage at an optimum pH point in the range of about 9.3 to 13.0 and in the presence of a differential activating and flocculating agent comprising one or more oxyhydryl anionic collectors including at least one or more fatty acids selected from the group consisting of oleic acid, crude oleic acid, tall oils, fish oils and mixtures thereof, to activate and flocculate the said aluminum oxide minerals; subsequently subjecting the said conditioned pulp to flotation to produce a rougher concentrate enriched in the said aluminum oxide minerals and rougher tailings impoverished in the said aluminum oxide minerals.



4,193,792

PROCESS FOR CLASS IIIB METALS ORE REDUCTION

Paul F. Taylor, P.O. Box 468, Crossville, Tenn. 38555

Filed May 3, 1978, Ser. No. 902,379

Int. Cl.² C22B *60/00, 60/02*

U.S. Cl. 75—84 **10 Claims**

1. A method of reducing Class IIIB metal series ore oxides individually and in metal matte combinations to ingot and alloy, fuzed and nonfuzed forms, comprising the steps of:

A. Adding powdered oxides derived from Class IIIB metal ore or the individual oxides to a solution formula consisting essentially of about 24.2 parts by weight of phosphoric acid, about 0.5 parts by weight of zinc oxide, and about 1.0 part by weight of a sulfated surfactant,

B. Adding materials selected from the group consisting of sugars and starch in the approximate norm amount three-fourths of the solution formula weight,

C. Adding sodium hydroxide and others of the Classes IA and IIA Periodic metal hydroxides in the approximate norm amount three-eighths of the solution formula weight,

D. Adding calcium carbonate ($CaCO_3$) in pulverized form in the approximate norm amount one-eighth of the solution formula weight,

E. Mixing, and adding to a reduction container,

F. Applying heat to the mixture sufficient to boil off gases,

G. Applying heat to the mixture sufficient to cause combustible materials to burn,

H. Smelting the remaining material to produce Class IIIB metal ingot and matte in both fuzed and nonfuzed states.

4,193,793

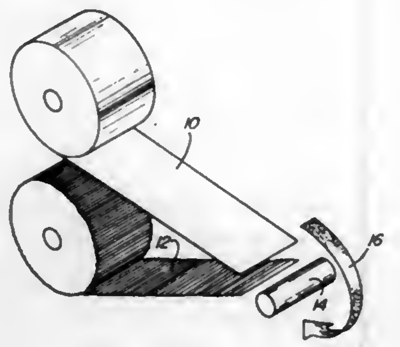
POROUS METAL-ALUMINA COMPOSITE

Harry Cheung, Buffalo, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 698,030, Jun. 2, 1976, Pat. No. 4,058,485, which is a continuation of Ser. No. 536,646, Dec. 26, 1974, abandoned. This application Nov. 9, 1977, Ser. No. 850,008

Int. Cl.² B01J *23/62, 23/74*

U.S. Cl. 75—235 **7 Claims**



1. A porous composite structure comprising a sintered mixture of metal particles and alumina particles characterized by the following parameters:

at least 50 weight percent of the particles in the composite are metal particles;

at least 5 weight percent of the particles in the composite are alumina particles having a surface area of at least 25 square meters per gram; and

the inter-particle porosity in the composite structure is between 5 volume percent and 60 volume percent.

5. A support structure for catalytic materials comprising the combination of a metal screen material having deposited thereon a sintered mixture of metal particles and alumina particles, characterized by the following parameters:

at least 50 weight percent of the particles in the sintered mixture are metal particles;

at least 5 weight percent of the particles in the sintered mixture are alumina particles having a surface area of at least 25 square meters per gram; and

the inter-particle porosity in the sintered mixture is between 15 volume percent and 60 volume percent.

4,193,794

LIQUID DEVELOPERS FOR ELECTROSTATIC IMAGES

Kenneth A. Metcalfe, Lockleys; Alwin S. Clements, Largs Bay, and Clive W. Wilson, Oaklands Park, all of Australia, assignors to The Commonwealth of Australia, Canberra, Australia

Continuation of Ser. No. 457,136, Apr. 1, 1974, abandoned. This application Apr. 30, 1976, Ser. No. 682,371

Claims priority, application Australia, Apr. 2, 1973, 2837/73

Int. Cl.² G03G *9/00*

U.S. Cl. 430—137 **6 Claims**

1. A method of producing a liquid developer for electrostatic images in which an electrically insulating carrier liquid has suspended in it a particular toner medium, which method consists of first adding a substance consisting of a polymer to a solvent adapted for being imbibed into the polymer such that the solvent is imbibed into the polymer to form a modifying carrier liquid, said polymer having a molecular weight between 2000 and 3000 and being selected from the group consisting of polyethylene and styrene-butadiene copolymer, said solvent being isoparaffinic liquid having a molecular weight between 100 and 300 and then applying the modifying carrier liquid to particles of solid toner material, the formation of the modifying carrier liquid being such that the modifying carrier liquid is drawn into the solid toner particles and by dilatant action causes the molecular bonds of the said particles to be broken to produce a developer comprising minute developer particles suspended in said carrier liquid.

4,193,795

PHOTOGRAPHIC FILM UNITS CONTAINING A POLYMERIC MORDANT WHICH COVALENTLY BONDS WITH CERTAIN DYES

Gerald A. Campbell, Webster; Hyman Cohen, Hilton; Lewis R. Hamilton, and George Villard, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 839,879, Oct. 6, 1977, abandoned. This application May 15, 1978, Ser. No. 906,289

Int. Cl.² G03C *5/54, 1/40, 7/00, 1/84*

U.S. Cl. 430—213 **45 Claims**

42. In a process of producing a photographic transfer image in a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material, a receiving layer, a barrier associated with a neutralizing layer being permeable by said alkaline processing composition after a predetermined time and which is located between said photosensitive silver halide emulsion layer and said neutralizing layer, comprising:

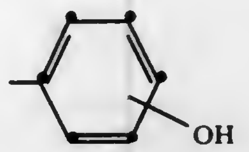
(a) treating said element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of said exposed silver halide emulsion layers,

  (i) an imagewise distribution of dye image-providing material being formed as a function of development and

  (ii) at least a portion of said imagewise distribution of dye image-providing material diffusing to said dye image-receiving layer; and

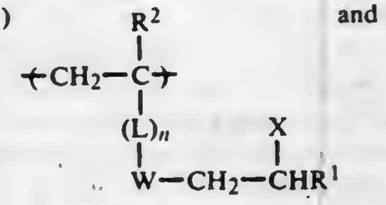
(b) neutralizing said alkaline processing composition by means of said neutralizing layer associated with said photographic element after said predetermined time;

the improvement wherein said dye image-providing material has appended thereto a moiety selected from the group consisting of ZNHR, $—SO_2NHR$ and



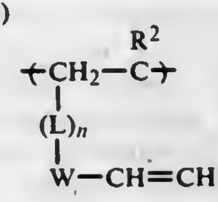
wherein R is H or alkyl and Z is selected from the group consisting of alkylene, arylenealkylene, cycloalkylene or with R can be taken together with the NH to complete an N containing heterocyclic group; and the receiving layer contains a polymer containing recurring units having the formula selected from the group consisting of:

(A)



$$-\!\!(CH_2-\overset{\overset{\displaystyle R^2}{|}}{C})\!\!-\quad \text{with } (L)_n-W-CH_2-\overset{\overset{\displaystyle X}{|}}{C}HR^1 \text{ on } C$$

and (B)



$$-\!\!(CH_2-\overset{\overset{\displaystyle R^2}{|}}{C})\!\!- \quad \text{with } (L)_n-W-CH=CHR^1 \text{ on } C$$

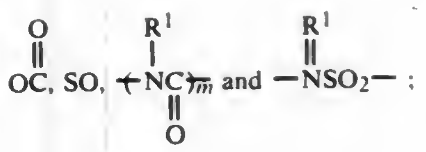
wherein

R² is hydrogen or alkyl;

L is a bivalent linking group., providing a linkage between the vinyl group and W, selected from the group consisting of alkylene, arylenealkylene, $COOR^3$ and $CONHR^3$;

R³ is selected from the group consisting of alkylene, arylene and arylenealkylene;

W is an electron-withdrawing group selected from the group consisting of SO_2, CO,

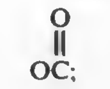


$$\overset{\displaystyle O}{\overset{\|}{O}C},\ SO,\ -\!\!(\overset{\overset{\displaystyle R^1}{|}}{N}\underset{\underset{\displaystyle O}{\|}}{C})\!\!-_m \text{ and } -\overset{\overset{\displaystyle R^1}{\|}}{N}SO_2- ;$$

m is 1 or 2;

n is 0 or 1;

with the proviso that when n is 0, W is SO_2 or



$$\overset{\displaystyle O}{\overset{\|}{O}C};$$

and

X is a leaving group which can be displaced by nucleophiles or eliminated in the form of HX by treatment with base, said dye or dye precursor and said recurring units forming a covalent bond on contact.

4,193,796

POLYMERS FOR USE IN IMAGE RECEIVING ELEMENTS FOR METALLIZABLE DYES IN IMAGE TRANSFER FILM UNITS

Gerald A. Campbell; Lewis R. Hamilton, and David P. Brust, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,620

Int. Cl.² G03C *5/54, 1/40, 1/76, 3/00*

U.S. Cl. 430—227 **38 Claims**

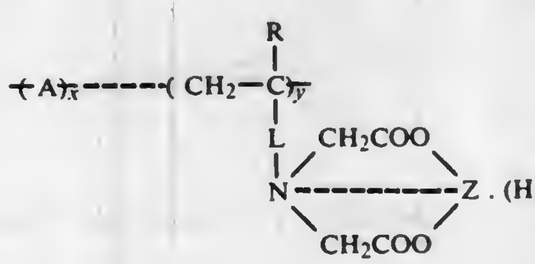
31. In a process of producing a photographic transfer image in a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a chelating dye or dye precursor and an image-receiving layer comprising:

(a) exposing and treating said element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of said exposed silver halide emulsion layers;

  (1) an imagewise distribution of dye or dye precursors being formed as a function of development; and

  (2) at least a portion of said imagewise distribution of dye or dye precursor diffusing to said dye image-receiving layer;

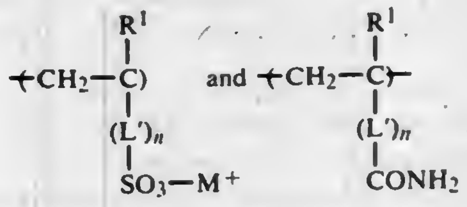
the improvement wherein said dye image-receiving layer comprises a polymer having the formula:



$$-\!\!(A)\!\!-_x\text{-----}(CH_2-\overset{\overset{\displaystyle R}{|}}{C})\!\!-_y \quad \text{with } L-N(CH_2COO)_2\cdots Z\ .\ (H_2O)_m \text{ on } C$$

wherein:

(A) is selected from the group consisting of:



$$-\!\!(CH_2-\overset{\overset{\displaystyle R^1}{|}}{\underset{\underset{\displaystyle SO_3-M^+}{\underset{|}{(L')_n}}}{\underset{|}{C}}}) \quad \text{and} \quad -\!\!(CH_2-\overset{\overset{\displaystyle R^1}{|}}{\underset{\underset{\displaystyle CONH_2}{\underset{|}{(L')_n}}}{\underset{|}{C}}})\!\!-$$

R and R¹ are independently H, halogen or alkyl containing from 1 to 6 carbon atoms;

L and L′ are independent linking groups;

n is 0 or 1;

M is selected from the group consisting of H, an ammonium cation and alkali metal;
Z is a transition metal;
x is from 20 to 95 weight percent;
y is from 80 to 5 weight percent; and
m is 1, 2 or 3.

4,193,797

METHOD FOR MAKING PHOTORESISTS

Abraham B. Cohen, Springfield, and Robert B. Heiart, Middletown, both of N.J., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 126,925, Mar. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 833,740, Jun. 16, 1969, abandoned, which is a continuation-in-part of Ser. No. 602,291, Dec. 16, 1966, Pat. No. 3,547,730. This application Nov. 22, 1972, Ser. No. 308,856

Int. Cl. G03c *5/00*

U.S. Cl. 430—258 **16 Claims**

1. A process for forming a positive photoresist on a surface which comprises:
(1) applying to said surface the surface of a solid, unexposed, positive-working, photosensitive layer comprised of a resist-forming photosoluble or photodesensitizable composition, the other surface of the layer having adhered thereto with low to moderate adherence a thin, flexible, polymeric film support; then in either order,
(2) exposing the layer, imagewise, to actinic radiation to form an image,
(3) stripping the film support from the resulting image-bearing layer; and then,
(4) washing away the exposed areas of the layer to form a positive resist image of thermoplastic material.

4,193,798

PROCESS FOR PRODUCING PRINTING RESIN PLATES USING LIQUID PHOTOSENSITIVE RESINS

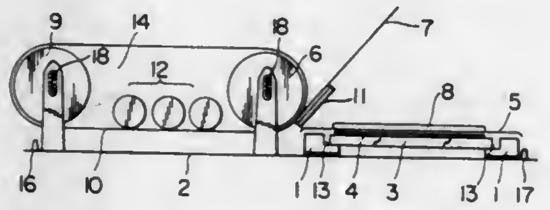
Takezo Sano, Takatsuki, and Tadanori Inoue, Ibaragi, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 584,355, Jun. 6, 1975, abandoned. This application May 31, 1977, Ser. No. 801,789

Claims priority, application Japan, Jun. 21, 1974, 49-71480

Int. Cl.² G03C *5/00;* **G03B** *27/04*

U.S. Cl. 430—300 **5 Claims**



1. A process for producing a printing resin plate which comprises the steps of
placing a negative film on a transparent plate positioned on a frame stand having a pair of horizontally separated spacers;
applying a transparent cover film on said negative film;
applying a liquid photopolymerizable resin on said cover film within the limits of said pair of horizontally separated spacers;
applying a support on said photopolymerizable resin layer by introducing a support between the resulting assembly on said frame stand and a means having a belt that has been extended between at least two rolls thus having an upper surface and a lower surface and which can rotate synchronously with said frame stand and (1) moving said resulting assembly on said frame stand or (2) moving said means having a belt or (3) moving said resulting assembly on said frame stand and said means having a belt together, so that the assembly on said frame stand is moved to below the lower surface of the belt while pressing the support with the lower surface of the belt by the downward pressure thereof, thereby closely adhering the support onto said photopolymerizable resin layer;
exposing said liquid photopolymerizable resin layer to light;
removing the resulting photopolymerizable resin plate from said frame stand, and
removing the unexposed areas from the resulting photopolymerized resin layer.

4,193,799

METHOD OF MAKING PRINTING PLATES AND PRINTED CIRCUIT

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 732,421, Oct. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 703,860, Jul. 9, 1976, abandoned. This application May 19, 1978, Ser. No. 907,791

Int. Cl.² G03C *5/00, 1/68*

U.S. Cl. 430—319 **2 Claims**

1. A method for making a circuit board which comprises
(1) contacting a film made by casting a solution of a curable composition to a copper clad laminate to produce a composite structure, where the curable composition comprises by weight
(A) 0.5% to 98% of epoxy resin,
(B) 0.5% to 98% of polyvinyl acetal,
(C) 0.1% to 10% of aromatic onium salt, where the sum of (A), (B) and (C) is 100% and (C) is selected from an aromatic halonium salt or mixtures thereof of the formula

$$[(R)_a(R^1)_bD]_c\ {}^+[MQ_d]^{-(d\text{-}e)}$$

an aromatic onium salt of a Group Va element of the formula,

$$[(R)_f(R^2)_g(R^3)_hE]\ _c\ {}^+[MQ_d]^{-(d\text{-}e)}$$

and an aromatic onium salt of a Group VIa element of the formula,

$$[(R)_j(R^4)_k(R^5)_mG]_c\ {}^+[MQ_d]^{-(d\text{-}e)}$$

(2) placing a contract mask onto the cast film of the composite structure of (1),
(3) exposing the composite structure of ultraviolet light to effect the cure of exposed areas of the cast film of the composite structure of (1),
(4) developing the resulting exposed composite structure of (1) to produce a copper-clad laminate protected by a negative photoresist of the contact mask in (2),
(5) etching the copper-clad laminate to effect the removal of exposed areas of copper therefrom, and
(6) removing the negative photoresist from the resulting copper-clad laminate to produce a circuit board comprised of copper patterned as a positive image of the mask used in (2),

where R is a monovalent aromatic organic radical, R^1 is a divalent aromatic organic radical, R^2 and R^4 are monovalent organic aliphatic radicals selected from alkyl, cyclo alkyl and substituted alkyl, R^3 and R^5 are polyvalent organic radicals selected from aliphatic radicals and aromatic radicals forming a heterocyclic or fused ring structure with E or G, E is a Group Va element selected from N, P, As, Sb and Bi, G is a group VIa element selected from S, Se and Te, M is a metal or metalloid, Q is a halogen radical,
"a" is a whole number equal to 0 or 2,
"b" is a whole number equal to 0 or 1, and the sum of "a"+"b" is equal to 2 or the valence of D,
"f" is a whole number equal to 0 to 4 inclusive,
"g" is a whole number equal to 0 to 2 inclusive,
"h" is a whole number equal to 0 to 2 inclusive and the sum of "f"+"g"+"h" is a value equal to 4 or the valence of E,

"j" is a whole number equal to 0 to 3 inclusive,
"k" is a whole number equal to 0 to 2 inclusive, and
"m" is a whole number equal to 0 or 1, where the sum of "j"+"k"+"m" is a value equal to 3 or the valence of G,

$$c=d-e,$$

e is equal to the valence of M and is an integer equal to 2–7 inclusive, and
$d>e$ and is an integer having a value up to 8.

4,193,800

PHOTOGRAPHIC DYE MORDANT

Hideaki Iwama; Mikio Koyama; Yasuo Tsuda, and Masao Asano, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

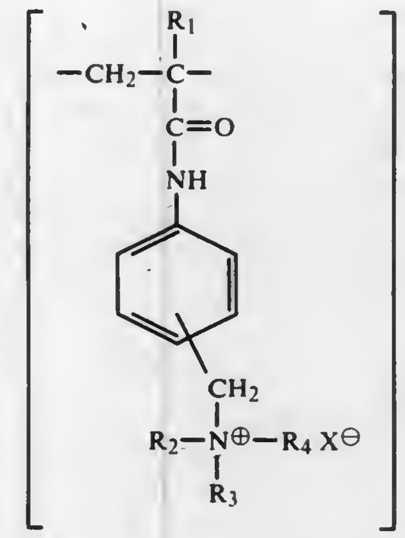
Filed Oct. 19, 1978, Ser. No. 952,816

Claims priority, application Japan, Oct. 24, 1977, 52-127794; Aug. 8, 1978, 53-96462

Int. Cl.² G03C *5/54, 1/40;* **C03C** *17/06, 21/00*

U.S. Cl. 430—213 **25 Claims**

16. A photographic element for use in color diffusion transfer process which comprises in sequence a support, an image receiving layer containing a mordant, a reflecting-agent-containing layer, an opacifying-agent-containing layer, and at least one light-sensitive silver halide emulsion layer having associated therewith an image dye-providing material and wherein said mordant is a polymer containing at least 10 mole percent of a repeating unit of the formula:



wherein R_1 represents a hydrogen atom or a methyl group; R_2, R_3 and R_4 each represent an alkyl group, an aralkyl group, a cycloalkyl group or a cycloalkylalkyl group; and $X^{\oplus}$ represents a monovalent anion.

4,193,801

PROCESS FOR PRODUCING PHOTOGRAPHIC SILVER HALIDE MATERIAL

Howard R. Hopwood, Chelmsford, and Roy Trunley, Rayleigh, both of England, assignors to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

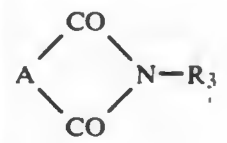
Continuation of Ser. No. 817,462, Jul. 19, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 965,965

Claims priority, application United Kingdom, Jul. 29, 1976, 31584/76; Jul. 29, 1976, 31783/76

Int. Cl.² G03C *1/84, 1/40*

U.S. Cl. 430—570 **11 Claims**

1. A process for preparing photographic material containing coated on a photobase at least one silver halide emulsion layer which contains at least one water-insoluble photographic additive selected from the groups consisting of optical sensitizing dyes, stabilizers, anti-foggants, color couplers and acutance dyes which process comprises the steps of:
(a) forming the photographic additive composition by preparing a melt of an organic compound which is water soluble to the extent of at least 3 g/litre and which has a melting point of between 30° C. and 200° C., adding to the melt the water-insoluble photographic additive, which consititutes from 1 to 80% by weight of the photographic additive composition, and which additive is soluble in said melt, to dissolve therein and allowing the melt to cool to form a solid, the water-soluble organic compound being an acid imide or its derivative of the formula



wherein A represents —CH═CH— or $(CH_2)_n$, n is 1 to 6, A is optionally substituted by OH, NH_2, halogen, hydroxyalkyl of 1 to 3 carbon atoms and R_3 represents H, OH or hydroxyalkyl of 1 to 3 carbon atoms or erythrite, D-fructose, maltose, xylite, sorbitol and mannitol,
(b) either adding the solid photographic additive composition directly to an aqueous gelatino silver halide or
(c) dissolving the solid photographic additive composition in the minimum amount of water or an organic solvent and adding this concentrated solution to a gelatino silver halide emulsion and
(d) coating the aqueous gelatino silver halide emulsion as a layer on a photographic base and drying the layer.

4,193,802

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING AROMATIC ESTER SOLVENT

Yasuo Mukunoki; Hideki Naito, and Akio Mitsui, all of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Aug. 15, 1978, Ser. No. 933,925

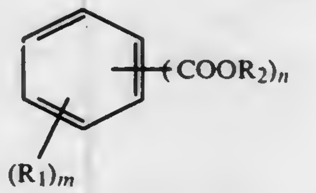
Claims priority, application Japan, Aug. 16, 1977, 52/98050

Int. Cl.² G03C *1/10, 1/40, 1/48, 1/06*

U.S. Cl. 430—139 **16 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer with the photographic light-sensitive material having a hydrophilic organic colloid layer containing a dispersion of a scarcely water-soluble photographic additive dissolved in an aromatic ester represented by the following general formula (I):

(I)



wherein R_1 represents an alkyl group, an alkoxy group, an acyloxy group, an aryloxy group, an alkoxycarbonyl group or a halogen atom; R_2 represents a cyclic saturated hydrocarbon group; m represents an integer of 0 to 5; n represents an integer of 1 to 6; and when m and n each represents an integer of 2 or more, the substituents represented by R_1 or R_2 can be the same or different.

6. The silver halide photographic light-sensitive material as claimed in claim 1, wherein said scarcely water-soluble photographic additive is a photographic coupler, an antioxidant, a fade preventing agent, a hardener, an oil-soluble filter dye, an oil-soluble ultraviolet absorbing agent, a fluorescent brightening agent, a development inhibitor releasing compound, a developing agent, a diffusible dye releasing coupler, a diffusible dye releasing redox compound or a dye developing agent.

4,193,803

AMORPHOUS POLYESTER ADHESIVES FOR PHOTOGRAPHIC MATERIALS COMPRISING PHTHALIC ACID, LINEAR AND BRANCHED ALIPHATIC GLYCOL COMPONENTS

Mohammad A. Sandhu, Webster, and Kenneth L. Tingler, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 778,635, Mar. 17, 1977, Pat. No. 4,113,493. This application Jun. 12, 1978, Ser. No. 915,023

Int. Cl.^{2} G03C *1/80*

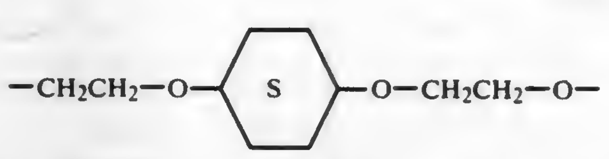
U.S. Cl. 430—627 **6 Claims**

1. An adhesive composition comprising an amorphous polyester capable of remaining amorphous at temperatures above about 20° C., comprising:

(a) an acid component comprising at least one phthalic acid derivative and

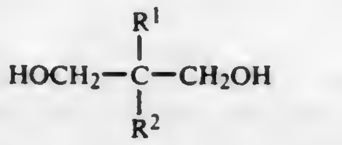
(b) a glycol component comprising:

(i) from about 15 to about 85 mole percent of at least one linear aliphatic glycol having the structure HO—R—H wherein R is selected from the group consisting of:



and $—CH_2CH_2O—_n$ wherein n is an integer of from 2 to 4, and

(ii) from about 85 to about 15 mole percent of at least one branched aliphatic glycol having the structure:



$$HOCH_2—\underset{R^2}{\overset{R^1}{C}}—CH_2OH$$

wherein R^1 and R^2 are alkyl; wherein the polyester is less than 1% crystalline and soluble in halogenated solvents and has a glass transition temperature within the range of from about −30° C. to about +50° C.

6. An adhesive composition comprising an amorphous polyester capable of remaining amorphous at temperatures above about 0° C., comprising:

(a) an acid component which is terephthalic acid and

(b) a glycol component comprising:

(i) from about 40 to about 60 mole percent of diethylene glycol and

(ii) from about 60 to about 40 mole percent of neopentyl glycol;

wherein the polyester is less than 1% crystalline, soluble in halogenated solvents, and has a glass transition temperature within the range of from about −30° C. to about +50° C.

4,193,804

PROCESS FOR PREPARING A COMPOSITION FOR A THERMALLY DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Shinpei Ikenoue, and Takao Masuda, both of Osaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

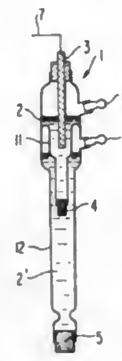
Filed Jul. 25, 1978, Ser. No. 928,025

Claims priority, application Japan, Jul. 26, 1977, 52-89481

Int. Cl.^{2} G03C *1/02, 1/72*

U.S. Cl. 430—353 **27 Claims**

1. In a process for preparing a composition for use in a thermally developable light-sensitive material, which comprises reacting (a) an organic silver salt with (b) a compound capable of releasing a halogen atom or a radical containing halogen by mixing a dispersion of component (a) and a dispersion or solution of component (b) to form a reaction solution mixture of the organic silver salt and a silver halide wherein the improvement the reaction of component (a) with component (b) is carried out while controlling the oxidation-reduction potential of the reaction solution, such that the potential does not fall outside a certain pre-determined range from the beginning of addition of component (b) to component (a) to the end of the said addition, whereby silver halide grains of a controlled grain size and a narrow grain size distribution are obtained due to the control of the oxidation-reduction potential.



4,193,805

FLAME RETARDANT REGENERATED CELLULOSE CONTAINING A PHOSPHORIC ACID OR THIOPHOSPHORIC ACID AMIDE

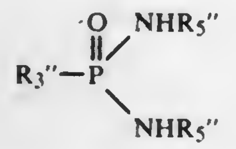
Claudine Mauric, Basel, and Rainer Wolf, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 749,379, Dec. 10, 1976, abandoned, which is a continuation of Ser. No. 549,933, Feb. 14, 1975, abandoned. This application Jul. 12, 1978, Ser. No. 923,961

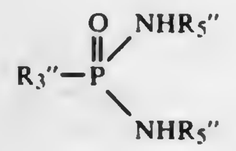
Int. Cl.^{2} C09K *3/28;* **C08L** *1/24*

U.S. Cl. 106—18.15 **17 Claims**

1. Flameproofed regenerated cellulose containing, as flameproofing agent, a flameproofing effective amount of a compound of the formula



said flameproofed regenerated cellulose having been produced by regenerating cellulose from a cellulose-containing medium containing said flameproofing agent of the formula



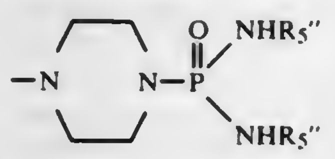
wherein

R_5'' is unsubstituted phenyl; or phenyl substituted by 1 or 2 chloro substituents, provided that not more than 1 chloro substituent is in an ortho-position; and

R_3'' is a group

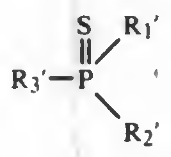
$R_5''—NH—$,

or a group

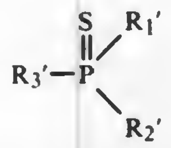


wherein R_5'' is as defined above.

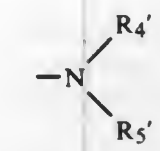
8. Flameproofed regenerated cellulose containing, as flameproofing agent, a flameproofing effective amount of a compound of the formula



said flameproofed regenerated cellulose having been produced by regenerated cellulose from a cellulose-containing medium containing said flameproofing agent of the formula



either, R_1' and R_2' are each, independently,

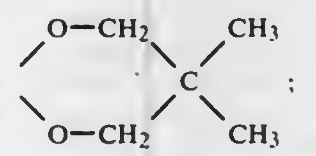


wherein

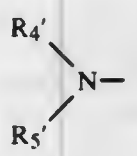
R_4' is hydrogen or C_1–C_3 alkyl; and

R_5' is C_1–C_6 alkyl; cyclohexyl; unsubstituted phenyl; or phenyl substituted by 1 or 2 substituents selected from bromo, chloro and $C_{1\text{-}2}$ alkyl, with the provisos that: (a) when substituted phenyl contains a bromo substituent, such substituent is in the para-position, (b) when substituted phenyl contains 2 chloro substituents, not more than 1 chloro substituent is in an ortho-position, (c) substituted phenyl contains not more than one $C_{1\text{-}2}$ alkyl substituent, and (d) substituted phenyl contains not more than one bromo substituent;

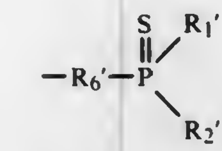
or R_1' and R_2' together form a group



and R_3' is a group



wherein R_4' and R_5' are as defined above; or a group



wherein

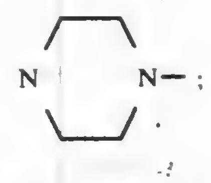
R_1' and R_2' are as defined above, and

R_6' is a group

$—NH—R_7'—NH—$

wherein R_7' is C_2–C_6 straight chain alkylene or 1,4-phenylene;

or a group



with the proviso that when any R_4' is C_2 or C_3 alkyl, then R_5' of the same amino group is $C_{1\text{-}6}$ alkyl.

4,193,806

VISCOSITY INCREASING ADDITIVE FOR PRINTING INKS

Claude M. Finlayson, Houston, Tex., assignor to N L Industries, Inc., New York, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,403

Int. Cl.^{2} C09D *11/02*

U.S. Cl. 106—20 **16 Claims**

1. A printing ink comprising an organic ink vehicle having dispersed therein an ink coloring material and an organophilic clay gellant comprising the reaction product of a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of clay and a methyl benzyl dialkyl ammonium compound or a dibenzyl dialkyl ammonium compound wherein the alkyl groups contain 14 to 22 carbon atoms and the amount of said ammonium compound reacted with said clay being from 100 to 120 milliequivalents per 100 grams of clay based upon 100% active clay.

4,193,807

OPTICAL GLASS

Kazufumi Ishibashi, Sagamihara, and Takeo Ichimura, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 30, 1978, Ser. No. 956,067

Claims priority, application Japan, Oct. 31, 1977, 52-129671

Int. Cl.^{2} C03C *3/16*

U.S. Cl. 106—47 Q **7 Claims**

1. Optical glass having a refractive index (ηd) range from 1.75 to 2.13 and Abbe number (νd) range from 17 to 28, consisting essentially of the following in % by weight:

Component	Weight Percent
P_2O_5	11–32
PbO	34–60
Nb_2O_5	22–50

4,193,808

ENAMEL FOR COATING STEEL ARTICLES

Lev G. Khodsky; Alla I. Brazgovskaya; Valentina S. Kaminskaya, all of Minsk, U.S.S.R., and Evgeny N. Podkletnov, deceased, late of Moscow, U.S.S.R. (by Vera M. Malkina, Evgeny E. Podkletnov, administrators), assignors to Institut Obschei i Neorganicheskoi Khimii Akademii Nauk Belorusskoi SSR, U.S.S.R.

Filed Mar. 2, 1977, Ser. No. 773,753

Int. Cl.^{2} C03C *3/04, 7/02*

U.S. Cl. 106—48 **3 Claims**

1. An enamel composition for coating steel articles, consisting essentially of comprising SiO_2, TiO_2, ZrO_2, CaF_2, Li_2O and Na_2O with the following ratio of said components, in percent by weight:

SiO_2	62.17 to 72.29
TiO_2	0.2 to 9.54
ZrO_2	0.5 to 9.9
CaF_2	2.4 to 6.6
Li_2O	0.3 to 5.06
Na_2O	10.48 to 19.05

4,193,809
HIGH-STRENGTH CONCRETE OBJECTS

Richard L. Ferm, and Robert W. Campbell, both of Lafayette, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 31, 1978, Ser. No. 938,665
Int. Cl.^{2} C04B *7/02*

U.S. Cl. 106—97 **7 Claims**

1. A process for producing a portland cement concrete object of increased strength by impregnating the object with an aqueous solution of alkali metal or an alkaline earth metal polysulfide and heating the object at a temperature between 110° C. and 180° C. for at least 0.1 hour.

4,193,810
CONCRETE COMPOSITION

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 31, 1978, Ser. No. 938,667
Int. Cl.^{2} C04B *7/02*

U.S. Cl. 106—97 **5 Claims**

1. A process for producing a portland cement concrete article of increased strength by impregnating the article with an aqueous solution of an alkali metal or alkaline earth metal polysulfide.

4,193,811
CONCRETE COMPOSITION

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 31, 1978, Ser. No. 938,668
Int. Cl.^{2} C04B *7/02*

U.S. Cl. 106—97 **8 Claims**

1. A concrete composition comprising a major portion of aggregate, from about 6 to 15% by weight portland cement based on aggregate, and from 1.5 to 6% based on aggregate of an alkali metal or alkaline earth metal polysulfide.

4,193,812
PLASTER OBTAINED FROM PHOSPHOGYPSUM AND ITS PROCESS OF OBTENTION

Jean-Pierre Caspar, Le Teil, and Bernard Lelong, Montelimar, both of France, assignors to Lafarge, Paris, France

Filed Apr. 12, 1978, Ser. No. 895,763
Claims priority, application France, Apr. 29, 1977, 77 12963
Int. Cl.^{2} C04B *11/00*

U.S. Cl. 106—110 **12 Claims**

1. A process for preparing plaster from phosphogypsum which comprises: contacting the phosphogypsum with from about 0.8 to 4.0% of a calcium source to react with the syncrystalline impurities in the phosphogypsum during a heat treatment which comprises:

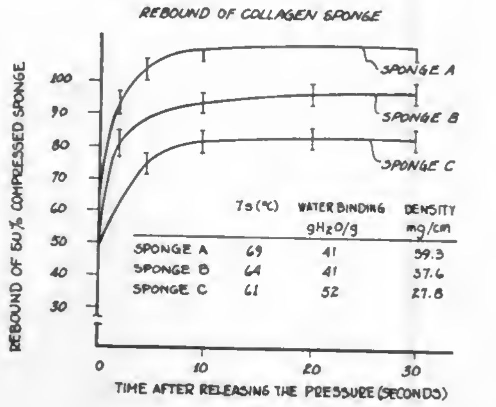
(a) dehydrating the phosphogypsum by heating at a temperature of from 110° C. to 150° C. for from about 30 to 90 minutes and
(b) conditioning the phosphogypsum product of step (a) by heating at 130° C. to 180° C. for at least 10 minutes under a H_2O partial pressure of at least 100 Torrs.

4,193,813
METHOD FOR MAKING COLLAGEN SPONGE

Milos Chvapil, Tucson, Ariz., assignor to Medi-Coll, Inc., Phoenix, Ariz.

Filed Sep. 7, 1976, Ser. No. 720,563
Int. Cl.^{2} B29D *27/00;* **C07G** *7/00, 7/06*

U.S. Cl. 106—122 **12 Claims**



1. In a method of making a collagenous product wherein comminuted collagen is suspended in water and formed into a homogeneous slurry, the improvement comprising: in the folowing sequence

(a) adjusting the pH of said slurry to from pH 3.5 to pH 6.5;
(b) adding from 0.5% to 1% of an aldehyde based on the total volume of said slurry;
(c) freezing said slurry at a temperature of from 0° centigrade to −20° centigrade;
(d) thawing said slurry to form collagenous sponge; and
(e) immersing said sponge in a reducing wash having a pH of from 8 to 9 containing sufficient reducing agent to create excess reducing equivalents for a time, and at a temperature sufficient to reduce the existing double bond Schiff base to a single bond.

4,193,814
BINDING LIGNOCELLULOSIC MATERIALS

Kuo-Cheng Shen, Ottawa, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

Continuation-in-part of Ser. No. 560,131, Mar. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 338,562, Mar. 6, 1973, abandoned. This application Apr. 21, 1978, Ser. No. 898,671
Int. Cl.^{2} C08L *97/02*

U.S. Cl. 106—123 LC **5 Claims**

1. A method of making a thermosetting binder for lignocellulosic materials, comprising treating a concentrate of spent sulfite liquor with sufficient sulfuric acid to produce a lignosulfonic acid content of not less than 0.8 milliequivalent weight of NaOH per gram of spent sulfite liquor solids, the amount of sulfuric acid being not substantially greater than that required to release all the available lignosulfonic acid.

4,193,815
GILSONITE EMULSION COMPOSITIONS

Michael V. Burris, 723 S. Third St., Las Vegas, Nev. 89101

Filed Jun. 5, 1978, Ser. No. 912,357
Int. Cl.^{2} C08L *1/00, 95/00;* **C09D** *3/24*

U.S. Cl. 106—202 **8 Claims**

1. An emulsion composition consisting essentially of

(a) a gilsonite phase consisting of a mixture of between about 33 and about 95% gilsonite, and a petroleum hydrocarbon having a boiling point above about 450° F. selected from the group consisting of diesel oil, gas oil, lubricating oil and asphalt, and
(b) a water phase consisting essentially of water and between about 0.05 and about 5%, by weight, of an emulsifying agent and wherein the gilsonite:water phase ratio is between about 1:2 and about 3:1, respectively, by weight.

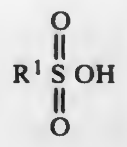
4,193,816
QUICK-SETTING BITUMINOUS EMULSION COMPOSITIONS

Richard L. Ferm, Lafayette, and Chester C. Latif, Turlock, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 672,746, Oct. 4, 1967, abandoned, and a continuation-in-part of Ser. No. 757,137, Sep. 3, 1968, abandoned, and a continuation-in-part of Ser. No. 68,502, Aug. 31, 1970, abandoned. This application May 22, 1972, Ser. No. 255,604
Int. Cl.^{2} C08L *95/00*

U.S. Cl. 106—277 **8 Claims**

1. A surfacing composition which rapidly sets to a tough cohesive surface with early development of tensile strength and rain resistance and is prepared by intimately mixing a solid particulate matter, a bituminous emulsion and a set initiator in the following proportions: 100 parts by weight of said solid particulate matter; 0.1 to 5 parts by weight of said set initiator which is Portland cement, hydrated lime or mixtures thereof; and from about 5 to 100 parts of said bituminous emulsion comprising from about 50 to 70 weight percent of an asphalt and from about 0.1 to 3 weight percent of an anionic emulsifying salt of a hydrocarbyl sulfonic acid of the formula:



$$R^1\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle O}{\|}}{S}}OH$$

wherein R^1 is alkyl or alkenyl of from 10–20 carbon atoms.

4,193,817
PRODUCTION OF BOTTLER'S LIQUID SUGAR

Terry R. Dillman, and Dennis J. Burke, both of Rockford, Ill., assignors to Illinois Water Treatment, Rockford, Ill.

Filed Mar. 22, 1979, Ser. No. 22,586
Int. Cl.^{2} C13D *3/14;* **B10D** *15/06;* **B01J** *1/09*

U.S. Cl. 127—46 A **20 Claims**

1. A process for production of bottler's liquid sugar essentially from brown sugar derived from cane sugar and crystallized in one or more intermediate strikes from sugar liquors comprising the steps of

(a) remelting the crystallized product of one or more intermediate strikes,
(b) filtering the remelted product, and
(c) passing the filtered product in contact with chloride form of Type-1 strong-base anion-exchange resin.

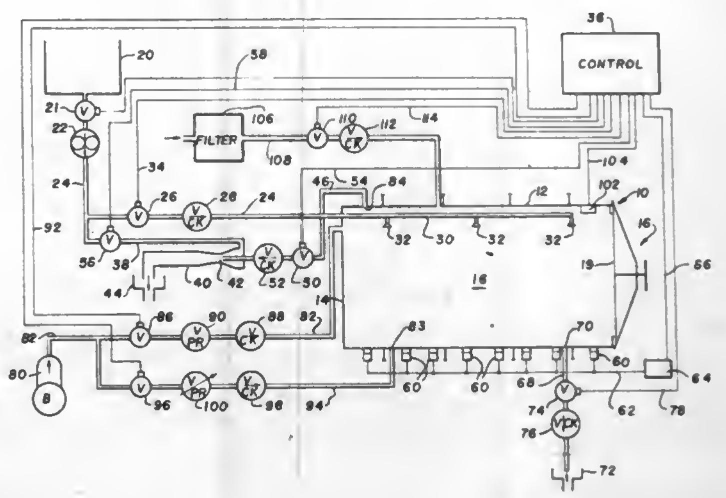
17. In a process for decolorization of sugar solutions by contact with chloride form of Type-1 strong-base anion-exchange resin, an improvement wherein decolorization is carried out at about 30° C., wherein the resin is regenerated by an aqueous solution of hydrochloric acid followed by an aqueous solution of sodium chloride, and wherein the aqueous solution of sodium chloride also contains a member selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonium hydroxide, and mixtures thereof.

4,193,818
COMBINED ULTRASONIC CLEANING AND BIOCIDAL TREATMENT IN A SINGLE PRESSURE VESSEL

Jack H. Young, Crawford; David A. Karle, and Frank E. Halleck, both of Erie, all of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed May 5, 1978, Ser. No. 903,249
Int. Cl.^{2} B08B *3/12*

U.S. Cl. 134—1 **18 Claims**



1. Method for combined ultrasonic washing and biocidal treatment of articles, such as surgical instruments, comprising
providing a sealable chamber capable of operating at pressures other than atmospheric including both positive pressures and vacuum levels in excess of 15″ Hg. and defined by a unitized shell main body portion,
placing an article to be ultrasonically cleaned and biocidally treated in such chamber and sealing the chamber,
admitting an ultrasonic washing liquid into the shell chamber,
controlling such washing liquid admission to cover the article to be cleaned,
evacuating the chamber to expose the washing liquid to a deep vacuum in excess of about 15″ Hg.,
transmitting ultrasonic energy through such unitized shell while maintaining such deep vacuum during at least a portion of the time that ultrasonic energy is transmitted into the washing liquid,
such ultrasonic energy being transmitted by energizing a plurality of transducers secured to such unitized shell externally of such chamber to achieve desired degassing of and cavitation in such washing liquid to ultrasonically clean the article,
releasing the vacuum in the chamber,
draining the washing liquid from the chamber, and
admitting a biocidal fluid into the chamber to provide desired biocidal treatment of such article.

4,193,819
LUMINESCENT PHOTOVOLTAIC SOLAR COLLECTOR

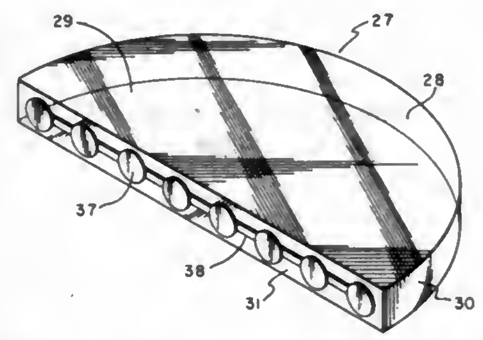
Peter G. Wohlmut, Palo Alto, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 23, 1978, Ser. No. 918,220
Int. Cl.^{2} H01L *31/04*

U.S. Cl. 136—89 PC **8 Claims**

1. A photovoltaic array comprising a luminescent member having a pair of flat, opposed essentially parallel semicircularly

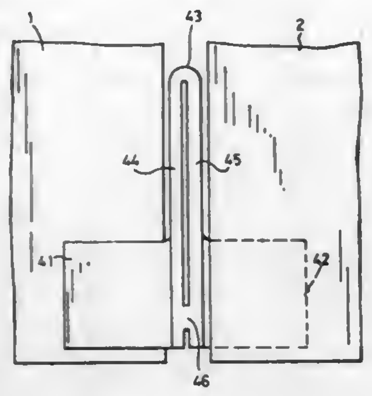
shaped sides, each of said sides being joined by a thin edge face having a curved, semicylindrical section and a straight section



and at least one photovoltaic cell carried on the straight section of said thin edge face.

4,193,820
INTERCONNECTION DEVICE FOR SOLAR CELLS

Ronald Thomas, Wassenaar, Netherlands, assignor to Organisation Europeenne de Recherches Spatiales, Paris, France
Filed Sep. 22, 1978, Ser. No. 994,737
Claims priority, application Belgium, Oct. 7, 1977, 181550
Int. Cl.² H01L *31/00*
U.S. Cl. 136—89 P **3 Claims**



1. In a solar panel comprising a plurality of spaced apart planar solar cells arranged on at least one face of a supporting plate, an interconnection device for interconnecting adjacent solar cells each having an upper and a lower surface, said interconnection device comprising:

a pair of flat strips of electro-conducting material, a first of said flat strips attached to the upper surface of a first solar cell and the second of said flat strips attached to the lower surface of a second solar cell; and

a hinge element of electro-conducting material having a U-shape and extending lengthwise in the gap between the pair of solar cells in a slant plane relative to the plane of the pair of solar cells, the end portions of said hinge element being connected each to a respective one of said flat strips.

4,193,821
FABRICATION OF HETEROJUNCTION SOLAR CELLS BY IMPROVED TIN OXIDE DEPOSITION ON INSULATING LAYER

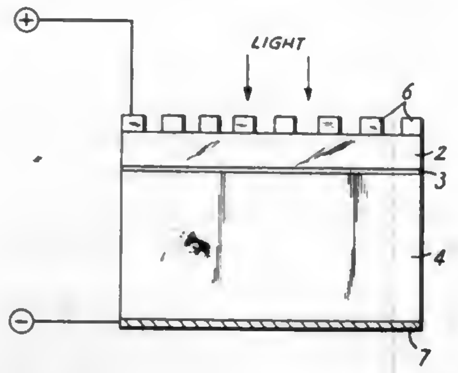
Tom Feng, Morris Plains, and Amal K. Ghosh, New Providence, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 933,563, Aug. 14, 1978, abandoned. This application Mar. 12, 1979, Ser. No. 19,827
Int. Cl.² H01L *27/14, 31/00, 29/48*
U.S. Cl. 148—1.5 **12 Claims**

1. A process for forming a tin oxide semiconductor heterojunction solar cell comprising:

providing an N-type silicon substrate having a resistivity less than about 10 ohm-cm;

depositing an insulating layer on the surface of said silicon substrate, said insulating layer being selected from the group consisting of SiO_2, Si_3N_4, GeO_2, Al_2O_3 and TiO_2;

heating said substrate to provide a substrate surface temperature in the range of about 300° C. to about 400° C.; and



contacting said heated substrate in the presence of air with an atomized liquid solution of tin tetrachloride and an organic ester having a boiling point below about 250° C. while continuing said heating, said contacting being for a time sufficient to deposit a conductive coating of tin oxide on the substrate.

4,193,822
HIGH STRENGTH ALUMINIUM BASE ALLOYS

Colin M. Adam, Camp Hill, and Clive G. Bennett, East Doncaster, both of Australia, assignors to Comalco Aluminium (Bellbay) Limited, Tasmania, Australia
Filed Jul. 7, 1978, Ser. No. 922,640
Claims priority, application Australia, Jul. 15, 1977, PD 0865
Int. Cl.² C22F *1/04*
U.S. Cl. 148—3 **6 Claims**

4. In a method of casting aluminum-iron alloy from a melt with a controlled temperature gradient between the solid and liquid metal and with a controlled rate of growth of the alloy phases as they solidify, said alloy consisting essentially of aluminum and about 0.5 to 5% by weight of iron, the improvement which comprises providing in said melt about 0.1 to 6.0% magnesium, about 0.0 to 3.0% copper, about 0.5 to 10% zinc and about 0.0 to 1.0% manganese, to improve the stiffness and strength of said alloy by producing in said alloy the metallurgical microstructure consisting essentially of cells of Al-Al_6Fe eutectic, wherein the Al_6Fe phase is present in the form of fibers, in combination with precipitates due to precipitation hardening.

4,193,823
ROLLS FOR HOT-ROLLING NON-FERROUS METALS AND METHOD OF MAKING

Robert S. Linne, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.
Division of Ser. No. 776,796, Mar. 11, 1977, Pat. No. 4,106,319. This application Dec. 21, 1977, Ser. No. 862,895
Int. Cl.² B21B *27/00;* B23P *9/02;* C21C *1/74*
U.S. Cl. 148—6.35 **15 Claims**

1. An improved method of making a work roll for a hot-rolling mill of the type used for rolling non-ferrous metal and generally comprising the steps of: providing a steel alloy bar

having a chromium content of about 4.0 to 6.0 percent; and machining said bar into a work roll having a predetermined shape; and heat-treating said work roll, to harden said steel alloy, by heating the roll to an elevated temperature then cooling the roll in a controlled atmosphere;

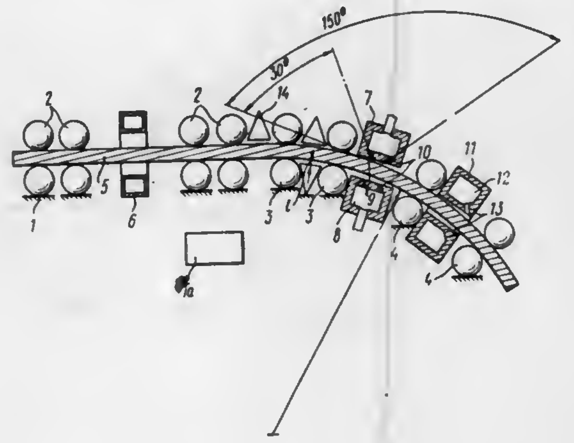
wherein the improvement comprises:

heat treating the roll by heating the roll to an elevated temperature in a controlled atmosphere then cooling the roll in an oxidizing atmosphere to harden said steel alloy and to form a dense, tightly-adherent oxide surface scale on at least the working surfaces of said work roll, which scale serves, during subsequent use for hot-rolling, to improve the average life of the roll; and

maintaining said surface scale on at least said working surfaces of said roll during any subsequent finish machining operations.

4,193,824
METHOD FOR MANUFACTURING STEEL SPRING LEAVES

Viktor P. Egorov, Vostryakovsky proezd, 11, korpus 1, kv. 226; Viktor A. Ognevsky, Sumskoi proezd, 15, korpus 2, kv. 279; Anatoly G. Orlovsky, Avtozavodskaya ulitsa, 7, kv. 81; Grigory A. Ostrovsky, Raketny bulvar, 10, kv. 47; Alexandr M. Ryskind, Kirovogradskaya ulitsa, 24, korpus 1, kv. 161; Anatoly L. Stepin, Birjuleveskaya ulitsa, 5, korpus 2, kv. 347; Oleg F. Trofimov, Chusovskaya ulitsa 11, korpus 8, kv. 92, and Isaak N. Shklyarov, Velozavodskaya ulitsa 9, kv. 24, all of Moscow, U.S.S.R.
Filed Aug. 9, 1977, Ser. No. 824,211
Claims priority, application U.S.S.R., Aug. 18, 1976, 2385501; Aug. 18, 1976, 2385502
Int. Cl.² C21D *7/14*
U.S. Cl. 148—12.4 **3 Claims**



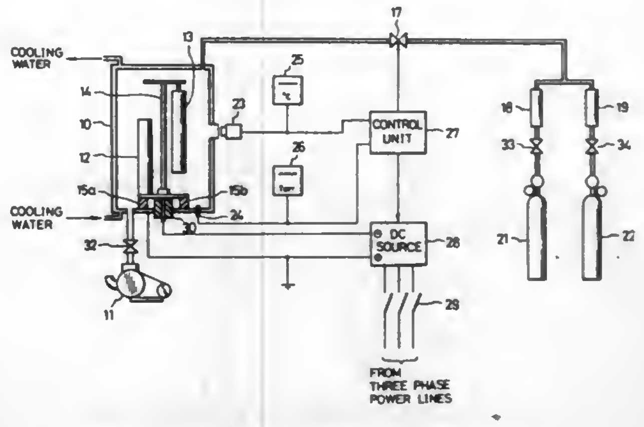
1. A method of manufacturing spring leaves, comprising the successive steps of: heating each spring leaf by induction heating to a hardening temperature; bending each heated spring leaf; cooling each spring leaf to ensure hardening with subsequent self-tempering; hardening the surface of each spring leaf to a depth of about one tenth to about three tenths part of its gauge on at least one of its sides, by surface induction heating.

4,193,825
METHOD OF CARBON NITRIDING A METAL WORKPIECE

Rinzo Kojima; Kazuhiro Shibata, both of Inuyama, and Sachio Nagata, Osaka, all of Japan, assignors to Kayaba Industry Co., Ltd. and Nihon Denshi Kogyo Kabushiki Kaisha, both of, Japan
Continuation of Ser. No. 810,833, Jun. 28, 1977, abandoned. This application Jan. 2, 1979, Ser. No. 405
Int. Cl.² C21D *1/38*
U.S. Cl. 148—16.6 **9 Claims**

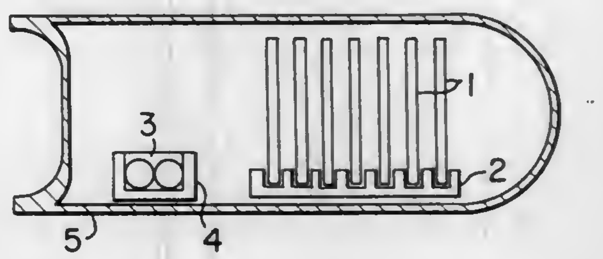
1. A method of carbon nitriding the surface of a metal workpiece comprising the steps of forming a pressurized mixture of about 1 to about 30 volume % of carbonaceous gas and the remainder of nitrogen gas, supplying said mixture to an electric discharge furnace containing said workpiece, said furnace being continuously evacuated to an internal pressure in the range from about 0.4 to about 20 Torr, heating said workpiece to a temperature in the range from about 400° C. to about 600° C. for a predetermined time, and then cooling said treated workpiece.

8. A method of carbon nitriding the surface of a metal workpiece comprising the steps of forming a pressurized mixture of about 1 to about 30 volume % of carbonaceous gas, 0.1 to 30% volume of hydrogen and the remainder of nitrogen gas, supplying said mixture to an electric discharge furnace containing said workpiece, said furnace being continuously evacuated to a pressure of 0.4 to 20 Torr, heating said workpiece to a temperature in the range from about 400° C. to about 600° C. for a predetermined time, and then cooling said treated workpiece.



4,193,826
VAPOR PHASE DIFFUSION OF ALUMINUM WITH OR WITHOUT BORON

Yasuhiro Mochizuki; Hiroaki Hachino; Yasumichi Yasuda; Yutaka Misawa, and Takuzo Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan
Filed Aug. 7, 1978, Ser. No. 931,399
Claims priority, application Japan, Aug. 15, 1977, 52/96983
Int. Cl.² H01L *21/223*
U.S. Cl. 148—189 **12 Claims**



1. A method of fabricating a semiconductor device through selective diffusion of aluminum in a vapor phase into a silicon substrate by heating a sealed enclosure in which said silicon substrate and an aluminum diffusion source are disposed, wherein said selective diffusion of aluminum is carried out in a predetermined surface region of said silicon substrate with a low aluminum concentration smaller than a predetermined value and using a silicon oxide film as a diffusion mask, said silicon oxide film having apertures at said predetermined surface region of said silicon substrate, through which aluminum is selectively diffused into the silicon substrate.

4,193,827

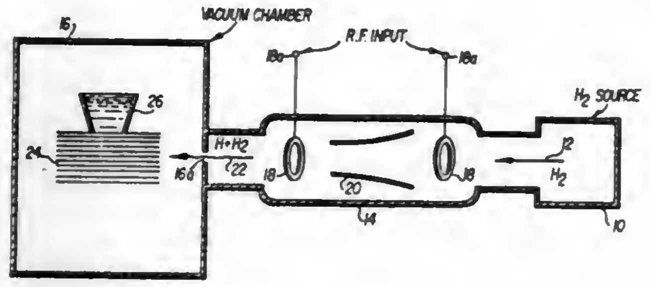
ATOMIC HYDROGEN STORAGE

John A. Woollam, Oberlin, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 676,432, Apr. 13, 1976, Pat. No. 4,077,788. This application Sep. 29, 1977, Ser. No. 837,794

Int. Cl.² C06B *47/00*

U.S. Cl. 149—1 **1 Claim**



1. A solid state matrix containing a high concentration of atomic hydrogen, said matrix comprising a delaminated layered compound which is a transitional metal dichologenide of the form TX_2 where T is a transitional metal and X is S, Se or Te and cooled to liquid helium temperature in the range of from about 0° to 14° K. and having a strong magnetic field of at least 1 Tesla per degree Kelvin impressed thereon, and a monolayer of free radicals of hydrogen collected in the interstices of said layered compound exposed by the delamination of said layered compound.

4,193,828

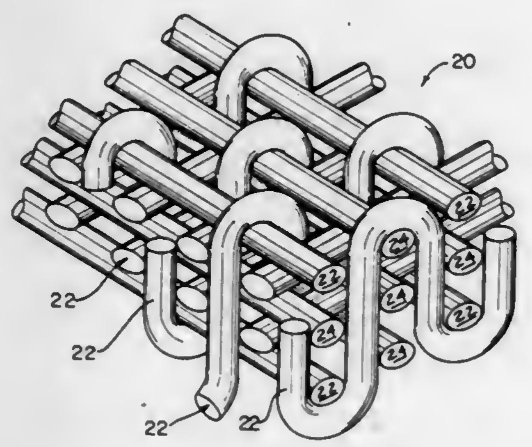
METHOD OF FORMING CARBON COMPOSITES

Peter R. Moores, Sanford, and James E. Shoffner, Kennebunk, both of, assignors to Fiber Materials, Inc., Biddeford, Me.

Division of Ser. No. 708,929, Jul. 27, 1976, Pat. No. 4,131,708. This application Jun. 12, 1978, Ser. No. 914,336

Int. Cl.² B32B *7/00*

U.S. Cl. 156—148 **6 Claims**



1. A method of forming a carbon-composite, comprising the steps of:

providing a carbon fiber body,
implanting columns of refractory metal at selected positions within said body,
impregnating said body with a carbonizable binder material, and
heating the impregnated body under pressure so as to (1) carbonize said binder and (2) simultaneously convert said metal in situ to refractory metal carbides having (a) a melting point below the sublimation temperature of the surrounding composite and (b) a thermal expansibility having a force below the strength of the surrounding composite.

4,193,829

PROCESS FOR THE MANUFACTURE OF LOW DENSITY BIS-MALEIMIDE-CARBON MICROBALLOON COMPOSITES

Demetrius A. Kourtides, San Jose, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 778,195, Mar. 16, 1977, Pat. No. 4,135,019. This application Jun. 30, 1978, Ser. No. 920,878

Int. Cl.² B32B *3/12*

U.S. Cl. 156—276 **14 Claims**

1. A process for preparing composite structures comprising:

a. impregnating a ceramic fiber cloth with a bismaleimide resin;
b. curing the resin-impregnated cloth to produce a cover sheet;
c. filling a polyamide paper or a bismaleimide-glass fabric honeycomb core structure with carbon microballoons; and
d. bonding said cover sheet to said honeycomb core structure with a bismaleimide hot melt adhesive.

4,193,830

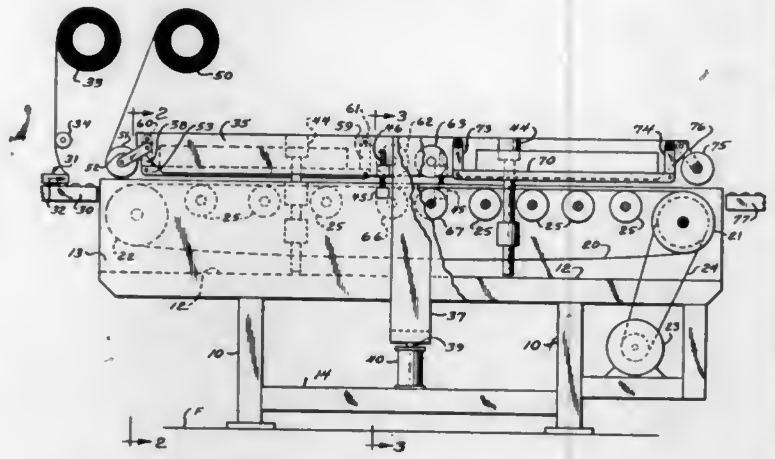
METHOD OF SURFACE LAMINATING

James A. Milne, Wheeling, Ill., assignor to Pace Incorporated, Northbrook, Ill.

Division of Ser. No. 723,026, Sep. 13, 1976, abandoned. This application Dec. 15, 1977, Ser. No. 860,839

Int. Cl.² C09J *5/06, 7/00*

U.S. Cl. 156—306 **5 Claims**



1. A method of surface laminating sheet material to a core with mechanical bond throughout an interface of surfaces of both sheet and core comprising the steps of:

registering at ambient temperature in sandwich form the core material, a high viscosity hot melt adhesive and a laminate,
advancing the sandwich past a heater for progressively raising the temperature of the adhesive from ambient to tackiness to activating temperature beginning at one edge and across the width of the sandwich and proceeding lengthwise of the sandwich under low unit pressure,
immediately advancing the sandwich under pressure rolls to migrate the adhesive when elevated to and while at said activating temperature into intimate contact with both laminate and core surfaces opposite each other in the sandwich by applying localized pressure across the sandwich urging the laminate against the core while maintaining the outer sandwich surfaces in substantial parallelism,
immediately advancing the sandwich past a cooling station for progressively cooling the sandwich under low unit pressure following said pressurizing step to reduce the temperature of the adhesive to mechanical bonding temperature beginning at said one edge of the sandwich and proceeding lengthwise thereof and maintaining the surfaces in said parallelism during said cooling.

4,193,831

WATER PROOFING COMPOSITIONS FOR CEMENT MORTAR OR CONCRETE AND METHOD EMPLOYING SAME

Toshihiro Fujii, Fukuyama, and Sekiji Yokota, Fukayasu, both of Japan, assignors to Hayakawa Rubber Company Limited, Fukuyama, Japan

Continuation of Ser. No. 668,114, Mar. 18, 1976, abandoned, which is a continuation of Ser. No. 537,014, Dec. 27, 1974, abandoned. This application Oct. 27, 1977, Ser. No. 846,051

Claims priority, application Japan, Mar. 18, 1976, 51-668114

Int. Cl.² C09J *5/00*

U.S. Cl. 156—309 **3 Claims**

1. A method of water-proofing hardened cement mortar or concrete comprising the steps of making a homogeneous mixture consisting essentially of 65–40% by weight reclaimed butyl rubber, 30–50% by weight filler, a softener and an antioxidant; rolling said mixture into a sheet having a hardness of 30–70, applying an adhesive on the hardened cement mortar or concrete, placing said sheet on the applied adhesive to adhere said sheet to said hardened cement mortar or concrete to form a water proofing roofing and applying wet mortar or concrete on said sheet to adhere said wet mortar or concrete to said sheet.

3. A water-proofing roofing sheet to be used in contact with wet cement mortar or wet concrete and having adhesion to the wet cement mortar or wet concrete without employing additional bonding materials and having a hardness of 30–70 (JIS hardness tester), which essentially consists of 65–40% by weight of reclaimed butyl rubber, 30–50% by weight of a filler, a softener and an antioxidant.

4,193,832

METHOD FOR MAKING BONDS

Artur Reischl, Leverkusen; Rudolf Hombach, Cologne, and Manfred Dollhausen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 24, 1978, Ser. No. 899,430

Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2719720

Int. Cl.² C09J *5/00*

U.S. Cl. 156—331 **14 Claims**

1. In a method for bonding one or more substrates with polyurethane adhesives comprising:

(A) applying to at least one of the surfaces to be bonded adhesives comprising organic polyisocyanates and compounds containing isocyanate-reactive hydrogen atoms which react with each other to form polyurethanes, or moisture-hardening reaction products containing free isocyanate groups or excess quantities of polyisocyanates and compounds containing isocyanate-reactive hydrogen atoms which react with each other and
(B) fitting together said surfaces to be bonded, the improvement wherein said compounds containing isocyanate-reactive hydrogen atoms are dispersions of isocyanate polyaddition products which contain terminal hydroxyl groups and primary or secondary amino groups or semicarbazide groups, in organic polyhydroxyl compounds, prepared from diisocyanates having a molecular weight of from 112 to 300 and compounds containing isocyanate-reactive groups having a functionality of at least two and a molecular weight of from 32 to 300.

4,193,833

ULTRASONIC PACKAGING MACHINE

John L. Young, Livonia, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

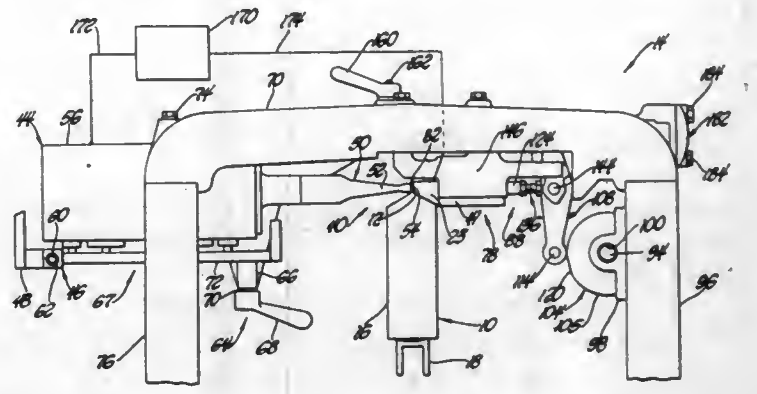
Filed Apr. 24, 1978, Ser. No. 899,141

Int. Cl.² B32B *31/00;* B31B *1/26*

U.S. Cl. 156—358 **22 Claims**

1. An apparatus so constructed and arranged as to be capable of forming a seal between layers of a carton of thermoplastic coated paperboard material and the like in a sealant activating station wherein the thermoplastic material of the layers in the area to be sealed serves as the sealant, said apparatus comprising:

a horn fixedly secured at the activating station and having a first work surface for engaging one outer surface of the layers in the area to be sealed,
back-up means located at the sealant activating station having a second work surface for engaging the opposite outer surface of the layers in the area to be sealed and that opposes the first work surface of the horn at the activating station, and



biasing means for biasing said back-up means, moving said backup means with respect to said horn between an inactive position and an active position in which the opposed work surfaces of the horn and back-up means engage the layers to be sealed in a clamping relationship and returning to said inactive position after remaining in the active position with said horn energized a predetermined period of time sufficient to activate the thermoplastic material of said layers by generating frictional heat, said biasing means allowing said active position to vary.

4,193,834

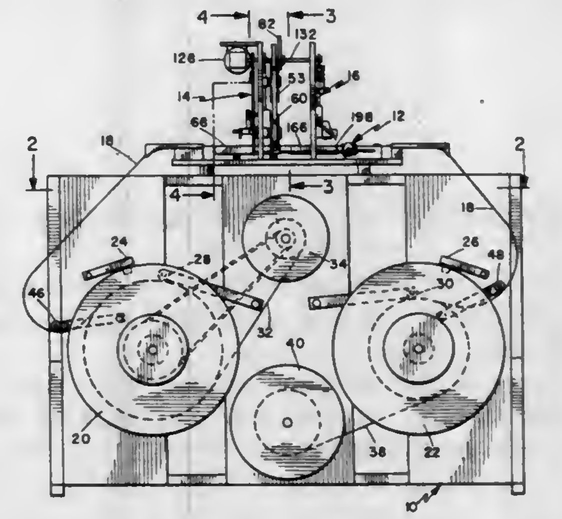
AUTOMATIC TAPING MACHINE

Carl E. Bernardi, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 19, 1978, Ser. No. 897,685

Int. Cl.² B32B *31/00;* G03B *1/22*

U.S. Cl. 156—521 **21 Claims**



1. An apparatus for applying a securing tape to a lead frame, said apparatus comprising:

a support surface for supporting a lead frame;
feeding means for feeding lead frames across said support surface;
a tape cutting and applying assembly disposed above said support surface and including a stationary cutting block having a fixed cutting edge, tape feeding means for feeding a tape a predetermined distance beyond said cutting edge, and a vertically movable cutting head including a movable cutting edge movable past said fixed cutting edge

for cutting a strip from a tape and applying said strip to lead frame on said support surface,

said cutting head includes a pressure face extending outward from said movable cutting edge, said grasping means comprises vacuum ports in said pressure face, and

a movable cutting gate movable into and out of a position adjacent said fixed cutting edge and including stop means for stopping said tape said predetermined distance beyond said cutting edge, and a support surface for supporting said strip of tape ahead of said cutting head until grasped by said grasping means.

4,193,835
METHOD FOR GROWING SEMICONDUCTOR CRYSTAL

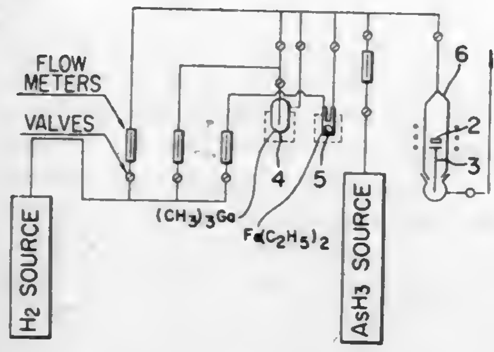
Morio Inoue; Kunio Itoh, and Kunihiko Asahi, all of Takatsuki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 5, 1977, Ser. No. 839,407

Claims priority, application Japan, Oct. 13, 1976, 51/123068

Int. Cl.² B01J *17/36, 17/40*

U.S. Cl. 156—606 **5 Claims**



1. A vapor phase epitaxial method for growing a semiconductor crystal comprising employing a reaction gas containing the same elements as the major elements in a semiconductor substrate and a chemical compound containing a dicyclopentadienyl metal, or derivative thereof, of a metal element to be added or doped into said semiconductor substrate, adding or doping said metal element into said semiconductor substrate.

4,193,836
METHOD FOR MAKING SEMICONDUCTOR STRUCTURE

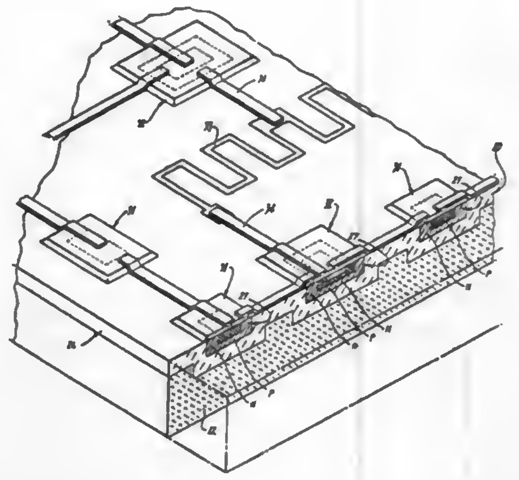
Albert P. Youmans, Cupertino; David F. Allison, Los Altos, and David A. Maxwell, San Jose, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 569,368, Aug. 1, 1966, which is a division of Ser. No. 391,704, Aug. 24, 1964, Pat. No. 3,829,889, which is a continuation-in-part of Ser. No. 338,802, Jan. 20, 1964, abandoned, which is a continuation-in-part of Ser. No. 330,697, Dec. 16, 1963, abandoned. This application Jan. 27, 1970, Ser. No. 6,057

Int. Cl.² H01L *21/306*

U.S. Cl. 156—657 **11 Claims**

7. In a method for forming a semiconductor structure, providing a semiconductor body having first and second surfaces, forming an insulating layer on the first surface on the semiconductor body, forming a support structure on the insulating layer, forming recesses in the semiconductor body extending from said second surface to the first surface to form islands in the semiconductor body, forming an insulating layer in the recesses and over the islands, forming an additional support structure upon the last named insulating layer and removing the first named support structure.



8. A method as in claim 7, together with the step of forming devices in said islands.

4,193,837
THIN LAYER EVAPORATORS

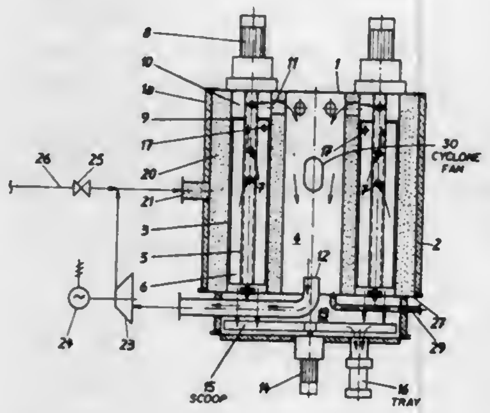
Franz J. Wyss, Uzwil, and Peter Hug, Bischofszell, both of Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Filed May 22, 1978, Ser. No. 908,574

Claims priority, application Switzerland, Jun. 7, 1977, 6982/77

Int. Cl.² B01D *1/16*

U.S. Cl. 159—6 W **14 Claims**



1. A thin-layer evaporator for the drying of sludge and similar substances comprising support means, at least two evaporation cylinders respectively having vertical axes extending upward from said support means, rotors respectively mounted in said evaporation cylinders, each rotor being constructed and arranged to apply a thin layer of a substance to be dried along a major portion of the inner wall surface of its associated evaporation cylinder extending substantially from the base thereof to an upper zone within said cylinder, motor means for rotating said rotors, a vapor-collection vessel mounted laterally with respect to and spaced from said evaporation cylinders said vessel having its lateral walls substantially parallel to said axes and substantially the same height as said cylinders, vapor-collection vessel, a compressor connected to said connection conduit to compress said vapor from said collection conduit, housing means for confining a steam jacket around said evaporation cylinders and said vapor-collection vessel whereby the walls of said cylinders and vessel can be heated, and an inlet duct means connected to said compressor and said housing to direct vapors transversely of said evaporation cylinders and said vapor-collection vessel for the admission of the resultant compressed vapors as a super-heated steam into said housing means so that said evaporation cylinders and said vapor-collection vessel are exposed to said superheated steam at substantially the same time, said housing means being constructed for division into two parts shaped to render said evaporation cylinders and vapor-collection vessel accessible when said parts are separated.

4,193,838
REMOVAL OF THERMOPLASTIC RESIN COATINGS FROM PAPERBOARD WITH HALOGENATED HYDROCARBON VAPORS

Robert J. Kelly, Oakley, and J. Frank Valle-Riestra, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 567,652, Apr. 11, 1975, abandoned. This application Jun. 11, 1976, Ser. No. 695,213

Int. Cl.² D21C *5/02*

U.S. Cl. 162—5 **10 Claims**

1. A process for removing a coating resin from paperstock coated therewith, comprising:

(a) maintaining a pool of hot, saturated vapors of a halogenated, acyclic hydrocarbon containing from one to three carbons and from two to eight bromine, chlorine or fluorine atoms, at least two of which are bromine or chlorine, said halogenated hydrocarbon melting at a temperature of 60° C. or less to form a liquid capable of wetting said resin and said vapors being at a temperature which is at least as high as the melting or softening point of the resin and having a density which is at least three times the density of the ambient air,

(b) placing pieces of the coated paperstock, which are at a temperature below the condensation temperature of said vapors, in said vapor pool, thereby causing formation of a continuous, off-running film of condensate on the resin,

(c) agitating together said pieces of paperstock in the vapor pool until at least a predominant proportion of said resin has been removed by the combined actions thereon of said agitation and of the vapors and condensate.

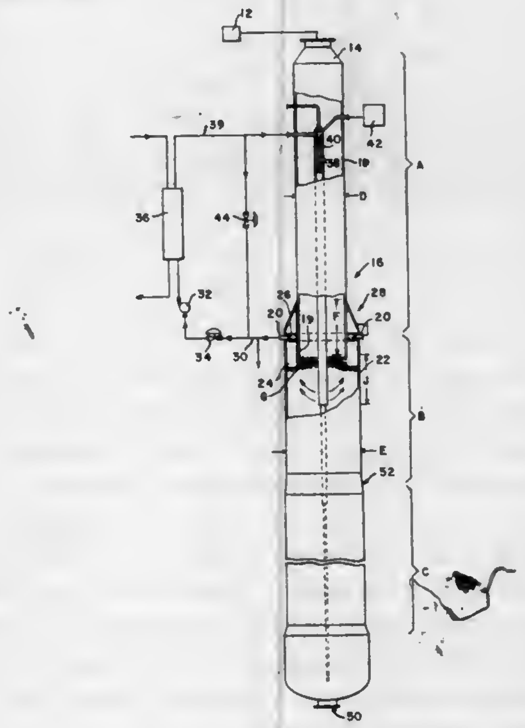
4,193,839
FLOW CONTROL METHOD AND APPARATUS FOR CONTINUOUS WOOD CHIP DIGESTER SCREENLESS LIQUOR EXTRACTOR

Michael I. Sherman, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed May 11, 1976, Ser. No. 685,391

Int. Cl.² D21C *7/14*

U.S. Cl. 162—19 **15 Claims**



1. A method for treating cellulose fiber material utilizing an inner vertically extending vessel having a diameter D and an outer vertically extending vessel having a diameter E greater than D, and a bottom portion of the inner vessel extending into the outer vessel and defining an annular liquid-filled space in the outer vessel between the innner vessel and the outer vessel, said method comprising the steps of

passing cellulose fiber material through said inner vessel into said outer vessel to establish a column of cellulose fiber material extending downwardly from the bottom portion of the inner vessel,

introducing cellulose fiber material treating liquid into said material column for treatment of said material,

preventing channeling of liquid flow through said column by establishing at least three distinct stationary flow areas of fiber material treating liquid through said column to the annular space in the outer vessel, at least two of the three distinct stationary flow areas having liquid being withdrawn therethrough from the column through the annular space, and at least one of the flow areas not having liquid being withdrawn therethrough,

withdrawing the liquid through the flow areas from the annular space in the outer vessel at a rate, relative to the dimensions of the vessels, such that a stilling well effect is created in said annular space and fiber material from said column is not entrained in liquid flow in said annular space and so that no screening of the liquid flow is necessary;

forcing liquid back into said annular space through one of said flow areas while withdrawal of liquid takes place through at least two flow areas; and

continuously switching which of the flow areas liquid is forced back into.

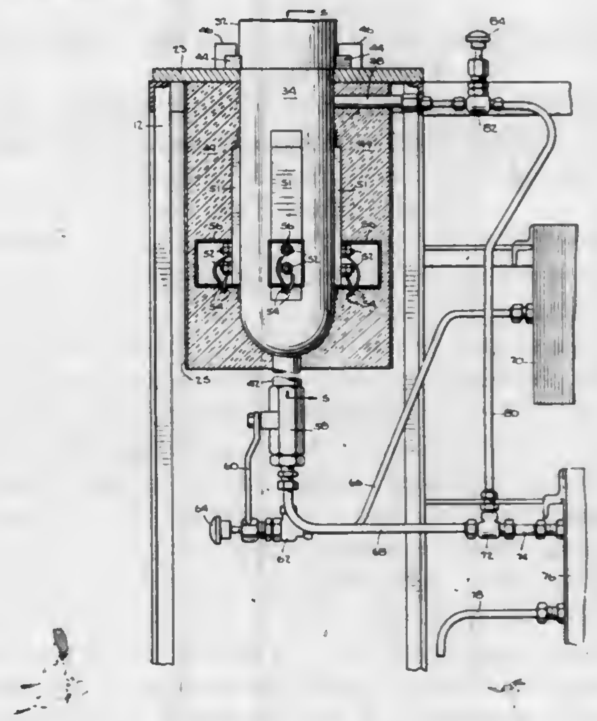
4,193,840
LABORATORY MINIDIGESTERS AND METHOD OF USING THE MINIDIGESTERS

Russell S. Andrews, Jr., Warwick, N.Y., and Emmett V. Moseley, Mobile, Ala., assignors to International Paper Company, New York, N.Y.

Filed Aug. 30, 1978, Ser. No. 938,110

Int. Cl.² D21C *7/10, 7/12, 7/14*

U.S. Cl. 162—49 **5 Claims**



1. A laboratory apparatus for generating data regarding the digestion of wood, comprising

(A) a plurality of essentially identical direct-steamed laboratory minidigesters, each digester comprising:

  (i) a vessel not greater than 25 liters in volume for containing digestion liquor, said vessel being contained in an insulated enclosure and having a removable top;

  (ii) a basket for containing wood inside the vessel;

  (iii) electrical heating means for supplying heat externally to the vessel; and

  (iv) means for allowing gas and vapor to leave the vessel;

(B) a temperature sensor lying in close proximity to one of the electrical heating means, thereby sensing the temperature of that electrical heating means;

(C) a temperature controller that is connected with the temperature sensor and all of the electrical heating means, wherein the temperature of the electrical heating means is controlled in response to the temperature sensed by the temperature sensor;

(D) a steam manifold for supplying steam internally to each of the vessels so that the steam contacts the digesting liquid; and

(E) means for monitoring and for controlling the steam pressure in the steam manifold, which means thereby control the internal pressures of the vessels.

4. A process for operating a laboratory apparatus useful for generating data on wood digestion, said apparatus comprising (A) a plurality of essentially identical direct-steamed laboratory minidigesters, each minidigester vessel being in an insulated enclosure and of 25 liters or less in volume and having (a) a removable top, (b) a basket for containing wood in the vessel, (c) an external electrical heater for supplying heat externally to the vessel, and (d) a valve for removing gas from the upper portion of the vessel; (B) a temperature sensor lying in close proximity to one of the electrical heating means and producing an output signal; and (C) a steam manifold for supplying steam internally to the vessels; said process comprising:

(a) placing wood and digesting liquid in the vessels;

(b) heating the vessels containing the wood and liquid using the electrical heaters;

(c) sensing the temperature of one of the electrical heaters by means of the temperature sensor lying in close proximity to said electrical heater to facilitate control of the temperatures of all of the electrical heaters;

(d) monitoring and controlling the steam pressure in the steam manifold, thereby controlling the pressure in the vessels;

(e) allowing vapors to leave the vessels through the valves; and

(f) maintaining the temperatures of all of the electrical heaters at the desired operating temperature through use of the output signal from the temperature sensor.

4,193,841

METHOD FOR THE MANUFACTURE OF A MINERAL FIBER SHEET

Gunnar Cederqvist, Lerdala, and Ulf Åberg, Skövde, both of Sweden, assignors to Rockwool Aktiebolaget, Skövde, Sweden

Filed Jun. 7, 1977, Ser. No. 804,287

Int. Cl.^{2} D21H *5/18*

U.S. Cl. 162—152 **10 Claims**

1. A method for the manufacture of an asbestos-free sheet containing mineral fiber and binder, said sheet being of the type useful as a support felt in flooring, the method comprising the steps of providing an asbestos-free aqueous suspension containing mineral wool fibers and a first portion of binder, forming an asbestos-free layer comprising said aqueous suspension, de-watering said layer to provide an asbestos-free wet sheet containing mineral wool fiber and said first portion of binder, applying a second portion of binder evenly to the entire area of said wet sheet, and thereafter drying the wet sheet to provide a dried, asbestos-free, sheet containing mineral wool fiber and binder, said first portion of binder comprising a dispersion of a resin latex in a liquid medium in which the dispersion is coagulated before it is incorporated into said aqueous suspension, the total amount of said first and second binder portions being from 10 to 40% by weight of said fibers.

4,193,842

METHOD AND APPARATUS FOR CLEANING PAPER MAKING FELT

John C. Rushing, 413 E. Seven Oak Dr., Greenville, S.C. 29607

Filed Aug. 9, 1978, Ser. No. 932,122

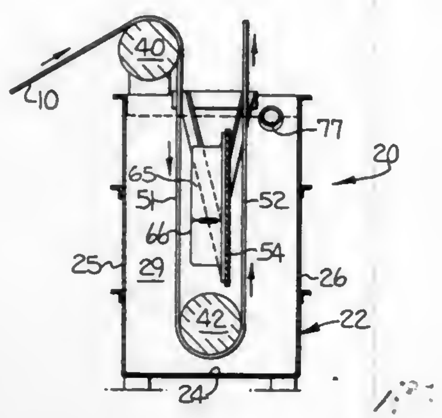
Int. Cl.^{2} B08B *3/12*

U.S. Cl. 162—199 **20 Claims**

1. A method of uniformly cleaning an endless paper making felt continuously during the paper making process, and comprising the steps of

guiding the moving felt so as to be immersed in a cleaning bath during a portion of the return run of the felt, and

subjecting the moving felt to ultrasonic vibrations while immersed in the bath to thereby dislodge a substantial portion of any fibrous residue or foreign materials on the felt, and including passing the full width of the felt past a vibrating flat surface and so that the surfaces of the felt are substantially perpendicular to the direction of propagation of the vibrations from the vibrating flat surface, whereby the felt is uniformly cleaned across its full width.



4,193,843

APPARATUS AND METHOD FOR DETECTING DEFECTIVE FUEL RODS

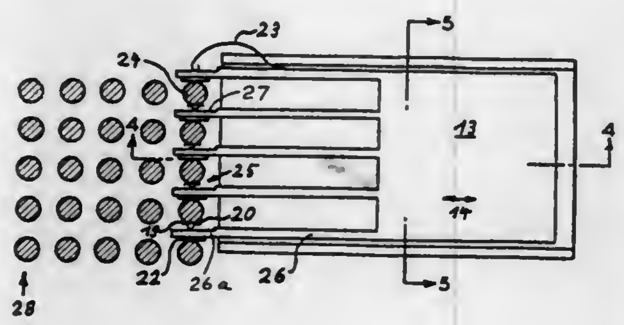
Robert E. Womack; William E. Lawrie, both of Lynchburg, Va., and Alfred Jester, Speyer, Fed. Rep. of Germany, assignors to Babcock-Brown Boveri Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 2, 1977, Ser. No. 764,797

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1976, 2605962

Int. Cl.^{2} G21C *17/00*

U.S. Cl. 176—19 LD **8 Claims**



1. Apparatus for the in situ testing of a fuel rod to locate a defective fuel rod in a nuclear fuel assembly of the type having a multiplicity of fuel rods spaced apart by a fixed distance comprising a support plate, a carriage, at least one elongated finger dimensioned to traverse the spaces between the fuel rods extensibly appended from the carriage, the carriage being slideably mounted on the support plate for transversely moving the finger within the spaces between the fuel rods, at least one ultrasonic transducer head fixedly attached to one side of the free end of the finger, spring means mounted on the other side of the finger opposite the ultrasonic transducer head biasing the finger from an adjacent fuel rod for pressing the ultrasonic transducer head against the fuel rod to be tested and means operatively connected to the ultrasonic transducer head for generating an ultrasonic resonance signal in the fuel rod to be tested and for comparing differences in resonance of the fuel rods as an indication of ingressed water.

4,193,844

METHOD OF MOUNTING FILTER ELEMENTS AND MOUNTING THEREFOR

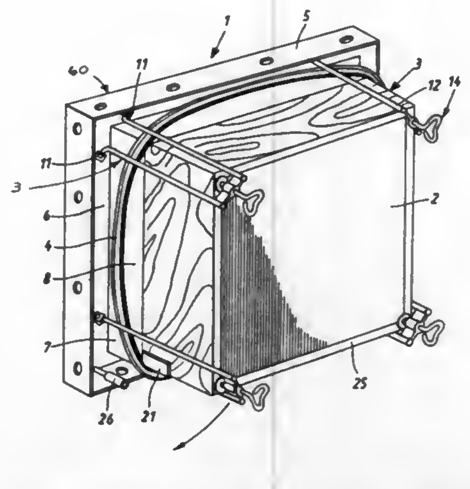
Gerhard M. Neumann, and Jochen Karelin, both of Berlin, Fed. Rep. of Germany, assignors to Delbag-Luftfilter GmbH, Fed. Rep. of Germany

Filed Sep. 20, 1976, Ser. No. 725,006

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1975, 2545309

Int. Cl.^{2} G21C *9/00*

U.S. Cl. 176—37 **13 Claims**



1. A device for changing a filter from the clean-air side and for sealing in the contaminants contained in an airborne particle filter in a nuclear installation comprising:

- a frame for supporting the filter element;
- a sealing groove integral with said frame surrounding said filter element and attached to said frame in a leak-proof manner;
- a plastic tube having a diameter surrounding said filter element, said tube having a length substantially greater than the length of said filter element, said tube being sealingly attached at its midsection to the periphery of said filter element;
- an elastic ring for sealingly attaching the upstream end of said tube to said sealing groove;
- the downstream end of said tube being foldable over said filter element; and
- means for detachably securing said filter element to said frame.

4,193,845

IMMOBILIZATION OF ENZYMES OR BACTERIAL CELLS

Isao Kaetsu; Hiroshi Watanabe, both of Takasaki; Tomotaro Sato, Sagamihara, and Akihiko Ito, Takasaki, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Continuation-in-part of Ser. No. 523,162, Nov. 12, 1974, abandoned. This application May 19, 1976, Ser. No. 688,081

Claims priority, application Japan, Nov. 15, 1973, 48-127763

Int. Cl.^{2} C07G *7/02;* C12K *1/00*

U.S. Cl. 435—182 **9 Claims**

1. A process for producing a porous, water-insoluble polymer composition containing fixed enzyme and/or fixed bacterial cells which comprises mixing an aqueous enzyme solution or an aqueous dispersion of bacterial cells with one or more monomers selected from the group consisting of hydroxyethyl methacrylate, hydroxyethyl acrylate, hydroxypropyl methacrylate and hydroxypropyl acrylate, and then polymerizing and/or copolymerizing the monomer(s) contained in the mixture by means of an ionizing radiation, thereby depositing the polymer containing enzyme and/or cells from water, the irradiation being conducted at a temperature at which the water in the mixture is frozen.

4,193,846

MANUFACTURING PROCESS OF A THIN METAL SHEET BY ELECTROLYTIC DEPOSIT

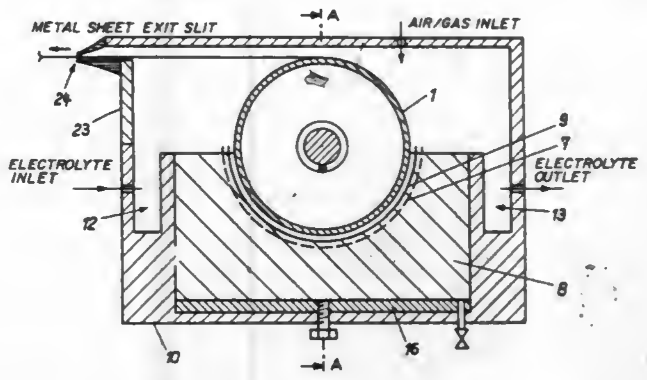
Fred Barrett, Wirral, England, assignor to Establissment Halgar, Geneva, Switzerland

Filed Aug. 3, 1978, Ser. No. 930,734

Claims priority, application Switzerland, Aug. 3, 1977, 9552/77

Int. Cl.^{2} C25D *1/04, 1/20*

U.S. Cl. 204—13 **8 Claims**



1. Manufacturing process of a thin metal sheet, comprising depositing the metal by electrolysis from a bath containing an aqueous solution of a salt of this metal onto a mobile cathode formed by a rotating drum partially immersed in this bath, removing the metal sheet thus deposited from the non-immersed part of the drum, and replacing in the bath the metal deposited by electrolytic dissolution of an anode containing the same metal, the temperature of the bath being kept higher than its normal boiling point by maintaining on top of the bath a pressure at least equal to the boiling pressure.

4,193,847

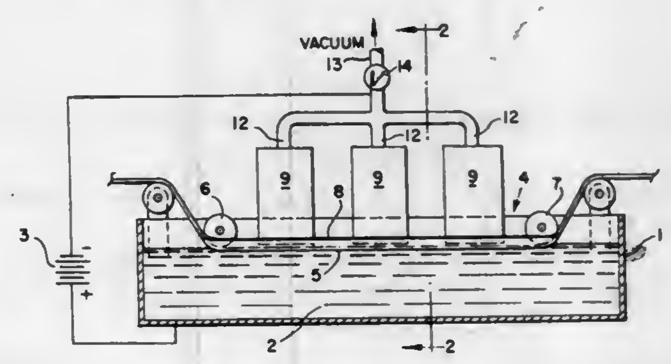
METHOD OF ELECTRODEPOSITION

Stanley M. Bloom, Waban; Arnold Hoffman, Brookline, and Kenneth S. Norland, Belmont, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 5, 1978, Ser. No. 939,846

Int. Cl.^{2} C25D *5/02, 5/06, 5/56*

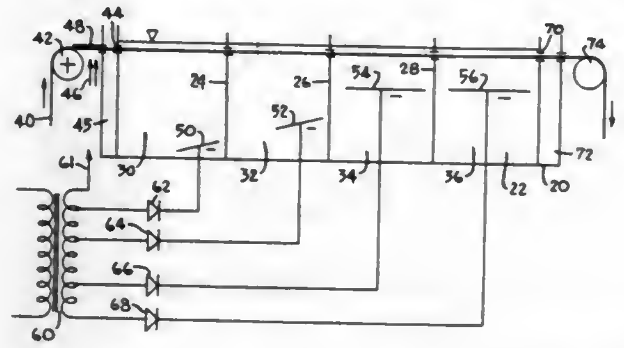
U.S. Cl. 204—15 **9 Claims**



1. A method of electrodepositing a series of spaced patches of electrode active material on a conductive plastic substrate which comprises contacting at least a portion of a first surface of said substrate with an electrolyte from which said material is electrodepositable, establishing a vacuum at a series of spaced predetermined areas of said substrate on a second surface opposite said first surface and in regions spaced from the borders of said substrate and lying within the borders of and opposite said portion, maintaining said predetermined areas of said second surface out of contact with said electrolyte, and causing current to flow through said preseclected areas and said electrolyte to deposit said material on said first surface in said preselected areas.

4,193,848
PROCESS FOR THE PRODUCTION OF COMPOSITE MATERIAL

Harald Severus-Laubenteid, Winterthur, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Division of Ser. No. 764,001, Jan. 31, 1977, Pat. No. 4,158,079, which is a continuation of Ser. No. 489,417, Jul. 17, 1974, abandoned. This application Jul. 20, 1978, Ser. No. 926,255
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1973, 2340962
Int. Cl.² C25D *11/24*
U.S. Cl. 204—28 **11 Claims**



1. A process for the production of composite material which comprises:

(a) providing a layer of flexible plastic material;
(b) providing a layer of aluminum or aluminum alloy foil material adhesively bonded to said flexible plastic, with an aluminum oxide layer produced by anodizing having a thickness of at least 3 microns on the exposed surface of said foil;
(c) coloring and sealing the oxide layer;
(d) coating the oxide layer with a layer of light sensitive plastic material which is a photoresist layer having the property of being hardened by ultra-violet light, placing a film negative on said photoresist layer wherein ultra-violet light hardens the illuminated portion of the photoresist layer; and
(e) exposing said composite to ultra-violet light through said negative, removing the unhardened portions of the photoresist layer, etching away the aluminum oxide and aluminum layers under those portions of the photoresist layer which are not hardened and removing the adhesive layer thereunder to expose said flexible plastic material, and removing the photoresist layer.

4,193,849
METHOD FOR MAKING A RAW BOARD FOR USE IN PRINTED CIRCUITS

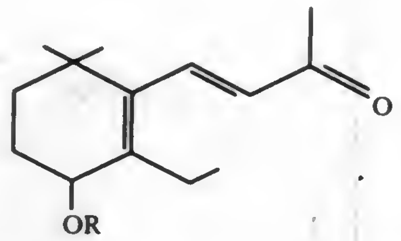
Junichi Sato, Yokohama, Japan, assignor to Nippon Mining Co., Ltd., Tokyo, Japan
Filed Mar. 15, 1978, Ser. No. 886,826
Claims priority, application Japan, Mar. 18, 1977, 52-29241
Int. Cl.² C25D *5/02, 5/56, 7/06*
U.S. Cl. 204—38 B **10 Claims**

1. A method for making a raw board for use in printed circuits, comprising the steps of subjecting a very long film of a flexible plastic which can be easily rolled into a roll form to vapor deposition with a metal so as to vapor-deposit the metal directly onto the surface of the flexible film, and continuously immersing the flexible film in an electrochemical bath including as an additive a brightener which has its brightening effect only at a temperature between about 15° to 30° C., said bath being kept at a temperature between 50°-60° C. where said brightener has no brightening effect so that a metal is continuously electroplated on the surface of the metal previously vapor-deposited on the surface of the flexible film thereby to produce a flexible raw board for use in printed circuits with the raw board having approximately 1.5 kg/cm of peel strength.

4,193,850
ALKANOYLOXYLATION OF BETA-IONONE

Urs Hengartner, Roseland; Gilbert Reymond, Clinton, and Valdemar Toome, Nutley, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Apr. 12, 1979, Ser. No. 29,170
Int. Cl.² C25B *3/02;* C07C *35/08*
U.S. Cl. 204—79 **7 Claims**

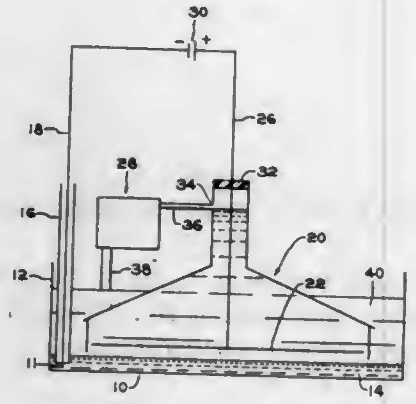
1. A process for producing alkanoyloxy beta-ionone of the formula:



comprising electrolyzing a solution containing beta-ionone dissolved in a lower alkanoic acid in the presence of an electrolyte.

4,193,851
SILICA GELS AND THEIR FORMATION BY ELECTROLYSIS OF SILICATE SOLUTIONS

Roger A. Crawford, Wadsworth, and Howard H. Hoekje, Corpus Christi, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jul. 21, 1978, Ser. No. 927,269
Int. Cl.² C25B *1/00*
U.S. Cl. 204—101 **5 Claims**



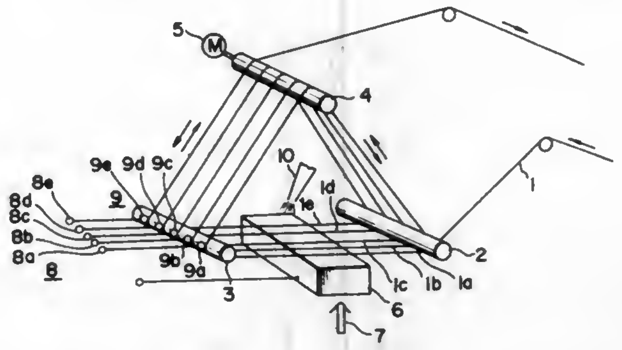
1. A process for producing silica gel upon an anode from a silicate solution containing hydroxyl ions which comprises:

neutralizing the hydroxyl ions by electrolysis at conditions which maintain the concentration of hydroxyl ions within the range whereby silicate ions polymerize to form a silica gel by placing the silicate solution containing hydroxyl ions within an electrolytic cell in the vicinity of an anode adapted to neutralize hydroxyl ions and to collect silica gel thereon, removing the hydroxyl ions from the solution in the effective vicinity of the anode at a rate whereby the hydroxyl ion concentration within the effective vicinity of the anode is maintained at the range whereby silica ions polymerize to form a silica gel which collects upon the anode, and

collecting the silica gel.

4,193,852
METHOD AND APPARATUS FOR ELECTRICAL MACHINING WITH A MULTI-GUIDED TRAVELLING ELECTRODE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan
Filed Jun. 13, 1978, Ser. No. 915,206
Claims priority, application Japan, Jun. 14, 1977, 52-70248; Jul. 18, 1977, 52-85889; Dec. 21, 1977, 52-154959
Int. Cl.² B23P *1/10, 1/12, 1/16, 1/00*
U.S. Cl. 204—129.46 **30 Claims**



1. A method of operating a traveling-wire electrical machining apparatus wherein a single-strand traveling wire is guided in a plurality of passes in juxtaposition with a workpiece, said method comprising the steps of:

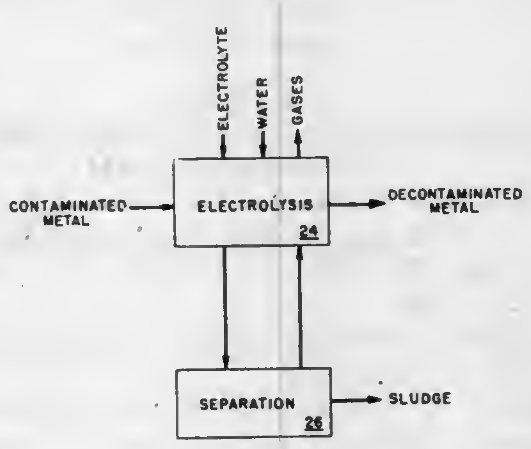
relatively displacing said workpiece and said wire so that respective stretches of the wire cut through said workpiece at respective locations;

applying a machining liquid to said locations; and

applying across the workpiece and each of said stretches individually a machining current from a common power supply, thereby equalizing the current distribution to said stretches of said wire.

4,193,853
DECONTAMINATING METAL SURFACES

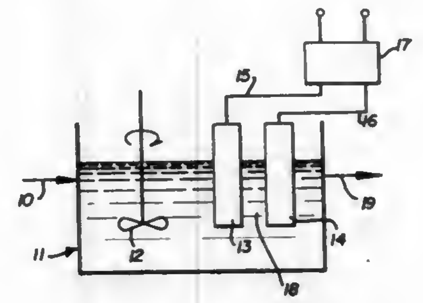
Everett L. Childs, Boulder, and Jack L. Long, Arvada, both of Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed May 15, 1979, Ser. No. 39,428
Int. Cl.² C25F *3/02*
U.S. Cl. 204—129.95 **8 Claims**



1. A process for decontaminating an object having a surface contaminated with a radioactive substance comprising: contacting said object with a basic aqueous solution containing nitrate, fluoride, borate, and oxalate anions; thereafter electrolytically removing a surface layer of said object; and subsequently separating resulting precipitate from said solution.

4,193,854
HEAVY METAL REMOVAL FROM WASTEWATER SLUDGE

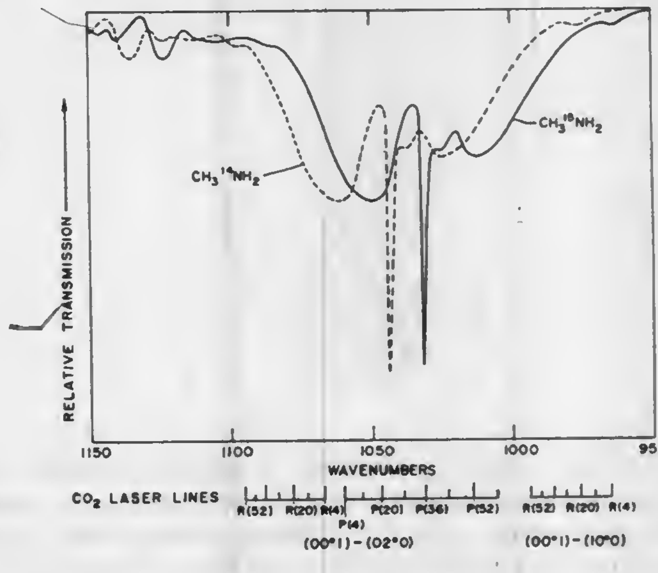
Raymond F. Drnevich, Clarence Center; Ladislas C. Matsch, Amherst, and Embar G. Srinath, Tonawanda, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 863,924, Dec. 23, 1977, abandoned. This application Nov. 21, 1978, Ser. No. 961,253
Int. Cl.² C02C *5/12*
U.S. Cl. 204—149 **11 Claims**



1. A method for removal of heavy metals from activated sewage sludge comprising: aerating the activated sewage sludge with oxygen-containing gas as the sole source of oxygen to biochemically oxidize the heavy metal sulfides to the soluble sulfate form; establishing and maintaining a voltage difference between a cathode and an anode in the soluble heavy metal sulfate-containing sludge as an electrolytic bath; maintaining said bath in an acidic and an aerobic condition and depositing heavy metals at the cathode; and separating aerated and heavy metal-depleted sludge from said electrolytic bath.

4,193,855
ISOTOPE SEPARATION BY MULTIPHOTON DISSOCIATION OF METHYLAMINE WITH AN INFRARED LASER

Sam A. Tuccio, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Filed Mar. 31, 1978, Ser. No. 892,228
Int. Cl.² B01D *54/00;* B01J *1/10*
U.S. Cl. 204—158 R **6 Claims**



1. A process for obtaining compounds which are enriched in a particular first elemental isotope which comprises exposing gaseous methylamine containing said first isotope and one or more other isotopes of the same element to infrared radiation of a predetermined wave length from a laser which selectively dissociates said methylamine containing said first isotope without substantially dissociating said methylamine containing other isotopes of said element.

4,193,856

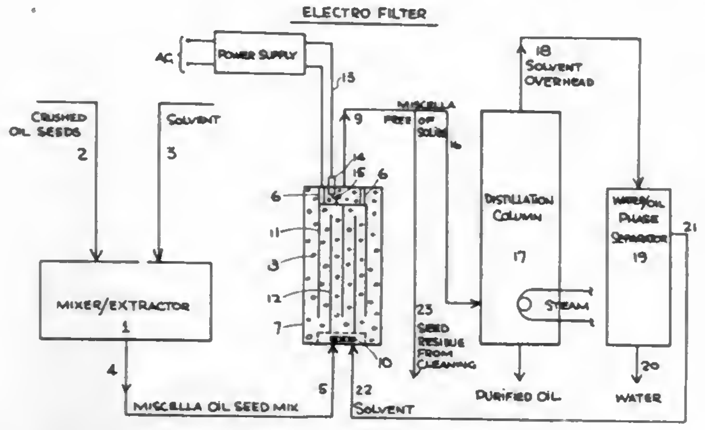
USE OF ELECTROFILTER AS AN EXTRACTION COLUMN

Leslie R. Watkins, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Jun. 24, 1977, Ser. No. 809,745

Int. Cl.^{2} B03C *5/00*

U.S. Cl. 204—186 **19 Claims**



15. The process which comprises in sequence:

(a) loading the bed of an electrically activated electrofilter with oilseeds from a miscella-oilseed mixture, said oilseeds having adhering miscella,

(b) flushing the loaded bed with a dielectric solvent for the oil so as to remove the miscella and additional oil from the oilseed solids,

(c) electrically deactivating the electrofilter bed, and

(d) removing deoiled solids from the electrofilter bed by flushing with a dielectric fluid.

4,193,857

OXYGEN SENSORS

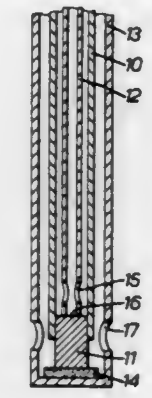
Michael J. Bannister, Glen Waverley; Neil A. McKinnon, North Balwyn, and Robert R. Hughan, Glen Iris, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Dec. 7, 1977, Ser. No. 858,328

Claims priority, application Australia, Dec. 7, 1976, PC8395; Aug. 18, 1977, PD1302

Int. Cl.^{2} G01N *27/46*

U.S. Cl. 204—195 S **20 Claims**



1. An oxygen sensor comprising a ceramic hollow body composed of or containing a composite solid electrolyte material and a pair of electrodes, one of the electrodes being located within said hollow body and the other being located outside said hollow body, said electrodes being separated by said composite solid electrolyte material, and said composite solid electrolyte material comprising a mixture of at least one non-electrolyte constituent or phase which is selected from the group consisting of alumina, aluminous porcelain and mullite, and at least one constituent or phase which is a good oxygen ion conductor, the microstructure of the composite material consisting of an intimate mixture of fine grains of the oxygen ion conducting and the non-electrolyte constituents, the oxygen ion constituent grains of which comprise from 25 to 75 percent by volume of the mixture.

4,193,858

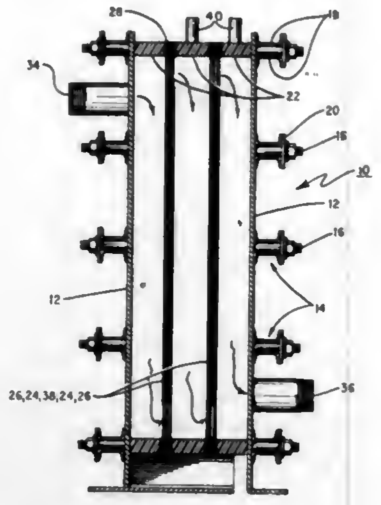
STACK PACK ELECTROLYTIC CELL

J. Edward Loeffler, Jr., Kirtland, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Nov. 3, 1978, Ser. No. 957,324

Int. Cl.^{2} C25B *9/04, 11/03, 11/00*

U.S. Cl. 204—268 **9 Claims**



1. A stack pack electrolytic cell for the production of chlorates or hypochlorites comprising: two end plates; each of said end plates having a plurality of structural cross members overhanging each edge of said end plates for tying and compressing internal units therebetween in liquid tight configuration; tie rods for extending and connecting the overextending edges of said structural cross members in order to compress the components between said end plates; two or more chamber sections in sealing engagement between said end plates; at least one electrode stack pack; said electrode stack pack containing one outside cathode, a foraminous anode, then a central cathode, a foraminous anode and finally a second outside cathode with the anodes having electrocatalytically active coatings thereon; said cathodes made of metallic sheet having apertures therein so as to provide electrolyte flow throughout said electrode stack pack; said cathodes acting as separators between said electrode packs to insure proper flow for cleaning the electrolytic cell of deposits; at least one access port for the removal of hydrogen gas from the electrolytic cell; means for supplying electrolyte feed to the interior of the electrolytic cell; means for removing the production of chlorates or hypochlorites from the electrolytic cell; and means for providing a direct electrical current between said anodes and said cathodes for the production of chlorates or hypochlorites.

4,193,859

SELECTIVE MULTIPLE ELECTRODE WASTE WATER TREATING SYSTEM

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Filed Aug. 31, 1978, Ser. No. 938,439

Int. Cl.^{2} C25B *9/00, 11/04, 11/12, 15/08*

U.S. Cl. 204—269 **8 Claims**

1. An effluent treatment system for liquids containing foreign substances comprising:

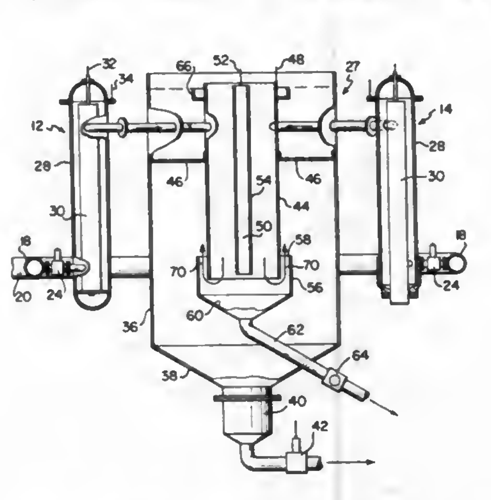
a plurality of separate treaters, each including a pair of opposed, oppositely charged electrodes exposed to the liquid as it passes through the treater,

each treater having at least one of its electrodes constructed from a different material than either of the electrodes of other treaters of the plurality of treaters;

a liquid supply manifold common to all of said plurality of treaters;

a receiver common to all of said treaters for reception of liquid therefrom after treatment; and

control means operable to open and close liquid flow communication between said manifold and each individual treater to permit treatment of the liquid by a selected one of the treaters according to the nature of the particular substance carried by the liquid and its predicted reaction with the particular materials from which the various electrodes are constructed.



4,193,860

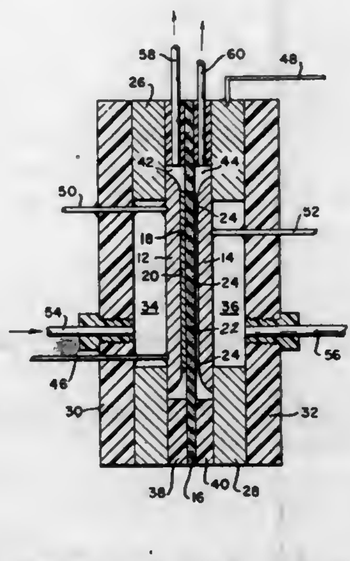
LIQUID-PERMEABLE ELECTRODE

George R. Folser, Lower Burrell, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 30, 1978, Ser. No. 938,141

Int. Cl.^{2} C25B *1/02, 11/12;* **C04B** *35/52*

U.S. Cl. 204—284 **5 Claims**



1. Method of preparing a rigid, porous, liquid-permeable low-electrical-resistance electrode for use in an electrolytic cell comprising:

mixing about 10 parts by weight of activated charcoal, from 6 to 10 parts by weight of a powdered thermosetting resin selected from the group consisting of phenol formaldehyde and phenol furfuryl and 3 to 5 weight percent, relative to the activated charcoal, oxalic acid to form a mixture;

compacting the mixture in a heated mold to melt the resin, forming a green electrode; and

heating the green electrode to from 550° to 750° C. in a nonoxidizing atmosphere for a period of time sufficient to pyrolyze the resin, volatilize the oxalic acid and volatilize from about 40 to 60 percent of the resin in the green electrode, thereby forming a rigid, porous, liquid-permeable electrode having a low electrical resistance.

4,193,861

PROCESS FOR INSTALLING SYNTHETIC FIBER DIAPHRAGMS IN CHLOR-ALKALI CELL

David A. Kramer, Dearborn; Shyam D. Argade, Farmington Hills, both of Mich., and Edward N. Balko, Wilmington, Mass., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 8, 1979, Ser. No. 1,445

Int. Cl.^{2} C25B *13/08*

U.S. Cl. 204—296 **23 Claims**

23. A process for installing a synthetic fiber diaphragm in a chlor-alkali cell, comprising the steps of

placing the diaphragm in position in the cell,

adding an aqueous saline electrolyte solutin in the cell to about the desired operating level therein,

adding a surfactant to the electrolyte solution in an amount sufficient to reduce the surface tension of the electrolyte solution below the critical surface tension for wetting the fibrous diaphragm,

subjecting the immersed diaphragm to a subatmospheric pressure of the order of the vapor pressure of the solution to about 200 millimeters mercury absolute for from about five minutes to one hour, and

returning the pressure to atmospheric pressure or cell working pressure while retaining the diaphragm in working position in the electrolyte.

4,193,862

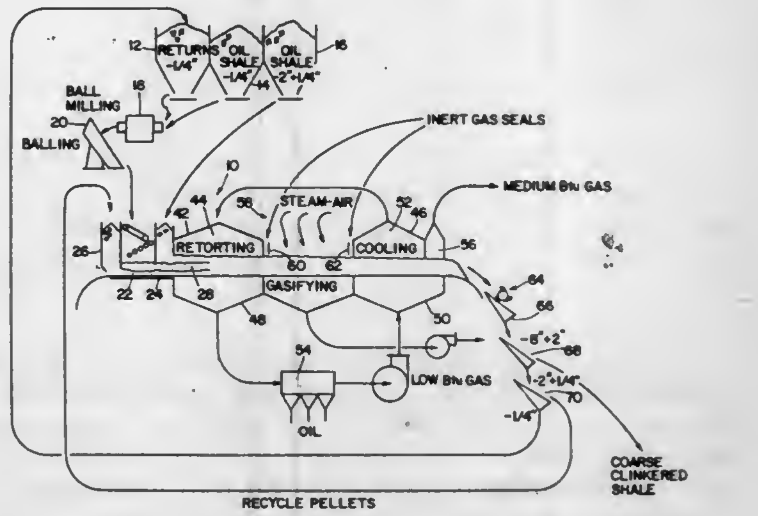
RECOVERY OF OIL AND GAS FROM OIL SHALE

Thomas E. Ban, South Euclid, and William H. Marlowe, Euclid, both of Ohio, assignors to McDowell-Wellman Company, Cleveland, Ohio

Filed Jun. 26, 1978, Ser. No. 919,081

Int. Cl.^{2} C10G *1/02*

U.S. Cl. 208—11 R **16 Claims**



1. A method of educting oil from high-carbon oil shales, comprising the steps of providing a burden of oil-bearing shale having a relatively high, fixed carbon content, charging the shale in a traveling grate machine to form a burden, moving the burden in a horizontal plane into a retorting zone, heating said burden in the retorting zone to an oil-educting temperature of at least 800 degrees F., condensing and removing oil educted from the burden, moving the burden to a gasifying zone, heating said burden in the gasifying zone in the presence of an oxygen-containing gas also containing between about 5% to about 15% water to raise the burden to a temperature which will convert substantial amounts of residual carbon in the burden to carbonaceous gases and which will promote substantial agglomeration or clinkering of the spent shale to enable a separation-recycling process, cooling the spent shale, and discharging coarse clinkered shale from the machine.

4,193,863

HYDROCARBON CONVERSION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 833,332, Sep. 14, 1977. This application Oct. 2, 1978, Ser. No. 947,906

The portion of the term of this patent subsequent to Feb. 14, 1996, has been disclaimed.

Int. Cl.^{2} C10G *35/08*

U.S. Cl. 208—139 **21 Claims**

1. A process for converting a hydrocarbon which comprises contacting at hydrocarbon conversion conditions said hydrocarbon with a catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state, and of a cadmium component.

19. The process of claim 1 wherein said hydrocarbon is a gasoline fraction which is contacted with said composite in the presence of hydrogen and said hydrocarbon conversion conditions to include reforming conditions.

4,193,864

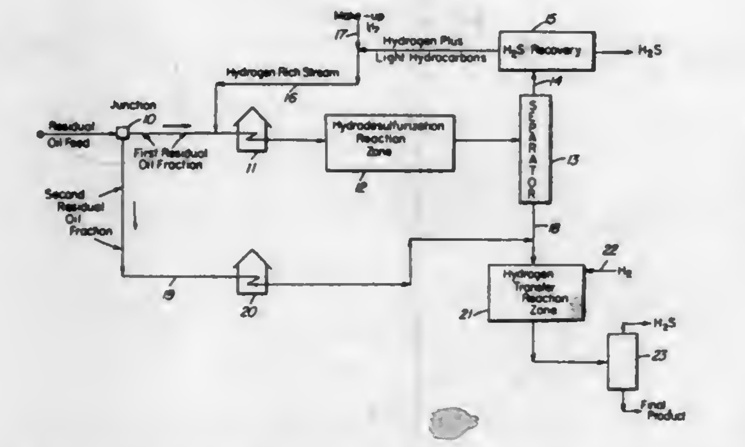
RESIDUAL OIL DESULFURIZATION IN MULTIPLE ZONES WITHOUT CONCOMMITANT INCREASE IN HYDROGEN CONSUMPTION

Clarence D. Chang, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 769,640, Feb. 17, 1977, abandoned. This application Jun. 2, 1978, Ser. No. 912,126

Int. Cl.^{2} C10G *23/02*

U.S. Cl. 208—210 **6 Claims**


Make-up H₂
17
Hydrogen Plus Light Hydrocarbons
15
H₂S Recovery
H₂S
Hydrogen Rich Stream
16
14
Junction
10
Residual Oil Feed
First Residual Oil Fraction
11
Hydrodesulfurization Reaction Zone
12
SEPARATOR
13
Second Residual Oil Fraction
18
19
20
22
H₂
Hydrogen Transfer Reaction Zone
21
H₂S
23
Final Product

1. A process for effecting the desulfurization of increased amounts of a residual oil, which oil boils above about 650° F., without a concomitant increase in hydrogen consumption, which comprises:

(a) hydrodesulfurizing a residual oil feed by reacting said feed with hydrogen over a hydrodesulfurization catalyst in a first reaction zone at hydrodesulfurization conditions of from about 500 to about 3000 psig pressure, about 600 to about 1000° F. temperature, about 0.2 to about 5 LHSV and about 1,000 to about 20,000 SCF/bbl. hydrogen rate, whereby a portion of the aromatics contained in said feed are converted to naphthenes and a portion of the organically combined sulfur contained in said feed is converted to hydrogen sulfide, thereby obtaining a liquid effluent having a lower sulfur content and a higher naphthene content than said residual oil feed; and

(b) desulfurizing an additional amount of said residual oil by combining said additional amount with the effluent of step (a) in an amount of from about 0.5 to about 4 bbl. of effluent of step (a) per bbl. of additional residue oil feed and reacting the resultant mixture in a second reaction zone over a catalyst comprising at least one metallic component selected from Groups VIB and VIII of the Periodic Table deposited on an acidic support selected from the group consisting of refractory inorganic oxides, crystalline aluminosilicate zeolites and combinations thereof, at conditions such that naphthenes contained in the mixture are dehydrogenated and the hydrogen so released is utilized to convert organically combined sulfur contained in said mixture to hydrogen sulfide, wherein said conditions comprise about 500 to about 3,000 psig pressure, about 700 to about 1200° F. temperature and about 0.2 to about 5 LHSV and wherein the effluent of step (b) has the same sulfur level as the effluent of step (a).

4,193,865

CLASSIFYING APPARATUS FOR A SUSPENSION

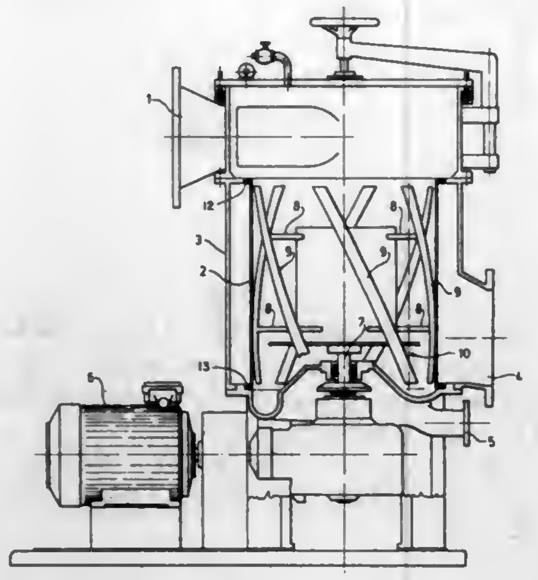
Matti Aario, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Continuation of Ser. No. 777,789, Mar. 15, 1977, abandoned. This application May 30, 1978, Ser. No. 910,434

Claims priority, application Finland, Mar. 16, 1976, 760686

Int. Cl.^{2} B07B *1/20*

U.S. Cl. 209—240 **3 Claims**



1. An improved classifying apparatus for a suspension, especially for a pulp suspension, comprising

a generally cylindrical stationary screen drum having a central axis and a plurality of apertures formed therein along a portion of its axial extent through which accept suspension material can pass;

means at both ends of said screen drum for supporting said drum;

means for feeding the suspension to one side of the screen drum;

means for removing reject or thickened suspension from said one side of said screen drum;

means for removing accept suspension or liquid from the opposite side of said screen drum;

sweeping means for generating hydraulic impulses to detach solids attached to said drum;

said sweeping means comprising a plurality of inclined blades;

blade support means for supporting said inclined blades for rotation in a predetermined direction about the central axis of said drum so that said blades are inclined relative to said axis and to their direction of rotation and so that said blades sweep a surface of the screen drum; and

driving means connected to said blade support means to establish motion of said blades relative to said surface, said blade support means being arranged to establish the angle of inclination of said blades so that the end portion of each of said blades near one end of said drum overlaps an end portion of at least one other of said blades near the other end of said drum with respect to an axial line along said drum, said overlap being sufficient to dampen said hydraulic impulses and lying axially within said portion of said drum in which said apertures are formed to permit the accept suspension material to pass therethrough.

4,193,866

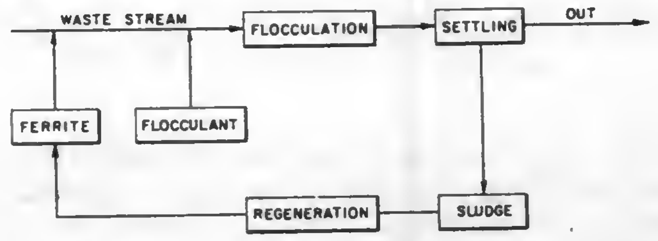
FERRITE FLOCCULATING SYSTEM

George M. J. Slusarczuk, Schenectady, and Ronald E. Brooks, Guilderland, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 27, 1976, Ser. No. 726,961

Int. Cl.^{2} C02B *1/20;* C02C *5/02*

U.S. Cl. 210—6 **6 Claims**



1. A method for purifying an aqueous polluted liquid containing particulate suspended impurities by removing at least 60% of said particulate suspended impurities therefrom, which comprises suspending and distributing a magnetic ferrite powder in said polluted liquid substantially uniformly in an amount ranging from about 500 parts to about 1000 parts per million parts of said polluted liquid, said magnetic ferite powder being a magnetic oxide containing iron as a major component and having the general formula Fe_2O_3-Metal O, said magnetic ferrite powder being suspendible in said polluted liquid and ranging in diameter from about 200 Angstroms to about 100 microns, after said magnetic ferrite powder has been distributed and suspended within said polluted liquid adding to said polluted liquid an aqueous flocculating solution in an amount which co-flocculates said suspended particulate impurities and said suspended magnetic ferrite powder forming a dense flocculated mixture which settles forming a sludge, and separating said sludge, said aqueous flocculating solution consisting essentially of about 0.01 part to 1 part of polyethyleneimine per 100 parts of water, and said aqueous flocculating solution being used in an amount ranging from about 0.5 part to about 10 parts per million parts of said polluted liquid.

5. A method according to claim 1 wherein said separated sludge is biologically treated causing removal of impurities and bioregeneration of the magnetic ferrite powder.

4,193,867

OPERATION OF A TWO-PHASE REACTOR

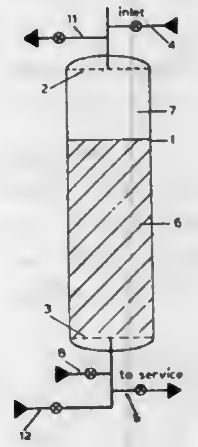
Sheldon Evans, Overveen, Netherlands, assignor to Hoogovens IJmuiden, B.V., IJmuiden, Netherlands

Filed Oct. 3, 1975, Ser. No. 619,245

Claims priority, application United Kingdom, Oct. 3, 1974, 43015/74

Int. Cl.^{2} B01D *15/06*

U.S. Cl. 210—20 **11 Claims**



1. A regenerative base ion exchange process involving the step of passing a liquid upwardly through a bed of particulate solid base ion exchange resin in a chamber of a two-phase reactor to regenerate said resin, wherein the rate of liquid flow is such that the solid resin is compacted and held by the liquid as a compact bed against a barrier located above it and is prevented by the liquid from sinking.

4,193,868

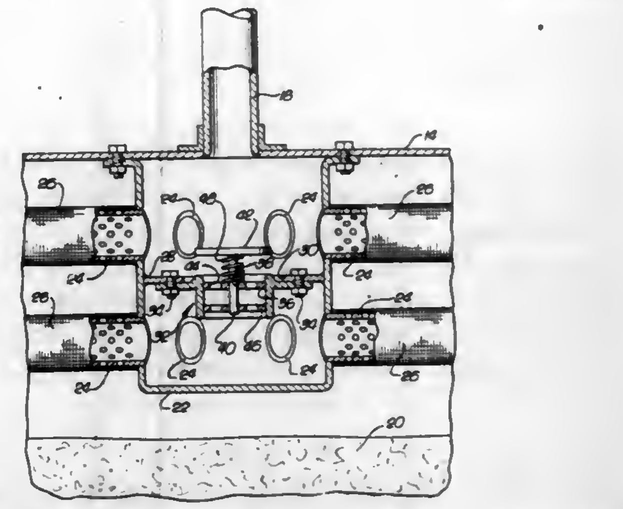
ION EXCHANGE METHOD AND APPARATUS

Peter S. Meyers, Covina, Calif., assignor to Chromalloy American Corporation, City of Industry, Calif.

Filed May 30, 1978, Ser. No. 910,675

Int. Cl.^{2} B01D *15/06*

U.S. Cl. 210—35 **8 Claims**



8. A process of operating an ion exchange apparatus including a container having a top and bottom, ends, conduits leading into the ends of said container, a plurality of channel means located at the top of said container, all of said channel means being connected to said conduit at the top of said container, check valve means being located so as to be capable of preventing flow from the conduit at the top of the container into at least some of said channels, a bed of ion exchange resin within the interior of said container which comprises steps of:

alternatively passing water to be treated upwardly through the bed and then passing a regenerant solution downwardly through said bed, and

utilizing the downward flow of said regenerant solution to actuate said check valve means so that said regenerant solution is distributed within said container through less than all of said channels.

4,193,869

WASTEWATER AND WASTEWATER SOLID PROCESSING SYSTEM

Milton Brucker, 1010 N. Rexford Dr., Beverly Hills, Calif. 90210; Ronald J. Matika, 4395 Jutland Ave., San Diego, Calif. 92117, and Maurice E. McMican, 7970 Mission Gorge Rd., Santee, Calif. 92071

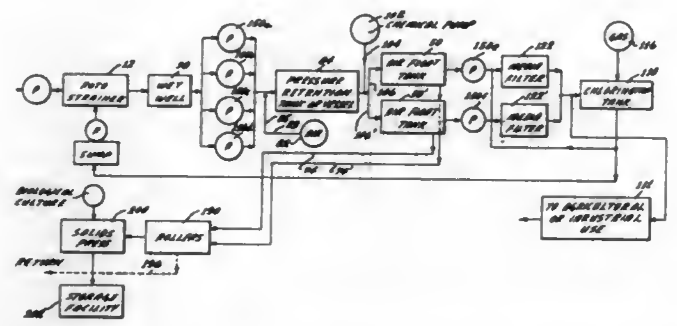
Continuation-in-part of Ser. No. 525,753, Nov. 21, 1974, abandoned, and Ser. No. 669,914, Mar. 24, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 879,061

Int. Cl.^{2} B03D *1/00, 1/24*

U.S. Cl. 210—44 **26 Claims**

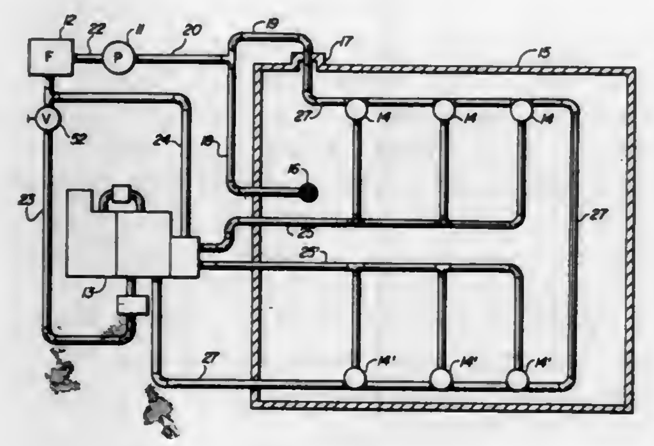
12. A process for treating wastewaters containing solids and dissolved organic matter, which comprises passing wastewater influent through a screen for removal of solids, incorporating a floculating agent into said last-mentioned influent to floculate any fine solid particles remaining in said influent, passing air under pressure into the resulting influent, introducing said influent containing dissolved air under pressure and floculated solids into the lower portion of a flotation chamber at about atmospheric pressure, the reduction in pressure of said influent causing the air bubbles released from said influent to float the floculated suspended solids to the surface of said influent in

said flotation chamber, removing said floculated solids as a scum from the surface of said influent, withdrawing the resulting substantially clear influent from the flotation chamber, treating said last-mentioned influent with chlorine or ozone in a sterilizer tank, to destroy bacteria in said influent, filtering the sterilized influent for removal of any remaining undissolved solids, collecting said scum of floculated solids removed from the surface of said influent in said flotation chamber, in a scum tank, centrifuging said scum, recovering the solids from said centrifuging and mixing water from the centrifuging with the incoming influent following the screening of said influent, mixing the solids recovered from said centrifuging with the solids removed by passage of said influent through said screen, and incinerating the resulting mixture of solids.



4,193,870
POOL CLEANING SYSTEM AND APPARATUS

Raymon L. Goodin, 2227 W. Overton, Tucson, Ariz. 85704
Filed Nov. 15, 1978, Ser. No. 960,827
Int. Cl.² B01D *37/00*
U.S. Cl. 210—65 **8 Claims**



6. A method for circulating and cleaning water in a swimming pool comprising the steps of:

pumping water out of a drain of the swimming pool,

filtering said water and subsequently pumping a first part of said water back into the swimming pool through rotatable jet nozzle means producing jet streams,

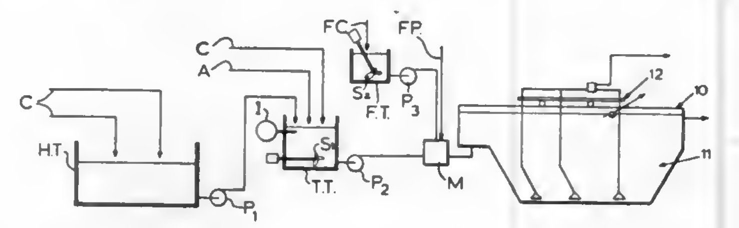
periodically introducing air into a second part of the water pumped back into said swimming pool to periodically increase its flow rate, and

rotating said jet nozzle means by said second part of the water during the period of its increased flow rate.

4,193,871
CLARIFIER

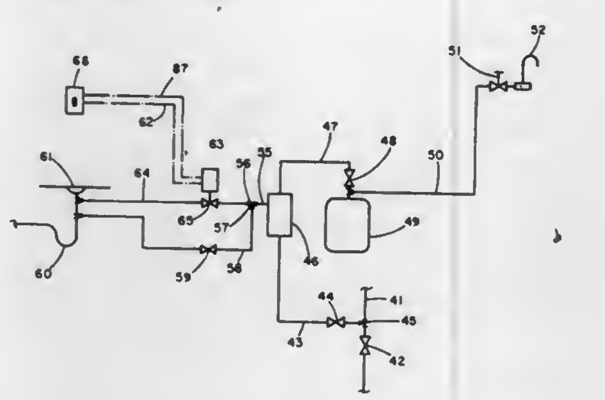
Harold R. White, New Lenox, and Alexander J. Doncer, Jr., Palos Heights, both of Ill., assignors to Alar Engineering Corporation, Chicago, Ill.
Filed Feb. 26, 1979, Ser. No. 15,463
Int. Cl.² B01D *21/00*
U.S. Cl. 210—142 **22 Claims**

1. A travelling bridge clarifier comprising an elongated rectangular tank having a converging hopper bottom with a narrow sediment collecting zone along the length of the tank, an inlet compartment at one end of said tank and an outlet at the other end of the tank, vertical flow straighteners between said compartment and said tank, a vertical baffle behind said flow straighteners directing liquid to be clarified over the top thereof to the flow straighteners, outlet weirs projecting longitudinally in the top of the tank from the outlet end thereof and receiving clarified liquid along the lengths thereof, a bridge moveable along the top of the tank, longitudinally spaced suction heads fixedly secured to said bridge suspended in the bottom of said tank from said bridge, means for reciprocating said bridge along said tank in a predetermined stroke to maintain said suction heads within localized portions in the bottom of said tank, and means for selectively independently evacuating said suction heads to remove sludge from said localized portions of the narrow sediment collecting zone of the tank.



4,193,872
FLUSHING SYSTEM FOR REVERSE OSMOSIS WATER PURIFICATION UNITS

Wayne A. Parkinson, 800 E. St. Louis Ave., Las Vegas, Nev. 89105
Filed Aug. 9, 1978, Ser. No. 932,289
Int. Cl.² B01D *41/00*
U.S. Cl. 210—143 **6 Claims**



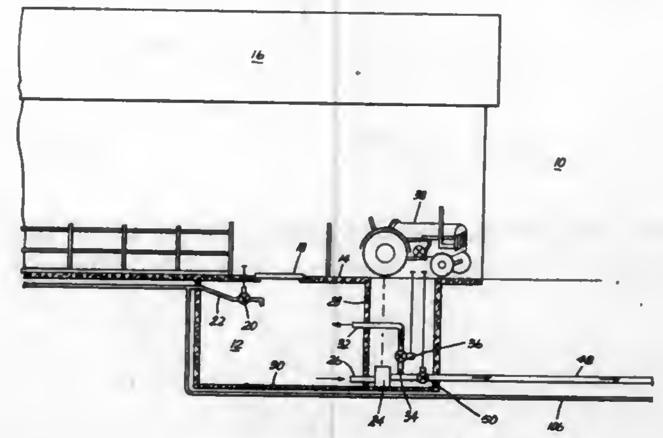
1. In a water delivery system for a sink having a cold water faucet, a separate purified water faucet, and a drain, a water source, a reverse osmosis water purification cartridge having a feed water inlet connected to the water source upstream of the cold water faucet, a purified water outlet, and a contaminated water outlet, the improvement therein which comprises a flow control means for automatically periodically increasing flow from the water source through the feed water inlet for short periods of time, said flow control means comprising either the cold water faucet or a solenoid-operated valve actuated by an on/off switch to a garbage-disposing apparatus.

4,193,873
MANURE COLLECTION AND STORAGE SYSTEM

Donald D. Thrasher, Rte. No. 1, North Manchester, Ind. 46962
Filed May 30, 1978, Ser. No. 910,693
Int. Cl.² A01K *1/00*
U.S. Cl. 210—170 **11 Claims**

1. A manure collection and storage system comprising: a first collecting receptacle for receiving manure collected from an animal confining facility; means for selectively feeding water to said first receptacle thereby to form a slurry of the manure therein; a first pump having an intake coupled to said first receptacle for withdrawing slurry therefrom and having a discharge; a second storage receptacle remote from said first receptacle; first means for selectively coupling said first pump discharge to said second receptacle thereby to transfer slurry thereto from said first receptacle; a second pump having an intake and a discharge, second means for coupling said second receptacle to said second pump intake for withdrawing slurry therefrom; third means for selectively coupling said second pump discharge to said second receptacle thereby to return slurry thereto to agitate the slurry therein; and fourth means for selectively coupling said second pump discharge to a discharge line thereby to remove slurry from said second receptacle;

said second receptacle has a bottom and a side wall, said first means being coupled to said second receptacle through said bottom, said third means being coupled to said second receptacle through said side wall at least at a first level adjacent said bottom, said second means being coupled through said side wall at least at said second level spaced above said first level;

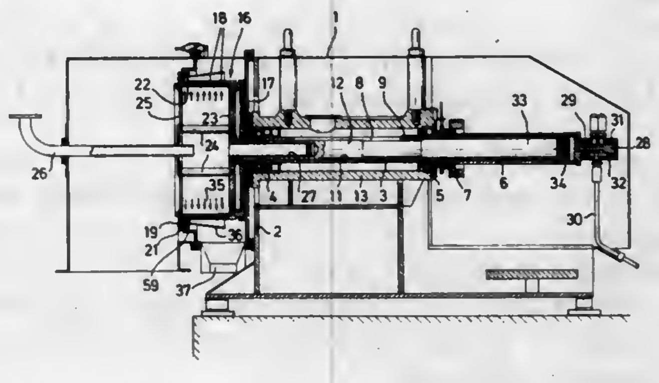


said second and third means are coupled to said second receptacle through said side wall at horizontally displaced points in the respective second and first levels;

said third means is also coupled to said second receptacle through said side wall at least at one other level above said first level, and said second means is also coupled to said second receptacle through said side wall at least at one other level above said second level.

4,193,874
FILTER CENTRIFUGE

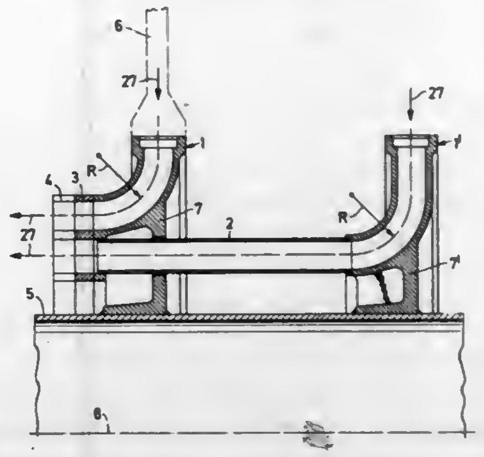
Hans Gerteis, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Firma Heinkel Industriezentrifugen GmbH & Co., Fed. Rep. of Germany
Filed Mar. 6, 1978, Ser. No. 883,721
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710624
Int. Cl.² B01D *33/10*
U.S. Cl. 210—232 **17 Claims**



1. Filter centrifuge for the separation of solid and liquid components found in a suspension, with a centrifugal drum open at one front side, with radial discharge openings, positioned rotatably in a centrifuge housing, and with a filter cloth insertable in the drum, which is removably fastened on the one side to the opening edge of the drum which is tightly sealed by a centrifuge bowl cover, and on the other side to a base plate rigidly joined with the cover in such a way as to leave an open space between them, wherein the centrifugal drum and the base plate are arranged coaxially with one another, and can be set into rotation together, and are movable axially with respect to one another, characterized in that a supporting screen (**41**) is provided between the centrifugal drum (**16**) and the filter cloth (**22**), said supporting screen comprising support elements which are both in direct contact with said filter cloth and oriented exclusively parallel to the center axis of said centrifugal drum and to the axial direction of stripping of the filter cloth.

4,193,875
ROTARY FILTER

Werner Stahl, and Franz Krappmann, both of Munich, Fed. Rep. of Germany, assignors to Krauss Maffei AG, Munich, Fed. Rep. of Germany
Filed Jan. 24, 1979, Ser. No. 6,290
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804779
Int. Cl.² B01D *33/26*
U.S. Cl. 210—330 **23 Claims**



1. A rotary disk filter comprising a filter shaft, a plurality of filter disks mounted on said shaft in axially spaced relation and rotatable into a trough containing a suspension to be filtered and out of said trough to dry a filter cake upon the respective disk, each of said disks having a plurality of sectors forming respective filter cells and a cell carrier provided with filtrate passages respectively communicating with said cells, and a control head surrounding said shaft and communicating successively between the passages of each disk and an external conduit, one of said disks being relatively proximal to said control head and another of said disks being relatively distal from said control head, each of said passages having a bend connecting a radial portion with an axial portion, the axial portions of said passages of said distal carrier being formed by respective straight tube sections disposed externally of the filter shaft.

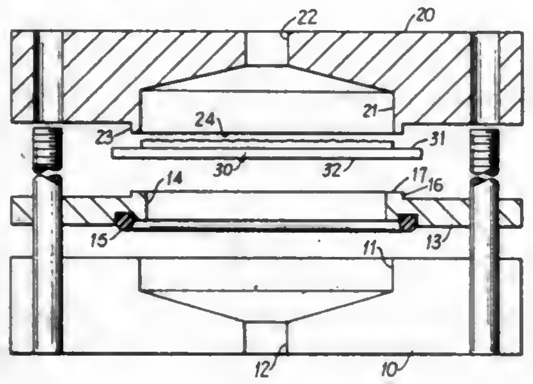
4,193,876
MEANS FOR SUPPRESSING EDGE LEAKAGE IN FILTER PRESSES

Gordon Leeke, Glastonbury, and Joseph W. Helme, Ellington, both of Conn., assignors to AMF Incorporated, White Plains, N.Y.
Filed Sep. 27, 1978, Ser. No. 946,268
Int. Cl.² B01D *25/12*
U.S. Cl. 210—489 **2 Claims**

1. A liquid filter for disposition between adjacent plates of a filter press and having axially aligned central flow path openings and opposed seal faces encircling said openings, comprising

a disc of predetermined size and shape of a sheet of filter media including fibrous cellulose and non-compressible mineral particulate material of predetermined concentration and particle size;

means for substantially eliminating edge learage due to wicking when said filter is disposed between said plates, said means, consisting of a flange portion extending outwardly from the flow path openings when retained between plates of a filter press, and said flange being dry pressed prior to use, to a density corresponding to a thickness approximately one half of its original thickness, said flange having sufficiently smooth surfaces to be engaged by and forming sealing interfaces with the opposed seal faces of the filter press plates to suppress edge leakage.



4,193,877

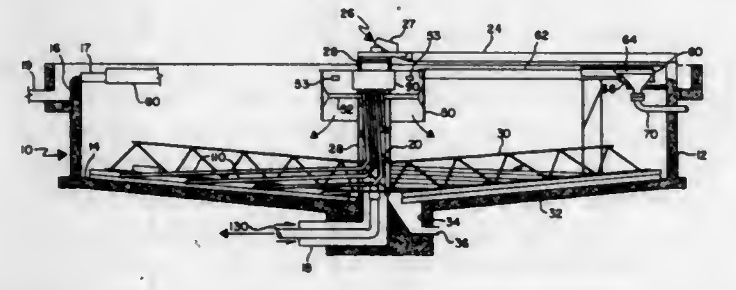
APPARATUS FOR CLARIFYING LIQUID

Mitchell J. Lillywhite, Draper, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Apr. 7, 1978, Ser. No. 894,298

Int. Cl.² B01D *21/24*

U.S. Cl. 210—520 **9 Claims**



1. An apparatus for clarifying liquid waste comprising:

a. a tank to contain the waste so that the surface of the waste is at a predetermined level;

b. a center column mounted vertically on the floor of said tank;

c. means for collecting sludge from the floor of said tank and removing the collected sludge from said tank, said sludge collecting means including at least one sludge box affixed to the upper part of said center column;

d. influent means connected to said center column for introducing the waste into said tank to be clarified, said influent means including at least one port formed in the center column at about the predetermined level of the waste in said tank to introduce waste into said tank so that the surface of the waste flowing from said at least one port is at substantially the same elevation as the predetermined level of the waste in said tank;

e. means for removing clarified waste from said tank; and,

f. means for removing scum from said tank.

4,193,878

14β-HYDROXYANDROSTANES

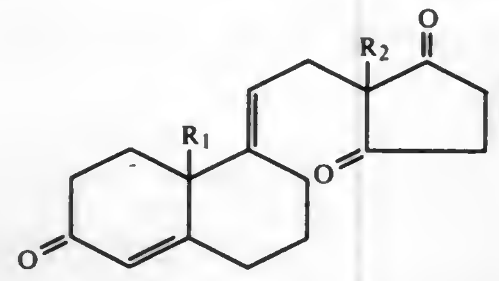
Zdenek Valenta, Fredericton, Canada, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 811,393, Jun. 29, 1977, Pat. No. 4,134,920. This application Oct. 12, 1978, Ser. No. 950,915

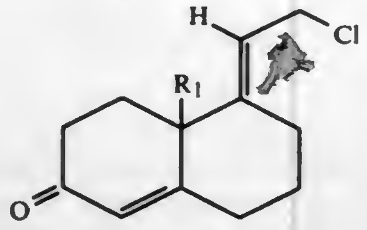
Int. Cl.² C07C *49/48, 49/46*

U.S. Cl. 260—586 C **4 Claims**

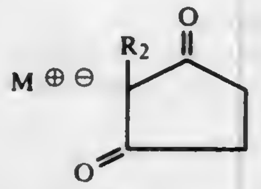
1. A process for the preparation of a compound of the formula



wherein R_1 and R_2 are each independently lower alkyl which comprises contacing a compound of the formula



wherein R_1 is lower alkyl with a compound of the formula



wherein R_2 is lower alkyl and M is an alkali metal in the presence of an alkali metal iodide, the reaction being conducted in a medium comprising a polar aprotic solvent and a lower alkanol at room temperature.

4,193,879

APPARATUS FOR POWERFUL ENERGY TRANSFER TECHNIQUE

Sam L. Leach, P.O. Box 2436, Palos Verdes Peninsula, Calif. 90274

Continuation-in-part of Ser. No. 790,320, Apr. 25, 1977, Pat. No. 4,113,589, and Ser. No. 834,682, Sep. 19, 1977, Pat. No. 4,148,701. This application Feb. 21, 1978, Ser. No. 879,226

Int. Cl.² B01J *1/00*

U.S. Cl. 250—527 **52 Claims**

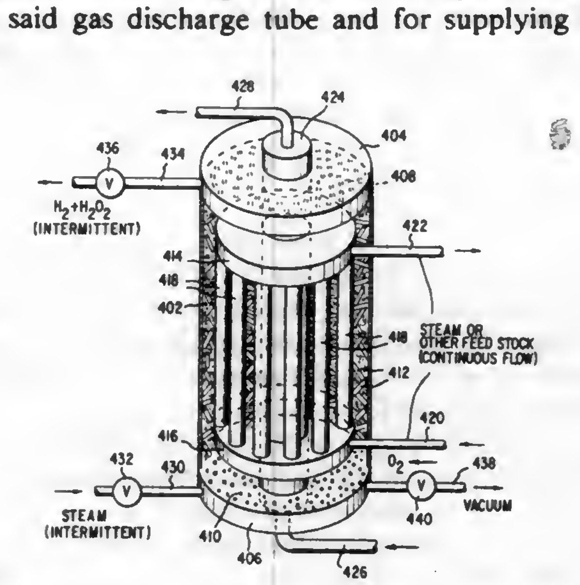
15. An apparatus for controlled photochemical reactions comprising:

a reaction chamber;

means for supplying feedstock to said reaction chamber, said feedstock having a predetermined frequency absorption band or bands; and

means for flooding said reaction chamber with radiation within at least one of the absorption bands of said feedstock;

said means including at least one gas discharge tube having output radiation of a lower frequency than said predetermined band or bands and means in physical proximity to said gas discharge tube and also exposed to said reaction chamber for receiving said lower frequency radiation from said gas discharge tube and for supplying intense radiation to said reaction chamber within said predetermined band or bands.



4,193,880

APPLICATION OF FLUOROCARBON COMPOUND TO SYNTHETIC ORGANIC POLYMER YARN

Robert M. Marshall, Chester, Va., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 1,625, Jan. 8, 1979. This application Mar. 30, 1979, Ser. No. 25,636

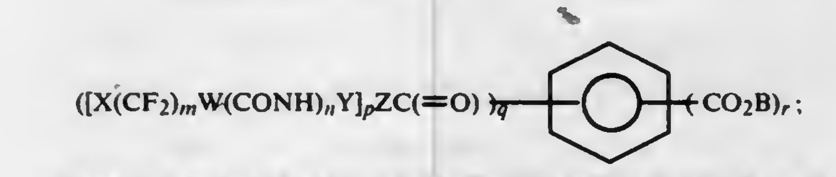
Int. Cl.² D06M *13/34*

U.S. Cl. 252—8.8 **16 Claims**

1. A yarn finish composition comprising:

a. about 15 to 80 weight percent of a nonhomogeneous mixture of a salt of dinonyl sulfosuccinate, a salt dimethyl naphthalene sulfonate, and ammonium perfluoralkyl carboxylate, and

b. about 20 to 85 weight percent of a fluorochemical compound having the formula



wherein the attachment of the fluorinated radicals and the radicals CO_2B to the nucleus is in asymmetrical positions with respect to rotation about the axis through the center of the nucleus; wherein "X" is fluorine, or perfluoroalkoxy of 1 to 6 carbon atoms, and m has arithmetic mean between 2 and 20; n is zero or unity; "W" and "Y" are alkylene, cycloalkylene or alkyleneoxy radicals of combined chain length from 2 to 20 atoms; $(CF_2)_m$ and "Y" have each at least 2 carbon atoms in the main chain; "Z" is oxygen and p is 1 or "Z"O is nitrogen and p is 2; q is an integer of at least 2 but not greater than 5; "B" is CH_2RCHOH or is $CH_2RCHOCH_2RCHOH$ where "R" is hydrogen or methyl, or "B" is $CH_2CH(OH)CH_2Q$ where Q is halogen, hydroxy, or nitrile; or "B" is $CH_2CH(OH)CH_2OCH_2CH(OH)CH_2Q$; and r is an integer of at least 1 but not greater than g; and $X(CF_2)_m$, W and Y are straight chains, branched chains or cyclic; and wherein the substituent chains of the above general formulas are the same or different.

4,193,881

LUBRICANT FOR METAL STRIP

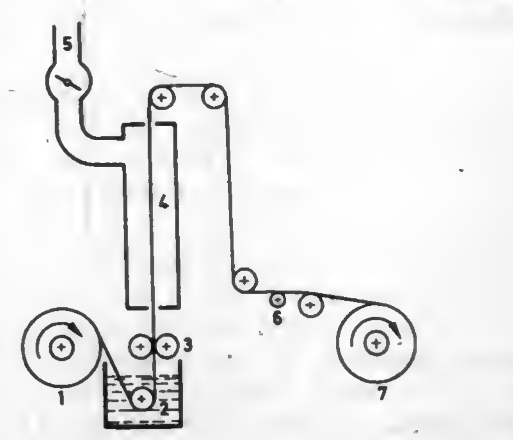
Rudolf Baur, Kreuzlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 25, 1978, Ser. No. 936,828

Claims priority, application Switzerland, Sep. 6, 1978, 10845/78

Int. Cl.² C10M *5/16, 5/14, 7/22, 7/20*

U.S. Cl. 252—17 **15 Claims**



1. A lubricant for metal strip for the processing of blank and lacquered aluminum or aluminum alloy strip used for packaging purposes, in particular for packaging foodstuffs, said lubricant consisting essentially of a minimum of 60% of the aluminum or magnesium salt of a saturated C_{11} to C_{19} monocarboxylic acid or mixtures thereof as the main constituent and from 10 to 30% of at least one dispersion agent so that said lubricant may be deposited on the surface of the strip from a dispersion.

4,193,882

CORROSION INHIBITED LUBRICANT COMPOSITION

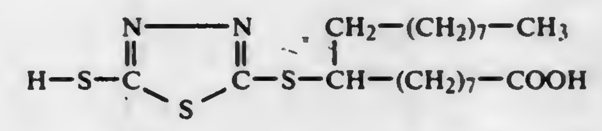
Robert M. Gemmill, Jr., Pitman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 572,480, Apr. 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 377,004, Jul. 6, 1973, abandoned. This application Oct. 19, 1978, Ser. No. 952,919

Int. Cl.² C10M *1/38*

U.S. Cl. 252—47.5 **8 Claims**

1. A lubricant composition comprising: a major proportion of a lubricating medium selected from the group consisting of oils of lubricating viscosity and greases thereof; and, in an amount sufficient to inhibit metal corrosion, a compound having the formula:



8. A process which comprises reacting oleic acid and 2,5-dimercapto--1,3,4-thiadiazole at a temperature from about 150° C. to about 200° C. and in a mole ratio of 1:1.

4,193,883

LUBRICANT COMPOSITIONS

Gerassimos Frangatos, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,397

Int. Cl.² C10M *1/10*

U.S. Cl. 252—49.9 **12 Claims**

1. A reaction product made by (1) reacting, at from about 120° C. to about 225° C., at least about 1 mole of a polyalkenylsuccinic anhydride with each mole of a primary aminopolyhydroxy compound having from 2 to 20 carbon atoms and from 2 to 4 hydroxyl groups and (2) reacting, at from about 80° C. to about 175° C., the material of (1) with a phosphorus trihalide and a polyhydroxyaromatic compound having from 6 to 40

carbon atoms and from 2 to 4 hydroxyl group, the respective molar ratio being about 1 to 3:1 to 3:1 to 3.

6. A lubricant composition comprising oils of lubricating viscosity or greases thereof and an antioxidant or antiwear amount of the product of claim **1**.

4,193,884

AMINE DERIVATIVES OF NITROSATED HIGH MOLECULAR WEIGHT ALKYL-SUBSTITUTED PHENOL, AND COMPOSITIONS CONTAINING THE SAME

Richard J. Lee, Downers Grove, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 9, 1978, Ser. No. 884,840

Int. Cl.^{2} C10M *1/34*

U.S. Cl. 252—51.5 R **15 Claims**

1. The oil-soluble product prepared by the process comprising, nitrosating, with nitrous acid anhydride gas in the presence of an acid catalyst, an alkyl-substituted phenol, wherein the alkyl-substituent has an average molecular weight of from about 300 to about 100,000, and reacting, from about 0.15 moles to about 0.5 moles of the resultant nitrosated alkyl-substituted phenol with from about 1.0 moles to about 0.5 moles of an amine compound having at least one amino group selected from the class consisting of primary amino and secondary amino.

4,193,885

METHOD FOR PREPARING A THERMAL-STABILITY ADDITIVE AND A THERMALLY STABILIZED METHYLPOLYSILOXANE AND COMPOSITIONS THEREFROM

Roland L. Halm, Saginaw, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 821,251, Aug. 2, 1977, Pat. No. 4,122,109. This application May 26, 1978, Ser. No. 910,706

Int. Cl.^{2} C09K *50/00*

U.S. Cl. 252—78.3 **8 Claims**

1. In a heat-transfer system comprising a heat source, a heat exchange, a heat-transfer fluid and means for conveying the heat-transfer fluid between the heat source and the heat exchanger whereby heat is added to the heat-transfer fluid by the heat source and heat is at least partially removed from the heat-transfer fluid by the heat exchanger, the improvement comprising using as the heat-transfer fluid a methylpolysiloxane fluid having improved resistance to thermal siloxane rearrangement, said methylpolysiloxane fluid being prepared by a method comprising

(A) mixing components consisting essentially of
  (i) an endblocked methylpolysiloxane fluid having an average of from approximately 1.9 to less than 3.0 methyl groups per silicon, and
  (ii) an organometallic compound in sufficient amount to provide from 0.001 to 10.0 parts by weight of the metal per 100 parts by weight of the mixture of (i) plus (ii), said organometallic compound being selected from the group consisting of organotitanium, organozirconium and organohafnium compounds wherein each organic group consists of carbon, oxygen, and hydrogen atoms and which is bonded to the metal by at least one metal-oxygen-carbon linkage,
(B) heating the mixture of (i) plus (ii) in an inert atmosphere to decompose the organometallic compound,
(C) mixing with the mixture of (B)
  (iii) an amount of the endblocked methylpolysiloxane fluid (i), said amount being any amount, including none, which is sufficient to reduce the concentration of the metal to a value of from 0.001 to 0.1 parts by weight per 100 parts by weight of the mixture of (C), and
(D) mixing with the mixture of (C),
  (iv) an organosilicon hydride compound, soluble in (i) and bearing at least one silicon-bonded hydrogen atom per molecule, the amount of (iv) being from none to an amount sufficient to provide up to 0.05 parts by weight of silicon-bonded hydrogen atoms per 100 parts by weight of the mixture of (C) thereby providing a methylpolysiloxane fluid having an improved resistance to thermal siloxane rearrangement under anhydrous conditions, compared to the methylpolysiloxane (i).

4,193,886

NOVEL LOW TEMPERATURE CLEANER

Daniel Schoenholz, Basking Ridge; Arthur W. Petersen, Chatham Township, Morris County, and Marcus A. Northup, Jr., Morristown, all of N.J., assignors to Church & Dwight Co., Inc., Piscataway, N.J.

Filed Apr. 22, 1976, Ser. No. 679,333

The portion of the term of this patent subsequent to May 6, 1992, has been disclaimed.

Int. Cl.^{2} C11D *7/26, 7/12*

U.S. Cl. 252—90 **10 Claims**

1. A weakly alkaline composition for removing soil containing free or combined organic acids comprising (A) at least one polyhydric alcohol or a lower aliphatic ether or ester thereof having at least 2 free hydroxy groups, (B) 1.0 to 500% by weight of at least one alkali metal bicarbonate based on the weight of the polyhydric alcohol and (C) 5.0 to 1000% by weight of at least one alkali metal salt of a weak organic acid based on the weight of the polyhydric alcohol.

4,193,887

FILLED DETERGENT FOAM MADE BY A ONE SHOT PROCESS

Herman Stone, Hazelton, and Peter D. Pauly, Mountaintop, both of Pa., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 780,701, Mar. 24, 1977, Pat. No. 4,124,518. This application Aug. 18, 1978, Ser. No. 935,033

The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

Int. Cl.^{2} C08G *18/08, 18/14;* **C08J** *9/12;* **C11D** *17/04*

U.S. Cl. 252—91 **9 Claims**

1. As an article of manufacture, a filled detergent hydrophilic flexible polyurethane foam, produced by a process which comprises mixing a clay filler and an alkyl aryl sulfonate detergent to form a first mixture, mixing said first mixture with a normally liquid polyether polyol to form a second mixture, and introducing said second mixture, tolylene diisocyanate and water, as a blowing agent, into the mixing chamber of a foam machine whereby a filled detergent polyurethane foam is manufactured, wherein said second mixture contains from 20 to 60 percent by weight of filler, based upon the weight of the polyol, and wherein said second mixture contains from 30 to 80 percent by weight of sulfonate detergent, based upon the weight of the polyol.

4,193,888

COLOR-YIELDING SCOURING CLEANSER COMPOSITIONS

Neil M. McHugh, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 426,286, Dec. 18, 1973, abandoned, which is a continuation of Ser. No. 177,158, Sep. 1, 1971, abandoned, which is a continuation of Ser. No. 816,092, Apr. 14, 1969, abandoned. This application Aug. 25, 1978, Ser. No. 937,006

Int. Cl.^{2} C11D *7/56*

U.S. Cl. 252—99 **17 Claims**

1. A substantially white scouring cleanser composition capable of undergoing signal color change on contact with aqueous media consisting essentially of, on a weight basis,

(1) from 45 to 95% of a substantially anhydrous water insoluble abrasive material having a particle size within the range of from about 0.001 mm to about 0.4 mm and at least about 85% thereof passes through a seive having 0.074

mm openings, selected from the group consisting of silica, fedspar, pumic volcanic ash, diatomaceous earth, bentonite, calcium carbonate and talc, and mixtures thereof,
(2) from 0.1 to 50% of a bleaching agent capable of liberating hypohalide on contact with aqueous media,
(3) from 0.5 to 30% of a water-soluble organic detergent stable in the presence of said bleaching agent, and
(4) from 0.1 to 10.0% by weight of a coloring agent which is a pigmented carrier capable of undergoing color extension on contact with aqueous media, the pigment being substantially water dispersable selected from the group consisting of water dispersible animal, mineral and synthetic pigments, the particle size of said pigmented carrier being within the range of 50 to 600 microns with 95% passing through a 325 mesh screen, being substantially stable in the presence of said bleaching agent said pigment having a reflectance in the 450 to 535 mm wavelength region of the visible spectrum, the weight ratio of carrier to pigment being from about 1:1 to about 150:1 and wherein said carrier is selected from the group consisting of the abrasive materials defined in (1), water soluble organic detergent, water soluble builder salt, sodium bromide and sodium sulfate.

4,193,889

MICROENCAPSULATION WITH MODIFIED ALIPHATIC POLYISOCYANATES

Gunther Baatz; Walter Schäfer, both of Cologne, and Manfred Dahm, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 29, 1977, Ser. No. 855,743

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655048

Int. Cl.^{2} B01J *13/02*

U.S. Cl. 252—316 **8 Claims**

1. Microcapsules having walls which comprise a polycondensate of a film-forming aliphatic polyisocyanate containing at least one biuret group or a polyaddition product thereof with a chain-extending agent selected from the group consisting of water, a polyol and a polyamine.

4. A process for the production of microcapsules, wherein a film-forming aliphatic polyisocyanate containing biuret groups, or a solution thereof in an inert solvent, is dissolved or dispersed in materials to be encapsulated, the resulting solution or dispersion is emulsified in water, a tertiary amine initiating the polycondensation reaction or a basically acting compound or an NCO-reactive chain-extending agent is added, the reaction mixture obtained is admixed until the microcapsules are formed, and the microcapsules are isolated.

4,193,890

COLOR STABILIZERS FOR VINYL CHLORIDE RESINS

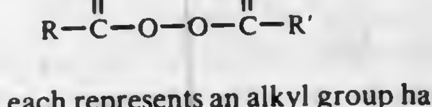
Henri Sidi, Paramus, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 879,416, Feb. 21, 1978, Pat. No. 4,150,219, Continuation-in-part of Ser. No. 784,998, Apr. 6, 1977, Pat. No. 4,139,697. This application Jun. 15, 1978, Ser. No. 916,330

Int. Cl.^{2} C09K *15/06*

U.S. Cl. 252—407 **9 Claims**

1. A vinyl chloride-miscible color stabilizer for vinyl chloride resins that contains 50% to 95% by weight of an epoxide selected from the group consisting of vicinal epoxides having 2 to 8 carbon atoms, epoxidized fatty acids having 16 to 18 carbon atoms, esters of these epoxidized fatty acids, and mixtures thereof and 5% to 50% by weight of an organic peroxide having the structural formula



$$R-\overset{\overset{O}{\|}}{C}-O-O-\overset{\overset{O}{\|}}{C}-R'$$

wherein R and R′ each represents an alkyl group having 2 to 12 carbon atoms, a chloroalkyl group having 2 to 12 carbon atoms, a bromoalkyl group having 2 to 12 carbon atoms, an aryl group having 6 to 10 carbon atoms, or a haloaryl group having 6 to 10 carbon atoms and 1 to 3 chlorine or bromine atoms.

4,193,891

PASSIVATION OF METALS ON CRACKING CATALYST WITH AN ANTIMONY THIOCARBAMATE

Dwight L. McKay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1978, Ser. No. 926,693

Int. Cl.^{2} C10G *11/06, 9/16;* **C07F** *9/90;* **B01J** *23/18*

U.S. Cl. 252—411 R **15 Claims**

1. A method for passivating a contaminating metal upon a hydrocarbon cracking catalyst, which comprises contacting said catalyst with an antimony thiocarbamate to add the same thereto.

4,193,892

PROCESS FOR PREPARING OLEFIN OXIDE POLYMERIZATION CATALYSTS BY AGING THE CATALYSTS

George L. Goeke, Kendall Park, and Frederick J. Karol, Belle Mead, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 902,566, May 8, 1978, abandoned, which is a continuation of Ser. No. 741,013, Nov. 11, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 928,974

Int. Cl.^{2} C08G *59/68, 65/00*

U.S. Cl. 252—428 **8 Claims**

1. In a process for the preparation of an olefin oxide polymerization catalyst comprising:

(i) admixing calcium, ammonia, an alkylene oxide modifier and an organic nitrile modifier, the alkylene oxide consisting of carbon, hydrogen, and oxirane oxygen atoms and the organic nitrile consisting of carbon, nitrogen, and hydrogen atoms, at least one hydrogen atom being acidic, to form a slurry of modified calcium hexammine in ammonia; and
(ii) evaporating ammonia to provide a solid residue,
  the improvement comprising:
  aging the solid residue at a temperature in the range of about 150° C. to about 225° C. for up to about 15 hours.

4,193,893

TRANSITION METAL CATALYST

Anthony D. Caunt; Peter I. Vincent, and Alan B. Newton, all of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 688,546, May 21, 1976, abandoned. This application Dec. 2, 1977, Ser. No. 856,985

Claims priority, application United Kingdom, May 28, 1975, 23324/75

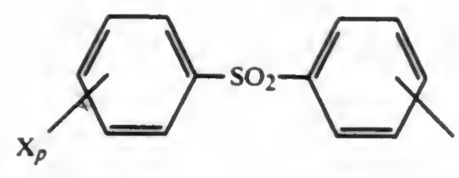
Int. Cl.^{2} B01J *31/02*

U.S. Cl. 252—429 B **11 Claims**

1. a process for the treatment of a transition metal compound which comprises grinding a solid compound of a transition metal of Groups IVA to VIA of the Periodic Table with at least 0.01 mole, and not more than one mole, for each gramme atom of the transition metal which is present in the solid compound, of at least one organic compound of the formula

$$R^1COOR^2$$

and also with at least 0.01 mole, and not more than one mole, for each gramme atom of the transition metal which is present in the solid compound, of at least one organo-Lewis Base compound having one of the formulae



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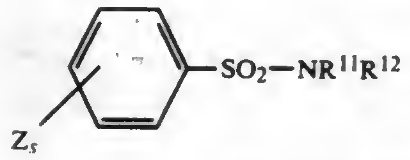
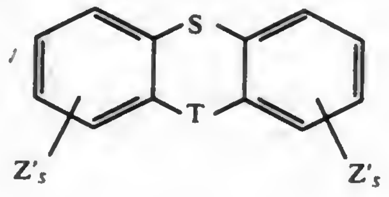


; or



where

R^1 is an alkyl, aryl, alkenyl, aralkyl or alkaryl group;

R^2 is a hydrogen atom or an alkyl, aryl, alkenyl, aralkyl or alkaryl group;

X, or each X, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^{10}R^{11}$, or two groups X can together form a saturated or unsaturated hydrocarbon ring;

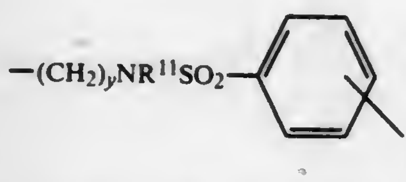
Y, or each Y, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^{10}R^{11}$, or two groups Y can together form a saturated or unsaturated hydrocarbon ring; or a group X and a group Y may be replaced by a link between the two phenyl groups attached to the $—SO_2—$ group, the linkage being either direct or through a group —O—, $—CH_2—$, $—NR^{10}—$, —S—or —CO—;

R^{10} is a hydrogen atom or a hydrocarbyl group;

R^{11} is a hydrocarbyl group;

Z, or each Z, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group $—NR^{10}R^{11}$, or two groups Z can together form a saturated or unsaturated hydrocarbon ring;

R^{12} is a hydrocarbyl group or a group



;

T is —S—, —O—, $—NR^{11}—$; or —CO—;

Z', or each Z', is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio or arylthio group, or a group $—NR^{10}R^{11}$;

p and q are each, independently, an integer from 0 up to 5;

s is an integer from 0 up to 5; and

y is a positive integer.

4,193,894
CATALYST FOR OXIDATION OF SULFUR DIOXIDE

John Villadsen, Vedbek, Denmark, assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 11, 1979, Ser. No. 2,648

Int. Cl.^{2} B01J *27/02;* **C01B** *17/68*

U.S. Cl. 252—440 **25 Claims**

1. A catalytic material for the oxidation of sulfur dioxide to sulfur trioxide at any temperature above 300° C. which comprises a catalyst whose active components are molten at reaction temperature and includes

(1) sulfatized vanadium ions as the catalytically active component;

(2) a first promoter comprising ions of at least one alkali metal said one alkali metal being cesium to stabilize the active vanadium species at temperatures below 420° C.; and

(3) a second promoter comprising ions of at least one metal which does not promote formation of inactive V^4 species and the oxide of which has a heat of formation greater than 100 kcal per oxygen atom and is at least partly soluble in the heavily sulfatized environment of the melt to increase the activity of the catalyst at any temperature;

said catalyst being supported by an inert porous carrier.

4. A catalytic material according to claim **1** wherein said second promoter comprises ions of a metal selected from the group consisting of Al, Mg, Y and La.

8. A catalytic material according to claim **1** wherein said carrier is an inactive silica support.

4,193,895
AROMATIZATION PROCESS AND CATALYST

Steven D. Light, Fullerton, and John W. Ward, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 842,221, Oct. 14, 1977, abandoned. This application Aug. 10, 1978, Ser. No. 932,468

Int. Cl.^{2} B01J *27/10*

U.S. Cl. 252—441 **10 Claims**

1. A dehydrocyclization-reforming catalyst composition comprising alumina and supported thereon about 0.1–2 wt. % Pt, about 0.1–3 wt. % Cl and sufficient Cs to provide a Cs/Cl atomic ratio between about 0.005 and 0.2.

4,193,896
PROCESS FOR MODIFYING LINEAR POLYMER RESINS

William H. Cook, Bloomfield Hills, Mich., assignor to Kemerica, Incorporated, Bloomfield Hills, Mich.

Filed Apr. 4, 1977, Ser. No. 784,259

Int. Cl.^{2} C08J *11/04*

U.S. Cl. 260—2.3 **13 Claims**

1. A process for treating a starting polymer resin composed of repeating hydrocarbon units linked together by amide or ester linear linkages in order to reduce the molecular weight thereof, which comprises treating the linear polymer resin with a basic primary or secondary amine under conditions which cause aminolysis of said linear linkages and recovering as product linear polymer resin also composed of hydrocarbon units linked together by amide or ester linear linkages, but having a lower average molecular weight than said starting linear polymer.

4,193,897
CONTACT LENSES FORMED OF MIXTURES OF CELLULOSE ESTERS AND ETHYLENE/VINYL ACETATE COPOLYMERS

Frank Wingler, Leverkusen; Theobald Eicher, Dormagen; Friedemann Muller, Neuss; Winfried Fischer, Cologne, and Richard Prinz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,468

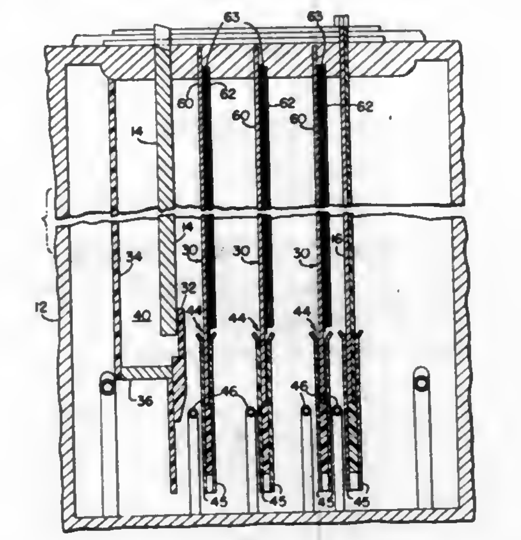
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807663

Int. Cl.^{2} C08L *1/14;* **G02C** *7/04*

U.S. Cl. 260—17 R **4 Claims**

1. A contact lens or scleral lens formed of a mixture consisting essentially of

(1) from 99 to 70% by weight of a cellulose ester of at least one aliphatic carboxylic acid having 1 to 5 carbon atoms and



(2) from 1 to 30% by weight of an ethylene/vinyl acetate copolymer containing from 30 to 98% by weight of incorporated vinyl acetate.

4,193,898
PROTECTIVE COVERING MATERIAL FOR USE SUCH AS SHINGLES AND SIDING

Sidney A. Miller, 821 Midway Dr. NE., Lacey, Wash. 98503

Filed Jan. 19, 1978, Ser. No. 867,798

Int. Cl.^{2} C08L *27/06*

U.S. Cl. 260—23 XA **19 Claims**

1. A protective covering material useful as roofing or siding material comprising:

(a) a formulation of 100 parts by weight of the following ingredients:

64 to 80 parts by weight percent of a total 100 of polyvinyl chloride resin; and

20 to 36 parts by weight percent of a total 100 of plasticizer;

(b) the said formulation of polyvinyl chloride resin and plasticizer is admixed as 60 to 90 parts by weight percent of a total 100 with 40 to 10 parts by weight percent of vermiculite.

4,193,899
ELASTOMERIC SYSTEMS HAVING UNUSUAL MEMORY CHARACTERISTICS

Douglas Brenner, Livingston, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 29, 1977, Ser. No. 855,567

Int. Cl.^{2} C08L *91/00*

U.S. Cl. 260—23.5 A **16 Claims**

1. A process for reshaping a sulfonated elastomeric article from a sulfonated elastomeric blend composition, which includes a neutralized sulfonated elastomeric polymer having about 10 to about 50 meq. metal sulfonate groups/100 grams of said neutralized sulfonated elastomeric polymer and about 2 to about 40 parts by weight of a non-volatile preferential plasticizer per 100 parts by weight of said neutralized sulfonated elstomeric polymer, said process comprising the steps of:

(a) applying sufficient pressure at room temperature to said sulfonated elastomeric article in its original shape so as to deform said sulfonated elastomeric article into a distorted or compressed shape;

(b) heating said sulfonated elastomeric article in said distorted or compressed shape to a temperature of about 50° C. to about 160° C. under said pressure and maintaining said sulfonated elastomeric article in said distorted or compressed shape at about 50° C. to about 160° C. for at least about 1 minute;

(c) cooling said heated sulfonated elastomeric article in such distorted or compressed shape from about 50° C. to about 160° C. to room temperature; and

(d) removing said pressure at room temperature from said sulfonated elastomeric article in said distorted or compressed shape.

7. The product prepared by the process of claim **1**, wherein said product contains at least 8 parts by weight of a non-volatile preferential plasticizer per 100 parts by weight of said neutralized sulfonated elastomeric polymer, said neutralized sulfonated elastomeric polymer having about 10 to about 60 meq. of metal neutralized sulfonate groups per 100 grams of said neutralized sulfonated elastomeric polymer, said neutralized sulfonated elastomeric polymer being formed from an EPDM terpolymer having a Mooney viscosity (ML 1+8, 212° F.) of about 10 to about 50, said preferential plasticizer being selected from the group consisting of long chain aliphatic acids having about 12 to about 40 carbon atoms, metallic salts of said long chain aliphatic acids and amides and mixtures thereof.

4,193,900
FIRE CARCASS RESILIENT RUBBER COMPOSITIONS

Lawrence E. Whittington, Round Rock, Tex.; Marvin L. Deviney, Jr.; James E. Lewis, both of Worthington, Ohio, and Duane K. Chapman, Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 828,301, Aug. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 509,172, Sep. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 342,831, Mar. 19, 1973, abandoned. This application Dec. 14, 1978, Ser. No. 969,501

Int. Cl.^{2} B60C *1/00;* **C08L** *9/00, 95/00*

U.S. Cl. 260—28.5 B **5 Claims**

1. In a pneumatic tire carcass or tread-grade rubber compound consisting essentially of a homogenous admixture of (a) an elastomer selected from the group consisting of a styrene-butadiene copolymer, polybutadiene, polyisoprene, an ethylene propylene terpolymer, natural rubber and mixtures thereof; (b) a reinforcing amount of carbon black; (c) an aromatic extender oil in the amount of about 21–42 parts by weight per 100 parts of said elastomer; (d) zinc oxide; (3) stearic acid; (f) sulfur in an amount of not in excess of about 3 parts by weight per 100 parts of said elastomer; and (g) effective amounts of a cure accelerator and an oxidation stabilizer; the improvement of including within the compound as a total or partial replacement of said extender oil component an unoxidized thermal petroleum pitch having a softening point between about 100° and 240° F.

4,193,901
PROCESS FOR THE SULFONATION OF AN ELASTOMERIC POLYMER

Henry S. Makowski, Scotch Plains; Robert D. Lundberg, and Jan Bock, both of Bridgewater, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 950,415, Oct. 11, 1978, which is a continuation of Ser. No. 855,771, Nov. 29, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,312

Int. Cl.^{2} C08L *91/00*

U.S. Cl. 260—28.5 B **17 Claims**

1. In a process for the sulfonation of an unsaturated elastomeric polymer to form a sulfonated elastomeric polymer, wherein a cement consisting essentially of of said unsaturated elastomeric polymer in a non-reactive solvent is contacted with a sulfonating agent in a reaction zone at about −100° C. to about +100° C. for a time sufficient to result in the formation of a sulfonated elastomeric polymer having about 15 to about 50 meq. of sulfonate groups per 100 grams of said sulfonated elastomeric polymer, the improvement which comprises using a sulfonating agent comprising a mixture of a sulfur trioxide donor complexed with a Lewis base and a second reagent being selected from the group consisting of $(RCO)_2O$

and RCOX and mixtures thereof, a molar-ratio of said second reagent to said SO_3 of said complex being at least 0.5, wherein R is selected from the group consisting of CH_3—, C_2H_5—, C_3H_7—, C_4H_9—, C_5H_{11}—, C_6H_{13} and $C_6H_5CH_2$— and mixtures thereof, and X is selected from the group consisting of F, Cl, Br and I.

4,193,902

FINELY PARTICULATE PLASTICS DISPERSIONS PREPARED BY METERING A MIXTURE CONTAINING FOUR MONOMERS INTO AN AQUEOUS LIQUOR CONTAINING AN ANIONIC EMULSIFIER

Josef Mondt, Konigstein; Karl J. Rauterkus, Kelkheim, and Helmut Rinno, Lorsbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 749,440, Dec. 10, 1976, abandoned. This application Jan. 4, 1978, Ser. No. 866,836

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1975, 2556327

Int. Cl.^{2} C08L *33/08*

U.S. Cl. 260—29.6 TA **2 Claims**

1. A process for the preparation of finely particulate plastics dispersions particularly suitable for the solidifying primer coating of substrates to be painted, which comprises metering a monomer mixture containing

I. from 20 to 80% by weight of monomer selected from styrene, methylmethacrylate and mixtures thereof as hardening component, provided that methyl methacrylate, if present, does not exceed 15% by weight of said mixture,
II. from 20 to 80% by weight of monomer selected from acrylic acid and methacrylic acid esters of linear and branched alcohols having from 2 to 8 carbon atoms and mixtures thereof as plasticizing component,
III. from 0.1 to 5% of an amide of an α,β-unsaturated carboxylic acid, and
IV. from 0.1 to 5% of an α,β-unsaturated monocarboxylic acid,

in the form of the pure monomer mixture or a preliminary emulsion, simultaneously with an initiator, into an aqueous liquor containing from 0.5 to 10% by weight of an anionic emulsifier, said monomers being used in such an amount that the solids content of the final dispersion does not exceed 45% by weight, polymerizing said monomers in said aqueous liquor to form said dispersion, and adjusting said dispersion to a pH of 7 to 10.

4,193,903

RAPID REMOVAL OF RESIDUAL MONOMERS FROM ACRYLONITRILE COPOLYMERS

Brandford E. Giddings, Warrensville Heights; Eddie Wardlow, Jr., Cleveland, and Brian L. Mehosky, Maple Heights, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

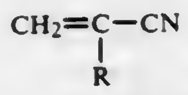
Filed May 17, 1978, Ser. No. 906,538

Int. Cl.^{2} C08F *6/24*

U.S. Cl. 260—29.6 R **4 Claims**

1. A process which comprises steam stripping residual nitrile monomer from an aqueous suspension of a resin at a temperature in the range of from about 100° C. up to 135° C. and at a pressure of from about 5 to 30 psig, said resin having been prepared in aqueous suspension by the free-radical polymerization of a mixture of

(A) at least 50% by weight of at least one nitrile monomer having the structure

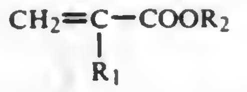


$$CH_2{=}\underset{\displaystyle R}{\underset{|}{C}}{-}CN$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

(B) up to 50% by weight based on the combined weight of (A) plus (B) of at least one member selected from the group consisting of

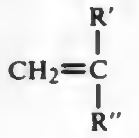
(1) styrene,
(2) an ester having the structure



$$CH_2{=}\underset{\displaystyle R_1}{\underset{|}{C}}{-}COOR_2$$

wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

(3) an alpha-olefin having the structure



$$CH_2{=}\overset{\displaystyle R'}{\overset{|}{\underset{\displaystyle R''}{\underset{|}{C}}}}$$

wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

(4) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,
(5) vinyl acetate, and
(6) indene.

4,193,904

COPOLYMERIZATION IN WATER SOLUBLE POLYOL WITH CONTROLLED REACTION WITH THE POLYOL AND AQUEOUS COATINGS CONTAINING THE RESULTING COPOLYMER SOLUTION

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed May 30, 1978, Ser. No. 910,368

Int. Cl.^{2} C08K *5/05*

U.S. Cl. 260—29.6 H **5 Claims**

1. A method for the production of a water dispersible copolymer solution in water soluble polyol with controlled limited reaction between the copolymer and the polyol comprising copolymerizing monoethylenically unsaturated monomers including a proportion of carboxyl-functional monomer providing dispersibility in water with the aid of a base and from 0.5%–5%, based on the total weight of monomers, of a monoethylenically unsaturated monomer carrying a reactive group selected from dicarboxylic acid anhydride functionality and N-methylol functionality, in solution in a water soluble polyol having a molecular weight of at least about 300, the copolymerization being carried out or being preceded by conditions causing substantially complete reaction between the said anhydride or N-methylol functionality in the reactive monomer and the hydroxy groups in the polyol.

4,193,905

CURABLE EPOXIDE RESIN MIXTURES CONTAINING DIAMINOPROPANES

Thaddeus Audykowski, and Roland Moser, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

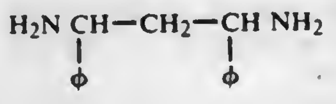
Filed Dec. 2, 1977, Ser. No. 856,893

Claims priority, application Switzerland, Dec. 10, 1976, 15573/76

Int. Cl.^{2} C08G *59/50*

U.S. Cl. 260—30.6 R **9 Claims**

1. A curable mixture comprising (a) a polyepoxide compound (x) having on average more than one epoxide group per molecule; and (b) a 1,3-diaminopropane of the formula I



$$H_2N\ \underset{\displaystyle \phi}{\underset{|}{CH}}{-}CH_2{-}\underset{\displaystyle \phi}{\underset{|}{CH}}\ NH_2 \qquad (1)$$

wherein 0.5 to 1.5 equivalents of active hydrogen atoms of the 1,3-diaminopropane per 1 equivalent of epoxide groups in the epoxide compound (x) are present.

4,193,906

COMPOSITIONS FOR SOLID WRITING MATERIALS AND WRITING IMPLEMENTS

Akio Hatanaka, Hirakata, Japan, assignor to Sakura Color Products Corporation, Japan

Filed Feb. 14, 1978, Ser. No. 877,580

Int. Cl.^{2} C08K *5/10*

U.S. Cl. 260—31.2 R **15 Claims**

1. A composition for use as a writing material comprising:

(i) a first component consisting of at least one member selected from the group consisting of dibenzylidene sorbitol, [di-(alkylbenzylidene)] sorbitol, tribenzylidene sorbitol and [tri-(alkylbenzylidene)] sorbitol, said component being present in an amount of about 2 to 12 parts by weight in 100 parts by weight of the total composition,
(ii) a second component consisting of an ester of a mono-saturated fatty acid having 10 to 20 carbon atoms and a mono-saturated aliphatic alcohol having 1 to 8 carbon atoms, said second component being present in an amount of about 10 to 50 parts by weight in 100 parts by weight of the total composition,
(iii) a third component consisting of a vinyl resin, said third component being present in an amount of about 10 to 40 parts by weight in 100 parts by weight of the total composition,
(iv) a fourth component consisting of a coloring agent, said forth component being present in an amount of about 2 to 30 parts by weight in 100 parts by weight of the total composition, and
(v) a fifth component consisting of an organic solvent having a boiling point from about 70° to 220° C., said fifth component being present in an amount of about 30 to 70 parts by weight in 100 parts by weight of the total composition, whereby said composition is shapeable and handleable as a solid under steady or semi-steady conditions but flowable under pressure when used for writing or drawing.

4,193,907

FLAME PROOF POLYAMIDE MOULDING COMPOSITIONS

Peter Tacke; Dieter Neuray, and Dietrich Michael, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 25, 1978, Ser. No. 927,860

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734103

Int. Cl.^{2} C08K *3/02;* **C08L** *77/00*

U.S. Cl. 260—37 N **8 Claims**

1. Flameproof polyamide moulding compositions containing

(I) from 0.5 to 20% by weight of a flameproofing agent comprising a mixture of
  (a) from 60 to 95% by weight of at least one phenol/aldehyde resin and
  (b) from 5 to 40% by weight of red phosphorus having an average particle size of less than 200μ and
(II) from 10 to 40% by weight of at least one reinforcing material and/or filler.

4,193,908

METHOD OF REDUCING THE VISCOSITY OF POLYESTER-ALUMINA TRIHYDRATE DISPERSIONS BY SLIGHT DEHYDRATION OF TRIHYDRATE

Hsiun P. Hsieh, Murrysville, Pa., and James J. Koenig, Belleville, Ill., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 20, 1978, Ser. No. 944,188

Int. Cl.^{2} C08K *3/22*

U.S. Cl. 260—40 R **14 Claims**

1. An improved method for dispersing alumina trihydrate, having an average particle size less than 15 microns, in a polyester resin comprising:

lowering the viscosity of the polyester-trihydrate dispersion, by dehydrating the alumina trihydrate to reduce the initial loss on ignition thereof by from 0.2 to 5.0 percent; and
after dehydrating the alumina trihydrate dispersing up to 65 percent alumina trihydrate, based on the total weight of the resin and the trihyrate, with the polyester resin.

4,193,909

FLOWER POT AND METHOD FOR MAKING

John A. Lundberg, Columbus; Robert J. Schafer, Worthington; Richard H. Toeniskoetter, Worthington, and Richard L. Pelfrey, Worthington, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 778,293, Mar. 16, 1977. This application Sep. 21, 1978, Ser. No. 944,507

Int. Cl.^{2} C08K *3/36, 9/06*

U.S. Cl. 260—42.15 **8 Claims**

1. A molded horticultural container structure prepared by:

(1) forming a uniform admixture of a molding composition comprising:
  (a) an aggregate;
  (b) up to 10 parts by weight of polyurethane resin binder per 100 parts (a);
  (c) from 0.0005–0.1 parts by weight of silane compound per 100 parts (a);
  (d) from 0.1–5 parts by weight of iron oxide pigment per 100 parts (a); and
  (e) from 0.5–2.5 parts by weight per 100 parts (a) of a powdered thermoplastic polymer having an average particle size of from 20–12000 microns.
(2) molding the resultant admixture to a desired shape;
(3) curing the shaped mixture;
(4) baking said molded structure at a temperature to effect fusing of the powdered thermoplastic polymer component thereof.

4,193,910

PREPARATION OF SUPPORT MATRICES FOR IMMOBILIZED ENZYMES

Ronald P. Rohrbach, Forest Lake, Ill., and Joseph Levy, Deerfield Beach, Fla., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 16, 1978, Ser. No. 951,948

Int. Cl.^{2} C08K *7/24*

U.S. Cl. 260—42.43 **13 Claims**

1. A process for the preparation of an organic-inorganic matrix which comprises adsorbing on a solid, porous, inorganic, water-insoluble support a styrene monomer, polymerizing the sytrene-solid support composite at polymerizing conditions, nitrating the resultant polystyrene-solid support composite, chemically reducing the nitrated polystyrene-solid support composite, and recovering the desired organic-inorganic matrix.

4,193,911

NONINFLAMMABLE OLEFIN FIBER AND METHOD OF PRODUCING SAME

Antonio Fochesato, 260 Summer St., Boston, Mass. 02210

Filed Dec. 27, 1977, Ser. No. 864,459

Claims priority, application Italy, Oct. 5, 1977, 85639 A/77

Int. Cl.^{2} C08K *3/22, 5/53, 5/02*

U.S. Cl. 260—45.7 P **13 Claims**

1. A noninflammable polypropylene fiber comprising in combination as flame-retartant agents:

(a) from about 1.0% to 12.5% by weight of a hydrated alumina, which alumina has been treated with a lubricant material to permit the alumina to be incorporated into the olefinic resin composition;
(b) from about 1.0% to 5.0% by weight of a halogenated organic polyphosphonate characterized by a phosphorus-

to-carbon bond repeated along the main oligomer chain of the polyphosphonate;

(c) from about 1.0% to 5.0% by weight of a halogenated organic compound selected from the group consisting of
  (i) a bromochlorocyclohexane, and
  (ii) a 2:1 Diels-Alder adduct of a hexahalocyclopentadiene and a cyclodiene; and

(d) the said fiber being noninflammable when tested by ASTM-D635-74.

4,193,912
PREPARATION OF HIGH-VISCOSITY MIXTURES CONTAINING THERMOPLASTIC POLYESTERS

Werner Schmidt, St. Augustin, and Rüdeger Minke, Troisdorf-Sieglar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany
Filed May 19, 1978, Ser. No. 907,638
Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724411
Int. Cl.² C08K *3/22*
U.S. Cl. 260—45.75 B **10 Claims**

1. A process for preparing an antimony oxide stabilized polymethylene terephthalate polymeric composition which comprises compounding a polymethylene terephthalate precondensate having a reduced viscosity in the range of 0.4 to 1.2 dl/g with said antimony oxide and thereafter subjecting the resultant composition to solid phase polycondensation until the resultant polycondensate has a reduced viscosity in the range of 1.3 to 2.5 dl/g the antimony trioxide concentration being 1 to 12 weight percent based on the weight of said precondensate.

4,193,913
THERMOPLASTIC VINYL CHLORIDE POLYMERS CONTAINING MONOALKYL-TIN-STABILIZERS

Gerd Abeler, Griesheim Über Darmstadt, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 806,428, Jun. 16, 1977, abandoned, which is a continuation of Ser. No. 639,146, Dec. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 540,924, Jan. 14, 1975, abandoned. This application Feb. 27, 1978, Ser. No. 881,445
Int. Cl.² C08K *5/58;* **C07F** *7/22*
U.S. Cl. 260—45.75 S **7 Claims**

1. A compound of the formula

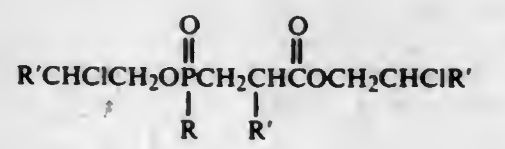
$$R—Sn—(S—CH_2COO—n—C_{14}H_{29})_3$$

wherein R is methyl, n-butyl or n-octyl.

4,193,914
PHOSPHORUS-CONTAINING PROPIONATES

Gail H. Birum, Kirkwood, and Richard F. Jansen, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
Continuation of Ser. No. 945,669, Sep. 25, 1978, which is a continuation-in-part of Ser. No. 855,533, Nov. 28, 1977, abandoned, which is a continuation of Ser. No. 831,707, Sep. 9, 1977, abandoned. This application Apr. 6, 1979, Ser. No. 27,562
Int. Cl.² C08K *5/53*
U.S. Cl. 260—45.85 R **4 Claims**

2. A flame retardant composition comprising a normally flammable material selected from the group consisting of polyamides and polyesters, together with from about 0.1% to 20% by weight of 2-chloroalkyl(2-chloroalkoxy)hydrocarbylphosphinylpropionate of the general formula



$$R'CHClCH_2O\underset{\underset{R}{|}}{\overset{\overset{O}{\|}}{P}}CH_2\underset{\underset{R'}{|}}{C}H\overset{\overset{O}{\|}}{C}OCH_2CHClR'$$

where R is phenyl, methyl or ethyl, and R' is hydrogen or methyl.

4,193,915
CONTRACEPTIVE, ANTIBODY GENERATING, POLYPEPTIDES

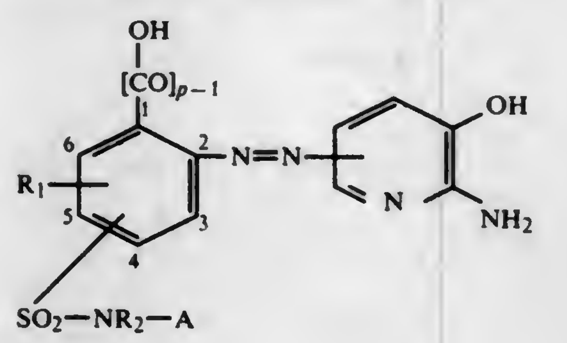
Kenneth W. McKerns, Blue Hill Falls, Me. 04615
Filed Apr. 13, 1978, Ser. No. 896,225
Int. Cl.² C07C *103/52;* **A61K** *37/00*
U.S. Cl. 260—112.5 R **28 Claims**

1. A compound R_1-R_2-R_3 and its pharmacologically acceptable salts, wherein R_1 is chosen from the group consisting of D-Ser-Arg, Ser-Arg, and -Arg, R_2 is chosen from the group consisting of Tyr-Gly-Lys-Pro-Val-Gly-Lys-Lys, Ala-Tyr-Pro-Thr-Pro-Ala-Arg-Ser-Lys, Tyr-Gly-Lys-Pro-Val-Gly-Lys-Lys-Lys, Tyr-Gly-Lys-Pro-Val-Arg-Ser-Lys, Tyr-Gly-Pro, Tyr-Gly-Pro-Val-Gly, Val-Leu-Pro, Val-Leu-Val-Gly, Ala-Tyr-Pro, Leu-Pro-Gly-Pro, Val-Leu-Gln-Gly, Ala-Tyr-Pro-Arg-Leu-Pro-Gly, Ala-Tyr-Pro-Arg-Val-Leu-Gln-Gly and Ala-Tyr-Pro-Arg-Val-Leu-Pro, and R_3 is chosen from the group consisting of Val-NH_2, -Val, Lys-NH_2, -Lys, -Thr, Thr-NH_2, -Ser, Ser-NH_2, -Pro and -Pro-NH_2.

4,193,916
SULFO- OR CARBOXY-ARYL AMINO SULFONYL PHENYL AZO HYDROXPYRIDINE HEAVY METAL COMPLEX DYES

Gerhard Back, Lorrach, Fed. Rep. of Germany, and Alfred Fasciati, Bottmingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Sep. 28, 1977, Ser. No. 837,138
Claims priority, application Luxembourg, Oct. 8, 1976, 75958; Feb. 7, 1977, 76713
Int. Cl.² C09B *45/16, 45/18, 45/20, 45/22*
U.S. Cl. 260—146 R **6 Claims**

1. A 1:1 or 1:2 copper, nickel, chromium or cobalt metal complex dye of an azo compound of the formula

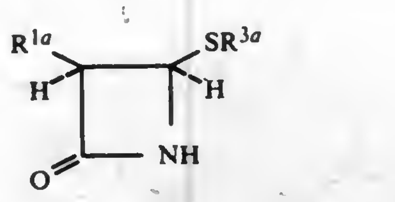


wherein
- A is carboxyphenyl or sulfophenyl which are unsubstituted or substituted by chloro, methyl, methoxy or acetylamino;
- p is 1 or 2;
- R_1 is hydrogen; chloro; bromo; nitro; C_1–C_4 alkyl; C_1–C_4-alkoxy; C_1–C_4 alkanoylamino; C_1–C_4 alkoxycarbonylamino; or phenoxy which is unsubstituted or substituted by chloro, bromo, methyl, methoxy or nitro;
- R_2 is hydrogen or C_1–C_4 alkyl; and with the proviso that one of —R_1 and —SO_2NR_2—A is in the 4-position and the other is in the 5- or 6-position.

4,193,917
CHEMICAL COMPOUNDS

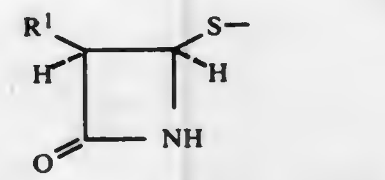
Derek H. R. Barton, London; Alan G. Long; Brian E. Looker, both of Greenford; Edward M. Wilson, Bowness-on-Windermere, and William G. Elphinstone, Stoke Poges, all of England, assignors to Glaxo Laboratories, Limited, Greenford, England
Division of Ser. No. 167,876, Jul. 30, 1971, Pat. No. 3,991,069. This application Aug. 12, 1976, Ser. No. 713,649
Claims priority, application United Kingdom, Jul. 31, 1970, 37186/70; Nov. 3, 1970, 52289/70
Int. Cl.² C07D *205/06*
U.S. Cl. 260—239 A **10 Claims**

1. A process for the preparation of a compound of the formula



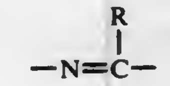
I

wherein R^{1a} and R^{3a} represent groups R^1 and R^4 respectively where R^1 is a blocked amino group of formula —NHCOR where —COR is an acyl group having 1 to 20 carbon atoms and R^3 is an acyl group of formula R^6CO— where R^6 is an alkyl group of 1 to 6 carbon atoms, a phenylalkyl group wherein the alkyl portion has 1 to 6 carbon atoms, a cycloalkyl group of 5 to 7 carbon atoms or a phenyl group; an alkyl group of 1 to 6 carbon atoms, a phenyl group; a phenylalkyl group wherein the alkyl portion has 1 to 6 carbon atoms; a group —SR^5 where R^5 is an alkyl group of 1 to 6 carbon atoms, a phenylalkyl group wherein the alkyl portion has 1 to 6 carbon atoms, a cycloalkyl group of 5 to 7 carbon atoms or a phenyl group; or a group of formula



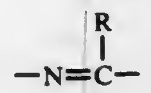
II

where R^1 is as defined above or R^{1a} and R^{3a} together represent the group



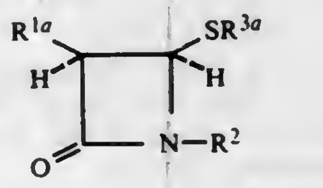
$$—N{=}\overset{\overset{R}{|}}{C}—$$

where R is the residue of an acyl group —COR which acyl group has from 1 to 21 carbon atoms, the carbon atom of the group



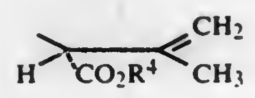
$$—N{=}\overset{\overset{R}{|}}{C}—$$

being bonded to the sulphur atom of the compound of formula I, which process consists of reacting a compound of formula



III

wherein R^2 is a group



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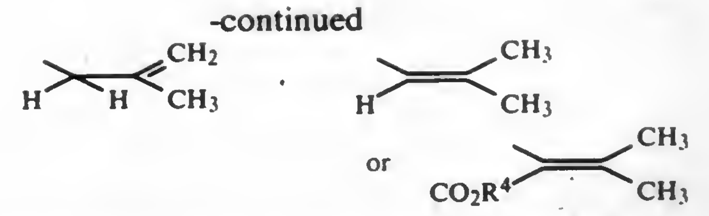
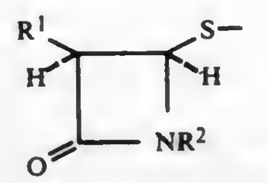


where R^4 is hydrogen or a carboxyl blocking group and R^{1a} and R^{3a} are as defined above except that R^3 can be a group of formula



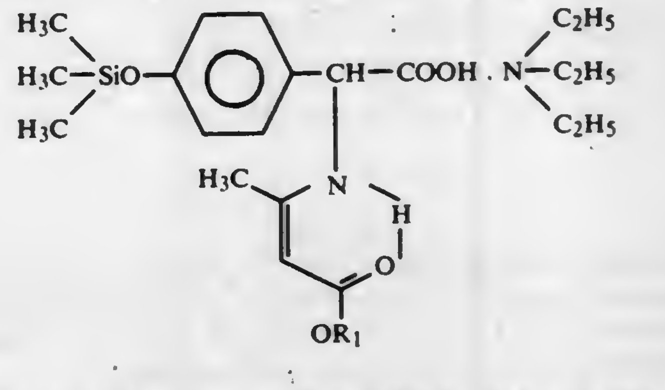
IV

but not a group of formula II with an alkali metal or alkaline earth metal permanganate.

4,193,918
PROCESS FOR THE PREPARATION OF HYDROXY-ALPHA-AMINO-BENZYL PENICILLIN

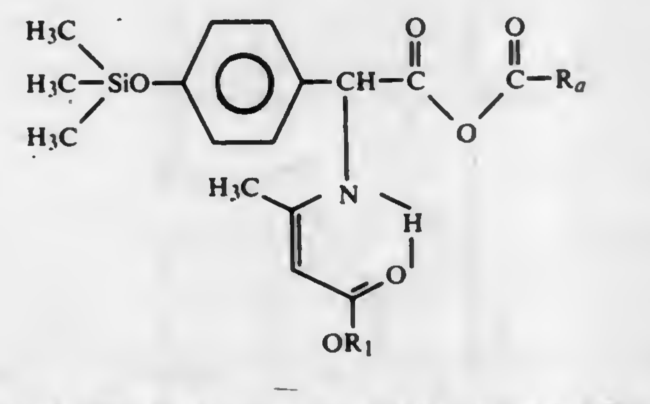
Asuncion Esteve Bianchini, and Antonio L. Palomo Coll, both of Barcelona, Spain, assignors to Antibioticos, Madrid, Spain
Filed Jun. 1, 1978, Ser. No. 911,513
Claims priority, application Spain, Jun. 4, 1977, 459.494
Int. Cl.² C07D *499/68*
U.S. Cl. 260—239.1 **5 Claims**

1. Process for the preparation of hydroxy-alpha-amino-benzyl penicillin, characterized in that the conversion product of D(−) p-hydroxy-C-phenylglycine, ethyl or methyl acetylacetate and triethylamine is made to react with 3-trimethylsilyl-2-oxazolidinone to obtain the compound of the following formula I:



(I)

where R_1 is a methyl or ethyl radical, which compound is reacted with a compound selected from the group comprising pivalyl chloride, 2-ethylhexanoyl chloride and alkyl chloroformate to obtain a compound of the following formula II

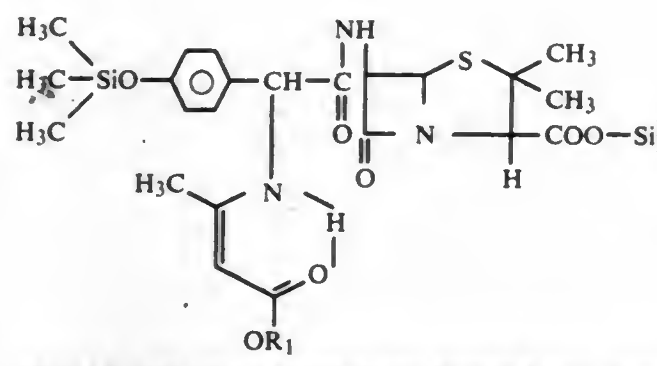


(II)

where R_1 has the meaning given hereinbefore and R_o may be a low molecular weight alkoxy group or an alkyl group having from four to nine carbon atoms and which is thereafter reacted with a compound selected from the group consisting of the triethylamine salt and the trimethylsilyl ester of 6-

aminopenicillanic acid, to obtain an intermediate of the following formula III

(III)



where R_1 has the meaning given hereinbefore, which, with the addition of water and acidulation to pH=0.6 gives a solution of amoxicillin, from which the antibiotic is isolated by precipitation at pH=3.30 to 4.20.

4,193,919

PROCESS FOR PREPARING RIFAMYCIN S USING A STRONG ACID CATION EXCHANGE RESIN

Roger A. Briggs, and Jo Ann Gilpin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 11, 1979, Ser. No. 29,233

Int. Cl.² C07D *491/18, 491/08*

U.S. Cl. 260—239.3 P **4 Claims**

1. A process for converting rifamycin O to rifamycin S which comprises contacting the rifamycin O with a strong acid cation exchange resin in a suitable solvent or solvent mixture containing from about 0.4 percent to about 15 percent water at a temperature of from about 20° C. to about 55° C. for a time sufficient to convert a substantial amount of the rifamycin O to rifamycin S and recovering the rifamycin S.

4,193,920

AZOMETHINE DERIVATIVES OF RIFAMYCIN SV

Rumyana G. Konstantinova; Svetlana S. Zikolova; Velichka I. Apostolova, and Tanya G. Toshkova, all of Sofia, Bulgaria, assignors to DSO "Pharmachim", Sofia, Bulgaria

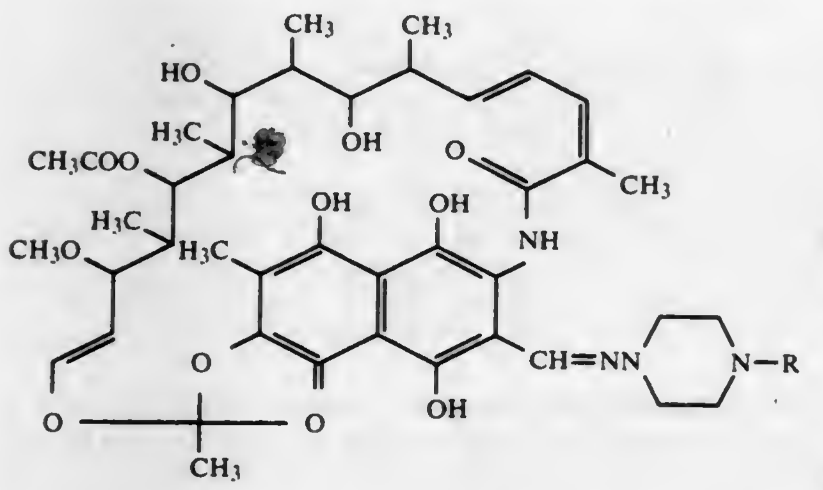
Filed Apr. 11, 1978, Ser. No. 895,399

Claims priority, application Bulgaria, Apr. 15, 1977, 36006

Int. Cl.² C07D *491/08*

U.S. Cl. 260—239.3 P **2 Claims**

1. An azomethine rifamycin SV with the formula



where R is biphenylmethyl, cinnamyl, or α-naphthyl-methyl.

4,193,921

PREGNANE DERIVATIVES

Andor Fürst, Basel; Ludwig Labler, Allschwil, and Werner Meier, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

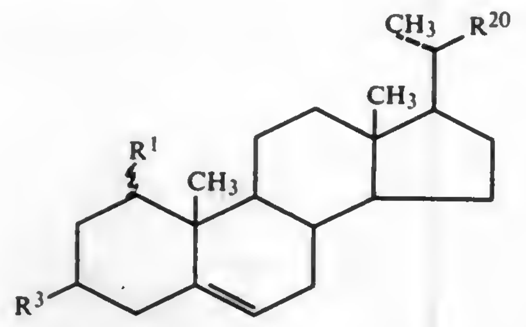
Filed Oct. 12, 1977, Ser. No. 841,430

Claims priority, application Switzerland, Oct. 14, 1976, 13006/76; Sep. 8, 1977, 11011/77

Int. Cl.² C07J *71/00*

U.S. Cl. 260—239.55 R **12 Claims**

1. A compound of the formula

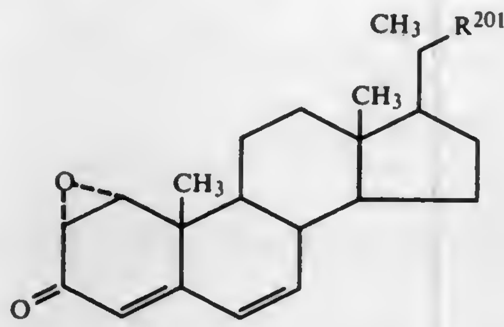


wherein R^1 and R^3 are hydroxy, formyloxy, alkanoyloxy having 2 to 4 carbon atoms or a group of the formula

$$R^XOC(R^J, R^Z)—O—$$

wherein R^J is hydrogen or alkyl having 1 to 6 carbon atoms; R^X and R^Z are alkyl having 1 to 6 carbon atoms or taken together R^X and R^Z are alkylene of 3 to 6 carbon atoms; and R^{20} is hydroxymethyl, formyloxymethyl, alkanoyloxymethyl having 2 to 4 carbon atoms in the alkanoyloxy moiety, bromomethyl, 4-toluenesulfonyloxymethyl, carboxyl or carbalkoxy.

9. A compound of the formula



wherein R^{201} is hydroxymethyl or a group of the formula

$$R^XOC(R^J, R^Z)—O—CH_2—$$

wherein R^J is hydrogen or alkyl having 1 to 6 carbon atoms; R^X and R^Z are alkyl having 1 to 6 carbon atoms or taken together R^X and R^Z are alkylene of 3 to 6 carbon atoms.

4,193,922

SUBSTITUTED-1,2,4-OXADIAZOLIDINE-3-ONE DERIVATIVES

Pál Agócs, Szeged; István Fabián, Sajószentpéter; András Gajdacsi, Szeged; Sándor Nagy, and Zoltán Pintér, both of Miskolc, all of Hungary, assignors to Északmagyarországi Vegyimüvek, Sajóbábony, Hungary

Filed Jun. 8, 1976, Ser. No. 693,892

Claims priority, application Hungary, Jun. 9, 1975, EA 148

Int. Cl.² C07D *271/06*

U.S. Cl. 548—132 **8 Claims**

1. 4-(3,4-dichlorophenyl)-5,5-dimethyl-1,2,4-oxadiazolidine-3-one.

4,193,923

TETRAHYDRO 2-CARBAZOLYL METHYL MALONATE DERIVATIVES

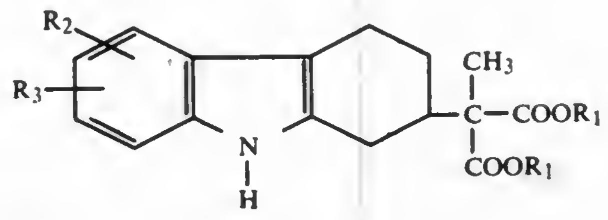
Harvey Gurien, West Orange, and Sidney Teitel, Clifton, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 935,197, Aug. 21, 1978. This application Mar. 23, 1979, Ser. No. 23,114

Int. Cl.² C07D *209/82, 209/86*

U.S. Cl. 260—315 **2 Claims**

1. A compound of the formula



IV

wherein R_1 is lower alkyl, R_2 is hydrogen, halogen, trifluoromethyl, hydroxy, lower alkyl, hydroxy-lower alkyl, lower alkylthio, amino, mono-lower alkylamino, or di-lower alkylamino; and R_3 is halogen, trifluoromethyl, lower alkyl, hydroxy-lower alkyl, lower alkoxy, lower alkylthio, hydroxy, amino, mono-lower alkylamino or di-lower alkylamino, or R_2, taken together with an adjacent R_3 is also alkylenedioxy.

4,193,924

PYROLYSIS OF N-SUBSTITUTED-1-CYCLOHEXENE-1,2-DICARBOXIMIDES

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 802,168, May 31, 1977, Pat. No. 4,125,536, which is a division of Ser. No. 603,221, Aug. 8, 1975, Pat. No. 4,056,542, which is a division of Ser. No. 360,962, May 16, 1973, Pat. No. 3,932,457. This application Aug. 21, 1978, Ser. No. 935,201

Int. Cl.² C07D *487/04*

U.S. Cl. 260—326 C **5 Claims**

1. The process for preparing N,N'-diphenyl- or N,N'-dialkylpyromellitdiimides which comprises the steps of:

reacting N-phenyl-1-cyclohexene-1,2-dicarboximide with N-phenyl-maleimide or N-alkyl-1-cyclohexene-1,2-dicarboximide with N-alkyl-maleimide in substantially equimolar relationship under pyrolysis conversion conditions to the dimer of respectively N-phenyl-1,3-butadiene-2,3-dicarboximide and N,N'-diphenyl-3,4,5,6-tetrahydropyromellitdiimide or N-alkyl-1,3-butadiene-2,3-dicarboximide and N,N'-dialkyl-3,4,5,6-tetrahydropyromellitdiimide, wherein said pyrolysis conversion conditions include elevated temperatures in the range of about 500° to 1000° C., reduced pressure, and short contact time, effective for said pyrolysis conversion, and

dehydrogenating under dehydrogenation conditions said N,N'-diphenyl- or N,N'-dialkyl-3,4,5,6-tetrahydropyromellitdiimide to said N,N'-diphenyl- or N,N'-dialkyl-pyromellitdiimide.

4,193,925

PROCESS FOR PREPARING 2-PYRROLIDONE

Peter J. N. Meijer, and Johannes G. M. Nieuwkamp, both of Geleen, Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jan. 18, 1979, Ser. No. 4,474

Claims priority, application Netherlands, Jan. 19, 1978, 7800644

Int. Cl.² C07D *207/38*

U.S. Cl. 260—326.5 FN **5 Claims**

1. An improved process for the preparation of 2-pyrrolidone by the liquid phase hydrogenation of succinonitrile by means of a catalyst in the presence of hydrogen and ammonia, the improvement wherein said catalyst is in the form of a fixed bed, and a liquid phase of succinonitrile and liquid ammonia is passed over said catalyst at a temperature within the range of between about 50° and 130° C.

4,193,926

4-(POLYALKOXY PHENYL)-2-PYRROLIDONES

Ralph Schmiechen; Reinhard Horowski; Dieter Palenschat; Gert Paschelke; Helmut Wachtel, and Wolfgang Kehr, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

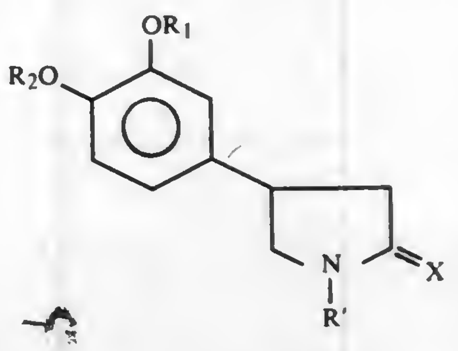
Continuation-in-part of Ser. No. 560,193, Mar. 20, 1975, Pat. No. 4,012,495. This application Feb. 18, 1976, Ser. No. 659,082

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1974, 2413935

Int. Cl.² C07D *707/26, 405/12, 409/12*

U.S. Cl. 260—326.5 S **45 Claims**

1. 4-(polyalkoxyphenyl)-2-pyrrolidones of the formula



selected from the group consisting of

4-(3-ethoxy-4-metoxyphenyl)-2-pyrrolidone;
4-(3-propoxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-butoxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-hexyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-isopropoxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(1-methylpropoxy)-4-methoxyphenyl)-2-pyrrolidone;
4-(3-isobutoxy-4-methoxyphenyl)-2-pyrrolidione;
4-(3-allyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(3-methyl-2-butenyloxy)-4-methoxyphenyl)-2-pyrrolidone;
4-(3-methoxymethoxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(2-hydroxyethoxy)-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(2,2,2-trifluoroethoxy)-4-methoxyphenyl)-2-pyrrolidone;
4-(3-benzyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-phenoxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-methoxy-4-ethoxyphenyl)-2-pyrrolidone;
4-(3-methoxy-4-butoxyphenyl)-2-pyrrolidone;
1-acetyl-4-(3,4-dimethoxyphenyl)-2-pyrrolidone;
4-(3-decyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-83-octadecyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(2-methylbutyl)-oxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-neopentyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-isopentyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(2-propinyl)-oxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-cyanomethyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-cyclobutoxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-cyclopentyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-cyclohexyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(3-methylcyclopentyl)-oxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(2-methylcyclopentyl)-oxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(3-tetrahydrothienyl)-oxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-(3-tetrahydrofuryl)-oxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-cyclopropylmethyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-cyclopentylmethyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(3-methallyloxy-4-methoxyphenyl)-2-pyrrolidone;
4-(4-propinyloxy-3-methoxyphenyl)-2-pyrrolidone;

4-(4-cyclopentyloxy-3-methoxyphenyl)-2-pyrrolidone;
4-(3,4-diethoxyphenyl)-2-pyrrolidone;
4-(3,4-diisobutoxyphenyl)-2-pyrrolidone;
4-(3-isobutoxy-4-methoxyphenyl)-pyrrolidine-2-thione;
4-(3-cyclopentyloxy-4-methoxyphenyl)-pyrrolidine-2-thione; and
4-(3-(2-tetrahydrofuryloxy)-4-methoxyphenyl)-2-pyrrolidone.

4,193,927
IMIDYL COMPOUNDS

Marcus Baumann, Basel; Vratislav Kvita, Muttenz; Martin Roth, Basel, all of Switzerland, and John S. Waterhouse, Cherry Hinton, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

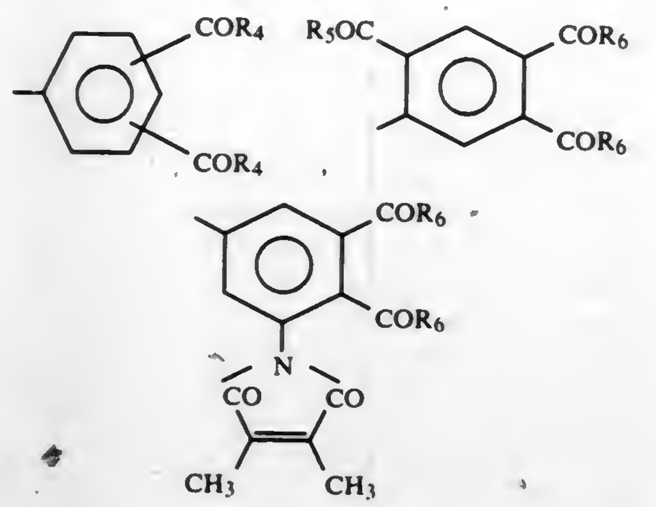
Division of Ser. No. 696,346, Jun. 15, 1976, Pat. No. 4,107,174. This application Apr. 21, 1978, Ser. No. 898,754

Claims priority, application Switzerland, Jun. 18, 1975, 07951/75; Nov. 27, 1975, 15390/75

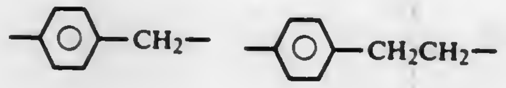
Int. Cl.² C07D *403/10, 207/44*

U.S. Cl. 260—326.26 **7 Claims**

1. A compound wherein n is 1 or 2, when n is 1, X is



or glycidyl, where R_5 and the two R_4's each denote OH, Cl or alkoxy of 1 to 12 carbon atoms; and the two R_6's have the same meaning as R_4 or conjointly represent —0—; and when n is 2, Y is phenylene, 1,4-cyclohexylene, naphthtlene,



or biphenylene;

4,193,928
LASALOCID DERIVATIVES

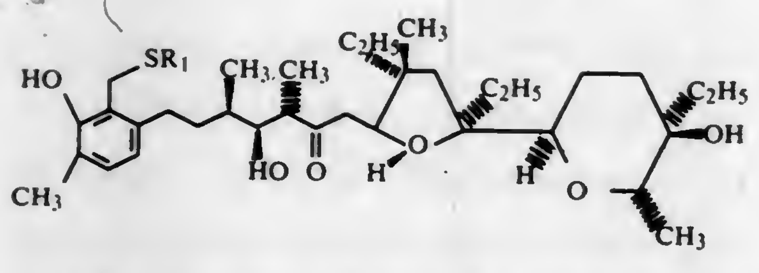
David Coffen, Glen Ridge, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 836,350, Sep. 26, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,645

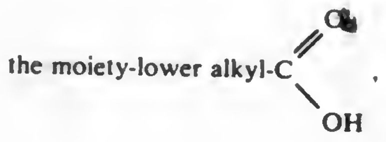
Int. Cl.² C07D *309/06, 309/04, 213/70*

U.S. Cl. 260—345.7 R **13 Claims**

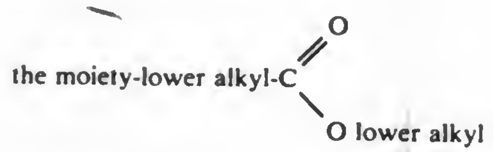
1. A compound of the formula



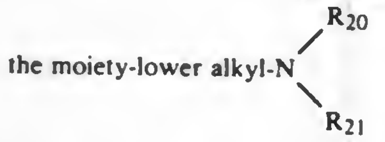
wherein R_1 is selected from the group consisting of phenyl, tolyl or halo, alkoxy or nitro mono-or di-substituted phenyl, benzyl, pyridyl, furyl, C_4 to C_7 cycloalkyl, lower alkyl, C_2 to C_6 lower alkenyl,



$$\text{the moiety-lower alkyl-}C\begin{matrix}\nearrow O\\ \searrow OH\end{matrix}$$



$$\text{the moiety-lower alkyl-}C\begin{matrix}\nearrow O\\ \searrow O\ \text{lower alkyl}\end{matrix}$$



$$\text{the moiety-lower alkyl-}N\begin{matrix}\nearrow R_{20}\\ \searrow R_{21}\end{matrix}$$

wherein R_{20} and R_{21} are hydrogen or lower alkyl, hydroxy lower alkyl, alkoxyalkyl, the moiety-lower alkyl-S-lower alkyl and hydrogen.

4,193,929
EPOXIDATION

Anthony M. Hildon, Tattenhall, and Peter F. Greenhalgh, Widnes, both of England, assignors to Propylox a Societe Anonyme, Brussels, Belgium

Filed Oct. 6, 1977, Ser. No. 839,887

Claims priority, application United Kingdom, Oct. 26, 1976, 44452/76

Int. Cl.² C07D *301/14*

U.S. Cl. 260—348.25 **10 Claims**

1. A continuous process for the epoxidation of an alkene by reaction with a peroxycarboxylic acid to produce an oxirane, comprising:
(i) preparing a solution comprising peroxycarboxylic acid and organic solvent;
(ii) mixing an alkene and said solution comprising peroxycarboxylic acid and organic solvent;
(iii) reacting said peroxycarboxylic acid and said alkene to produce a product mixture;
(iv) distilling said product mixture such that unreacted alkene is separated therefrom in gaseous form;
(v) absorbing said gaseous alkene in said solution comprising peroxycarboxylic acid and organic solvent before step (ii); and
(vi) purifying the product mixture, after removal of the alkene, to produce the oxirane.

4,193,930
25-ALKYL-3β-HYDROXYCHOLEST-5-EN-7-ONES AND ESTERS THEREOF

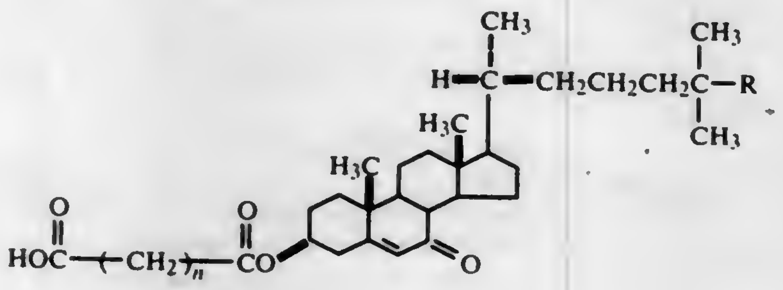
Robert J. Chorvat, Arlington Heights, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 828,385, Aug. 29, 1977. This application Jul. 28, 1978, Ser. No. 928,664

Int. Cl.² C07J *9/00*

U.S. Cl. 260—397.2 **2 Claims**

1. A compound having the formula



wherein n represents a positive integer less than 4 and R represents alkyl containing fewer than 5 carbons.

4,193,931
POLYENE COMPOUNDS

Peter Loeliger, Kaiseraugst, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

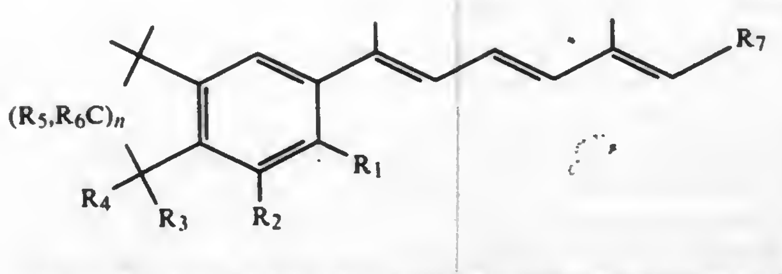
Filed Apr. 24, 1978, Ser. No. 899,427

Claims priority, application Luxembourg, May 4, 1977, 77254

Int. Cl.² C11C *3/02*

U.S. Cl. 424—308 **21 Claims**

1. A polyene compound of the formula:



I

wherein R_1 and R_2 each are hydrogen, halogen or lower alkoxy; R_3, R_4, R_5 and R_6 each are hydrogen or lower alkyl; R_7 is hydroxymethyl, lower alkoxymethyl, lower alkanoyloxymethyl, carboxyl, lower alkoxycarbonyl, mono(lower alkyl)-carbamoyl or di(lower alkyl)carbamoyl; and n is 1 or 2 or the alkali metal salts thereof.

4,193,932
PROCESS FOR PREPARING ORGANIC ISOCYANATES

Ryuichi Yamamoto, Enmeiji; Kousuke Yamamoto, Toritsuka; Teruyuki Nagata, Kamishirakawa, and Kenji Obata, Toritsuka, all of Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,266

Claims priority, application Japan, Nov. 11, 1977, 52-134692

Int. Cl.² C07C *118/02*

U.S. Cl. 260—453 PH **15 Claims**

1. In a process for preparing an organic isocyanate including reacting an organic amine with phosgene to yield a reaction product containing the corresponding organic isocyanate and subjecting said reaction product to purification, the improvement which comprises passing hydrogen chloride gas through said reaction product in the presence of an inert organic solvent whereby the gas included in said reaction product is removed and the acid substances and hydrolyzable chlorine-containing substances included therein are minimized.

4,193,933
N-(2-FLUORO-1,1,2,2-TETRACHLOROETHYLTHIO)-N-PHENYL METHANE SULFONAMIDES AND THEIR USE IN CONTROLLING PESTS

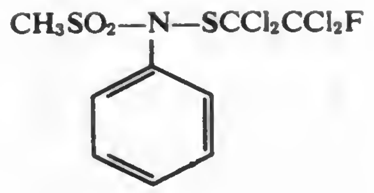
Peter F. Epstein, Overland Park, Kans., and Willis C. McGuire, Lafayette, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 517,721, Oct. 24, 1974, abandoned, which is a continuation of Ser. No. 393,537, Aug. 31, 1973, abandoned, which is a continuation of Ser. No. 198,029, Nov. 9, 1971, abandoned, which is a continuation of Ser. No. 69,957, Sep. 4, 1970, abandoned, which is a continuation of Ser. No. 672,969, Oct. 5, 1967, abandoned, which is a continuation-in-part of Ser. No. 512,781, Dec. 9, 1965, abandoned. This application Feb. 9, 1976, Ser. No. 657,019

Int. Cl.² C07C *119/00*

U.S. Cl. 260—453 RW **1 Claim**

1. The compound having the formula



in which R_1 is methyl, R_2 is hydrogen and n is 1.

4,193,934
NITRILES WITH ODORANT PROPERTIES

Kurt Bauer; Ulli Harder, and Wolfgang Sturm, all of Holzminden, Fed. Rep. of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Fed. Rep. of Germany

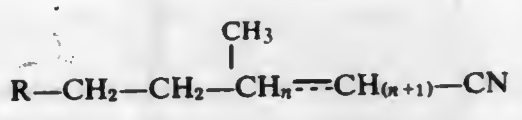
Continuation of Ser. No. 779,665, Mar. 21, 1977, abandoned, which is a continuation of Ser. No. 636,881, Dec. 2, 1975, abandoned, which is a continuation of Ser. No. 415,896, Nov. 14, 1973, abandoned. This application Oct. 12, 1978, Ser. No. 950,896

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1972, 2256483; Feb. 23, 1973, 2308735; Sep. 26, 1973, 2348359

Int. Cl.² C07C *121/68, 121/70, 121/46;* **C11B** *9/00*

U.S. Cl. 260—465 R **9 Claims**

1. Compound of the formula



$$R—CH_2—CH_2—\overset{\overset{CH_3}{|}}{C}H_n\text{- - -}CH_{(n+1)}—CN \qquad (I)$$

in which
n stands for 0 or 1 and, where n stands for 0, a double bond is present as indicated by the chain line and,
R represents phenyl which may optionally be substituted in the p-position by alkyl of 1–5 carbon atoms.

4,193,935
NOVEL OXIODINIUM AND THIAIODINIUM COMPOUNDS

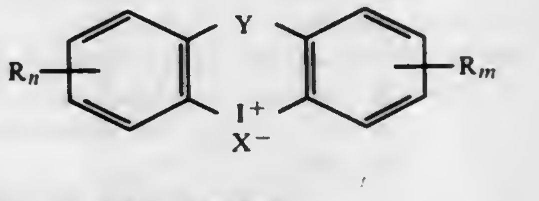
William N. Cannon, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 16,589, Mar. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 270,545, Apr. 4, 1963, abandoned, which is a continuation-in-part of Ser. No. 654,656, Jul. 19, 1967, Pat. No. 3,506,719. This application Mar. 2, 1973, Ser. No. 337,345

Int. Cl.² C07C *143/24, 149/00;* **A01N** *9/00, 9/24*

U.S. Cl. 260—505 R **4 Claims**

1. A compound represented by the following formula:



wherein Y is oxygen or sulfur;
R is lower alkyl, trifluoromethyl or halo;
n and m are numbers from 0 to 3; and
X^- is C_1-C_3 alkylsulfonate.

4,193,936

N-SUBSTITUTED PARAMENTHANE CARBOXAMIDES

Hugh R. Watson, Wargrave; David G. Rowsell, Staines, and David J. Spring, Datchet, all of England, assignors to Wilkinson Sword Limited, London, England

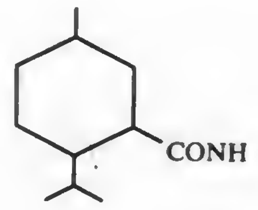
Division of Ser. No. 796,973, May 16, 1977, Pat. No. 4,150,052, which is a continuation of Ser. No. 486,566, Jul. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 221,755, Jan. 28, 1972, abandoned. This application Jan. 18, 1979, Ser. No. 4,319

Claims priority, application United Kingdom, Feb. 4, 1971, 3928/71; Feb. 4, 1971, 3934/71

Int. Cl.^{2} C07C *103/737;* **A61K** *31/16*

U.S. Cl. 260—557 R **5 Claims**

1. Substantially odorless, non-volatile physiologically active cooling compounds of the formula



where

R is C_1–C_9 alkyl, C_3–C_7 cycloalkyl or a substituted phenyl radical of up to 10 carbon atoms containing as substituents one or more groups selected from C_1–C_4 alkyl, hydroxy, C_1–C_4 alkoxy, nitro and halogen.

4,193,937

PROCESS FOR PREPARING 3-CHLORO- AND 3,5-DICHLORO-ANILINES

Karlfried Wedemeyer, Cologne; Wolfgang Kiel, Schildgen, and Werner Evertz, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

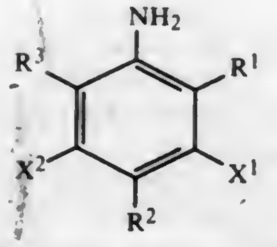
Continuation of Ser. No. 647,966, Jan. 9, 1976, abandoned. This application Sep. 15, 1978, Ser. No. 942,711

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1975, 2503145

Int. Cl.^{2} C07C *87/52, 87/60, 93/00, 93/08*

U.S. Cl. 260—570 R **24 Claims**

1. Process for preparing anilines meta-substituted by chlorine which comprises reacting chloroanilines having the formula



wherein

X^1 and X^2 are the same or different and represent chlorine, hydrogen or optionally substituted alkyl, aryl, aralkyl, alkoxy or aralkoxy, with one of the radicals X^1 or X^2 representing chlorine when 3-chloroanilines are being prepared and

X^1 and X^2 representing chlorine when 3,5-dichloroanilines are being prepared and

R^1, R^2 and R^3 are the same or different and represent chlorine, hydrogen or optionally substituted alkyl, aryl, aralkyl, alkoxy or aralkoxy, with at least one of the radicals R^1, R^2 or R^3 representing chlorine,

with hydrogen in solution in an acid medium in the presence of noble metals which are in the elementary form or in the form of compounds and are optionally applied to supports, and in the presence of sulfur or sulfur compounds at elevated temperatures and under pressure, said chloroaniline being introduced into a reaction vessel and the pH of the contents thereof being adjusted to less than 6.5 before addition of hydrogen.

4,193,938

EXTRACTION OF PHENYLENEDIAMINE FROM AQUEOUS ALKALINE SOLUTION

Preston S. White, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1978, Ser. No. 884,522

Int. Cl.^{2} C07C *85/26*

U.S. Cl. 260—582 **5 Claims**

1. In a process for the preparation of a solid phenylenediamine by reacting a dichlorobenzene with ammonia in the liquid phase in the presence of a copper catalyst, treating the reaction mixture with an alkali metal hydroxide to both recover the catalyst as insoluble copper hydroxide and to liberate free phenylenediamine, extracting phenylenediamine from the aqueous alkaline reaction mixture with an organic liquid and recovering solid phenylenediamine from the extracting liquid, the improvement consisting of extracting phenylenediamine from the aqueous alkaline reaction mixture by liquid-liquid extraction with a C_1 chlorinated solvent selected from the group consisting of methylene chloride, chloroform and carbon tetrachloride.

4,193,939

PROCESS FOR THE SYNTHESIS OF MIXED POLYIMINO DERIVATIVES OF ALUMINUM AND ALKALINE EARTH METALS

Giovanni Dozzi, Milan; Salvatore Cucinella, and Alessandro Mazzei, both of San Donato Milanese, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Division of Ser. No. 831,240, Sep. 7, 1977. This application Jan. 3, 1979, Ser. No. 678

Claims priority, application Italy, Oct. 28, 1976, 28776 A/76; Oct. 28, 1976, 28777 A/76

Int. Cl.^{2} C07C *83/00*

U.S. Cl. 260—583 R **3 Claims**

1. A process for preparing a magnesium amide consisting of reacting magnesium with a primary or secondary aliphatic amine in the presence of hydrogen having a pressure of about 130 kg/cm^2 or greater at ambient temperature, the reaction being carried out at a temperature greater than or equal to about 50° C.

4,193,940

14 β-HYDROXYANDROSTANES

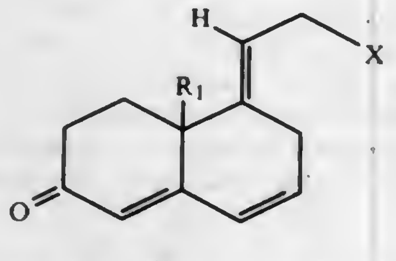
Zdenek Valenta, Fredericton, Canada, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 811,393, Jun. 29, 1977, Pat. No. 4,134,920. This application Oct. 12, 1978, Ser. No. 950,930

Int. Cl.^{2} C07C *49/48;* **C07J** *1/00*

U.S. Cl. 260—586 F **2 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl and X is bromo or chloro and the optical antipodes and geometrical isomers thereof.

4,193,941

1,1,1-TRIHALO-2-HYDROXY-4-(2-HYDROXYPHENYL)-4-BUTANONES

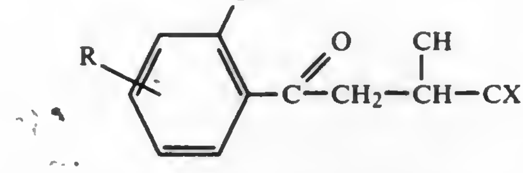
Sidney H. Levinson, Philadelphia, and Wilford L. Mendelson, King of Prussia, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 843,371, Oct. 19, 1977, Pat. No. 4,152,517. This application Oct. 5, 1978, Ser. No. 948,731

Int. Cl.^{2} C07C *49/82*

U.S. Cl. 260—592 **3 Claims**

1. The compound of the formula:



in which X is Cl or Br and R is hydrogen, methyl, ethyl, methoxy, ethoxy, methylthio, ethylthio, halo or trifluromethyl.

4,193,942

PROCESS FOR CATALYTIC CONVERSION OF OLEFINICALLY UNSATURATED COMPOUNDS WITH HYDROGEN AND/OR CARBON MONOXIDE

Leendert A. Gerritsen, Delft, and Joseph J. F. Scholten, Geleen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jan. 18, 1978, Ser. No. 870,582

Claims priority, application Netherlands, Jan. 20, 1977, 7700554; Nov. 17, 1977, 7712648

Int. Cl.^{2} C07C *45/08*

U.S. Cl. 260—604 HF **7 Claims**

1. In a process for the hydroformylation of the olefinically unsaturated organic compound containing 2 to 20 carbon atoms to produce the corresponding aldehyde having an additional carbon atom by reaction of said compound with hydrogen and carbon monoxide at a temperature of between 20° C. and 300° C. and at a pressure of between 1 and 100 bar in the presence of a catalyst consisting of a solid, porous carrier in the pores of which a catalytically active metallo-organic complex, containing as the central metal atom at least one metal selected from the group consisting of rhodium, cobalt, ruthenium and iridium, dissolved in a solvent of low volatility under the reaction conditions, is present,

the improvement comprising using a catalyst wherein said catalytically active metallo-organic complex is present in the pores of the carrier in the form of a solution in at least one ligand-forming electron-donating phosphorous compound with a vapor pressure of less than 15 mbar under the reaction conditions, having the formula $PR^1R^2R^3$ or $P(OR^1)(OR^2)(OR^3)$ in which R^1, R^2 and R^3, independent of each other, or together, represent a C1 to C20 hydrocarbon group, the concentration of the complex being between 0.1 to 0.00001 moles of complex per liter of solvent.

4,193,943

HYDROFORMYLATION CATALYSTS

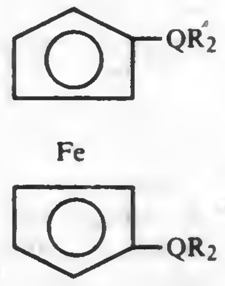
Jerry D. Unruh, and William J. Wells, III, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 650,405, Jan. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 569,738, Apr. 21, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 898,734

Int. Cl.^{2} C07C *45/08*

U.S. Cl. 260—604 HF **50 Claims**

1. In the hydroformylation of an olefin having up to about 25 carbon atoms with hydrogen and carbon monoxide in a liquid-phase reaction zone to produce an aldehyde derivative of said olefin, said hydroformylation being conducted at a temperature from about 50° C. to about 200° C., under a combined partial pressure of hydrogen and carbon monoxide of from about one atmosphere to about 1000 pounds per square inch, and with the ratio of hydrogen partial pressure to that of carbon monoxide being from about 10:1 to 1:10, the improvement which comprises catalyzing said hydroformylation with rhodium hydrido carbonyl in complex combination with a ferrocene derivative of the structure



wherein Q is P, As, or Sb and R is phenyl or lower alkyl.

4,193,944

PURGING OF INERTS IN CHLORINATED HYDROCARBON PRODUCTION

Utah Tsao, Jersey City, and Angel Sy, Cedar Park, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jun. 15, 1978, Ser. No. 915,896

Int. Cl.^{2} C07C *17/00*

U.S. Cl. 260—659 R **10 Claims**

1. In a process for producing chlorinated hydrocarbons, the improvement comprising:

(a) recovering from a chlorinated hydrocarbon production zone an effluent containing chlorinated hydrocarbon, unreacted alkane, and inerts, said chlorinated hydrocarbons including waste chlorinated hydrocarbon byproduct;

(b) introducing the effluent into a separation and recovery zone;

(c) recovering in the separation and recovery zone a purge gas containing a portion of the inerts, a portion of the unreacted alkane and a portion of the chlorinated hydrocarbons;

(d) contacting the purge gas with a first absorption oil recovered from the effluent to absorb chlorinated hydrocarbon, said first absorption oil being at least one chlorinated hydrocarbon boiling at a temperature of at least 140° F.;

(e) introducing first absorption oil, containing absorbed components into at least one of the chlorinated hydrocarbon production zone and the separation and recovery zone;

(f) contacting purge gas from step (d) with a second absorption oil which is higher boiling than the first absorption oil, said second absorption oil being a first portion of said waste chlorinated hydrocarbon byproduct;

(g) introducing second absorption oil containing absorbed components into the separation and recovery zone to recover second absorption oil and absorbed components;

(h) introducing purge gas from step (f), oxygen and a second portion of the waste chlorinated hydrocarbon byproduct into a combustion zone to effect combustion of waste chlorinated hydrocarbon byproduct and utilize alkane present in the purge gas as fuel to thereby produce a gas containing gaseous chlorine values selected from the group consisting of chlorine, hydrogen chloride and mixtures thereof, as well as inerts; and

(i) recovering the chlorine values and purging the inerts.

4,193,945

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Guido Bertelli; Pierpaolo Roma, and Renato Locatelli, all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed May 25, 1977, Ser. No. 800,569

Claims priority, application Italy, May 28, 1976, 23748 A/76

Int. Cl.^{2} C08K *3/32, 5/34;* **C08L** *23/16, 77/00*

U.S. Cl. 525—2 **18 Claims**

1. Self-extinguishing polymeric compositions comprising a polymer selected from the group consisting of polypropylene, polyethylene, polystyrene, acrylonitrile-butadiene-styrene resins and blends of polypropylene and EPDM rubber, and a combination of

(1) from 5 to 30 parts by weight, based on 100 parts of the total composition, of an ammonium phosphate or ammonium polyphosphate; and

(2) from 3 to 20 parts by weight, based o 100 parts of the total composition, of one or more nitrogen containing compounds selected from the group consisting of (a) those containing $>C{=}O$ and/or $>C{=}S$ and $>NH$ inserted in a cyclic structure; (b) polyamides, and (c) water insoluble reaction products of compound (a) with an aliphatic aldehyde.

4,193,946

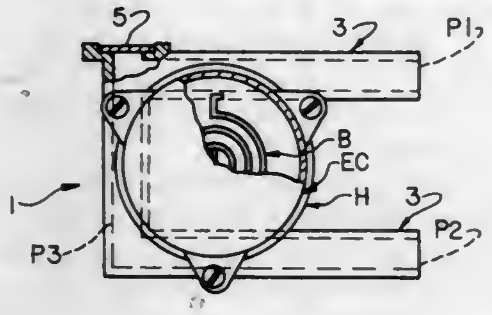
MEANS FOR INCREASING CHOKE VALVE OPENING RATE

S. Owen Dye, Highland, Ill., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,257

Int. Cl.^{2} F02M *1/10*

U.S. Cl. 261—39 B **2 Claims**



1. In a carburetor for an internal combustion engine, the carburetor having an unbalanced choke valve positioned at the inlet end of an air induction passage, a shaft on which the choke valve is mounted, a bi-metal coil to which the shaft is connected, the coil being responsive to engine temperature to exert a closing force on the choke valve which lessens as engine temperature increases whereby the choke valve gradually opens, a closed housing in which the coil is mounted, the housing being mounted to the body of the carburetor, and means for heating the bi-metal coil when the engine is running thereby to open the choke valve, the improvement comprising means for decreasing the rate at which the choke valve closes after the engine is shut off, the means including means defining first and second spaced apart horizontal passages respectively extending through the housing at the upper and lower ends thereof, the passages being substantially parallel to each other, a third passage extending vertically through the housing and communicating at each end with one end of the respective first and second passage and means connecting the other end of the first and second passages to a water circulating passage in the engine whereby water circulating through the engine flows through the first, second, and third passages and some of the water heat is transmitted to the housing and the bi-metal coil so the coil cools at a slower rate than that at which it otherwise cools, the three passages being inward of the bi-metal coil when the housing is mounted on the carburetor body, the water connecting means connecting to the outer end of both the first and second passages and the third passage connecting at each end with a respective inner end of the first and second passages.

4,193,947

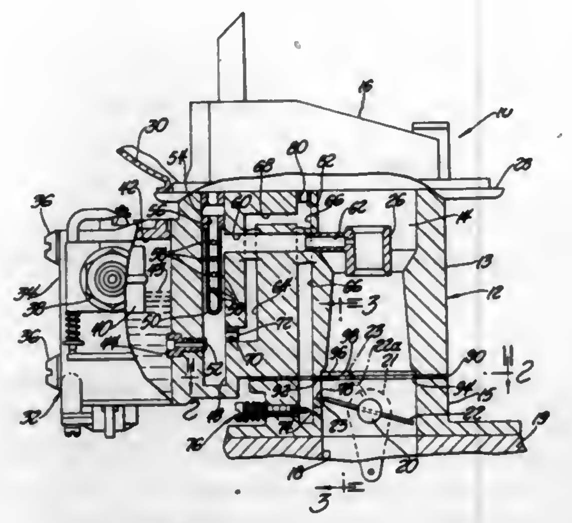
CARBURETING DISCHARGE MEANS

Ralph Bugamelli, Sterling Heights, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Mar. 20, 1978, Ser. No. 888,504

Int. Cl.^{2} F02M *3/08*

U.S. Cl. 261—41 D **1 Claim**



1. A carburetor, comprising body means, said body means comprising a main body section and a throttle body section operatively connected to each other, a generally cylindrical air induction passage means formed through said main body section and said throttle body section, an annular venturi restriction in that portion of said passage means, formed in said main body section, a main fuel nozzle for discharging main fuel into said passage at said venturi, an idle fuel discharge port in said throttle body section as to communicate with said passage means downstream from said nozzle for discharging idle fuel into said passage means, a butterfly throttle valve pivotally mounted in said passage means as to be carried by said throttle body section and situated between said venturi and said discharge port, a transfer fuel port formed in and carried by said throttle body section at one side of said passage means for discharging transfer fuel into said passage, said transfer port being disposed downstream of said venturi and adjacent said throttle valve so as to be traversed by an edge of said throttle valve upon opening movement thereof, gasket means having upper and lower planar surfaces situated and retained between said main body section and said throttle body section as to have said upper planar surface juxtaposed to said main body section and said lower planar surface juxtaposed to said throttle body section, said gasket means having an aperture formed therethrough as to have the periphery of said aperture for the major portion thereof closely conform to the axially transverse cross-sectional configuration of said passage means immediately upstream and downstream of said gasket means, said gasket means further comprising an air turbulence generating planar portion projecting radially inwardly of said passage means and terminating in a projecting edge which edge extends to and from said periphery of said aperture, said upper planar surface extending to and terminating in said projecting edge, said lower planar surface extending to and terminating in said projecting edge, said turbulence generating planar portion being situated immediately upstream of said transfer port as to thereby result in having the air flowing in said passage means immediately upstream of said turbulence generating portion impinge upon said extending upper planar surface thereof and by resulting turbulence be deflected generally radially inwardly of said passage means as to continue its flow through said passage means only after passing around said projecting edge.

4,193,948

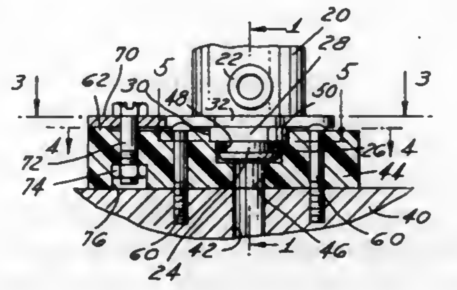
MOUNTING STRUCTURE FOR PLASTIC CARBURETORS

Richard P. Charmley, Caro, and William A. Scott, Cass City, both of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Dec. 26, 1978, Ser. No. 972,777

Int. Cl.^{2} F02M *19/00*

U.S. Cl. 261—65 **6 Claims**



1. A carburetor retention device for plastic carburetors to eliminate body distortion which comprises:

(a) a carburetor body having spaced recesses formed therein adjacent a surface to be mounted to an engine,

(b) a forked elongate clamp having legs to seat in and straddle said recesses and having a portion spaced from said legs adapted to be fastened adjacent an engine to retain said carburetor through the pressure of said legs on said body, and

(c) an acircular projection on said body to be received in a complemental recess to stabilize the carburetor body against turning.

4,193,949

APPARATUS FOR GENERATING FINELY DIVIDED PARTICULATE BUBBLES

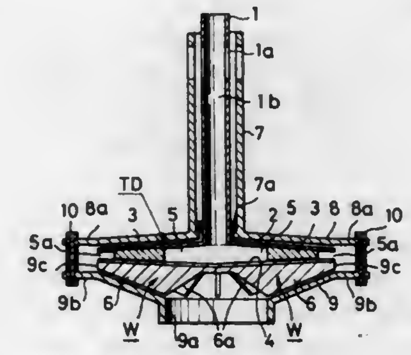
Makoto Naito, 15-22, Kami-Soshigaya 2-chome, Setagaya-ku, Tokyo, Japan

Filed Jun. 13, 1978, Ser. No. 915,140

Claims priority, application Japan, Jun. 23, 1977, 52-81742[U]; Jun. 23, 1977, 52-81743[U]

Int. Cl.^{2} B01F *3/04*

U.S. Cl. 261—87 **4 Claims**



1. An apparatus for generating finely divided particulate bubbles comprising:

an outer body including a hollow shaft and a cavity defining means carried thereby, said shaft being apertured for fluid communications with a gas and said cavity being apertured adjacent the axis of said hollow shaft for fluid communication with a liquid, and being apertured for expulsion of an admixture of gas and liquid at a point radially outwardly of the axis of said hollow shaft, the interior of said shaft and said cavity being in fluid communication with each other;

an inner body including a shaft and a plurality of vanes, said inner body being carried by said outer body with the shaft of said inner body journaled for rotation within the hollow shaft of said outer body, the vanes of said inner body disposed within the cavity of said outer body, said plurality of vanes comprising:

a generally horizontal disc carried by said inner body and,

a plurality of paddles extending downwardly along equally spaced radials of said lower disc,

the spacing between the lower edge of said paddles and the lower internal surface of said cavity defining means being substantially constant,

said paddles having a wider vertical dimension from a radially intermediate point than at either radial end, and said radially intermediate point being adjacent the radially outer circumference of the aperture in said cavity defining means.

4,193,950

APPARATUS FOR INTRODUCING GAS INTO A LIQUID

Josef Stockner, Baierbrunn, and Alfred Wildmoser, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

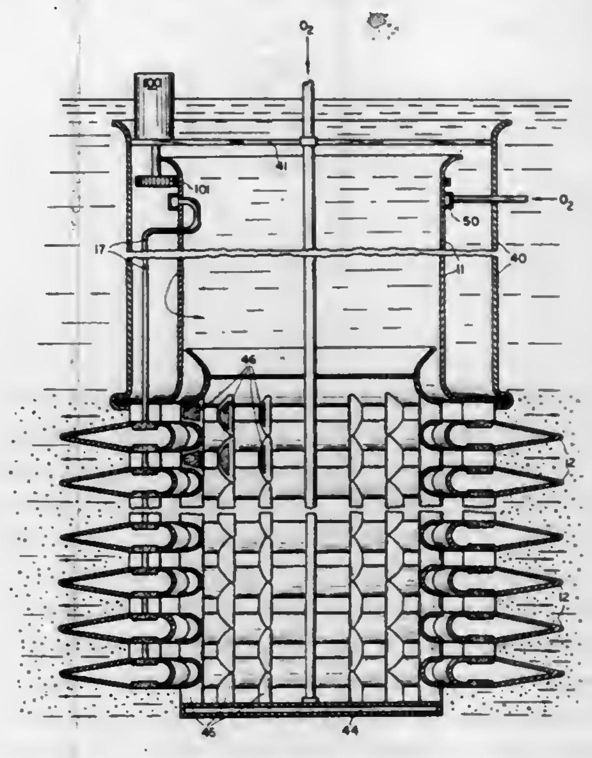
Continuation-in-part of Ser. No. 702,052, Jul. 2, 1976, Pat. No. 4,117,048. This application Apr. 12, 1978, Ser. No. 895,641

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1975, 2530050

The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.^{2} C02B *1/34, 3/08;* **C02C** *5/04*

U.S. Cl. 261—87 **4 Claims**



1. A device for dispersing gas in a liquid in the aeration of swage in a clarifier tank, comprising:

a plurality of aerodynamically spaced ribs defining between them venturi passages;

means for inducing a flow of liquid through said passages, said passages progressively converging from an upstream side to a constricted portion, thereafter diverging to a downstream side of the respective passage;

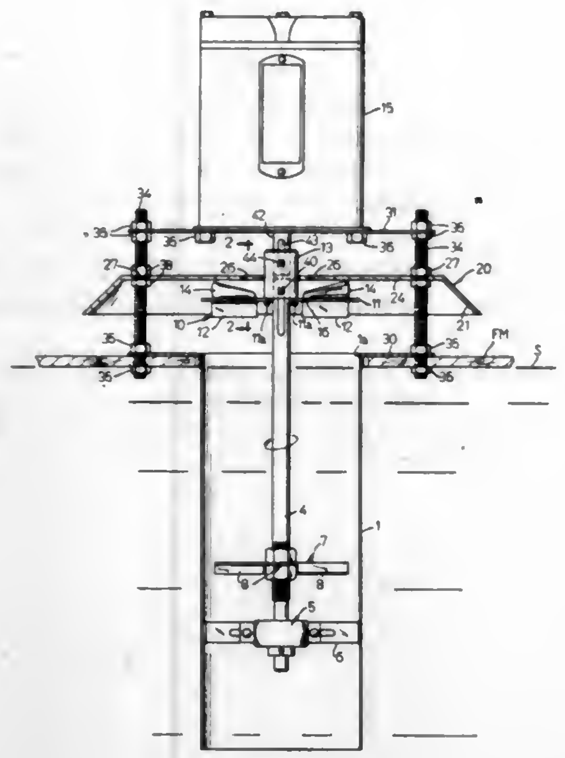
gas permeable means along at least one surface of each of said ribs bounding a respective one of said passages in the region of the respective constriction for feeding gas to the liquid in a direction substantially perpendicular to the direction of liquid flow through the respective passage;

a vertical duct open at its upper end and formed at its lower end with said ribs, said ribs being axially spaced horizontal rings, said means for inducing liquid flow through said passages including an axial intake, radial outflow pump having a rotor coaxial with said rings for dispacing liquid between them, said rotor being formed with aerodynamically shaped members which function as radial vanes; and

means for holding said vanes stationary while rotating said ribs.

4,193,951
WATER AERATING DEVICE

Carl F. Stanley, Rte. 1, Box 123B, Zimmermann, Minn. 55398
Continuation of Ser. No. 824,259, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 668,326, Mar. 18, 1976, abandoned. This application Aug. 21, 1978, Ser. No. 935,605
Int. Cl.^{2} C02C *5/04*
U.S. Cl. 261—91 **4 Claims**



1. A water aerating device for bodies of water, such as lakes, ponds or the like, said device comprising floatation means located on the surface of the water and having an upper surface of predetermined diameter, a water inlet member for extending downwardly into the water to be aerated, and supported on said floatation means, said water inlet member having a water discharge opening which is bounded by said upper surface of said floatation means, a rotatable shaft mounted in said water inlet member and having a water pump impeller secured thereto, said impeller acting to pump water upwardly through said water inlet member and discharging it upwardly through said discharge opening, a rotatable water and air beater secured to said shaft and located above said discharge opening, said beater having air scoop means on its upper side and water paddles on its lower side and against which water is discharged from said opening by said impeller, a baffle of a diameter less than said predetermined diameter located above said beater and including a downwardly and inwardly facing annular flange which is located above said upper surface of said floatation means and extends downwardly around said beater to enclose the periphery of said beater, said baffle having at least one air inlet opening therethrough located above said beater and inwardly of said annular flange, said beater laterally directing a mixture of air and water forceably against said downwardly and inwardly facing flange for downward direction by said flange against said upper surface of said floatation means, a power source connected to said shaft and above said baffle, and means for rigidly securing said baffle, said power source, and said water intake member on said floatation means, whereby air and the water being discharged from the water inlet member are thoroughly mixed, directed against said baffle, then directed downwardly against said upper surface of said floatation means and from thence to the body of water.

4,193,952
EXTRUSION OF SOLID PROPELLANT INCLUDING AMMONIUM PERCHLORATE WHISKERS

Arnold Adicoff; William G. Finnegan; William R. McBride, all of China Lake, and William M. Ayres, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 4, 1972, Ser. No. 250,407
Int. Cl.^{2} C06B *21/00, 45/10*
U.S. Cl. 264—3 B **4 Claims**

1. A method for preparing an improved propellant formulation comprises:

(1) introducing a viscous binder selected from the group consisting of linear carboxylated polybutadiene, polyurethane, polyvinylchloride and polybutadiene-acrylic acid copolymer into a mixing pot;
(2) adding while slowly agitating the pot ammonium perchlorate whiskers ranging in size from micron to below micron in diameter and having a length to diameter ratio of between 10:1 and 100:1 to form a mixture;
(3) casting said mixture;
(4) partially curing said mixture for a predetermined length of time at room temperature thereby increasing the viscosity thereof;
(5) extruding said viscous mixture into strands; and
(6) curing said strands in an oven at a predetermined temperature and for a predetermined length of time dependent upon the binder used.

4,193,953
HYDROSOL DROPLET CASTING PROCESS FOR PRODUCTION OF NUCLEAR FUEL AND BREEDER MATERIAL GRANULES

Hans Langen, Jülich; Helmut Ringel, Niederzier-Hambach, and Erich Zimmer, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany
Filed Jul. 19, 1978, Ser. No. 925,978
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733384
Int. Cl.^{2} G21C *21/00*
U.S. Cl. 264—0.5 **3 Claims**

1. A method of producing breeder or fuel and breeder kernels for fuel elements of nuclear reactors comprising the steps of:

making a hydrosol containing a dispersed particle phase selected from the group consisting of thorium oxide and mixtures thorium oxide and uranium (VI) oxide which mixtures have a hexavalent uranium content not exceeding 25% by weight of the aggregate amount of heavy metal, and hydrosol having a heavy metal concentration between 1.5 and 3 moles per liter, and

injecting said hydrosol substantially horizontal in the form of drops into a gas phase enriched with ammonia gas overlying an ammonium hydroxide containing precipitation bath held at a pH value between 8 and 9, so that said drops fall by gravity through said gas phase while being affected by the ammonia content thereof and are immersed in said precipitation bath and hardened therein.

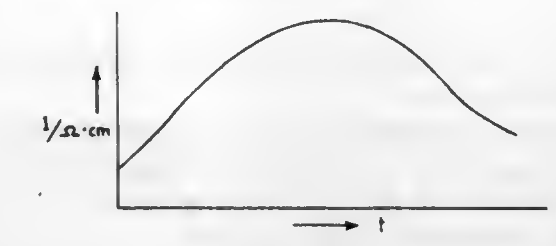
4,193,954
BETA ALUMINA MANUFACTURE

Barry K. Speronello, Saddle Brook, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.
Filed Mar. 27, 1978, Ser. No. 890,797
Int. Cl.^{2} C04B *35/10*
U.S. Cl. 264—13 **17 Claims**

1. A process for preparing a beta alumina article useful as a solid electrolyte which comprises (a) forming an aqueous substantially homogeneous slurry containing at least 40% solids on a weight basis and comprising powdered anhydrous alumina, sodium nitrate and sodium carbonate in predetermined relative proportions selected to produce in step (c) pressed green bodies having maximum green density, and, optionally, a source of cations selected from the group consisting of magnesium, lithium and mixtures thereof, (b) drying said slurry sufficiently rapidly to precipitate said soluble components and form a uniform particulate mixture thereof with said powdered alumina, (c) compacting said particulate mixture under pressure without having previously calcined it to produce a green shaped article having a green density in the range of about 1.92 to 2.44 g./cc., (d) heat treating said article to decompose and react the constituents of said particulate mixture to form beta alumina and sintering the article to produce dense beta alumina.

4,193,955
METHOD OF PRODUCING AN ELECTRICALLY CONDUCTIVE PLASTICS MATERIAL

Ludwig Prölss, Bellach, Switzerland, assignor to Kilcher-Chemie AG, Recherswil, Switzerland
Filed Nov. 14, 1977, Ser. No. 851,177
Claims priority, application Switzerland, Dec. 3, 1976, 15245/76
Int. Cl.^{2} B29B *31/80*
U.S. Cl. 264—23 **8 Claims**



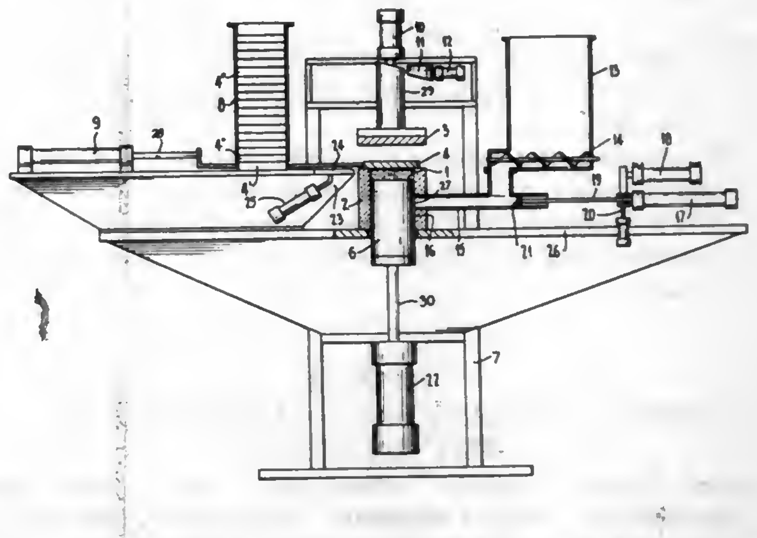
1. A method of producing an electrically conductive plastic material, the conductive pigment in said material being selected from lamp black, graphite and a mixture of lamp black and graphite, comprising the steps of dispersing the conductive pigment in a hydrocarbon solvent, subjecting the pigment-hydrocarbon dispersion to a vibrational force with a frequency corresponding approximately to the frequency of resonance of the pigment-structure to cause swelling of the conductive pigment until the maximum of the volume is reached, and, at the time of maximum swelling, adding a bonding agent having an interfacial tension substantially equal to that of the solvent.

4,193,956
PROCESS FOR CURING THERMOSETTING RESINS AND ELASTOMERS

John Z. Kalnins, Seaford, Australia, assignor to McPheasons Limited, Melbourne, Australia
Continuation-in-part of Ser. No. 720,418, Sep. 3, 1978, abandoned. This application Jul. 19, 1978, Ser. No. 926,036
Claims priority, application Australia, Sep. 5, 1975, PC3052/75
Int. Cl.^{2} B29G *7/00*
U.S. Cl. 264—27 **21 Claims**

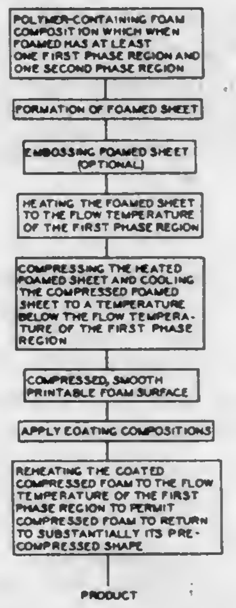
1. A method of shaping and curing a friction or anti-friction material for use in brakes, clutches, bearings and the like comprising the steps of:

(a) introducing a mixture of a substantially non-electrically conducting heat bondable friction or anti-friction material composite with at least one divided electrically conductive material uniformly dispersed throughout the mixture into an insulated mold having a predetermined shape;
(b) closing the mold to confine said mixture;
(c) locating at least two electrodes on opposed sides of the mixture and electrically connected with the mixture;
(d) applying an electrical potential to said electrodes to pass an electric current substantially throughout said mixture to thereby effect resistance heating, shaping and curing of the mixture within the mold; and
(e) monitoring the energy input to said mixture to control the total energy input to a predetermined value required for effecting shaping and curing of the mixture within the mold independently of electrical resistance variations of said mixture.



4,193,957
PROCESS FOR FORMING A SURFACE COVERING HAVING DECORATIVE EFFECTS

William J. Kauffman, Lancaster, and George L. Lilley, Manheim, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Continuation-in-part of Ser. No. 820,864, Aug. 1, 1977, abandoned. This application May 10, 1978, Ser. No. 904,611
Int. Cl.^{2} B29D *27/04*
U.S. Cl. 264—46.4 **6 Claims**



POLYMER-CONTAINING FOAM COMPOSITION WHICH WHEN FOAMED HAS AT LEAST ONE FIRST PHASE REGION AND ONE SECOND PHASE REGION
FORMATION OF FOAMED SHEET
EMBOSSING FOAMED SHEET (OPTIONAL)
HEATING THE FOAMED SHEET TO THE FLOW TEMPERATURE OF THE FIRST PHASE REGION
COMPRESSING THE HEATED FOAMED SHEET AND COOLING THE COMPRESSED FOAMED SHEET TO A TEMPERATURE BELOW THE FLOW TEMPERATURE OF THE FIRST PHASE REGION
COMPRESSED, SMOOTH PRINTABLE FOAM SURFACE
APPLY COATING COMPOSITIONS
REHEATING THE COATED COMPRESSED FOAM TO THE FLOW TEMPERATURE OF THE FIRST PHASE REGION TO PERMIT COMPRESSED FOAM TO RETURN TO SUBSTANTIALLY ITS PRE-COMPRESSED SHAPE
PRODUCT

1. A process of forming a surface covering having decorative effects which process comprises:

(a) depositing a mechanically frothed foam or forming a chemically blown foam on a backing, said foam comprising at least one polymer or a blend of polymers, said polymer or blend of polymers having at least a first phase region and a second phase region, both phase regions existing at least in the surface region of said foam,
  (1) flow occurring in said first phase region at a temperature above room temperature and said first phase region serving to hold the compressed shape of the foam in compression step (d) below.
  (2) said second phase region remaining elastomeric at the temperature at which said first phase region flows;
(b) curing or fusing the foam on the backing;
(c) compressing the resulting cured or fused foam, at a temperature sufficient to cause flow to occur in said first phase region, in order to form a smooth, printable foam surface and cooling the foam in the compressed shape to a

temperature below the temperature at which flow occurs in said first phase region;

(d) removing the compressing force whereby the first phase region serves to hold the compression, thus providing a smooth, printable foam surface;

(e) applying at least one coating composition to at least a portion of the compressed, smooth, printable foam surface; and,

(f) reheating the resulting coated, compressed foam to a temperature at least equal to the temperature at which flow occurs in said first phase region to permit the compressed foam to return to substantially its precompressed shape.

4,193,958

PROCESS FOR PREPARING CALCIUM SILICATE SHAPED PRODUCT

Mitsuo Uchida, Machida; Yasuo Oguri, Tokyo; Junji Saito, Machida, and Tsukasa Kawahara, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Nov. 7, 1977, Ser. No. 849,468

Claims priority, application Japan, Nov. 18, 1976, 51/138721; Nov. 22, 1976, 51/140439; Dec. 14, 1976, 51/150066; May 31, 1977, 52/63621

Int. Cl.² B28B *1/26*

U.S. Cl. 264—86 **11 Claims**

1. A process for preparing a calcium silicate shaped product, of bulk density lower than 0.13 g/cm^3 and bending strength of 4.3-8 kg/cm^2 which comprises:

forming an aqueous slurry of calcium silicate hydrate of tobermorite group compounds having a wet volume of more than 15 cm^3/g by heating at a temperature higher than 130° C. a siliceous source and a calcareous source dispersed in water to react them;

shaping the aqueous slurry with a press filter molding;

curing said filtered slurry by a steam curing under pressure while transforming said calcium silicate hydrate from semi-crystalline or near-amorphous tobermorite to crystalline tobermorite or xonotlite; or from crystalline tobermorite to xonotlite; wherein said wet volume is given by the equation:

$$\text{wet volume} = \frac{V}{W}$$

wherein W represents the total weight of the calcareous source and the siliceous source, and V represents the volume of solid components after a 24 hour sedimentation of said aqueous slurry.

4,193,959

PRESSURE FORMING METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 813,804, Mar. 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 501,174, Oct. 22, 1965, abandoned, which is a continuation-in-part of Ser. No. 393,292, Aug. 31, 1964, abandoned, which is a continuation-in-part of Ser. No. 559,232, Jan. 16, 1956, Pat. No. 3,401,418. This application Aug. 10, 1971, Ser. No. 170,625

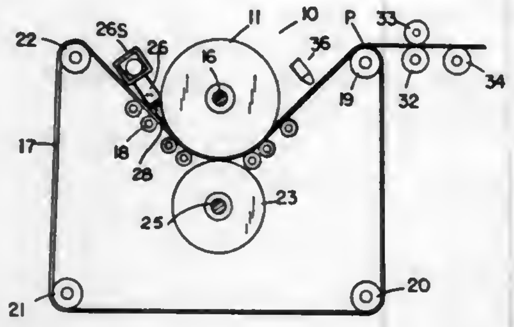
Int. Cl.² B29D *7/02*

U.S. Cl. 264—166 **6 Claims**

1. A method of forming sheet material comprising:

providing an elongated bucking sheet having a central portion and longitudinal border portions and feeding said bucking sheet against a cylindrical roll having a central portion of reduced diameter disposed a distance away from the central portion of said bucking sheet and having cylindrical end portions of greater diameter than said roll central portion with said cylindrical end portions compressively engaging the respective longitudinal border portions of said bucking sheet and sealingly engaged to said bucking sheet, rotating said cylindrical roll while feeding and maintaining said bucking sheet against the cylindrical end portions of the roll as the roll rotates and maintaining the border portions of said bucking sheet sealed to and in surface engagement with said end portions of said cylindrical roll so as to define an arcuate clearance volume between the central portion of the surface of said bucking sheet and the surface of the central portion of said cylindrical roll,

feeding a thermoplastic material into the arcuate clearance volume defined by said bucking sheet and the central portion of said cylindrical roll and providing said thermoplastic material in said clearance volume under pressure and in a thermally deformable condition, and maintaining sealing engagement between said bucking sheet against the end portion of said cylindrical roll to prevent the outflow of said thermoplastic material therefrom while under said pressure,



causing said thermoplastic material to be molded against and to conform to the shape defined by the central portion of said cylindrical roll and said bucking sheet while in said thermally deformable condition, and

conveying said thermoplastic material partly around said cylindrical roll in the arcuate path defined by said arcuate clearance volume while reducing the temperature of said thermoplastic material as it is conveyed around said roll to cause it to set to substantially the shape defined by the central portion of said roll and said bucking sheet, and

removing said bucking sheet and the material solidified thereagainst from said clearance volume.

4,193,960

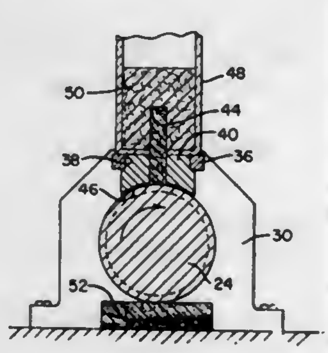
METHOD OF FORMING A BEARING CONTACTOR

Martin L. Abel, Franklin, Mich., assignor to Permawick Company, Inc., Detroit, Mich.

Division of Ser. No. 618,337, Oct. 1, 1975. This application Dec. 2, 1977, Ser. No. 857,037

Int. Cl.² D04H *1/64*

U.S. Cl. 264—128 **2 Claims**



1. A method for forming a contactor adapted to transmit oil to a bearing surface from a reservoir of oil-impregnated wicking material having interstices therein, comprising:

(a) filling a mold cavity of a predetermined size and shape with a charge of a fibrous material;

(b) compressing the fibrous material in said mold cavity to a density wherein the fibrous material has therein a network of interconnected pores of a size smaller than the interstices in the wicking material;

(c) relieving the compressing force, while the compressed fibrous material retains said network of interconnected pores smaller than the interstices in the wicking material;

(d) saturating the prior compressed fibrous material with an alcohol-nylon solution;

(e) allowing the alcohol to evaporate whereby many of the individual fibers absorb the nylon and become coated with the nylon, thereby forming a contactor consisting of a dry mass of bonded fibers containing a network of interconnected pores of a size smaller than the interstices in the wicking material; and,

(f) removing the contactor from the mold.

4,193,961

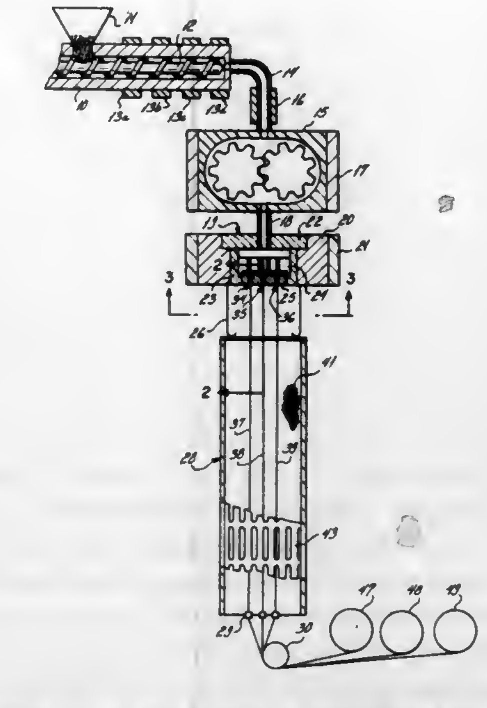
METHOD OF EXTRUDING POLYPROPYLENE YARN

John S. Roberts, Ellicott, Md., assignor to Kling-Tecs, Inc., Mantoloking, N.J.

Filed Apr. 4, 1978, Ser. No. 893,371

Int. Cl.² D01D *5/22*

U.S. Cl. 264—176 F **13 Claims**



1. A method of producing a multifilament polypropylene yarn comprising heating polypropylene having a narrow molecular weight distribution with a swell value of less than 3 to a temperature at which it is molten, extruding the molten polypropylene at a temperature less than 425° F. into a plurality of filaments, passing the filaments through a first zone having a temperature sufficiently high to retard cooling of the filaments therein, drawing down the filaments to their undrawn denier in said first zone, then passing the filaments through a second zone, and directing cooling gas over the filaments in said second zone to cool them, the combination of the swell value of the polypropylene, the temperature of extrusion, and the temperature of said first zone interacting to substantially eliminate the occurance of resonance in the filaments as they are drawn down in said first zone.

4,193,962

MELT SPINNING PROCESS

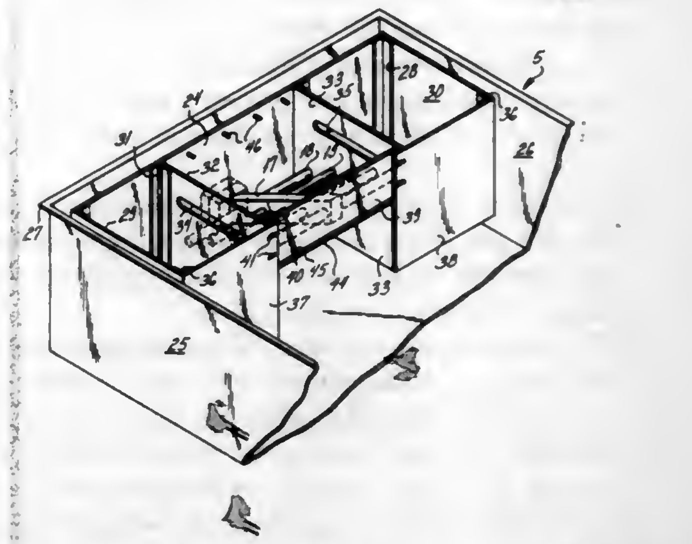
John S. Roberts, Ellicott City, Md., assignor to Kling-Tecs, Inc., Mantoloking, N.J.

Filed Aug. 11, 1978, Ser. No. 932,832

Int. Cl.² D01D *5/08*

U.S. Cl. 264—178 F **6 Claims**

1. A method of producing a multifilament yarn from thermoplastic material by liquid quench melt spinning in which the filaments are extruded in molten state downwards into a quench bath containing quench liquid in which they are quenched and solidified, and in which the solidified filaments pass around guide means before being withdrawn upwardly out of said quench bath, whereby the molten filaments first enter a partitioned portion of the quench bath, the quench liquid in said partitioned portion being separated from the quench liquid in the remainder of the quench bath and only being in communication therewith through inlet means and outlet means, quench liquid entering said partitioned portion from the remainder of the quench bath through said inlet means, quench liquid exiting from said partitioned portion together with said solidified filaments through said outlet means into the remainder of the quench bath, said filaments passing around said guide means before so exiting, the movement of the filaments through said partitioned portion generating a pumping action of the quench liquid therethrough, and said pumping action being caused to be inefficient by the area of said inlet means being greater than the area of said outlet means with a substantial reduction of vortexing where the filaments first enter the quench liquid.



4,193,963

APPARATUS FOR THE DETERMINATION OF CHEMICAL COMPOUNDS BY CHEMILUMINESCENCE WITH OZONE

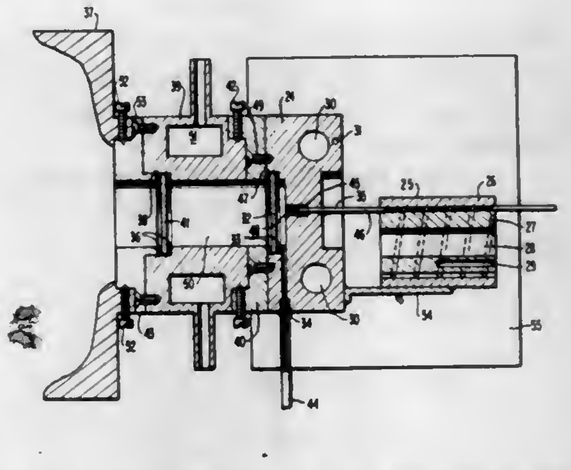
Wilhelm Bruening; Inäi M. R. de Andrade Bruening, and Francisco J. Martinez Concha, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A.-Petrobras, Rio de Janeiro, Brazil

Continuation-in-part of Ser. No. 614,981, Sep. 19, 1975, abandoned. This application Jun. 6, 1977, Ser. No. 803,916

Claims priority, application Brazil, Sep. 20, 1974, 007833

Int. Cl.² G01N *21/24, 33/00*

U.S. Cl. 422—52 **4 Claims**



1. An apparatus for the qualitative and quantitative measurement of specific hydrocarbons contained in a mixture and capable of reacting with ozone to emit chemiluminescence, said apparatus comprising:

(a) a reaction chamber essentially comprising a cavity formed in an otherwise smooth phase of a metallic block, said cavity being closed by means of a quartz window fitted to said smooth phase to said metallic block, said block being formed with three orifices connecting the outside with the inside of the reaction chamber, one of said orifices being adapted for the admission to the inside of said chamber of the gaseous flow to be analyzed, another of said orifices being adapted to transmit the admission of ozone to the inside of said chamber and the third orifice being adapted for the discharge of the gases formed after the reaction with ozone;

(b) heating resistors inserted in said metallic block for maintaining said reaction chamber at a temperature selected between 20° and 250° C.;

(c) a gaseous mixture inlet tube fitted to said respective orifice in the metallic block, said tube being heated in a region before its point of fixture to the metallic block, said heating arrangement comprising a part of said tube being helically wound around an element heated by electrical resistors;

(d) a reaction gas outlet tube connected at one end to said reaction gas outlet orifice of the reaction chamber, and at the other end to means for treating said gases before discharge thereof in the atmosphere;

(e) a cooler comprising a metallic body provided throughout the extension of its central axis with an internal cavity, along which the light signal coming from the reaction chamber will pass, said cavity being closed at one of its ends by said quartz window of said reaction chamber and at its other end by a second quartz window, the walls of said metal body being provided with channels for the circulation of cooling liquid;

(f) means for detecting said chemiluminescence and providing a signal related to the intensity of said chemiluminescence, comprising an optical system adjacent said second quartz window, and a photomultiplier adjacent said optical system, the internal cavity of said cooler, said quartz window in said reaction chamber, said optical system and said photomultiplier being optically aligned with each other; and

(g) electronic amplifier, converter and recorder means for said signal connected to said photomultiplier.

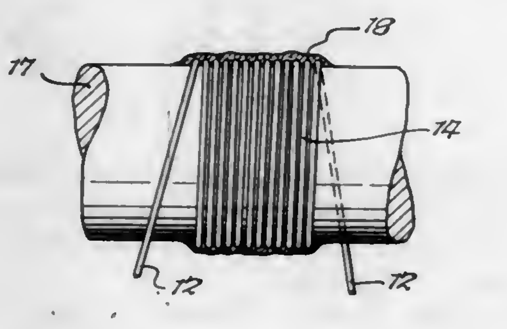
4,193,964
MICROMINIATURE PALLADIUM OXIDE GAS DETECTOR AND METHOD OF MAKING SAME

Frank T. John, Williamsville, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Filed Dec. 21, 1977, Ser. No. 862,974

Int. Cl.² G01N *27/04;* H01C *3/00*

U.S. Cl. 422—90 **46 Claims**



1. An element which, at a temperature of below about 600° C., undergoes a change in electrical resistance when exposed to a combustible gas in air, said element comprising a wire coated with a solution of a palladium compound which is heated to from about 100° C. to about 600° C. to form a palladium oxide composition.

4,193,965
CIRCUIT ASSEMBLY FOR EXHAUST EMISSION MONITORING

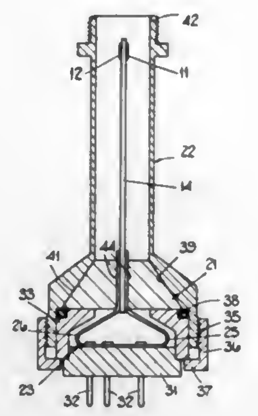
Christopher V. Cullingford, Inkberrow, and Martin A. Read, Redditch, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Apr. 3, 1978, Ser. No. 892,598

Claims priority, application United Kingdom, Apr. 12, 1977, 15101/77

Int. Cl.² G01N *27/04, 27/26;* H01C *7/00*

U.S. Cl. 422—95 **8 Claims**



1. A device for monitoring the composition of the exhaust emission of a combustion process including a hollow elongated body open at one end thereof, an elongated insulating substrate located in the body and defining adjacent said one end of the body a sensing element and a resistive heating element, the sensing element and the heating element being printed on opposite sides respectively of the substrate adjacent one end of the substrate and being electrically connected to respective first conductive areas extending to the opposite end of the substrate, said sensing element having electrical characteristics which vary with the concentration of oxidising or reducing constituents in the exhaust emission being sensed when the sensing element is raised to an elevated operating temperature by said heating element, first and second, elongated flexible circuit elements each having an elongated second conductive area provided on one surface of the respective element and extending from one end of the element, a carrier mounted in the other end of the hollow body, said one end of each of said first and second circuit elements being secured to the carrier with the opposite ends of the elements projecting from the carrier and being folded inwardly so that said second conductive areas are presented to each other, at least two terminal members supported by the carrier and electrically connected to said second conductive areas respectively, the other end of the substrate being interposed between the folded portions of the first and second circuit elements so that said second conductive areas are aligned with said first conductive areas respectively, a locating sleeve engaged with said carrier so that said substrate and said folded portions of the first and second circuit elements extend through the sleeve, at least one clamping member movable into a channel defined in the sleeve and engaging at least one of the folded portions of said first and second circuit elements, and means urging said clamping member to trap said folded portions against the substrate whereby said first and second conductive areas are urged into electrical contact with each other to electrically connect said terminal members so said sensing element and said resistive element respectively.

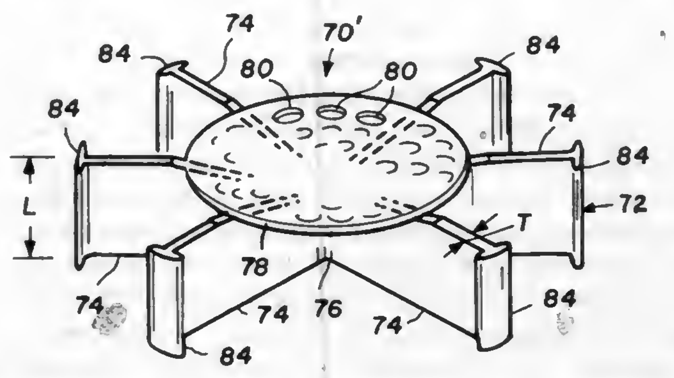
4,193,966
CARBON DIOXIDE ABSORBENT CANNISTER WITH CONDENSATE CONTROL

Ronald W. Dowgul, Panama City Beach, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 15, 1978, Ser. No. 915,635

Int. Cl.² B01J *7/02;* A61M *15/00*

U.S. Cl. 422—122 **8 Claims**



1. A cannister for use in an underwater breathing apparatus of the rebreather or recirculated breathing gas type and containing a bed of absorbing composition of the type characterized by an exothermic reaction requiring the presence of moisture, said cannister comprising:

a hollow container comprising a thermally conductive wall and adapted to contain said composition, said container comprising inlet means at one end for admitting carbon dioxide containing breathing gas at substantially 100% relative humidity, and outlet means at the opposite end for exiting breathing gas, after passage through said composition, from which said carbon dioxide has been removed;

said container having a predetermined length and including portions exposed during use to an ambient medium at temperatures substantially at the dew point of said breathing gas upon admission to said container;

condenser means, mounted in said container in contact with said composition, for conducting heat from said gas admission and while passing through said composition, whereby the moisture content of said composition is maintained so as to support said reaction through an extended period;

said condenser means comprising at least a first condenser element comprising a plurality of leg portions formed of a thermally conductive material and extending from a common origin within said container, each of said leg portions having an outer end in thermally conducting contact with the inner surface of said wall of said container, a heat sink and diffuser disc comprising a thermally conductive material and fixed to said leg portions, said disc lying generally transversely of the principal direction of flow through the cannister and defining a space between the outer edge of the disc and said wall, and said condenser element having a length in said principal direction of flow that is in the range of from about one-tenth to about two-tenths of said predetermined length of said cannister.

4,193,967
LIQUID SEALING APPARATUS FOR SEALING VAPORS IN A TANK

James L. Black, Houston, Tex., assignor to Merichem Company, Houston, Tex.

Filed Oct. 16, 1978, Ser. No. 951,541

Int. Cl.² B01D *47/02, 47/06;* F16L *43/00*

U.S. Cl. 422—170 **8 Claims**

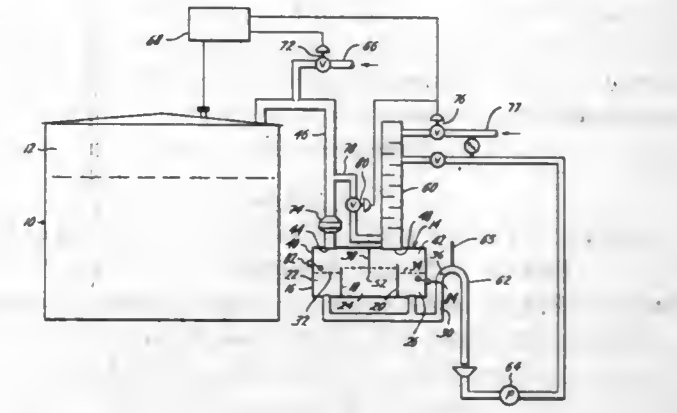
1. A liquid sealing apparatus for attachment to a tank having vapor therein for sealing the vapors comprising,

an enclosure,

first and second liquid partitions positioned in the enclosure extending upwardly from the bottom of the enclosure toward but not to the top of the enclosure dividing the enclosure into first, second and third liquid compartments for receiving a sealing liquid,

a liquid trap connected to the first and third liquid compartments for maintaining liquid therein and preventing escape of gas,

a third partition positioned in the enclosure extending downwardly from the top of the enclosure into the second liquid compartment dividing the enclosure into first and second gas compartments above the fluid compartments whereby gas can flow between said gas compartments only in response to certain pressure differences,



a first port in the first gas compartment adapted for connection to said tank having vapor,

a second port connected to the second gas compartment for admission and exit of gas from the second gas compartment,

a gas scrubber connected to the second port for scrubbing vapor flowing into the first port and into the second gas compartment, and supplying sealing liquid through the second port to the second fluid compartment, and

a liquid connection between the liquid trap and the gas scrubber for recycling scrubbing liquid.

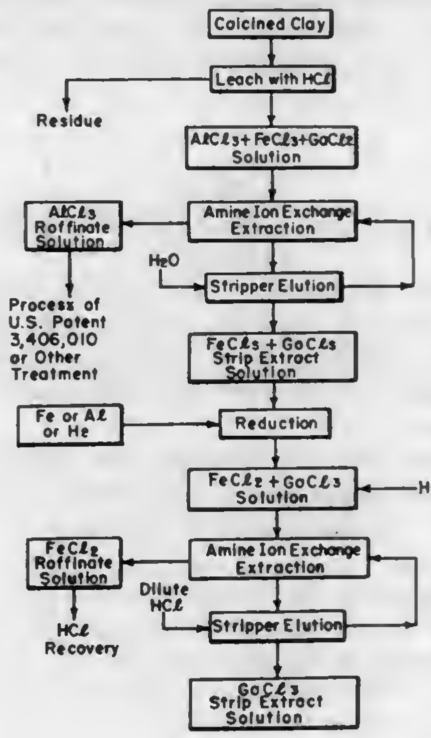
4,193,968
PROCESS FOR RECOVERING GALLIUM

Robert E. Sullivan, Louisville, Ky.; William R. Stern, and Bess L. Vance, both of Tucson, Ariz., assignors to The Anaconda Company, Denver, Colo.

Filed Oct. 3, 1978, Ser. No. 948,296

Int. Cl.² C01G *15/00;* C01F *7/00;* C01G *49/00*

U.S. Cl. 423—112 **4 Claims**


Calcined Clay
Leach with HCℓ
Residue
AℓCℓ3+ FeCℓ3+GaCℓ3 Solution
AℓCℓ3 Raffinate Solution
Amine Ion Exchange Extraction
H2O
Stripper Elution
Process of U.S. Patent 3,406,010 or Other Treatment
FeCℓ3 + GaCℓ3 Strip Extract Solution
Fe or Aℓ or Hg
Reduction
FeCℓ2 + GaCℓ3 Solution
HCℓ
FeCℓ2 Raffinate Solution
Amine Ion Exchange Extraction
Dilute HCℓ
Stripper Elution
HCℓ Recovery
GaCℓ3 Strip Extract Solution

1. A process for recovering gallium from calcined clay which comprises leaching calcined clay with a hydrochloric

acid solution, separating the hydrochloric acid solution from residuals, treating the hydrochloric acid solution containing aluminum chloride, ferric chloride, and gallium chloride in an organic-containing amine ion extraction unit for separately recovering aluminum chloride raffinate solution and an organic phase containing ferric chloride and gallium chloride, stripping the organic phase to yield a first strip extract solution containing ferric chloride and gallium chloride, reducing the ferric chloride in such solution to ferrous chloride and incorporating sufficient hydrochloric acid in the reduced solution to convert the gallium therein to $GaCl_4^-$ ions, then treating said solution in a second organic-containing amine ion extraction unit for separately recovering a raffinate solution containing ferrous chloride and a second organic phase containing gallium, stripping the second organic phase to yield a second strip extract solution containing gallium, and recovering the gallium-containing solution.

4,193,969

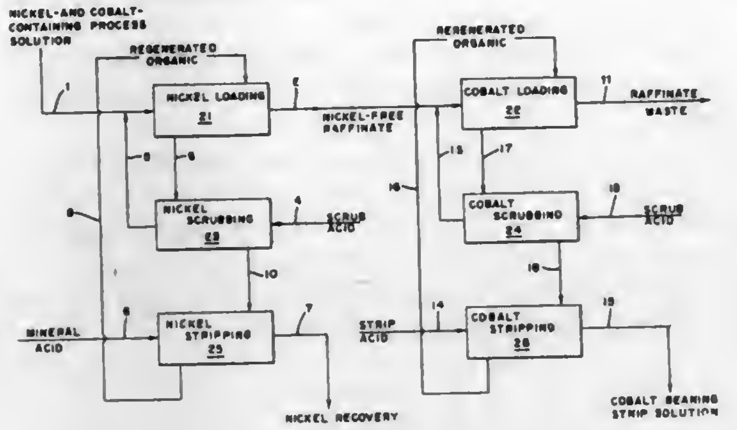
SELECTIVE NICKEL AND COBALT EXTRACTION FROM AQUEOUS ACIDIC SOLUTIONS

Simon O. Fekete, and Gustavo A. Meyer, both of Arvada, Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Nov. 12, 1976, Ser. No. 741,344

Int. Cl.^{2} C01G *51/00, 53/00*

U.S. Cl. 423—139 **26 Claims**



1. A process for recovering at least one metal value selected from the group consisting of nickel or cobalt from an aqueous process solution having a pH value less than about 4 and containing other metal ions which comprises contacting the process solution with a liquid organic extractant containing an α-hydroxyoxime and a sulfonic acid dissolved in a water-immiscible organic solvent, the molar ratio of α-hydroxyoxime to sulfonic acid in the organic extractant being between about 4:1 and about 1:2, to selectively extract the metal value from the process solution.

4,193,970

PROCESS FOR THE PRECIPITATION OF IRON AS JAROSITE

Verner B. Sefton, Edmonton; Godefridus M. Swinkels; Charles R. Kirby, both of Rossland, and Roman M. Genik-Sas-Berezowsky, Edmonton, all of Canada, assignors to Cominco Ltd., Vancouver and Sherritt Gordon Mines Limited, Toronto, both of, Canada

Filed Aug. 14, 1978, Ser. No. 933,215

Claims priority, application Canada, Aug. 19, 1977, 285090

Int. Cl.^{2} C01G *49/14*

U.S. Cl. 423—141 **3 Claims**

1. In a process for the precipitation of iron from ferrous sulfate-containing solutions by reacting the solutions with an oxygen-bearing gas in the presence of ammonia or ammonium or alkali-metal compounds at a temprature above the boiling point of the solution in the range of 100° to 230° C. and under super-atmospheric pressure of an oxygen-bearing gas for precipitation of jarosite and production of sulfuric acid, the improvement which comprises the steps of preheating ferrous sulfate-containing solution to a temperature in the range of 70° to 130° C., said temperature being below the temperature at which ferrous sulfate may precipitate from said solution; feeding preheated ferrous sulfate-containing solution comprising iron in an amount in the range of 20 to 100 g/L iron as ferrous sulfate and an amount of sulfuric acid of up to 50 g/L to the first of a plurality of reaction zones; maintaining a temperature in said first reaction zone of at least 100° C.; feeding a compound chosen from the group consisting of ammonia, ammonium compounds and alkali-metal compounds to said ferrous sulfate-containing solution in said first reaction zone; feeding an oxygen-bearing gas chosen from the group consisting of oxygen, air and oxygen-enriched air into said first reaction zone to establish an oxygen partial pressure in the range of 50 to 1400 kPa; said solution, said compound and said oxygen-bearing gas forming a reaction mixture; causing said mixture to flow through the reaction zones to the last of said plurality of reaction zones; retaining said reaction mixture in said reaction zones for a time in the range of 20 to 90 minutes; injecting steam in said last reaction zone in an amount sufficient to establish a temperature in said last reaction zone in the range of 170° to 230° C., said temperature being above the temperature in said first reaction zone; and discharging the reaction mixture, wherein the reaction mixture discharged from said last reaction zone contains iron in an amount in the range of 2 to 15 g/L iron and sulfuric acid in the range of 40 to 60 g/L, from said last reaction zone.

4,193,971

PROCESS FOR REMOVAL OF SULFUR OXIDES FROM WASTE GASES

Naoyuki Kawamata, Kobe; Tadahara Itoh, Ashiya, and Noriaki Takahashi, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Nov. 8, 1977, Ser. No. 850,623

Claims priority, application Japan, Mar. 23, 1977, 52-32605

Int. Cl.^{2} C01B *17/00;* **C01F** *1/00, 11/46*

U.S. Cl. 423—242 **10 Claims**

1. A process for removal of sulfur oxides from waste gases, which comprises the steps, in combination, of:

A. contacting an aqueous slurry containing magnesium hydroxide as well as gypsum with a waste gas containing sulfur oxides thereby fixing the sulfur oxides as magnesium sulfite;

B. contacting the aqueous slurry containing the magnesium sulfite as well as the gypsum with an oxidizing agent thereby converting the magnesium sulfite into magnesium sulfate;

C. subjecting the aqueous slurry containing magnesium sulfate as well as gypsum to filtration thereby obtaining an aqueous solution of the magnesium sulfate and a cake of gypsum;

D. causing the magnesium sulfate in the aqueous solution to undergo double decomposition with calcium hydroxide with the addition of a quantity of gypsum crystals as seed crystals thereby obtaining a slurry of magnesium hydroxide and gypsum, which slurry is to be recycled to step A;

wherein the mole ratio of $MgSO_4/Ca(OH)_2$ in step D is controlled so as to be equal to or higher than 1.0 whereby the resulting slurry is substantially free of calcium hydroxide when it is recycled to step A.

4,193,972

TREATING PARTICLE-CONTAINING SOX OR NOX GAS STREAMS IN PARALLEL PASSAGE CONTACTORS

Jack B. Pohlenz, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 2, 1977, Ser. No. 847,968

Int. Cl.^{2} C01B *17/00;* **B01J** *8/00;* **C01B** *21/00*

U.S. Cl. 423—244 **3 Claims**

1. In a method of removing noxious gaseous atmospheric pollutants selected from the group consisting of sulfur oxides and nitrogen oxides from a flue gas stream of a coal-fired

combustion zone wherein said flue gas is passed through (i) a particle removal zone wherein particulate particles are removed from said flue gas stream; and (ii) a stationary parallel passage contacting zone wherein said noxious pollutants within said flue gas stream are substantially reduced to produce a flue gas stream containing a decreased quantity of said noxious pollutants; the improvement which comprises:

(1) classifying by size said particulate particles removed from said flue gas stream in said particle removal zone to produce a quantity of relatively coarse particles having an average particle size at least twice as great as the average particle diameter of said particles in said flue gas stream and a quantity of relatively fine particles;

(2) admixing at least a portion of said quantity of relatively coarse particles into said flue gas stream containing said noxious pollutants;

(3) passing said flue gas stream containing said noxious pollutants and said quantity of relatively coarse particles through said stationary parallel passage contacting zone under turbulent conditions to reduce the quantity of deposited fine particulate material from the outer surface of said stationary parallel passage contactor; and

(4) passing said flue gas stream containing said quantity of relatively coarse particles to said particle removal zone to remove at least a portion of said quantity of relatively coarse particles from said flue gas before emission of said flue gas containing a reduced quantity of said noxious pollutants to the atmosphere.

4,193,973

PROCESS FOR STABILIZATION OF DICALCIUM PHOSPHATE

William M. Jarvis, Webster Groves, and Keun Y. Kim, Clayton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1978, Ser. No. 972,566

Int. Cl.^{2} C01B *25/32*

U.S. Cl. 423—265 **4 Claims**

1. In a process for the preparation of stabilized dicalcium phosphate dihydrate wherein an aqueous mixture containing dicalcium phosphate dihydrate is treated with a tetra-alkali metal pyrophosphate, the improvement which comprises

(a) adding a stabilizing amount of the tetra-alkali metal pyrophosphate to said aqueous mixture at a pH from about 5.5 to about 6.5 for said mixture; and then

(b) adding to the mixture resulting from Step (a) a material selected from the group consisting of alkali metal, alkaline earth metal and ammonium hydroxides in an amount which results in a stabilized dicalcium phosphate dihydrate having a pH from about 6.5 to about 8.0.

4,193,974

PROCESS FOR PRODUCING REFINED METALLURGICAL SILICON RIBBON

Peshotan S. Kotval, Hartsdale, and Harold B. Strock, North Tarrytown, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,763

Int. Cl.^{2} C01B *33/02*

U.S. Cl. 423—348 **15 Claims**

1. A process for the production of low-cost, multigrained refined metallurgical silicon ribbon from metallurgical grade silicon comprising:

a. dissolving metallurgical grade silicon in a liquid metal solvent to form a metal solvent-silicon solution;

b. cooling said solution to a temperature at which silicon platelets form;

c. removing silicon platelets from said solution of metallurgical grade silicon in a liquid metal solvent, thereby recovering partially purified, essentially iron-free silicon platelets with adherent impurities derived from said metal solvent;

d. melting said partially purified silicon platelets in contact with acid silica slag in a melting zone, the resulting slag oxidation removing residual and said adherent impurities from the silicon platelets;

e. removing the silicon-slag melt from said melting zone in a unidirectional manner so as to directionally solidify said silicon; and

f. pulling a silicon ribbon from a melt of the thus-refined silicon, the resulting refined metallurgical silicon ribbon comprising a multigrained silicon ribbon having a resistivity of from about 0.04 to about 0.2 ohm-cm, said silicon having impurity concentrations of up to, but not exceeding, about 1 ppm of aluminum, about 1 ppm of iron, about 2 ppm of titanium, about 2 ppm of boron, about 2 ppm of phosphorus, about 1 ppm of chromium, about 1 ppm of calcium and about 1 ppm of magnesium, whereby said, multigrained silicon ribbon is obtained having a substantially higher impurity level than in a conventional, high purity semiconductor grade silicon and suitable properties for solar cell applications.

4,193,975

PROCESS FOR THE PRODUCTION OF IMPROVED REFINED METALLURGICAL SILICON

Peshotan S. Kotval, Hartsdale, and Harold B. Strock, North Tarrytown, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,759

Int. Cl.^{2} B01J *17/20;* **C01B** *33/02*

U.S. Cl. 423—348 **24 Claims**

1. A process for the production of low-cost multigrained refined metallurgical silicon from metallurgical grade silicon comprising:

a. dissolving metallurgical grade silicon in a liquid metal solvent to form a metal solvent-silicon solution;

b. cooling said solution to a temperature at which silicon platelets form;

c. removing said silicon platelets from said solution of metallurgical grade silicon in a liquid metal solvent, thereby recovering partially purified, essentially iron-free silicon platelets with adherent impurities derived from said metal solvent;

d. melting said partially purified silicon platelets in contact with acid silica slag in a melting zone, the resulting slag oxidation removing residual and adherent impurities from said silicon; and

e. pulling refined metallurgical silicon boules from a melt of the thus-refined silicon on a rotating silicon seed rod by the Czochralski pulling technique, the resulting pulled, refined metallurgical silicon comprising a multigrained silicon having a resistivity of from about 0.1 to about 0.2 ohm-cm, said silicon having impurity concentrations of up to, but not exceeding about 1 ppm of aluminum, about 1 ppm of iron, about 0.5 ppm of titanium, about 2 ppm of boron, about 2 ppm of phosphorus, about 0.5 ppm of chromium, about 0.5 ppm of calcium and about 0.5 ppm of magnesium, whereby said multigrained silicon is obtained at a substantially higher impurity level than in a conventional high purity semiconductor grade silicon and has suitable properties for solar cell applications.

4,193,976

REMOVAL OF DINITROGEN DIFLUORIDE FROM NITROGEN TRIFLUORIDE

John T. Lileck, Tamaqua; John Papinsick, Summit Hill, and Edward J. Steigerwalt, Lehighton, all of Pa., assignors to Air Products & Chemicals, Inc., Allentown, Pa.

Filed Apr. 6, 1978, Ser. No. 894,114

Int. Cl.^{2} C01B *21/52*

U.S. Cl. 423—406 **8 Claims**

1. A process for purifying a nitrogen trifluoride containing atmosphere contaminated with dinitrogen difluoride in an amount not exceeding about 5% by volume which comprises selectively decomposing said dinitrogen difluoride while avoiding decomposition of said nitrogen trifluoride, said selective defluorination comprising the steps:

contacting the atmosphere with a particulate elemental metal which is inert to nitrogen trifluoride to the extent that not more than 3.5 grams nitrogen trifluoride will react with 100 grams of particulate elemental metal spheres of $\frac{1}{8}$ inch in diameter when at a temperature of 500° F., and atmospheric pressure in a 100 second time period, said contacting being for a time and at a temperature effective for permitting selective defluorination.

4,193,977
PROCESS FOR PREPARING FOAMABLE SODIUM PERCARBONATE

Yunosuke Nakagawa, Soka, and Minoru Kikuchi, Tokyo, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,210

Claims priority, application Japan, Sep. 13, 1977, 52-111001

Int. Cl.^{2} C01B *15/10*

U.S. Cl. 423—415 P **2 Claims**

1. A process for preparing dry particles of foamable sodium percarbonate which consists essentially of the steps of: (1) flowing a stream of hot air through a bed of sodium percarbonate particles to heat said particles to a temperature of from 110° to 135° C. and maintaining said particles at said temperature for from 5 to 60 minutes, and (2) then immediately thereafter flowing a stream of cool gas through a bed of the heated sodium percarbonate particles obtained in step (1) and thereby forcibly cooling said particles to a temperature below 90° C. within 10 minutes after completion of the heating step (1), whereby to obtain sodium percarbonate particles which foam vigorously in water and contain a high amount of available oxygen.

4,193,978
PRODUCTION OF HYDROGEN

Alain Muller, Le Havre; François Mathey, Vert le Petit, and Jean Bensoam, Ballancourt, all of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Jun. 27, 1977, Ser. No. 810,616

Claims priority, application France, Jun. 28, 1976, 76 19584; Dec. 15, 1976, 76 37793

Int. Cl.^{2} C01B *1/03*

U.S. Cl. 423—648 R **14 Claims**

1. In a combined process for the storage and generation of hydrogen from a hydrogen reserve comprising lithium borotetrahydride by decomposition of at least part of said borotetrahydride into hydrogen and a composition comprising boron in free or combined form and lithium in free or combined form, the improvement in said process for reusable hydrogen storage comprising driving the decomposition of the lithium borotetrahydride to generate more than one mole of free hydrogen per mole of lithium borotetrahydride and thereafter hydrogenating the composition comprising boron and lithium obtained upon the generation of hydrogen so as to reconstitute the hydrogen reserve at least partially, and thereafter generating more than one mole of free hydrogen per mole of lithium borotetrahydride from the reconstituted hydrogen reserve.

4,193,979
SODIUM
3-[[[2-(2-METHYL-5 NITRO-1H-IMIDAZOl-1-yL)ETHYL]-AMINO]CARBONYL]-2-PYRIDINECARBOXYLIC ACID AND RELATED COMPOUNDS LABELED WITH TECHNETIUM-99M

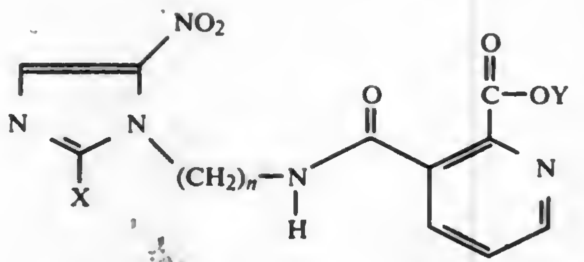
Patricia Frank, Evanston; Stephen Kraychy, Northbrook, and Ernest F. LeVon, Evanston, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed May 22, 1978, Ser. No. 907,645

Int. Cl.^{2} C07D *401/12;* **A61K** *43/00*

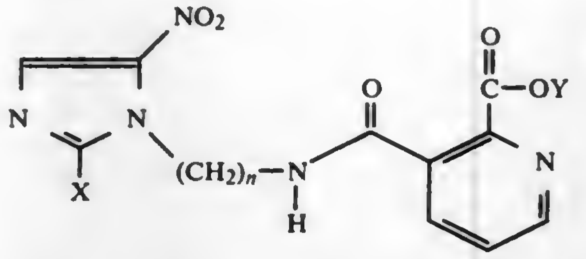
U.S. Cl. 424—1.5 **15 Claims**

1. A compound of the formula



wherein X can be an alkyl having 1 to 4 carbon atoms; Y is hydrogen or the cation of a pharmaceutically acceptable salt and n is a positive integer from 2 to 4.

2. A chelate of technetium-99m and a compound of the formula



wherein X can be an alkyl having 1 to 4 carbon atoms; Y is hydrogen or the cation of a pharmaceutically acceptable salt; and n is a positive integer from 2 to 4.

4,193,980
DRY PREPARATION FOR RETICULOCYTE STAINING

Stanley E. Clason, Painted Post, and John W. Gilliland, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 5, 1978, Ser. No. 867,199

Int. Cl.^{2} G01N *33/16, 31/22, 21/60*

U.S. Cl. 424—3 **11 Claims**

8. A method of forming a stain tube containing an amount of dry stain sufficient for staining a volume V_b of blood, said method comprising

preparing a volume V_d of a concentrated aqueous solution of new methylene blue N dye,

filtering said dye solution,

preparing a concentrated aqueous solution of a salt of a strong base and a weak acid of a monovalent anion,

mixing said dye solution and said salt solution,

adding an anticoagulant to said mixture to form a stain stock solution,

dispensing into a tube a volume V_f of said stain stock solution which is sufficient to stain said volume V_b of blood, and

drying the stain stock solution in said tube, said dye and said salt being present in said tube in relative amounts which are effective, when the resultant dry stain is diluted in a volume V_b of pure deionized water, to form a solution, the pH of which is between 5 and 9.

4,193,981
PROCESS FOR QUANTITATIVE DETERMINATION OF CAPA ANTIGEN OR ANTIBODY

Tom B. Björklund, Bromma, Sweden, assignor to AB Bonnierföretagen, Sweden

Filed Sep. 28, 1977, Ser. No. 837,082

Claims priority, application Sweden, Oct. 1, 1976, 7610939

Int. Cl.^{2} G01N *31/00, 31/02, 33/16*

U.S. Cl. 424—12 **6 Claims**

1. In a process for quantitative determination of the amount of CAPA, cancer associated polypeptide antigen, in a solution while using agglutination inhibition technique, comprising preparing under serial dilution a series of samples of said solution, adding to each of said samples a predetermined amount of antiserum containing antibodies specific with regard to the CAPA, adding after incubation to each of the resulting samples a predetermined amount of the said antigen carried by a particulate carrier resulting in agglutination, and preparing a corresponding series of control samples with known decreasing amounts of said antigen, the steps of

(1) measuring the diameter of the agglutination deposits of the control samples and

(2) plotting the measured diameters against the antigen concentrations, thereby obtaining an S-shaped curve, the middle part of which has a steep inclination,

(3) selecting a sample in said series of samples of unknown antigen concentration having a known diameter lying within said middle part of the curve,

(4) comparing said known diameter of the unknown sample with the diameters of samples of known concentration as plotted against known diameter in step (2), and

(5) reading off the CAPA concentration corresponding to the known diameter of said unknown sample.

6. In a process for quantitative determination of the amount of CAPA, cancer associated polypeptide antigen, antibody in solution while using agglutination technique, comprising preparing under serial dilution a series of samples of said solution, adding to each of said samples a predetermined amount of CAPA reacting specifically with said antibody and carried by a particulate carrier resulting in agglutination, and preparing a corresponding series of control samples with known decreasing amounts of said antigen, the steps of (1) measuring the diameter of the agglutination deposits of the control samples and (2) plotting the measured diameters as a function of the antibody concentrations, thereby obtaining a curve of reversed S-shape, the middle part of which has a steep inclination, (3) selecting a sample in said series of samples of unknown antibody concentration having a known diameter lying within said middle part of the curve, (4) comparing said known diameter of the unknown sample with the diameters of samples of known concentration as plotted against known diameter in step (2), and (5) reading off the antibody concentration corresponding to the known diameter of said unknown sample.

4,193,982
PROCESS FOR COUPLING BIOLOGICAL SUBSTANCES BY COVALENT BONDS

Stratis Avrameas, La Celle Saint Cloud, and Therese M. F. Ternynck, Paris, both of France, assignors to Etablissement DéClaré d'Utilité Publique dit: Institut Pasteur, Paris, France

Filed Dec. 1, 1976, Ser. No. 746,552

Claims priority, application France, Dec. 5, 1975, 75 37392

Int. Cl.^{2} A61K *37/00, 39/00;* **C07G** *7/00;* **G01N** *31/00*

U.S. Cl. 424—12 **13 Claims**

1. In a process for coupling at least two biological substances by covalent bonds by means of a cross-linking agent, the said cross-linking agent being benzoquinone, the improvement comprising the steps of:

(a) treatment of Fab fragment of an immunoglobulin as the first substance dissolved in solution by at least about 200 times its molar amount of benzoquinone, said reaction known as the activation reaction being performed in a homogeneous liquid medium;

(b) removal of the reaction products of step (a) and the excess benzoquinone and recovery of the activated Fab fragment;

(c) contacting the activated Fab fragment with the second substance to be coupled.

4,193,983
LABELED LIPOSOME PARTICLE COMPOSITIONS AND IMMUNOASSAYS THEREWITH

Edwin F. Ullman, Atherton, and John M. Brinkley, Oakland, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed May 16, 1978, Ser. No. 906,514

Int. Cl.^{2} G01N *31/00, 33/16, 23/00;* **A61K** *37/00*

U.S. Cl. 424—12 **17 Claims**

1. In an immunoassay for the determination of an analyte, where the analyte is a member of a specific binding pair consisting of ligand and antiligand and wherein a label is employed which provides a detectible signal, the value of which is affected by the proximity of said antiligand to said label due to the presence of the bulk of said antiligand or a compound conjugated to said antiligand which interacts with said label,

wherein said immunoassay comprises combining in an aqueous medium: (1) a sample suspected of containing said analyte, (2) a reacgent comprising ligand or ligand analog and label, wherein said ligand analog is capable of specific binding to said antiligand, and (3) antiligand, when ligand is the analyte or said antiligand is conjugated with said compound which interacts with said label; and

determining the value of said detectible signal as compared to said value determined with a sample having a known amount of analyte;

the improvement which comprises employing as said reagent discrete colloidal particles comprised of a major portion of lipophilic compounds and a minor portion of label and ligand or ligand analog, wherein said label is covalently conjugated to at least one of said lipophilic compounds, and the ligand or ligand analog are lipophilic or made so by conjunction to a lipophilic compound.

4,193,984
METHOD AND COMPOSITIONS FOR CONTROLLING FLYING INSECTS

Agis F. Kydonieus, New York, N.Y., assignor to Herculite Protective Fabrics Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 675,424, Apr. 9, 1976, abandoned. This application Mar. 23, 1977, Ser. No. 780,398

Int. Cl.^{2} A61L *3/00, 9/04;* **B32B** *27/08, 27/18*

U.S. Cl. 424—16 **12 Claims**

1. A dispenser for controlling flies comprising

a first section of sheeting comprising an internal layer containing resmethrin as a non-volatile insecticide for said flies and adhered to both sides of the internal layer, solid polymeric layers through which said resmethrin is capable of migrating to become available on outer surfaces of said first section of sheeting; and

a second section of sheeting, having a smaller surface area than the first section, comprising an internal layer containing vanillin as a volatile fly attractant and adhered to both sides of the internal layer, solid polymeric layers at least through one of which said vanillin is capable of migrating to become available on at least one outer surface of said second section of sheeting,

wherein said first and second sections are in contact with each other to form a single unit.

4,193,985
MULTIPLE-UNITS DRUG DOSE

Helle Bechgaard, Hellerup, and Arne M. Pedersen, Vanlose, both of Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark

Filed Mar. 23, 1978, Ser. No. 889,269

Claims priority, application United Kingdom, Mar. 30, 1977, 13296/77

Int. Cl.^{2} A61K *9/22, 9/54*

U.S. Cl. 424—19 **4 Claims**

1. A controlled release upper-gut retentive gastrointestinal tract transit time increasing multiple-units drug dose, which comprises a tablet or a capsule, enclosing subunits of a therapeutically active agent in the form of 0.3 to 1.7 millimeter balls or pellets, each of which are enclosed in an insoluble dialysis membrane of a cellulose ether or acrylic polymer allowing for diffusion of the juices of the gastrointestinal tract, the specific weight of at least 25% by weight of which subunits has been increased from 1.0 or less to at least 1.4 by means of a physiologically innocuous substance of higher specific weight than that of the therapeutically active agent.

4,193,986
FLEA COMPOSITION FOR ANIMALS

Nicholas D. Cox, South Rte., P.O. Box 12, Lavina, Mont. 59046

Filed Sep. 11, 1978, Ser. No. 941,217

Int. Cl.² A01N *17/00, 9/02;* C11D *9/50;* A01K *27/00*

U.S. Cl. 424—28 **13 Claims**

1. A composition for the treatment of flea infested animals comprising an inert vehicle and between about 2% and 7% by weight of natural active ingredients consisting essentially of between about 10 and 40 parts oil of pennyroyal, between about 5 and 20 parts oil of eucalyptus, between about 3 and 10 parts cedar oil, between about 3 and 10 parts oil of citronella, and between about 1 and 2 parts oil of rue.

10. An animal collar treated with the composition of claim 1.

4,193,987
NON-CORROSIVE TOOTHPASTE

Helmut Harth, Mainz, and Dieter Becker, Darmstadt-Wixhausen, both of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,227

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757280

Int. Cl.² A61K *7/16*

U.S. Cl. 424—49 **4 Claims**

1. A non-corrosive aqueous-based toothpaste composition comprising about 0.05% to about 5% by weight of an anticorrosive additive which inhibits toothpaste corrosion of aluminum, said additive being a synthetic alkali metal aluminum silicate zeolite of the formula

$$x(M.AlO_2).ySiO_2.zH_2O$$

wherein M is alkali metal or ammonium, X is a number from 1 to 64, y is a number dependent on X with the determination of y being one-fold to six-fold of X, and Z is a number from 0 to 256.

4,193,988
ORAL HYGIENE COMPOSITIONS

Geoffrey C. Forward, Epsom Downs, and Janet A. Gawthorpe, nee Baylis, Orpington, both of England, assignors to Beecham Group Limited, Great Britain

Continuation-in-part of Ser. No. 493,717, Aug. 1, 1974, abandoned, which is a continuation of Ser. No. 369,451, Jun. 13, 1973, abandoned, which is a continuation of Ser. No. 247,948, Apr. 27, 1972, abandoned. This application Jul. 12, 1978, Ser. No. 924,001

Claims priority, application United Kingdom, Apr. 29, 1971, 12099/71; Dec. 14, 1971, 58064/71

Int. Cl.² A61K *7/18*

U.S. Cl. 424—52 **5 Claims**

1. In a method of enhancing reduction of solubility of dental enamel by an anti-cariogenic oral hygiene composition, the steps of preparing an anti-cariogenic oral hygiene composition having a potentiating combination of sodium monofluorophosphate and calcium glycerophosphate in a weight ratio of 10:1 to 3:1, the sodium monofluorophosphate being present in an amount of 0.08% to 7.6%, by weight, and contacting the dental enamel with the composition.

4,193,989
SUNSCREEN GEL

James Teng, St. Louis County; James M. Lucas, Crestwood, and Marcella C. Stubits, St. Louis, all of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Sep. 27, 1976, Ser. No. 727,169

Int. Cl.² A61K *7/42, 7/44*

U.S. Cl. 424—60 **5 Claims**

1. A water resistant suntan gel capable of forming, by solvent evaporation, a water-resistant film on skin after application of the gel thereon, which consists essentially of about 80 to about 90% alcoholic solvent, about 1 to about 12% ultraviolet radiation absorber which is soluble in said solvent, about 3 to about 7% emollient, about 1 to about 2% gelling agent for said solvent, said gelling agent being selected from the group consisting of hydroxypropyl cellulose acetate, hydroxypropyl starch acetate, and mixtures thereof, said esters having a degree of substitution of about 1.2 to about 3 and a degree of molar substitution of hydroxypropyl groups of about 2 to about 8, and methyl hydroxypropyl cellulose acetate having a degree of molar substitution of hydroxypropyl groups of about 2 to about 8, a degree of substitution of methyl groups of about 0.1 to about 1, and a degree of substitution of acetyl groups of about 0.8 to about 2.5, and about 1 to about 3% of an acid selected from the group consisting of citric acid, adipic acid, succinic acid and malic acid to enhance the binding ability of said gel film to the skin.

4,193,990
HETEROTYPIC CANINE PARVOVIRUS VACCINE

Max J. G. Appel; Leland E. Carmichael, both of Ithaca, and Fredric W. Scott, Brooktondale, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,691

Int. Cl.² A61K *39/12*

U.S. Cl. 424—89 **2 Claims**

1. The method of protecting dogs against disease caused by virulent canine parvovirus which comprises inoculating the animal with a modified live feline panleukopenia virus vaccine.

4,193,991
CANINE PARVOVIRUS VACCINE

Max J. G. Appel, and Leland E. Carmichael, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,296

Int. Cl.² A61K *39/12*

U.S. Cl. 424—89 **6 Claims**

1. The method of protecting dogs against virulent canine parvovirus which comprises inoculating an animal with inactivated canine parvovirus vaccine prepared in accordance with a process which comprises the steps of growing a strain of canine parvovirus in a non-oncogenic cell culture and then inactivating the virus.

4,193,992
PROCESS FOR THE PREPARATION OF DEFIBRINATED AND LYOPHILIZED PLACENTAL CELLS

Gérard Fontaine, Clarens, Switzerland, assignor to Laboratories Cellorgan S.A., Chatel St. Denis, Switzerland

Filed Dec. 21, 1977, Ser. No. 862,911

Claims priority, application Switzerland, Aug. 16, 1977, 10013/77

Int. Cl.² A61K *35/48*

U.S. Cl. 424—105 **9 Claims**

1. A process for the preparation of defibrinated and lyophilized placental cells comprising breaking into fragments the foetomaternal placenta of a ewe killed at about the end of the fourth month of gestation, immediately submerging the fragments in Ringer's solution in order to wash away traces of blood, finely dividing the fragments and placing them in a 1 to 10% aqueous trypsinated solution, effecting tryptic digestion in said solution with the aid of stirring, separating the placental cells by filtering, washing the cells in refrigerated Hanks medium and separating the cells by centrifuging at a low temperature, suspending the cellular residue obtained from the centrifuging process in survival liquid and lyophilizing the suspension until a constant weight is obtained.

4,193,993
COMPOSITIONS CONTAINING PRESERVATIVE METALS AND THEIR USE FOR THE PRESERVATION OF WOOD AND LIKE MATERIALS AND AS FUNGICIDES

Edward A. Hilditch, Somerset, England, assignor to Cuprinol Limited, Somerset, England

Filed May 10, 1978, Ser. No. 904,606

Claims priority, application United Kingdom, May 12, 1977, 20089/77

Int. Cl.² A01N *13/00, 9/00*

U.S. Cl. 424—141 **58 Claims**

1. In an aqueous ammoniacal preservative composition comprising: p(a) a composition of a preservative metal selected from the group consisting of copper, zinc, cobalt, iron, manganese and nickel;

(b) an organic acid; and

(c) an ammoniacal compound selected from the group consisting of ammonia, ammonia compounds, and mixtures thereof, the amount of ammoniacal compound being at least sufficient to solubilize said compound (a) and to neutralize said acid (b), the improvement wherein said organic acid is a branched chain carboxylic acid having 6 to 20 carbon atoms, a dipentene monocarboxylic acid, a dipentene dicarboxylic acid, or a mixture thereof present in a preserving amount.

4,193,994
TETRAHYDRO-S-TRIAZINE THIONES

Michael R. G. Leeming, Canterbury; Subramaniyan Narayanaswami, Deal, and Alexander B. Penrose, Tilmanstone, Nr. Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

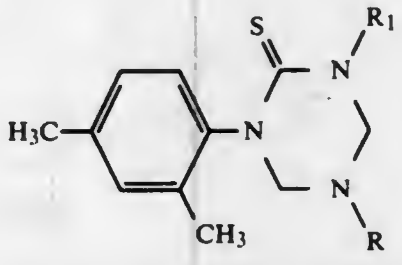
Filed Jul. 3, 1978, Ser. No. 921,204

Claims priority, application United Kingdom, Jul. 22, 1977, 30998/77

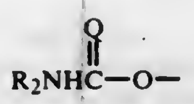
Int. Cl.² C07D *251/08;* A01N *9/12*

U.S. Cl. 424—249 **15 Claims**

1. A compound selected from the group consisting of



and a pharmaceutically acceptable acid addition salt thereof, wherein R is selected from the group consisting of alkyl having from one to twelve carbon atoms, cycloalkyl having from three to six carbon atoms, adamantyl, benzyl, allyl, propargyl and substituted alkyl wherein said alkyl contains from two to four carbon atoms and said substituent is selected from the group consisting of hydroxy, alkoxy having from one to three carbon atoms, alkanoyloxy having from two to five carbon atoms, methylamino, dimethylamino, phenyl, p-toluenesulfonyloxy and carbamoyloxy of the formula

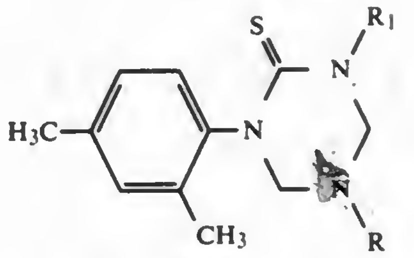


$$R_2NHC(=O)—O—$$

wherein R_2 is selected from the group consisting of hydrogen, cyclohexyl, phenyl and methyl and Q is selected from the group consisting of oxygen and sulphur, with the proviso that said substituent is substituted on other than the alpha-position of said substituted alkyl; and

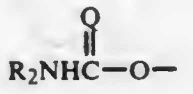
R_1 is selected from the group consisting of alkyl having from one to three carbon atoms and hydroxymethyl.

6. A method for protecting cattle from acarids which comprises applying externally to said cattle in need of such protection an acaricidal amount of a compound selected from the group consisting of



and a pharmaceutically acceptable addition salt thereof, wherein

R is selected from the group consisting of alkyl having from one to twelve carbon atoms, cycloalkyl having from three to six carbon atoms, adamantyl, benzyl, allyl, propargyl and substituted alkyl wherein said alkyl contains from two to four carbon atoms and said substituent is selected from the group consisting of hydroxy, alkoxy having from one to three carbon atoms, alkanoyloxy having from two to five carbon atoms, methylamino, dimethylamino, phenyl, p-toluenesulfonyloxy and carbamoyloxy of the formula



$$R_2NHC(=O)—O—$$

wherein R_2 is selected from the group consisting of hydrogen, cyclohexyl, phenyl and methyl and Q is selected from the group consisting of oxygen and sulphur, with the proviso that said substituent is substituted on other than the alpha-position of said substituted alkyl; and

R_1 is selected from the group consisting of alkyl having from one to three carbon atoms and hydroxymethyl.

4,193,995
2-(3-SUBSTITUTED AMINO-2-HYDROXYPROPOXY)-3-SUBSTITUTED PYRAZINE COMPOUNDS AND COMPOSITIONS

Burton K. Wasson, Valois, Canada, and Leonard M. Weinstock, Belle Mead, N.J., assignors to Merck Sharp & Dohme (I.A.) Corp., Rahway, N.J.

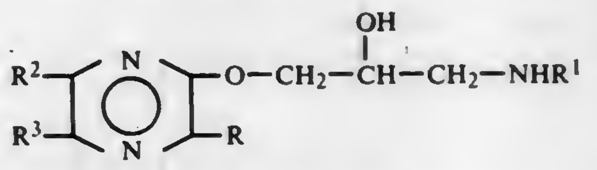
Division of Ser. No. 584,439, Jun. 6, 1975, Pat. No. 4,042,586, which is a division of Ser. No. 408,032, Oct. 19, 1973, Pat. No. 3,946,009, which is a continuation-in-part of Ser. No. 341,421, Mar. 15, 1973, abandoned. This application Mar. 8, 1977, Ser. No. 775,678

Claims priority, application Canada, May 5, 1972, 141471

Int. Cl.² A61K *31/495;* C07D *241/18*

U.S. Cl. 424—250 **8 Claims**

1. A pyrazine compound having the structure



or a pharmacologically acceptable salt thereof wherein

R represents C_{1-5}alkyl,

R^1 represents a straight or branched chain C_{3-6}alkyl, a straight or branched chain hydroxy substituted C_{3-6}alkyl, a straight or branched chain C_{3-6}alkinyl, phenyl-C_{1-6}alkyl or indolyl-C_{1-6}alkyl;

R^2 and R^3 can represent the same or different substituents and represent hydrogen, C_{1-3}alkyl, C_{5-7} cycloalkyl, C_{1-3}alkoxy, phenoxy, phenyl, or substituted phenyl wherein the substituent is C_{1-3}alkyl, C_{1-3}alkoxy, amino, acetyl amino, nitro or halo.

7. A pharmaceutical composition in unit dosage form comprising a compound of claim 1 and a carrier.

4,193,996
SPIRO-QUINOLONE HYDANTOINS

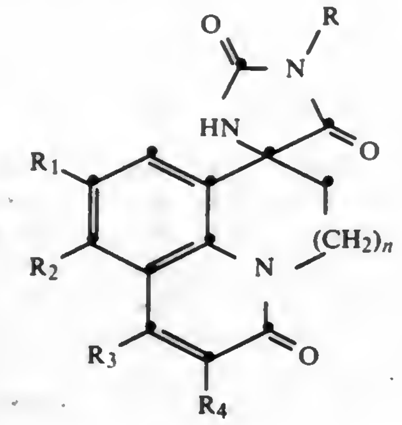
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 4, 1979, Ser. No. 26,990

Int. Cl.^{2} C07D *471/10;* **A61K** *31/47*

U.S. Cl. 424—256 **10 Claims**

1. A compound of the formula



and the pharmaceutically acceptable addition salts thereof, wherein n is one or two; R, R_3 and R_4 are each hydrogen; and R_1, and R_2 are each selected from the group consisting of hydrogen, chloro, bromo, fluoro, alkyl of 1 to 3 carbon atoms and alkoxy of 1 to 3 carbon atoms.

6. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a compound of claim **1** in an amount effective for the treatment of diabetic cataracts, neuropathy or retinopathy.

4,193,997
THIENO[2,3-c] AND [3,2-c]PYRIDINES, PROCESS FOR THEIR PREPARATION AND THERAPEUTIC APPLICATIONS THEREOF

Robert Boigegrain, Portet; Michel Gachon, Ramonville St Ague; Jean-Pierre Maffrand, and Gerard Maire, both of Toulouse, all of France, assignors to Parcor, Paris, France

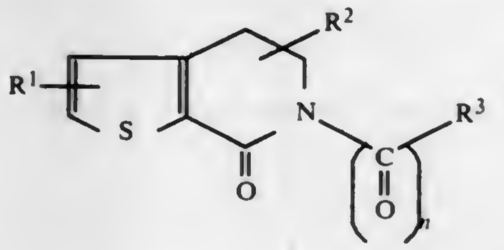
Filed Mar. 15, 1978, Ser. No. 886,688

Claims priority, application United Kingdom, Mar. 29, 1977, 13209/77

Int. Cl.^{2} C07D *471/04;* **A61K** *31/435*

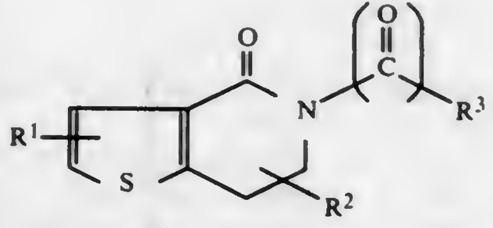
U.S. Cl. 424—256 **10 Claims**

1. Process for the preparation of a compound selected from the compounds having the formulae:



(I)

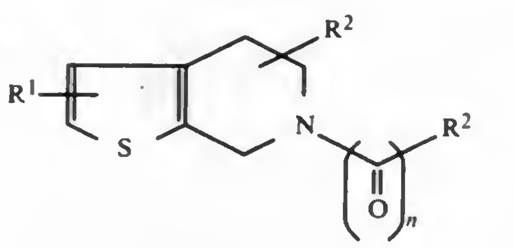
and



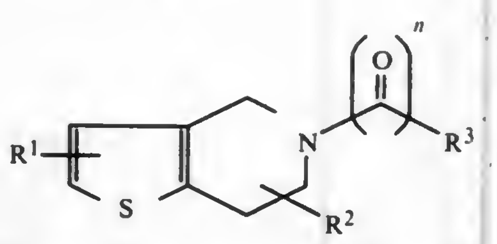
(II)

in which:

R^1 is selected from hydrogen, halogen, $C_{1\text{-}6}$ alkyl, $C_{1\text{-}6}$ alkoxy and $C_{1\text{-}6}$ alkylthio; R^2 is selected from hydrogen, $C_{1\text{-}6}$ alkyl, phenyl, carboxy, benzyloxycarbonyl and trimethoxybenzyloxycarbonyl; R^3 is selected from hydrogen, $C_{1\text{-}12}$ alkyl, phenyl, benzyl, benzyl substituted by one to three substituents selected from halogen, cyano, $C_{1\text{-}6}$ alkoxy and carbomethoxy; and n is selected from 0 and 1, and the therapeutically acceptable acid addition salts of said compounds, comprising oxidizing a compound selected from the compounds having the formulae (III) and (IV), respectively:



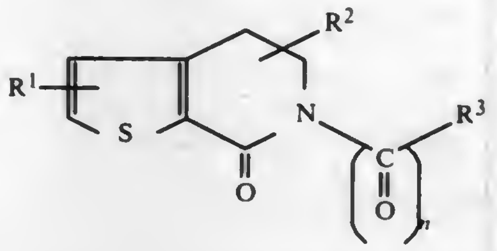
(III)



(IV)

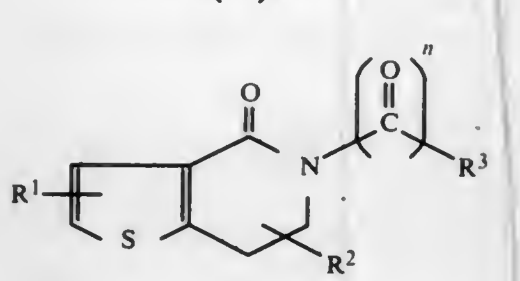
in which R^1, R^2, R^3 and n have the above-defined meanings, with an alkali metal permanganate, in acetone, at a temperature of 40°–56° C.

2. Therapeutic composition having bloodplatelet aggregation inhibiting properties, comprising an effective amount of a compound selected from the compounds having the formulae:



(I)

and



(II)

in which:

R^1 is selected from hydrogen, halogen, $C_{1\text{-}6}$ alkyl, $C_{1\text{-}6}$ alkoxy and $C_{1\text{-}6}$ alkylthio;

R^2 is selected from hydrogen, $C_{1\text{-}6}$ alkyl, phenyl, carboxy, benzyloxycarbonyl and trimethoxybenzyloxycarbonyl; R^3 is selected from hydrogen, $C_{1\text{-}12}$ alkyl, phenyl, benzyl, benzyl substituted by one to three substituents selected from halogen, cyano, $C_{1\text{-}6}$ alkoxy and carbomethoxy; and n is selected from 0 and 1; and their therapeutically acceptable acid addition salts, together with a pharmaceutically acceptable carrier.

4,193,998
1,2,3,4,6,7-HEXAHYDRO-11BαH-BENZO[A]QUINOLIZINE-DERIVATIVES

Csaba Szantay; Lajos Szabo; Istvan Toth; Erzsebet Kanyo; Gyula Sebestyen, and Sandor Virag, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

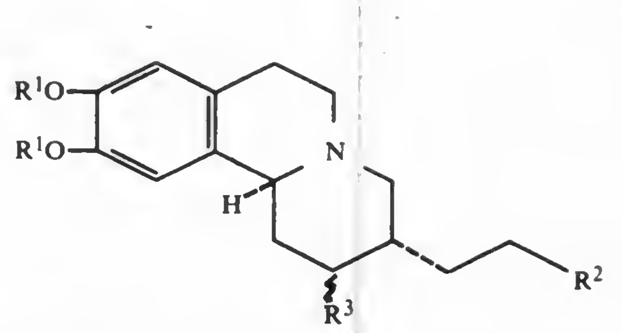
Filed Jun. 14, 1978, Ser. No. 915,379

Claims priority, application Hungary, Jun. 15, 1977, CI 1751

Int. Cl.^{2} A61K *31/47;* **C07D** *455/06*

U.S. Cl. 424—258 **5 Claims**

1. A compound of the formula I or an acid addition salt thereof



I

wherein

R^1 is $C_{1\text{-}4}$ alkyl or form together a methylene bridge,

R^2 is cyano, or an alkoxycarbonyl group having a $C_{1\text{-}4}$ alkyl group in the alkoxy portion,

R^3 is hydroxy or alkanoyloxy having a $C_{1\text{-}4}$ alkyl in the alkoxy portion in α- or β-steric position.

4. An antiinflammatory, analgesic and gastric juice secretion inhibiting pharmaceutical composition which comprises as active ingredient an effective amount at least one compound of formula I as defined in claim **1** and the pharmaceutically acceptable acid addition salts thereof mixed with pharmaceutically acceptable carriers.

5. A process for treatment to obtain antiinflammatory, analgesic and gastric juice secretion inhibiting pharmaceutical effects which comprises administering effective amounts of at least one of the compounds of formula I as defined in claim **1**, in a pharmaceutically acceptable carrier.

4,193,999
ANTIVIRAL AMINE DERIVATIVES OF PROPANEDIOLS

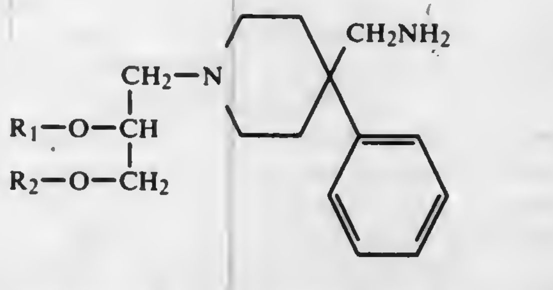
Allen R. Kraska, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 825,535, Aug. 18, 1977. This application Feb. 15, 1979, Ser. No. 12,346

Int. Cl.^{2} C07D *211/26;* **A61K** *31/445*

U.S. Cl. 424—267 **9 Claims**

1. A compound selected from those of the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein R_1 and R_2 are each selected from the group consisting of normal alkyl of from 12 to 20 carbon atoms and normal alkenyl not having a double bond in the 1-position of from 12 to 20 carbon atoms.

8. A method of prophylactically controlling a viral infection in a mammal which comprises administering an amount effective to prophylactically control said viral infection of a compound of claim **1**.

4,194,000
PSYCHOACTIVE 1,3,4-BENZOTRIAZEPINE-2-THIONES AND A METHOD FOR TREATING CENTRAL NERVOUS SYSTEM DEPRESSION AND ANXIETY

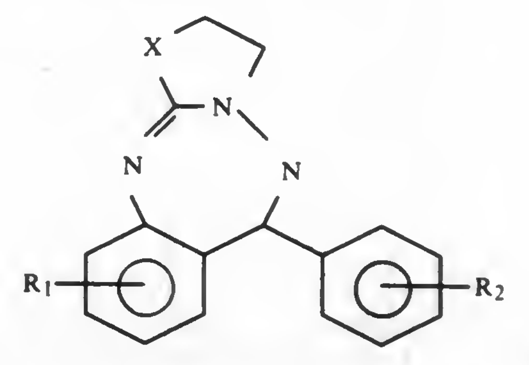
Donald L. Trepanier, and Thomas C. Britton, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 769,126, Feb. 16, 1977. This application Feb. 13, 1978, Ser. No. 877,064

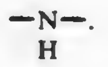
Int. Cl.^{2} A61K *31/425, 31/415*

U.S. Cl. 424—270 **3 Claims**

1. A method for treating the symptoms of central nervous system depression or anxiety in a mammal which comprises administering to said mammal an effective psychoactive amount of a compound or a pharmaceutically-acceptable salt thereof having the formula



wherein R_1 and R_2 independently represent hydrogen, lower alkyl, or halo and X represents sulfur or a secondary amine of the formula



$$-\underset{H}{N}-.$$

4,194,001
SYNERGISTIC INSECTICIDAL COMPOSITIONS

Colin N. E. Ruscoe, Braywick; Henry G. H. Alner, Wokingham, and Brian C. Baldwin, Wargrave, all of England, assignors to Imperial Chemical Industries Limited, London, England

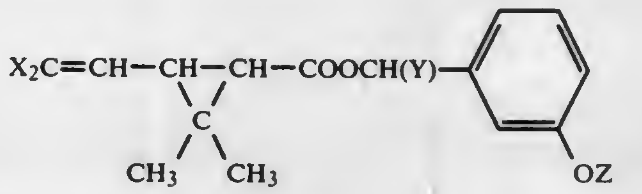
Filed Aug. 29, 1977, Ser. No. 828,826

Claims priority, application United Kingdom, Sep. 6, 1976, 36817/76

Int. Cl.^{2} A01N *9/02*

U.S. Cl. 424—273 R **2 Claims**

1. A synergised insecticidal and acaricidal composition comprises an insecticidally effective amount of an insecticide of the formula:



wherein each X is chlorine, Y is hydrogen and Z is phenyl, in combination with a synergistically effective amount of 1-n dodecylimidazole in the range of about 5 to 50 parts of 1-n-dodecylimidazole per part of said insecticide, the synergistic action of the 1-n-dodecylimidazole being evidenced by the acaricidal activity added to the composition when the 1-n-dodecylimidazole is used even though the 1-n-dodecylimidazole is not itself an acaricide.

4,194,002
CHOLESTEROL ESTER-REDUCING AMIDES OF HEXAHYDROINDOLINOLS

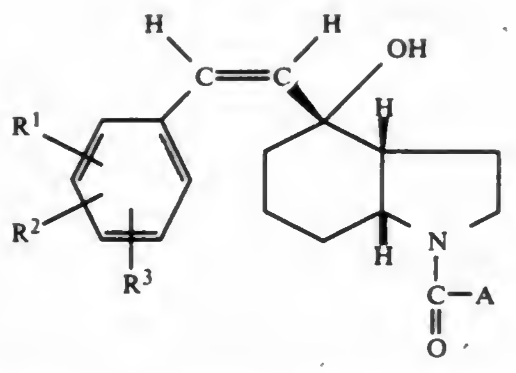
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 29, 1978, Ser. No. 891,298

Int. Cl.^{2} A61K *31/40;* **C07D** *209/04*

U.S. Cl. 424—274 **32 Claims**

1. A compound of the formula:



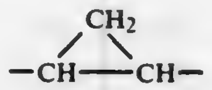
wherein

R^1 and R^2 are, independently, hydrogen, fluorine, chlorine, trifluoromethyl, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, and

R^3 is hydrogen, or alkoxy of 1 to 4 carbon atoms, with the proviso that when R^1 and R^2 are both other than hydrogen and R^3 is alkoxy then at least one of R^1 and R^2 is alkoxy, or

R^1 and R^2 are bound to adjacent ring carbon atoms and are together $-(CH_2)_q-$, wherein q is 3 or 4, $-CH=CH-CH=CH-$, or $-O-CH_2-X-$, wherein X is $-O-$ or $-CH_2-$, and

R^3 is hydrogen, fluorine, chlorine, trifluoromethyl, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms; and A is either of type A′, wherein A is the residue of an unsaturated long-chain fatty acid minus the carboxylic portion, said acid having from 8 to 24 carbon atoms and having from 1 to 4 ethylenically unsaturated positions; or A is of type A″, wherein A is a saturated hydrocarbon radical having from 1 to 4 cyclopropanyl groups of the formula



said A having from 7 to 23 carbon atoms plus one carbon atom for each cyclopropanyl group present.

21. A method of reducing the cholesterol ester content of an arterial wall, in a mammal in need of such treatment, comprising administering a cholesterol ester-reducing amount of a compound of claim **1** to said mammal.

4,194,003
NEW PYRROLE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THERAPEUTIC APPLICATIONS THEREOF

Jacqueline Laforest, Vincennes; Jacqueline Bonnet, Vichy, and Pierre Bessin, Chilly-Mazarin, all of France, assignors to Albert Rolland S.A., Paris, France

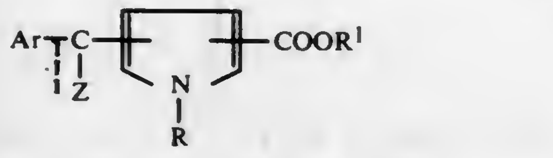
Filed Sep. 26, 1978, Ser. No. 947,337

Claims priority, application United Kingdom, Oct. 10, 1977, 42105/77

Int. Cl.^{2} A61K *31/40;* C07D *207/34*

U.S. Cl. 424—274 **7 Claims**

1. A compound selected from the compounds of the formula



(I)

in which:

R^1 is selected from hydrogen and C_{1-4} alkyl,

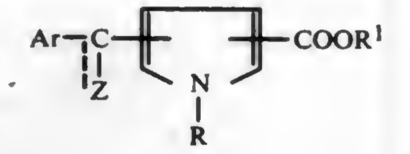
R is selected from C_{1-6} alkyl, benzyl and phenyl,

Ar is selected from phenyl, phenyl monosubstituted with a group selected from C_{1-4} alkyl, C_{1-4} alkoxy and halogen, phenyl polysubstituted with groups selected from C_{1-4} alkyl, C_{1-4} alkoxy and halogen, naphthyl, naphthyl monosubstituted with a group selected from C_{1-4} alkyl, C_{1-4} alkoxy and halogen, naphthyl polysubstituted with groups selected from C_{1-4} alkyl, C_{1-4} alkoxy and halogen, thienyl, furyl and pyrrolyl

and >C$\overline{\overline{---}}$Z represents a carbonyl group, a group of the formula >C=NOH or an alcoholic group >CHOH

and the salts of acids of formula (I) with physiologically acceptable bases.

6. A therapeutic composition having an uricosuric activity containing an uricosuric effective amount of a compound selected from the compounds of the formula



(I)

in which:

R^1 is selected from hydrogen and C_{1-4} alkyl,

R is selected from C_{1-6} alkyl, benzyl and phenyl,

Ar is selected from phenyl, phenyl monosubstituted with a group selected from C_{1-4} alkyl, C_{1-4} alkoxy and halogen, phenyl polysubstituted with groups selected from C_{1-4} alkyl, C_{1-4} alkoxy and halogen, naphthyl, naphthyl monosubstituted with a group selected from C_{1-4} alkyl, C_{1-4} alkoxy and halogen, naphthyl polysubstituted with group selected from C_{1-4} alkyl, C_{1-4} alkoxy and halogen, thienyl, furyl and pyrrolyl

and >C$\overline{\overline{---}}$Z represents a carbonyl group, a group of the formula >C=NOH or an alcoholic group >CHOH

and the salts of acids of formula (I) with physiologically acceptable bases

and a pharmaceutically acceptable excipient.

4,194,004
SUBSTITUTED BENZENESULPHONIC ACID ESTERS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS MEDICAMENTS

Ekkehard Niemers; Hartmund Wollweber, both of Wuppertal; Heinrich Kölling, Haan, and Herbert Thomas, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

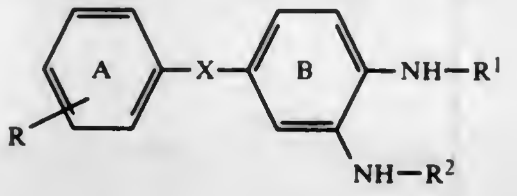
Filed Nov. 2, 1977, Ser. No. 847,890

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653766

Int. Cl.^{2} A61K *31/27, 31/255;* C07C *143/68*

U.S. Cl. 424—300 **13 Claims**

1. A substituted benzenesulphonic acid ester of the formula



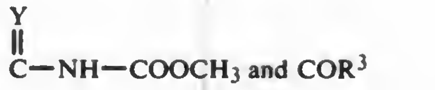
(I)

in which

R represents hydrogen, a straight-chain or branched alkyl radical with 1 to 6 carbon atoms, unsubstituted or substituted by (C_1–C_4)-alkoxy, (C_1–C_4)-alkylmercapto, halogen or CN; or a formylamino, acetylamino, n-propionylamino, i-butrylamino or n-butyrylamino radical,

X represents the group SO_3 and

R^1 and R^2 are different from one another and individually represent one of the radicals



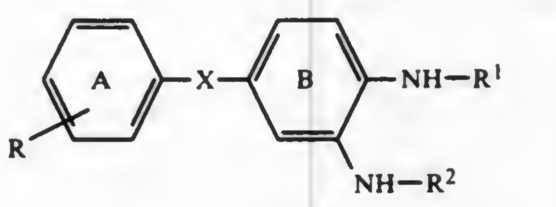
$$\overset{Y}{\overset{\|}{C}}-NH-COOCH_3 \text{ and } COR^3$$

wherein

Y represents S and

R^3 represents hydrogen, a straight-chain or branched alkyl radical with 1 to 6 carbon atoms, unsubstituted or substituted by (C_1–C_6)-alkoxy, halogen, (C_1–C_4)-alkylmercapto or cyano, or a pharmaceutically acceptable salt thereof.

4. A pharmaceutical composition containing as an active ingredient an anthelmintically effective amount of a compound of a substituted benzenesulphonic ester of the formula



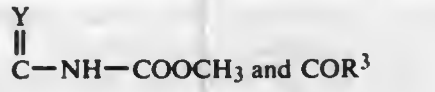
(I)

in which

R represents hydrogen, a straight-chain or branched alkyl radical with 1 to 6 carbon atoms, unsubstituted or substituted by (C_1–C_4)-alkoxy, (C_1–C_4)alkylmercapto halogen or CN, or a formylamino, acetylamino, n-propionylamino, i-butrylamino or n-butyrylamino radical,

X represents the group SO_3 and

R^1 and R^2 are different from one another and individually represent one of the radicals



$$\overset{Y}{\overset{\|}{C}}-NH-COOCH_3 \text{ and } COR^3$$

wherein

Y represents S and

R^3 represents hydrogen, a straight-chain or branched alkyl radical with 1 to 6 carbon atoms, unsubstituted or substituted by (C_1–C_6)-alkoxy, halogen, (C_1–C_4)-alkylmercapto or cyano, or a pharmaceutically acceptable salt thereof;

in admixture with a solid or liquefied gaseous diluent.

4,194,005
COMBATING ARTHROPODS WITH 4-CYANO-4′-[N-(N′-SUBSTITUTED-BENZOYL)-UREIDO]-DIPHENYL ETHERS

Wilhelm Sirrenberg, Sprockhoevel; Erich Klauke, Cologne; Jürgen Schramm, Dormagen; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

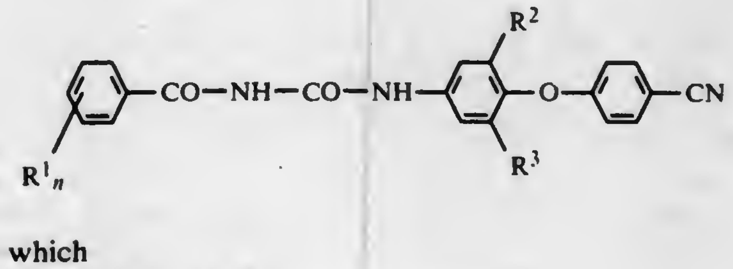
Filed Jul. 27, 1977, Ser. No. 819,631

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638233

Int. Cl.^{2} A01N *9/20;* C07C *121/78*

U.S. Cl. 424—304 **10 Claims**

1. A 4-cyano-4′-[N-(N′-substituted-benzoyl)-ureido]-diphenyl ether of the formula



in which

R^1 is halogen or alkyl,

R^2 is chlorine, bromine or hydrogen,

R^3 is bromine or hydrogen, and

n is 1, 2, 3, 4 or 5.

9. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim **1**.

4,194,006
THERAPEUTIC APPLICATION OF ACETYL-d,l-CARNITINE AND OTHER ACYL DERIVATIVES OF D,L-CARNITINE

Claudio Cavazza, via Marocco 35, Rome, Italy (001⁴1)

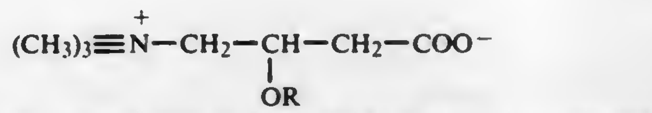
Filed Apr. 10, 1978, Ser. No. 895,044

Claims priority, application Italy, Apr. 29, 1977, 49180 A/77; Feb. 3, 1978, 47898 A/78

Int. Cl.^{2} A61K *31/22, 31/23*

U.S. Cl. 424—311 **16 Claims**

1. Method of using a composition containing a d,l-carnitine derivative in the therapy of myocardial anoxia, ischaemia, arrhythmic syndromes, and heart fatigue and failure, in animals or in humans which comprises administering an effective dose of said composition to the animal or human for said therapy wherein the d,l-carnitine derivative is (a) a compound of the formula



$$(CH_3)_3\equiv\overset{+}{N}-CH_2-\underset{OR}{\underset{|}{CH}}-CH_2-COO^- \quad (I)$$

or (b) the pharmaceutically acceptable salts of (I) wherein R represents acetyl, propionyl, butyryl, hydroxy-butyryl, or acetoacetyl.

4,194,007
α-HYDROXYRETINOIC ACID, α-KETORETINOIC ACID AND MIXTURES AND THEIR USE IN TREATING SKIN CONDITIONS

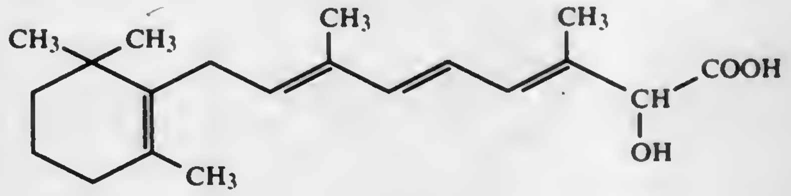
Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046, and Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002

Filed Jan. 13, 1978, Ser. No. 869,351

Int. Cl.^{2} A61K *31/20;* C11C *1/00*

U.S. Cl. 424—318 **14 Claims**

1. The compound of formula:



14. A method for treating the symptoms of a disease selected from the group consisting of dry skin, ichthyosis, acne, dandruff, palmar and planter hyperkeratosis, psoriasis, eczema, mycosis fungoides, Darier's disease, and lichen simplex chronicus

comprising: topically applying to involved areas of the human body a material selected from the group consisting of alpha hydroxyretinoic acid, alpha ketoretinoic acid, and mixtures of alpha hydroxyretinoic acid and alpha ketoretinoic acid in a pharmaceutically acceptable carrier for topical application in an amount sufficient to improve the symptoms of said disease.

4,194,008

N-ARYL-N'-(CYCLO)-ALKYL-THIOUREAS AND THEIR USE AS AGENTS FOR COMBATING ANIMAL PESTS AND PLANT PESTS

Edgar Enders, Cologne; Wilhelm Stendel, Wuppertal, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 25, 1977, Ser. No. 827,902

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2639748; Dec. 21, 1976, 2657772; Jun. 18, 1977, 2727416

Int. Cl.^{2} A01N *9/12;* **C07C** *157/05*

U.S. Cl. 424—322 **12 Claims**

1. An N-aryl-N'-(cyclo)alkyl thiourea or an acid-addition salt thereof selected from the group consisting of N-(2,6-diisopropyl-phenyl)-N'-(3-trifluoromethylcyclohexyl)-thiourea, N-(2,6-di-sec.-butyl-phenyl)-N'-cyclopentyl-thiourea, N-(4-n-butyl-2,6-diethyl-phenyl)N'-cyclohexyl-thiourea.

11. A method of combatting animal and plant pests which comprises applying to the pests, or a habitat thereof a pesticidally effective amount of a compound for combatting a pest of the order isopoda, Diplopoda, Chilopoda, Symphyla, Thysanura, Collembola, Orthoptera, Dermaptera, Isoptera, Anoplura, Mallophaga, Thysanoptera, Heteroptera, Homoptera, Lepidoptera, Coleoptera, Hymenoptera, Diptera, Siphonaptera, Arachnida or Acarina according to claim 1 either alone or in admixture with a diluent or carrier.

4,194,009

ARYLOXYPHENYLPROPYLAMINES FOR OBTAINING A PSYCHOTROPIC EFFECT

Bryan B. Molloy, and Klaus K. Schmiegel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

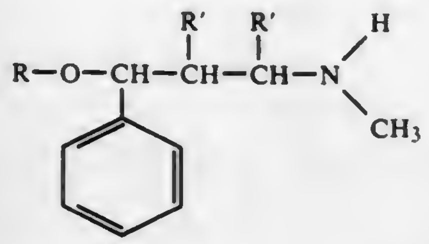
Division of Ser. No. 432,379, Jan. 10, 1974. This application Sep. 15, 1976, Ser. No. 723,349

The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.

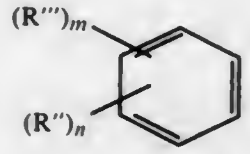
Int. Cl.^{2} A61K *31/135;* **C07C** *91/22*

U.S. Cl. 424—330 **1 Claim**

1. A pharmaceutical composition in unit dosage form adapted for administration to obtain a psychotropic effect, consisting per dosage unit of a pharmaceutical carrier and a psychotropically effective amount within the range of from 1 to 50 mg. of a compound of the formula:



wherein each R' is independently hydrogen or methyl; wherein R is naphthyl or



wherein R'' and R''' are halo, trifluoromethyl, C_1–C_4 alkyl, C_1–C_3 alkyloxy or C_3–C_4 alkenyl; and
wherein n and m are 0, 1 or 2; and an acid addition salt thereof formed with a pharmaceutically-acceptable acid.

4,194,010

PHARMACOLOGICALLY ACTIVE ENOL ETHER COMPOUNDS

Alexander C. Goudie, Harlow, England, assignor to Beecham Group Limited, United Kingdom

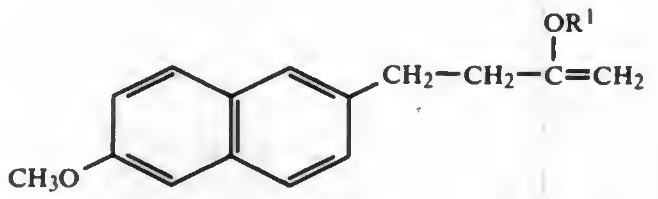
Division of Ser. No. 735,738, Oct. 26, 1977. This application Jun. 2, 1978, Ser. No. 911,797

Claims priority, application United Kingdom, Oct. 29, 1975, 44530/75

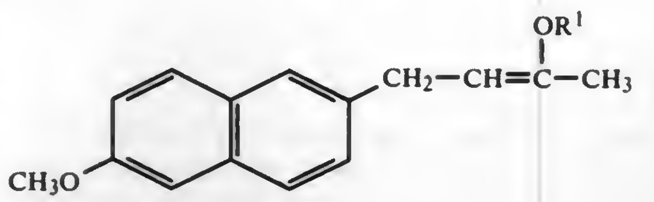
Int. Cl.^{2} C07C *43/20;* **A61K** *31/075*

U.S. Cl. 424—341 **12 Claims**

1. An enol ether of the formula (II) or (III):



(II)



(III)

in each of which formulas R^1 is alkyl of 2–4 carbon atoms.

4,194,011

MANUFACTURE OF CHEESE

Rutilio Invernizzi, Milan, and Giovanni Prella, Vercelli, both of Italy, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jul. 29, 1977, Ser. No. 820,299

Claims priority, application Italy, Aug. 2, 1976, 50724 A/76; Feb. 3, 1977, 47896 A/77

Int. Cl.^{2} A23C *19/02, 19/14*

U.S. Cl. 426—8 **24 Claims**

1. A process for the production of cheese which comprises providing a starting material the composition of which is that of the cheese which it is desired to produce, subjecting this material to a thermal pasteurisation or sterilisation treatment, packaging the pasteurised or sterilised material under heat at a temperature equal to 55° C. or above in a hermetic container or containers whilst at the same time adding a lactic fermentation agent to it and, finally, incubating the product thus packaged until fermentation is complete, wherein no drainage takes place once the starting material is provided.

4,194,012

FERMENTED FEED FOR RUMINANTS AND PROCESS FOR PRODUCING SAME

Isao Horiuchi, Kodan 5-101, Yabe-cho, 337 Tozuka-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Apr. 18, 1977, Ser. No. 788,442

Int. Cl.^{2} A23K *1/12*

U.S. Cl. 426—53 **2 Claims**

1. A process for producing a feed for ruminants which comprises the steps of:

(a) mixing about 90–99.5% by weight of a wood fiber material which is not digestible by ruminants and which is selected from the group consisting of wood chips, sawdust, sawpowder, waste paper, and mixtures thereof, and 0.5–10% by weight of a non-protein nitrogen compound;

(b) inoculating the mixture with an effective amount of an ester producing microorganism or the combination of an organic acid producing microorganism and an alcohol producing yeast, whereby esters are formed in said feed by fermentation; and

(c) cultivating said ester producing microorganism or said combination in said mixture for at least 18 hours.

4,194,013

METHIONINE-CONTAINING MICROGRANULATES AND METHOD OF MANUFACTURE

Josef Rehacek, and Jaroslav Dasek, both of Yverdon, Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Feb. 2, 1978, Ser. No. 874,630

Claims priority, application Switzerland, Feb. 22, 1977, 2165/77

Int. Cl.^{2} A23J *3/00;* **A23L** *1/34*

U.S. Cl. 426—96 **15 Claims**

1. Microgranulates intended for addition to foods having a deficit in methionine so as to increase their nutritive value, comprising a core consisting of microcrystals of methionine of at most about 10 microns in size encapsulated in a matrix comprising a gellable water soluble polymer of spheroid shape in which they are evenly distributed, the core being coated in one or more layers of a vegetable protein extracted from gluten, the diameter of the microgranulates obtained being from about 25 to about 200 microns.

4,194,014

METHOD FOR ADJUSTABLY HEATING A LIQUID

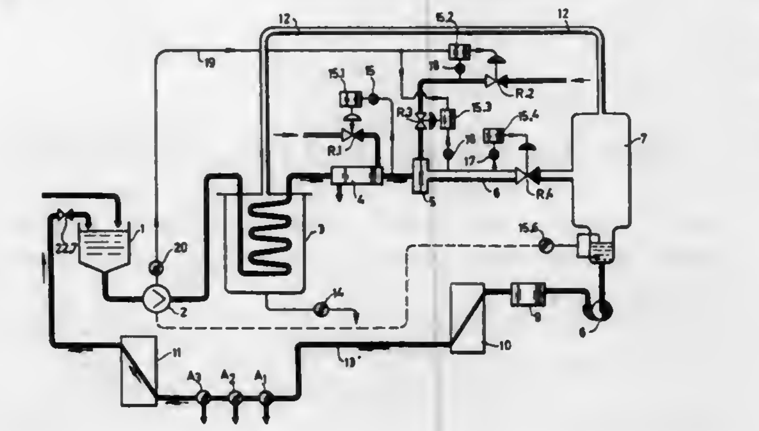
Willem F. Hermans, Amstelveen, and Louwrens J. van Eijk, Nieuw-Vennep, both of Netherlands, assignors to Stork Amsterdam B.V., Amstelveen, Netherlands

Filed Dec. 28, 1977, Ser. No. 865,264

Claims priority, application Netherlands, Dec. 30, 1976, 7614605

Int. Cl.^{2} A23L *3/00;* **A23C** *3/02*

U.S. Cl. 426—231 **2 Claims**



1. In a method for sterilizing or pasteurizing a liquid food product, wherein the product is heated by a heating medium as it flows through a heating device, with the heated product passing successively through an insulated dwelling stretch so as to effect the desired sterilization or pasteurization of said product in said dwelling stretch and then through a throttle valve into an expansion vessel from which the treated product is discharged, the improvement comprising the steps of:

measuring the amount of product supplied to the heating device per unit of time;

measuring the pressure of the heating medium as supplied to said heating device;

measuring the temperature of the product within the dwelling stretch;

measuring the pressure of the product in the dwelling stretch;

controlling and adjusting the amount of heating medium which is supplied to the heating device per unit of time in dependence on both the measured amount of product supplied to the heating device and the measured temperature of the product within the dwelling stretch;

controlling the pressure of the heating medium as supplied to the heating device in dependence on the measured amount of supplied product and the measured pressure of the heating medium; and

adjusting the throttle valve so that the measured product pressure in the dwelling stretch remains at a constant value irrespective of alterations in the amount of supplied product.

4,194,015

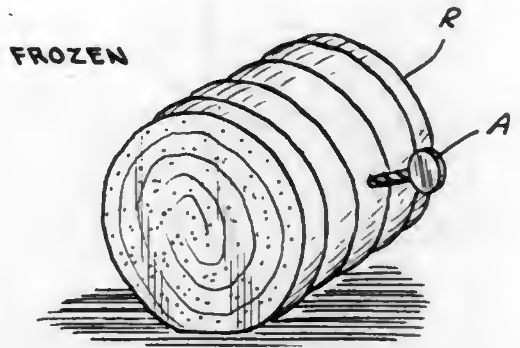
METHOD OF COOKING A FROZEN FOOD ITEM WITH A HEAT PROBE

Albert E. Colato, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.

Filed Jun. 26, 1978, Ser. No. 919,745

Int. Cl.^{2} A01K *43/00*

U.S. Cl. 426—233 **1 Claim**



1. The method of cooking a frozen food item with the use of a heat probe consisting in inserting an insert rod into the food item in an unfrozen state, then freezing the food item with the insert rod therein, then removing the insert rod from the frozen food item thereby creating a hole in the frozen food item, then inserting a heat probe into the hole in the frozen food item, then cooking the frozen food item with the heat probe therein.

4,194,016

PROCESS FOR PREPARING PRECOOKED FRUITS AND VEGETABLES

Merle L. Weaver, Martinez, and Keng C. Ng, Berkeley, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 809,355, Jun. 23, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,340

Int. Cl.^{2} A23L *1/212, 1/216*

U.S. Cl. 426—419 **12 Claims**

1. A process for preparing precooked fruits and vegetables, which exhibit excellent texture, flavor, and color on finish-cooking, comprising the steps of

(a) washing raw, unpeeled fruits or vegetables,

(b) cooking the fruits or vegetables to their centers without damage to the surface tissue thereof, the temperature of said cooking being below the temperature at which sloughing of the fruit or vegetable surface would occur if the fruit or vegetable were cooked to its center at that temperature, said sloughing occurring at a temperature of about 81°–83° C., for a period of about 5 to 45 minutes,

(c) heating the so-cooked fruits or vegetables of step b in air at a temperature of about 66°–93° C. for a period of about 5 to 20 minutes such that the fruit or vegetable tissue has a moisture content above 68%, and then,

(d) preserving the so-heated fruits or vegetables in the absence of starch suspensions.

4,194,017

FLAVORED BOUILLON BASE

Hermann Poiger, Dübendorf, and Lienhard B. Huster, Winterthur, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Continuation of Ser. No. 714,116, Aug. 13, 1976, abandoned. This application Apr. 25, 1978, Ser. No. 899,719
Claims priority, application Switzerland, Aug. 26, 1975, 11033/75
Int. Cl.^{2} A23L *1/231*
U.S. Cl. 426—533 **7 Claims**

1. A process for the production of a flavouring product reminiscent of meat in taste, which comprises diluting a yeast autolysate with at least the same quantity by weight of water, precipitating substantially insoluble salts, which includes alkaline-earth metal phosphates, by heating the diluted autolysate at a pH-value in the range from about 7 to 8.5, separating solid fractions from the autolysate treated by heating so that only a solution is left, treating the residual solution obtained by steam distillation, concentrating the treated solution by evaporation to a dry matter content of from 75% to 85% by weight, mixing the concentrate obtained with at least one vegetable protein hydrolysate, a monosaccharide and a substance containing sulphur in sulphide form in a ratio of 60–80:15–30:1–3:1–3% by weight, and heating the mixture for 0.5 to 5 minutes to a temperature in the range from 100° C. to 200° C. to obtain a reaction product.

4,194,018

METHOD OF PRODUCING AN AQUEOUS SOYA SUSPENSION

Theodore Hodel, Yverdon; Marcel Buhler, Tolochenaz, and Josef Rehacek, Yverdon, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Filed Sep. 30, 1977, Ser. No. 838,130
Claims priority, application Switzerland, Oct. 8, 1976, 12793/76
Int. Cl.^{2} A23L *1/20, 2/00*
U.S. Cl. 426—580 **12 Claims**

1. A process for the production of an aqueous soya suspension, which comprises grinding soya beans in the presence of water at a temperature of from 90° to 100° C. to form a dispersion of particles of which the majority have dimensions of about 100 to 500μ; heating the dispersion by the injection of steam to a temperature of from 120° to 160° C. thereby destroying antitrypsin factor in the soya beans; and grinding the dispersion to form a suspension containing corpuscles of protein and fat with dimensions of about 2 to 10μ and cell wall debris of which the largest dimension does not exceed about 40 to 300μ.

4,194,019

PREPARATION OF AN ACIDIFIED MILK BEVERAGE

Mutsuo Yasumatsu; Kenji Katayama; Shozo Takeuchi, and Yoshio Saito, all of Tokyo, Japan, assignors to Calpis Shokuhin Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 782,396, Mar. 29, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,910
Claims priority, application Japan, Apr. 8, 1976, 52-38776
Int. Cl.^{2} A23L *2/00;* **A23C** *9/10*
U.S. Cl. 426—580 **3 Claims**

1. A method for the production of a stabilized acidified milk beverage, which consists essentially of

preparing an acidified milk having a milk solids-not-fat content of 0.7 to 1.5 w/w% and a pH value of 3.35 to 3.75 from skim milk and subsequently

subjecting the acidified milk to an ultra-high temperature heating treatment at temperatures in the range of 125° to 160° C. for not more than ten seconds, said process being carried out in the absence of added sugar prior to said ultra-high temperature heating.

4,194,020

METHOD FOR PREVENTING DEGRADATION OF A LIQUID DEVELOPER FOR ELECTROSTATIC RECORDING

Hiroshi Tanaka, Tokyo, and Terukuni Tsuneda, Matsudo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 555,088, Mar. 4, 1975, abandoned. This application Aug. 5, 1977, Ser. No. 822,339
Claims priority, application Japan, May 8, 1974, 49-27616
Int. Cl.^{2} G03G *13/10, 13/16*
U.S. Cl. 430—119 **4 Claims**

3. In an electrophotographic process including the steps of

(a) forming a toner image on a support by developing an electrostatic image on said support with a liquid developer comprising toner particles dispersed in a highly insulating carrier liquid;

(b) transferring said toner image onto a transfer paper containing, as a sizing agent, rosin size and aluminum sulfate, by contacting said toner image with said transfer paper and applying an electric field thereto;

(c) recovering and combining any nontransferred liquid developer remaining on said support with the liquid developer employed in step (a) for reuse in subsequent developing steps; and

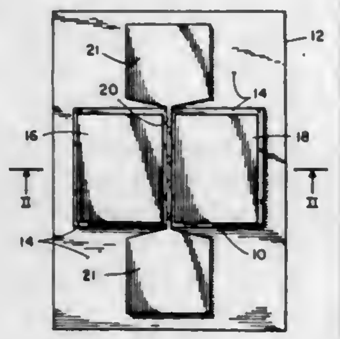
(d) repeating steps (a)–(c);

wherein the improvement comprises suppressing the accelerated deterioration of the liquid developer during such repeated use by using a transfer paper containing rosin size and aluminum sulfate, wherein the amount of rosin size is not more than an equimolar amount based on the amount of aluminum sulfate, such that a substantial amount of rosin aluminum soap is not eluted into said nontransferred liquid developer during said transferring step (b).

4,194,021

MICROWAVE INP/SIO$_2$ INSULATED GATE FIELD EFFECT TRANSISTOR

Louis J. Messick, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 846,070, Oct. 27, 1977, Pat. No. 4,161,739. This application May 21, 1979, Ser. No. 40,800
Int. Cl.^{2} H01L *29/78, 21/316*
U.S. Cl. 427—95 **14 Claims**



1. The method of making an insulated gate field effect transistor including the steps of:

placing an indium phosphide sample consisting of an indium phosphide n-type semiconducting film deposed on a semi-insulating indium phosphide substrate, in a reaction zone;

introducing a vaporous mixture of nitrogen, oxygen and silane (SiH_4) into said reaction zone;

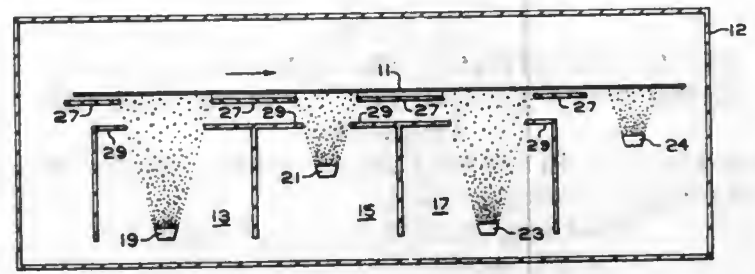
heating said indium phosphide sample to a temperature sufficient to cause the formation of a vitreous SIO_2 film on said semiconducting film without producing interfacial properties unsuitable for the fabrication of field effect transistors;

maintaining said temperature for a period of time sufficient to deposit an SiO_2 film having a thickness suitable as a gate insulating film on the surface of said semiconducting film.

4,194,022

TRANSPARENT, COLORLESS, ELECTRICALLY CONDUCTIVE COATING

Frank H. Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation of Ser. No. 818,360, Jul. 25, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 935,223
Int. Cl.^{2} B05D *5/12, 3/04, 3/10*
U.S. Cl. 427—109 **7 Claims**



1. A method for making a transparent, colorless, electroconductive coated article comprising the steps of:

a. evacuating a vacuum chamber containing a transparent substrate to be coated;

b. vacuum depositing in a partial pressure of oxygen a transparent film of titanium oxide, TiO_x wherein x has a value greater than 1.0 and less than 2.0;

c. vacuum depositing on the titanium oxide film a continuous, transparent, electroconductive film of a metal selected from the group consisting of gold and silver;

d. vacuum depositing in a partial pressure of oxygen a second transparent film of titanium oxide, TiO_x wherein x has a value of greater than 1.0 and less than 2.0, on the electroconductive film;

e. establishing in the vacuum chamber an atmosphere comprising the vapor of a material selected from the group consisting of oils, waxes, heavy organic acids, alcohols and amines capable of decreasing the rate of oxidation of titanium oxide;

f. exposing said films to said atmosphere; and

g. oxidizing the titanium oxide constituents of the coating.

4,194,023

CONTROLLED DEPOSITION OF ASPHALT EMULSIONS

Donald R. Cushman, Wenonah; Charles A. Pagen, West Deptford, and John W. Schick, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Sep. 22, 1978, Ser. No. 944,823
Int. Cl.^{2} E01C *5/12;* **B05D** *5/10*
U.S. Cl. 427—138 **9 Claims**

1. A method for depositing asphalt from an asphalt emulsion onto an aggregate, that comprises wetting down the aggregate with water containing between about 0.01 weight percent and about 1.0 weight percent of coupling agent selected to have charge opposite to the charge of said asphalt emulsion and applying said asphalt emulsion to the wetted aggregate.

4,194,024

METHOD OF MAKING HYDROPHILIC ARTICLES OF WATER-INSOLUBLE POLYMERS

Arno Holst; Michael Kostrzewa, and Helmut Lask, all of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Division of Ser. No. 838,339, Sep. 10, 1977, abandoned, which is a continuation of Ser. No. 681,730, Apr. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 535,972, Dec. 23, 1974, abandoned. This application May 8, 1978, Ser. No. 904,174
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1973, 2364628
Int. Cl.^{2} B05D *3/00*
U.S. Cl. 427—180 **1 Claim**

1. A process for the production of a hydrophilic film of a water-insoluble polymer selected from the group consisting of regenerated cellulose, cellulose ether, cellulose ester, and polyalkylene, and capable of forming films, which comprises sprinkling the surface of said film, in tackified condition, with from an amount effective to render said film hydrophilic up to 50% by weight of the total weight of said film, of amorphous particles of a size within the range of about 0.01 to 2 mm of an orginally water-soluble cellulose ether selected from the group consisting of carboxymethyl cellulose, hydroxyethyl cellulose and methylhydroxyethyl cellulose, prepared from natural cellulose and rendered by chemical cross-linking more than 50% by weight water-insoluble while remaining water-absorbent, said cross-linking agent being selected from the group consisting of dimethylol-methylene bisacrylamide, methylene-bis-acrylamide, tri- and tetra-chloropyrimidine, cyanuric chloride, epichlorohydrin, dichloroacetic acid, a diepoxide and a di-α-halogenohydrin.

4,194,025

PROCESS FOR THE PRODUCTION OF STABILIZED SODIUM PERCARBONATE

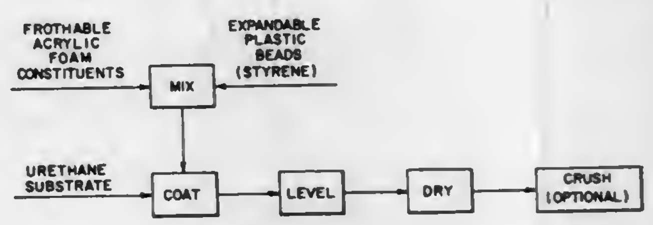
Hans Klebe; Gerd Knippschild, both of Rheinfelden, and Hubert Schuster, Karsau-Beuggen, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany
Filed Mar. 1, 1979, Ser. No. 16,729
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1978, 2810379
Int. Cl.^{2} C11D *7/54*
U.S. Cl. 427—215 **10 Claims**

1. A process for preparing sodium percarbonate particles comprising a sodium percarbonate nucleus and an encasing layer comprising dehydrated sodium perborate containing less than 54 grams of water per mole and sodium silicate comprising spraying a supersaturated aqueous sodium perborate solution and an aqueous sodium silicate solution on sodium percarbonate particles and then drying to at least partially remove the water.

4,194,026

METHOD OF MANUFACTURING TEXTURED FOAM COATINGS AND MATERIALS

Clark W. Goodale, Simi Valley; Charles W. Morgan, Rolling Hills; Albert L. Rhoton, Cypress, all of Calif., and David F. McNeil, Hickory, N.C., assignors to United Foam Corporation, Compton, Calif.
Continuation-in-part of Ser. No. 664,568, Mar. 8, 1976, abandoned. This application Mar. 18, 1977, Ser. No. 778,985
Int. Cl.^{2} B05D *3/02, 5/00*
U.S. Cl. 427—244 **31 Claims**


FROTHABLE ACRYLIC FOAM CONSTITUENTS
EXPANDABLE PLASTIC BEADS (STYRENE)
MIX
URETHANE SUBSTRATE
COAT
LEVEL
DRY
CRUSH (OPTIONAL)

1. A method of producing a flexible material having a textured surface for use as an acoustical wall and ceiling covering comprising the steps of:

(a) providing a mixture of a curable frothed elastomeric emulsion composition comprising 20 pounds or less of thermally expandable plastic beads to each 100 pounds of said elastomeric composition, said thermally expandable plastic beads having a diameter of at least approximately 0.5 millimeters;

(b) uniformly distributing said mixture over one surface of a flexible urethane foam sheet; and

(c) heating said mixture to expand the plastic beads and to dry and cure the frothed elastomeric emulsion composition to form a textured pebble-like elastomeric coating.

4,194,027

METHOD OF COATING WITH HOMOGENEOUS PYROCARBON

Charles C. Adams; Curtis L. Allen, and Gottfried E. A. Besenbruch, all of San Diego, Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Apr. 21, 1975, Ser. No. 570,223

Int. Cl.^{2} C23C *11/00, 13/00*

U.S. Cl. 427—249 **11 Claims**

1. A method of coating items with substantially homogeneous pyrolytic carbon, which method comprises

heating the items to be coated to a temperature of between about 1000° C. and about 2000° C. in an enclosure and flowing a mixture of gases through said enclosure at a rate so that said gases are heated to a temperature approaching the temperature of said items causing gaseous decomposition and deposition of pyrolytic carbon,

said mixture containing an inert gas portion and a hydrocarbon portion,

said hydrocarbon portion including between about 25 v/o and about 65 v/o of acetylene and the remainder of propylene, said mixture composition being such that the amount of heat needed to raise said gaseous mixture from the temperature at which it enters the enclosure to said decomposition temperature is approximately balanced against the heat given off by the hydrocarbon decomposition.

4,194,028

PROCESS FOR APPLYING A PROTECTIVE LAYER TO SHAPED CARBON BODIES

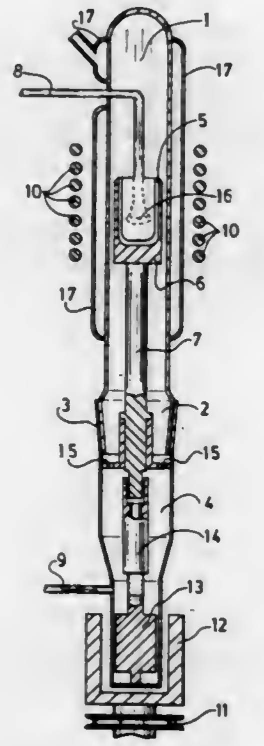
Erhard Sirtl, Marktl, and Heinz-Jorg Rath, Burghausen, both of Fed. Rep. of Germany, assignors to Wacher-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,963

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739258

Int. Cl.^{2} B05D *1/36, 7/22*

U.S. Cl. 427—249 **15 Claims**



1. A process for applying a protective layer to shaped carbon bodies within a reactor, comprising the steps of:

heating the shaped carbon bodies to a temperature of 1250° to 1350° C.;

depositing by vapor deposition the reaction products of a gaseous admixture containing a carrier gas and a member selected from the group consisting of (a) a silicon- and carbon-containing gaseous compound and (b) a gaseous admixture including a silicon-containing gaseous compound and a carbon-containing gaseous compound onto the surface of the shaped carbon bodies so as to produce a silicon carbide layer;

lowering the temperature of the carbon bodies to between 1000° and 1200° C.; and

subsequently depositing by chemical vapor deposition from a carrier gas onto the shaped carbon body, the reaction product of a gaseous organosilicon compound and ammonia so as to produce a silicon nitride layer.

4,194,029

NOVEL 4-CHROMANONE-7-PHOSPHATES AND PHOSPHONATES AND THE INSECTICIDAL USE THEREOF

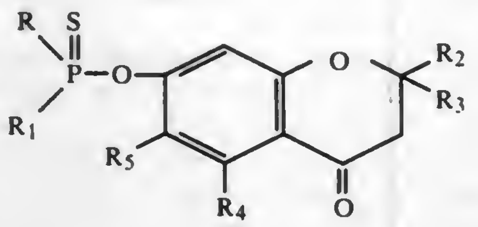
Hsiao-Ling Lam, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 17, 1978, Ser. No. 934,436

Int. Cl.^{2} A61K *31/35;* **C07D** *311/22*

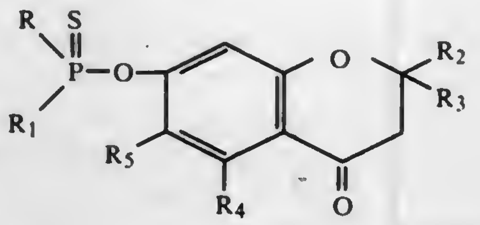
U.S. Cl. 424—283 **16 Claims**

1. A compound having the formula



in which R is C_1–C_3 alkyl or C_1–C_3 alkoxy, R_1 is C_1–C_3 alkoxy, R_2 and R_3 are C_1–C_3 alkyl; R_4 is hydrogen or C_1–C_3 alkyl; and R_5 is hydrogen, chloro or C_1–C_3 alkoxy.

12. A method of controlling insects or mites comprising applying to the insects or mites or the locus thereof an insecticidally or miticidally effective amount of a compound having the formula



in which R is C_1–C_3 or C_1–C_3 alkoxy; R_1 is C_1–C_3 alkoxy; R_2 and R_3 are C_1–C_3 alkyl; R_4 is hydrogen or C_1–C_3 alkyl and R_5 is hydrogen, chloro or C_1–C_3 alkoxy.

4,194,030

METHOD FOR REINFORCING FABRIC BY APPLYING A FLUID REINFORCING MATERIAL THERETO

Cassiano Fassina, S. Mauro Torinese, Italy, assignor to Codama Holding S.A., Luxembourg

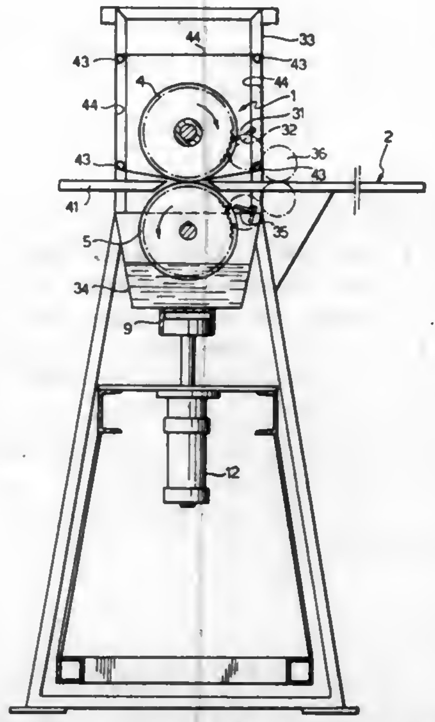
Continuation of Ser. No. 635,544, Nov. 26, 1975, abandoned. This application Oct. 11, 1977, Ser. No. 841,079

Claims priority, application Italy, Dec. 2, 1974, 70493 A/74; Jul. 23, 1975, 68918 A/75

Int. Cl.^{2} B05D *5/00*

U.S. Cl. 427—286 **20 Claims**

1. A method of reinforcing a fabric comprising, providing a printing member having a printing face defining 0.05–1 mm deep blind grooves therein, said grooves forming a printing pattern, locating a backing member a predetermined distance from said printing member to receive said fabric therebetween, supplying fluid, settable or curable, reinforcing material to said grooves, said fluid reinforcing material having a Brookfield viscosity of between 10,000 and 25,000 centipoise, feeding a fabric having a thickness at least equal to said predetermined distance between said backing member and said printing member and maintaining said predetermined distance during the entire printing operation so that said printing face engages a face of said fabric located between said printing member and said backing member with a pressure dependent on said thickness thereby printing an amount of said fluid reinforcing material onto said fabric and penetrating said fluid reinforcing material into said fabric a distance dependent on said pressure in a pattern corresponding to said pattern on said printing member and substantially setting or curing said pattern of reinforcing material to form an elastomeric or plastics material firmly adhering to and reinforcing said fabric.



4,194,031

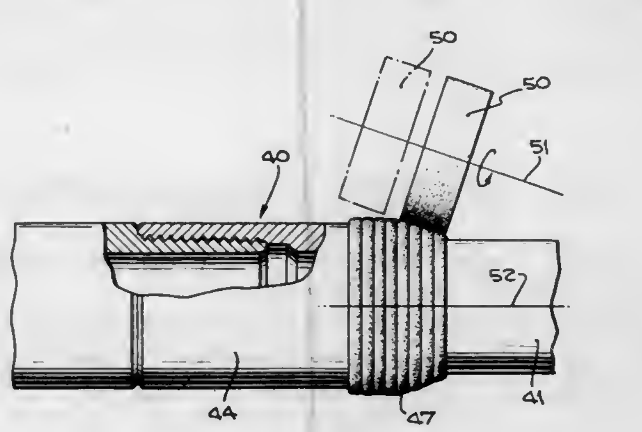
METHOD OF PROLONGING THE LIFE OF A TOOL JOINT MEANS

Otis O. Cullum, Bakersfield, Calif., assignor to AMF Incorporated, White Plains, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,771

Int. Cl.^{2} E21C *13/00;* **F16L** *15/00*

U.S. Cl. 427—289 **5 Claims**



1. A method of prolonging the life of a tool joint means on a drilling pipe, the joint means including a member having a cylindrical surface with an outer diameter greater than the outer diameter of the pipe and having a tapered portion extending from an edge of the cylindrical surface and joining and welded to the pipe, said tapered portion having a conical surface subjected to severe conditions in a geothermal well hole from fluid in the well hole carrying abrasive particles and under high pressure and temperature; the steps of:

preparing said conical surface of the tapered portion of said tool joint means for deposit of selected metal material;

depositing on said entire conical surface of said tapered portion a quantity of selected material to provide a selected metal hardness at said tapered portion;

and grinding said deposited metal about an axis parallel to said conical surface to provide a hard smooth conical external surface at said tapered portion.

4,194,032

TRANSFER TECHNIQUES FOR PRODUCING FLAME RETARDANT COTTON FABRICS

Robert J. Harper, Jr.; Timothy A. Calamari, Jr., and Sidney P. Schreiber, all of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 5, 1975, Ser. No. 555,486

Int. Cl.^{2} B05D *3/10*

U.S. Cl. 427—341 **14 Claims**

1. A process for producing flame retardant cotton fabrics, which process comprises:

(a) padding the fabric with a 30 to 40 weight % solution of tetrakishydroxymethylphosphonium hydroxide,

(b) drying the fabric from (a),

(c) kiss roll padding the fabric from (b) with an aqueous solution of ammonium hydroxide to a fabric wet pickup of from 5-40 weight %,

(d) drying the said fabric from (c),

(e) oxidizing the fabric from (d).

4,194,033

PROCESS FOR TREATING WOOD

Takeji Motai, Chofu, Japan, assignor to Shin-Asahigawa Co., Ltd., Japan

Filed Jul. 14, 1978, Ser. No. 924,834

Int. Cl.^{2} B05D *3/12, 3/02*

U.S. Cl. 427—351 **6 Claims**

1. A process for treating wood, consisting essentially of:

(a) pretreatment steps consisting essentially of:

(i) dipping the wood into an aqueous alkylamine solution, alkylamine of which has a molecular weight of about 100 and a boiling point of above 90° C;

(ii) heating the wood in the solution to 92° C. to 98° C., and

(iii) maintaining the wood in the solution at this temperature for a time sufficient to soften the wood without destroying its molecular structure, to permit the alkylamine solution to permeate and implant plasticity to the wood and to dissolve and remove resins, hemicellulose, rubbery and chalky substances from within the wood;

(b) main treatment steps consisting essentially of:

(i) dipping the wood treated in step (a) into an aqueous alkylamine solution as defined above;

(ii) subjecting the wood from (b) to boiling under pressure to open closed structures, to render the flow of liquids and gases within the wood more uniform and to permeate and disperse alkylamine within the wood structure;

(c) lowering the moisture content of the treated wood to the fiber saturation point by subjecting the wood to reduced pressure; and

(d) drying the wood.

4,194,034

FLOATING FENDER

Roderick F. R. T. Rijnders, Amersfoort, Netherlands, assignor to International B.F. Goodrich-Europe B.V., Netherlands

Continuation-in-part of Ser. No. 851,305, Nov. 14, 1977, abandoned, which is a continuation of Ser. No. 643,019, Dec. 22, 1975, abandoned. This application Nov. 20, 1978, Ser. No. 962,013

Claims priority, application Netherlands, Dec. 24, 1974, 7416838

Int. Cl.^{2} B63B *59/02*

U.S. Cl. 428—36 **4 Claims**

1. A floating vulcanized rubber fender consisting of a matrix, in solid form, manufactured from synthetic rubber having a density not exceeding 0.91 which is free of gas-filled or air-filled closed pores, and from 5–10 parts by weight of carbon black per 100 parts by weight of said rubber, said carbon black

having a particle size smaller than 35 nanometers and which is dispersed throughout said matrix as a filler; said fender having a density not exceeding 0.97, a modulus at 25% elongation of at least 3.5 kg/cm^2, a tear resistance of at least 10 kg/cm^2 and the shape of a thick-walled hollow cylinder with an outer diameter of between substantially 0.3 and 2 m. and an inner diameter varying accordingly between substantially 0.15 and 1½ m; said carbon black being incorporated as a filler in said solid form matrix of rubber solely for its small particle size and high structure, said carbon black having a dibutyl phthalate oil absorption higher than 130 ml/100 gm, and a specific surface by the BET method of more than 130 m^2/gm.

4,194,035

MODIFIED POLYISOCYANATES CONTAINING SULFONIC ACID ESTER GROUPS

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,814

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801129

Int. Cl.² C08G *18/77, 18/14;* **C07C** *143/68*

U.S. Cl. 528—67 **14 Claims**

1. A process for the preparation of modified polyisocyanates which contain sulfonic acid alkyl ester groups and in which the isocyanate groups may be at least partly in the dimerized form, comprising: reacting isocyanatoaryl sulfonic acids having at least two isocyanate groups and wherein the isocyanate groups may be at least partly in the dimerized form, optionally as mixtures with mono and/or polyisocyanates which are free from sulfonic acid groups, with di- and/or tetrahydrofurans at 0° to 190° C., wherein the equivalent ratio of isocyanate groups, including any isocyanate groups present in the dimerized form, to sulfonic acid groups is greater than 1:1 and the equivalent ratio of di- and tetrahydrofuran groups to sulfonic acid groups is from 0.1:1 to 10:1.

11. Polyisocyanate mixtures, comprising:

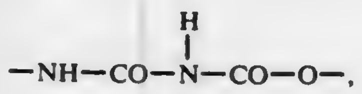
(a) 4 to 48% by weight of isocyanate groups optionally present in the dimerized form,

(b) 0.3 to 38% by weight of groups of the formula —SO_2—O— forming part of an aryl sulfonic acid alkyl ester group.

(c) 0 to 36% by weight of sulfonic acid groups,

(d) 0 to 25% by weight of urethane groups —NH—CO—O—, and

(e) 0 to 28% by weight of allophanate groups



$$-NH-CO-\overset{\overset{H}{|}}{N}-CO-O-,$$

the groups mentioned under (d) and (e) together amounting to at least 0.4% by weight and no more than 28% by weight and the groups mentioned under (b) and (c) together amounting to not more than 38% by weight.

13. In a process for the production of urethane groups containing products comprising reacting an isocyanate with an isocyanate receiving group containing compound, the improvement wherein the isocyanate is a polyisocyanate mixture comprising:

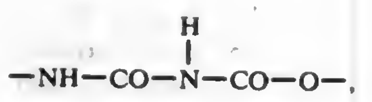
(a) 4 to 48% by weight of isocyanate groups optionally present in the dimerized form,

(b) 0.3 to 38% by weight-of groups of the formula —SO_2—O— forming part of an aryl sulfonic acid alkyl ester group,

(c) 0 to 36% by weight of sulfonic acid groups,

(d) 0 to 25% by weight of urethane groups —NH—CO—O—, and

(e) 0 to 28% by weight of allophanate groups



$$-NH-CO-\overset{\overset{H}{|}}{N}-CO-O-,$$

the groups mentioned under (d) and (e) together amounting to at least 0.4% by weight and no more than 28% by weight and the groups mentioned under (b) and (c) together amounting to not more than 38% by weight.

4,194,036

MODULE FOR FURNACE WALLS TOTALLY WRAPPED WITH THERMALLY COMBUSTIBLE MATERIAL

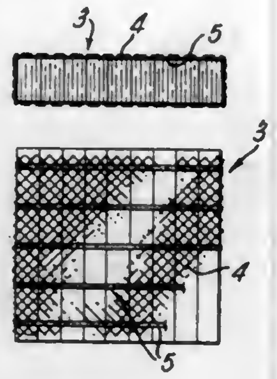
Richard P. B. Davis; Harold G. Emblem; Richard D. Shaw, and Stanley J. Shelley, all of Bromley, England, assignors to Zirconal Processes Limited, Bromley, England

Division of Ser. No. 707,108, Jul. 20, 1976, abandoned. This application Jun. 6, 1977, Ser. No. 804,079

Claims priority, application United Kingdom, Jul. 29, 1975, 31736/75; Nov. 28, 1975, 49043/75

Int. Cl.² E04C *3/10*

U.S. Cl. 428—74 **3 Claims**



1. A module for application to a furnace or oven wall to reduce the thermal inertia thereof, such module being made up of refractory fibers disposed with their axes aligned at right angles to the plane of the module so that they are end-on to the furnace or oven wall, the fibers of said module being totally wrapped and held in elastic compression by a wrapping of thermally combustible material which on first firing of the furnace or oven after application of the modules, is thermally destroyed so that the module is released from the compression.

4,194,037

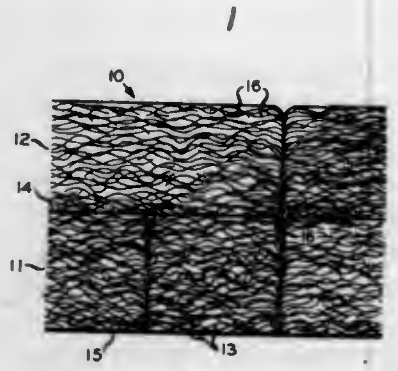
FLAME-RESISTANT FABRIC AND METHOD OF FORMING SAME

Frederick L. Stoller, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 516,478, Oct. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 249,866, May 3, 1972, abandoned. This application Jun. 28, 1976, Ser. No. 700,434

Int. Cl.² D05C *15/00;* **D04H** *3/08*

U.S. Cl. 428—92 **42 Claims**



1. A method for forming a flame-resistant, nonwoven fabric, comprising:

needling together a multiplicity of base fibers to form a nonwoven, needled batt having upper and lower surfaces, said base fibers being formed of a material selected from the group consisting of polypropylene, polyester, polyamide, polyacrylic and admixtures thereof;

laying down at least one flame-resistant layer of fibers on the upper surface of said batt to at least substantially completely cover the upper surface of said batt; wherein said layer comprises polyvinyl chloride fibers in an amount sufficient to provide the desired degree of flame resistance;

needling said flame-resistant fibers into said batt to form a nonwoven, needled fabric; and

heating the lower surface of the batt of said needled fabric to a temperature sufficient to adhere together the fibers positioned at said lower surface.

4,194,038

POLY(ESTER-CARBONATES) FROM DICARBOXYLIC ACID CHLORIDES

Josefina T. Baker, Cupertino, Calif.; Robert S. Cooke, Morris Plains, and Stylianos Sifniades, Madison, both of N.J., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed Jan. 25, 1979, Ser. No. 6,947

Int. Cl.² C08G *63/64*

U.S. Cl. 528—182 **5 Claims**

1. In a process for production of poly(ester-carbonate) of dihydric phenol and of aromatic or cycloaliphatic dicarboxylic acid from a reaction mixture containing dichloride of at least one such acid, dissolved in a chlorinated hydrocarbon solvent inert under the reaction conditions having from 1 to 6 carbon atoms and from 1 to 4 chlorine atoms, said process employing a tertiary nitrogen base, having pK_b in aqueous solution at 25° C. in the range 7–11, to catalyze condensation of such dihydric phenol with said dichloride and with phosgene employed as carbonate precursor, and to serve as HCl acceptor for the HCl generated in said condensation reactions; the improvement which comprises:

(1) Feeding at least one such dihydric phenol into said dichloride solution at temperature in the range 0°–100° C., said dichloride solution containing at the start of said condensation reaction, phosgene in the range between 10% and 50% of the stoichiometric proportion of phosgene: total dihydric phenol required for formation of the poly(ester-carbonate) final product with the desired mol ratio in the range 1.00:0.05 up to 1.00:0.70 of dihydric phenol:dichloride residues;

(2) Concurrently with the feeding of dihydric phenol, agitating the reaction mixture and feeding phosgene in a separate stream thereto, until all dihydric phenol for the reaction has been added and at least 80% but not over 97% of the stoichiometrically required phosgene for reaction with all hydroxyl groups has been added;

(3) Maintaining during the feeding of dihydric phenol, at least a 10% molar excess of tertiary nitrogen base over that required by stoichiometry;

(4) Then allowing time for the condensation reaction forming poly(ester-carbonate) to come essentially to completion while the phosgene added is being brought at least to the stoichiometrically required quantity for reaction with all hydroxyl groups.

4,194,039

MULTI-LAYER POLYOLEFIN SHRINK FILM

Walter B. Mueller, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Apr. 17, 1978, Ser. No. 896,963

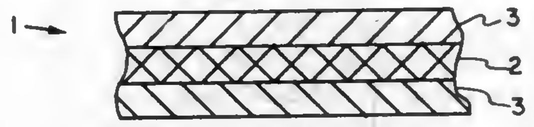
Int. Cl.² B32B *7/02, 27/08*

U.S. Cl. 428—213 **18 Claims**

1. A multi-layer, flexible, heat shrinkable thermoplastic packaging film comprising:

(a) at least three layers including (i) a core layer located between the other layers and (ii) an auxiliary layer which is stretch oriented;

(B) said core layer comprising a polymeric blend, 70% to 90% by weight of said blend being selected from the group consisting of homopolymers and copolymers of ethylene and 30% to 10% by weight of said blend being selected from the group consisting of homopolymers and copolymers of butylene; and,



(c) said auxiliary layer comprising a polymer selected from the group consisting of homopolymers and copolymers of propylene.

4,194,040

ARTICLE OF FIBRILLATED POLYTETRAFLUOROETHYLENE CONTAINING HIGH VOLUMES OF PARTICULATE MATERIAL AND METHODS OF MAKING AND USING SAME

Ernest J. Breton; Jack D. Wolf, and Dexter Worden, all of Wilmington, Del., assignors to Joseph A. Teti, Jr. and William C. Teti, both of Philadelphia, Pa., part interest to each

Division of Ser. No. 229,823, Feb. 28, 1972, Pat. No. 3,864,124, which is a continuation-in-part of Ser. No. 818,781, Apr. 23, 1969, abandoned. This application Aug. 22, 1974, Ser. No. 499,583

Int. Cl.² B32B *3/26, 5/18*

U.S. Cl. 428—308 **8 Claims**

1. A flexible, self-sustaining, dropable, sheet consisting essentially of from about 85 to about 99 percent, by volume of a solid sinterable particulate material substantially uniformly distributed in a matrix of from about 1 to about 15 percent by volume of fibrillated polytetrafluoroethylene resin, the fibrils of said polytetrafluoroethylene interconnecting and entrapping said sinterable particulate material to impart a self-sustaining condition and flexibility to said sheet.

4,194,041

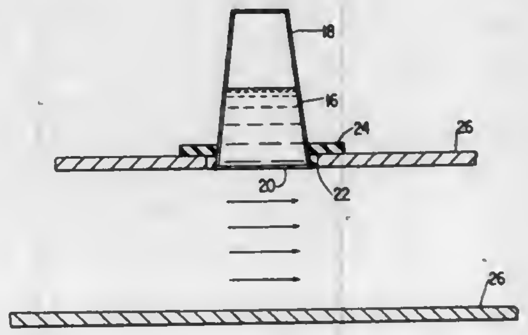
WATERPROOF LAMINATE

Robert W. Gore, Hockessin, and Samuel B. Allen, Jr., Newark, both of Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jun. 29, 1978, Ser. No. 920,275

Int. Cl.² A41B *17/00;* **A41D** *3/04;* **B32B** *27/40, 27/28*

U.S. Cl. 428—315 **28 Claims**



1. A flexible layered article suitable for use in waterproof garments, or tents, which permits transfer of water vapor to prevent the build-up of moisture, the layered article retaining its resistance to transmission of liquid water even when the interior face of the article is exposed to a surface tension lowering agent, such as perspiration and body oils, comprising:

(a) a flexible, first layer of hydrophobic material having a moisture vapor transmission rate exceeding 1000 gms./m^2. day and an advancing water contact angle exceeding 90 degrees; and

(b) a continuous hydrophilic layer attached to the inner face of said first layer, said hydrophilic layer having a moisture vapor transmission rate exceeding 1000 gms./m^2. day and forming a barrier to passage of a surface tension lowering agent that would if present in said first layer tend to reduce the waterproofness of said first layer.

4,194,042
METALLIZED GLASS-CERAMIC COOKING VESSELS EXHIBITING EXTENDED SERVICE LIFE

Harold F. Dates, and Joseph E. Nitsche, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,299

Int. Cl.^{2} B32B *15/04*

U.S. Cl. 428—332 **4 Claims**

1. In an article of glass-ceramic cookware comprising a glass-ceramic vessel composed of a lithium aluminosilicate glass-ceramic material having a thermal expansion coefficient not exceeding about 25×10^{-7}/°C., at least a portion of the surface of said vessel having a sprayed coating of metallic aluminum having a thickness of at least about 18 mils bonded thereto, the improvement which comprises: forming the coating from sprayed aluminum having an ultimate tensile strength within the range of about 500–3000 psi.

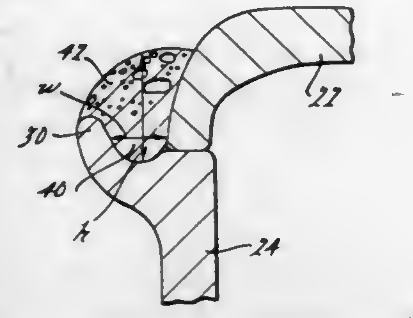
4,194,043
WELDED ALUMINUM DIE CAST ARTICLE

John Lee, Rochester, and Leo Golin, Clawson, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 5, 1978, Ser. No. 912,591

Int. Cl.^{2} B23K *15/00*

U.S. Cl. 428—582 **11 Claims**



1. A method of making a high pressure die cast part comprising the steps of:

high pressure die casting a first portion of the part, said first portion having a flat surface forming a plane and having a raised lip projecting from said plane about the periphery of said first portion at an oblique angle to said plane;

high pressure die casting a second portion of the part, said second portion being formed with a complementary flat surface which mates with the plane on said first portion; positioning the periphery of said second portion adjacent said lip with said flat surfaces mating in a manner which provides a seam having a negligible amount of gas flow into the seam;

forming a relatively deep molten pool of metal from said portions within said seam at atmospheric pressure; and

cooling said molten pool of metal to form a relatively dense material near the seam.

8. An article of manufacture comprising:

a first portion having an enlarged raised lip portion projecting therefrom; and

a second portion welded to said first portion by a single pass of welded seam, at least one of said portions being a high pressure die cast material having substantial porosity in the as cast condition and said welded seam having a height substantially greater than its width, said seam being substantially formed from said lip and having substantially all its porosity concentrated in its upper portion distal the weld root and being substantially dense at the weld root.

4,194,044
PROCESS FOR PREPARING 3-PHENOXY MORPHINANS

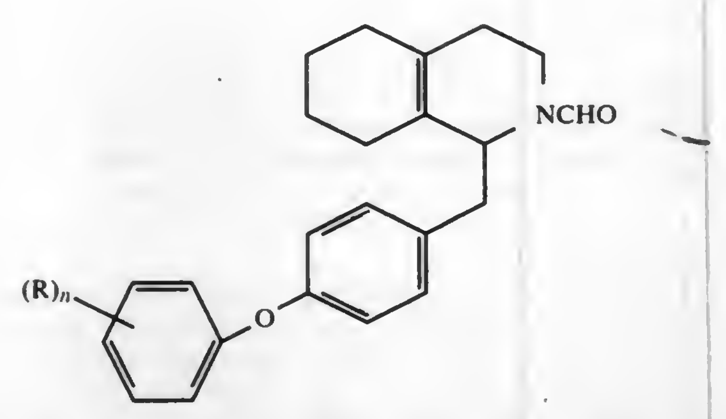
Ernest Mohacsi, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 811,233, Jun. 29, 1977, Pat. No. 4,113,729, which is a continuation-in-part of Ser. No. 748,022, Dec. 6, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,656

Int. Cl.^{2} C07D *217/20*

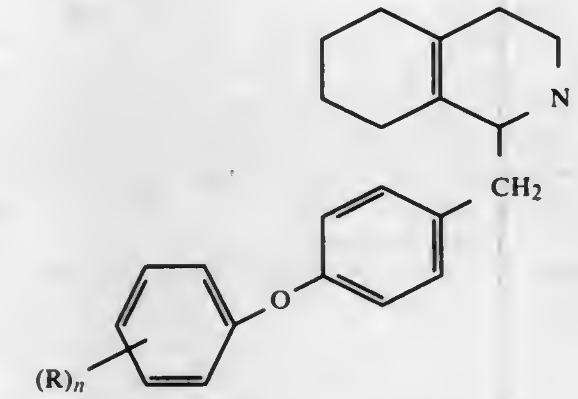
U.S. Cl. 546—146 **6 Claims**

1. A compound of the formula:



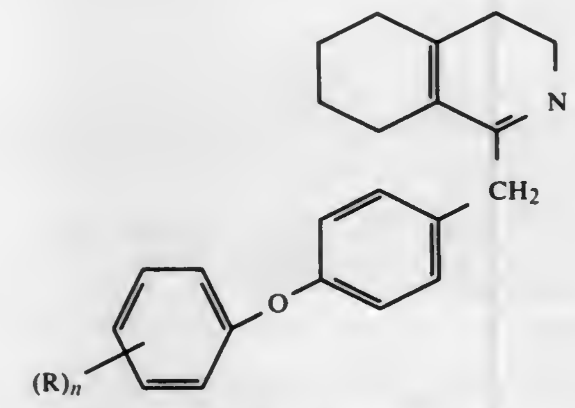
wherein R is halo, lower alkyl, nitro, lower alkoxy, hydroxy or hydrogen; and n is an integer from 1 to 5.

3. A racemic compound of the formula:



wherein R is halo, lower alkyl, nitro, lower alkoxy, hydroxy or hydrogen; and n is an integer from 1 to 5.

5. A compound of the formula:



wherein R is halo, lower alkyl, nitro, lower alkoxy, hydroxy or hydrogen; and n is an integer from 1 to 5.

4,194,045
1-(3,3-DIARYL-3-OXADIAZOLALKYL)-4-PHENYL-4-PIPERIDINOMETHANOLS AND RELATED COMPOUNDS

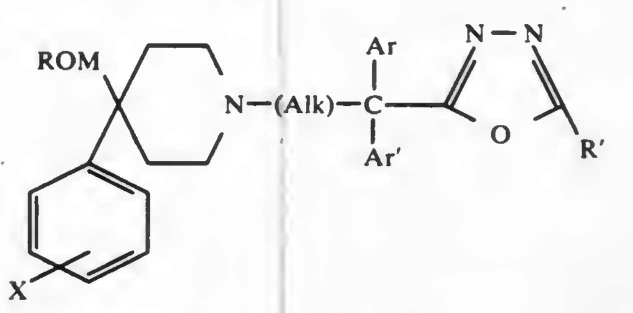
Gilbert W. Adelstein, Evanston, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Dec. 27, 1977, Ser. No. 864,989

Int. Cl.^{2} C07D *413/06*

U.S. Cl. 546—209 **5 Claims**

1. A compound of the formula



and pharmaceutically acceptable acid addition salts thereof wherein Alk is straight or branched chain alkylene having 2–4 carbon atoms; Ar and Ar' are independently selected from the group consisting of phenyl, alkyl substituted phenyl wherein the alkyl moiety has 1–4 carbon atoms, halo substituted phenyl or pyridyl; M is alkylene having 1 to 4 carbon atoms; R is hydrogen, alkyl having 1 to 4 carbon atoms or alkanoyl having 2–5 carbon atoms; R' is hydrogen or alkyl having 1 to 4 carbon atoms; X is hydrogen, halogen, alkyl having 1 to 4 carbon atoms or trifluoromethyl.

4,194,046
PREPARATION OF 4,4'-DIPYRIDYLS

Klaus Junghans, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,675

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811803

Int. Cl.^{2} C07D *213/22*

U.S. Cl. 546—259 **11 Claims**

1. In a process for the production of a 4,4'-dipyridyl by electrolysis of a 4-unsubstituted pyridine the improvement which comprises carrying out the electrolysis in liquid ammonia containing a conducting salt.

4,194,047
SUBSTITUTED N-METHYLENE DERIVATIVES OF THIENAMYCIN

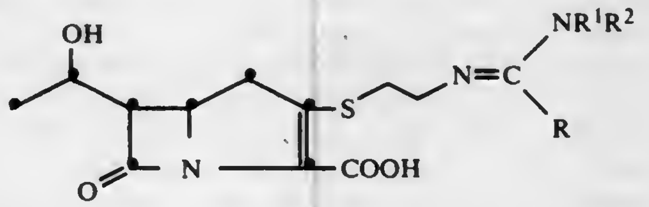
Burton G. Christensen, Metuchen; William J. Leanza, Berkeley Heights, and Kenneth J. Wildonger, Somerville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 733,654, Oct. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 676,261, Apr. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 634,296, Nov. 21, 1975, abandoned. This application Nov. 17, 1977, Ser. No. 852,425

Int. Cl.^{2} C07D *487/04;* **A61K** *31/40*

U.S. Cl. 546—272 **14 Claims**

1. The compound of the structure:



and the pharmaceutically acceptable salts thereof, wherein R^1 and R^2 are independently selected from the group consisting of hydrogen, alkyl having 1–6 carbon atoms, and alkenyl having 2–6 carbon atoms, and R is hydrogen, alkenyl of 2–6 carbon atoms, alkyl, alkoxyalkyl, mono- or dialkyl aminoalkyl, aminoalkyl, amino, perfluoroalkyl, alkylthioalkyl, 3-pyridyl, 4-thiazolyl, phenyl, benzyl, or phenethyl; in any of which alkyl chains, alkyl is 1–6 carbon atoms.

4,194,048
DIPHENYLHYDANTOIN DERIVATIVES

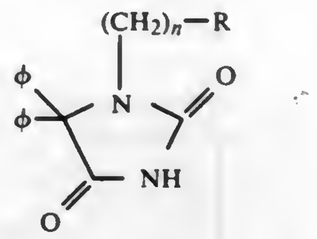
Robert T. Buckler, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 899,844, Apr. 25, 1978. This application Dec. 7, 1978, Ser. No. 967,131

Int. Cl.^{2} C07D *233/72, 233/78*

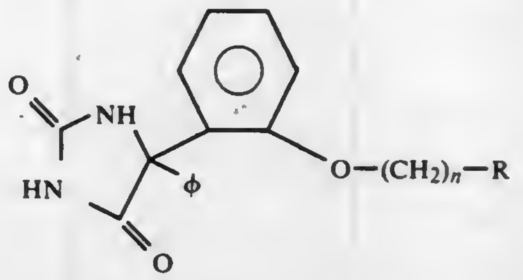
U.S. Cl. 548—312 **6 Claims**

1. A compound of the formula:



wherein ϕ is phenyl, $n=2$ through 6, and R is amino.

3. A compound of the formula:



wherein ϕ is phenyl, $n=2$ through 6, and R is amino or carboxyl.

4,194,049
2-[[2-METHYL-1-[2-BENZOYL(OR BENZYL)PHENYL]-1H-IMIDAZOL-5-YL]METHYL]-1H-ISOINDOLE-1,3(2H)-DIONES

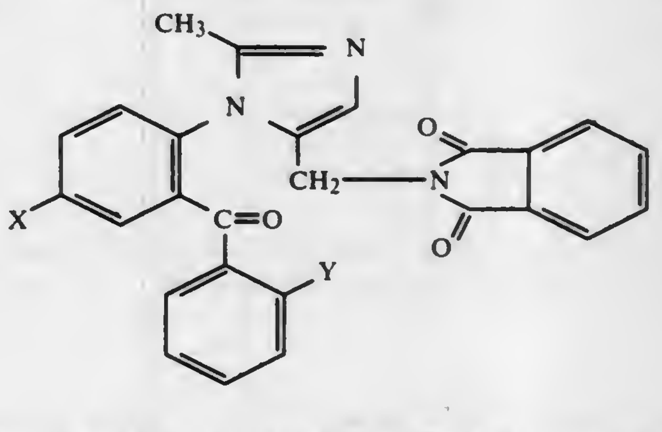
George F. Field, West Caldwell, and William J. Zally, Cresskill, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 29, 1979, Ser. No. 25,219

Int. Cl.^{2} C07D *403/06*

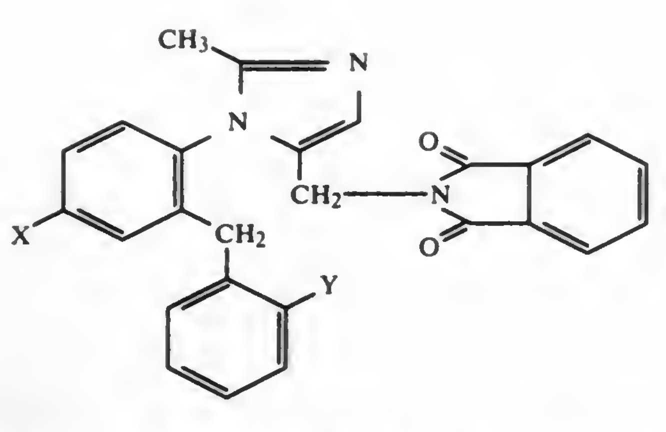
U.S. Cl. 548—336 **2 Claims**

1. A compound of the formula



wherein X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl.

2. A compound of the formula



where X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl.

4,194,050

PROCESS FOR PRODUCING AN ENAMIDE

Motoo Hazama, Kyoto, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

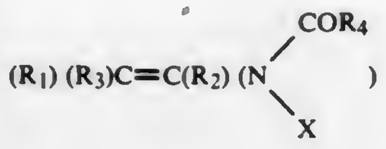
Division of Ser. No. 790,908, Apr. 26, 1977, Pat. No. 4,137,417. This application Jul. 13, 1978, Ser. No. 924,436

Claims priority, application Japan, Apr. 30, 1976, 51-50537

Int. Cl.^{2} C07C *102/00, 67/00*

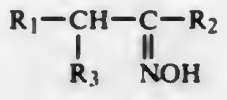
U.S. Cl. 560—41 **10 Claims**

1. A process for the production of enamides of the formula (I),



$$(R_1)\,(R_3)C{=}C(R_2)\,\left(N\begin{array}{l}\diagup\,COR_4\\ \diagdown\,X\end{array}\right)\qquad\text{(I)}$$

wherein R_1 and R_2 are independently a hydrogen atom, an alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, cyano, acyl, carboxyl, carbamoyl, —$CONR_5R_6$, in which R_5 and R_6 are independently an alkyl, aralkyl or aryl group, or —$COOR_5$ group, in which R_5 is as defined above, said alkyl, cycloalkyl, cycloalkylalkyl, aralkyl and aryl groups being substituted or unsubstituted with a halogen atom, a cyano, imidazolyl, N-acylimidazolyl, indolyl, N-acylindolyl group or one of the groups, —$COOR_5$, —COR_5, —$CONR_5R_6$, —OR_5, —$OCOR_5$, —NR_5R_6, —$NHCOR_5$ and —$N(COR_5)_2$, wherein R_5 and R_6 are as defined above, or R_1 and R_2, taken together, may form an alicyclic ring; R_3 has the same meanings as R_2 or R_3 is a hydroxyl, imidazolyl, N-acylimidazolyl, indolyl, N-acylindolyl group or one of the groups, —COR_5, —OR_5, —NR_5R_6, —$NHCOR_5$ and —$N(COR_5)_2$, wherein R_5 and R_6 are as defined above; R_4 is an alkyl, aralkyl or aryl group; and X is a hydrogen atom or R_4CO group, which comprises hydrogenating oximes having at least one hydrogen atom at the α-position represented by the formula (II),



$$R_1-\underset{\displaystyle R_3}{\underset{|}{CH}}-\underset{\displaystyle NOH}{\underset{\|}{C}}-R_2\qquad\text{(II)}$$

wherein R_1, R_2 and R_3 are as defined above, in the presence of a carboxylic anhydride of the formula (III),

$$(R_4CO)_2\,O\qquad\text{(III)}$$

wherein R_4 is as defined above,
using a ruthenium catalyst, the amount of said carboxylic anhydride used being at least two times by mole based on the oxime.

4,194,051

ASYMMETRIC CATALYSIS

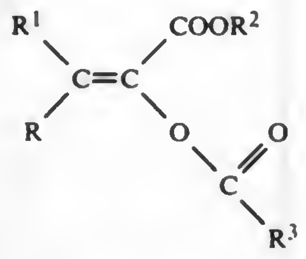
Gerald L. Bachman, and Billy D. Vineyard, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 704,858, Jul. 14, 1976, which is a continuation of Ser. No. 607,090, Aug. 24, 1975, abandoned. This application Aug. 17, 1977, Ser. No. 825,339

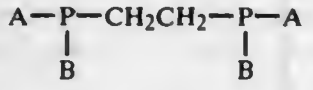
Int. Cl.^{2} C07C *69/76*

U.S. Cl. 560—60 **34 Claims**

1. An asymmetric hydrogenation process affording an optical purity of enantiomorph of at least about 86 percent comprising hydrogenating a compound of the formula



wherein R, R^1 and R^2 each independently represent hydrogen, substituted or unsubstituted alkyl having from 1 to 5 carbon atoms or substituted or unsubstituted aryl, and R^3 represents substituted or unsubstituted alkyl having from 1 to 5 carbon atoms or substituted or unsubstituted aryl, provided that, if only one of R and R^1 is hydrogen the Z geometric isomer is hydrogenated, in the presence of from about 0.001% to about 5% by weight, based on said compound, of a homogeneous, coordination complex of rhodium, iridium or ruthenium in combination with an optically active bis phosphine ligand represented by the formula



$$A-\underset{\displaystyle B}{\underset{|}{P}}-CH_2CH_2-\underset{\displaystyle B}{\underset{|}{P}}-A$$

wherein A and B each independently represent substituted or unsubstituted alkyl of from 1 to 12 carbon atoms, substituted or unsubstituted cyclo alkyl having from 4 to 7 carbon atoms, or substituted or unsubstituted aryl; provided that such substituents provide no significant interference with the steric requirements around the phosphorus atom and A and B are different, said process being conducted at a temperature of from about −20° C. to about 110° C. and said hydrogen concentration being equal to about 0.5 to about 5 times the mole quantity of said compound.

4,194,052

METHOD OF PREPARING NOVEL SULFONIC ACID SALTS OF ACYLOXYALKYLAMINES AND POLYMERS AND COMPOUNDS THEREFROM

Sheldon N. Lewis, Willow Grove, and Jerome F. Levy, Dresher, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 740,480, Jun. 27, 1968, abandoned. This application May 1, 1969, Ser. No. 821,068

Int. Cl.^{2} C07C *69/54*

U.S. Cl. 560—155 **10 Claims**

1. Process for the production of an ester of an organic acid which comprises reacting

(a) at least one alkyl, cycloalkyl, alkaryl, aralkyl, or halogen-substituted alkyl, cycloalkyl, alkaryl, or aralkyl sulfonic acid salt of an alkanolamine having from two to eight carbon atoms, one primary amino group and either a primary or secondary hydroxyl group, with (b) at least one organic acid or salt thereof selected from the group consisting of (1) aliphatic and aromatic dicarboxylic acids (2) acrylic, methacrylic, fumaric, and maleic acids, and (3) an alkyl, benzene, naphthalene, alkaryl, aralkyl, or halogen-substituted alkyl, benzene, alkaryl, or aralkyl sulfonic acid salt of a lactam or an amino acid selected from the group consisting of monoaminomonocarboxylic, monoamino-dicarboxylic, diaminomonocarboxylic, and diamino-dicarboxylic acids,

at a temperature of at least 40° C. while removing water as the reaction proceeds.

4,194,053

PROCESS FOR PREPARING ESTERS OF α-ACETYL-α′-METHYLSUCCINIC ACID AND ESTERS OF α-METHYL-α′-ACETYL-α′-(5-METHYL-3-OXOHEXYL)-SUCCINIC ACID

David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 778,571, Mar. 17, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 938,972

Int. Cl.^{2} C07C *67/30, 69/67*

U.S. Cl. 560—176 **10 Claims**

1. A process which comprises reacting an ester of acetoacetic acid with an ester of α-halopropionic acid wherein halo is chloro or bromo in a substantially anhydrous mixture of a non-polar, aprotic organic liquid having a dielectric constant below about 11 at 25° C. at a temperature of from about 50° C. to the reflux temperature of the mixture in the presence of a phase transfer agent, a catalytic amount of an iodide ion and a deprotonating base having a surface area equivalent to a size below at least about 60 mesh, for a time sufficient to form the diester of α-acetyl-α′-methylsuccinic acid.

4,194,054

PREPARATION OF SUBSTITUTED FLUOROBENZENES

Heinz Förster, Wuppertal; Hans Klusacek, Cologne, and Arthur Wenz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

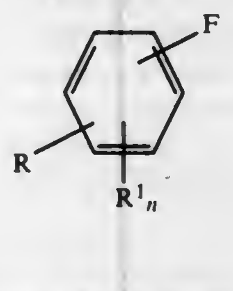
Filed Nov. 7, 1977, Ser. No. 849,294

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1976, 2652810

Int. Cl.^{2} C07C *25/04, 25/13, 63/12*

U.S. Cl. 562—493 **10 Claims**

1. A process for the preparation of a substituted fluorobenzene of the formula

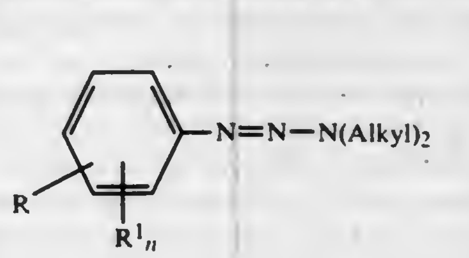


in which

R is alkyl with 1 to 6 carbon atoms, alkoxy with 1 to 4 carbon atoms, fluorine, chlorine, bromine, amino, acetamido, propionamido, butyrylamido, carboxyl, benzyloxy, phenyloxy, benzyloxy or phenyloxy carrying at least one fluorine, chlorine, trifluoromethyl or alkyl substituent with 1 to 4 carbon atoms, and

R^1 is alkyl with 1 to 4 carbon atoms or chlorine, and

n is an integer from 0 to 4, comprising reacting an N-aryl-N′,N′-dialkyl-triazene of the formula



in which

Alkyl is alkyl with 1 to 4 carbon atoms, with about a 5 to 25-fold molar excess of anhydrous hydrofluoric acid at a temperature between about −20° and +150° C.

4,194,055

15,16-DIOXY PROSTENOIC ACIDS AND ESTERS

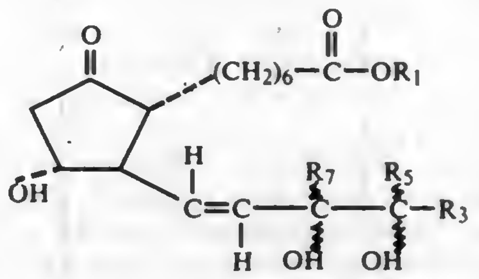
Martin J. Weiss, Oradell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 767,864, Feb. 11, 1977, Pat. No. 4,111,959, which is a continuation of Ser. No. 663,603, Mar. 3, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,781

Int. Cl.^{2} C07C *177/00*

U.S. Cl. 562—503 **7 Claims**

1. An optically active compound of the formula:



wherein R_1 is selected from the group consisting of hydroxy and alkoxy (C_1 to C_3); R_3 is alkyl (C_3 to C_6); R_5 is selected from the group consisting of hydrogen and alkyl (C_1 to C_3); and R_7 is selected from the group consisting of hydrogen and alkyl (C_1 to C_3); and the pharmacologically acceptable cationic salts thereof when R_1 is hydroxy.

6. The optical isomer that is l-erythro-9-oxo-11α,15-dihydroxy-16-methoxy-13-trans-prostenoic acid.

4,194,056

ACETIC ACID FROM METHYL FORMATE

Emilios P. Antoniades, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 30, 1970, Ser. No. 77,328

Int. Cl.^{2} C07C *51/10*

U.S. Cl. 562—516 **5 Claims**

1. Process for the preparation of acetic acid which comprises heating methyl formate in the presence of carbon monoxide, a catalytic amount of a soluble rhodium salt carbonylation catalyst, and an iodine-containing promoter, said heating being carried out at temperatures within the range of from about 150° to 350° C. at pressures in excess of 20 psi and with an excess of one mol of carbon monoxide per mol of said rhodium salt.

4,194,057

POLYMER COMPOSITION VISCOSITY INDEX IMPROVER ADDITIVE AND LUBRICATING OIL CONTAINING THE ADDITIVE

David Brankling, Hull, and John Crawford, Hornsea, both of England, assignors to Orobis Limited, London, England

Filed May 17, 1978, Ser. No. 906,992

Claims priority, application United Kingdom, May 19, 1977, 21109/77; Jul. 13, 1977, 29406/77

Int. Cl.^{2} C10M *1/16*

U.S. Cl. 585—11 **18 Claims**

1. A polymer composition suitable for use as a viscosity index improver additive which composition comprises as essential components:

(A) from 0.1 to 15% by weight of a tapered or block copolymer consisting of from 10 to 40% by weight of units derived from styrene and from 90 to 60% by weight of units derived from isoprene, said copolymer having a number average molecular weight in the range 25,000 to about 125,000,

(B) from 0.1 to 20% by weight of an oil-soluble copolymer consisting of from 25 to 75% by weight of units derived from ethylene and from 75 to 25% by weight of units derived from propylene, said copolymer having a kinematic viscosity, as measured on a 5.0% by weight solution in 150 solvent neutral base oil at 210° F., in the range from 100 to 1500 cS, and

(C) a mineral oil.

4,194,058

PROCESS FOR THE CONVERSION OF AROMATIC HYDROCARBONS

Lee Hilfman, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 810,323, Jun. 27, 1977, Pat. No. 4,148,759, which is a continuation-in-part of Ser. No. 684,055, May 6, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 973,305

Int. Cl.^{2} C07C *3/52, 3/62*

U.S. Cl. 585—455 **9 Claims**

1. A process for the catalytic conversion of an aromatic hydrocarbon comprising contacting the aromatic hydrocarbon with a reactant in the presence of a catalytic composite comprising a combination of a nickel component, a molybdenum component and a platinum component with a zeolitic carrier material wherein said platinum component is present in an amount sufficient to result in the composite containing, on an elemental basis, about 0.2 to about 0.5 percent by weight platinum, and recovering a converted aromatic hydrocarbon as a product of the process.

4. The process of claim 1 wherein the conversion reaction which occurs in alkylation of an aromatic compound with an alkylating agent.

7. The process of claim 1 wherein the conversion reaction which occurs in transalkylation of alkylaromatic compounds.

4,194,059

ASSEMBLY FOR AN ELECTROCHEMICAL DEVICE COMPRISING A PLATE AND A SUPPORT

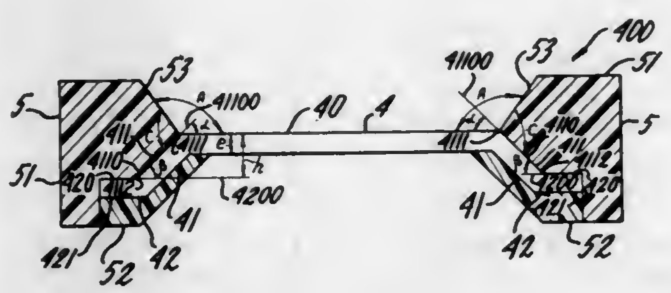
Pierre Durand, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation of Ser. No. 859,442, Dec. 12, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,010

Claims priority, application France, Dec. 20, 1976, 76 38622

Int. Cl.^{2} H01M *4/00*

U.S. Cl. 429—27 **12 Claims**



1. In an electrochemical device, an assembly comprising a plate, which constitutes a gaseous diffusion electrode, said electrode comprising a porous body with an electron collector, and a support for the plate, characterized by the fact that
   - (a) the plate has at least one bend, with a bend line, on at least one edge of the plate, a peripheral portion of said bend, referred to as the anchoring zone, being situated in the support;
   - (b) at least a portion of the support is formed of one or more materials molded onto said anchoring zone;
   - (c) a face of the support adjacent to the anchoring zone is connected with a face of said plate, along a connecting line, in the form of a uniform junction surface;
   - (d) an angle C determined, in the vicinity of the connecting line, by the junction surface and the face of the anchoring zone corresponding to said face of the plate is at least equal to 20°;
   - (e) said face of the support and said face of the plate are intended to be in contact with an electrolyte;
   - (f) the porous body comprises sintered particles;
   - (g) the bend is due to a press shaping of the plate leading to microfissures at least in the porous body, said microfissures containing some of the molded material(s);
   - (h) an angle α, referred to as the angle of the bend, is determined, in the vicinity of the bend line, by said face of the plate and the extension of the corresponding face of the anchoring zone, said angle α being at most equal to 60°.

4,194,060

ELECTRIC ACCUMULATOR AND STORAGE CELL

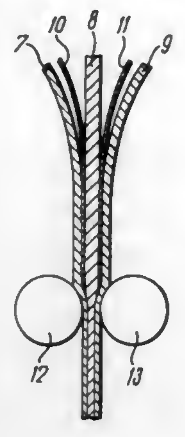
Günter Schöll, Hauffstrasse 14, and Joachim Pauls, Meisenweg 3, both of 7441 Wolfschlugen, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,855

Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722461

Int. Cl.^{2} H01M *10/06, 4/14*

U.S. Cl. 429—67 **34 Claims**



1. A lead-acid accumulator or storage cell comprising:
   a first and a second stack of mutually spaced thin metal foils disposed in interleaved relationship and forming positive and negative plates respectively;
   respective separators between the foils of opposite polarity;
   a housing receiving the positive and negative plates and the separators between them and containing a sulfuric acid electrolyte, said housing having internal dimensions close to the external dimensions of said stacks and closely surrounding same; and
   electrically nonconductive and electrolyte-impermeable masks on only limited areas of juxtaposed faces of foils of opposite polarity surrounding active-mass regions thereof so that each foil has such masks coextensively on each of its faces, the masks of the juxtaposed faces being exactly in registry and of mutually coextensive areas, said masks being bonded to the respective foils and the faces of said foils not covered by said masks being continuously in contact with said electrolyte to sustain electrochemical reaction therewith.

4,194,061

COMPACT HIGH VOLTAGE BATTERY

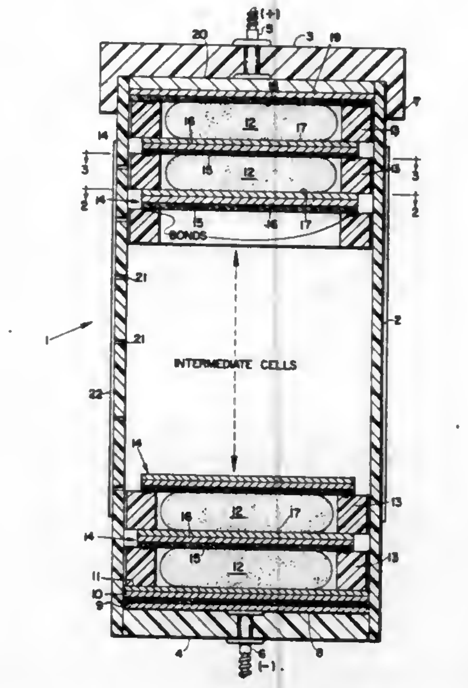
Edwin H. Land, Cambridge, and Gordon F. Kinsman, Billerica, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 23, 1979, Ser. No. 23,309

Int. Cl.^{2} H01M *2/12*

U.S. Cl. 429—82 **6 Claims**

1. A battery, comprising a housing, said housing comprising a cylindrical wall and end caps secured to opposed ends of said wall to form a chamber between said wall and said end caps; a plurality of laminar electrical cells stacked in contiguous series relationship in said chamber, said cells each comprising an electrically conductive layer, an anode layer on said electrically conductive layer, a separator permeated by liquid electrolyte on said anode layer, and a slurry cathode layer comprising a dispersion of cathode particles in liquid electrolyte on a central region of said separator; and an insulating spacer on each separator and formed with a central opening within which the cathode layer on said separator is received; the spacer on each separator, except the spacer on the separator in an end one of said cells, being separated from the spacer on the separator in the next contiguous cell by the electrically conductive layer, the anode layer, and the separator of said next contiguous cell.



4,194,062

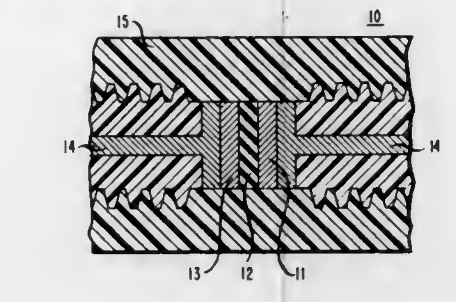
RECHARGEABLE DICHALCOGENIDE CELL

James N. Carides, Bernardsville, and Donald W. Murphy, Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 27, 1978, Ser. No. 928,529

Int. Cl.^{2} H01M *6/14*

U.S. Cl. 429—194 **13 Claims**



1. A nonaqueous secondary cell comprising a negative electrode, an electrolyte, and a positive electrode, CHARACTERIZED IN THAT at least one of said negative electrode and said positive electrode consists essentially of a first layered chalcogenide having the nominal atom composition Li_yMX_2, where M is at least one member selected from the group consisting of V and Ti, X is at least one member selected from the group consisting of S and Se and y is greater than 1.0 and less than or equal to 2.0.

4,194,063

METHOD, COMPOSITION AND ELEMENTS FOR THE DETECTING OF NITROGEN-CONTAINING COMPOUNDS

David S. Frank, and Ignazio S. Ponticello, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 24, 1978, Ser. No. 880,827

Int. Cl.^{2} G01N *33/14*

U.S. Cl. 435—12 **47 Claims**

1. An element for the determination of nitrogen-containing analyte in an aqueous sample, said element comprising at least one enzyme which catalyzes the decomposition of the analyte to ammonia, a β-diketone capable of forming a detectable dihydropyridine on condensation with ammonia in the presence of formaldehyde, and formaldehyde or a formaldehyde source.

4,194,064

PRODUCTION OF NANAOMYCIN B

Satoshi Omura, Tokyo; Haruo Tanaka, Machida; Juichi Awaya, Souka, and Toju Hata, Tokyo, all of Japan, assignors to The Kitasato Institute (Kitasato Kenkyusho), Tokyo, Japan

Continuation of Ser. No. 719,752, Sep. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 558,514, Mar. 14, 1975, abandoned. This application Dec. 7, 1977, Ser. No. 858,216

Claims priority, application Japan, Apr. 15, 1976, 51-42881

Int. Cl.^{2} C12D *9/14*

U.S. Cl. 435—125 **4 Claims**

1. A process for producing nanaomycin B by fermentation which comprises the steps of culturing *Streptomyces rosa var. notoensis* in a medium containing carbon sources, nitrogen sources and inorganic substances at a temperature of from 15° to 40° C. and a pH of 6 to 10 for about 2 to 8 days, and recovering as the principal product accumulated nanaomycin B from the cultured broth.

4,194,065

PROCESS FOR PRODUCING COENZYME Q

Yoshio Shimada, Kakogawa; Keiichi Kagotani; Norio Noda, both of Takasago; Hajime Kawaharada, Kakogawa, and Kiyoshi Watanabe, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 18, 1977, Ser. No. 843,214

Claims priority, application Japan, Oct. 26, 1976, 51-129106

Int. Cl.^{2} C12D *13/02*

U.S. Cl. 435—133 **12 Claims**

1. A process for producing coenzyme Q which comprises aerobically cultivating a yeast in a fermentor, in which maximum specific growth rate is not less than 0.15 hr^{-1} under optimun cultural conditions, in a nutrient medium containing a carbon source in which said yeast can grow, while maintaining the dissolved oxygen concentration in the culture broth at not less than 2 ppm and controlling the average specific growth rate through the whole period of cultivation at not more than 0.1 hr^{-1}, and recovering coenzyme Q from the resulting yeast cells.

4,194,066

IMMOBILIZATION OF ENZYMES OR BACTERIA CELLS

Isao Kaetsu, and Minoru Kumkaura, both of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

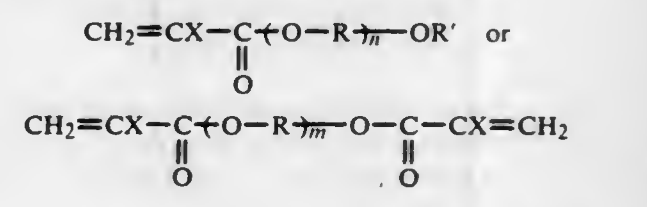
Filed Aug. 20, 1975, Ser. No. 606,209

Claims priority, application Japan, Aug. 30, 1974, 49-99756

Int. Cl.^{2} C07G *7/02*

U.S. Cl. 435—182 **4 Claims**

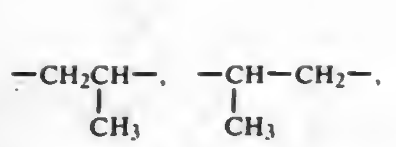
1. A process for producing a porous polymer composition containing immobilized enzymes and/or immobilized bacterial cells which comprises:
   forming a mixture consisting essentially of an enzyme solution or a dispersion of bacterial cells and a monomer having the formula



$$CH_2{=}CX{-}\underset{\underset{O}{\|}}{C}{-}\left(O{-}R\right)_n{-}OR' \quad \text{or}$$

$$CH_2{=}CX{-}\underset{\underset{O}{\|}}{C}{-}\left(O{-}R\right)_m{-}O{-}\underset{\underset{O}{\|}}{C}{-}CX{=}CH_2$$

wherein X is hydrogen or methyl, R is $—CH_2CH_2—$,



$-CH_2\underset{CH_3}{\underset{|}{CH}}-,\quad -\underset{CH_3}{\underset{|}{CH}}-CH_2-,$

or $-CH_2CH_2CH_2-$, R′ is hydrogen or alkyl, n is an integer of 2 or more and m is an integer of 4 or more, or a mixture of such monomers; and then

polymerizing and/or copolymerizing the monomer(s) containied in the mixture at a temperature of less than 0° C. by means of an ionizing radiation, thereby depositing the polymer containing enzyme and/or cells from water.

4,194,067
PROCESS FOR THE PURIFICATION OF CARBOHYDRATE CONTAINING ENZYMES

Melvin H. Keyes, Sylvania, Ohio, assignor to Technicon Instruments Corp., Tarrytown, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,477

Int. Cl.^{2} C07G *7/00*

U.S. Cl. 435—190 **17 Claims**

1. A method for separating a carbohydrate containing enzyme from the enzyme catalase, comprising:

a. mixing a solution containing said carbohydrate containing enzyme with a carbohydrate modifying reagent.

b. allowing said carbohydrate containing enzyme and said modifying reagent to react to modify said carbohydrate,

c. and separating said enzyme from said catalase enzyme.

4,194,068
FLAME RETARDANT COMPOSITION FOR POLYURETHANE COMPRISING BROMOHYDRIN OF PENTAERYTHRITOL AND AN ORGANOPHOSPHORUS COMPOUND

Dennis P. Miller, Midland, Mich., and Masahiko Tamaki, Gotemba, Japan, assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 21, 1978, Ser. No. 888,796

Int. Cl.^{2} C08G *18/14*

U.S. Cl. 521—107 **13 Claims**

1. A flame-retardant comprising a mixture of at least about 46 percent by weight of a bromohydrin of pentaerythritol, from about 5 to about 45 percent by weight of a polyhydric alcohol and a sufficient amount of a flame-retardant organophosphorus compound to render said mixture a substantially solids-free liquid at 25° C., one atmosphere pressure.

4,194,069
UREA DERIVATIVE AND USE AS POLYURETHANE CATALYST

George P. Speranza, and Robert L. Zimmerman, both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Oct. 16, 1978, Ser. No. 952,027

Int. Cl.^{2} C08G *18/20*

U.S. Cl. 521—129 **3 Claims**

1. A method for producing a polyurethane which comprises reacting an organic polyisocyanate with an organic polyester polyol or polyether polyol in the presence of a catalytic amount of N-(3-dimethylaminopropyl)-N′-(3-morpholinopropyl)urea.

4,194,070
ISATOIC ANHYDRIDE DERIVATIVES AND USE AS CHAIN-EXTENDERS

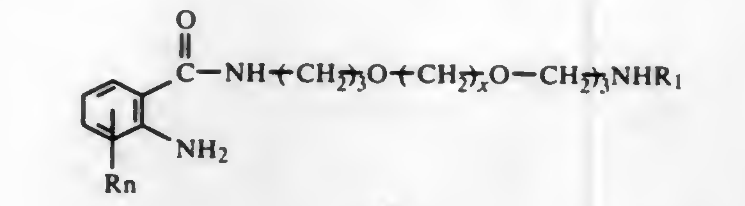
Edward T. Marquis, and Ernest L. Yeakey, both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,833

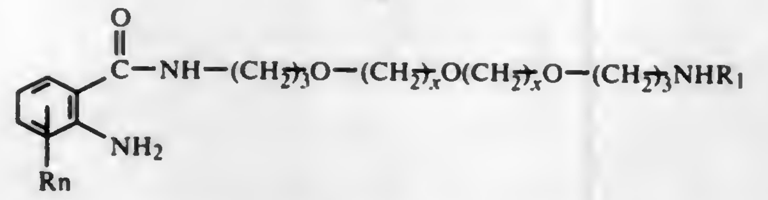
Int. Cl.^{2} C08G *18/32*

U.S. Cl. 521—163 **3 Claims**

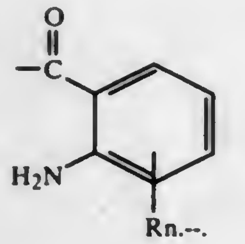
1. A polyurethane composition prepared by reacting an organic polyisocyanate with a polyhydroxy compound and a chain-extending agent comprising a compound of the formula:



or



wherein R is selected from the group consisting of hydrogen, alkyl, nitro, halo, hydroxy, amino and cyano, n is a number of 1–4, x is a number of from 2 to 6 and R_1 is hydrogen or



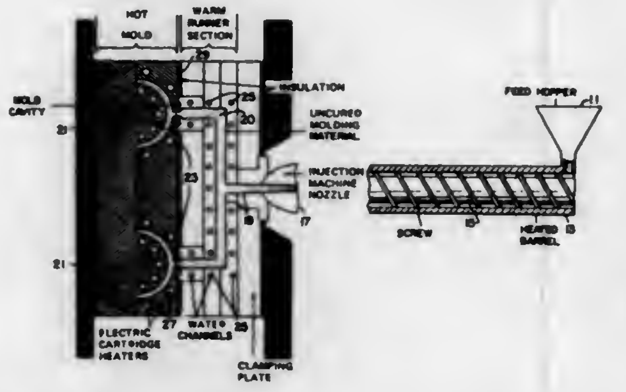
4,194,071
PHENOLIC RESINS AND MOLDING COMPOSITIONS FOR USE IN WARM RUNNER INJECTION MOLDING

Marvin E. Sauers, Belle Mead, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 503,688, Sep. 6, 1974, Pat. No. 3,959,433. This application Feb. 11, 1976, Ser. No. 657,207

Int. Cl.^{2} C08G *8/10, 8/28*

U.S. Cl. 525—480 **14 Claims**



1. A thermosetting phenolic resin composition comprising:

(a) a molding grade thermosetting phenolic resin; and

(b) an amount of a reactive para substituted phenolic compound that is capable of reducing the viscosity and retarding the curing rate of molding compositions containing said molding grade phenolic resin to provide a molding composition having a processable viscosity at a temperature at which the cure rate is slow enough so that said molding composition does not cure to a thermoset state during the period of time that said molding composition is in the runner during a normal warm runner injection molding operation, wherein said reactive phenolic compound is a compound having a melting point within the range of from about 35° to about 160° C., wherein the para substituent is alkyl, cycloalkyl, cycloalkenyl, phenyl, alkylphenyl, or hydroxyphenylalkyl, and wherein said reactive phenolic compound is employed in an amount within the range from 9 to about 35 parts by weight, per 100 parts of said molding grade phenolic resin.

4,194,072
FLAME RETARDANT NYLON COMPOSITIONS

Eng P. Chang, Grand Island; Charles S. Ilardo, and Eugene L. Slagowski, both of Tonawanda, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, New York

Filed Oct. 2, 1978, Ser. No. 948,066

Int. Cl.^{2} C08L *77/02*

U.S. Cl. 525—432 **12 Claims**

1. A flame retardant nylon composition comprising in weight percent, a blend of about 45 to about 70 percent of homopolymers of nylon 6 or nylon 66, or mixture thereof; about 15 to about 25 percent of nylon 612 homopolymer; about 2 to about 10 percent of iron oxide, antimony oxide, zinc oxide, or mixture thereof; and about 10 to about 25 percent of bis(hexachlorocyclopentadieno)cyclooctane.

4,194,073
OLEFIN POLYMERIZATION

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 4, 1978, Ser. No. 866,900

Int. Cl.^{2} C08F *4/24*

U.S. Cl. 526—98 **18 Claims**

1. A process for the polymerization of 1-olefins in the presence of a chromium oxide catalyst and a liquid diluent which comprises adding to the reactor either before, during or after the charging of the diluent to the reactor an effective melt index increasing amount of fluorobenzene under such conditions that a polymer is produced having an increased melt index relative to polymers made under similar conditions in the absence of the fluorobenzene.

9. A process for the polymerization of 1-olefins in the presence of a chromium oxide catalyst the improvement which comprises: carrying out said polymerization in the presence of an effective melt index increasing amount of at least one aromatic compound selected from the group consisting essentially of the fluorine, chlorine and bromine monohalogenated derivatives of benzene and mixtures thereof, under such conditions that a polymer is produced having an increased melt index relative to polymers made under similar conditions in the absence of the aromatic compound.

14. A polymerization process for the polymerization of 1-olefins in the presence of a chromium oxide catalyst and a liquid diluent which comprises the steps of:

(a) reducing said chromium oxide catalyst with a suitable reducing agent,

(b) contacting said reduced catalyst with vapors of at least one aromatic compound selected from the group consisting essentially of: the fluorine, chlorine and bromine monohalogenated derivatives of benzene and mixtures thereof, under such conditions as to add at least one mole of said aromatic compound per mole of chromium present in the catalyst, and

(c) charging said pretreated chromium oxide catalyst to the reactor and then polymerizing said 1-olefin.

4,194,074
POLYMERIZATION PROCESS

Thomas J. Pullukat, Hoffman Estates; Mitsuzo Shida, Barrington, and Raymond E. Hoff, Palatine, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Division of Ser. No. 915,056, Jun. 12, 1978, which is a continuation-in-part of Ser. No. 764,914, Feb. 2, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,994

Int. Cl.^{2} C08F *4/24*

U.S. Cl. 526—100 **13 Claims**

1. The method of making a polymer of ethylene or a copolymer of ethylene with alpha-olefins having a narrow molecular weight distribution, comprising: polymerizing the corresponding monomer or mixtures of monomers under polymerizing conditions with a highly active catalyst prepared by forming a mixture of (1) a porous support of the class consisting of silica, alumina, zirconia, thoria and mixtures thereof, (2) a chromium compound and (3) an alkyl ester of boron containing 1 to about 7 carbon atoms in the alkyl group or a halide of boron, said (2) being reactive with (3) to form a chromium-boron compound upon heating, said mixture containing about 0.1–10 wt.% of boron and about 0.1–10 wt.% of chromium and (4) activating said mixture at an elevated temperature in a fluidized bed with a substantially dry reducing gas and then fluidizing the product of (4) with (5) an oxidizing gas at an elevated temperature, and recovering said polymer or copolymer.

4,194,075
MAGNESIUM REDUCING AGENT-HYDROCARBYLALUMINUM HALIDE COCATALYST FOR TITANIUM TETRAHALIDE

Richard E. Dietz, and Charles M. Selman, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 686,606, May 14, 1976, abandoned. This application May 2, 1978, Ser. No. 902,123

Int. Cl.^{2} C08F *4/02, 10/02*

U.S. Cl. 526—125 **15 Claims**

1. A process comprising:

reacting an organic halide having the formula RX or $R'X_2$ wherein X represents a halogen atom, R is selected from alkynyl, alkenyl, alkyl, aryl, cycloalkenyl, and cycloalkyl radicals and combinations thereof containing from 1 to 12 carbon atoms per molecule and R′ is a saturated divalent hydrocarbyl radical containing from 2 to 10 carbon atoms per molecule and magnesium metal in the absence of a complexing diluent to form a magnesium reducing agent reaction mixture containing at least 10 weight percent each of a diorganomagnesium compound and magnesium halide;

mixing the total magnesium reducing agent reaction mixture thus produced with a dihydrocarbylaluminum halide of the formula R''_2AlX wherein R″ is an alkyl or an aryl radical having 1 to 12 carbon atoms and X is a halogen atom to form a cocatalyst; and thereafter

contacting said cocatalyst with a titanium tetrahalide.

4,194,076
WASHING MAGNESIUM REDUCING AGENT PREPARED IN ABSENCE OF COMPLEXING DILUENT

Richard E. Dietz, and Oscar D. Nowlin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 686,966, May 14, 1976, abandoned. This application Apr. 27, 1978, Ser. No. 900,555

Int. Cl.^{2} C08F *4/02, 10/02*

U.S. Cl. 526—125 **19 Claims**

1. A process comprising:

reacting an organic halide of the formula RX or $R'X_2$ where X represents halogen, R is an alkynyl, alkenyl, alkyl, aryl, cycloalkenyl or cycloalkyl radical or combination thereof having from 1 to 12 carbon atoms per molecule and R′ is a saturated divalent aliphatic hydrocarbyl radical containing 2 to 10 carbon atoms per molecule and magnesium metal in the absence of any complexing diluent to form a magnesium reducing agent reaction mixture containing at least 10 weight percent each of a diorganomagnesium compound and a magnesium halide;

washing the total magnesium reducing agent reaction mixture thus produced with an unreactive liquid hydrocarbon to remove material soluble in said unreactive liquid hydrocarbon;

contacting said magnesium reducing agent with an organoaluminum compound to form a cocatalyst mixture; and

thereafter contacting said cocatalyst mixture with a titanium tetrahalide to form a catalyst.

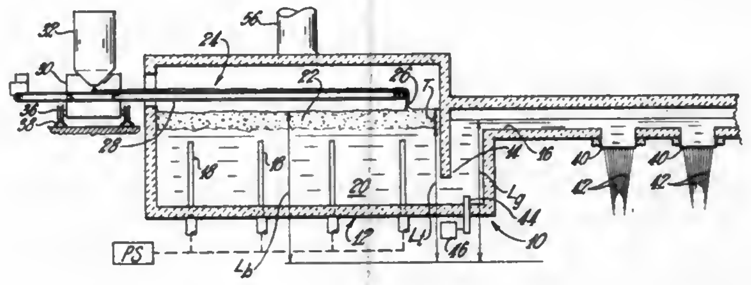
4,194,077
BATCH SENSOR FOR GLASS-MELTING FURNACES

Sheldon A. Canfield, and Walter J. Karch, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 27, 1977, Ser. No. 864,429

Int. Cl.^{2} C03B *5/02*

U.S. Cl. 13—6 **23 Claims**



1. Apparatus for controlling the thickness of glass batch in a glass-melting furnace, said apparatus comprising sensing means positioned above the glass batch for measuring the level of the batch without contacting same, said sensing means producing a signal which is responsive to the level of the glass batch, and means responsive to the signal for causing an increase in the thickness of the glass batch when the level decreases and for causing a decrease in the thickness of the glass batch when the level increases.

4,194,078
APPARATUS FOR REGULATING THE DEPTH OF IMMERSION OF CONSUMABLE ELECTRODES IN ELECTROSLAG REMELTING FURNACES

Friedrich W. Thomas, Hasselroth, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH & Co. KG, Cologne, Fed. Rep. of Germany

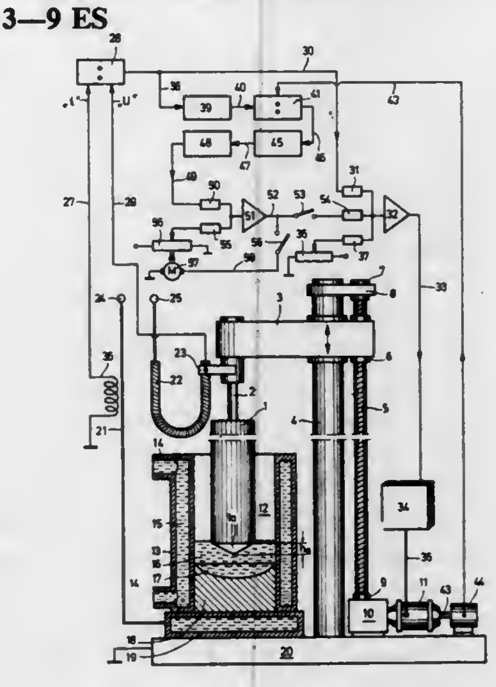
Filed Jul. 14, 1978, Ser. No. 924,785

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732873

The portion of the term of this patent subsequent to Feb. 21, 1995, has been disclaimed.

Int. Cl.^{2} H05B *3/60;* **F27D** *11/10*

U.S. Cl. 13—9 ES **2 Claims**



1. In an apparatus for the continuous and automatic regulation of the depth of immersion of a driven remelting electrode in the slag layer of an electroslag remelting furnace, comprising regulating means for maintaining the depth of immersion essentially constant at a predetermined value, the improvement comprising: first circuit means for detecting the actual resistance of the current-path through the slag layer and for producing a first signal corresponding to the reciprocal of the actual resistance corresponding to the conductance of the current path, and second circuit means for detecting the changing of the conductance upon the spatial displacement of the electrode within the slag layer and for producing a second signal defining a correction signal corresponding to the changing of the conductance and means receptive of the first signal corresponding to the reciprocal of the actual resistance from the said first circuit means and the second signal from the second circuit means for algebraically summing the two and responsive to the sum for controlling the driving of remelting electrode to effect immersion thereof to a depth, wherein the relationship between said first signal corresponding to the conductance and the immersion depth is essentially linear whereby a uniform regulation amplification results.

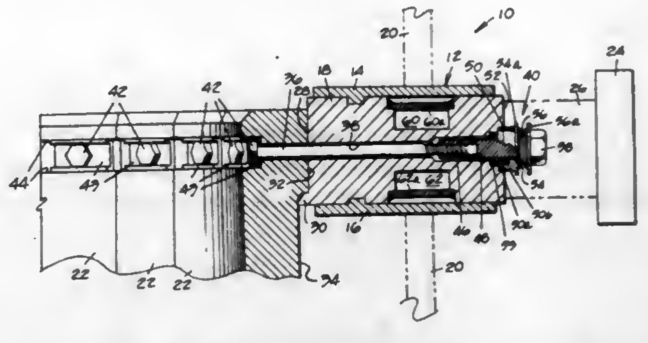
4,194,079
HEATING ELEMENT AND ELECTRODE ASSEMBLY FOR HIGH TEMPERATURE FURNACES

Robert C. Noren, and Michael H. Spritzer, both of San Diego, Calif., assignors to General Atomic Company, San Diego, Calif.

Continuation-in-part of Ser. No. 721,819, Sep. 9, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 885,909

Int. Cl.^{2} H05B *3/62*

U.S. Cl. 13—25 **11 Claims**



1. An assembly for maintaining an interconnection between a heating element arranged in a high temperature furnace and an external bus bar, comprising

an electrode means arranged in a wall of the furnace, said electrode means including external means for connection with the bus bar, an internal conductive surface connected with said external means while being arranged for abutting engagement with the heating element and an opening extending between said internal surface and an external surface of said electrode means,

an elongated member effectively engaged with the heating element and movably arranged in said opening, and

adjustable spring means arranged adjacent the external surface of said electrode means and connected to said elongated member for urging the heating element into intimate electrically conductive relation with said internal conductive surface.

4,194,080
UTILITY LINE SUPPORT STRUCTURE

Raymond F. Meisberger, West Chester, Pa., assignor to Bruce-Lake Company, Coatesville, Pa.

Filed Apr. 17, 1978, Ser. No. 897,044

Int. Cl.^{2} E04H *12/24, 12/10;* **H02G** *7/20*

U.S. Cl. 174—45 R **9 Claims**

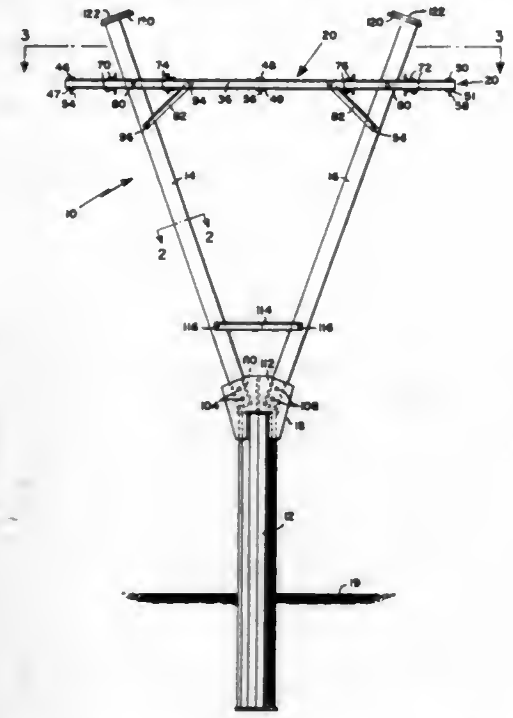
1. A metal electric utility line support structure for supporting electric power transmission lines, comprising

a tubular pole adapted to be erected so as to extend upright from the ground,

a pair of Y arms extending upwardly and outwardly from the top of the pole,

each of said Y arms comprising a structural element having a web, a pair of sidewalls extending at right angles to said web from the edges of said web, a pair of inturned flanges extending at right angles to said sidewalls from the outer edges of said flanges, said flanges being parallel to the web and having edges defining a slot therebetween, connector means connecting the bottom of the Y arms to the top of the pole,

a crossarm connected between the upper portions of the Y arms for supporting electric utility lines therefrom,



and including a series of said electric utility line support structures spaced apart from each other in a line,

and an electric utility line supported from the crossarms of said series and connected between said support structure of said series along said line.

4,194,081

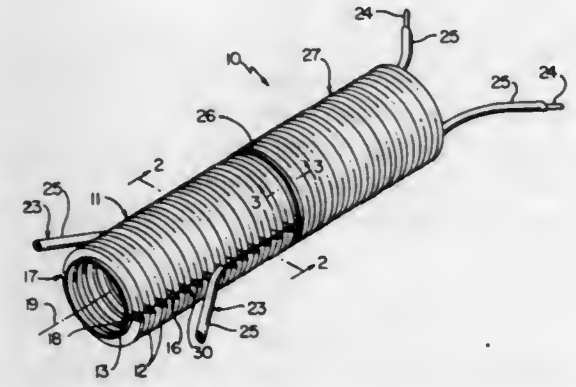
VACCUM CLEANER HOSE CONSTRUCTION HAVING ELECTRICAL CONDUCTORS EXTENDING THEREALONG AND METHOD OF MAKING SAME

Richard D. Medford, and Jerry W. Cooper, both of Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Oct. 11, 1977, Ser. No. 841,176

Int. Cl.^{2} F16L *11/11, 11/12;* **A47L** *9/24;* **B29D** *23/04*

U.S. Cl. 174—47 **22 Claims**



1. A vacuum cleaner hose construction comprising, a convoluted polymeric tube having alternating outwardly convex crests and outwardly concave troughs, each of said crests having a wall thickness which defines the entire wall thickness of its associated portion of said tube and said troughs having outside surfaces, a plurality of cutouts in said crests aligned along the length of said tube to define a slot construction, said cutouts extending completely through said entire wall thickness and defining associated openings in said tube, a flexible member disposed in said slot construction along said tube, and a polymeric sleeve disposed around said tube and flexible member, said sleeve holding said flexible member within its slot construction while sealing said openings and defining a fluid-tight outer layer for said hose construction, said slot construction and sleeve enabling said flexible member to be provided in said hose construction economically and with minimum weight yet still maintaining flexibility and a sealed interior in said hose construction.

14. A method of continuously making a flexible hose construction comprising the steps of, continuously forming convoluted polymeric tube having alternating outwardly convex crests and outwardly concave troughs, each of said crests having a wall thickness which defines the entire wall thickness of its associated portion of said tube and said troughs having outside surfaces, moving said tube in a path to enable further operations to be performed thereon, continuously cutting a plurality of cutouts which extend completely through said entire wall thickness of said crests during movement of said tube in said path to define associated openings and a plurality of sets of cutouts in said tube, said cutouts of each set being aligned along the length of said tube to define an associated slot construction, continuously inserting a plurality of flexible members each in an associated slot construction along said tube during movement thereof in said path, and continuously disposing a polymeric sleeve around said tube and flexible members while shrinking said sleeve tightly thereagainst to define a convoluted outer surface for said hose construction corresponding roughly to the convoluted outer surface of said tube, said sleeve holding said flexible members within said slot constructions while sealing said openings and defining a fluid-tight outer layer for said hose construction, said slot constructions and sleeve enabling said flexible members to be provided in said hose construction economically and with minimum weight yet still maintaining flexibility and a sealed interior in said hose construction.

4,194,082

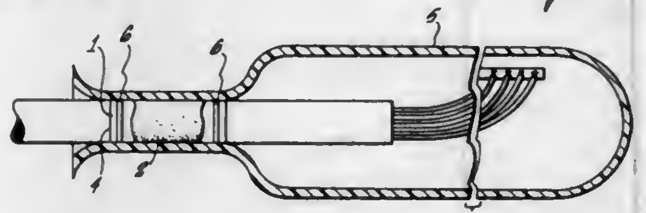
HEAT RECOVERABLE CLOSURE WITH SUBSTRATE PROTECTIVE MEANS

Bruce D. Campbell, Redwood City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed May 24, 1978, Ser. No. 908,976

Int. Cl.^{2} H02G *15/04;* **B29C** *27/00;* **B32B** *31/00*

U.S. Cl. 174—74 A **10 Claims**



1. An article comprising:

(a) an elongate substrate;

(b) a heat recoverable closure disposed about an exterior portion of said substrate; and

(c) penetration resistant means removably interposed at least partially between said substrate and said closure for forming a moisture proof seal between a selected portion of the exterior of said substrate and a selected overlying portion of said closure, whereby said closure may be removed after installation with a sharp tool without damage to the exterior of said substrate, the penetration resistant means comprising:

(i) a flexible member possessing substantially parallel inner and outer surfaces, the flexible member having sufficient strength and thickness to protect the elongate substrate from sharp instrumentalities and sufficient flexibility to be wrapped around the elongate substrate; and

(ii) a layer of thermoplastic adhesive juxtaposed a portion of at least one of the surfaces of the flexible metallic member, said adhesive flowing and becoming tacky above a temperature of 200° F., whereby after installation said thermoplastic adhesive removably seals said flexible member between the elongate substrate and the heat recoverable closure.

10. A method for forming a waterproof seal between an elongate substrate and a heat recoverable closure which provides protection from substrate damage upon forcible removal of said closure employing sharp instrumentalities comprising the steps of:

(a) positioning a flexible metallic member coated on both sides with a thermoplastic adhesive that flows and becomes tacky above a temperature of 200° F. about at least a portion of the exterior surface of said elongate substrate, the flexible metallic member having sufficient strength and thickness to protect the elongate substrate from sharp instrumentalities and sufficient flexibility to be wrapped around the elongate substrate;

(b) affixing said metallic member removably in place;

(c) positioning a portion of an open end of said heat recoverable closure in overlying relationship with said metallic member;

(d) heating said open end of said closure to at least 200° F. to cause said open end to recover about said metallic member and said elongate substrate thereby causing said thermoplastic adhesive to melt and flow; and

(e) cooling said closure thereby forming a waterproof seal between said closure and said substrate, whereby a sharp instrumentality employed to cut said closure during removal will not penetrate said metallic member and damage said substrate.

4,194,083

CAPACITIVELY COUPLED TABLET

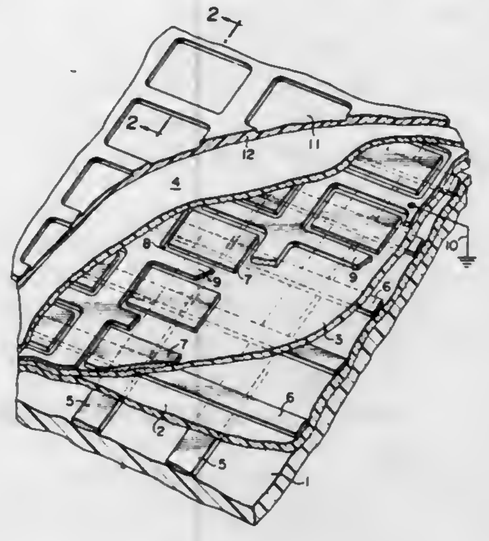
Kiyomi Abe, and Hiromichi Takahashi, both of Soka, Japan, assignors to Pentel Kabushiki Kaisha, Japan

Filed May 23, 1978, Ser. No. 908,790

Claims priority, application Japan, May 24, 1977, 52-60199

Int. Cl.^{2} G08C *21/00*

U.S. Cl. 178—18 **11 Claims**



1. A capacitively coupled tablet for use with a probe comprising: two sets of mutually insulated conductors spaced apart along coordinate axes to define a conductor matrix; one set of conductors being sequentially pulsed before the other set of conductors are pulsed in a repeated manner during use of the tablet; an overlay disposed above the sets of conductors and having a plurality of key segments defined in its surface, each key segment being located above a point of intersection of the conductors of each set; and a plurality of electrode plates disposed between the conductors and the overlay and being isolated from each other and corresponding to each of the key segments; whereby the probe can be applied against a particular key segment from over the overlay to achieve capacitive coupling with associated conductors of the respective sets through the electrode plate thereby sensing pulses of given timings from the conductors.

4,194,084

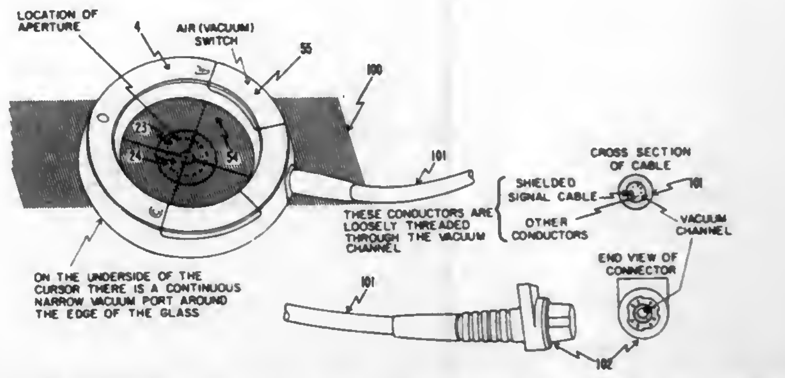
APERTURE CAPACITOR PICKUP

Henry T. Hetzel, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 17, 1978, Ser. No. 952,230

Int. Cl.^{2} G08C *21/00*

U.S. Cl. 178—19 **23 Claims**



LOCATION OF APERTURE
4
AIR (VACUUM) SWITCH
55
100
23
24
54
101
CROSS SECTION OF CABLE
SHIELDED SIGNAL CABLE
101
OTHER CONDUCTORS
VACUUM CHANNEL
THESE CONDUCTORS ARE LOOSELY THREADED THROUGH THE VACUUM CHANNEL
END VIEW OF CONNECTOR
ON THE UNDERSIDE OF THE CURSOR THERE IS A CONTINUOUS NARROW VACUUM PORT AROUND THE EDGE OF THE GLASS
101
102

1. Apparatus for optical alignment with and capacitive coupling to a conductor, the apparatus comprising:

a transparent first conductive surface for capacitive coupling to the conductor at a location along the conductor that is in optical alignment with the transparent first conductive surface; and

a second conductive surface, electrically isolated from the transparent first conductive surface, physically interposed between the conductor and the transparent first conductive surface, and having an aperture that first limits the capacitive coupling between the conductor and the transparent first conductive surface by shielding the transparent first conductive surface from the conductor except in the region of the aperture and that second provides a region at least through which the apparatus is optically alignable with the conductor.

4,194,085

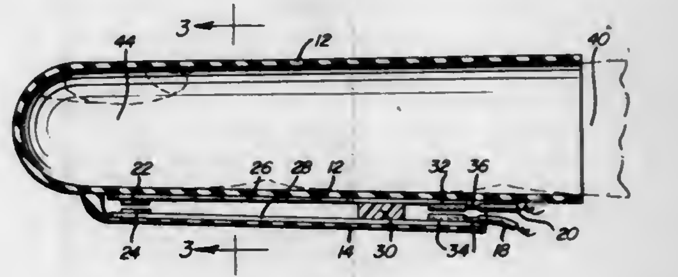
FINGER KEYER FOR CODE TRANSMISSION

Joseph I. Scelzi, P.O. Box 600-710, North Miami Beach, Fla. 33160

Filed Sep. 14, 1978, Ser. No. 942,912

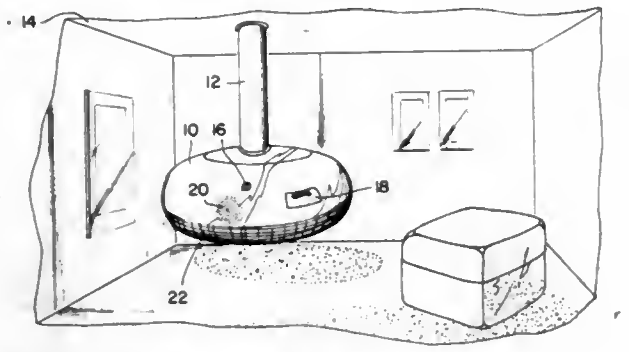
Int. Cl.^{2} H01H *21/86*

U.S. Cl. 178—101 **6 Claims**



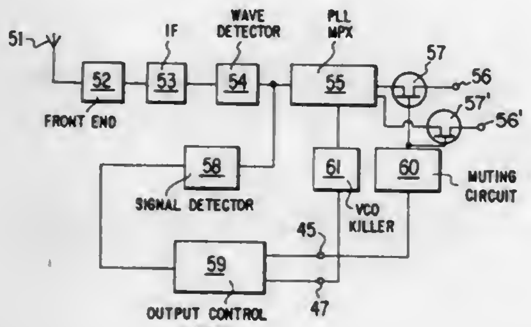
1. A keyer device for manual coded electrical signal production for code practice or transmission by an operator comprising removable wearing means insertible over a digit of the operator and signal producing means attached to said wearing means for production of said coded electrical signal in the form of dots and dashes, wherein said signal producing means comprises an elongated flexible hollow cavity attached to and independent of said wearing means, said cavity enclosing a keyer mechanism for alternate opening and closing of an electrical circuit, wherein said wearing means comprises a flexible sheath into which said digit is insertible, said keyer mechanism in the cavity being operable by manual pressure exerted on the keyer mechanism by said digit forcing the cavity against a solid object, whereby the closing of the electrical circuit is effected by said manual pressure, and the opening of the electrical circuit is effected by release of said manual pressure.

4,194,086
SUSPENDED STEREO CONSOLE AND LIGHT SHOW
Anthony Solla, 5425 Valles Ave., Bronx, N.Y. 10471
Filed Dec. 7, 1977, Ser. No. 858,191
Int. Cl.² H04R *5/02*
U.S. Cl. 179—1 G **3 Claims**



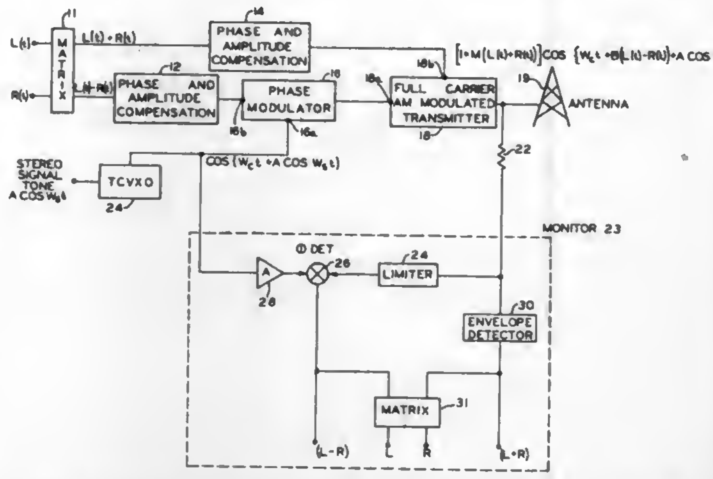
1. A stereo console, comprising
a housing,
a stereo unit mountable in the housing,
means of mounting the housing in a room, wherein the means of mounting the housing in a room is a column attached to an upper portion of the housing and mountable to a ceiling of a room, in which
two loudspeakers are connected to the stereo unit so as to produce stereophonic reproduction of sound and each loud speaker is mounted to an opposed vertical inclined side of the housing in the mounted position of the housing, with
said housing mounted to the column by rotatable means so that the housing may continuously rotate with respect to the column so as to disperse stereophonic sound reproduction to various opposite sides of a room as the housing rotates about a vertical axis with respect to the column, when the column is mounted from a ceiling of a said room.

4,194,087
CONTROL CIRCUIT AND FM STEREO RECEIVER USING SAME
Kaku Sakaida, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan
Filed May 8, 1978, Ser. No. 903,783
Claims priority, application Japan, May 17, 1977, 52-56550
Int. Cl.² H04H *5/00;* **H03K** *5/153*
U.S. Cl. 179—1 GD **6 Claims**



1. Circuitry for generating from an input signal having leading and trailing edges at least two output control signals where the leading and trailing edges of the first one of said two output control signals respectively precede and follow the leading and trailing edges of the second one of said two output control signals, said circuitry comprising
a first transistor responsive to said input signal;
time constant circuit means having a predetermined time constant connected to said first transistor;
a second and third transistors responsive to said first transistor and said time constant circuit means;
bias means for so establishing different operating voltages for said second and third transistors that, upon application of said input signal to said first transistor, said first and second output control signals are respectively outputted by second and third transistors due to the fact that they are actuated at different times by the output signal from said first transistor and said time constant circuit depending on whether the input signal is rising or falling.

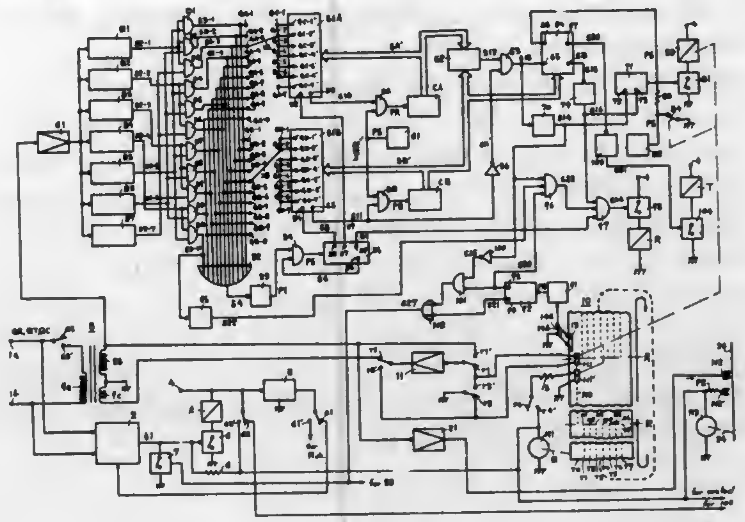
4,194,088
MODULATION MONITOR FOR AM STEREOPHONIC BROADCASTS
Robert D. Streeter, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
Filed Mar. 15, 1978, Ser. No. 886,707
Int. Cl.² H04H *5/00*
U.S. Cl. 179—1 GS **2 Claims**


L(t)
R(t)
MATRIX
11
L(t)+R(t)
14
PHASE AND AMPLITUDE COMPENSATION
12
PHASE AND AMPLITUDE COMPENSATION
16
PHASE MODULATOR
16b
16a
18a
18b
FULL CARRIER AM MODULATED TRANSMITTER
18
[1+M(L(t)+R(t))]COS {W_c t +B(L(t)-R(t))+A COS W_s t}
19
ANTENNA
22
STEREO SIGNAL TONE A COS W_s t
TCVXO
24
COS (W_c t +A COS W_s t)
MONITOR 23
Φ DET
26
28
24
LIMITER
30
ENVELOPE DETECTOR
MATRIX
31
(L-R)
L
R
(L+R)

2. A method for providing monitor signals from an AM stereophonic broadcast signal, said signal comprising a carrier frequency signal being modulated in phase with a first channel of information and subsequently modulated in amplitude with a second signal comprising:
a. supplying a sample of said carrier frequency signal to one input of a phase detector;
b. amplitude limiting a portion of said broacast signal;
c. combining said amplitude limited signal with said sample of said carrier frequency signal in said phase detector whereby said first channel of information is provided; and
d. detectng the envelope of said broadcast signal to provide a signal proportional to the amplitude changes in said broadcast signal to produce a second channel of information.

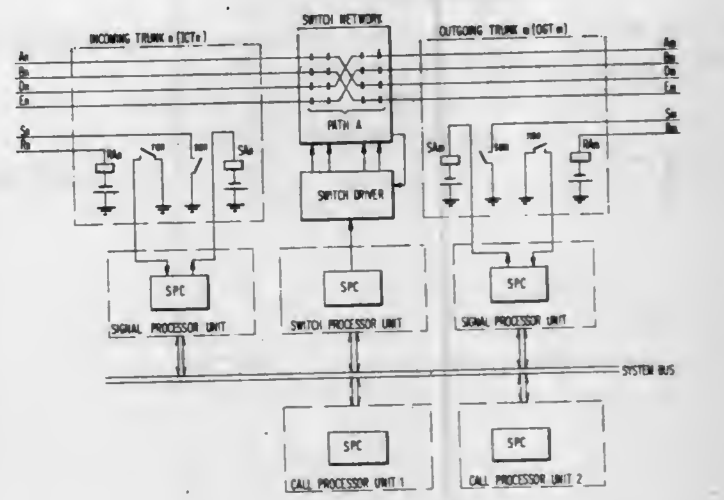
4,194,089
AUTOMATIC ANSWERING TELEPHONE SET HAVING AN ENDLESS TAPE WITH A PLURALITY OF SELECTIVE TRACKS
Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan
Filed Sep. 29, 1977, Ser. No. 837,814
Claims priority, application Japan, Sep. 30, 1976, 51-117706
Int. Cl.² H04M *1/64, 1/65*
U.S. Cl. 179—6 E **4 Claims**

1. An automatic telephone answering set comprising:
(a) an endless magnetic medium means having first and second half portions successively disposed along the length thereof so that as said endless magnetic medium is driven the first half portion is encountered prior to the second half portion, said endless magnetic medium including (1) a first endless track where there is pre-recorded in said first half portion of the endless magnetic medium a message for a general calling party and (2) a plurality of further endless tracks in which there is prerecorded in said second half portion of the endless magnetic medium a message for a specified calling party so that after said general calling party message is reproduced, one of said specified calling party messages can be reproduced without having to rewind said endless magnetic medium;
(b) a magnetic head for (1) selectively reproducing the message for the general calling party and the messages for the specified calling parties and (2) selectively recording new messages for the specified calling parties on the endless tracks therefor of the endless magnetic medium means in place of the pre-recorded messages for the specified calling parties;
(c) drive means for driving the endless magnetic medium;
(d) means for selectively moving the magnetic head to the portions of the endless tracks for the specified calling parties from the portion of the endless track for the general calling party;
(e) message sending means for (1) selectively sending to a telephone line the message reproduced by the magnetic head from the endless track for the general calling party and the messages reproduced by the magnetic head from the endless tracks for the specified calling parties and (2) selectively sending to the magnetic head the new messages for the specified calling parties derived from the telephone line;
(f) ringing signal responsive means for providing an output in response to a ringing signal derived from the telephone line;
(g) call information responsive means for providing a first output in response to first call information for the specified calling parties derived from the telephone line and a second output in response to second call information derived from the telephone line for a person in a position to give a message to the specified calling parties, said second call information comprising a first information part identical with said first call information and a second information part following the first information part;



(h) first control means for (1) controlling the drive means to drive said first endless track of the endless magnetic medium means by the magnetic head to thereby reproduce the message for the general calling party and (2) controlling the message sending means to send the reproduced general calling party message to the telephone line, said first control means being responsive to the output from the ringing signal responsive means when only the ringing signal is derived from the telephone line;
(i) second control means for (1) controlling first the drive means to drive said first endless track of the endless magnetic medium means by the magnetic head to thereby reproduce the message for the general calling party, (2) controlling the message sending means to send the reproduced general calling party message to the telephone line, said second control means being first responsive to the output from the ringing signal responsive means and then (3) controlling the magnetic head moving means to bring the magnetic head to a selected endless track for a specified calling party and then drive said selected track by the magnetic head to thereby selectively reproduce the prerecorded specified calling party message and to send it to the telephone line by the message sending means, said second control means being further responsive to said first output from the call information responsive means when there is only sequentially applied thereto the ringing signal and said first information part of the call information signal whereby said specified calling party message can be reproduced after said general calling message without having to rewind said endless magnetic medium means; and
(j) third control means for (1) controlling first the drive means to drive said endless track of the endless magnetic medium means by the magnetic head to thereby reproduce the message for the general calling party, (2) controlling the message sending means to send the reproduced general calling party message to the telephone line, said third control means being first responsive to the output from the ringing signal responsive means, then (3) controlling the magnetic head moving means to bring the magnetic head to a selected endless track for a specified calling party, and then (4) controlling the message sending means to selectively send a new message for the specified calling party from the telephone line to the magnetic head to record on said selected endless track the new message for the specified calling party, said third control means being responsive to said second output from the call information responsive means when there is only sequentially applied thereto the ringing signal from the telephone line, the said first information part of a selected call information from a person in a position to give a message to the specified calling party from the telephone line, the said second information part of the selected call information from the telephone line and said new message for the specified calling party from the telephone line via the message sending means.

4,194,090
DECENTRALIZED-CONTROL TYPE ELECTRONIC SWITCHING SYSTEM
Hideo Yabe, and Shohei Sato, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 854,968, Nov. 25, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 938,740
Claims priority, application Japan, Nov. 27, 1976, 51/142607
Int. Cl.² H04Q *3/54*
U.S. Cl. 179—18 ES **3 Claims**



1. A decentralized control-type electronic switching system comprising:
at least one signal processor accommodating a plurality of communication lines for receiving, storing and analyzing a line signal and a register signal sent from said communication lines, for transmitting a line signal and a register signal to said communication lines, and for storing an idle or busy state of said communication lines;
at least one call processor for determining said signal processor which accommodates an outgoing line to be connected to an incoming line on the basis of a signal received from said signal processor via said incoming line;
at least one switch processor for storing an idle or busy state of links in a switch network, for responding to a request

from another processor for seeking for an idle path between two communication lines designated by said request, for storing and connecting said path, and for responding to a request from another processor for disconnecting a path between two communication lines designated by said request;

a common system bus for carrying out data transfer between said respective processors; and

an oscillator for generating system clock pulses to be used for controlling said data transfer, each of said processors including:

a system clock counter for controlling a sequence of data transmission onto said system bus, said counter being set at an initial value upon starting of said switching system and thereafter stepped in synchronism with said system clock pulses;

inhibit means operable when one processor is ready to transfer data therefrom to another processor for inhibiting the feed of the system clock pulses;

sending means for transmitting said data onto said system bus upon coincidence of the count in said system clock counter with an assigned processor number;

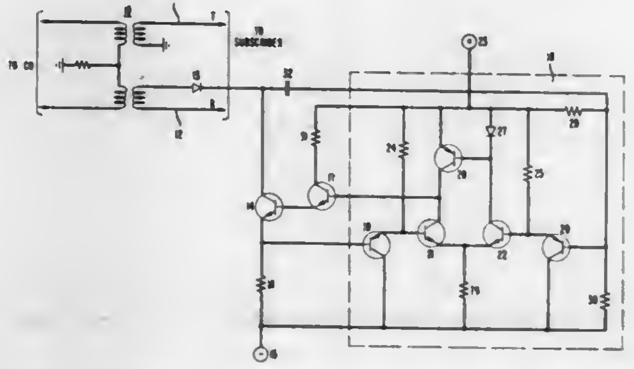
receiving means for receiving data from said system bus but storing the data only when an addressed processor number contained in said data coincides with an assigned processor number; and

means for releasing said inhibit means to restore the feeding of the system clock pulses after the data transmission has been completed, whereby the data transfer between said processors can be accomplished.

4,194,091

LINE FEED CIRCUIT

Barry S. Bosik, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 29, 1978, Ser. No. 974,386
Int. Cl.^{2} H04M *3/02*
U.S. Cl. 179—77 **4 Claims**



1. A line feed circuit for telephone subscriber loops characterized by

an operational amplifier,

a constant current source utilizing said operational amplifier in its direct current mode

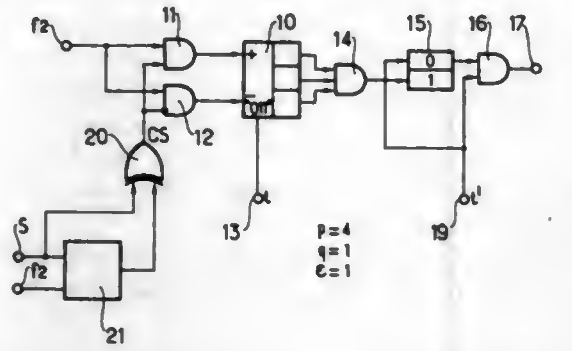
a bypass capacitor connected around said constant current source, and

means for utilizing said operational amplifier in its alternating current mode for multiplying the value of said bypass capacitor.

4,194,092

DEVICE FOR DETECTING A FREQUENCY IN A PCM CODED SIGNAL

Jacques Luder, Ris Orangis, France, assignor to Compagnie Industrielle des Telecommunications, Paris, France
Filed Jun. 6, 1978, Ser. No. 913,163
Claims priority, application France, Jun. 10, 1977, 77 17814
Int. Cl.^{2} H04Q *1/46;* **H04B** *3/20*
U.S. Cl. 179—84 VF **2 Claims**

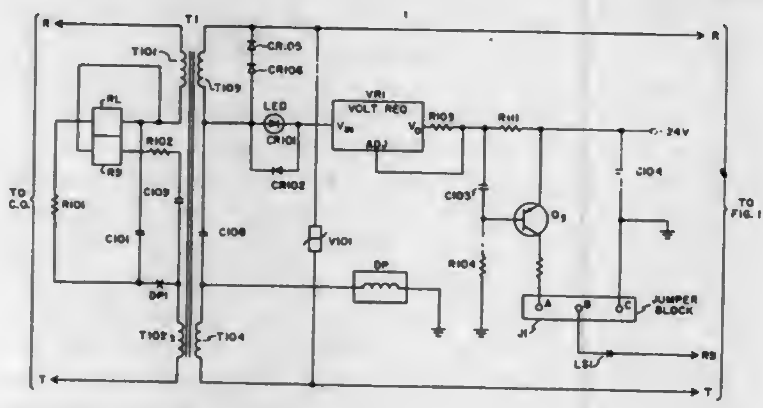


1. An arrangement for detecting a frequency f_1 in a signal which is in PCM coded form, whose sampling frequency is f_2, $f_2 \approx p/qf_1$, p and q being integers and p being greater than 2q, including a circuit which delivers a pulse at each change of sign of said signal and a counting circuit for counting this pulse during a measurement period, wherein the counting circuit is constituted by an up/down counter which operates at the frequency f_2, which shifts in a first direction a number of steps a each time said pulse appears and which shifts in a second direction a number of steps r when said pulse does not appear, a and r being such that the ratio a/r is equal to $p-2q/2q$ and a means for detecting whether the up/down counter deviates by more than a predetermined number of steps which is a function of p and q from a given position at which it is initialized at the beginning of the measurement period, the presence of the frequency f_1 being characterized by the absence of such detection during the measurement period.

4,194,093

KEY SYSTEM PROTECTIVE APPARATUS

Orland L. Davis, Jr., and Charles E. Moore, Jr., both of Corinth, Miss., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Nov. 29, 1978, Ser. No. 964,620
Int. Cl.^{2} H04M *1/00;* **H04Q** *5/18*
U.S. Cl. 179—99 R **6 Claims**

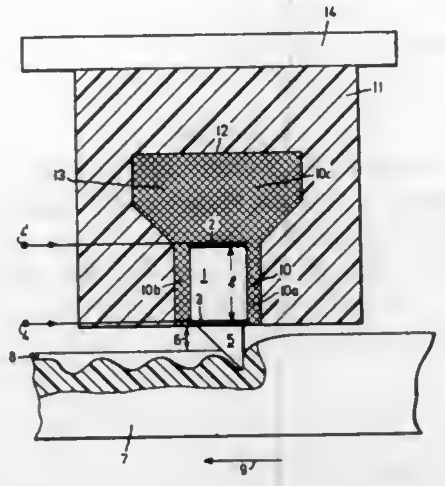


1. Apparatus for isolating a line circuit for a key telephone system from the exchange serving the line of the line circuit, said apparatus including a relay connected to said line and having output contacts connected to the line circuit, and transformer means providing d.c. isolation between line conductors to said exchange and line conductors to said line circuit, said relay comprising a ring winding for detecting ringing current from the exchange to energize said line circuit and a second winding responsive to line current in the line conductors of said line circuit for holding said line energized.

4,194,094

DEVICE FOR MECHANICALLY RECORDING A SIGNAL HAVING A BANDWIDTH OF SEVERAL MHz, PARTICULARLY FOR A VIDEO DISC

Horst Redlich, Berlin, Fed. Rep. of Germany, assignor to Ted Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec, Switzerland
Filed Nov. 21, 1978, Ser. No. 962,645
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2752022
Int. Cl.^{2} G11B *3/46;* **H01L** *41/10, 23/14*
U.S. Cl. 179—100.41 P **12 Claims**



1. A device for mechanically recording a signal, having a bandwidth of several MHz on a receiving surface, particularly on a video disc, comprising, a rigid housing having a stylus-receiving cavity, a piezoelectric transducer mounted in said cavity, a cutting stylus connected to said transducer and projecting out of said housing for cutting into the receiving surface, and damping means disposed between said housing and said transducer for resiliently supporting said transducer in said cavity and providing a greater resilience for movement of said transducer in the direction of oscillation than in a direction perpendicular thereto.

4,194,095

FLUID FLOW CONTROL SPEAKER SYSTEM

Toshitada Doi, Yokohama; Akira Iga; Osamu Hamada, both of Tokyo; Jyoji Hukuda, Yokohama, and Yuichiro Hamada, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 765,387, Feb. 3, 1977, abandoned. This application Jan. 6, 1978, Ser. No. 867,508
Claims priority, application Japan, Feb. 10, 1976, 51-13396
Int. Cl.^{2} H04R *23/00*
U.S. Cl. 179—113 **11 Claims**

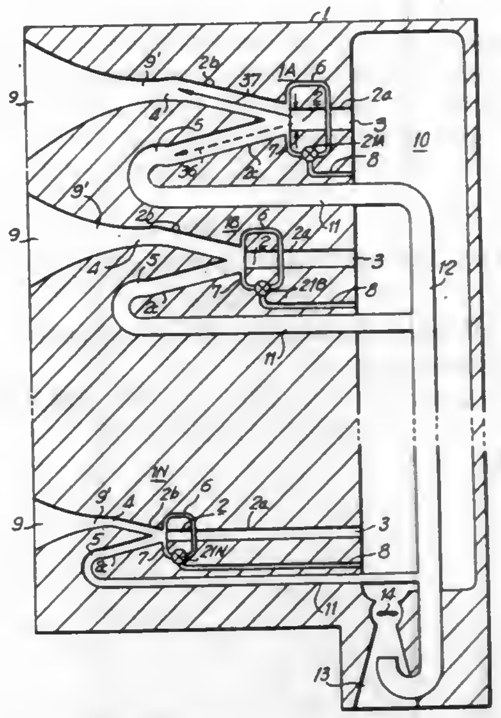
1. A loudspeaker system responsive to a pulse-code modulated input signal having a plurality of bits ranging in order from a most significant bit to a least significant bit, comprising:

a plurality of flow pipes, each associated with a respective order of said bits and each having an inlet and an outlet for producing an acoustic output in response to a predetermined flow condition in the respective flow pipe;

a fluid source for supplying a fluid to each of said inlets;

control means for controlling said flow condition of the fluid through each of said flow pipes; and

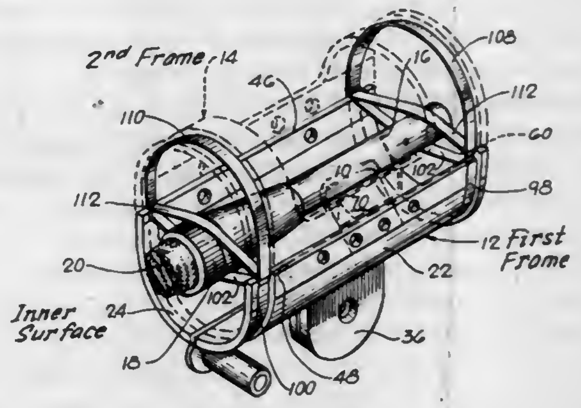
circuit means supplied with said pulse-code modulated input signal for actuating said control means of each of said flow pipes in response to the respective order of said bits of the input signal.



4,194,096

MICROPHONE SHOCK MOUNT AND ASSEMBLY

Robert C. Ramsey, Niles, Mich., assignor to Electro-Voice, Incorporated, Buchanan, Mich.
Filed Nov. 3, 1978, Ser. No. 957,067
Int. Cl.^{2} H04R *1/02*
U.S. Cl. 179—147 **10 Claims**



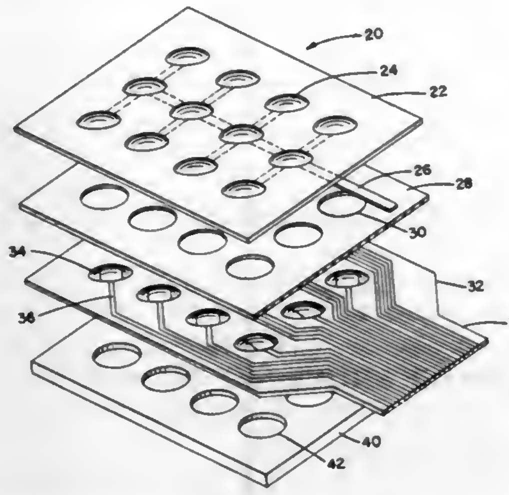
1. A device for mounting a microphone comprising a first frame and a second frame, each of the frames having a first surface extending between opposite ends thereof, each first surface having an elongated recess extending therein between the opposite ends thereof, and each of the frames having a second surface extending between the opposite ends thereof opposite the first surface, two position means for mounting the first frame on the second frame in a first position or a second position, the first surface of the first frame being in abutment with the first surface of the second frame and the elongated recesses of the first and second frames being aligned to form a channel in the first position, and the first surface of the first frame being remote from the first surface of the second frame in the second position, a first and a second closed band of elastomeric material extending about the first frame, one of said first and second bands being disposed adjacent to each end of the first frame and in abutment with the first and second surfaces of the first frame, a third and a fourth closed band of elastomeric material extending about the second frame in spaced relationship, one of said third and fourth bands being disposed adjacent to each end of the second frame and in abutment with the first and second surfaces of the second

frame, whereby a microphone may be placed between the portion of the first and second bands confronting the first surface of the first frame and the portion of the third and fourth bands confronting the first surface of the second frame with the mounting means in the second position and the mounting means changed to the first position to secure the microphone on the bands, the microphone being accommodated in the channel in said first mounting position.

4,194,097
MEMBRANE KEYBOARD APPARATUS WITH TACTILE FEEDBACK

William R. Bradam, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 12, 1978, Ser. No. 915,036
Int. Cl.² H01H *13/70*
U.S. Cl. 200—5 A **11 Claims**



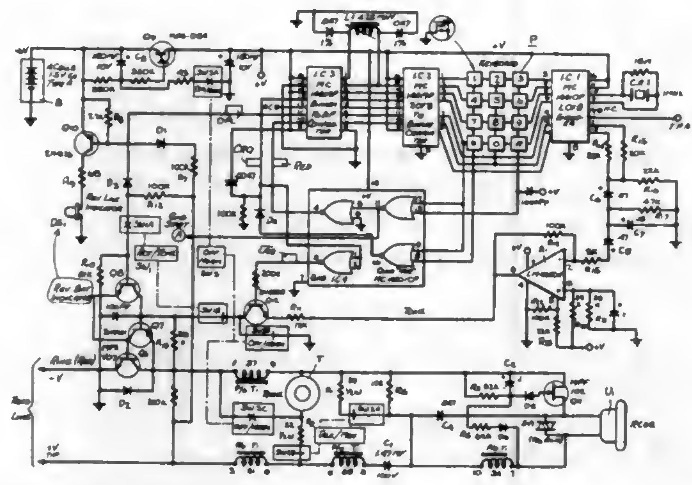
1. A keyboard apparatus comprising:
support means having a plurality of recessed portions each defining a key portion;
a first flexible support member mounted on said support means having first designated key portions, each in registration with one of said recessed portions;
a second flexible support member mounted on said support means and spaced from said first flexible support member, said second support member having second designated key portions each in registration with an associated one of said first key portion and spaced therefrom;
a first electrical conducting means secured to the inner surface of said first key portion;
and a second electrical conducting means secured to a surface of said second key portions adjacent said first conducting means and spaced therefrom whereby upon depression of a selected one of said first designated key portions, said first and second support members together with their associated electrical conducting means move toward said support member to provide an electrical contact between adjacent electrical conducting means and are further moved into the recessed portion of said support means a distance to provide a tactile feedback with respect to the operation of the key portions.

4,194,098
LINEMAN'S HAND TEST SET

Alan J. Carlson, Syosset, N.Y., assignor to Metro-Tel Corp., Syosset, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,869
Int. Cl.² H04M *3/22*
U.S. Cl. 179—175 **20 Claims**

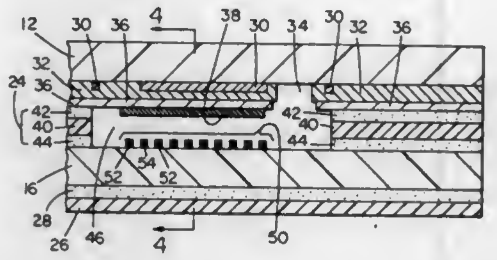
1. A lineman's hand test set for generating digital and rotary tones to a telephone network comprising a single tone generating mechanism, a rotary tone encoder, a digital tone encoder, each encoder being operatively connected to the tone generating mechanism, a switch circuit operatively connected to each of said encoders and to the telephone network, generation of tones by said tone generator mechanism pulsing signals to each encoder, control means interposed between each encoder and said switch circuit, the control means being disabled from its particular encoder depending on whether rotary tones or digital tones are desired whereby either rotary tones or digital tones are passed by the undisabled control means to the switch circuit to the telephone network.



4,194,099
CONTROL PANEL OVERLAY

John A. Mickelson, Glendale Heights, Ill., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Oct. 25, 1977, Ser. No. 845,301
Int. Cl.² H01H *9/00, 13/02*
U.S. Cl. 200—5 A **12 Claims**



1. A flexible switching element adapted to be mounted on a surface having electrically conductive portions thereon, said element comprising:
a flexible overlay,
said overlay having an upper surface for receiving switch activating pressure and a lower surface,
a layer of ink formed on at least some portions of said overlay lower surface to provide indicia for said switching element,
said overlay being transparent with respect to said indicia, and
an electrically conductive layer formed on at least a portion of said overlay lower surface or ink layer lower surface for movement jointly with a respective indicium and against at least two spaced said electrically conductive portions.

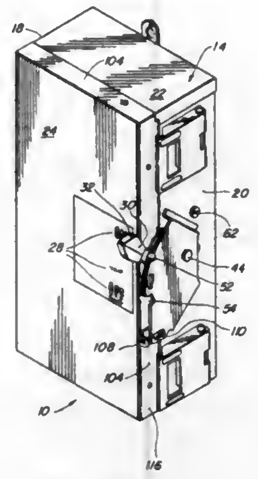
4,194,100
CIRCUIT BREAKER ENCLOSURE

Russell Cox, Frankfort; Joseph C. Drilling, and Harris I. Stanback, both of Lexington, all of Ky., assignors to Square D Company, Palatine, Ill.

Filed Sep. 19, 1977, Ser. No. 834,219
Int. Cl.² H01H *9/22, 9/20*
U.S. Cl. 200—50 A **40 Claims**

1. An enclosure for a circuit interrupting device comprising:
a peripheral wall encircling said device,
a cover carried by said wall for movement between an open and closed position,

a sealing gasket carried by said cover for engaging an end edge of said wall in response to the movement of said cover to said closed position,
a latch element,
means carrying said latch element on said wall for pivotal and longitudinal movement relative said wall to enable said latch element to engage said cover for latching said cover in said closed position,

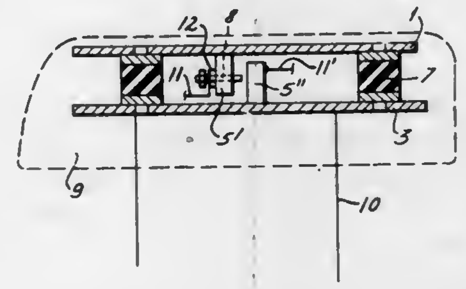


and bias means for biasing said latch element longitudinally relative said wall for placing said gasket under pressure against said end edge in response to the latching of said cover in said closed position and for pivoting said latch element in response to the disengagement of said latch element from said cover for indicating an open position of said cover.

4,194,101
STARTING BLOCK SWITCH ASSEMBLY FOR TIMED SWIMMING EVENTS

Michel Berseth, La Neuveville, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Switzerland

Filed May 23, 1978, Ser. No. 908,866
Claims priority, application Switzerland, Jun. 1, 1977, 6710/77
Int. Cl.² H01H *35/00;* A63K *3/02*
U.S. Cl. 200—52 R **10 Claims**

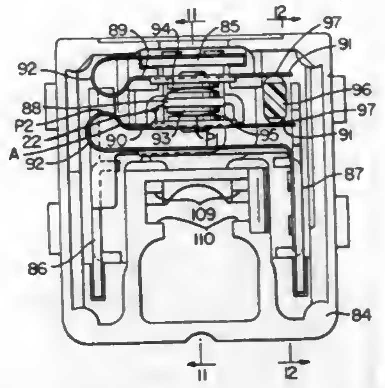


1. A starting block for timed swimming events comprising:
a fixed support;
a movable platform for supporting a swimmer;
elastic shock absorbing means disposed between said fixed support and said movable platform,
said elastic shock absorbing means supporting said movable platform in a plane while permitting a displacement of the platform having a translational component parallel to said plane under an impetus imparted to the platform by a swimmer;
first contact means mounted on said fixed support; and,
second contact means supported by said movable platform laterally of said first contact means whereby said first and second contact means make contact with each other only upon a displacement of said platform having a translational component parallel to said plane.

4,194,102
CONDITION RESPONSIVE ELECTRICAL SWITCH CONSTRUCTION AND PARTS AND METHODS THEREFOR

Charles D. Branson, Greensburg, and Harvey J. Shopsky, Latrobe, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 29, 1977, Ser. No. 865,594
Int. Cl.² H01H *5/18, 37/38, 37/40, 37/60*
U.S. Cl. 200—67 D **20 Claims**



1. In an electrical switch construction having frame means carrying fixed contact means and movable contact means to be moved relative to said fixed contact means by a knicker-type actuator member, said fixed contact means comprising a single contact member and said movable contact means comprising a pair of movable contact members disposed on opposite sides of said fixed contact member and each being biased in a direction to tend to place the same in contact with said fixed contact member, said actuator member being disposed between said pair of movable contact members and being movable in opposite directions to engage and move the respective movable contact member out of contact with said fixed contact member, the improvement wherein each movable contact member comprises a conductive blade having two legs joined together by a loop at adjacent ends of said legs, one of said legs of each blade being substantially straight and having said loop offset therein at said end thereof to cause that leg to tend to elongate between said fixed contact member and the outside edge of said loop should a weld exist between that leg and said fixed contact member when said actuator member is attempting to move that conductive blade out of contact with said fixed contact member, each said conductive blade having said one leg thereof engageable with said actuator member and adapted to make contact with said fixed contact member intermediate said offset loop thereof and where said actuator member is engageable with said one leg.

11. In a method of making an electrical switch construction having frame means carrying fixed contact means and movable contact means to be moved relative to said fixed contact means by a kicker-type actuator member, said fixed contact means comprising a single contact member and said movable contact means comprising a pair of movable contact members disposed on opposite sides of said fixed contact member and each being biased in a direction to tend to place the same in contact with said fixed contact member, said actuator member being disposed between said pair of movable contact members and being movable in opposite directions to engage and move the respective movable contact member out of contact with said fixed contact member, the improvement comprising the steps of forming each movable contact member to comprise a conductive blade having two legs joined together by a loop at adjacent ends of said legs with one of said legs being substantially straight and having said loop offset therein at said end thereof to cause that leg to tend to elongate between said fixed contact member and the outside edge of said loop should a weld exist between that leg ans said fixed contact member when said actuator member is attempting to move that conductive blade out of contact with said fixed contact member, and forming each said conductive blade to have said one leg thereof engageable with said actuator member and adapted to

make contact with said fixed contact member intermediate said offset loop thereof and where said actuator member is engageable with said one leg.

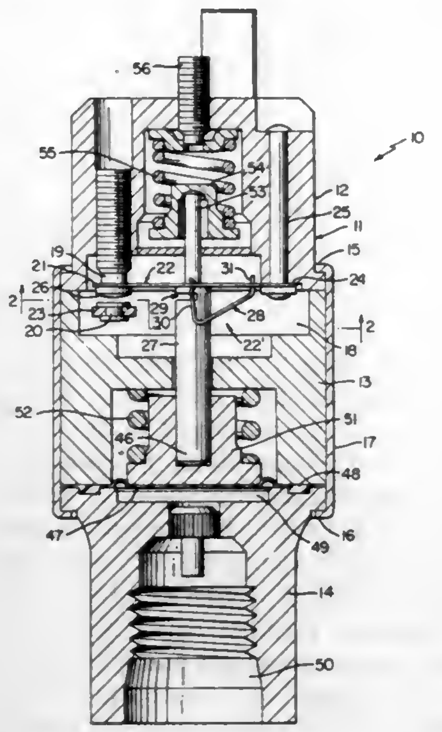
4,194,103
ELECTRICAL SWITCH CONSTRUCTION AND METHOD OF MAKING THE SAME

William N. Smith, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 13, 1978, Ser. No. 941,917

Int. Cl.^{2} H01H *5/18, 13/36*

U.S. Cl. 200—67 E **20 Claims**



1. In a double throw electrical switch construction having a housing means carrying movable actuator means for moving a snap switch blade of said housing means overcenter to snap a contact portion of said blade between a pair of spaced contact stops carried by said housing means, said actuator means comprising an actuator plunger and an actuator spring, said actuator spring having opposed ends and an intermediate portion between said opposed ends thereof, said actuator spring being movable relative to said housing means and having one of said opposed ends thereof operatively interconnected to said blade to move said blade as said spring is moved, said plunger having lost motion means for acting against said intermediate portion of said actuator spring to cause movement thereof as said actuator plunger is being moved whereby said actuator spring can move relative to said actuator plunger through said lost motion means thereof, the improvement wherein one of said opposed ends of said actuator spring comprises a pair of spaced apart legs, said legs being interconnected together by a narrow band of said actuator spring, said narrow band comprising said intermediate portion of said actuator spring on which said lost motion means of said plunger acts against.

4,194,104
PUSH BUTTON ADAPTER FOR SLIDE SWITCH

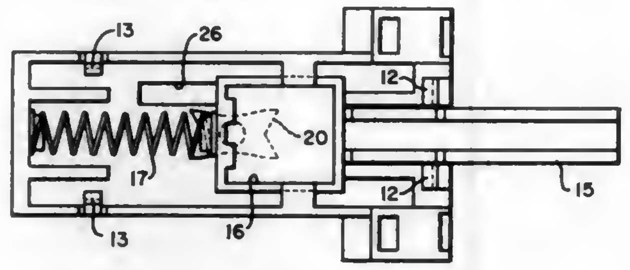
Richard A. Stenta, Farmville, Va., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Jan. 31, 1979, Ser. No. 8,067

Int. Cl.^{2} H01H *13/56*

U.S. Cl. 200—153 J **6 Claims**

1. The combination with a slide switch having an actuating button extending through a longitudinal slot in the top wall of the switch case, of an adapter for converting the switch into a push button switch, said adapter comprising a housing having an open bottom mounted on top of the switch with said actuating button extending up into the housing, means on the housing attaching it to the switch, a push button plunger slidably mounted in the housing and extending out of one end of it, the plunger having a recess therein loosely receiving said actuating button for moving it with the plunger, a coil spring compressed between the inner end of the plunger and the opposing end wall of the housing for normally holding the plunger in its outermost position with said button at one end of said slot, the plunger being movable into the housing far enough to move said button to the opposite end of said slot, a latch rotatably mounted in the top of the housing above the plunger, and means on top of the inwardly moving plunger for turning the latch from a normal position only far enough for it to stop outward movement of the released plunger before the plunger can move said button away from said opposite end of the slot, said latch-turning means being adapted to turn the latch past said plunger-stopping position when the plunger is pushed inwardly again and to then turn the latch to its normal position when the plunger is released so that the plunger will return said button to said one end of said slot.



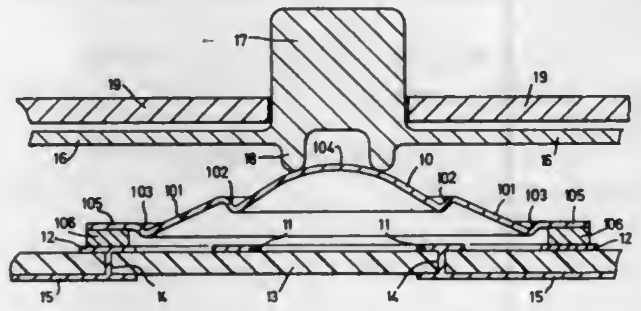
4,194,105
SWITCHES

Robert J. Hodges, Cheshunt, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 13, 1977, Ser. No. 759,068

Int. Cl.^{2} H01H *13/70*

U.S. Cl. 200—159 B **2 Claims**



1. An electrical switch assembly having a generally dome-shaped diaphragm of electrical conductive and resilient material and being deformable from a stable position to an instable position, a portion of said diaphragm engaging at least one switch contact for completing an electrical circuit, wherein said diaphragm includes a central portion, a peripheral portion and an intermediate frusto-conic portion joining said central and peripherial portions, the transition region between said peripherial portion and said frusto-conic portion is turned away from a first side of the conical surface plane of said frusto-conic portion and the transition region between said central portion and said frusto-conic portion is turned away from the opposite side of said conical surface plane of said frusto-conic portion, one of said transition regions engaging said switch contact for completing said electrical circuit, and the resilient spring characteristics of said diaphragm being controlled by the dimension of said frusto-conic portion between said central and peripherial portions; and means including said one of said transition portions and said switch contact for limiting the deformation translation of said diaphragm in the direction of said instable position thereby to ensure the return translation of said diaphragm back to said stable position.

4,194,106
METHODS AND DEVICES FOR CUTTING, ERODING, WELDING AND DEPOSITING METALLIC AND NON-METALLIC MATERIALS BY MEANS OF AN ELECTRIC ARC

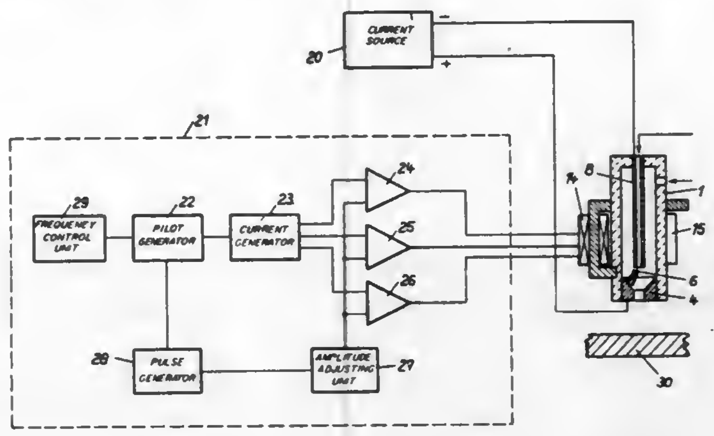
Albi Rudaz, Givrins/VD, and Albert Ferrari, Gland/VD, both of Switzerland, assignors to Secheron Soudure S.A., Gland/VD, Switzerland

Continuation of Ser. No. 652,750, Jan. 27, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 913,061

Claims priority, application Switzerland, Jan. 27, 1975, 919/75

Int. Cl.^{2} B23K *9/08*

U.S. Cl. 219—123 **1 Claim**



1. In a device for cutting, eroding, welding or depositing a metallic or non-metallic material by means of an electric arc, first means for producing an electric arc, second means for producing, in the proximity of the arc a turning magnetic field acting on the arc to make it turn, said second means comprising a polyphase alternating current generator for producing said turning magnetic field acting on the arc to make it turn, and third means comprising voltage controlled amplifiers fed by said second means, and a pulse generator for controlling the gain of said amplifiers the output of said voltage controlled amplifiers connected to means for producing said turning magnetic field.

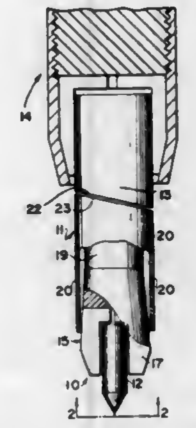
4,194,107
WELDING TIP

George A. Klasson, 4430 Azalea La., North Olmsted, Ohio 44070

Filed Jun. 2, 1977, Ser. No. 802,825

Int. Cl.^{2} B23K *9/24*

U.S. Cl. 219—75 **11 Claims**



1. A welding assembly for a TIG welding torch comprising:

an electrode holder; and

an electrode that extends forwardly relative to said torch whereby a welding arc may be established between said electrode and a workpiece for accomplishing a welding operation and which comprises

a solid, highly conductive tip holder with a length of about 1¼" prior to use capable of being removably and releasably mounted in the electrode holder and having a rearward end portion received in the electrode holder and a forward end portion extending outwardly beyond the electrode holder and

a short-length disposable, nonconsumable tungsten electrode tip with a length of about ⅜" prior to use preground to a precise point angle and attached to the forward end portion of the tip holder, the tip being located forwardly of and spaced entirely beyond the forward extension of the electrode holder,

said electrode being located for access externally of said torch whereby the quantity of tungsten utilized in the electrode is minimized and after deterioration of the tip, replacement can be accomplished without disassembly of said torch by placing a new electrode with the preground tip in the electrode holder without requiring in situ cutting and grinding of a new tip from a length of tungsten rod.

4,194,108
THERMAL PRINTING HEAD AND METHOD OF MAKING SAME

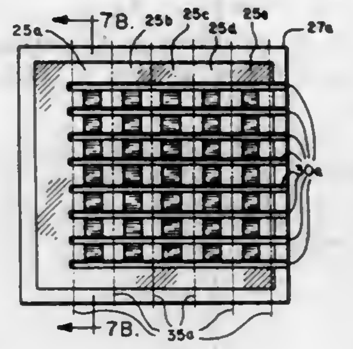
Takashi Nakajima, Chiba; Katsuto Nagano, Yokohama, and Kazumi Ishikawa, Chiba, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 18, 1978, Ser. No. 870,417

Claims priority, application Japan, Jan. 20, 1977, 52/5251

Int. Cl.^{2} H05B *1/00*

U.S. Cl. 219—216 **8 Claims**



1. A thermal printing head comprising an electrically insulative substrate, a pattern of heat generating elements formed on a surface of said substrate and electrically insulated from one another, and means for selectively flowing an electric current to said heat generating elements to heat selected ones of the elements, said heat generating elements consisting substantially of a boron phosphide compound.

4,194,109
FOOD SERVING TRAY AND SUPPORTING HEATER SHELF

Donald A. Springer, San Jose, Calif., assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

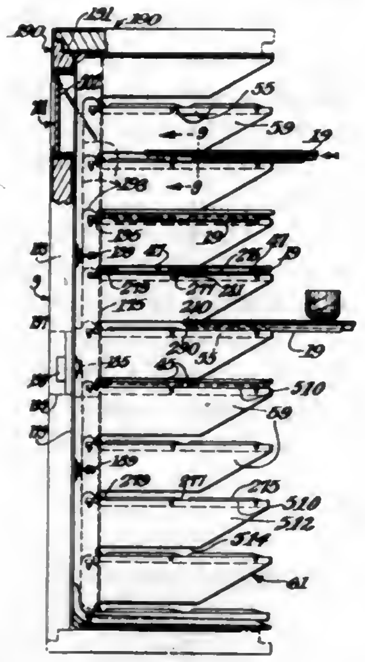
Division of Ser. No. 758,455, Jan. 11, 1977. This application Oct. 4, 1977, Ser. No. 839,379

Int. Cl.^{2} H05B *1/00*

U.S. Cl. 219—386 **21 Claims**

1. In combination a heater shelf rack and heater shelves and food serving trays, said rack including a plurality of sets of cantilevered support arms, each of said support arms including an upper edge and a depending side wall having a lower horizontal edge, each of said heater shelves being mounted to a corresponding set of said support arms, each of said heater shelves including a generally flat upper surface with at least one heater element thereon, each of said food serving trays including a generally flat upper surface, a raised border on at least the lead edge of each tray, a pair of notches in said raised border of said lead edge, said notches being spaced apart by the same distance as the distance between the lower horizontal edges of said support arms, each tray including at least one dish supporting opening for being disposed over said heater ele-

ment, and each tray being supported by one of said heater shelves with the lower edges of the adjacent support arms above said heater shelf being disposed directly above said notches.



4,194,110
LOCALIZED-FIELD STATIC MAGNETIZING DEVICE

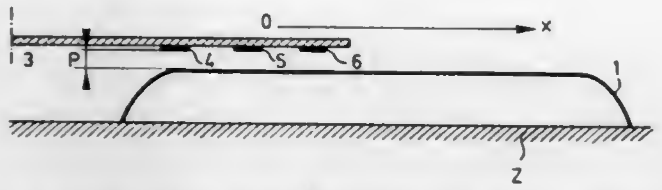
Jean P. Lazzari, Montfort L'Amaury, and Michel Helle, Marcq, both of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France C11-Honeywell Bull (Societe Anonyme),

Filed Feb. 23, 1978, Ser. No. 880,331

Claims priority, application France, Mar. 31, 1977, 77 09823

Int. Cl.^{2} G06K *7/08, 19/06;* **G11B** *5/09, 5/02*

U.S. Cl. 235—450 **21 Claims**



1. A localized-field static magnetizing device comprising a substrate, a magnetic magnetizing layer on said substrate, said magnetic layer having a succession of adjoining zones in which the magnetic induction is alternately positive and negative, said zones being alternately of different lengths d1 and d2, the length of each d1 zone being the same for all such zones, the length of each d2 zone being the same for all such zones, the length of each d2 zone being the same for all such zones, the length d2 being very much greater than the length d1.

4,194,111
TIDAL DEPTH CALCULATOR

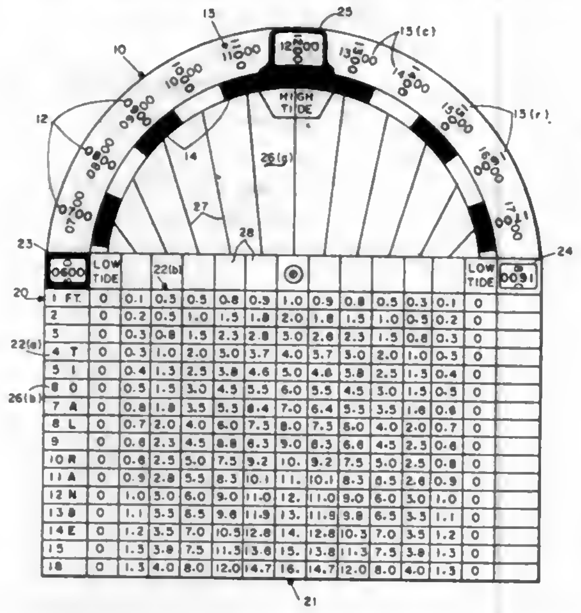
Joseph Katz, 529 Main St., Box 69, Stoneham, Mass. 02180

Filed Oct. 25, 1978, Ser. No. 954,594

Int. Cl.^{2} G06C *3/00, 27/00*

U.S. Cl. 235—83 **15 Claims**

1. A tidal depth calculator device of the slide rule type comprising: a sliding element and a stationary element, said elements being connected for relative motion therebetween; one of said elements having indicia thereon representative of sequential time intervals spanning at least a twelve hour period; the other of said elements having thereon a tidal range table comprising a list of tidal ranges and a table of tide depths comprising a plurality of tidal depth entries keyed to each tidal range of said list, said entries being arranged in sequential time interval order embracing a tide cycle; means to index the one element to the other element, thereby to key the time interval indicia of the one element representing the starting time of a tidal cycle to said tidal range table of the other element; and reference means to key the time intervals of the indexed one element to the tide depth entries of the other element.


13
25
15(c)
10
12
15(r)
1100
1200
1300
1000
1400
0900
1500
0800
1600
0700
1700
HIGH TIDE
14
26(a)
27
28
23
24
0600
LOW TIDE
22(b)
LOW TIDE
1800
20
22(a)
26(b)
1 FT. 0 0.1 0.3 0.5 0.8 0.9 1.0 0.9 0.8 0.5 0.3 0.1 0
2 0 0.2 0.5 1.0 1.5 1.8 2.0 1.8 1.5 1.0 0.5 0.2 0
3 0 0.3 0.8 1.5 2.3 2.8 3.0 2.8 2.3 1.5 0.8 0.3 0
4 T 0 0.3 1.0 2.0 3.0 3.7 4.0 3.7 3.0 2.0 1.0 0.3 0
5 I 0 0.4 1.3 2.5 3.8 4.6 5.0 4.6 3.8 2.5 1.3 0.4 0
6 D 0 0.5 1.5 3.0 4.5 5.5 6.0 5.5 4.5 3.0 1.5 0.5 0
7 A 0 0.6 1.8 3.5 5.3 6.4 7.0 6.4 5.3 3.5 1.8 0.6 0
8 L 0 0.7 2.0 4.0 6.0 7.3 8.0 7.3 6.0 4.0 2.0 0.7 0
9 0 0.6 2.3 4.5 6.8 8.3 9.0 8.3 6.8 4.5 2.3 0.6 0
10 R 0 0.8 2.5 5.0 7.5 9.2 10. 9.2 7.5 5.0 2.5 0.8 0
11 A 0 0.9 2.8 5.5 8.3 10.1 11. 10.1 8.3 5.5 2.8 0.9 0
12 N 0 1.0 3.0 6.0 9.0 11.0 12. 11.0 9.0 6.0 3.0 1.0 0
13 G 0 1.1 3.3 6.5 9.8 11.9 13. 11.9 9.8 6.5 3.3 1.1 0
14 E 0 1.2 3.5 7.0 10.5 12.8 14. 12.8 10.5 7.0 3.5 1.2 0
15 0 1.3 3.8 7.5 11.3 13.8 15. 13.8 11.3 7.5 3.8 1.3 0
16 0 1.3 4.0 8.0 12.0 14.7 16. 14.7 12.0 8.0 4.0 1.3 0
21

4,194,112
PRESETTING COUNTER DEVICE

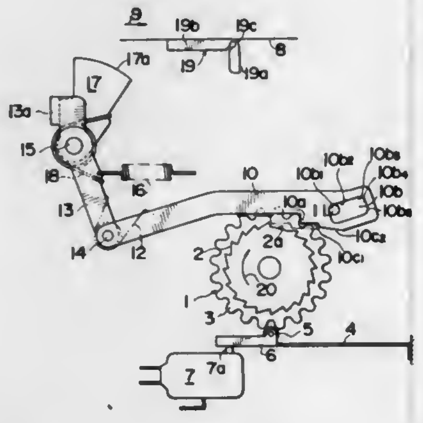
Hiromi Mori, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1979, Ser. No. 26,344

Claims priority, application Japan, Apr. 13, 1978, 53/49275[U]

Int. Cl.^{2} G06F *15/18;* **G06M** *1/00*

U.S. Cl. 235—132 E **5 Claims**



1. A presetting counter device operable by a cyclically movable device, comprising, a ratchet wheel coupled to a cycle number setting dial and being rotatable stepwise for reducing the setting of the dial, indexing means engageable with the ratchet wheel in operative relation to the movement of the cyclically movable device to rotate the ratchet wheel stepwise by one pitch thereof at a time, means for generating cycle repeating signals, a member coupled to the ratchet wheel for movement therewith, said member including a signal generating means actuating portion having the same pitch angle as the ratchet wheel, the actuating portion engaging the signal generating means for actuating same, and the indexing means including a means for temporarily stopping the ratchet wheel in the course of its stepwise rotation at a position where the signal generating means is held actuated by the actuating member.

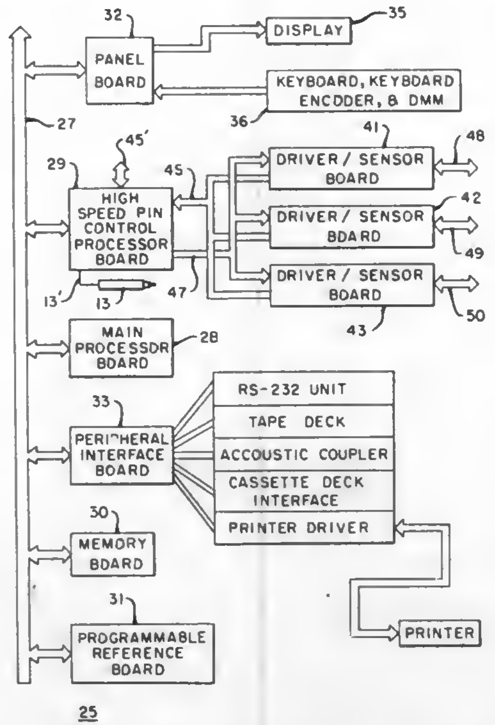
4,194,113
METHOD AND APPARATUS FOR ISOLATING FAULTS IN A LOGIC CIRCUIT

Robert G. Fulks; Robert E. Enfield, and Eric Sacher, all of Phoenix, Ariz., assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 13, 1978, Ser. No. 895,892

Int. Cl.^{2} G06F *11/00;* **G01R** *31/28*

U.S. Cl. 371—20 **61 Claims**



1. A method for isolating faults in a loop of a digital circuit, the loop including a plurality of nodes, the method comprising the steps of:

(a) for each node in the loop
  - i. applying a predetermined sequence of test signals to an input of the digital circuit;
  - ii. comparing a response of the node to the known correct response of the node to determine if the node response is faulty;
  - iii. if the node response is faulty, storing information representative of a time of occurrence of the earlier of an actual initial transition of the node and a known correct initial transition of the node;

(b) testing loop entry nodes of the loop to determine if the response of any loop entry node is faulty until a loop entry node having a faulty response is determined; and

(c) if none of the loop entry nodes are faulty, determining which node corresponds to the earliest of said stored information representative of said initial transitions.

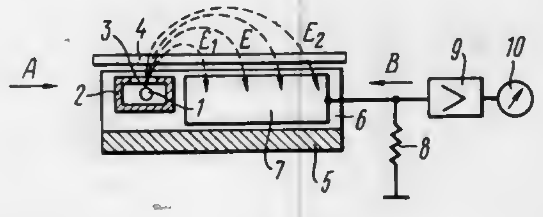
4,194,114
DEVICE FOR NON-CONTACT GAUGING OF THICKNESS OR WEIGHT PER UNIT AREA OF SHEET AND LIKE MATERIALS

Vladimir I. Pankratov; Gennady P. Konovalenko; Ivan T. Prilipko, and Moris L. Gomberg, all of Kiev, U.S.S.R., assignors to Ukrainsky Nauchno-Issledovatelsky Institut Tselljulozno-Bumazhoi Promyshlennosti (UKRNIIB), U.S.S.R.

Filed Jan. 3, 1978, Ser. No. 866,811

Int. Cl.^{2} G01N *23/00*

U.S. Cl. 250—308 **4 Claims**



1. A device for non-contact gauging of thickness or weight per unit area of sheet materials, comprising radiation source means for producing charged ionizing radiation located on one side of the material, magnetic means including at least one pair of magnetic poles for arcuately deflecting the radiation that has passed through the material to enable it to pass through the same material in a reverse direction, a radiation detector to perceive the radiation that has passed through the material in the reverse direction, said detector being located on the same side of the material as said radiation source means, said radiation source means and said radiation detector being interposed between the poles of said magnetic means.

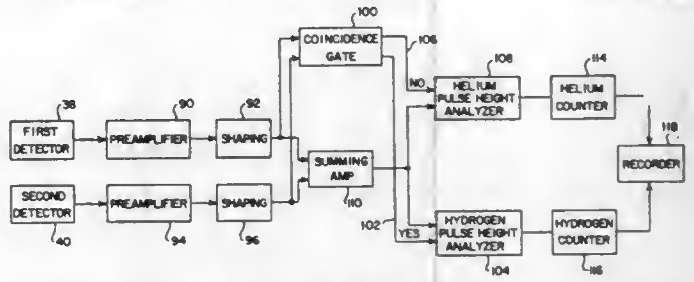
4,194,115
METHOD AND MEANS FOR HELIUM/HYDROGEN RATIO MEASUREMENT BY ALPHA SCATTERING

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; A. Bruce Whitehead, Wayzata, Minn., and Thomas A. Tombrello, Altadena, Calif.

Filed Nov. 7, 1978, Ser. No. 958,573

Int. Cl.^{2} G01N *23/00*

U.S. Cl. 250—308 **10 Claims**



1. An apparatus for providing data useful in a determination of the ratio of helium to hydrogen in a gaseous sample; comprising:

a source for directing alpha particles into said gaseous sample;

isolation means for isolating scattering products contained within a predetermined forward scattering angular range, said scattering products resulting from collisions between said alpha particles and said gaseous simple;

detection means for detecting said isolated scattering products;

first identification means for identifying said detected isolated scattering products resulting from alpha particle/hydrogen collisions; and

second identification means for identifying said detected isolated scattering products resulting from alpha particle/-helium collisions whereby the ratio of helium to hydrogen is determinable from the ratio of the products of said second and first identification means, respectively.

4,194,116
ELECTRON MICROSCOPE OR THE LIKE AND METHOD OF USE

Wilhelm Egle, Königsbronn, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,579

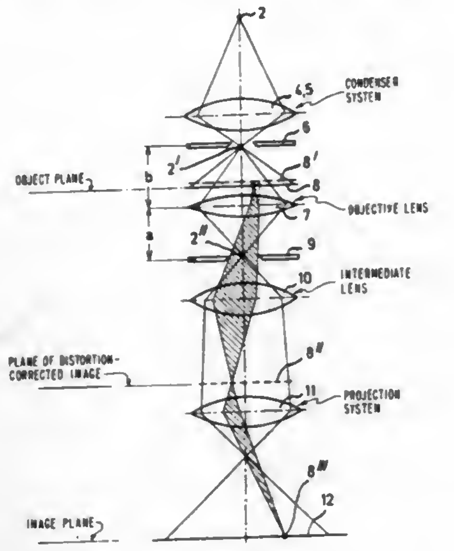
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742264

Int. Cl.^{2} G01M *23/00*

U.S. Cl. 250—311 **12 Claims**

1. A method of reproducing the image of an object with low magnification by means of a corpuscular radiation device, in particular an electron microscope, in which the object, whose position remains the same regardless of the magnification chosen, is illuminated by a condenser system behind which is a condenser diaphragm, and in which the final image is produced on a screen by means of an objective lens, an intermediate lens, and a projection system, as well as an image diaphragm (zone diaphragm) placed between the objective and intermediate lenses, distinguished in that the objective lens is switched on and is given a low level of excitation enabling it to form, together with the intermediate lens, an optimum, distortion-corrected image of the object in the object plane of the

following projection system, and that the condenser system is excited such that the crossover point of the rays emitted by the radiation source is between the object and the last condenser lens in or near the plane of the condenser diaphragm, whose position and opening remain unchanged with increased magnification, during the adjustment of the electron microscope, and that this crossover point is real and is formed in the plane of the image diaphragm by the objective lens.



4,194,117

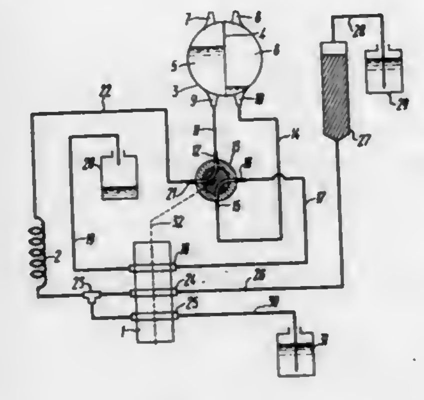
ARRANGEMENT FOR CONTINUOUSLY MEASURING THE RADIOACTIVITY OF SOLUTIONS OF MATTERS IN A HOMOGENEOUS MIXTURE WITH A LIQUID SCINTILLATOR

Valery N. Gross, ulitsa Poddubnogo 6, Alma-Ata, U.S.S.R.

Filed Aug. 22, 1977, Ser. No. 826,663

Int. Cl.² G01T *1/00*

U.S. Cl. 250—328 **1 Claim**



1. An arrangement for continuously measuring the radioactivity of solutions of matters in a homogeneous mixture with a liquid scintillator, comprising: a multi-channel pump for feeding the solution of a matter, the liquid scintillator and their mixture, a device for mixing the solution of a matter with the liquid scintillator and for obtaining a homogeneous mixture thereof: a first measuring chamber; a second measuring chamber; a system of conduits: a two-way tap valve having two operating positions; said two-way tap valve serving, when in the first position thereof, to establish communication between said first measuring chamber and said mixing device, and between said second measuring chamber and said multi-channel pump, and also serving, when in the second position thereof, to establish communication between said first measuring chamber and said multi-channel pump, and between said second measuring chamber and said mixing device.

4,194,118

DETECTOR FOR USE IN INFRARED GAS ANALYZER

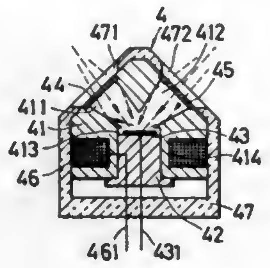
Mitsuo Kotaka; Hirotoshi Ishikawa; Kaisuke Muraki; Ryo Takahashi, and Tamizo Matsuura, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Mar. 20, 1978, Ser. No. 888,408

Claims priority, application Japan, Mar. 30, 1977, 52/38864; Apr. 1, 1977, 52/40383; Sep. 19, 1977, 52/125773

Int. Cl.² G01J *1/00*

U.S. Cl. 250—343 **2 Claims**



1. A detector for use in an infrared gas analyzer wherein one light beam is passed through a sample cell and a second light beam is passed through a reference cell, to produce two resultant beams to be sensed comparatively, apparatus comprising:

a metallic block formed with first and second cone-shaped light inlet ports which intersect within said block;

a light sensing element secured to said block at the intersection of said two ports;

multilayer interference filters secured to said block and covering the entrances to said light inlet ports, said filters being positioned to be at right angles to incoming light beams;

temperature control means including first circuit means coupled to said light sensing element and responsive to variations in temperature thereof to regulate the temperature of said metallic block to tend to maintain a constant block temperature; and

signal detecting means including second circuit means coupled to said light sensing element and responsive to variations in light impinging thereon to produce a corresponding measurement signal;

whereby a measurement signal relating to the density of the gas in said sample cell may be obtained by alternately directing said two resultant beams to said two light ports respectively.

4,194,119

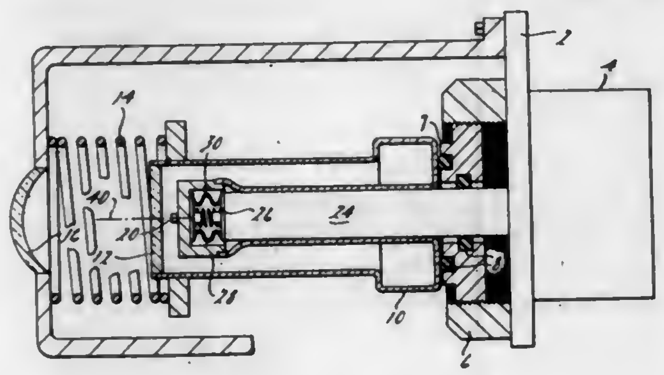
SELF-ADJUSTING CRYOGENIC THERMAL INTERFACE ASSEMBLY

Ronald MacKenzie, Newport Beach, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 30, 1977, Ser. No. 855,844

Int. Cl.² G01J *1/00*

U.S. Cl. 250—352 **10 Claims**



1. A compressible thermal interface assembly for providing a predetermined heat conducting path between a reorientable

heat source having a flat surface and a relatively fixed heat sink having a flat surface comprising:

a first heat conducting plate for intimately contacting said flat surface of said reorientable heat source;

a second heat conducting plate for intimately contacting said flat surface of said relatively fixed heat sink;

a compressed spring element centrally located between said plates to bias said plates in intimate contact with said source and said sink; and

a flexible heat conducting means surrounding said spring element and connected to said first and second heat conducting plates for defining said predetermined heat conducting path.

4,194,120

ADJUSTABLE IONIZATION CHAMBER

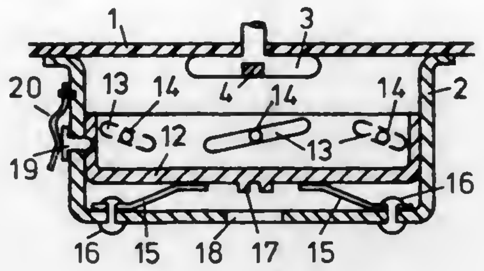
Otto Meier, Hombrechtikon, and Andreas Scheidweiler, Uerikon, both of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Nov. 21, 1977, Ser. No. 853,434

Claims priority, application Switzerland, Nov. 29, 1976, 15006/76

Int. Cl.² H01J *39/28*

U.S. Cl. 250—381 **13 Claims**



1. An ionization chamber with two electrodes having a variable spacing, with a radioactive source for the ionization of the electrode gap therebetween, and with an adjusting mechanism for the positional adjustment of one of the electrodes relative to the other being constructed and positioned in such a way that a spring element presses the adjustable electrode against at least one point of the adjusting mechanism, wherein the adjustable electrode is constructed in cup-shaped manner and has a flat base and cylindrical sides in which guide slots are provided into which extend fixed pins and wherein the cup-shaped electrode rotates about its axis.

4,194,121

METHOD AND APPARATUS FOR PROVIDING SIMULTANEOUS DISPLAYS IN PANORAMIC RADIOGRAPHY

Robert H. Cushman, Princeton, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 13, 1978, Ser. No. 969,042

Int. Cl.² G03B *41/16*

U.S. Cl. 250—439 P **5 Claims**

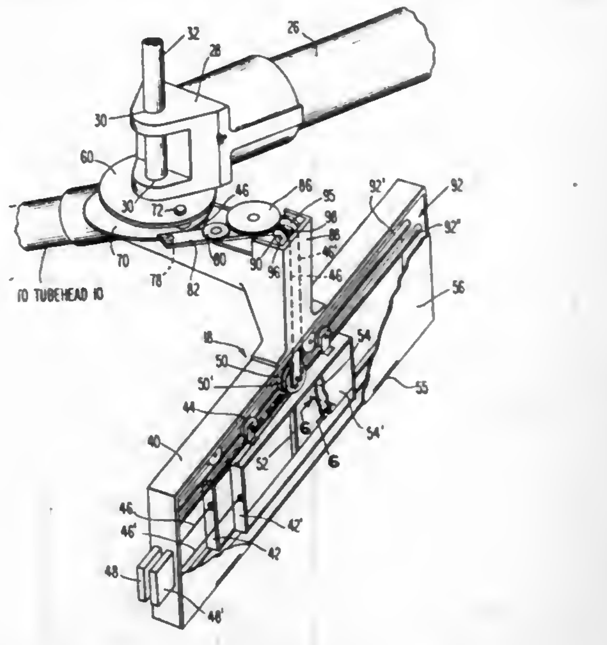
1. A process for providing a plurality of simultaneous panoramic displays of different portions of focal trough of dental arch area of a patient by means of a tubehead-camera assembly continuously orbiting about said patient, said process comprising

irradiating said dental arch area of said patient with radiation from an X-ray source within said orbiting tubehead to produce intelligence carrying radiation,

directing said intelligence carrying radiation while said tubehead and camera are orbiting about said patient onto a first recording medium moving within said orbiting camera at a predetermined speed,

permitting said radiation directed onto said first recording medium to activate said first recording medium before substantially passing therethrough for activating a second recording medium immediately rearwardly said first recording medium,

said second recording medium moving within said orbiting camera at a speed dissimilar to said speed of said first recording medium.



4,194,122

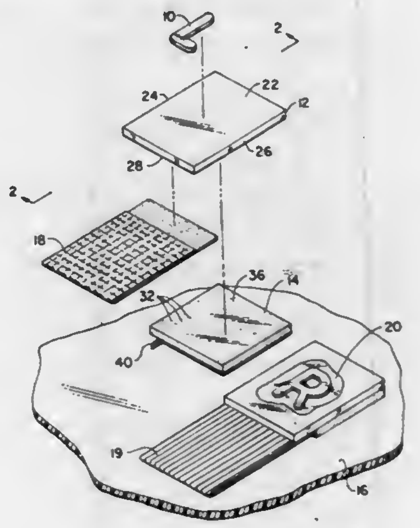
APPARATUS FOR THE MARKING OF X-RAY FILM

Eugene C. Mitchell, and Carol J. Mitchell, both of 538 N. Maryland, #2, Glendale, Calif. 91206, assignors to Eugene Mitchell, Santa Monica, Calif.

Filed Jun. 7, 1978, Ser. No. 913,408

Int. Cl.² G03B *41/16*; F16B *47/00*

U.S. Cl. 250—476 **14 Claims**



1. A device for marking X-ray film with identifying characters, the film being held prior to exposure in a cassette of non-X-ray shielding material, said device comprising:

indicia of X-ray shielding material;

means rigidly secured to said indicia for supporting said indicia;

means for releasably securing said supporting means and therewith said indicia to the cassette; and

a generally flexible tab connected to said supporting means and extending outwardly therefrom for facilitating the removal of said supporting means and therewith said indicia from the cassette.

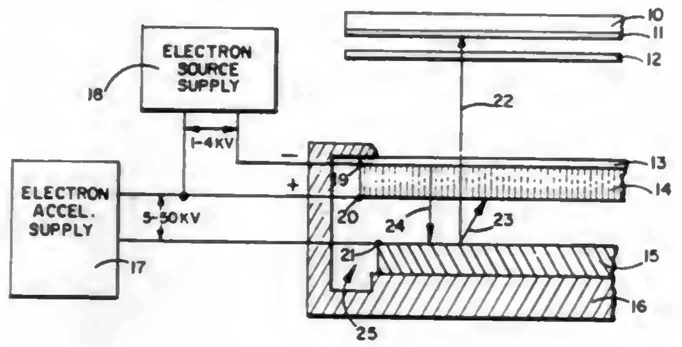
4,194,123
LITHOGRAPHIC APPARATUS

David B. Wittry, Pasadena, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 12, 1978, Ser. No. 905,484

Int. Cl.^{2} H01J *37/00*

U.S. Cl. 250—492 A **13 Claims**



1. Apparatus for high resolution lithography comprising,
source means for supplying energetic charged particles,
microchannel array plate means for collimating said charged particles into a prescribed beam path,
said source means comprising a layer on said microchannel array plate,
mask means, and
utility means disposed to receive and be responsive to energy produced by said charged particles which pass through said mask means as part of said beam path.

4,194,124
METHOD OF PREVENTING VAPOR EXPLOSIONS CAUSED BY CONTACT OF TWO LIQUIDS HAVING DIFFERENT TEMPERATURES

Hugh Nutley, 827 W. Barrett, Seattle, Wash. 98119, and Howard S. Gardner, 5743 NE. 56th, Seattle, Wash. 98105

Filed Oct. 11, 1977, Ser. No. 840,756

Int. Cl.^{2} G01N *23/00*

U.S. Cl. 250—492 R **9 Claims**

1. A method of preventing vapor explosions caused by contact of two liquids having different temperatures comprising:
irradiating the liquid interface of the two-liquid system with sufficient electromagnetic radiation to prevent such vapor explosions.

4,194,125
SUNLAMP AND SOURCE OF ULTRAVIOLET RADIATION THEREFOR

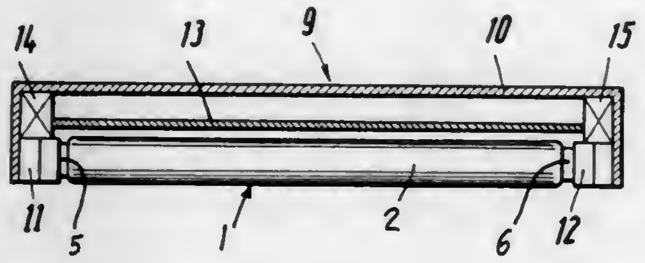
Friedrich Wolff, Lindenring 17, D-6000 Frankfurt am Main 50, Fed. Rep. of Germany

Filed Nov. 8, 1978, Ser. No. 958,613

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2844967

Int. Cl.^{2} G01J *1/00*

U.S. Cl. 250—504 **7 Claims**



4. A sunlamp, comprising a housing; spaced-apart aligned first and second sockets mounted in said housing; and a source of ultraviolet light, particularly in the UVA region, including a hollow elongated tubular body having first and second end portions and an outer diameter of approximately 25 mm, first and second plugs respectively provided at said first and second end portions, the combined length of said tubular body and said plugs being between 440 and 450 mm, and electric contact means extending from each of said plugs and removably received in the respective sockets.

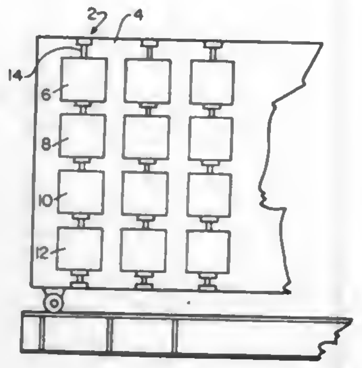
4,194,126
ESCORT MEMORY USING MIRRORS

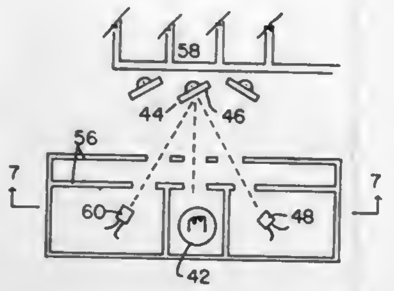
Jacob Rabinow, Bethesda, Md., assignor to Hall & Myers, Potomac, Md., a part interest

Filed Mar. 6, 1978, Ser. No. 884,349

Int. Cl.^{2} G06K *7/10*

U.S. Cl. 250—566 **9 Claims**





1. In a machine for sorting articles by selectively delivering them to a multiplicity of destinations, a conveyor including a series of article storage devices for respectively receiving articles to be sorted, a source of light, light beam reflecting means responsive to said source and associated with each article storage device for producing light beams which represent a coded address for the destination of the article associated with its complementary article storage device, and means, for each of a multiplicity of destinations, responsive to light beams from said light beam reflecting means for determining when a given article storage device has reached its proper destination as determined by said coded address;
said light beam reflecting means associated with each article storage device having mirrors each independently selectively settable to one of only two positions to reflect the light to form beams that collectively represent the address in the binary code.

4,194,127
PROCESS AND DEVICE FOR CHECKING SUBSTRATE WAFERS

Walter Schmidt, Lenzburg, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

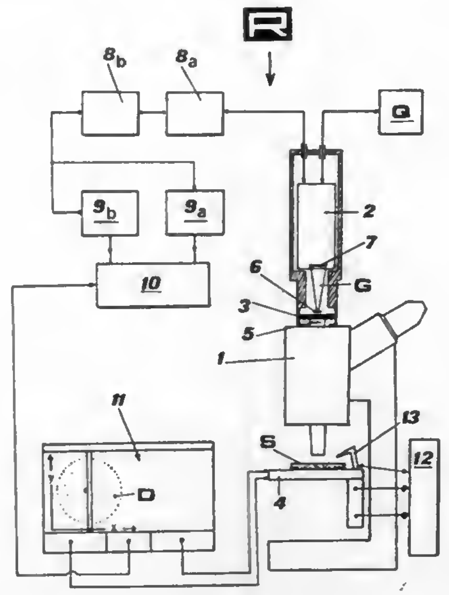
Continuation-in-part of Ser. No. 755,135, Dec. 29, 1976, abandoned. This application Mar. 17, 1978, Ser. No. 887,516

Claims priority, application Switzerland, Jan. 20, 1976, 625/76

Int. Cl.^{2} G01N *21/32*

U.S. Cl. 250—572 **21 Claims**

1. A method for determining the number and distribution of defects in substrate wafers, particularly polished wafers of single crystal materials comprising:
moving said wafer in two dimensions;
projecting light on said wafer;
conducting light reflected by said wafer to a photosensor;
sensing the intensities of said light reflected by said wafer;
transforming the differences of said sensed light intensities into an electrical signal;



feeding said signal to an indicating element responsive to the strength of said electrical signal; and
moving said indicating element in synchronism with said wafer whereby the number and distribution of defects on said wafer are displayed by said indicating element.

4,194,128
RIPPLE CONTROL SYSTEMS

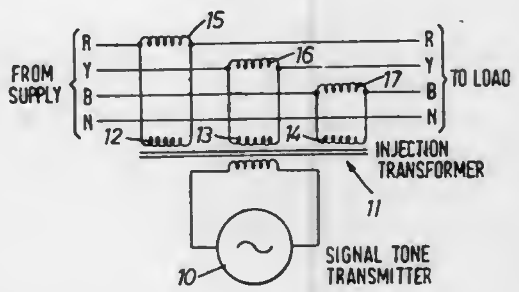
Timothy J. Biglin, Bath, England, assignor to The Horstmann Gear Company Limited, Avon, England

Filed Jul. 26, 1977, Ser. No. 819,225

Claims priority, application United Kingdom, Jul. 27, 1976, 31298/76

Int. Cl.^{2} H02J *13/00;* **H04B** *3/56*

U.S. Cl. 307—3 **6 Claims**



1. A three phase ripple control system for feeding a control signal onto each phase line, the system comprising an injection transformer having a primary winding and three secondary windings a control signal generator connected in circuit with said primary winding and a respective inductor connected in series in each phase line which inductors are each coupled in parallel with a respective one of said secondary windings for receiving a common control signal the inductors having a value of inductance arranged such that their impedance at line frequency is substantially smaller than the magnetising impedance of the transformer.

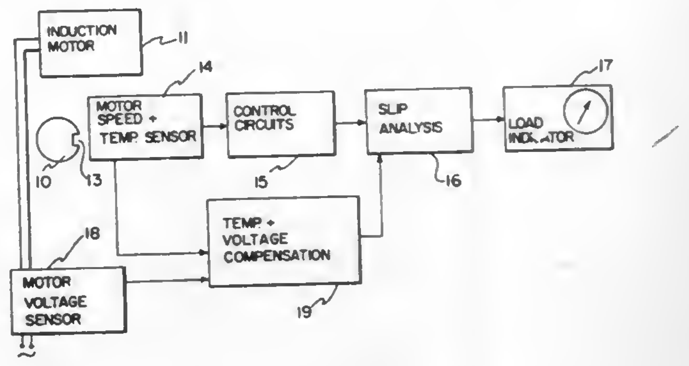
4,194,129
ARMATURE SLIP ANALYSIS OF INDUCTION MOTORS WITH TEMPERATURE AND VOLTAGE CORRECTION

Robert F. Dumbeck, Elgin, Tex., assignor to Rexnord Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 675,780, Apr. 12, 1976, Pat. No. 4,063,112, which is a continuation-in-part of Ser. No. 548,011, Feb. 7, 1975, abandoned. This application Dec. 8, 1977, Ser. No. 858,674

Int. Cl.^{2} H02K *11/00*

U.S. Cl. 307—149 **6 Claims**



1. A load indication system for displaying a load signal of an induction motor, comprising in combination means for measuring armature slip from electric pulses derived from motor shaft rotation speed, means responsive to motor temperature to produce a temperature correction signal, means for producing a load display signal derived from joint action of the pulses and the temperature correction signal thereby improving the accuracy of said display signal due to variations of motor operating temperature, means for applying voltage to operate said motor, means coupled thereto for sensing variations of said voltage and producing a signal that is a measure of said voltage variations, and means responsive to the voltage variation signal further modifying the load display signal in response to variations of motor operating voltage.

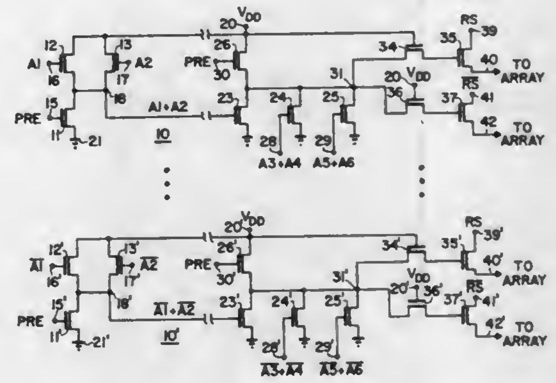
4,194,130
DIGITAL PREDECODING SYSTEM

Jerry D. Moench, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 21, 1977, Ser. No. 853,786

Int. Cl.^{2} H03K *19/08, 19/20;* **G11C** *8/00*

U.S. Cl. 307—205 **6 Claims**



1. A circuit for providing address signals to a memory array, comprising: a plurality of OR gates for predecoding a first portion of an address signal received in a coded format; a plurality of NOR gates each coupled to a respective one of the plurality of OR gates, the plurality of NOR gates providing at least one output; and a plurality of means each coupled to one of the plurality of NOR gates, each of the plurality of means for ANDing the at least one output with a signal to route a decoded address signal to a predetermined line of storage cells within the memory array.

4,194,131

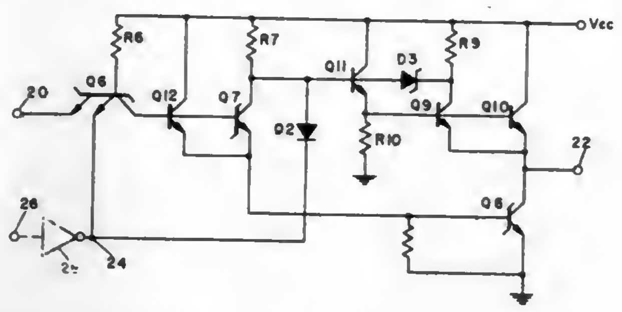
TRISTATE LOGIC BUFFER CIRCUIT WITH ENHANCED DYNAMIC RESPONSE

Dale A. Mrazek, Los Altos Hills, and Robert M. Reinschmidt, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 30, 1978, Ser. No. 910,383

Int. Cl.² H03K ***3/29, 19/08***

U.S. Cl. 307—209 **2 Claims**



1. A tristate logic buffer circuit, comprising
a data input terminal;
a multi-emitter input transistor, having a first emitter connected to the data input terminal for receiving a digital data input signal;
a voltage supply terminal;
a phase splitter transistor having its base coupled to the collector of the input transistor;
a data output terminal;
a pull-down output transistor having its base coupled to the emitter of the phase splitter transistor, its emitter coupled to a circuit ground terminal, and its collector connected to the data output terminal;
a pull-up output transistor having its emitter connected to the data output terminal and its base coupled to the collector of the phase splitter transistor;
a resistance for coupling the collector of the pull-up output transistor to the voltage supply terminal;
a circuit disable terminal connected to a second emitter of the input transistor; and
a diode having its anode connected to the collector of the phase splitter transistor and its cathode connected to the circuit disable terminal;
wherein, when a "high" logic signal is applied at the circuit disable terminal, a digital data output signal that is the logical complement of the digital data input signal is provided at the data output terminal; and when a "low" logic signal is applied at the circuit disable terminal, the circuit has a high output impedance between the data output terminal and circuit ground to inhibit the provision of said digital data output signal;
wherein the improvement comprises
a current mirror transistor having its base and emitter respectively connected to the base and emitter of the pull-up output transistor and its collector connected to the voltage supply terminal for enhancing the dynamic response of the pull-up output transistor in providing a "high" logic level in the digital data output signal.

4,194,132

TRISTATE LOGIC BUFFER CIRCUIT WITH REDUCED POWER CONSUMPTION

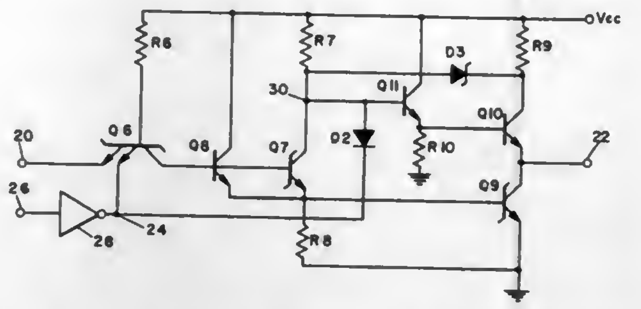
Dale A. Mrazek, Los Altos Hills, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 30, 1978, Ser. No. 910,384

Int. Cl.² H03K ***3/29, 19/08***

U.S. Cl. 307—209 **6 Claims**

1. A tristate logic buffer circuit, comprising
a data input terminal;
a multi-emitter input transistor, having a first emitter connected to the data input terminal for receiving a digital data input signal;
a voltage supply terminal
a first resistance for coupling the base of the input transistor to the voltage supply terminal;
a phase splitter transistor having its base coupled to the collector of the input transistor;
a second resistance for coupling the collector of the phase splitter transistor to the voltage supply terminal;
a data output terminal;
a pull-down transistor having its base coupled to the emitter of the phase splitter transistor, its emitter coupled to a circuit ground terminal, and its collector connected to the data output terminal;
a third resistance coupled between the base and emitter of the pull-down output transistor;
a pull-up output transistor having its emitter connected to the data output terminal, its collector coupled to the voltage supply terminal, and its base coupled to the collector of the phase splitter transistor;



a circuit disable terminal connected to a second emitter of the input transistor; and
a diode having its anode connected to the collector of the phase splitter transistor and its cathode connected to the circuit disable terminal;
wherein, when a "high" logic signal is applied at the circuit disable terminal, a digital data output signal that is the logical complement of the digital data input signal is provided at the data output terminal; and when a "low" logic signal is applied at the circuit disable terminal the circuit has a high output impedance between the data output terminal and circuit ground to inhibit the provision of said digital data output signal;
wherein the improvement comprises
a current mirror transistor having its base and emitter respectively connected to the base and emitter of the phase splitter transistor and its collector connected to the voltage supply terminal.

4,194,133

CHARGE COUPLED CIRCUIT ARRANGEMENTS AND DEVICES HAVING CONTROLLED PUNCH-THROUGH CHARGE INTRODUCTION

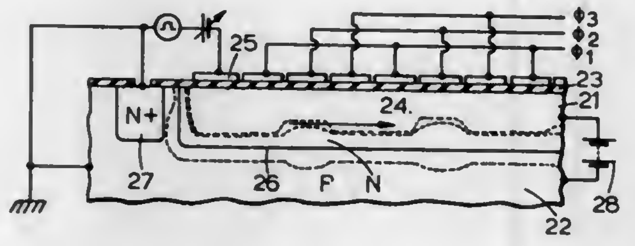
John M. Shannon, Whyteleafe, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 718,885, Aug. 30, 1976, abandoned. This application Apr. 28, 1978, Ser. No. 900,910

Claims priority, application United Kingdom, Sep. 5, 1975, 36701/75

Int. Cl.² G11C ***19/28;*** **H01L** ***29/78***

U.S. Cl. 307—221 D **4 Claims**



1. A charge coupled circuit arrangement comprising a charge coupled device having a semiconductor body comprising a region of one conductivity type in which charge carriers representative of information can be stored at a plurality of storage sites and transferred between successive storage sites from a first part of the region to a second part of the region, an input gate electrode for converting signal information into said charge carriers, a storage site associated with the input gate electrode, an insulating layer which separates the input gate electrode from the first part of the region, a further region in the semiconductor body which forms a source of charge carriers to be stored and transported, said source region being separated from the storage site associated with the input gate electrode by at least one rectifying barrier bounding said source region and having a zero-bias small depletion region, drive circuit means connected to the device for effecting the transfer of charge between storage sites, and input circuit means including connections to the input gate electrode and source region for converting signal information into an input of charge into the storage site associated with the input gate electrode by causing a depletion region which is formed at least in part adjacent said storage site to punch-through to the source region to effect introduction of charge carriers from said source region into said storage site, said depletion region adjacent said storage site being spaced apart from said zero-bias small depletion region until it reaches equilibrium, the transport of charge carriers being arranged to occur via the interior of the region of one conductivity type, said region at least during operation being isolated from the surroundings thereof, the source region being of the same conductivity type as said region in which charge storage and transport is effected and being separated therefrom by a region of the opposite conductivity type, the semiconductor body region of one conductivity type comprising a surface layer of one conductivity type, said surface layer having a thickness and doping concentration such that a depletion region can be obtained throughout the thickness of the surface layer by means of an electric field while avoiding breakdown, an electrode system at at least one side of the surface layer for the capacitive production of electric fields in the surface layer by means of which charge can be transported from a first part of the surface layer to a second part of the surface layer in the lateral direction of the surface layer via the interior of the surface layer, said input gate electrode being separated from the first part of the surface layer by said insulating layer, said surface layer of the one conductivity type being laterally bounded in the semiconductor body at least in the vicinity of the location of the input gate electrode by a region of the opposite conductivity type, said region of the opposite conductivity type separating the first part of the surface layer from a surface region of the one conductivity type which forms the source region, and ohmic connections at least to the source region and to the region of the opposite conductivity type.

4,194,134

TWO-TERMINAL NETWORK COMPRISING A TRANSISTOR

Fritz L. G. Bjorklund, Tyreso; Carl-Olof Sandberg, Handen; Olaf Sternbeck, Bromma, and Lars A. Wern, Stockholm, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

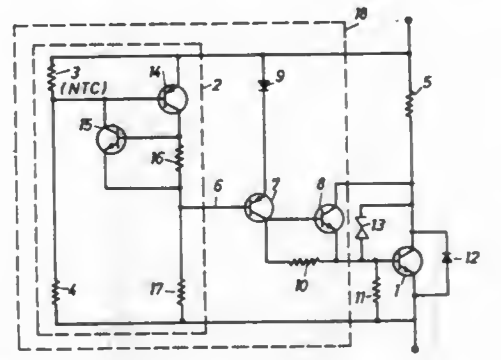
Filed Nov. 3, 1977, Ser. No. 848,314

Claims priority, application Sweden, Nov. 12, 1976, 7612698

Int. Cl.² H03K ***17/00, 3/26***

U.S. Cl. 307—255 **4 Claims**

1. A two-terminal network comprising: first and second terminals; a transistor means having base, emitter and collector electrodes for switching from a low-ohmic state to a high-ohmic state in accordance with the presence or absence of current through the base electrodes; means for connecting said emitter electrode to one of said terminals; means for connecting said collector electrode to the other of said terminals; a shunt diode connected across the emitter and collector electrodes of said transistor means; a zener diode connected across the collector and base electrodes of said transistor means; and a regenerative threshold switching device connected across said first and second terminals, said regenerative threshold switching device having an input means responsive to the potential across said terminals for switching said regenerative threshold switching device from a first state to a second state when the potential across said terminals exceeds a predetermined value, and said regenerative threshold switching device having an output means connected to the base electrode of said transistor means for cutting off the flow of current through said base electrode when said regenerative threshold switching device is in said second state.



4,194,135

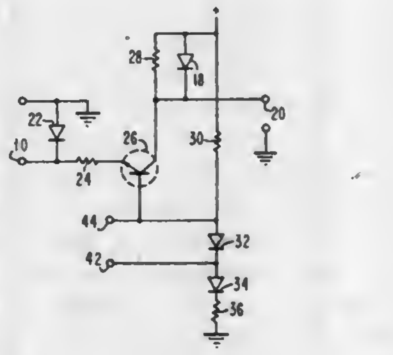
ELECTRONIC SIGNAL LEVEL TRANSLATING CIRCUITRY

Warren A. Christopherson, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1978, Ser. No. 921,144

Int. Cl.² H03K ***5/00***

U.S. Cl. 307—260 **10 Claims**



1. Electronic signal level translating circuitry, comprising
a transistor having emitter, collector and base electrodes,
an output circuit including a load resistor connected to the collector electrode of said transistor,
an input circuit including an input resistor connected solely to but one of the other electrodes of said transistor,
a reference potential regulating circuit including one terminal connected to a point of fixed energizing potential, one terminal connected to another of the electrodes of said transistor, and another terminal connected to a point of fixed reference potential,
said reference circuit comprising at least two diodes and at least two resistors of equal value connected in series between said points of fixed potential with said other electrode of said transistor connected to the junction between one of said diodes and one of said resistors having one terminal thereof connected to said point of fixed energizing potential, and
the p-n junctions of each of said diodes having the same characteristics as that of the emitter-base p-n junction of said transistor.

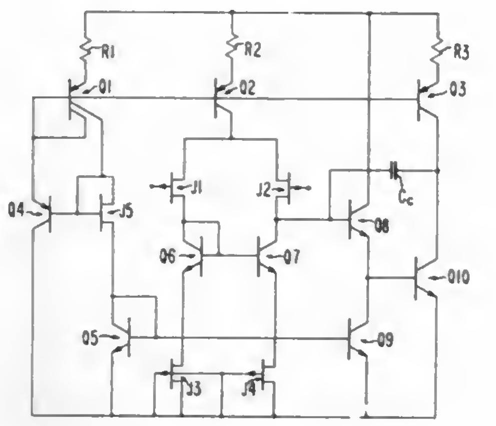
4,194,136
INPUT STAGE USING JUNCTION FIELD EFFECT TRANSISTORS FOR BIASING

James R. Butler, San Jose, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Jun. 17, 1977, Ser. No. 807,602

Int. Cl.² H03K *17/00*

U.S. Cl. 307—296 R **3 Claims**



1. A bias circuit comprising:
at least a pair of bipolar transistors, the bases of said pair of bipolar transistors being connected to each other;
a first junction field effect transistor, the source of which is connected to the emitter of one of said pair of bipolar transistors; and
a second junction field effect transistor, the source of which is connected to the emitter of the other of said pair of bipolar transistors;
wherein the gate electrodes of said first and second junction field effect transistors are connected to each other and to the drain electrodes of both said first and second junction field effect transistors.

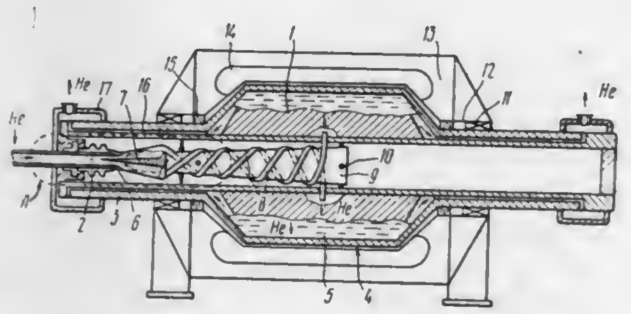
4,194,137
DEVICE FOR DELIVERING CRYOGEN TO ROTARY SUPER-CONDUCTING WINDING OF CRYOGEN-COOLED ELECTRICAL MACHINE

Alexandr A. Vinokurov; Gennady S. Gorbunov; Jury S. Popov, all of Novosibirsk; Jury V. Skachkov, Leningrad; Iosif F. Filippov, Leningrad, and Gary M. Khutoretsky, Leningrad, all of U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro "Energokhimmash", Novosibirsk and Leningradskoe Proizvodstvennoe Elektromashinostroitelnoe Obiedinenie "Elektrosila", Leningrad, both of, U.S.S.R.

Filed Mar. 17, 1978, Ser. No. 887,533

Int. Cl.² H02K *9/00*

U.S. Cl. 310—52 **6 Claims**



1. A cryogen-cooled electrical machine comprising:
a stator;
a hollow rotor located in said stator and having two ends;
a superconducting winding accommodated in said hollow rotor;
a cryogen-delivering pipe articulated or movable along the axis of said hollow rotor and located at one end of said rotor;
a chamber located inside of said rotor, coaxially with said cryogen-delivering pipe and connnected rigidly to said rotor;
one end of said cryogen-delivering pipe, arranged with a clearance inside of said chamber;
said chamber which is rotatable with said rotor flares out from said end of said pipe and initially causes said cryogen to be swirled therein;
at least two helical channels for delivering swirling cryogen to said superconducting winding, and for communicating said chamber with the space of said rotor which accommodates said superconducting winding; and
a needle secured inside of said chamber along its axis, said needle being of sufficient length such that in the advanced position of said cryogen delivering pipe said needle reaches the end of said pipe and facilitates controlling the cryogen flow rate in conjunction with said axially movable cryogen-delivering pipe.

4,194,138
SPARK GAP DEVICES

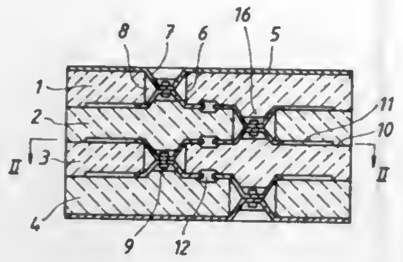
Bengt Johansson, and Erland Nilsson, both of Ludvika, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Nov. 9, 1978, Ser. No. 959,214

Claims priority, application Sweden, Nov. 11, 1977, 7712756

Int. Cl.² H01J *1/92;* **H02H** *9/06*

U.S. Cl. 313—3 **7 Claims**



1. Spark gap device comprising a number of arc-resistant insulating elements stacked in spaced relationship to form spaces between adjacent elements, each said element having a through-hole;
at least two metallic electrodes sandwiched between the respective surfaces of adjacent insulating elements in spaced relation to form a spark-over gap therebetween and each electrode including a recessed portion, and the recessed portions of aligned electrodes on respective opposite sides of an insulating element extending through each of said through-holes in contacting relationship;
a metallic electrode arranged on the outer surface of each outer insulating element and including a recessed portion extending into the through-hole of the associated outer insulating element into contacting relationship with an associated one of the at least two metallic electrodes sandwiched between the respective outer insulating element and the next adjacent insulating element; and
said insulating elements each include at least one elevation projecting snugly into the recessed portion of an electrode of an adjacent element.

4,194,139
REFLEX TETRODE FOR PRODUCING AN EFFICIENT UNIDIRECTIONAL ION BEAM

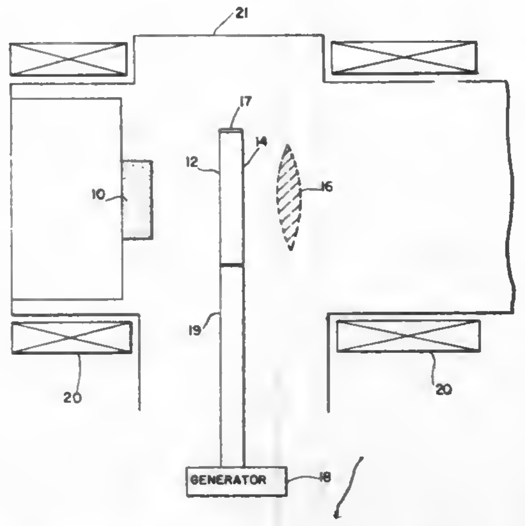
John A. Pasour, Alexandria, Va.; Christos A. Kapetanakos, Bethesda, Md.; Redge A. Mahaffey, Wheaton, Md., and Jeffry Golden, Laurel, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1978, Ser. No. 936,146

Int. Cl.² H01J *23/08, 27/00;* **H05H** *1/00*

U.S. Cl. 313—153 **15 Claims**

1. A reflex tetrode for efficiency producing unidirectionally ion beams comprising:
an evacuated chamber including therein a cathode and an anode structure;
said anode structure spaced from and in axial alignment with said cathode, said anode structure including a first anode spaced from said cathode and made of a material that is a poor source of ions, and a second anode spaced from and in parallelism with said first anode on the side thereof away from said cathode and made of a material that readily produces a plasma of ions when penetrated by electrons, said second anode being connected electrically with said first anode, and
said first and second anodes being made of materials through which electrons easily penetrate so that the application of a pulse of high voltage between the cathode and anodes results in a flow of ions beyond the second anode in the cathode-to-anode direction.



4,194,140
BEAM-INDEXING COLOR IMAGE-PRESENTATION CATHODE RAY TUBE

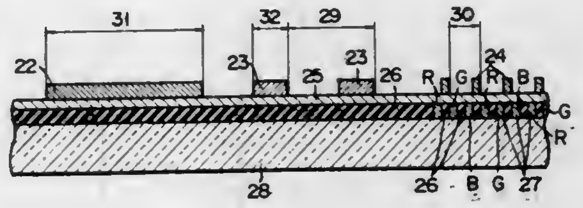
Eizaburo Hamano, Kumagaya, and Tetsuo Komatsu, Fukaya, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 23, 1978, Ser. No. 889,507

Claims priority, application Japan, Mar. 28, 1977, 52/33342

Int. Cl.² H01J *29/32, 31/20*

U.S. Cl. 313—471 **2 Claims**



1. A beam-indexing color image-presentation cathode-ray tube comprising color-phosphor stripes arranged in a regular order and differently responsive to impingement by electron beams to produce light of different colors and index-phosphor stripes arranged in a predetermined geometric relation to the color-phosphor stripes and responsive to impingement by the electron beam to produce index signals, in which said index-phosphor stripes comprise a first index-phosphor stripe, a second index-phosphor stripe and a third index-phosphor stripe, the pitch of the second index-phosphor stripe being three times as large as the pitch of said third index-phosphor stripe, and the width of the first index-phosphor stripe being about twice that of the second index-phosphor stripe.

4,194,141
ELECTROLUMINESCENT UNIT

Teresa Langer; Barbara Krukowska-Fulde, and Jerzy Langer, all of Warsaw, Poland, assignors to Osrodek Badawczo-Rozwojowy Monokrysztalow and Uniwersytet Warszawaki Instytut Fizyki Doswiadczalnej, both of Warsaw, Poland

Continuation of Ser. No. 759,375, Jan. 14, 1977, abandoned, which is a continuation of Ser. No. 621,044, Oct. 9, 1975, abandoned. This application Sep. 28, 1978, Ser. No. 947,335

Claims priority, application Poland, Oct. 10, 1974, 174745

Int. Cl.² H01J *1/63;* **C09K** *11/10*

U.S. Cl. 313—503 **3 Claims**

1. An electroluminescent device comprising a metal blocking electrode and an electroluminescent material comprising a semiconducting cadmium fluoride crystal doubly doped with manganese serving as luminescence activators and a trivalent element serving as shallow donors selected from the group consisting of rare earths, scandium, yttrium, gallium and indium, the electron concentration in the doubly doped crystal being greater than 10^{15} cm^{-3}, the concentration of manganese impurities ranging from 0.1 mole percent to 5 mole percent, and wherein the doubly doped cadmium fluoride crystal is separated from the metal blocking electrode by an insulating or semi-insulating layer, electroluminescence occurring under the action of a high electric field at the depletion polarization of a semiconductor.

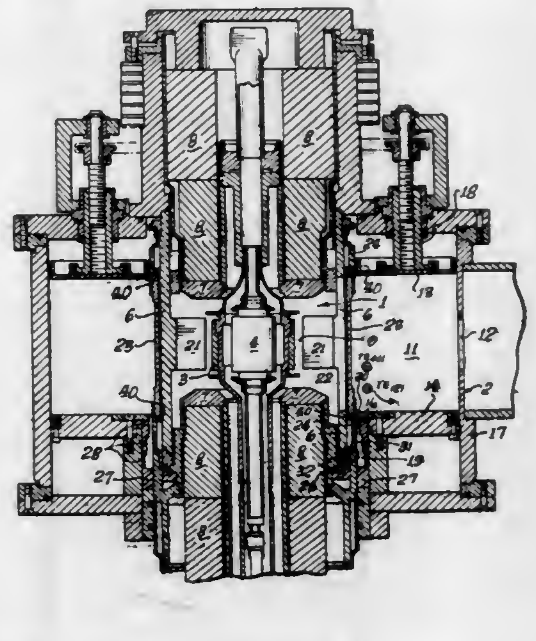
4,194,142
MODE CONTROL APPARATUS FOR A SEPARABLE-INSERT COAXIAL MAGNETRON

William A. Gerard, Andover, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 10, 1978, Ser. No. 924,280

Int. Cl.² H01J *25/50*

U.S. Cl. 315—39.77 **6 Claims**



1. Magnetron apparatus comprising:
a vacuum-sealed interaction cavity assembly including:
an axially-disposed cathode member,
a anode member having an axially-extending medially slotted wall portion radially-spaced from the cathode member,
a dielectric window member spaced radially from and surrounding said anode wall portion, and
a cavity-sealing metallic connector strip member extending between each axial end portion of the dielectric window member and the proximate axial end portion of the anode wall portion,
said dielectric window member sealably covering each anode member slot and having an axial length considerably less than said anode member whereupon the requisite axial extent of at least one of the metallic strip members is

of sufficient electrical length of substantially impede longitudinally flowing electrical current, and

- a resonant cavity assembly formed for removably receiving said interaction cavity assembly, said resonant cavity assembly including:
  - axially-spaced end walls defining the axial extent of the cavity, one of the end walls being adjustable for tuning purposes and the other being relatively fixed whereby the cavity has an adjustable tuning end and a fixed end, said fixed end further having an axially-extending side wall spaced radially from said anode wall portion for providing an axially-extending choke cavity having an entrance opening from said resonant cavity, and
- said magnetron apparatus further including:
  - a lossy-material choke absorber member in said choke cavity for receiving and suppressing resonant cavity current modes coupled into the choke cavity through said entrance,
  - said one metallic connector strip member extending axially through said choke cavity whereby said cavity-coupled current modes tend to flow longitudinally through it, and
- an electrically-conductive flexible gasket member disposed in close proximity to said choke cavity entrance between and in electrical contact with said connector strip and said anode wall portion whereby said modes present in said resonant cavity and applied to said strip member at said choke cavity entrance are shorted through said gasket member, said shorting removing said strip member impedance and permitting the desired mode suppression by said choke cavity and its absorber member.

4,194,143
POWER SUPPLY FOR FLASH LAMP

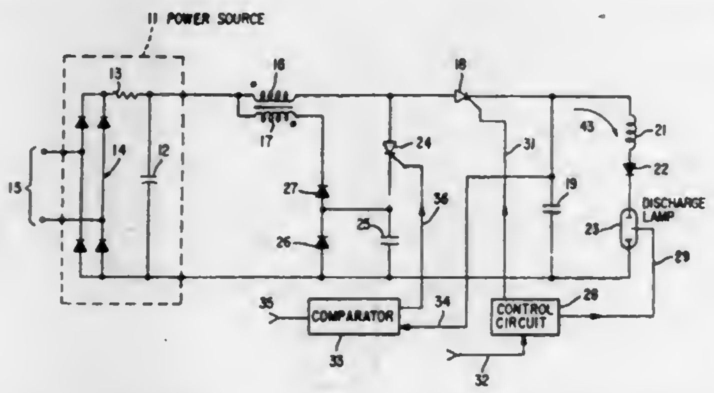
Rudolf Farkas, Geneva, and Michel Moulin, Lausanne, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 23, 1978, Ser. No. 953,521

Claims priority, application Switzerland, Oct. 27, 1977, 13107/77

Int. Cl.² H05B *41/34*

U.S. Cl. 315—241 R **3 Claims**



1. A power supply circuit for a discharge lamp, having an electric power source outputting a d.c. voltage and capable of reabsorbing electrical energy, and further having an energy transferring circuit inserted between the electric power source and a first capacitor connected to the lamp, the capacitor being charged via the energy transferring circuit and adapted to store the energy required for each discharge across the lamp, wherein the energy transferring circuit comprises:

- a first current path comprising the primary winding of an autotransformer and adapted to transfer current from the electric power source to the first capacitor until the voltage across it reaches a predetermined value,
- a second current path comprising a second capacitor for storing part of the surplus energy stored in the autotransformer during the charging of the first capacitor, and
- a third current path comprising the secondary winding of the autotransformer, which path serves for returning the unused energy stored in the autotransformer and in the second capacitor to the electric power source.

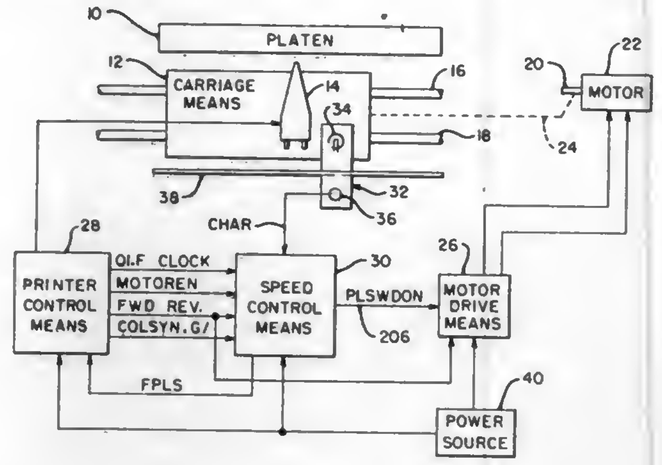
4,194,144
CONSTANT VELOCITY DRIVING MEANS

Jack H. Reynolds, Bellbrook, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 5, 1977, Ser. No. 813,191

Int. Cl.² H02P *5/34, 5/40*

U.S. Cl. 318—341 **26 Claims**



1. A driving means comprising:

- means for sensing the actual velocity of a moveable member whose velocity is to be controlled;
- motor drive means including a motor for driving said moveable member; and
- digital circuit means operatively coupling said sensing means and said motor drive means for controlling the duration of an energizing pulse to said motor drive means to enable said motor to drive said moveable member at a desired constant velocity;
- said circuit means including means for inversely varying the duration of said energizing pulse in accordance with said actual velocity; and
- said means for inversely varying the duration of said energizing pulse including a digital counter with means for alternately presetting said counter with a first count which corresponds to a desired off period for said motor and with a second count which is inversely related to the actual velocity of said moveable member.

4,194,145
METHOD FOR MONITORING THE RUN-UP TO SPEED OF ASYNCHRONOUS MOTORS AND APPARATUS FOR THE PERFORMANCE THEREOF

Franz Ritter, Fislisbach, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Feb. 10, 1978, Ser. No. 876,630

Claims priority, application Switzerland, Mar. 4, 1977, 2701/77

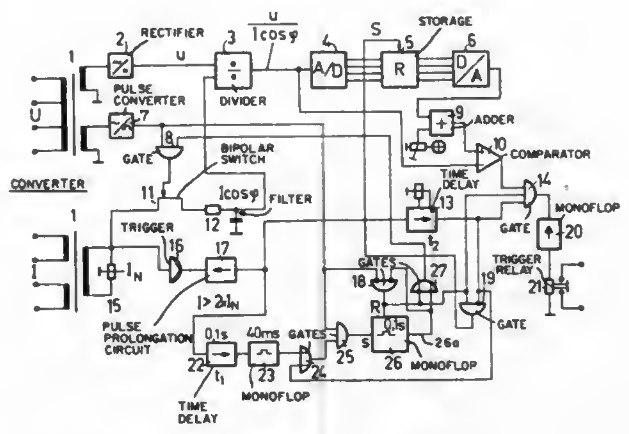
Int. Cl.² H02P *1/04*

U.S. Cl. 318—799 **15 Claims**

1. A method of monitoring the run-up to speed of asynchronous motors which are turned-off within a permissible blocking time of the motor when the speed run-up is improper, comprising the steps of:

- turning-on the monitored motor;
- determining a first electrical magnitude dependent upon the phase angle between the motor current and the motor voltage after expiration of a first time-delay following turning-on of the motor;
- determining a second value of said electrical magnitude which is dependent upon the phase angle between the motor current and the motor voltage after expiration of a second time-delay following turning-on of the motor;

- comparing both the first and second values with one another; and



- turning-off the motor when the comparison of the first and second values with one another produces a magnitude indicative of improper run-up to speed of the motor.

4,194,146
DEVICE FOR CONTROLLING THE CHARGING AND DISCHARGING OF A STORAGE BATTERY

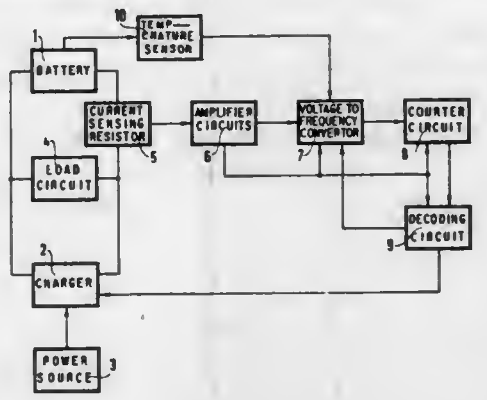
Eric Patry, Nogent, and Daniel Lelaidier, Neuilly, both of France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Aug. 11, 1977, Ser. No. 823,659

Claims priority, application France, Aug. 11, 1976, 76 24473

Int. Cl.² H02J *7/04;* **G01R** *11/66*

U.S. Cl. 320—44 **9 Claims**



1. A device for monitoring the charging and discharging current of a storage battery and for controlling a charger connected to the battery, the device comprising:

- a current sensing resistor adapted to be connected in series with a battery, the voltage across said resistor being proportional to the current through the battery and being referred to hereinafter as the input voltage;
- at least one chopper amplifier stage providing an amplified voltage with an absolute value proportional to said input voltage;
- a voltage to frequency converter providing a train of pulses at a frequency proportional to the absolute value of said amplified voltage;
- a counter responsive to said pulses and to the polarity of the input voltage, the counter being incremented or decremented by said pulses in accordance with the polarity of said input voltage, the state of a logic output of the counter being representative of the state of charge of the battery; and
- a decoding circuit responsive to the logic output state of said counter and adapted to be connected to the charger for limiting the charge rate of said charger to no more than a trickle charge when the counter output state corresponds to full charge of the battery, characterized in that said chopper amplifier state comprises:
- an oscillator;
- a first analog gate controlled by said oscillator and which converts said input voltage into a periodic voltage with an amplitude equal to the absolute value of the input voltage and whose phase is shifted by π each time the polarity of the input signal changes;
- an amplifier and associated filter providing an amplified alternating voltage in phase with said periodic voltage and with an amplitude proportional to that of said periodic voltage; and
- a second analog gate controlled by said oscillator converting said amplified alternating voltage into a direct current voltage with an absolute value proportional to the amplitude of said amplified alternating voltage.

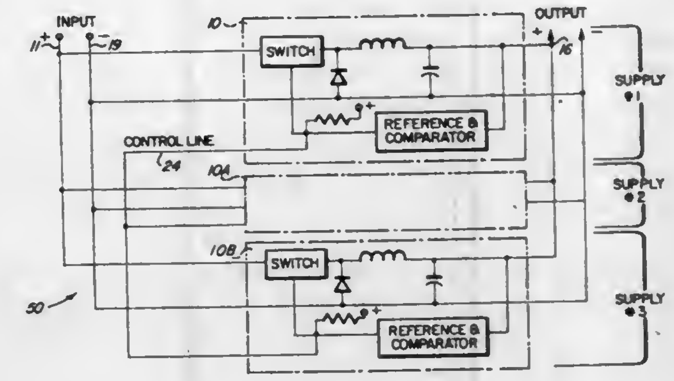
4,194,147
PARALLEL CONNECTED SWITCHING REGULATOR SYSTEM

Francis L. Payne, and Ernest E. Godsey, both of Tucson, Ariz., assignors to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Dec. 5, 1977, Ser. No. 857,089

Int. Cl.² G05F *1/40*

U.S. Cl. 323—17 **21 Claims**



1. A switching regulator having a switching transistor, an inductor, and input, and an output for producing a regulated output voltage at the output in response to an unregulated input voltage applied to the input, said switching regulator comprising in combination:

- (a) comparator means responsive to the regulated output voltage for producing a first signal indicative of whether the regulated output voltage exceeds a predetermined voltage level;
- (b) first means coupled to a first node and to said comparator means for producing a first logical level at the first node if the first signal is at a first voltage and for presenting an open circuit impedance to the first node if the first signal is at a second voltage;
- (c) second means coupled to the first node for producing a second logical level at the first node if an open circuit impedance is presented to the first node;
- (d) a control conductor coupled to the first node for conducting the voltage of the first node, whereby the voltage of the first node may be coupled to corresponding first nodes of other switching regulators coupled in parallel with said switching regulator in order to effect uniform loading of said switching regulator and the other switching regulators; and
- (e) third means coupled to said first means and to the base of said switching transistor for turning said switching transistor on when the first node is at the first logical level and for turning said switching transistor off when the first node is at the second logical level.

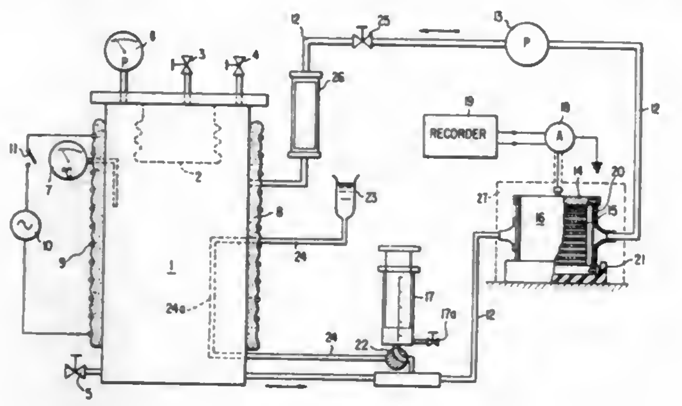
4,194,148
MEASURING APPARATUS FOR MEASURING A CHARGING DEGREE OF LIQUID

Hitoshi Ohkubo, Anjo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 25, 1978, Ser. No. 872,119

Int. Cl.^{2} G01R *5/28, 29/12;* G01N *27/60*

U.S. Cl. 324—453 **10 Claims**



1. A measuring apparatus for measuring the charging degree of a liquid comprising:

a closed circulating system for circulating a base liquid, the closed circulating system including a tank for containing a base liquid, said tank including inlet means for receiving a supply of said base liquid, a piping having two ends in fluid communication with the tank, and a pump attached in the piping to draw the base liquid from the tank through the piping and back to the tank;

static electricity generating means coupled to said piping and having a member interposed in the middle of the circulating system for causing static electricity to be generated by constant friction with the circulating base liquid;

detecting means for detecting the static electricity generated in the static electricity generating means; and

injecting means coupled to said piping and disposed upstream of the position of the static electricity generating means and downstream of said tank in the circulating system for injecting into the circulating base liquid a small quantity relative to the quantity of circulating base liquid of a liquid whose charging degree is to be measured;

whereby any difference in static electricity caused by charging of the injected liquid whose charging degree is to be measured is detected by the detecting means to provide an indication of the charging degree of the injected liquid.

4,194,149
METHOD FOR GENERATING THE EDDY CURRENT SIGNATURE OF A FLAW IN A TUBE PROXIMATE A CONTIGUOUS MEMBER WHICH OBSCURES THE FLAW SIGNAL

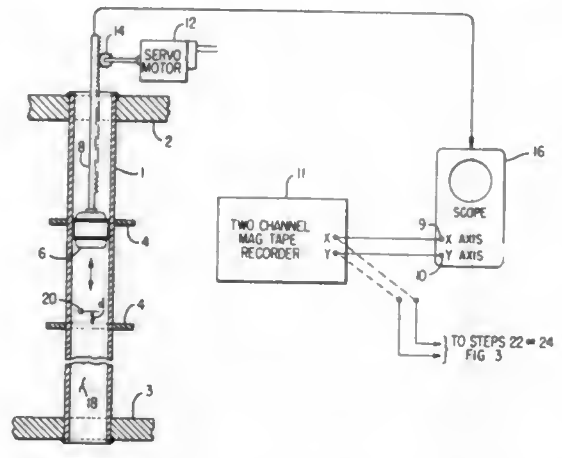
Amos E. Holt; Allen E. Wehrmeister, and Hubert L. Whaley, all of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 15, 1977, Ser. No. 860,811

Int. Cl.^{2} G01R *33/12*

U.S. Cl. 324—220 **9 Claims**

1. The method of generating the eddy current signature of a flaw in a tube proximate a contiguous member which obscures the flaw signature comprising, traversing a reference tube with an eddy current sensor proximate a similar contiguous member to obtain a reference eddy current signature of the first named contiguous member, performing a duplicate traverse of the first named tube to obtain a composite eddy current signature of the flaw and contiguous member, and generating the eddy current signature of the flaw by comparing the composite signature with the reference signature "wherein the step of comparing the composite signature with the reference signature to generate the flaw signature comprises, determining the vector of the reference signature at selected travel points of the sensor, determining the vector of the composite signature at the selected travel points and constructing the flaw signature from the resultant vectors derived by the vector subtraction of the reference vector from the composite vector at the selected travel points".



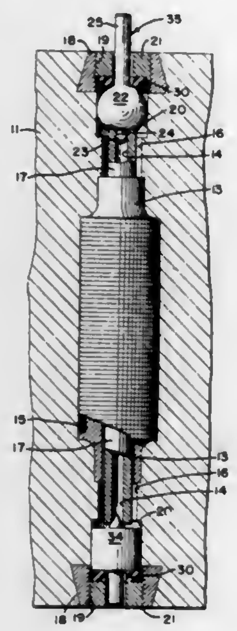
4,194,150
METHOD AND APPARATUS FOR REDUCING MAGNETOMETER ERRORS

Arthur W. Obenschain, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1958, Ser. No. 763,758

Int. Cl.^{2} G01R *33/02*

U.S. Cl. 324—245 **1 Claim**



1. A method of correcting errors in the electrical characteristics of a total field magnetometer after the magnetometer is tested and said errors are measured and resolved, which comprises correcting the core turnover errors in said total field magnetometer by replacing a pair of cores thereof with a new pair of cores having the same total reductance as the first pair and the difference in reductance of the replaced cores different than the difference in reductance of the cores which are replaced, and subsequently correcting the block misparabolism errors in said magnetometer by adjusting at least one of the cores of the magnetometer to a new angular setting thereof so that the indication of field strength will be within prescribed limits of accuracy.

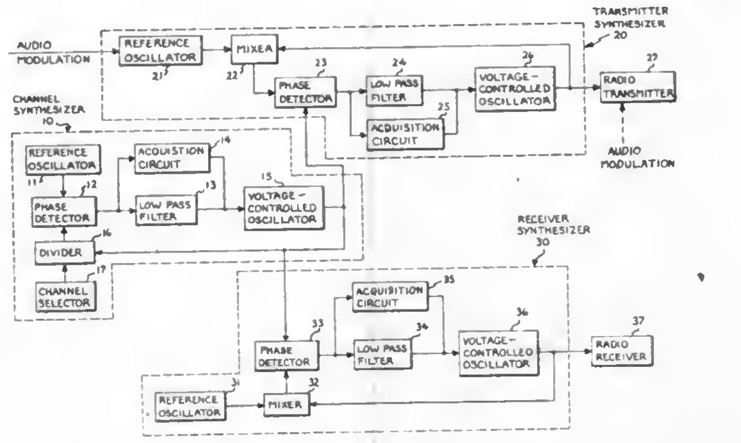
4,194,151
MULTIFREQUENCY GENERATOR

Jens O. Gregersen, Karlslunde, and Sigurd B. Sorensen, Taastrup, both of Denmark, assignors to General Electric Company, Lynchburg, Va.

Filed Jun. 29, 1978, Ser. No. 920,372

Int. Cl.^{2} H03B *3/08*

U.S. Cl. 455—76 **15 Claims**



1. An improved system for generating a plurality of selectable transmitter and receiver frequencies comprising:

a. a first phase-locked loop having a first reference oscillator, a phase detector having an input connected to said first reference oscillator, and a first controlled oscillator and frequency divider circuit connected between the output of said phase detector and an input of said phase detector for generating a relatively small bandwidth first signal whose frequency is determined by said reference oscillator and said frequency divider;

b. a second phase-locked loop having a second reference oscillator, a mixer having an input connected to said second reference oscillator, a phase detector having an input connected to said mixer and having an input connected to said first controlled oscillator, and a second controlled oscillator connected between the output of said phase detector and an input of said mixer for generating a second signal whose frequency is determined by the frequency of said first signal and the frequency of said second reference oscillator;

c. and a third phase-locked loop having a third reference oscillator, a mixer having an input connected to said third reference oscillator, a phase detector having an input connected to said mixer and having an input connected to said first controlled oscillator, and a third controlled oscillator connected between the output of said phase detector and an input of said mixer for generating a third signal whose frequency is determined by said frequency of said first signal and the frequency of said third reference oscillator.

4,194,152
RADIO COMMUNICATION SYSTEM

Takeshi Tokoro, 3-11, Tenjin-cho, Fuchu-shi, Tokyo, Japan

Filed Apr. 24, 1978, Ser. No. 899,520

Claims priority, application Japan, Apr. 27, 1977, 52/48797; Apr. 27, 1977, 52/48798

Int. Cl.^{2} H04Q *7/02*

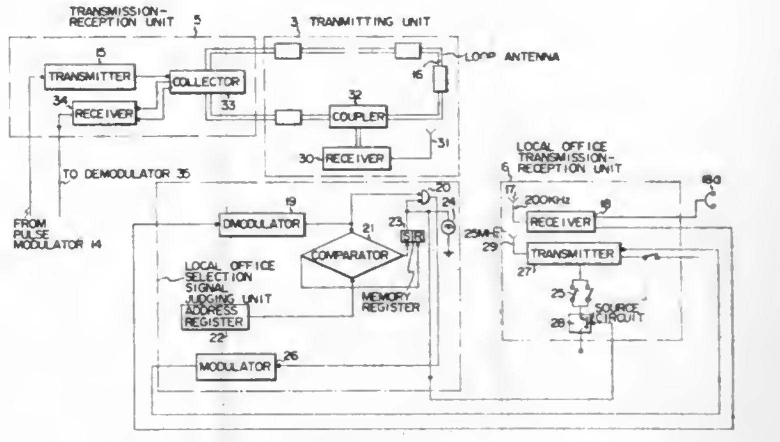
U.S. Cl. 455—31 **10 Claims**

1. A radio communication system providing two-way voice communication between a central office and a local office, comprising:

a plurality of local offices; and

a central office including means for producing a voice signal to be transmitted to the local offices, a local office selection signal generator which generates, in a time sharing basis, local office selection signals respectively assigned to the plurality of local offices, and transmitting means for radiating said local office selection signals toward said local offices together with said voice signal;

each local office including means for receiving the radiated local office selection signals and said voice signal, local office selection signal judging means which judges whether a received local office selection signal is assigned thereto or not, and means for transmitting a response voice signal and a response signal to said central office when said judging means judges that the received local office selection signal is assigned to said local office;



said central office further including means for receiving signals from said local offices, response signal judging means for judging that a response signal received by the central office was sent from which one of the local offices, and display means responsive to the output of said response signal judging means for displaying the identification of a local office that has sent said response signal.

4,194,153
DIGITAL RADIO PAGING COMMUNICATION SYSTEM

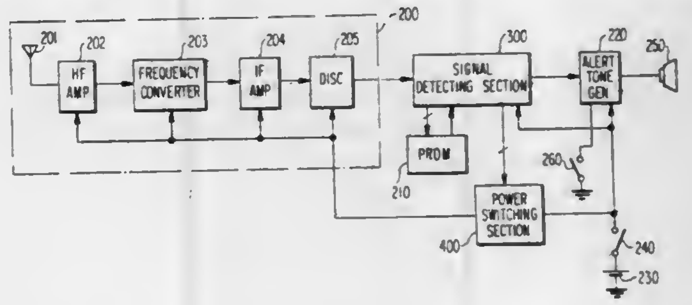
Masaru Masaki, and Akio Yotsutani, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1978, Ser. No. 942,260

Claims priority, application Japan, Sep. 16, 1977, 52/112052

Int. Cl.^{2} H04B *5/04*

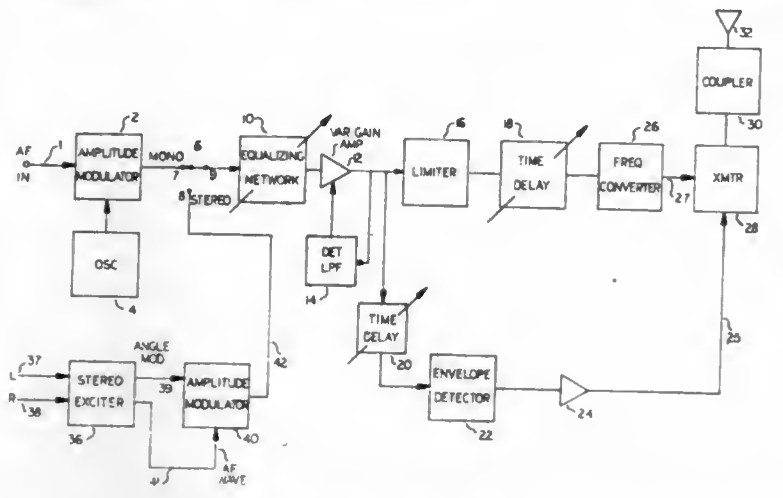
U.S. Cl. 455—31 **12 Claims**



1. A digital radio paging communication receiver for receiving a carrier wave modulated with a preamble digital signal, a calling digital signal and an end mark digital signal, comprising: first means for receiving said modulated carrier wave and demodulating it into said preamble digital signal, calling digital signal and end mark digital signal; second means for recovering a clock pulse from the output of said first means; third, fourth and fifth means connected to the output of said first means for detector said preamble digital signal, said calling digital signal and said end mark digital signal in synchronism with said clock pulse, respectively; sixth means for supplying a power source voltage to said first means; seventh means for generating first pulses having a predetermined period; and eighth means provided between said first means and said sixth means for controlling the supply of said power source voltage in response to the output of said seventh means or in response to the outputs of said third means and said fifth means.

4,194,154
NARROW BANDWIDTH NETWORK COMPENSATION METHOD AND APPARATUS

Leonard R. Kahn, 70 N. Grove St., Freeport, N.Y. 11520
Continuation-in-part of Ser. No. 662,832, Mar. 1, 1976, abandoned. This application Apr. 26, 1978, Ser. No. 900,095
Int. Cl.^{2} H04B *1/04*
U.S. Cl. 455—114 **15 Claims**

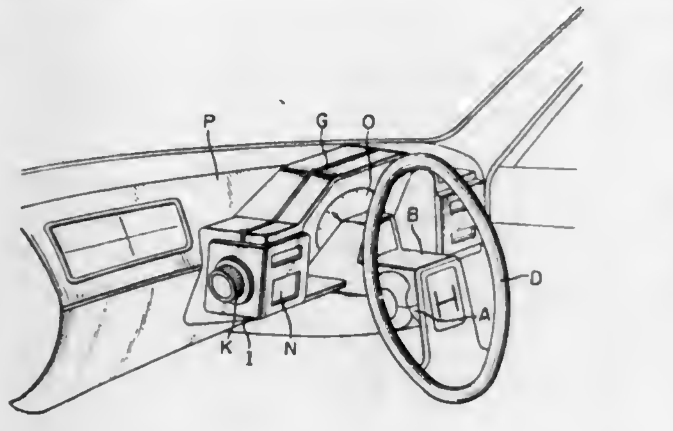


1. A method for reducing distortion of modulated waves caused by passive devices operating at power levels substantially greater than the power level at which the modulated wave was generated, such as transducers and antenna systems used for transmitting modulated waves which alter the desired amplitude and phase relationships between the upper and lower sidebands of the modulated wave creating said distortion comprising;

(a) generating a modulated wave at a power level substantially below the power level fed to the passive device,
(b) altering the phase and amplitude relationships between the upper and lower sidebands of the wave generated in Step (a) in such a manner as to compensate for the distortion caused by the passive device,
(c) amplifying the altered modulated wave of Step (b) to a level required to drive the passive device in an amplifier which faithfully maintains the altered relationships between the upper and lower sidebands of the modulated wave, and
(d) feeding the amplified wave to the passive device.

4,194,155
RADIO RECEIVING DEVICE FOR AUTOMOTIVE USE

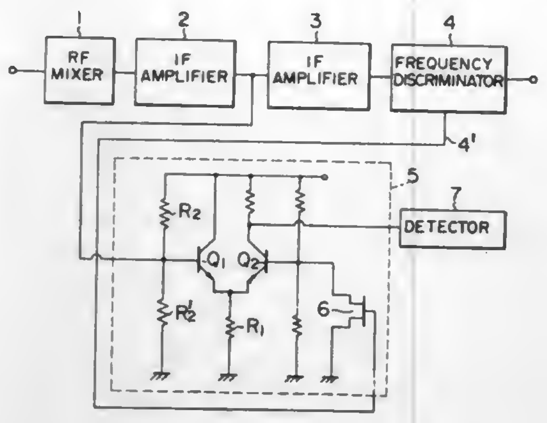
Kazuo Hirai, Tokyo; Junich Kamata, Miyoshi; Sadao Makiguchi, Tokyo, and Kazuhiro Iwai, Hidaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 14, 1978, Ser. No. 916,047
Int. Cl.^{2} H04B *1/06*
U.S. Cl. 455—345 **7 Claims**



1. A radio receiving apparatus for automotive use comprising: an instrument panel in front of the driver's seat having a protruding portion formed in the vicinity of the steering wheel, station-number and frequency indicating means arranged in said protruding portion of said instrument panel for displaying a specified frequency corresponding to each of a plurality of presetted station numbers, control means arranged on one side of the protruding portion for selecting a desired station number and indicator means arranged in the front face of the protruding portion for indicating a station number and corresponding frequency as selected by said control means.

4,194,156
FM TUNER

Nobuyuki Sakabe, Okazaki, Japan, assignor to Shin-Shirasuna Electric Corp., Nagoya, Japan
Continuation-in-part of Ser. No. 821,075, Aug. 2, 1977, which is a continuation of Ser. No. 661,504, Feb. 26, 1976. This application May 31, 1978, Ser. No. 911,172
Claims priority, application Japan, Jun. 17, 1975, 50/73337
Int. Cl.^{2} H04B *1/16*
U.S. Cl. 455—214 **6 Claims**



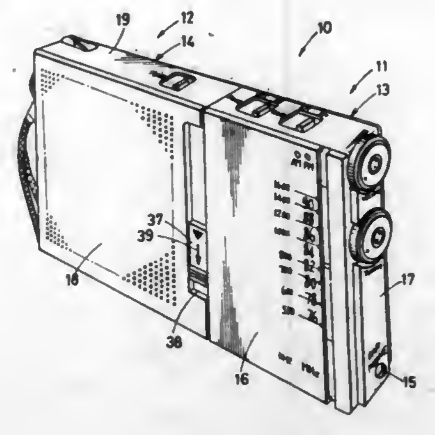
1. An FM tuner including means for producing an intermediate frequency signal; frequency discriminator means with "S" characteristics for frequency-discriminating said intermediate frequency signal; differential amplifier means responsive to a substantially rectilinear portion of said "S" characteristics to produce an output signal whose amplitude becomes maximum at a frequency position corresponding to the center frequency position of said intermediate frequency signal, said differential amplifier means comprising a first transistor and a second transistor connected to each other so as to constitute a differential amplifier, and a variable resistance element connected to said frequency discriminator means in such a manner that the internal resistance is variable depending on a d.c. component output which is provided by said frequency discriminator means, said variable resistance element being associated with said differential amplifier, wherein said intermediate frequency signal is imparted to the base of said first transistor; said variable resistance element being utilized as a base bias resistor for said second transistor, and said output signal being derived from the collector of said second transistor; and detector means responsive to said out-put signal provided by said differential amplifier means to produce an indication as to whether said tuner is in a tuned state or not.

4,194,157
PORTABLE RADIO RECEIVER WITH DETACHABLE SPEAKER UNIT

Takeshi Uno, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 15, 1977, Ser. No. 833,708
Claims priority, application Japan, Sep. 14, 1976, 51-124750[U]
Int. Cl.^{2} H04B *1/08*
U.S. Cl. 455—348 **13 Claims**

1. A portable radio receiver comprising: a first part having a radio tuner and an earphone jack and being operative for receiving a radio frequency signal and providing an electrical audio frequency signal at said jack;

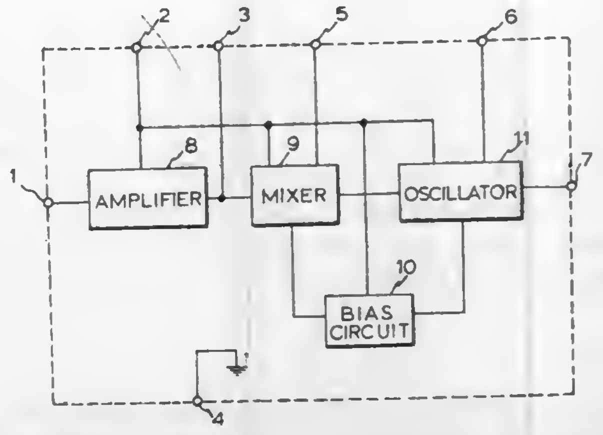
a second part having a speaker unit;
said first and second parts having respective first and second cabinets with mating surfaces, respectively, at which said cabinets can be brought together in abutting relationship;
assembling means for detachably assembling together said first and second parts with said mating surfaces of the respective cabinets in said abutting relationship, said assembling means including complementary mechanical coupling members at said mating surfaces of the first and second cabinets, respectively, and electrical coupling means separate from said mechanical coupling members at said mating surfaces; for applying said audio frequency signal from said first part to said speaker unit when said first and second parts are used together;
one of said mechanical coupling members defining at least one undercut groove extending a substantial distance along the respective one of said mating surfaces and having an opening at one end of the groove, the other of said mechanical coupling members defining, for each said undercut groove, a flange extending a substantial distance along the other mating surface and having a cross-sectional shape corresponding to that of the respective undercut groove so as to be slidably insertable in the latter through said end opening upon relative displacements of said first and second cabinets in directions parallel with each said groove and flange;
said electrical coupling means including cooperative terminal means at said mating surfaces, respectively, and being engaged with each other for establishing electrical connections between said first and second parts when the latter are assembled together with said mating surfaces in said abutting relationship; and
detachable protective case means adapted to at least partly envelop said first part when the latter is detached from said second part said case means including a mechanical coupling member which is complementary to, and engageable with said mechanical coupling member at the mating surface of said cabinet of the first part, and by which said case means can be detachably assembled with said first part.



4,194,158
INTEGRATED FRONT END CIRCUIT FOR VHF RECEIVER

Kenzo Tanabe, and Masashi Kanno, both of Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 9, 1977, Ser. No. 849,959
Claims priority, application Japan, Nov. 15, 1976, 51-137678; Nov. 15, 1976, 51-153602[U]
Int. Cl.^{2} H04B *1/28*
U.S. Cl. 455—333 **5 Claims**

1. A front end circuit for a VHF receiver comprising: an input terminal for a VHF signal; a power source; a resonance tuning circuit having a coil connected at one end thereof to said power source; a high frequency amplifier having a grounded base transistor, the emitter of said grounded base transistor being connected to said input terminal, the base of said grounded base transistor being connected to said power source and the collector of said grounded base transistor being connected to said power source through said coil of said resonance tuning circuit; an intermediate frequency transformer having a primary winding connected at one end thereof to said power source and a secondary winding; a mixer consisting of a differential amplifier composed of first and second transistors, a first constant current transistor and a first resistor, the base of said first transistor, which is one input terminal of said differential amplifier, being connected to the collector of said grounded base transistor of said high frequency amplifier, the base of said second transistor, which is the other input terminal of said differential amplifier, being connected to said power source, the emitters of said first and second transistors being connected in common to the collector of said first constant current transistor through said first resistor, the collector of said first transistor being connected to said power source, the collector of said second transistor being connected to said power source through said primary winding of said intermediate frequency transformer, and the emitter of said first constant current transistor being grounded; a tuning circuit for oscillation having a coil connected at one end thereof to said power source; first, second and third capacitors; a grounded base type transistor oscillating circuit consisting of an oscillation transistor, a second constant current transistor, the base of said oscillation transistor being connected to said power source, the collector of said oscillation transistor being connected to said power source through said coil of said tuning circuit for oscillation, and the emitter of said oscillation transistor being connected to the collector of said second constant current transistor so that bias current to said oscillation transistor is provided from and controlled by said second constant current transistor, the emitter of said second constant current transistor being grounded, the collector of said oscillation transistor being also connected to the base of said first constant current transistor of said mixer through said first capacitor for providing an oscillation signal to said mixer, said second capacitor being connected between the collector and the emitter of said oscillation transistor and said third capacitor being connected between the emitter of said oscillation transistor and the ground; and a transistor bias circuit including a current mirror transistor and a second resistor, said bias circuit driving said first constant current transistor of said mixer and said second constant current transistor of said oscillating circuit according to operation of a current mirror circuit.



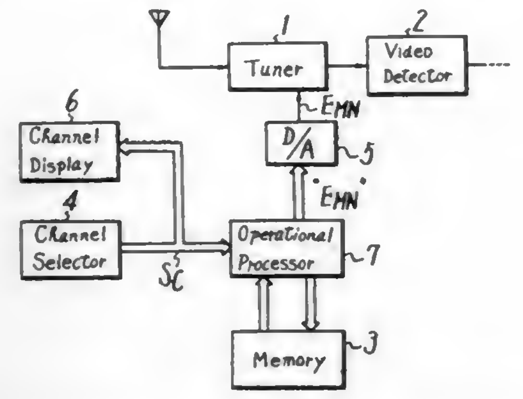
4,194,159
ELECTRONIC TUNING SYSTEM

Tadao Sasaki, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 18, 1978, Ser. No. 897,394
Claims priority, application Japan, Apr. 21, 1977, 52/46108
Int. Cl.^{2} H04B *1/26*
U.S. Cl. 455—179 **7 Claims**

1. An electronic tuning apparatus comprising:
an electronic tuner capable of tuning in a plurality of channels within a predetermined frequency range in response to a variable tuning signal;

means for selectively generating a channel selecting signal corresponding to a desired channel from among said plurality of channels;

storage means for storing a number of predetermined tuning values each corresponding to a predetermined frequency, said number being less than the total number of said plurality of channels, said storage means having an output to which said predetermined tuning values are selectively delivered;



operational processing means receiving said channel selecting signal and the output of said storage means for generating an actual tuning value for said desired channel in response to said channel selecting signal and at least two of said predetermined tuning values delivered to said operational processing means by said output of the storage means; and

means receiving said actual tuning value from said operational processing means for supplying a corresponding tuning signal to said electronic tuner.

4,194,160

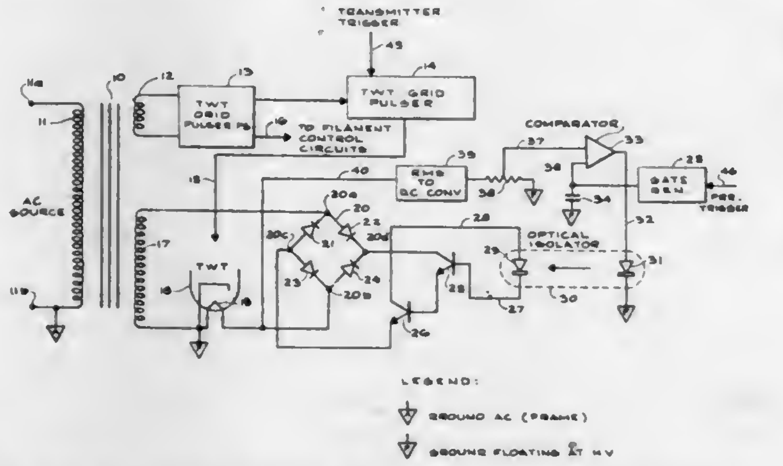
NONINTERACTIVE HEATER POWER SUPPLY

Richard S. Loucks, Northridge, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 2, 1977, Ser. No. 830,067

Int. Cl.^{2} H03K *3/42;* H05B *9/06*

U.S. Cl. 328—267 **11 Claims**



1. An AC power supply regulation system with means for eliminating AC magnetic field interactive effects during a predetermined relatively small time period, comprising:

an alternating current source connected to energize a heatable element the temperature of which is to be stabilized;

first means for sensing the RMS AC voltage applied to said element and for converting said RMS voltage to an analog signal as a function of the true RMS value of said AC voltage;

second means connected in the current path between said source and said element, said second means comprising a circuit responsive to chopping control signals for cyclically interrupting the current through said element;

and third means responsive to said analog signal and to external synchronizing signals for generating said chopping control signals as variable time duration gates of repetition frequency high compared to the frequency of said AC voltage, said chopping control signals being applied to said second means in a sense tending to stabilize the true RMS value of the resulting chopped AC current flowing through said element.

4,194,161

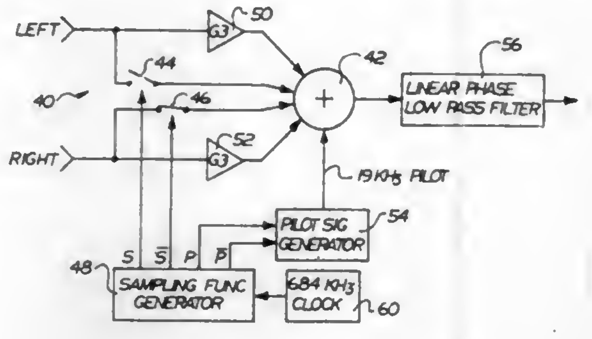
SWITCHING MODULATORS AND DEMODULATORS UTILIZING MODIFIED SWITCHING SIGNAL

David L. Hershberger, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 25, 1978, Ser. No. 954,365

Int. Cl.^{2} H03C *1/06;* H03D *1/04;* H04H *5/00*

U.S. Cl. 329—50 **8 Claims**



7. A method of gating an input signal to an output line at a first rate without incidentally producing a selected component on said output line corresponding to the input signal modulated at a given odd multiple of said first rate comprising the steps of:

generating a bilevel switching control signal having a harmonic component whose frequency corresponds to said first rate, but not including a harmonic component whose frequency corresponds to said given odd multiple of said first rate, and

gating said input signal to said output line in accordance with said bilevel switching control signal.

4,194,162

SEMICONDUCTOR DEVICE

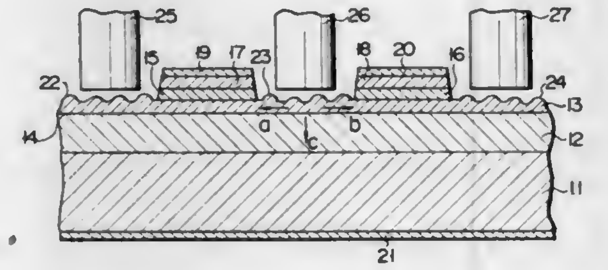
Yutaka Uematsu, Yokosuka, and Yoichi Unno, Kamakura, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 22, 1978, Ser. No. 889,115

Claims priority, application Japan, Apr. 6, 1977, 52-38574

Int. Cl.^{2} H01S *3/19*

U.S. Cl. 330—4.3 **3 Claims**



1. A semiconductor device comprising a semiconductor body, a semiconductor layer as a photoconductive path disposed on one side of said body and defining a pn-junction between said layer and body, first and second diffraction gratings formed at a distance from each other on top of said semiconductor layer, a first electrode disposed between said first and second diffraction gratings on top of said semiconductor layer, a second electrode disposed on the other side of said semiconductor body so as to face said first electrode, a third diffraction grating formed at a distance from said first diffraction grating on top of said semiconductor layer and a third electrode disposed between said first and third diffraction gratings on top of said semiconductor layer.

4,194,163

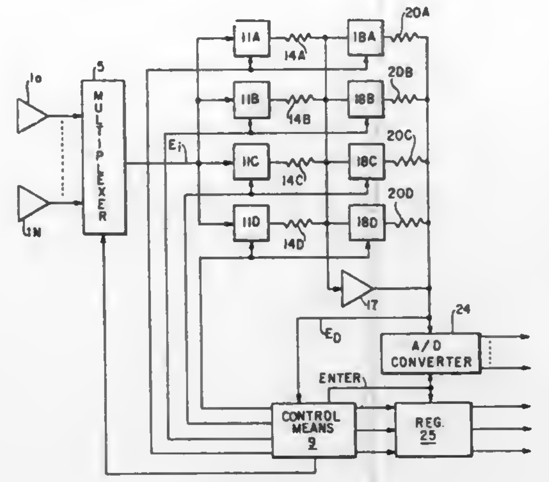
FLOATING POINT AMPLIFIER MEANS AND METHOD

Ronald G. Gillespie, Old Tappan, N.J., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Aug. 3, 1978, Ser. No. 930,634

Int. Cl.^{2} H03G *3/20*

U.S. Cl. 330—86 **6 Claims**



1. A wide dynamic range automatic gain ranging amplifier system comprising means for receiving an analog input signal, a single stage amplifier having an input connected to the receiving means for amplifying a received analog signal to provide an output signal, control means connected to the receiving means and to the amplifier for controlling the gain of the amplifier in accordance with the output signal and providing digital gain signals corresponding thereto, and analog-to-digital converter means connected to the amplifier for providing digital signals corresponding to the output signal, in which the digital signals provided by the control means and the converter means comprise a floating point word including a mantissa and an exponent in the form:

$$Q=\pm x\, b^{-k};$$

where Q represents the magnitude of the input signal to said system; wherein b represents a predetermined gain standard wherein x, the mantissa is represented by the digital signals from the converter means and corresponds to the amplitude of the output signal; and wherein k, the exponent, is represented by the digital signals from the control means and corresponds to the number of gain stages and ranges from 1 through n in unit steps; and the receiving means includes a plurality of n input resistor networks having a first common connection adapted to receive the analog input and a second common connection to the input of the amplifier; and the control means includes a plurality of n feedback resistor networks connected between the input and the output of the amplifier, and control means connected to the output of the amplifier and to the pluralities of input and feedback resistor networks for providing a plurality of control signals in accordance with the output signal so as to control the gain of the amplifier; each control signal is provided to corresponding input and feedback resistor networks.

4,194,164

VARIABLE FREQUENCY SOURCES

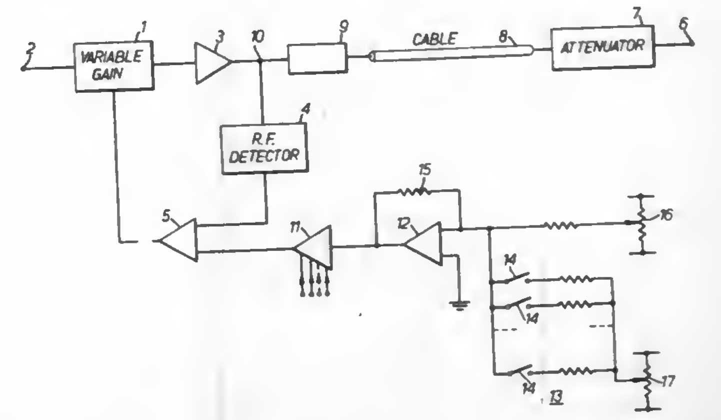
David P. Owen, Dunstable, England, assignor to Marconi Instruments Limited, Chelmsford, England

Filed Nov. 7, 1978, Ser. No. 958,431

Claims priority, application United Kingdom, Nov. 24, 1977, 49035/77

Int. Cl.^{2} H03G *3/20*

U.S. Cl. 330—130 **6 Claims**



1. A variable frequency source including a variable gain stage for receiving a variable frequency R.F. signal and for controlling the amplitude of the R.F. signal in dependence on its frequency by means of a control signal characterised in that the control signal is derived from a resistor network, the value of the control signal being at least partly dependent on the selection of particular resistors in the network which are selected as a function of the frequency of the variable R.F. signal.

4,194,165

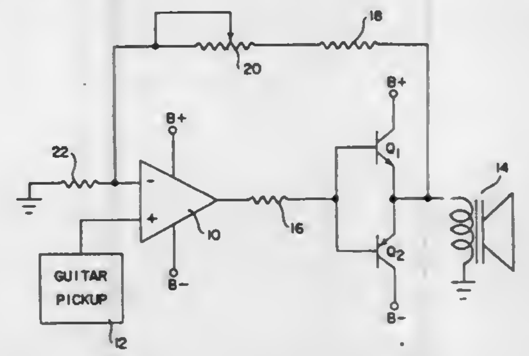
MINIATURE GUITAR AMPLIFIER

Peter J. Skulski, P.O. Box 5583, Mission Hills, Calif. 91345

Filed Jun. 28, 1978, Ser. No. 919,909

Int. Cl.^{2} H03F *3/183*

U.S. Cl. 252—255 **3 Claims**



1. A miniature guitar amplifier, for receiving a signal from a guitar pickup and at least one small speaker comprising

a pair of complementary power transistors connected directly in a common-emitter push-pull configuration to said speaker,

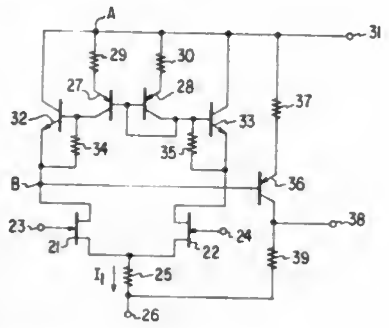
an operational amplifier having a differential input stage to provide a noninverting input terminal for receiving said guitar pickup signal, an inverting input terminal, and an output terminal,

means for directly connecting the output of said operational amplifier to said power transistors to drive said speakers, and

variable resistance means for directly connecting the emitter output of said power transistors to said inverting input terminal of said operational amplifier.

4,194,166
DIFFERENTIAL AMPLIFIER WITH A CURRENT MIRROR CIRCUIT

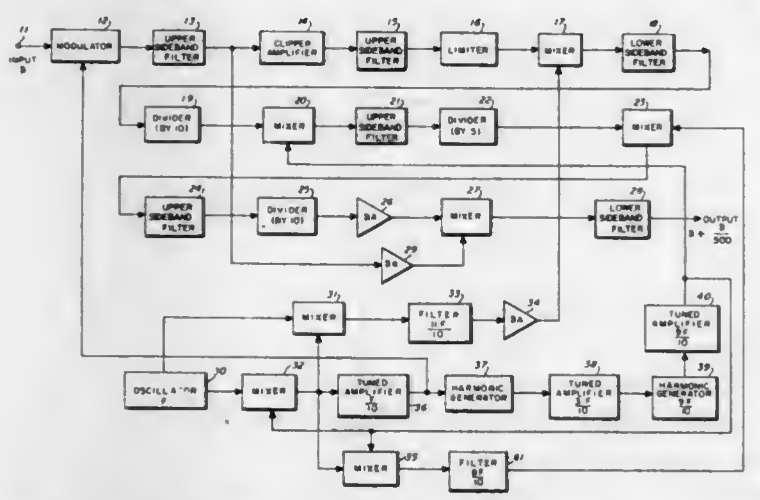
Kazumasa Sakai, and Hiroshi Watanuki, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 1, 1978, Ser. No. 874,203
Claims priority, application Japan, Feb. 4, 1977, 52-10730
Int. Cl.^{2} H03F *3/45*
U.S. Cl. 330—257 9 Claims



1. In a differential amplifier with a current mirror circuit where said differential amplifier includes a pair of active elements having (a) control electrodes respectively connected to the input terminals of the differential amplifier, (b) first electrodes connected together, and (c) second electrodes, the improvement where the collectors of a pair of transistors comprising the current mirror circuit are respectively connected to the bases of a pair of transistors of polarity reverse that of the current mirror transistors, the collectors of the reversed polarity transistors are connected to a power supply, the emitters of the reversed polarity transistors are respectively connected to said second electrodes of the active elements of the differential amplifier, and resistors are respectively connected between the bases and emitters of the reversed polarity transistors.

4,194,167
UP-DOPPLER SIMULATOR

Milton D. Papineau, Kailua, Hi., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 10, 1963, Ser. No. 250,991
Int. Cl.^{2} H03F *3/14*
U.S. Cl. 331—38 19 Claims



1. Means for up-Dopplerizing an input signal comprising in combination,

means for generating a predetermined F frequency signal,

means effectively connected to said predetermined F frequency signal generating means for producing an F/10 frequency signal, an 8F/10 frequency signal, a 9F/10 frequency signal, and an 11F/10 frequency signal,

means connected to said F/10 frequency signal producing means for heterodyning an input S frequency signal with said F/10 frequency signal for producing an F/10+S frequency signal,

means effectively coupled to said last mentioned heterodyning means and said 11F/10 frequency signal producing means for producing an F−S frequency signal,

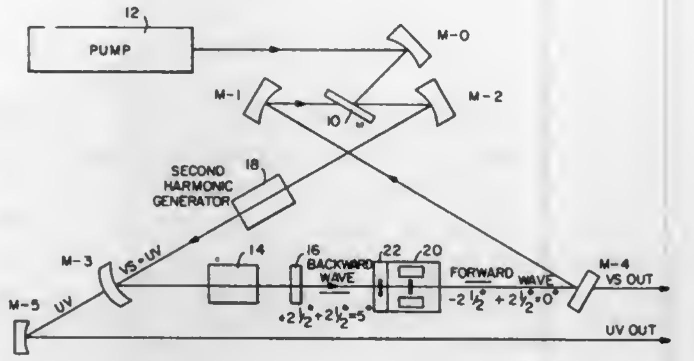
means effectively coupled to said F−S frequency signal producing means and said 9F/10 frequency signal generating means for producing an F−S/10 frequency signal,

means effectively coupled to said F−S/10 frequency signal producing means and said 8F/10 frequency signal generating means for producing an F/10−S/500 frequency signal,

and means effectively connected to said F/10−S/500 frequency signal producing means and the aforementioned F/10+S frequency signal producing means for producing an S+S/500 frequency signal.

4,194,168
UNIDIRECTIONAL RING LASER APPARATUS AND METHOD

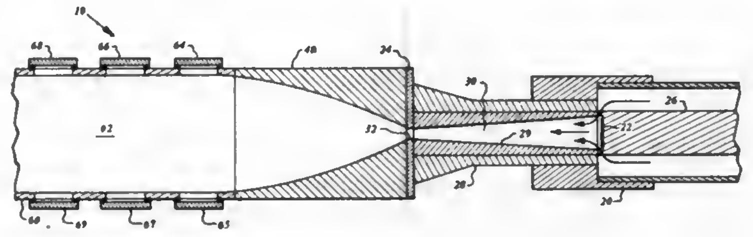
Steven M. Jarrett, Los Altos, and Michael W. Leitner, Palo Alto, both of Calif., assignors to Spectra-Physics, Inc., Mountain View, Calif.
Filed Nov. 25, 1977, Ser. No. 854,517
Int. Cl.^{2} H01S *3/083*
U.S. Cl. 331—94.5 C 8 Claims



1. A ring laser comprising a laser resonator capable of supporting running waves in both forward and backward directions within said resonator, an ion laser pumped liquid dye capable of lasing over a wide wave length range disposed within the path of radiation within said resonator structure and coupled thereto, tuning means for continuously tuning the ring laser over a tuning range of lasing to produce any single selected frequency or wave length within said range, ion laser pumping means for pumping said dye to develop running first and second laser beam waves propagating both in the forward and backward direction respectively within said resonator, polarization shifter means for causing preferential oscillation of one of said waves in unidirectional single frequency operation and effective to produce high single frequency power over the tuning range, said shifter means comprising a combination of a Faraday rotator in series with a polarization rotator and in which combination each rotator is rotated through only a small angle to shift the plane of polarization of a propagating wave traveling in one direction in an amount which is sufficient to impair amplification and to defeat reinforcement and build-up of laser oscillation of the wave traveling in said one direction while leaving the plane of polarization of the propagating wave traveling in the other direction substantially unaffected so that the unaffected wave is constructively reinforced in gain by said resonator and dye to thereby develop said unidirectional single frequency operation.

4,194,169
MOLECULAR LASER OPERATING ON FUNDAMENTAL AND OVERTONE BANDS

Joseph W. Rich, East Aurora, and Richard C. Bergman, Corfu, both of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.
Filed Nov. 25, 1977, Ser. No. 854,863
Int. Cl.^{2} H01S *3/00*
U.S. Cl. 331—94.5 G 15 Claims



1. A method for operating a laser on the vibrational fundamental and overtone infrared molecular bands including the steps of:

supplying a mixture of gases including at least one lasant species to an electric discharge section;

flowing said mixture of gases through said discharge section;

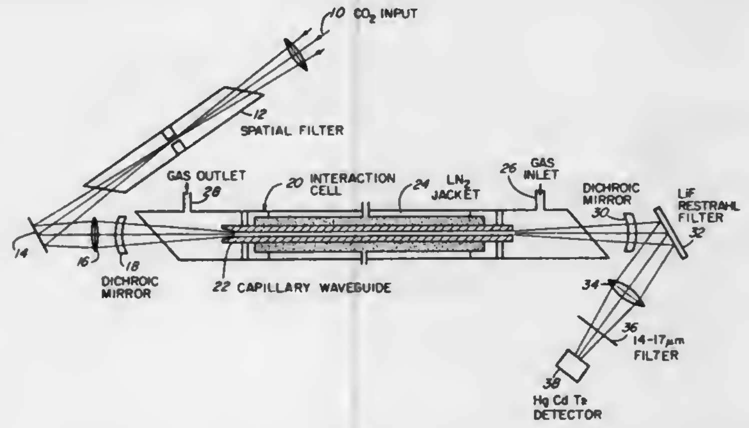
vibrationally exciting said at least one lasant species through electron energy transfer in said electric discharge section;

flowing said mixture of gases including said at least one vibrationally excited lasant species through a supersonic expansion to an optically resonant cavity to gas dynamically cool said mixture of gases to a chosen kinetic temperature; and

serially extracting laser power from said cooled flowing mixture in the optically resonant cavity starting with the second overtone and progressing to the fundamental.

4,194,170
SHIFTING OF INFRARED RADIATION USING ROTATIONAL RAMAN RESONANCES IN DIATOMIC MOLECULAR GASES

Norman A. Kurnit, Santa Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation-in-part of Ser. No. 802,400, Jun. 1, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,409
Int. Cl.^{2} H01S *3/22*
U.S. Cl. 331—94.5 N 40 Claims



1. A Raman laser for frequency shifting infrared radiation comprising:

an infrared radiation source for producing said infrared radiation;

an interaction cell containing a diatomic molecular gas;

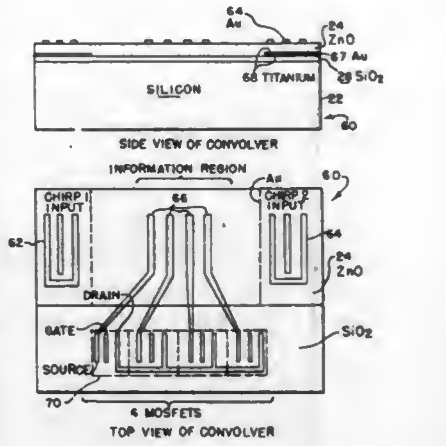
a restrahl reflective capillary waveguide disposed within said interaction cell;

dichroic means disposed at each end of said interaction cell for primarily reflecting frequency shifted radiation and primarily transmitting said infrared radiation from said infrared radiation source;

whereby said capillary waveguide increased focal interaction length between said infrared radiation from said infrared radiation source and said diatomic molecular gas to overcome losses and produce stimulated Raman scattered frequency shifted radiation from rotational transitions in said diatomic molecular gas.

4,194,171
ZINC OXIDE ON SILICON DEVICE FOR PARALLEL IN, SERIAL OUT, DISCRETE FOURIER TRANSFORM

Edward C. Jelks, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 7, 1978, Ser. No. 922,610
Int. Cl.^{2} H03H *7/30*
U.S. Cl. 333—149 17 Claims



1. A device suitable for the propagation of acoustic waves on its surface comprising:

a substrate of semiconductor material, of which there exists an oxide, excluding the class of piezoelectric materials, the substrate having at least one flat, rectangular, surface, the longer side defining two ends;

a layer of oxide of the semiconductor material, disposed on the flat surface;

a layer of metal disposed on at least a part of the layer of oxide, at both ends thereof;

a layer of a piezoelectric material disposed on the layer of metal and on that part of the oxide over and between the metal; and

at least one metal-oxide semiconductor (MOS) structure disposed on that part of the oxide which is not covered by the layer of piezoelectric material.

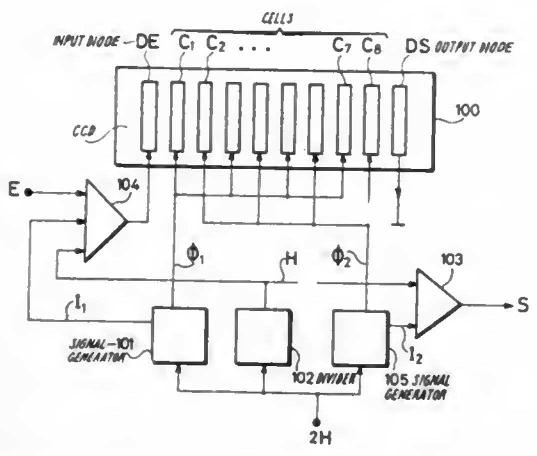
4,194,172
APPARATUS FOR FILTERING AN ELECTRICAL SIGNAL WITH A CHARGE-COUPLED DEVICE

Jean-Edgar Picquendar, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Mar. 16, 1978, Ser. No. 887,340
Claims priority, application France, Mar. 29, 1977, 77 09294
Int. Cl.^{2} H03H *7/10, 7/28;* H03K *5/156;* G11C *19/28*
U.S. Cl. 333—165 4 Claims

1. An apparatus for filtering an input signal, comprising:

a charge-coupled device having an input diode for receiving said input signal, a grounded output diode, a first plurality of cells weighted so as to represent a recurring filter law, and a second plurality of cells weighted so as to represent a nonrecurring filter law; the cells of said first plurality being interposed one-by-one between the cells of said second plurality;

a first generator for applying to the cells of said first plurality a first set of displacement signals having a predetermined clock rate, and for obtaining from said first set of displacement signals a recurring feedback signal for coupling to said input diode; and a second generator for applying to the cells of said second plurality a second set of displacement signals having said

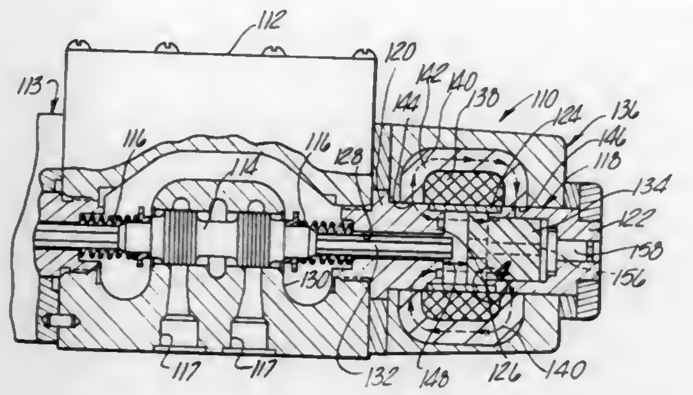


clock frequency, and for obtaining from said second set of displacement signals an output filtered signal.

4,194,173
SOLENOID CONSTRUCTION

Ronald L. Loup, Clarkston, and Arthur W. Gill, Saline, both of Mich., assignors to Double A Products Company, Manchester, Mich.

Filed Aug. 14, 1978, Ser. No. 933,177
Int. Cl.² H01F ***7/08***
U.S. Cl. 335—260 **4 Claims**

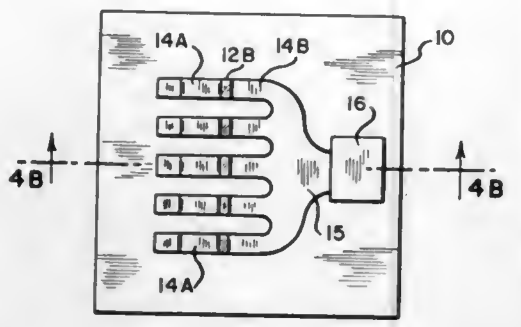


1. A wet plunger solenoid for actuating a hydraulic valve comprising an armature assembly including front and rear magnetic stop pieces, a non-magnetic tube connected at opposite ends respectively to said front and rear magnetic stop pieces and defining therebetween a chamber, said front stop piece having a duct extending axially therethrough in communication with said chamber and for communication with hydraulic fluid within said valve, a pin positioned in said duct for axial movement and extending exteriorly of said front stop piece, and a plunger mounted within said chamber for reciprocal axial movement between said stop pieces and responsive to a magnetic field to exert a biasing action on said pin, and a casing surrounding the circumference of the armature assembly and including a coil and an associated yoke arranged to induce a magnetic flield through said plunger when current is passed through the coil, said yoke having its opposite ends in engagement respectively with the front and rear stop pieces so that the working gap between the plunger and the stop pieces is the only air gap in the induced magnetic field, said tube having an axial length sufficiently small so that said front and rear stop pieces are connected thereto between the locations where engagement of the front and rear stop pieces with said yoke occurs thereby to eliminate an air gap between the yoke and either stop piece, said rear stop piece being cup-shaped with the open end thereof facing said front stop piece and defining a lip, said lip having a step around the outer circumference thereof into which the end of said tube is fitted so that a seating portion extends radially inwardly to the radially inner wall of the cup-shaped stop piece, said plunger being slidably movable in an axial direction in said rear stop piece in engagement with said radially inner wall and having an enlarged head portion for seating on the seating portion defined by the lip when the plunger is moved to its engaged position with the stop piece, the outer wall of said cup-shaped stop piece being in engagement with one end of said yoke, and said enlarged head portion being sufficiently large to expand the flux path area to be at least as great as the flux path area of the front pole piece.

4,194,174
METHOD FOR FABRICATING BALLASTED FINGER ELECTRODE

Michael F. DeLise, Doylestown, Pa., assignor to Microwave Semiconductor Corp., Somerset, N.J.

Filed Jun. 19, 1978, Ser. No. 916,904
Int. Cl.² H01C ***1/012***
U.S. Cl. 338—308 **6 Claims**



1. A method of fabricating a ballasted finger electrode on a substrate comprising the steps of:

forming on such substrate at least one resistive segment at a position for underlying at least one finger electrode;

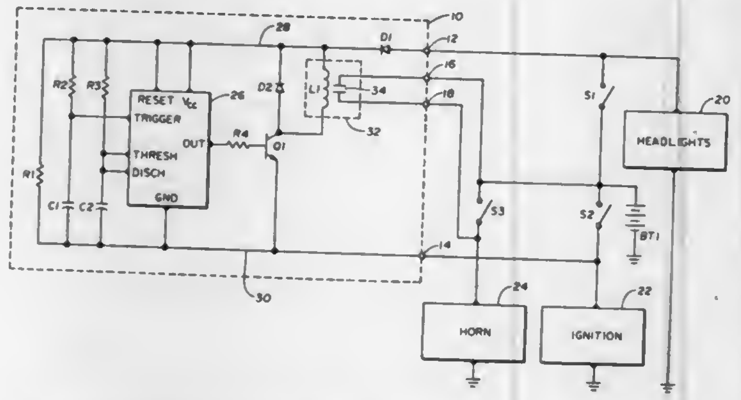
forming at least one dielectric region on said resistive segment; and

forming a plurality of conductive segments defining a finger electrode, said segments being spaced apart in a region overlying at least one of said dielectric regions and electrically connected through said resistive segment underlying said dielectric region.

4,194,175
AUTOMOBILE HEADLIGHT ALARM SYSTEM

Walter A. Eklund, 6036 Portland Ave. S., Minneapolis, Minn. 55417

Filed Sep. 22, 1978, Ser. No. 944,716
Int. Cl.² B60Q ***5/00***
U.S. Cl. 340—52 D **6 Claims**



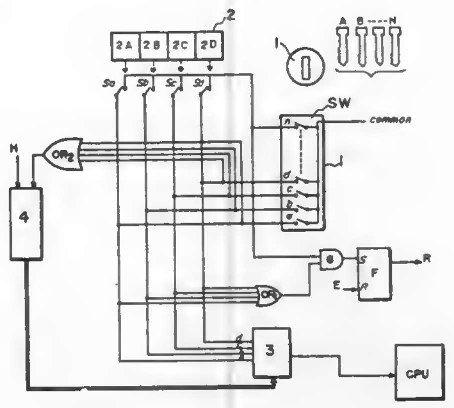
1. A warning apparatus for use in a vehicle having an ignition switch, headlights, a headlight switch for controlling the headlights, a horn, and a horn switch for operating the horn, the system comprising:

timer means operatively connected to the ignition switch, the headlight switch, and the horn for energizing the horn for a time period of predetermined duration after the ignition switch is turned off while the headlight switch remains on, and wherein turning off the headlight switch during the time period de-energizes the horn.

4,194,176
CASHIER IDENTIFYING ADMINISTRATION IN AN ELECTRONIC CASH REGISTER

Yositaka Fukuma, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1978, Ser. No. 955,337
Claims priority, application Japan, Oct. 27, 1977, 52/130531
Int. Cl.² H04Q ***3/00***
U.S. Cl. 340—147 R **4 Claims**



1. A cashier identifying system for an electronic cash register comprising:

a key switch means to which plural kinds of operator clerk keys and a master clerk key are inserted;

key signal developing means for developing signals representation of the keys inserted into said key switch means;

keyboard switch means for introducing an information signal for specifying a specific operator clerk;

means for enabling said keyboard switch means when the master clerk key is inserted into said key switch means; and

a code signal generator for developing a code signal specifying the operator clerk through the use of said signals derived from said key signal developing means when any one of said operator clerk keys is inserted into said key switch means, and through the use of said information signal derived from said keyboard switch means when said master clerk key is inserted into said key switch means.

4,194,177
TRANSDUCER SYSTEM FOR CONTINUOUS MONITORING LIQUID LEVELS IN STORAGE TANKS AND THE LIKE

John S. Adamson, Pleasant Hill, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 25, 1977, Ser. No. 854,917
Int. Cl.² G08C ***19/16;*** **H04Q** ***9/14***
U.S. Cl. 340—152 T **13 Claims**

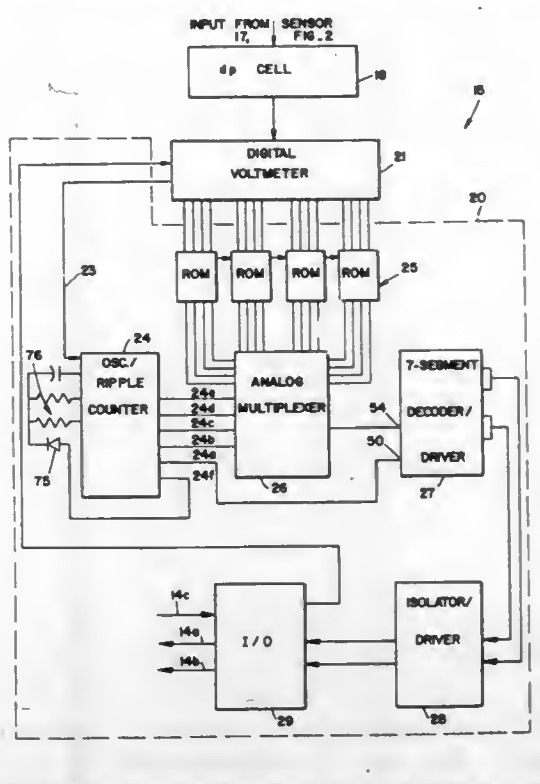
1. Transducer system for generating a digital code indicative of liquid level within a storage tank or the like, upon receipt of a square wave interrogation signal from a transmitter/receiver of a tank gauging system located at a central station remote from said storage tank but electrically connected to said transducer system through an INTERROGATION, a MARK and a SPACE line of said tank gauging system, comprising:

(A) means for providing a series of input signals representative of liquid level within said tank, said means including a digital volt meter (DVM) in circuit with a series of look-up read-only-memories (ROM's);

(B) I/O network for receiving said interrogation signal and connected to said DVM for generating a reset signal therefrom in response to said interrogation signal;

(C) an oscillator/ripple counter formed essentially of MSI's connected to said DVM and including at an input, a network for receiving said reset pulse from said DVM, said oscillator/ripple counter generating, in response to said reset pulse, sets of square wave pulses of differing repetition rates and pulse widths;

(D) a multiplexer and multi-segment decoder/driver means connected to each other and to (B) responding to selected sets of said square wave pulses to generate a synthetic digital code indicative of liquid level at microcircuit signal levels at an output means of said decoder/driver means;

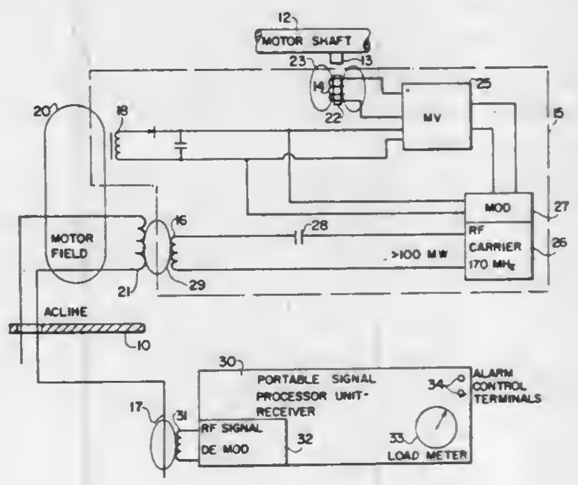


(E) isolatordriver means having one or more inputs connected to said decoderdriver means of (D, and one or more output means connected to said MARK and SPACE lines controllable as a function of said synthetic digital code to drive said MARK and SPACE lines between tank gauging operating potentials for generating said digital code of interest at said central station whereby said liquid level condition within said storage tank can be indicated.

4,194,178
ELECTRIC MOTOR WITH INTERNAL WIRELESS LOAD MONITOR

Robert F. Dumbeck, Elgin, Tex., assignor to Rexnord Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 675,780, Apr. 12, 1976, Pat. No. 4,063,112, which is a continuation-in-part of Ser. No. 548,011, Feb. 7, 1975, abandoned. This application Dec. 8, 1977, Ser. No. 858,657
Int. Cl.² H04B ***3/56***
U.S. Cl. 340—201 R **2 Claims**



1. An electric motor load monitor comprising: a detector

and slip analysis circuit mounted within the motor housing and that produces a signal indication of motor load by slip analysis means; said slip analysis circuit further including means responsive to power line voltage variations and which corrects the motor load signal for such variations; a modulator and transmitter mounted within the motor housing that impresses a modulated motor load signal of radio frequency onto the line that supplies power to the motor for transmitting the modulated motor load signal outside the motor housing on the power line; a receiver outside the motor housing capable of receiving the modulated motor load signal impressed on the power line; and a demodulator for transforming the received signal to produce the motor load signal.

4,194,179

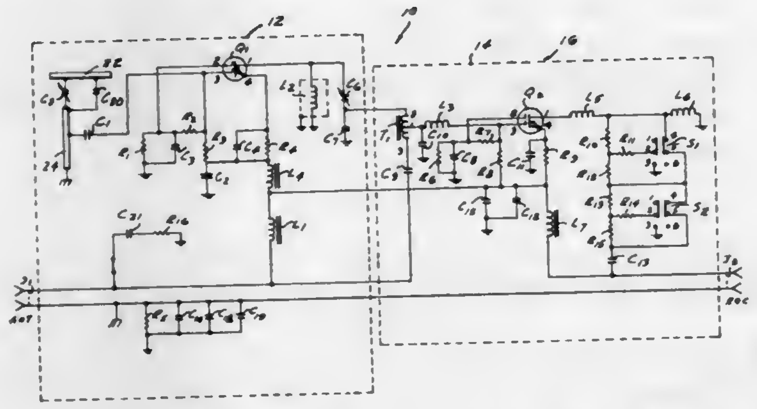
ACTIVE ANTENNA FOR MEDICAL TELEMETRY MONITORING SYSTEMS

Donald Malinouskas, Norton, Mass., assignor to Becton, Dickinson & Company, East Rutherford, N.J.

Filed Nov. 18, 1977, Ser. No. 852,954

Int. Cl.^{2} G08C *15/00;* H04B *3/56;* H04Q *5/00*

U.S. Cl. 340—211 **19 Claims**



10. A telemetry system for monitoring the physiological condition of patients having transmitters for generating rf signals corresponding to a physiological condition, comprising:

- a plurality of antenna assemblies, each of said assemblies including at least one passive reception element for receiving rf signals, first amplifying means for amplifying the rf signals received by the reception element, and combining means for combining rf signals which have been amplified by said first amplifying means with rf signals from another antenna assembly;
- each of said antenna assemblies being connected in series by means of cables connecting respective inputs and outputs of the combining means of the respective antenna assemblies;
- a receiver connected to the output of the combining means of one of the antenna assemblies; and
- a power supply means connected to the output of the combining means of one of said antenna assemblies such that the required operating voltage for each of the series connected antenna assemblies is provided by said power source via the cables connecting the respective combining means.

4,194,180

APPARATUS FOR REGISTERING QUANTITY VALUES OF CORRESPONDING VOLUME OR ENERGY QUANTITIES BY MEANS OF COUNTERS IN A CENTRAL STATION

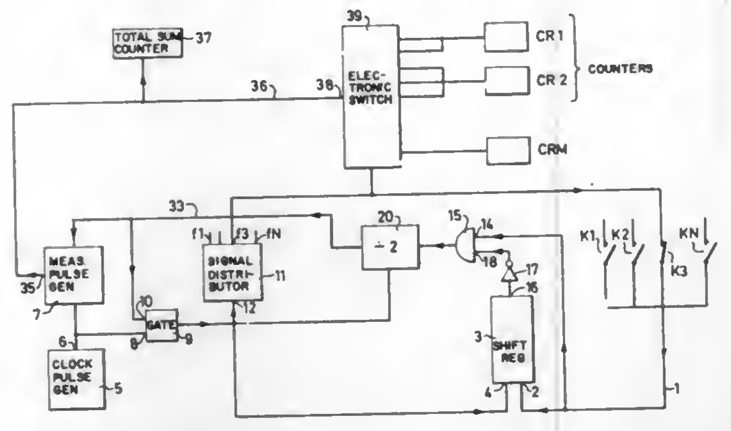
Kjell S. Norén, Stockholm, and Stig I. Karlsson, Karlskrona, both of Sweden, assignors to AB Svensk Varmematning SVM, Bromma, Sweden

Filed Jul. 27, 1977, Ser. No. 819,439

Claims priority, application Sweden, Jul. 30, 1976, 7608653

Int. Cl.^{2} G08C *15/06, 19/16, 25/00;* H04Q *9/00*

U.S. Cl. 340—183 **9 Claims**



1. Apparatus for registering, by means of counters (CR1–CRN) in a central station, quantity values of corresponding volume or energy quantities measured at consumption points distant from the station, each consumption point being allocated a measuring device with a signal transmitter (K1–KN) arranged so that when said volume or energy quantity is measured the signal transmitter is put into an active state for transmitting a signal to an associated counter, said apparatus being characterized by a distributing device (11) stepwise controlled by clock-pulses from a clock-pulse generator (5), the device having a working revolution time equal to or less than the time each signal transmitter is in an active state, and arranged for connection to the signal transmitters (K1–KN) in turn, so that when a signal transmitter in the active state is acquired, the transmitter produces an order signal to a memory device (3), the order signal ordering the memory to transmit a memory signal which is stored in the memory, the memory device being arranged to store the order signal on receiving it and to transmit a memory signal indicating the state of the memory, the memory signal corresponding to the state of the activated signal transmitter at the time when it was last acquired by the distributing device; by a gate circuit means (15; 44) arranged to receive the order signal from the acquired signal transmitter and the memory signal transmitter by the memory device, and that if the signals indicate that the signal transmitter was in an unactivated state at the previous time that the signal transmitter was acquired by the distributing device and is then in the activated state, to generate a start signal to a measurement pulse generator (7; 57) for transmitting a measurement signal, and a stop signal to the distributing device (11) to retain it in its set position (f1–fN) corresponding to the address of the activated signal transmitter; and by a switching means (39; 49, 50) arranged to connect, in response to an address signal from the distributing device (11) corresponding to the set position of the distributing device, the counter associated with the activated signal transmitter for receiving said measurement signal from the measurement pulse generator (7; 57).

4,194,181

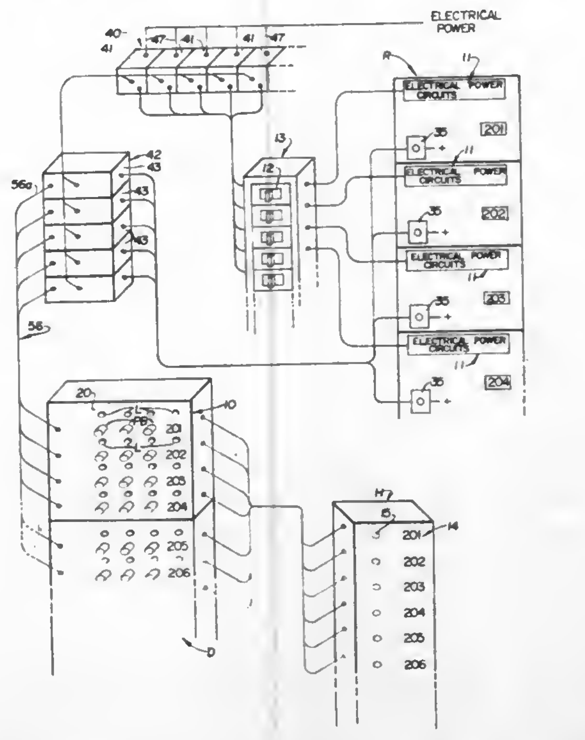
HOTEL ROOM STATUS MONITOR AND POWER CONTROL SYSTEM

Bert W. Brundage, Columbus, Ohio, assignor to Efficiency Systems, Inc., Grove City, Ohio

Filed Nov. 28, 1977, Ser. No. 855,184

Int. Cl.^{2} G08B *5/00*

U.S. Cl. 340—286 R **8 Claims**



1. A hotel room status monitor and power control system for a hotel having a desk clerk station and a plurality of guest room units with each room unit having an electrical power circuit; the system comprising

- room power switch means interposed in circuit with an electrical power circuit of each respective room unit and an electrical power source, said switch means responsive to application of a switch control signal thereto to alternatively effect connection or disconnection of said power circuit with respect to the electrical power source,
- respective room input signal means located within each room unit, each of said signal means selectively operable to provide a room input control signal,
- control circuit means connected with said room power switch means and said room input signal means for each respective room unit, said control circuit means including room status indicating means located at the desk clerk station for providing indications of a plurality of room status conditions and first and second electrical switch means which are each selectively operable to provide respective first and second input switch signals to said control circuit means, said control circuit means responsive to the application thereto of first and second input switch signals and room input control signals to effect operation of said room status indicating means in providing an indication of a selected one of the plurality of room status conditions and to provide a switch control signal to said room power switch means to effect either connection or disconnection of said power circuit in accordance with a predetermined relationship to the selected room status condition.

4,194,182

ELECTRICAL SWITCH CONTROLLABLE ALTERNATIVELY BY AN INTERNAL TIMER AND BY DIGITAL INFORMATION FROM A REMOTE SOURCE

James L. Martin, 4985 Dalton Dr., Ellicott City, Md. 21045

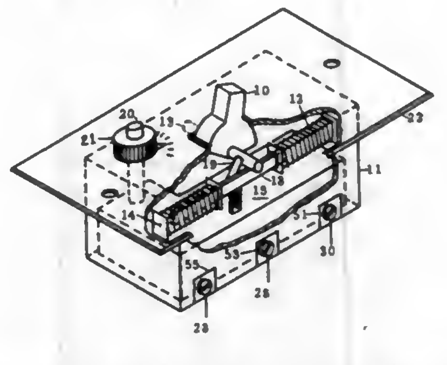
Filed Aug. 23, 1977, Ser. No. 827,095

Int. Cl.^{2} H04Q *11/04;* H01H *43/02*

U.S. Cl. 340—310 R **9 Claims**

1. An automatically controlled electric switch adapted to be received within a wall-mounted switch body joined by electrical wiring to a source of alternating current, said switch comprising:

- switching means;
- a receiver responsive to digitally coded electrical information transmitted from a remote location via the electrical wiring and superimposed on the alternating current for producing an electrical signal;



- means operatively related to the receiver and said switching means for actuating the switching means in response to said signal; and
- means for operating the switching means manually from outside the switch body.

4,194,183

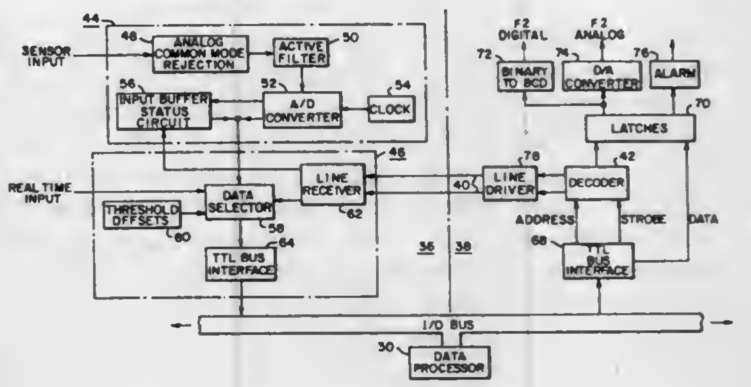
APPARATUS FOR ELECTRICALLY CONVERTING AN ANALOG SIGNAL INTO A DIGITAL REPRESENTATION

James A. Neuner, Gibsonia; Charles W. Einolf, Jr., and Andras I. Szabo, both of Export, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 8, 1974, Ser. No. 522,190

Int. Cl.^{2} H03K *13/02*

U.S. Cl. 340—347 AD **1 Claim**



1. Apparatus for electrically communicating information embodied in an analog signal generated at a first location to a remote second location, which maximizes noise rejection including:

- an analog to digital converter situated at the first location and operable to sample the analog signal with a periodicity equal to an integral number of cycles of the power line to provide an electrical digital output representative of the samples taken;
- means for transmitting the digital output to the second remote location;
- a summing unit electrically responsive to the digital output at the second remote location to maintain a running digital sum of the samples taken and responsive to a reset input to transmit the digital sum and clear the sum from the unit;
- means for digitally shifting the transmitted sum and dropping the least significant bit;
- a random access memory responsive to the transmitted sum to store all but the least significant bits of the sum that were dropped in a corresponding memory location;
- a first counter operable to cycle through its respective output states with the same periodicity as that of the samples taken;
- a decoder responsive to a given output state of the first

counter to provide an output which is communicated to the reset input of the summing unit and a strobe input on the random access memory which readies the random access memory to accept the transmitted sum; and

a second counter responsive to the respective decoder outputs to cycle through its corresponding output states which are communicated to the random access memory to identify the location within the random access memory the transmitted sum is to assume.

4,194,184
BIDIRECTIONAL DIGITAL POSITION ENCODER

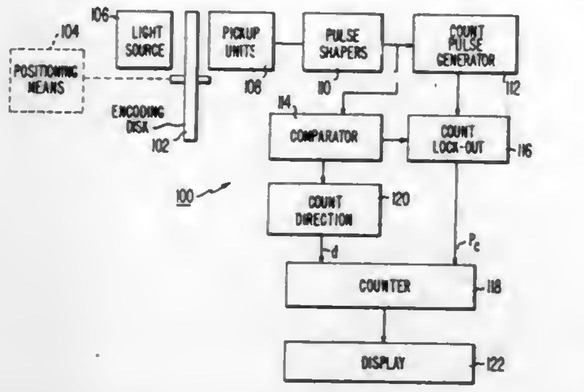
John C. Hartmann, Cedar Grove, and Nicholas F. Maxemchuk, Mercerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 15, 1977, Ser. No. 788,036

Claims priority, application United Kingdom, Apr. 30, 1976, 17962/76

Int. Cl.^{2} H03K *13/00*

U.S. Cl. 340—347 P **8 Claims**



1. A bidirectional incremental digital encoder comprising:

a member moveable in first and second directions,

at least two digitally encoded tracks on the member, said tracks forming together first and second different sequential periodic digital codes, each code corresponding to a separate, different one of said directions and having a given encoded value in each period, said tracks forming together a third periodic code whose value remains substantially unchanged in each period, each period corresponding to a given position of said member, said first and second codes shifting in value in next adjacent periods,

detecting means responsive to the sequence of shift in values of said first and second codes for producing a direction signal corresponding to the movement direction of said member and responsive to said third code for producing a count signal corresponding to the number of periods traversed by said member,

count means responsive to said direction signal and said count signal for providing a member position indicating signal, and

means responsive to the order in which the codes are sensed for causing said count means to disregard a second occurring count signal produced by the same code in succession.

4,194,185
DIGITIZING A RECURRING ANALOG SIGNAL

David W. Wilson, San Jose, Calif., assignor to Gould, Inc., Cleveland, Ohio

Filed Feb. 24, 1978, Ser. No. 881,060

Int. Cl.^{2} H03K *13/04*

U.S. Cl. 340—347 AD **13 Claims**

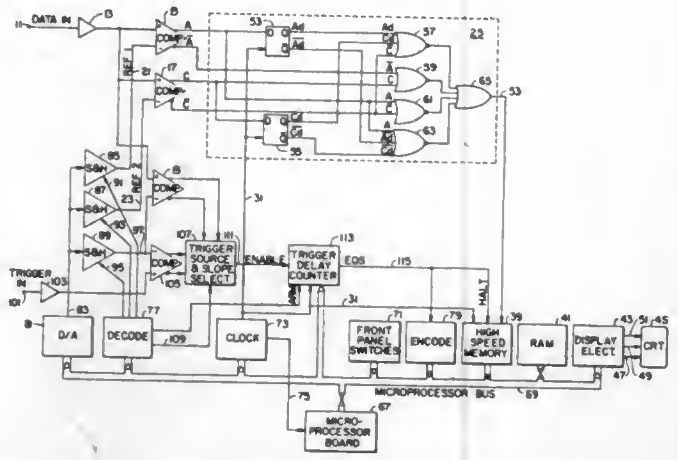
1. A method of digitizing a repetitive analog signal, comprising the steps of:

(a) establishing a first reference voltage level and selecting a first occurrence of said analog signal,

(b) comparing the signal level of said occurrence of said analog signal with said reference voltage level,

(c) developing at each of a plurality of instants during said occurrence of the analog signal a separate digital bit whose state is a function of the relative magnitudes of the reference voltage and the analog signal at each such instant,

(d) storing said digital bits, and



(e) repeating the steps (b) through (d) on each of a plurality of subsequent occurrences of the analog signal with a different reference voltage level during each occurrence, whereby all reference voltage levels of interest within the voltage range of the analog signal are covered.

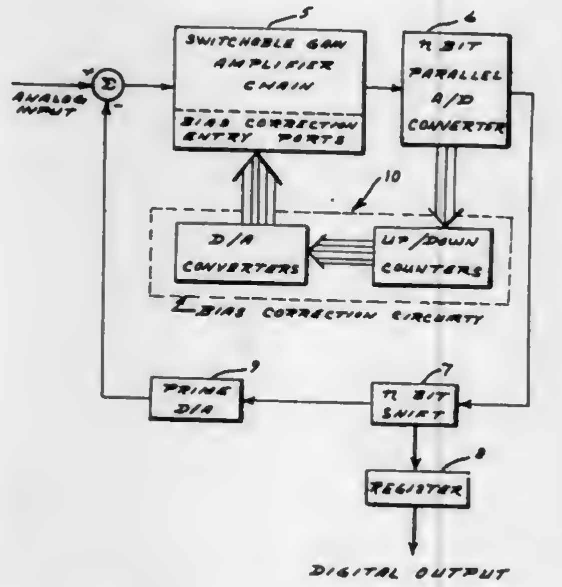
4,194,186
DIGITAL HYSTERESIS CIRCUIT

Steven Morrison, and Thomas K. Lisle, Jr., both of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 20, 1978, Ser. No. 898,067

Int. Cl.^{2} H03K *13/02*

U.S. Cl. 340—347 AD **2 Claims**



ANALOG INPUT
Σ
+
-
5
SWITCHABLE GAIN AMPLIFIER CHAIN
BIAS CORRECTION ENTRY PORTS
6
n BIT PARALLEL A/D CONVERTER
10
D/A CONVERTERS
UP/DOWN COUNTERS
BIAS CORRECTION CIRCUITRY
9
PRIME D/A
7
n BIT SHIFT
8
REGISTER
DIGITAL OUTPUT

1. In a successive ranged analog/digital converter having a switchable gain amplifier chain and an n bit parallel analog/-digital converter, the improvement of an automatic bias adjustment circuit with hunting elimination means, said automatic bias adjustment circuit comprising

a first up/down counter means for counting between extremum states in response to enable and up/down input signals and having a pre-set state intermediate said extremum states, said first up/down counter means generating an enable output pulse and a reset pulse for each extremum state count,

means for re-setting said first up/down counter means to said pre-set state in response to each said reset pulse,

a second up/down counter means receiving enable pulses from said first up/down counter means,

digital/analog converter means driven by said second up/-down counter means and providing bias correction signals in response thereto,

a logic circuit for developing from said n bit parallel analog/digital converter first and second logic functions, said logic functions defining a given sub-range, and

up/down counter actuating means receiving said first and second logic functions and clock signals, said actuating means enabling said first up/down counter means in response to said first logic function and effecting counting thereby in a direction dictated by the state of said second logic function.

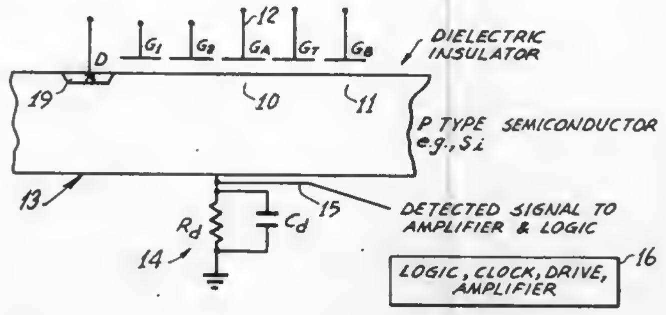
4,194,187
ANALOG-TO-DIGITAL CONVERSION BY CHARGE COUPLED DEVICE

William B. Glendinning, Red Bank, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1978, Ser. No. 931,638

Int. Cl.^{2} H03K *13/02*

U.S. Cl. 340—347 AD **10 Claims**



12
D
G_1
G_2
G_A
G_T
G_B
DIELECTRIC INSULATOR
19
10
11
P TYPE SEMICONDUCTOR e.g., Si
13
15
R_d
C_d
14
DETECTED SIGNAL TO AMPLIFIER & LOGIC
LOGIC, CLOCK, DRIVE, AMPLIFIER
16

1. An analog-to-digital converter which is an integrated circuit charge coupled device having a substrate and a pair of charge packet potential wells comprising a first well and a second well for converting an analog signal to an M-bit binary code, said wells having first and second holding gates respectively;

input means to insert charge packets representing analog values of samples of the input analog signal into said first well;

transfer means including a transfer gate to transfer charge packets from the first well to the second well and from the second well to the first well;

substrate detection means for output of "one" or "zero" values for the M-bits of each sample

control means comprising logic, drive, and clock circuits coupled to said holding gates, to said input means, to said transfer gate, and to said detection means, with the clock circuits providing clock signals in repetitive cycles to convert one sample per cycle, each cycle being divided into an input subcycle plus M conversion subcycles of three phases each; the conversion subcycles being designated by the sumbol K, with the first conversion subcycle having $K=M$, the second $K=M-1$, and K decreasing by 1 until its value is 1 for the Mth conversion subcycle;

the converter being operative during the first conversion subcycle following the input subcycle to place a voltage of (2^m-1) units (the voltage units being of a fixed predetermined value) on both of said holding gates during the first and second clock phases and a voltage of $(2^{m-1}-1)$ units during the third clock phase, and to place a voltage of (2^m-1) units on the transfer gate during the second clock phase, so that the full analog charge packet representing the input sample is in the first well during the first clock phase, and any charge in excess of (2^{m-1}) is transferred to the second well during the second clock phase, then during the third clock phase said detection means is actuated to detect whether the first well has a charge in excess of $(2^{m-1}-1)$ to output a "one" or otherwise to output a "zero";

the converter being further operative during subsequent conversion subcycles to place a voltage of $(2^{k-1}-1)$ units on both of said holding gates during the first and second clock phases and a voltage of $(2^{K-1}-1)$ units during the third clock phase, except that if the bit output in the preceding subcycle was a "one" then the voltage on the holding gate is changed to zero during the first clock phase for that well which produced the output signal to dissipate its charge into the substrate, so that at the end of the first clock phase only one well of said pair contains a charge packet, and any charge in excess of (2^{k-1}) is transferred to the other well during the second clock phase, then during the third clock phase said detection means is actuated to detect whether said one well has a charge in excess of $(2^{k-1}-1)$ to output a "one" or otherwise to output a "zero".

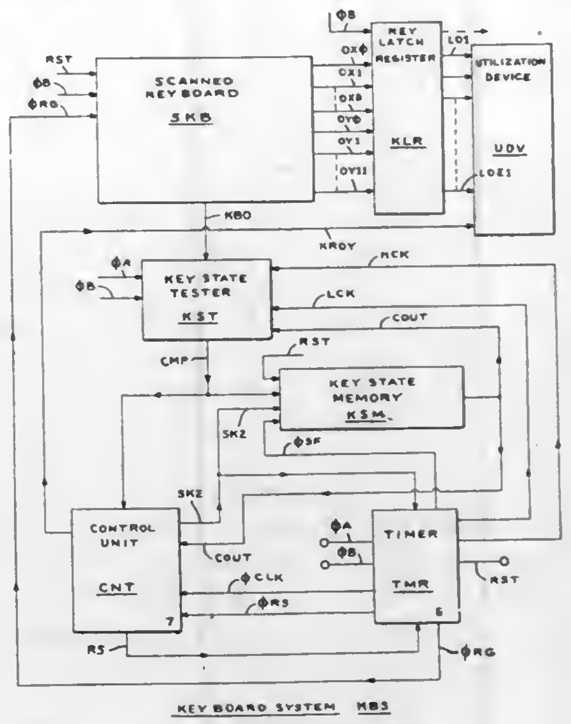
4,194,188
INTERROGATION OF KEY SWITCHES USING PULSE WIDTH DETECTION

Francis C. Marino, Dix Hills, and Morton B. Herman, Queens Village, both of N.Y., assignors to Redactron Corporation, Hauppauge, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,526

Int. Cl.^{2} G08C *25/00;* G06F *3/02*

U.S. Cl. 340—365 E **15 Claims**



12. A keyboard system comprising: a plurality of key switch means, each of said key switch means having a movable key, an input adapted to receive sampling pulses of a first given width, an output for emitting pulses of different widths and pulse-width modulating means connected to said movable key and connecting said input to said output for transmitting a pulse to said output in response to a pulse received at said input, the emitted pulse having a width which is a function of the travel of said movable key; a pulse generator means emiting a single sampling pulse to the input of each of said key switch means sequentially; low sensing means connected to the output of each of said key switch means for giving a low-key indication whenever a pulse having a width greater than a second given width which is less than said first given width is emitted from the output of the key switch means whose input is then receiving a pulse of said first given width from said pulse generator means; stalling means responsive to said low-key indication for stalling said pulse generator means on the input of the key switch means whose output activated said low sensing means whereby pulses of said first given width are continuously fed to said input; delay means responsive to said low-key indication for deactivating said stalling means for a given time interval which is a multiple of said first given width, after the activation of said stalling means whereby said pulse generator resumes emitting a single pulse to the input of each of said key switch means sequentially; and indicating means responsive to said

delay means for emitting a depressed-key indication that a key switch has reliably operated if a low key indication is received at the end of said given time interval.

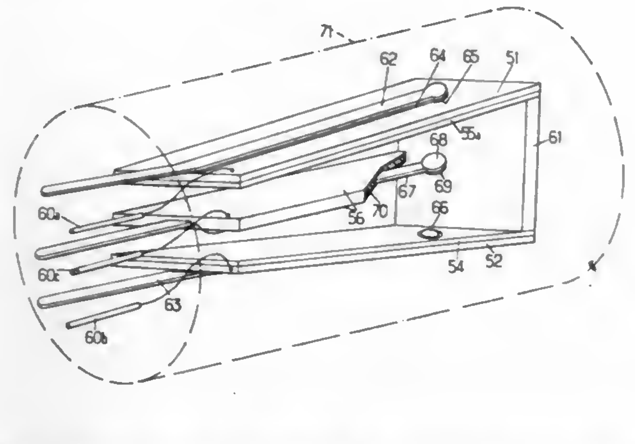
4,194,189
CONTROL DEVICES OF THE RELAY TYPE
Jacques Lewiner, Saint-Cloud; Gerard Dreyfus, Villebon sur Yvette, and Didier Perino, Suresnes, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Mar. 29, 1978, Ser. No. 891,466

Claims priority, application France, Apr. 5, 1977, 77 10323

Int. Cl.² G08B *5/00*

U.S. Cl. 340—373 **11 Claims**



1. In a control device having at least two elements including two control electrodes, one of said elements comprising a mobile element, moving in response to electric signals between first and second positions, and means for supplying electric control signals to said electrodes, the improvement wherein there are provided at least two electrets, one of said electrets carried by one of said fixed elements and another of said electrets carried by another of said elements, either fixed or mobile.

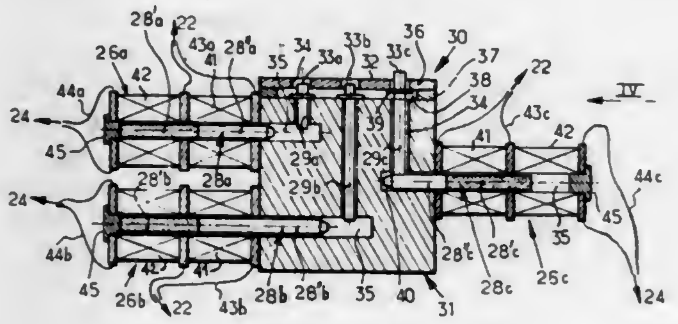
4,194,190
ARRANGEMENT FOR CONVERTING DIGITAL SIGNALS REPRESENTING CHARACTERS INTO A SELF-LOCKING DOT REPRESENTATION
Alain Bareau, Les Ponts de Ce, France, assignor to Compagnie International pour l'Informatique C11-Honeywell Bull (Societe Anonyme), Paris, France

Filed Oct. 17, 1978, Ser. No. 952,079

Claims priority, application France, Oct. 11, 1977, 77 34053

Int. Cl.² G09B *21/00*

U.S. Cl. 340—407 **12 Claims**



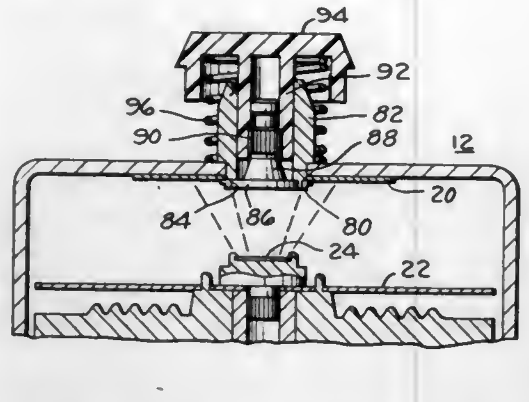
1. Apparatus for converting digital electrical signals representing characters into a particular pattern of dots symbolizing each of the said characters which pattern of dots project from a given surface of a module and which pattern of dots are selected from a given number of dots in a predetermined grid, comprising at least one group of stems having first ends arranged to form the said given number of dots in a predetermined grid, a plurality of coil means supported to said module and responsive to the said electrical signals to cause said stems to project, selectively from the said given surface, said module having a plurality of wells and a plurality of cavities, each of the said stems being mounted to slide in an associated well which opens substantially orthogonally into an associated cavity, a plurality of plunger cores each being disposed to slide in an associated cavity, each plunger core having a first end adapted to be subjected to a magnetic write flux which propels the said plunger core in a given direction and to a magnetic clearing flux which moves said plunger core in the opposite direction, said fluxes being generated respectively by at least one of the said coils in response to the said electrical signals and a clearing signal respectively, and each plunger core having a second end cooperating with the second end of the associated stem to cause the stem to be raised so that its first end projects above the given surface of the module in response to the said magnetic write flux, and to maintain said first end projecting until the said first end of said plunger core is subjected to a clearing flux.

4,194,191
SMOKE SIMULATING TEST APPARATUS FOR SMOKE DETECTORS
Robert J. Salem, Danbury, Conn., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 630,204, Nov. 10, 1975, abandoned. This application Feb. 1, 1978, Ser. No. 874,363

Int. Cl.² G08B *29/00, 17/10*

U.S. Cl. 340—515 **7 Claims**



1. A smoke detector of the ionization type comprising:

a measuring chamber having an interior substantially freely accessible to airborne products of combustion,

first and second spaced-apart electrodes within said measuring chamber,

a source of alpha radiation for ionizing air between said first and second electrodes such that current flows between said electrodes when appropriate voltage is applied across said first and second electrodes,

alarm means coupled to said measuring chamber for producing an alarm signal when the electrical resistance of said measuring chamber is consistent with the presence within said measuring chamber of a predetermined level of airborne products of combustion, and

test apparatus comprising:

- intercepting means within said measuring chamber movable between a first neutral position and a second position closer to said source of alpha radiation for intercepting alpha particles, said intercepting means being separate from said source of alpha radiation and being electrically insulated from each of said first and second electrodes at least when said intercepting means is in said second position, and
- manually operable means coupled to said intercepting means for moving said intercepting means between said first and second positions to increase the electrical resistance between said first and second electrodes,
- the size of said intercepting means and the location of said second position being such that the electrical resistance between said first and second electrodes when said intercepting means is in said second position is substantially identical to the electrical resistance between said first and second electrodes when said intercepting means is in said first position and said predetermined level of airborne products of combustion is present within said measuring chamber,

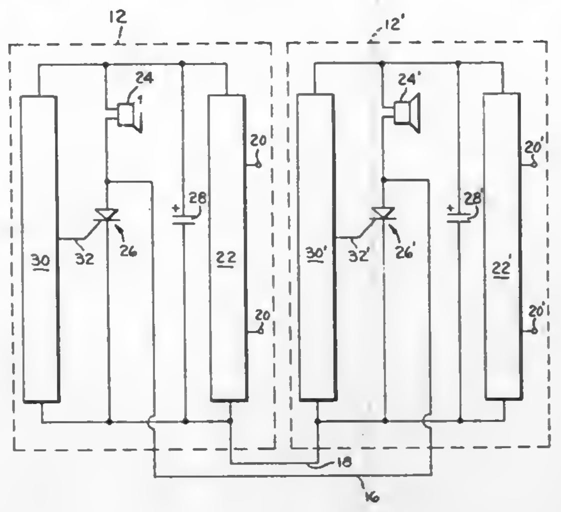
whereby the presence within said measuring chamber of said predetermined level of airborne products of combustion may be simulated by moving said intercepting means to said second position so as to test the responsiveness of said alarm means.

4,194,192
ALARM DEVICES FOR INTERCONNECTED MULTI-DEVICE SYSTEMS
Harry Albinger, Jr., Monroe, Conn., assignor to General Electric Company, New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,514

Int. Cl.² G08B *17/10, 23/00, 3/10*

U.S. Cl. 340—517 **9 Claims**



1. An alarm device adapted for use in a multidevice alarm system, said alarm device comprising:

terminal means for connection to a source of electric power;

an alarm circuit coupled to said terminal means, said alarm circuit comprising normally conductive alarm means connected in series with normally non-conductive (OFF) switching means;

energy storage means coupled to said terminal means, said energy storage means connected in series with said alarm circuit and said energy storage means having sufficient electrical energy storage capacity to operate said alarm means for a discernable period of time;

control means coupled to said terminal means and said switching means for sensing an adverse condition and supplying an output signal to said switching means in response thereto, said switching means switching to a conductive state (ON) only while an output signal is supplied thereto; and

circuit means connected to said switching means for permitting the interconnection of said switching means in parallel with the switching means of one or more other alarm devices such that a source of electric power connected to the terminal means of at least one interconnected alarm device will charge the energy storage means of all of the interconnected alarm devices, whereby the alarm means of all of the interconnected alarm devices will operate in response to the sensing of an adverse condition by any one of the inter-connected alarm devices.

4,194,193
SELF-CONTAINED DOOR ALARM DEVICE
Larry McDonough, 529 E. Florence, West Covina, Calif. 91790

Filed Nov. 25, 1977, Ser. No. 854,646

Int. Cl.² G08B *13/08*

U.S. Cl. 340—545 **12 Claims**

1. A self-contained alarm device, adapted to provide an audible signal upon the opening of a door, comprising:

enclosure means comprising a mounting plate adapted to be secured to the door frame above said door,

a DC power source, secured within said enclosure,

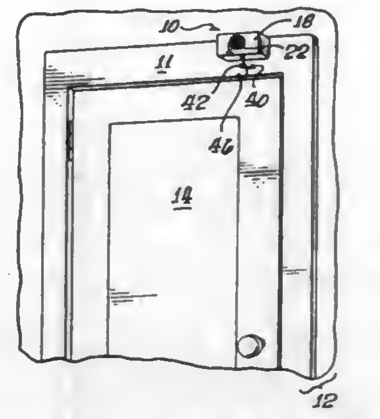
an electrically powered sound signal source for said audible signal, adapted to be powered from said DC power source and connected thereto by means of an electrically conducting path,

a switch in said conducting path adapted to interrupt current flow in said path with the door in a closed position,

said switch comprising an electrically conductive planar element proximate to, and insulated from, the inner face of said enclosure at the basal surface thereof,

coaxial orifices in said conductive element and said basal surface, with the orifice in the latter increased in size with respect to the orifice in the former,

a cantilevered conductor depending from a fixed anchor within said enclosure and passing through said orifices in an alignment spaced from the peripheries thereof in an unloaded state, and



actuator means for said switch responsive to movement of said door toward an open position, and comprising cam means affixed to said cantilevered conductor, further depending from said enclosure and adapted to be entrained by said door upon the movement thereof toward said cam into said open position,

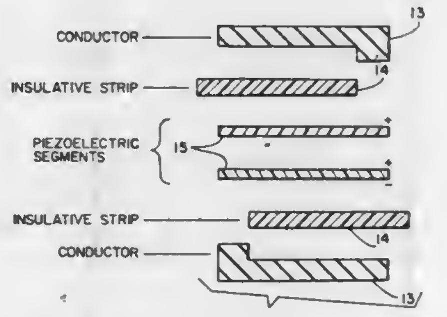
wherein one leg of said conductive path is terminated at said conductive element and one leg is terminated at said anchor, thereby allowing current flow in said path when said cam means is entrained by the door and said cantilevered conductor is deflected against the perimeter of said orifice in said conductive element.

4,194,194
PIEZOELECTRIC VIBRATION DETECTOR FOR SENSING A NEARBY INTRUDER
John T. Redfern, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 30, 1978, Ser. No. 873,200

Int. Cl.² G08B *13/00;* **H01L** *41/10;* **H04R** *17/00*

U.S. Cl. 340—566 **2 Claims**



1. An apparatus for sensing a mechanical vibration which is representative of a nearby intruder comprising:

an elongated sheath;

a pair of top and bottom elongated conductors located within the sheath and extending therealong in a vertically spaced apart relationship;

- a layer of segments of piezoelectric film mounted in a longitudinally spaced apart relationship between said pair of conductors;
- a strip of insulative material mounted between the top conductor and a top side of each piezoelectric segment, and another strip of insulative material mounted between the bottom conductor and the bottom side of each piezoelectric segment;
- the strips of insulative material being offset from opposite edges of the layer of piezoelectric segments;
- each conductor having an inwardly extending projection within the respective offset of insulative material to electrically connect with respective top and bottom portions of each piezoelectric segment; and
- the piezoelectric segments being arranged in an alternately polarized relationship along the sheath,
- whereby nearby vibrations of an intruder will activate the closest piezoelectric segment to cause a signal on the conductors while distant vibrations will be nullified.

4,194,195

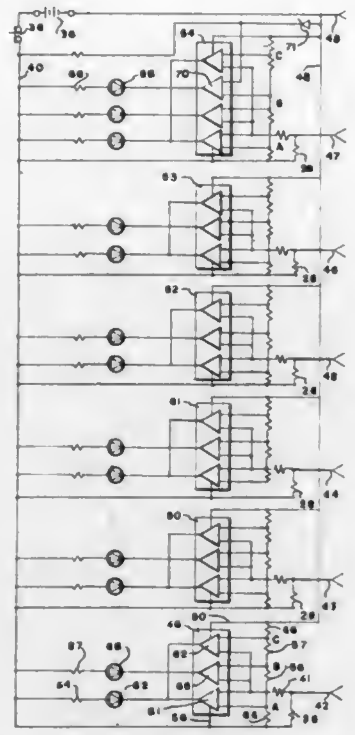
PORTABLE LIQUID LEVEL MAINTENANCE MONITOR SYSTEM FOR VEHICLES

Kenneth C. Merrell, Brea, and James H. Koegel, Placentia, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 27, 1978, Ser. No. 872,898

Int. Cl.² B60T ***8/00***

U.S. Cl. 340—661 **10 Claims**



1. A monitoring circuit to detect changes in a sensed condition which comprises:
- (1) a constant voltage source;
- (2) a voltage divider in circuit therewith to develop at least three reference, constant voltage signals of distinct and predetermined values at each of at least three reference voltage terminals,
- (3) sensor circuit means to generate a condition responsive voltage signal of predetermined value for each of at least four conditions at a sensor voltage terminal;
- (4) at least three voltage comparator means, each having an output terminal and a pair of inputs, one in circuit to a respective one of said reference voltage terminals and the other to said sensor voltage terminal; and
- (5) at least two output circuit means including respective indicators, one indicator in circuit to the output terminal of two of said voltage comparator means and the remaining indicators each in circuit to respective single output the output terminal of a respective one of the remaining voltage comparator means.

4,194,196

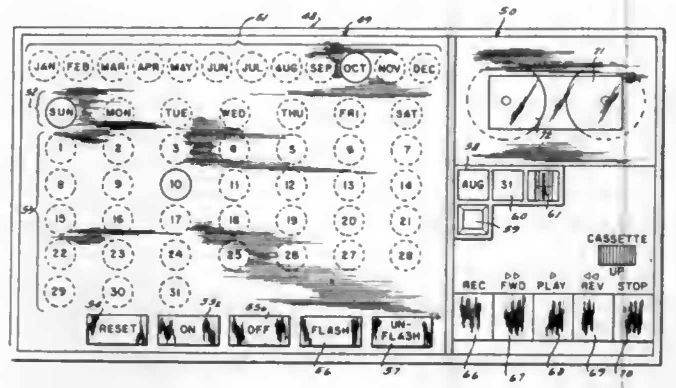
ILLUMINATED MASTER CALENDAR AND MESSAGE RECORDING SYSTEM

Mohammed S. Mohiuddin, 920 W. Lakeside, Apt. 1511, Chicago, Ill. 60640

Filed Oct. 25, 1977, Ser. No. 845,047

Int. Cl.² G06F ***3/14***

U.S. Cl. 340—711 **9 Claims**



1. An illuminated master calendar comprising:
- (a) a wall mounting housing having a depth of less than two inches;
- (b) a front panel for the housing;
- (c) a plurality of momentary contact touch sensitive switches arranged in a 5 row and 7 column monthly calendar format on the front panel with indicia at each switch location for indicating each of the days of a month;
- (d) a plurality of momentary contact touch sensitive switches arranged in a horizontal row on the front panel with indicia at each switch location for indicating each of the months of a year, and an additional horizontal row of touch sensitive switches with indicia at each switch location for indicating days of the week in alignment with the 7 columns of the calendar format;
- (e) a reset switch on the front panel;
- (f) illuminator means directly at each switch for illuminating only the associated indicia directly at the switch;
- (g) circuit means for illuminating the illumination means when the corresponding switch is touched and maintaining the illumination after the switch is released; and
- (h) reset circuit means connected to said reset switch for controlling said circuit means so as to extinguish all illuminated illumination means and prepare each of said illumination means for reactivation by corresponding touch sensitive switches.

4,194,197

AUTOMATIC CENTERING OF CHARACTER STRINGS

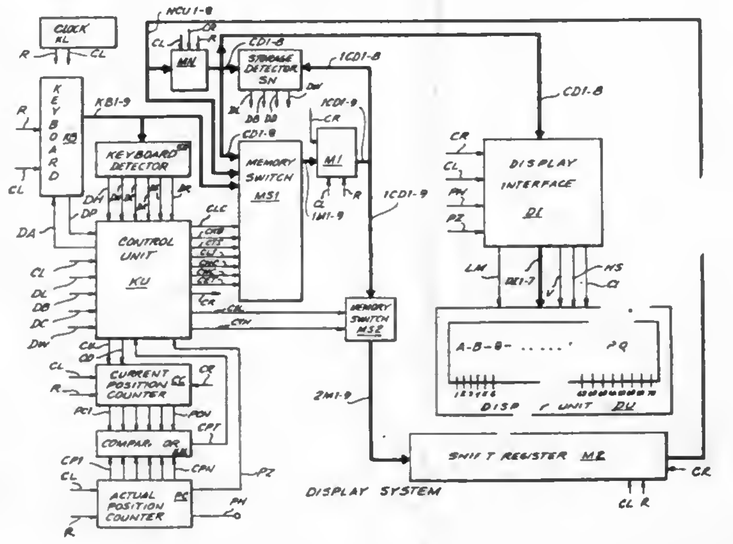
Leslie J. Bodin, Stonybrook, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 832,280, Sep. 12, 1977, Pat. No. 4,139,902. This application Sep. 18, 1978, Ser. No. 943,049

Int. Cl.² G06K ***15/18***

U.S. Cl. 340—711 **3 Claims**

1. In a word processor wherein data characters entered serially via a keyboard are displayed by a display device serially in a plurality of positions along a line of a record medium, the method of centering a set of data characters about a particular point on the line of the record medium comprising: the steps of providing a storage medium having a plurality of addressed cells wherein the addresses continuously range from a first value to a second value; serially assigning the cells to the positions of the record medium; selecting the cell assigned to the position which includes the particular point on the line; loading the first data character of the set in said cell; for all subsequent pairs of data characters of the set, loading one data character of the data character pair in the memory cell having an address one unit closer to said first value than the address of the memory cell in which the previous data character was loaded and for the other character of the pair, shifting the contents of each of the memory cells storing a loaded data character to the memory cell having an address one unit closer to said second value and loading said other character into the memory cell in which said one data character was loaded; and serially transmitting the contents of the loaded memory cells to said display device.



4,194,198

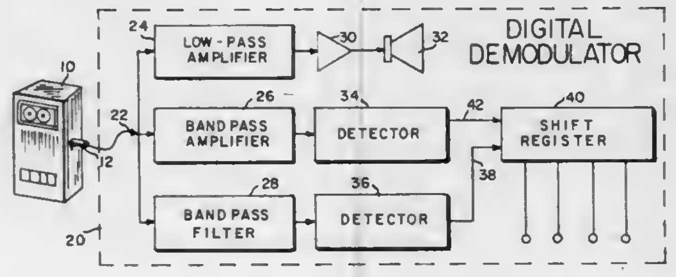
DIGITAL PREPROGRAMMED TELEVISION GAME SYSTEM

Ralph H. Baer, Manchester, and Leonard D. Cope, Nashua, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Continuation of Ser. No. 679,301, Apr. 22, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 922,451

Int. Cl.² G06K ***15/20***

U.S. Cl. 340—724 **25 Claims**



1. Apparatus for playing games on the screen of a television type receiver, comprising:
- at least one symbol generator for generating signals which when coupled to a television type receiver will display on the screen of the receiver a symbol which is moveable over the screen of the receiver to play games;
- a prerecorded audio frequency magnetic recording means having bits of binary coded digital data recorded thereon, said bits comprising instructions to affect the position of the symbol on the screen of the receiver; and
- a demodulator coupled to said prerecorded audio frequency recording means having a plurality of outputs coupled to said symbol generator, each of said outputs providing instruction regarding a different positioning of the symbol on the screen of the receiver.

4,194,199

DISPLAY APPARATUS

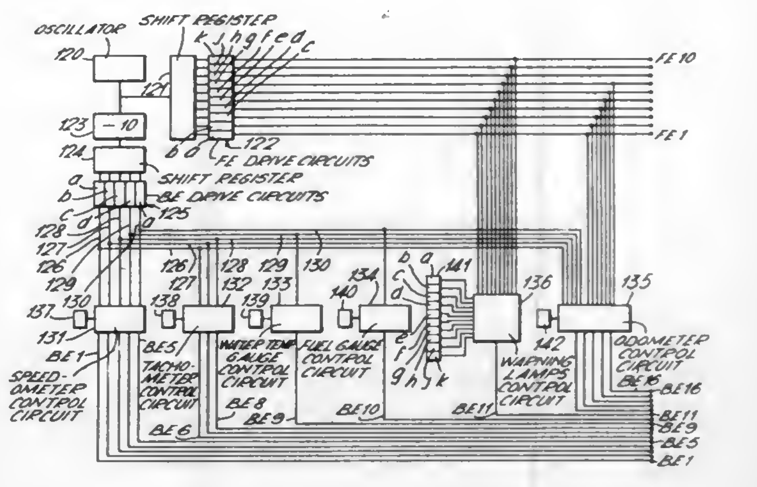
Brian Shepherd, Witney, and Richard N. Thomas, Weybridge, both of England, assignors to Smiths Industries Limited, London, England

Filed Apr. 4, 1977, Ser. No. 784,304

Claims priority, application United Kingdom, Apr. 6, 1976, 13987/76

Int. Cl.² G06F ***3/14***

U.S. Cl. 340—754 **17 Claims**


OSCILLATOR
SHIFT REGISTER
FE DRIVE CIRCUITS
SHIFT REGISTER
BE DRIVE CIRCUITS
SPEEDOMETER CONTROL CIRCUIT
TACHOMETER CONTROL CIRCUIT
WATER TEMP GAUGE CONTROL CIRCUIT
FUEL GAUGE CONTROL CIRCUIT
WARNING LAMPS CONTROL CIRCUIT
ODOMETER CONTROL CIRCUIT
FE 10
FE 1
BE 1
BE 5
BE 9
BE 11
BE 16

1. Display apparatus for simultaneously displaying the values of a plurality of different physical parameters, said apparatus having a plurality of electrically-operable display regions which are to be operated respectively in accordance with said different physical parameters to display respectively the values of those physical parameters, the said display regions each comprising a plurality of display sections disposed in spaced array, an electrode which is common to all display sections in that display region, and a plurality of individual electrodes defining individual and respective ones of the display sections in that display region, the electrodes of the said plurality of individual electrodes associated with the display region for one of said physical parameters being coupled to respective ones of the said plurality of individual electrodes associated with another display region for another one of said physical parameters to form respective groups of electrodes which respectively interconnect display sections associated with different ones of said plurality of physical parameters, and circuit means comprising first means for energizing the said groups of electrodes in a repeated fixed sequence and second means for energizing the said common electrodes in synchronism with the number of the repetition of said fixed sequence in a display cycle, said second means including a plurality of individual control means at least two of which are operable during each repetition of said fixed sequence, each of said control means being associated with a respective one of said plurality of physical parameters and being operable to control the energization of the common electrodes of the display region appropriate to that physical parameter in accordance with an input signal representative of the value of the physical parameter.

4,194,200

COMBINED RECEIVER PROTECTOR, AGC ATTENUATOR AND SENSITIVITY TIME CONTROL DEVICE

Harry Goldie, Randallstown, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 801,714, May 31, 1977, abandoned. This application Nov. 1, 1978, Ser. No. 956,704

Int. Cl.² G01S ***7/34***

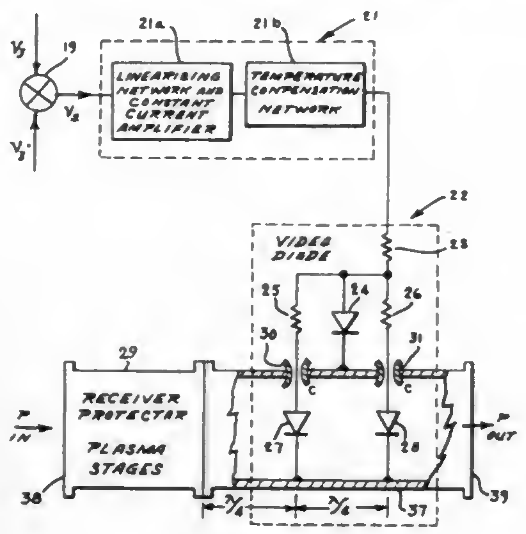
U.S. Cl. 343—5 SM **9 Claims**

1. In combination with a radar having various discrete system function command signals, a combined radar receiver protector and system function command signal implementing device comprising

a high power plasma stage,

a transmission line section connected thereto having microwave semiconductor diode means connected thereacross,

system function command signal linearizing means, and


LINEARIZING NETWORK AND CONSTANT CURRENT AMPLIFIER
TEMPERATURE COMPENSATION NETWORK
VIDEO DIODE
RECEIVER PROTECTOR PLASMA STAGES
IN
OUT

a video driver circuit connected to receive linearized system function command signals and bias said microwave semiconductor diode means in response thereto.

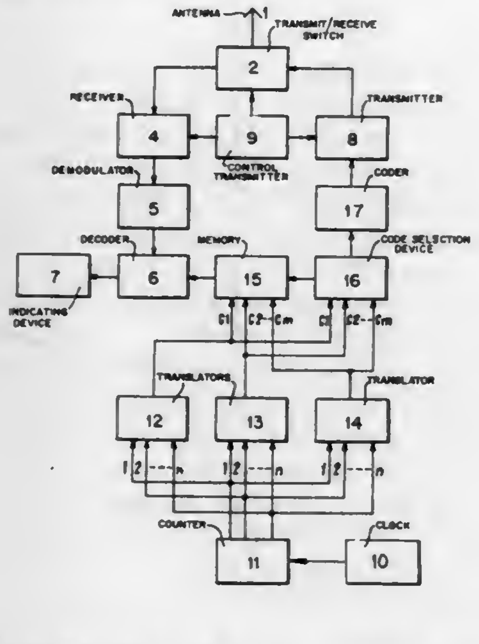
4,194,201
INTERROGATOR-RESPONSOR SYSTEM

Hans-Jürgen Stein, Eichenau, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 76,272, Sep. 23, 1970, abandoned. This application Jul. 23, 1973, Ser. No. 385,593

Int. Cl.² G01S *9/56*

U.S. Cl. 343—6.5 LC **5 Claims**



1. The combination of an interrogator which permits the transmission of different interrogation codes and at least one answering device which upon agreement with a previously received code transmits an answering signal, said interrogator having means for generating a plurality of different interrogation codes simultaneously, means for transmitting a number m of said codes in sequence, means for continuously changing the interrogator and answering codes according to a time distribution program, a memory in said interrogator for storing the code sequence transmitted to said answering device, said answering device reacting only to m-p of the transmitted interrogation codes, where $p \geqq 1$ and is an integer, means in said interrogator for receiving and decoding answering signals, said decoding means in the interrogator being connected to said memory for comparing the interrogator codes stored in said memory with the sequence of codes of the answering signal.

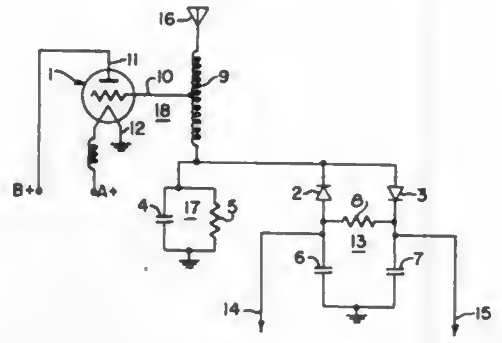
4,194,202
GRID PULSED OSCILLATOR AND DETECTOR

William E. Doyle, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 16, 1959, Ser. No. 840,479

Int. Cl.² F42C *13/04;* **G01S** *9/02*

U.S. Cl. 343—7 PF **5 Claims**



5. A pulse doppler proximity fuze comprising a self-pulsing oscillator for developing a series of radio frequency electromagnetic energy impulses, an antenna electrically connected to said oscillator for radiating said impulses into space and for intercepting reflected impulses thereby to effect a variation in the amplitude of said impulses, a pair of detectors electrically connected to the said oscillator circuit for developing an output signal in proportion to the energy of the said reflected signal during the peak amplitude of said impulse, a thyratron firing circuit said detectors having means for detecting spurious signals and target signals but utilizing only the target signals for firing the thyratron firing circuit; and an electroresponsive ignition device electrically coupled to the thyratron firing circuit, said device being ignitable upon actuation of the thyratron firing circuit by said target signal.

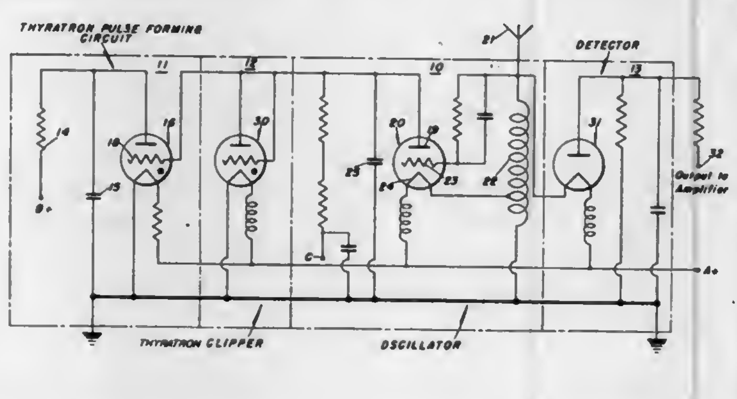
4,194,203
PULSE DOPPLER-RADIO PROXIMITY FUZE

John H. Kuck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 14, 1951, Ser. No. 210,851

Int. Cl.² F42C *13/04*

U.S. Cl. 343—7 PF **3 Claims**



1. A radio proximity fuze comprising, an oscillator for generating radio frequency waves, an antenna for propagating said generated waves through space and for receiving waves reflected from a target and propagated through space toward said antenna, a detector for rectifying said generated waves and said received waves, an output connection to said detector for utilizing the detector output to fire said fuze, means for periodically supplying power to said radio frequency oscillator, said power means including a thyratron relaxation oscillator and a connection from said relaxation oscillator to said radio frequency oscillator, and means for rendering said detector insensitive to received waves during periods of non-operation of said oscillator whereby said fuze is afforded protection against jamming by remotely situated radio transmitters.

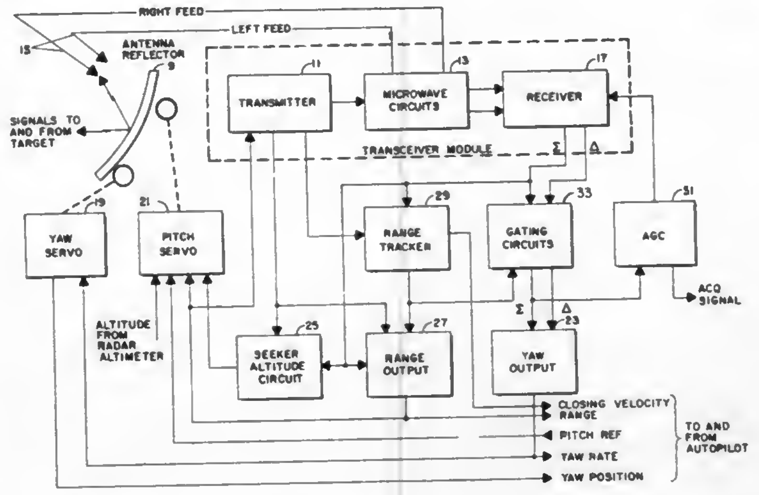
4,194,204
HIGH RESOLUTION MICROWAVE SEEKER

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 5, 1972, Ser. No. 260,703

Int. Cl.² G01S *9/22, 9/233*

U.S. Cl. 343—7.4 **8 Claims**



1. In a high resolution microwave seeker, the combination comprising:

(a) antenna means for transmitting and receiving microwave signals in the direction of a target of interest,

(b) microwave transceiver means coupled to said antenna means for supplying signals controlled in pulse width and frequency for transmission and for processing received signals to generate a normalized yaw control signal,

(c) yaw control circuit means coupled to said transceiver and to said antenna for controlling the aim point of said antenna in the yaw plane,

(d) pitch control circuit means including range and altitude circuit means coupled to said transceiver and to said antenna for controlling the aim point of said antenna in the pitch plane.

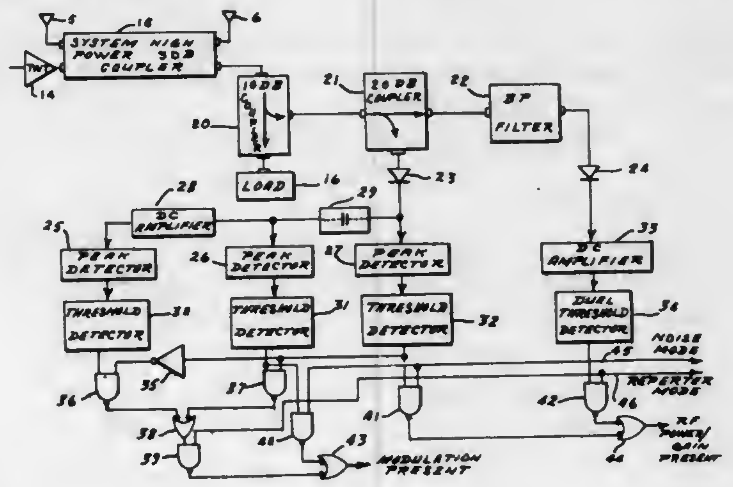
4,194,205
R.F. POWER AND VIDEO MODULATION MONITORING CIRCUIT FOR COUNTERMEASURES SYSTEM

Robert R. Willmore, Millersville, and William B. McCartney, Odenton, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 6, 1978, Ser. No. 868,969

Int. Cl.² G01S *7/38, 7/40;* **H04K** *3/00*

U.S. Cl. 343—17.7 **3 Claims**



1. In an electronic countermeasures system adapted to function in either a noise jamming mode or a repeater mode and in which the system is operated in frequency bands selected from a multiplicity of frequency bands the improvement comprising a system monitoring circuit, said monitoring circuit including

a first coupling means connected to couple a portion of the power from said countermeasures system,

a second coupling means having an input port and first and second output ports, said second coupling means being connected to receive power from said first coupling means,

a band pass filter having a band pass frequency centered on the center frequency of an unused system frequency band said filter being connected to receive the output of said second output port,

first and second crystal detectors, said first crystal detector being connected to receive the output of said first output port and said second crystal detector being connected to receive the filtered output of said band pass filter,

a peak detector,

a D.C. amplifier,

a threshold detector,

a dual threshold threshold detector,

first and second Nand gates,

an OR inverter gate,

a system noise jamming mode bus, and

a system repeater mode bus, said peak detector being connected to receive the output of said first crystal detector, said first mentioned threshold detector having its input connected to receive the output of said peak detector and its output connected to a first input of said first Nand gate, said DC amplifier being connected between said second crystal detector and said dual threshold threshold detector, the output of said duel threshold detector being connected to a first input of said second Nand gate, said system noise jamming mode bus being connected to a second input of said first Nand gate, said system repeater mode bus being connected to a second input of said second Nand gate, and the outputs of said first and second Nand gates being connected to first and second inputs of said OR inverter gate.

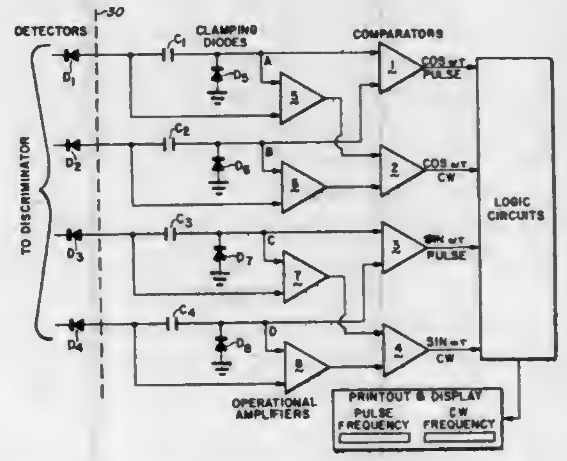
4,194,206
INSTANTANEOUS FREQUENCY MEASUREMENT (IFM) RECEIVER WITH CAPABILITY TO SEPARATE cw AND PULSED SIGNALS

James B. Y. Tsui, Centerville, and Gerd H. Schrick, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 22, 1978, Ser. No. 240

Int. Cl.² G01S *7/36*

U.S. Cl. 343—18 E **2 Claims**

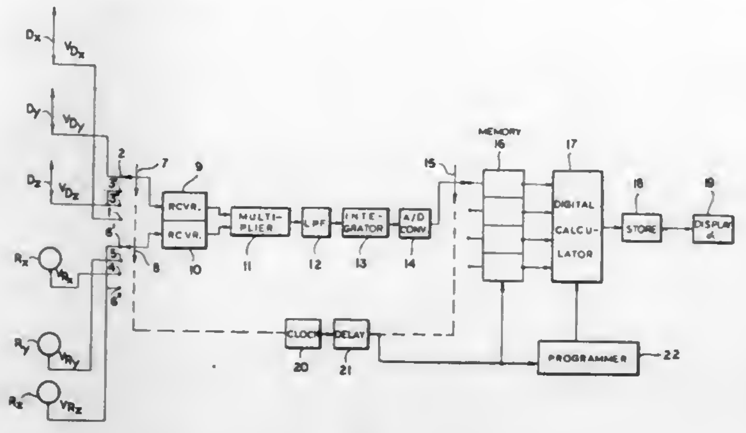


1. The improvement in an instantaneous frequency measurement (IFM) receiver to provide frequency measurement of simultaneously received pulse and continuous wave (cw) signals, the said receiver having receiving means including a phase discriminator and detectors providing outputs represented by $1+\cos\omega\tau$, $1-\cos\omega\tau$, $1+\sin\omega\tau$, and $1-\sin\omega\tau$ of the received signals, the said improvement comprising:

a. a first means cooperating with the outputs of the said diode detectors for providing a pulse signal path that

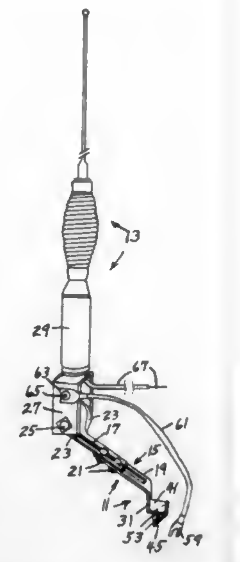
generates a first output signal represented by sin $\omega\tau$ of the said received pulse signals and a second output signal represented by cos $\omega\tau$ of the said received pulse signals:
b. a second means cooperating with the outputs of the said diode detectors for providing a cw signal path that generates a first output signal represented by sin $\omega\tau$ of the said received cw signal and a second output signal represented by cos $\omega\tau$ of the said received signal;
c. means cooperating with the said first and second output signal of the said first means and the said first and second output signal of the said second means for providing the said frequency of the said received pulse signal and the said frequency of the said simultaneously received cw signal.

4,194,207
RADIOLOCATION SYSTEM FOR DETERMINING THE DIRECTION OF INCIDENT ELECTROMAGNETIC WAVES
Hermann Zaüscher, Wörthsee, Fed. Rep. of Germany, assignor to C. Plath GmbH Nautisch Elektronische Technik, Hamburg, Fed. Rep. of Germany
Filed May 4, 1978, Ser. No. 902,821
Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720222
Int. Cl.² H04B *7/00*
U.S. Cl. 343—120 3 Claims



1. In a radiolocation system, in combination:
an antenna array adapted to intercept incident electromagnetic waves, said array comprising three loop antennas in mutually orthogonal planes and three dipole antennas extending along the intersections of said planes;
a first set of output terminals each connected to an individual dipole antenna of said array;
a second set of output terminals each connected to an individual loop antenna of said array;
a first and a second receiving channel;
first and second switch means for respectively connecting individual outputs of said first set to said first receiving channel and individual outputs of said second set to said second receiving channel;
scanning means for jointly operating said first and second switch means to connect said receiving channels to a multiplicity of different combinations of a loop antenna with a dipole antenna during successive phases of a recurrent cycle, thereby feeding a pair of analog output voltages from selected antennas to said channels in each of said phases;
multiplication means connected to said receiving channels for forming the product of said pair of output voltages in each phase, said multiplication means comprising a multiplier, a low-pass filter and an integrator in cascade;
a memory with a multiplicity of stages respectively assigned to said different combinations;
third switch means controlled by said scanning means for sequentially connecting said multiplication means to said stages, thereby loading same with the voltage products obtained in respective phases; and
arithmetic means connected to said memory for algebraically combining the voltage products loaded into said stages in each cycle to derive directional data therefrom.

4,194,208
SWINGABLE SUPPORT FOR CONCEALABLY MOUNTING ANTENNAS ON VEHICLES
Steven Eveloff, Springfield, Ill., assignor to Shur-Lok Manufacturing Co., Inc., Hutchins, Tex.
Filed Apr. 8, 1976, Ser. No. 674,957
Int. Cl.² H01Q *1/32*
U.S. Cl. 343—715 4 Claims



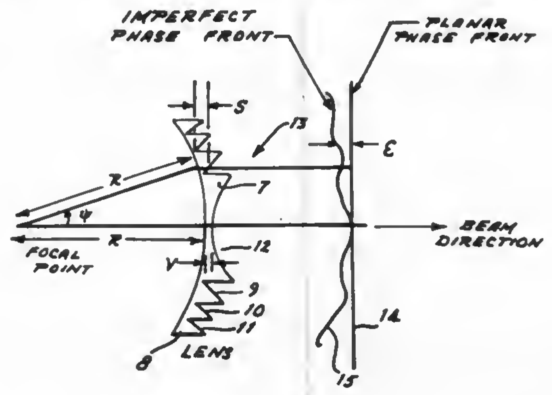
1. A support for concealably mounting an antenna to an automotive vehicle having a relatively large compartment with a readily movable closure, said support comprising: a stationary member adapted for semi-permanent interior concealed attachment to vehicle structure defining the access opening of said compartment, and a movable antenna-supporting member swingably connected to said stationary member, whereby said movable member and its attached antenna can be readily swung between an exposed normal-use position and a completely concealed under-cover non-use position, said stationary member being a relatively small plate mountable flatly on the top side of the bottom of a conventional rain-channel, and said movable member being an L-shaped strap whose upright reach is adapted to extend upwardly through the usual narrow gap between a compartment closure member and adjacent vehicle structure, and whose horizontal reach is hinged at its end edge to said stationary small plate.

4,194,209
BROADBAND WAVEGUIDE LENS ANTENNA AND METHOD OF FABRICATION
Charles B. Coulbourn, Jr., Rolling Hills Estates, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Dec. 30, 1977, Ser. No. 866,187
Int. Cl.² H01L *19/06*
U.S. Cl. 343—753 1 Claim

1. A broadband waveguide lens antenna having a multiplicity of spaced juxtaposed electromagnetic waveguide plates and having an aperture phase error characteristic

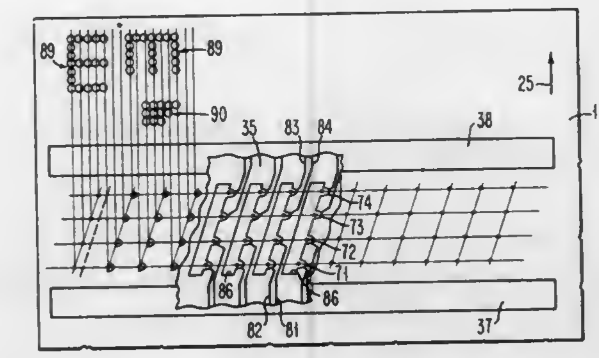
$$\epsilon = \left|\left[(S - V) - R(1 - \mathrm{Cos}\psi)\right] - \left[\eta(S - V)\right] + \left[J\lambda\right]\right| \frac{360}{\lambda} \text{ degrees,}$$

wherein R=focal length, ψ=angle at intersection of general ray and antenna axis, S=lens thickness at point of general ray passage, V=lens thickness along its axis, η=lens refractive axis, V=zone number, λ=free space wavelength, each waveguide plate being formed to have multiple steps, each said step defining a zone and being configured and dimensioned such that the componenets of phase error due to waveguide plate dispension ϵ_n is equal to and opposite the components of phase error due to waveguide plate geometric configuration ϵ_u for



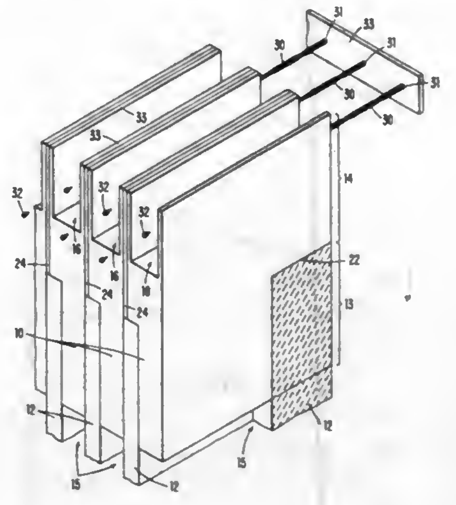
each said zone, ϵ_n being defined as $\epsilon_n=(S-V)(\eta_o-\eta)(360/\lambda)$ degrees, and ϵ_j being defined as $\epsilon_j(\lambda-\lambda_o)(360/\lambda)$ degrees, wherein η_o=lens refractive index at design frequency, and λ_o=freespace wavelength at the design frequency.

4,194,210
MULTI-NOZZLE INK JET PRINT HEAD APPARATUS
Konrad A. Krause, Mountain View, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 671,920, Mar. 29, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,299
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 8 Claims



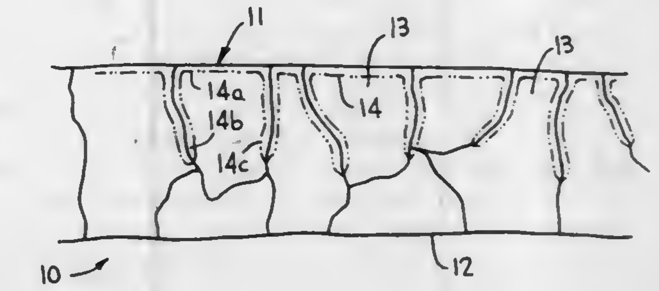
1. An ink jet head for producing a plurality of parallel streams of uniformly sized ink drops for selective deposition on a recording medium during relative movement between said medium and said head comprising:
a plurality of rows of nozzles, each row arranged diagonally with respect to the direction of said relative movement and in a plane parallel to said recording medium;
manifold means for said nozzles having an input for supplying pressurized ink from a source to said nozzles to project a stream of ink from each of said nozzles along parallel paths;
perturbation means for perturbating said ink to cause said streams of ink to break into corresponding streams of uniformly sized drops along said parallel paths;
a plurality of rows of charge electrodes arranged correspondingly with said nozzles and disposed at the point of breakoff of said drops for selectively charging said drops;
common deflection means comprising two deflection electrodes arranged respectively on opposite sides of all said plurality of streams of drops to establish a single electrostatic deflection field for deflecting said selectively charged drops from said parallel paths to deflected paths; and
gutter means arranged to catch said drops in one of said sets of paths to prevent their impacting said recording medium, whereby said drops in the other of said sets of paths impact said recording medium to produce a plurality of spaced marking on said medium.

4,194,211
CHARGE ELECTRODE ARRAY FOR MULTI-NOZZLE INK JET ARRAY
Arthur R. Hoffman, Longmont, and Gerald B. Lammers, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 19, 1978, Ser. No. 917,144
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 19 Claims



1. In an ink jet printer an array of electrodes for charging ink drops comprising:
a plurality of electrically conductive charge electrodes, each electrode having a base portion and a head portion;
a substrate of nonconductive material with grooves of substantially the same width as the base portion of said electrodes for supporting each of said electrodes with the head portion above the surface of the substrate when the base portion rests in a groove and said grooves positioned a distance apart greater than the width of the head portion of the electrodes so that there is a separation space between the head portion of each electrode and the head portion of an adjacent electrode;
nonconductive material filling the separation space between the head portions of the electrodes for insulating each electrode from the adjacent electrode;
a channel in the head portion of each electrode through which ink drops may pass and be charged.

4,194,212
SEMICRYSTALLINE SILICON ARTICLE AND METHOD OF MAKING SAME
Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.
Continuation-in-part of Ser. No. 751,342, Dec. 16, 1976, abandoned, and Ser. No. 751,343, Dec. 16, 1976. This application Jun. 19, 1976, Ser. No. 916,545
Int. Cl.² H01L *27/14*
U.S. Cl. 357—30 8 Claims



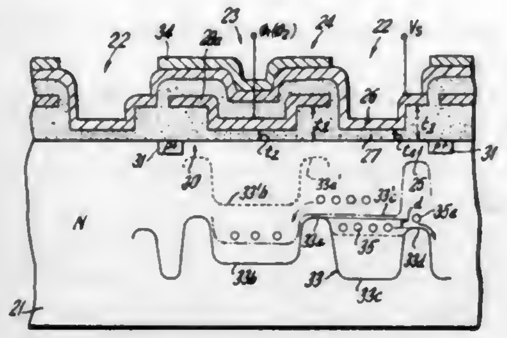
1. A photovoltaic energy cell comprising a silicon wafer having a major surface adapted for the impingement of light thereon and another surface opposed to said impingement surface, said cell and said impingement surface being formed from randomly arranged, irregular, individual grains of silicon

having portions thereof at said surface, said grains having mean diameters of at least about 100 microns and grain boundaries that at said impingement surface are in contact with or separated only slightly from the boundaries of adjoining grains, and a photovoltaic junction formed at said impingement surface and extending across and below said surface and also into the interior of said wafer along and inwardly of said grain boundaries, said junction penetrating said wafer to a substantial depth whereby the total junction area exceeds the product of the linear dimensions of said wafer surface but not to an extent whereby said junction extends completely around the boundaries of said silicon grains or from said impingement surface to said opposed surface of said wafer.

4,194,213
SEMICONDUCTOR IMAGE SENSOR HAVING CCD SHIFT REGISTER

Yasuo Kano, Tokyo; Shunsuke Furukawa, Ebina, and Tadayoshi Mifune, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 645,029, Dec. 29, 1975, abandoned.
This application Aug. 18, 1977, Ser. No. 825,706
Claims priority, application Japan, Dec. 25, 1974, 49-3860
Int. Cl.^{2} H01L *29/78, 27/14, 31/00;* **G11C** *19/28*
U.S. Cl. 357—24 5 Claims



1. A charge-coupled photo-sensor element for a semiconductor image sensor, said photo-sensor element comprising:

a substrate of one conductivity type;

an insulating layer on said substrate;

a first electrode on said insulating layer having first means for applying a potential to said first electrode, said first electrode having a first electrode portion which is spaced from said substrate by a thickness of said insulating layer for defining, in combination with the potential applied to said first electrode by said first means, a first region in said substrate which is a potential well for minority charge carriers in said substrate;

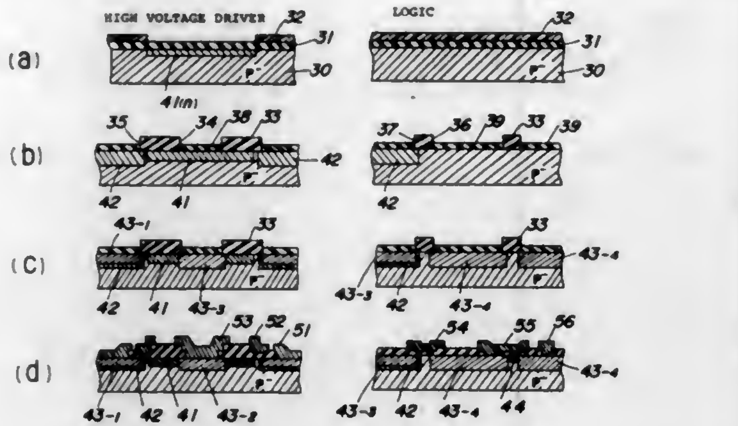
a second electrode in said insulating layer having second means for applying a potential to said second electrode, said second electrode having a second electrode portion adjacent one side of said first electrode and an adjacent third electrode portion remote from said first electrode, said second electrode portion being spaced from said substrate by a thickness of said insulating layer which is greater than the thickness of said insulating layer which spaces said third electrode portion from said substrate for defining, in combination with the potential applied to said second electrode by said second means, a second region in said substrate adjacent said first region which is a potential barrier for said minority charge carriers in said substrate relative to said potential well in said first region, and for defining with said third electrode portion in combination with the potential applied to said second electrode by said second means a third region in said substrate adjacent said second region and which is a potential well for said minority charge carriers in said substrate relative to said potential barrier in said second region; and

a third electrode in said insulating layer and extending generally parallel to said second electrode and electrically insulated from the latter by said insulating layer, said third electrode being connected with said second means for receiving a potential therefrom, said third electrode having a fourth electrode portion overlapping said third electrode portion and being spaced from said substrate by a thickness of said insulating layer which is larger than said thickness of the insulating layer which spaces said third electrode portion from said substrate, at least one of said second and third electrodes having a cutout portion cooperating with an adjacent portion of the other of said second and third electrodes to define an opening above said first region.

4,194,214
INTEGRATION OF HIGH VOLTAGE DRIVER AND LOW VOLTAGE LOGIC IN A SEMICONDUCTOR DEVICE

Katunobu Awane, Ikoma; Hironori Hattori, Suita; Tetuo Biwa, Osaka, and Hiroshi Tamaki, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 25, 1977, Ser. No. 827,677
Claims priority, application Japan, Aug. 26, 1976, 51-102296
The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.
Int. Cl.^{2} H01L *27/04, 29/78*
U.S. Cl. 357—41 3 Claims



1. An integrated semiconductor device for electronically driving a matrix display panel comprising:

a semiconductor body means;

a plurality of high voltage diffusion-self-alignment metal oxide field effect semiconductors integrally formed on said semiconductor body for applying driving voltages to said dislay panel, each of said high voltage semiconductors including,

a drain region having a conductivity opposite that of the semiconductor body,

a source region having a conductivity opposite that of the semiconductor body,

a channel region of the same conductivity type as but more heavily doped than the semiconductor body, said channel region being formed to surround the source region,

a drift channel region of the opposite conductivity type to that of the semiconductor body, said drift channel region being formed on the surface of the semiconductor body to extend between the drain and the channel regions, a drain electrode connected to the drain region,

a source electrode connected to the source region,

a gate electrode formed above the channel region via a thin insulating layer, and

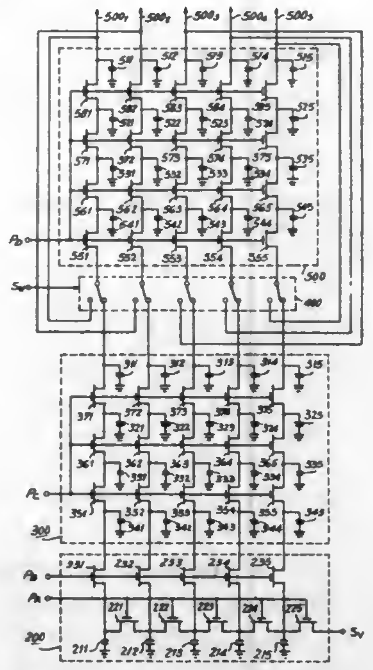
field plate means including a portion of said drain electrode extending toward said gate electrode to cover at least a portion of said drift channel region via a thick insulating layer; and

a plurality of low voltage metal oxide field effect semiconductors integrally formed on said semiconductor body for selectively enabling said high voltage semiconductors.

4,194,215
METHOD AND APPARATUS FOR DISPLAYING A VIDEO PICTURE ON A MATRIX OF LIGHT EMITTING ELEMENTS

Toshio Shionoya, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 16, 1978, Ser. No. 917,018
Claims priority, application Japan, Jun. 16, 1977, 52-71545
Int. Cl.^{2} H04N *5/66, 3/12*
U.S. Cl. 358—56 25 Claims



1. A method of displaying a video picture on a matrix array of light emitting elements formed of m rows and n columns of said elements, comprising the steps of:

receiving a video signal comprised of periodic vertical intervals each containing successive line intervals of video information;

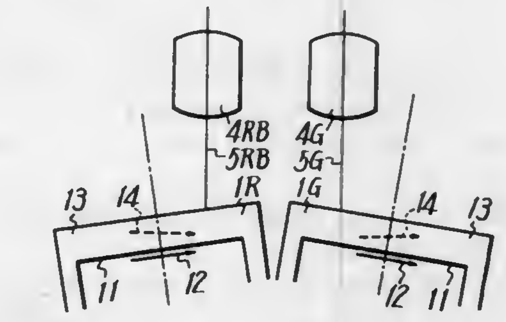
sampling said line intervals of video information and storing n sampled picture elements for each sampled line interval in a vertical interval; and

energizing, during a vertical interval, a light emitting element corresponding to a sampled picture element in a respective line interval for a duration greater than a line interval and less than a vertical interval as a function of the brightness of said sampled picture element when said sampled picture element is between black and peak white levels.

4,194,216
VIDEO PROJECTING APPARATUS

Masayuki Ohmori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 25, 1978, Ser. No. 936,729
Claims priority, application Japan, Sep. 25, 1977, 52/101870
Int. Cl.^{2} H04N *9/31*
U.S. Cl. 358—60 5 Claims

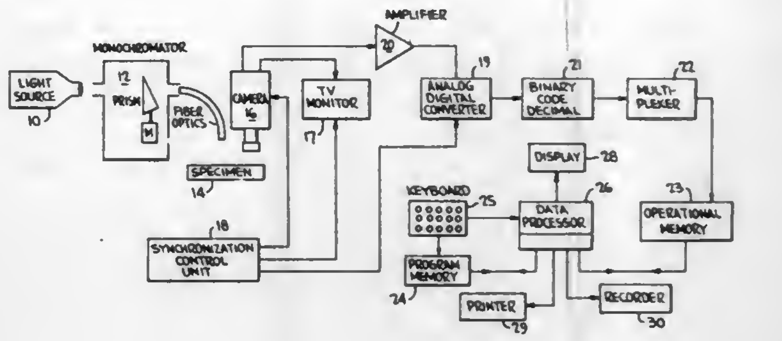


1. In an apparatus for projecting a compound video image onto a screen, and which comprises a plurality of color image sources, each forming a respective primary color image which has a central axis normal to the plane of the color image formed by said respective color image source, and a plurality of focusing means for projecting said color images onto said screen to form said compound image, said focusing means having respective principal axes which are arranged substantially parallel to one another; the improvement comprising each of said central axes being epaxially displaced from said principal axes of the respective focusing means for causing the projected color images to coincide on said screen, and at least one of said central axes being inclined to said principal axis of the respective focusing means.

4,194,217
METHOD AND APPARATUS FOR IN-VIVO SPECTROSCOPIC ANALYSIS

Francois J. G. van den Bosch, 11 Hillcrest Rd., Cedar Grove, N.J. 07009

Filed Mar. 31, 1978, Ser. No. 892,320
Int. Cl.^{2} H06N *7/18*
U.S. Cl. 358—93 14 Claims



1. Apparatus for the spectroscopic analysis of a specimen, comprising:

first means for scanning the specimen with a narrow band of a monochromatic light over a range of wavelengths;

second means for scanning the light reflected from said specimen and generating a signal representative thereof;

means for selectively gating a portion of said signal;

means for converting the gated signal into a digital signal;

means for storing said digital signal;

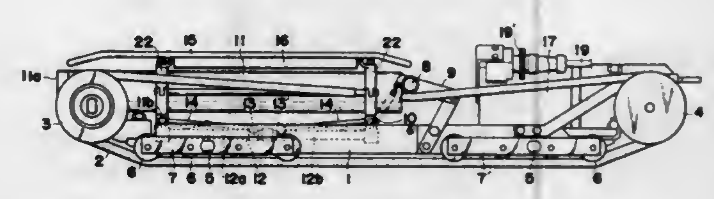
means for storing digital data representative of selected spectroscopic characteristics; and

means for reading out said digital data and said spectroscopic data to identify the spectroscopic characteristics of said specimen.

4,194,218
INSPECTION APPARATUS FOR UNDERGROUND CHANNELS

Kiyoshi Hasegawa, Tokyo, Japan, assignor to Kabushiki Kaisha Kantool, Tokyo, Japan

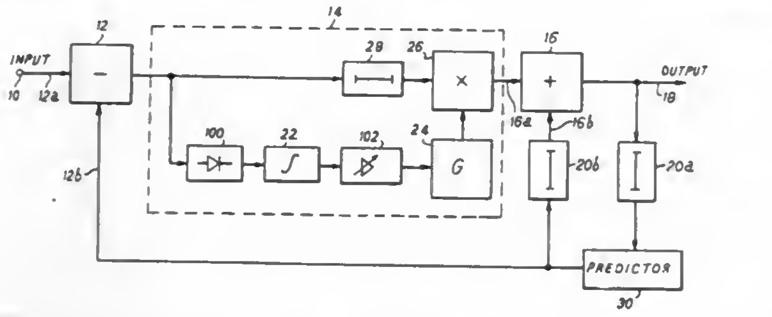
Filed Dec. 29, 1978, Ser. No. 388
Int. Cl.^{2} H04N *7/18*
U.S. Cl. 358—100 5 Claims



1. An inspection apparatus for underground channels comprising a chassis which has pulleys at the end portions thereof, endless V belts engaged with said pulleys, a reversible motor having a driving shaft, a television camera at one end portion of said chassis, means for adjusting the position of said television camera in accordance with the size of said channels, and cable means for remotely operating and controlling said television camera and said reversible motor.

4,194,219
NOISE REDUCTION IN ELECTRICAL SIGNALS

John O. Drewery, Coulsdon, England, assignor to British Broadcasting Corporation, London, England
Filed Mar. 6, 1978, Ser. No. 883,406
Claims priority, application United Kingdom, Mar. 7, 1977, 9537/77
Int. Cl.² H04N *5/21*
U.S. Cl. 358—167 **54 Claims**



1. Apparatus for reducing the effect of noise in an electrical signal which is obtained by scanning, said apparatus comprising:

input and output terminals;

a delay device coupled to the output terminal for providing a delay time of substantially one scan;

a subtractor coupled to the input terminal and to the output of the delay device for providing a difference signal representative of the difference between the input signal during the current scan and the output signal during a preceding scan;

an attenuation circuit coupled to the output of the subtractor and arranged to attenuate low-amplitude portions of the difference signal relative to high-amplitude portions thereof; and

an adder having inputs coupled to the outputs of the attenuation circuit and of the delay device and having an output coupled to the output terminal;

the attenuation circuit comprising:

- rectifying means and a variable gain element forming a series circuit coupled to the output of the subtractor;
- a non-linear transfer characteristic element couled to the output of the series circuit, the non-linear element having a characteristic such that above a predetermined value a constant predetermined minimum attenuation factor applies; and
- a multiplier one input of which is coupled to the subtractor output and the other input of which is coupled to the output of the non-linear transfer characteristic element the output of the multiplier forming the output of the attenuation circuit.

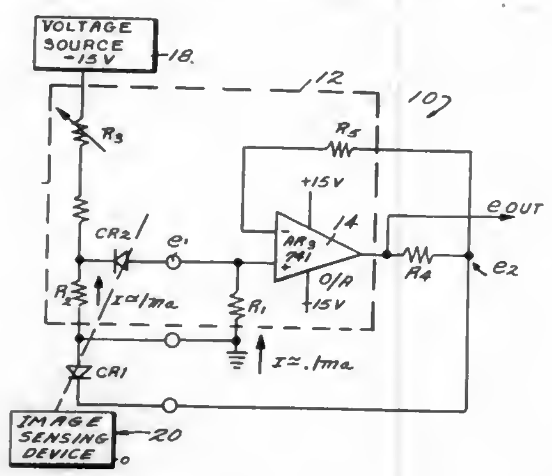
4,194,220
LEAKAGE CURRENT COMPENSATING CIRCUIT FOR SEMICONDUCTOR IMAGE SENSOR

Wayne W. Frame, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.
Filed Mar. 27, 1978, Ser. No. 890,842
Int. Cl.² H04N *5/34*
U.S. Cl. 358—221 **17 Claims**

1. An image sensing system comprising:

a semiconductor imaging device for generating an output signal having a video current component representative of the intensity of light incident on said imaging device, said imaging device output signal further including a leakage current component proportional to the temperature of said imaging device;

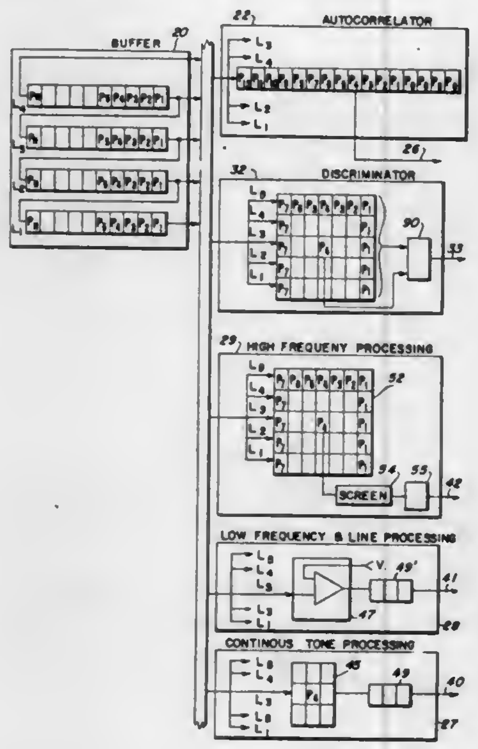
first means, including first and second forward biased p-n junctions maintained at a respective temperature in constant relationship with the temperature of said imaging device, for impressing the voltage developed across said second p-n junction across said first p-n junction and for generating from the forward current through said first p-n junction an output signal having a magnitude equal to the reverse saturation current of said forward biased p-n junction multiplied by a predetermined constant; and



second means, responsive to said first means output signal and said imaging device output signal, for generating a compensated video signal representative of the intensity of said light incident on said imaging device.

4,194,221
AUTOMATIC MULTIMODE CONTINUOUS HALFTONE LINE COPY REPRODUCTION

James C. Stoffel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 26, 1978, Ser. No. 973,821
Int. Cl.² H04N *1/40*
U.S. Cl. 358—283 **18 Claims**



1. The method of processing automatically image pixels which may comprise high or low frequency half-tones, continuous tones, and/or lines to provide binary level output pixels, the steps which comprise:

(a) separating any high frequency half-tone image pixels from said image pixels;

(b) descreening any high frequency half-tone image pixels found to permit rescreening at a lower frequency;

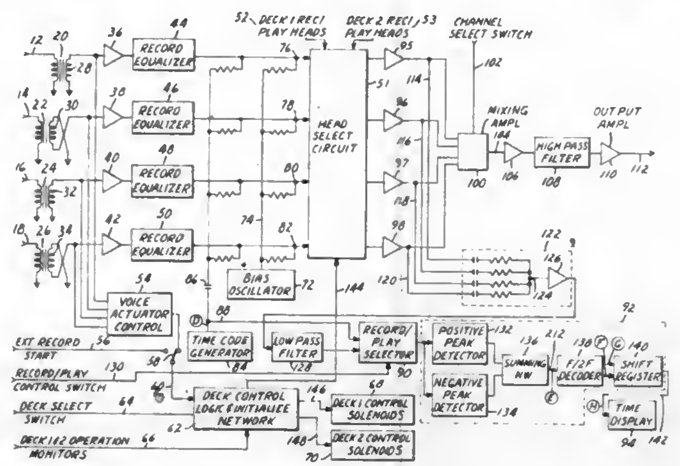
(c) separating any continuous tone image pixels from said image pixels;

(d) screening any image pixels from steps b and c to produce binary level output pixels thereof; and

(e) thresholding the remaining low frequency half-tone and line image pixels to produce binary level output pixels.

4,194,222
MULTITRACK RECORDER INCLUDING SUPERIMPOSED REAL TIME CODE

Richard D. Ebbinga, Camarillo, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Aug. 23, 1978, Ser. No. 936,108
Int. Cl.² G11B *5/02*
U.S. Cl. 360—18 **14 Claims**



1. A multichannel recorder for recording real time information together with other information, comprising

(a) a plurality of circuits, each of which is adapted for receiving and amplifying one of a plurality of analog data signals, including means for shifting received data signals in certain of said circuits out of phase with each other,

(b) means for generating a signal indicative of the real time at which said data signals are received, including

- (i) means for generating a digital signal corresponding to said real time having two different width pulses representing digital "1"s and "0"s, respectively.
- (ii) means for converting said first and second width pulses into an alternating signal containing two substantially sinusoidal frequency components, one frequency corresponding to said first width pulse and a second frequency corresponding to said second width pulses,

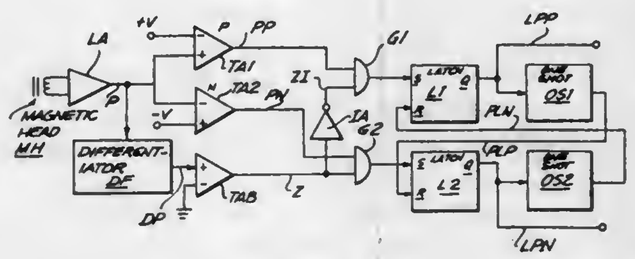
(c) means associated with each circuit for mixing a component of said alternating signal with said data signal therein, while maintaining each said alternating signal components within each circuit in phase with each other, and

(d) means for recording each of said mixed data signals and alternating signals on a separate track of a multitrack recording medium,

wherein said time code information may be reconstructed by adding together signals recovered from tracks such that recovered data signals which are out-of-phase with each other at least partially negate each other, and recovered alternating signal components, all of which are in-phase, reinforce each other to provide a readily detectable signal having a level exceeding that attributable to said data signals.

4,194,223
MAGNETIC RECORDING DETECTION

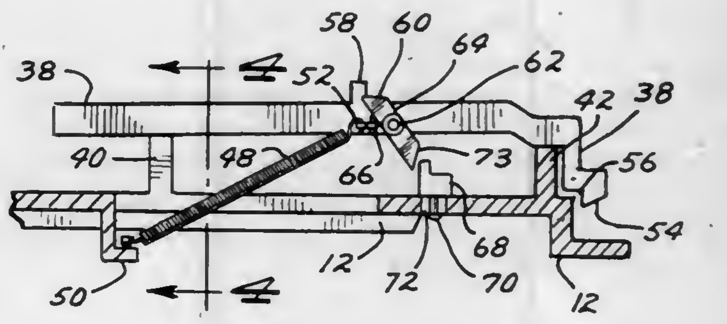
Francis C. Marino, Dix Hills, N.Y., assignor to Redactron Corporation, Yaphank, N.Y.
Filed Sep. 18, 1978, Ser. No. 943,050
Int. Cl.² G11B *5/09*
U.S. Cl. 360—41 **7 Claims**



1. In a magnetic recording system wherein information is recorded according to one of the non-return-to-zero formats, apparatus for evaluating signals reproduced by a magnetic transducer comprising: a positive threshold detector means for giving a first threshold signal as long as a received signal is greater than a first given voltage level; a negative threshold detector means for giving a second threshold signal as long as a received signal is less than a second given voltage level; signal differentiator means for generating a derivative signal whose waveform is the time derivative of a received signal; means for connecting the magnetic transducer to each of said threshold detector means and said differentiator means; zero-crossing detector means for giving a zero-crossing signal whenever the amplitude of the derivative signal passes through a predetermined voltage level, the polarity of the zero-crossing signal being determined by the direction of the passage of the derivative signal through the predetermined voltage level; and bistable means connected to said zero-crossing detector means and said threshold detector means for giving a signal which switches from a first signal level to a second signal level at the coincidence of a zero-crossing signal of a first polarity and one of the threshold signals, and which switches from the second signal level to the first signal level at the coincidence of a zero-crossing signal of a second polarity and the other of the threshold signals, said bistable means comprising latching means having a first input which upon receipt of a signal triggers the latching means to a first state and a second input which upon receipt of a signal triggers the latching means to a second state, a first coincidence means having inputs connected to one of said threshold detector means and said zero-crossing detector means and an output connected to the first input of said latching means, and a second coincidence means having inputs connected to the other of said threshold detector means and said zero-crossing detector means and an output connected to the second input of said latching means.

4,194,224
DISK INDICATOR AND EJECTOR

Robert D. Grapes, Oklahoma City, and Donald J. Watson, Bethany, both of Okla., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.
Filed Sep. 1, 1978, Ser. No. 939,007
Int. Cl.² G11B *17/02*
U.S. Cl. 360—97 **6 Claims**



1. Disk drive apparatus having a housing adapted to receive a disk cartridge for digital insertion to a substantially centered position within the housing, said housing including a base, guide means mounted to the base for maintaining said cartridge substantially in a selected plane as it is so inserted, and a clamshell assembly including a clamshell mounted to the base for movement between an open position to receive said disk cartridge and a closed position to drivably engage the cartridge; wherein the improvement comprises:

a linking member supported with respect to the base for inward and outward movement generally in the direction of said digital insertion; biasing means for urging outward movement of the linking member; stop means for preventing movement of said linking member outward beyond a first position; linking means mounted to the linking member and positioned to contact the leading edge of said cartridge during said insertion and before the cartridge reaches said centered position, further cartridge insertion after such contact moving said linking member inwardly from said first position against the force of said biasing means; fastening means mounted to the linking member; and a locking pin mounted to the clamshell and, with said clamshell open, positioned so that it is engaged by said fastening means substantially as the cartridge reaches said centered position, thereby retaining the linking member at an initial linking position against the force of said biasing means, movement of said clamshell from the open position to the closed position after such engagement moving said locking pin inward thereby moving said linking member to a final linking position wherein said linking means is free of said cartridge.

4,194,225

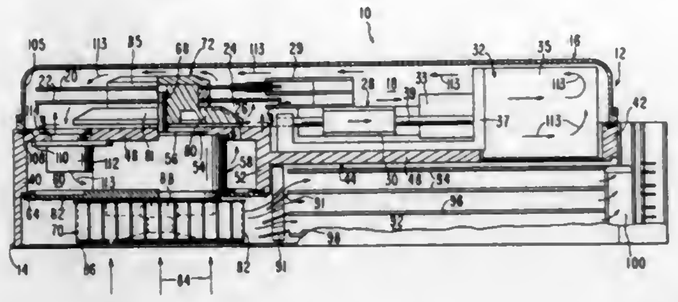
HOUSING FOR DISK DRIVE UNIT

Alfred Hasler, Mountain View, Calif., assignor to International Memories, Inc., Cupertino, Calif.

Filed Jun. 6, 1978, Ser. No. 913,156

Int. Cl.^{2} G11B *17/02*

U.S. Cl. 360—98 **16 Claims**



1. In a disk drive unit having a magnetic storage disk and electronic circuitry: a housing including a first region for receiving said magnetic storage disk, said housing having a second region adjacent to the first region and a third region adjacent to and communicating with the second region for containing said circuitry, first region being closed to the atmosphere and the second region being open to the atmosphere; a motor in the housing and provided with a drive shaft having a pair of ends projecting outwardly from the motor in opposite directions, one end of the drive shaft being in the first region for connection to a magnetic storage disk in the first region for rotating the same, the opposite end of the shaft extending into the second region; means in the first region for creating a flow of air along a flow path therein in response to the rotation of the drive shaft; means across said air flow path for cleaning the air as it flows along said path; and means coupled with the opposite end of the drive shaft for generating another flow of air for movement into said third region and into heat exchange relationship with the circuitry.

4,194,226

RIGID MAGNETIC DISC MEMORY APPARATUS INCLUDING OPEN LOOP STEPPER-MOTOR-DRIVEN READ/WRITE HEAD

Robert Kaseta, Stow; Lenn Daugherty, Northboro, and Sigmund Hinlein, Sudbury, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 24, 1978, Ser. No. 899,046

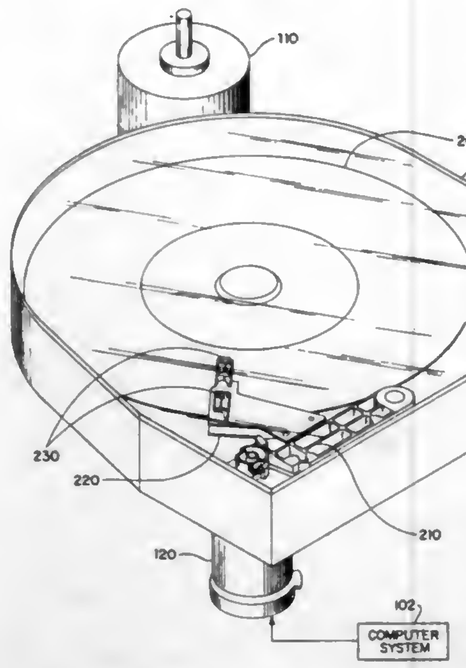
Int. Cl.^{2} G11B *5/55, 5/48, 21/08, 21/22*

U.S. Cl. 360—106 **2 Claims**

1. In memory apparatus supported by a base and intended for use in a digital computer system, said apparatus comprising at least one spinable and rigid magnetic disk for recording digital information; magnetic head means for reading said information from and writing said information into said disk; positioning means for accurately positioning said magnetic head means parallel and adjacent to the plane of said disk; said positioning means comprising:

supporting means movably mounted on said base for supporting said magnetic head means;

stepper motor means including a rotational stepper motor rotatably mounted on said base, said rotational stepper motor having a rotational shaft and responsive to electrical signals from said computer system for providing mechanical step rotation of said shaft;



band means for coupling said step rotation of said shaft to said movably mounted supporting means, whereby said head means is stepped along said disk surface; and

viscously-coupled inertia damping means mounted around said shaft for providing viscously-coupled inertia damping of the step-rotating motion of said shaft.

4,194,227

COMPOSITE MAGNETIC CORE ASSEMBLY HAVING AT LEAST ONE SIDE TIP FOR A MAGNETIC HEAD

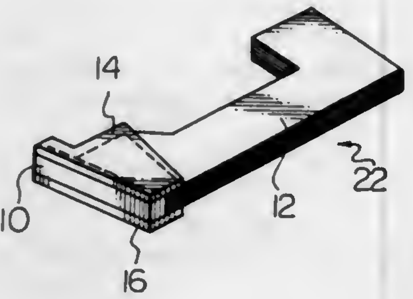
Takashi Kitamura, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jul. 18, 1978, Ser. No. 925,866

Claims priority, application Japan, Jul. 19, 1977, 52-95967[U]; Feb. 8, 1978, 53-13141

Int. Cl.^{2} G11B *5/22, 5/42*

U.S. Cl. 360—122 **9 Claims**



1. A composite magnetic core assembly for a magnetic head, comprising:

(a) first and second back cores having a high magnetic permeability, each of said first and second back cores respectively having a substantially L-shaped portion which has first and second ends, each of said first and second ends having a substantially rectangular shape, said second ends of said first and second L-shaped portions abutting on each other;

(b) first and second head tips made from wear resisting magnetic material, each of said first and second head tips having an oblique prism shape, one side of said first and second head tips being fixedly connected to said first ends of said first and second L-shaped portions respectively, a portion of said first head tip facing a portion of said second head tip to form a transducing gap; and

(c) at least first and second side plates, said first side plate being fixedly attached to one side of said first head tip and to one side of said first back core, said second side plate being fixedly attached to one side of said second head tip and to one side of said second back core.

4,194,228

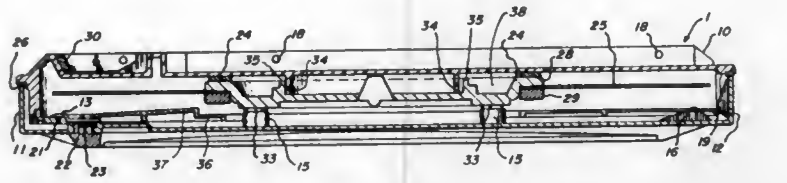
MAGNETIC DISC HOUSING WITH MEANS TO PREVENT RADIAL DISC SHIFT

James A. Duff, Omaha, Nebr., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Oct. 11, 1978, Ser. No. 950,346

Int. Cl.^{2} G11B *23/02;* **B65D** *85/30*

U.S. Cl. 360—133 **5 Claims**



1. In a disk memory module of the type having a permanent substantially circular housing enclosing the disk, said disk supported by a hub having a central drive unit spindle attachment area and a peripheral downwardly facing support area, said housing having an opening in the bottom allowing access to the spindle attachment area of the drive unit spindle and supporting around its edge the hub on its peripheral support area in a predetermined axial position, an improvement for preventing radial shifting of the hub past a predetermined deviation from concentricity with the housing, comprising

(a) an annular projection of predetermined height fixed to and extending downwardly from the interior surface of the top of the housing and substantially concentrically located thereon; and

(b) an area on the hub portion facing the annular projection having an annular depression into which the annular projection extends a predetermined distance with predetermined axial and radial tolerances therebetween while the hub's peripheral support area is supported by the edge of the housing bottom opening, said predetermined radial tolerance equaling the predetermined deviation from concentricity.

4,194,229

MODE SELECTING ASSEMBLY FOR RECORDING AND/OR REPRODUCING APPARATUS

Yoshinori Yamamoto, Tokyo; Hideo Imai, and Yoshikazu Ishimatsu, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,090

Claims priority, application Japan, Sep. 12, 1977, 52-109745

Int. Cl.^{2} G11B *19/00*

U.S. Cl. 360—137 **18 Claims**

1. A mode selecting assembly for a recording and/or reproducing apparatus wherein signals are recorded on a recording media and/or reproduced from a recording media comprising:

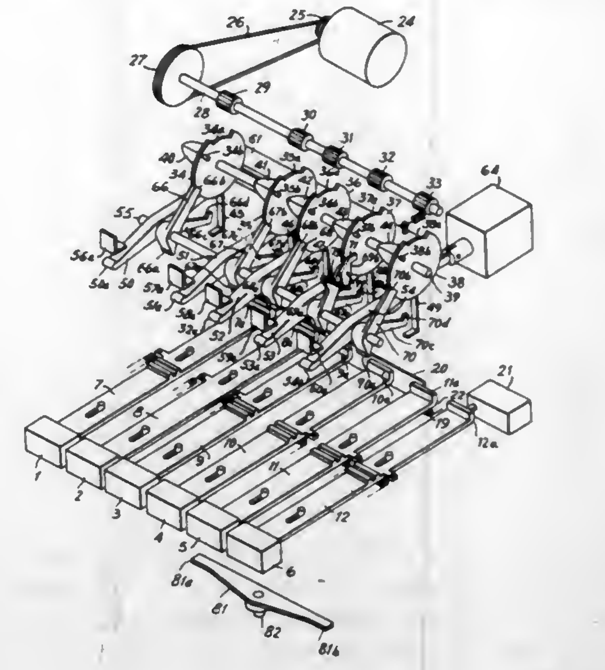
at least one mode selecting push-button associated with a selected operating mode for said apparatus, said push-button being depressible from a first inactive position to a second active position to initiate selection of an operating mode for said apparatus;

an operating member associated with each said push-button for effecting a change over from one mode for said apparatus to another mode responsive to the displacement of said operating member from a first inactive position to a second active position initiated by the depression of said at least one push-button;

an operating gear member associated with each said operating member, said operating gear member including a toothless portion along a limited circumferential extent of said gear member, said gear member being operatively interconnected with said associate operating member to effect displacement of the latter from its first position to its second position upon rotation of said operating gear member;

pinion associated with each said operating gear member disposed to engage said operating gear member to drive the latter when said associated pinion is in engagement with the toothed portion of said operating gear member and wherein said pinion is disengaged from said operating gear member when said toothless portion of the latter moves into registry with said pinion;

trigger means operatively associated with each said mode



selecting push-button and movable from a first inactive position to a second active position to initiate engagement of said toothed portion of the operating gear member with said pinion in response to the depression of said push-button whereby said operating gear member is driven by said pinion through the toothed portion of each rotary cycle of said operating gear member to thus establish a selected operating mode for said apparatus; and

stop means associated with each said operating gear member for preventing further rotation of said operating gear member after the latter has completed said cycle and said selected operating mode has been established, whereby said operating gear member is prevented from rotating beyond one rotary cycle and reengaging said pinion if said associated push button is held down in said second position.

4,194,230

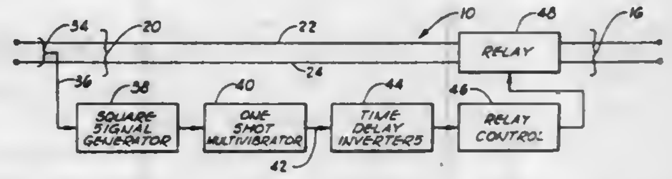
HAZARDOUS VOLTAGE PROTECTION CIRCUITRY

Glenn S. Danford, Oklahoma City, Okla., assignor to Southwest Utilities, Inc., Oklahoma City, Okla.

Filed Sep. 11, 1978, Ser. No. 941,068

Int. Cl.^{2} H02H *3/04, 7/26*

U.S. Cl. 361—1 **14 Claims**



1. A hazardous voltage isolation and protection device for interconnection between a telephone installation line output and the external telephone distribution line, comprising:

discrimination means connected to said line output and providing a control signal output upon detection of approximately sixty cycle per second voltage on said line output;

switching means connected in series with said external telephone distribution line; and

reactance means responsive to input of said control signal to actuate said switching means and disconnect said external telephone distribution line.

4,194,231

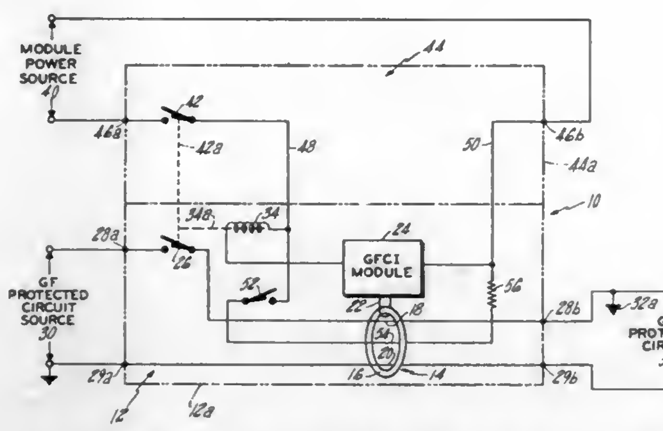
DUAL VOLTAGE GROUND FAULT PROTECTOR

Keith W. Klein, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Mar. 8, 1978, Ser. No. 884,501

Int. Cl.^{2} H02H *3/28*

U.S. Cl. 361—45 **2 Claims**



1. A ground fault protector for affording ground fault protection to a load circuit powered from an AC source of non-standard voltage, said protector comprising, in combination:

A. a molded case ground fault interrupting circuit breaker including
  (1) breaker contacts,
  (2) a differential current transformer having first, second and third primary windings and a secondary winding,
  (3) an electronic ground fault module connected with said secondary winding for processing a ground fault signal induced therein pursuant to initiating a ground fault trip function,
  (4) a trip solenoid activated under the control of said module to precipitate opening of said breaker contacts, thereby effectuating said ground fault trip function;
  (5) line and neutral terminals for respective connection to the line and neutral sides of the non-standard voltage source, load power and load neutral terminals for respective connection to the line and neutral sides of the ground fault protected load circuit, said line and load power terminals connected in series through said breaker contacts and said first primary winding, and said neutral and load neutral terminals connected in series through said second secondary winding, and
  (6) a normally open test switch and a calibrated resistor electrically connected in series with said third primary winding; and

(B) a conventional molded case circuit breaker ganged in side-by-side relation with said ground fault circuit breaker and including
  (1) line and load terminals for connection across a standard voltage source,
  (2) breaker contacts operatively coupled with said breaker contacts of said ground fault circuit breaker such as to be opened and closed in concert therewith, and
  (3) said module, trip solenoid, and the series combination of said test switch, resistor and third secondary winding connected between said line and load terminals of said conventional circuit breaker to draw current from the standard voltage source through said breaker contacts of said conventional circuit breaker.

4,194,232

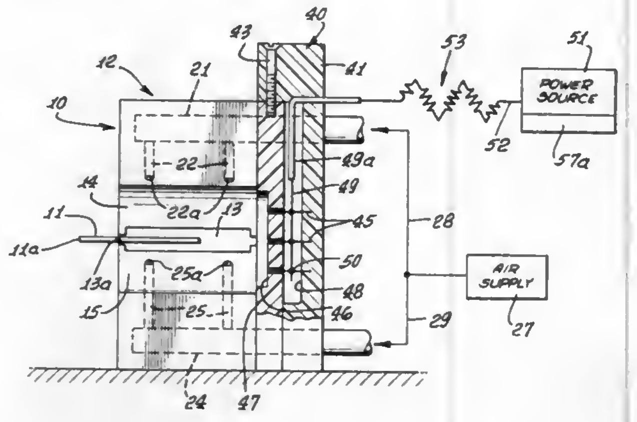
ION TREATMENT OF PHOTOGRAPHIC FILM

James M. Cumming, 4571 Comber Ave., Encino, Calif. 91316, and Donald G. Saurenman, 6787 Worsham Dr., Whittier, Calif. 90602

Filed Mar. 31, 1978, Ser. No. 892,139

Int. Cl.^{2} H05F *3/04;* H01T *19/04*

U.S. Cl. 361—213 **28 Claims**



10. In apparatus for treating a film combination comprising
(a) a support,
(b) means associated with the support defining a film treatment zone in the shape of a recess having a front opening and opposite side openings which are laterally spaced apart, and through which film may be laterally passed,
(c) means for supplying streams of gas to said zone and closely adjacent opposite faces of the film passing laterally through said treatment zone, and
(d) means for effecting delivery of ions to come in contact with said opposite faces of the film passed through said zone, said means including tips to which voltage is supplied,
(e) said treatment zone being generally venturi shaped between said opposite side openings, said means for supplying streams of gas including ducting having discharge ports facing a throat portion of said zone.

4,194,233

MASK APPARATUS FOR FINE-LINE LITHOGRAPHY

Addison B. Jones, La Mirada, and David B. Wittry, Pasadena, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 30, 1978, Ser. No. 873,307

Int. Cl.^{2} H02N *13/00*

U.S. Cl. 361—233 **13 Claims**

1. Apparatus for supporting a substrate means to be operated upon, comprising
chuck means for holding said substrate means,
mask means disposed adjacent to said substrate means,
first means for confining a first layer of thermally conductive conformable material between said mask means and said substrate means,
second means for confining a second layer of thermally conductive, conformable material between said substrate and said chuck means, and
charging means for establishing an electrical charge on said mask to produce a force field between said mask means and said substrate means,
said first and second layers providing accurate positioning and thermal stabilization of said mask means.

4,194,234

SIMULTANEOUS MULTI DIRECTIONAL SINGLE SOURCE MULTIPLE REFLECTOR ELECTRONIC PHOTO FLASH UNIT

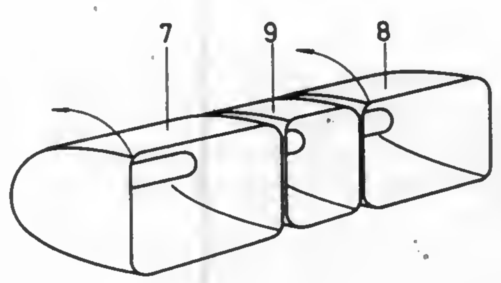
Udo M. Geissler, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft für Elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,011

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740487

Int. Cl.^{2} G03B *15/02*

U.S. Cl. 362—17 **10 Claims**



1. Single-source multiple reflector electronic photo flash unit having
a holder (**1**);
a single gas discharge lamp (**2**) positioned in said holder;
and reflector means (**4**) positioned in the light path from the gas discharge lamp to reflect light therefrom
wherein, in accordance with the invention
the reflector means comprises
a plurality of individual reflector elements (**4**',**4**''; **7**, **8**, **9**; **6**, **10**; **11**, **12**; **13**, **14**) located adjacent each other of which at least one is relatively movable with respect to the light source and with respect to another relector element to permit directing light from the single gas discharge lamp in multiple directions upon flash-illumination thereof.

4,194,235

AUTOMATIC HEADLIGHT TILTING DEVICE FOR AUTOMOBILES

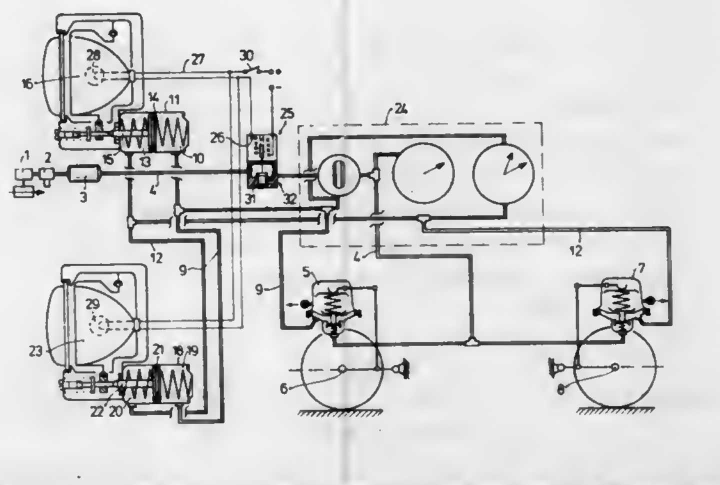
Werner Heinlein, Wiernsheim-Pinache, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1978, Ser. No. 881,988

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1977, 2706770

Int. Cl.^{2} B60Q *1/12*

U.S. Cl. 362—38 **3 Claims**



1. In an apparatus for automatically adjusting the beam angle of motor vehicle headlights, which includes a headlight switch for energizing the headlights from the vehicle electrical system and modulators linked to the vehicle axles and responsive to the chassis-to-axle distance for supplying fluid of varying pressure to servo-mechanisms connected to tilt the headlights, the improvement comprising a normally closed electromagnetic valve disposed in a conduit between a source of pressurized fluid and said modulators and connected in parallel with said headlight switch, so that said valve is opened to activate said beam angle adjusting apparatus only when said headlight switch is closed.

4,194.236

ARRANGEMENT FOR A LIGHTING UNIT IN VEHICLES

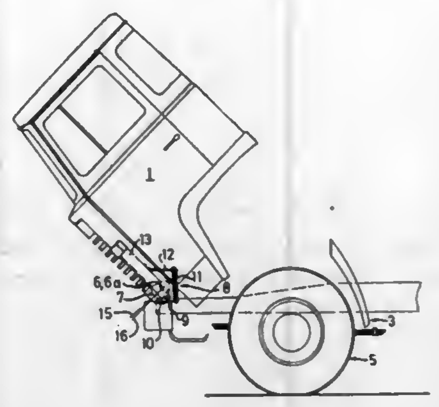
Axel J. M. Pettersson, Södertälje, and Rolf K. Johansson, Trosa, all of Sweden, assignors to Saab-Scania Aktiebolag, Södertälje, Sweden

Filed Feb. 1, 1978, Ser. No. 874,224

Claims priority, application Sweden, Feb. 3, 1977, 7701202

Int. Cl.^{2} B60Q *1/04*

U.S. Cl. 362—66 **8 Claims**



1. An arrangement for a front lighting unit in a wheeled vehicle comprising a vehicle chassis frame and a vehicle body portion which is pivotably mounted relative to the vehicle chassis frame for swinging movement about a transverse axis at the front end of the vehicle chassis frame, said vehicle body portion having a forward front section with a recess in which the lighting unit is adapted to fit, said lighting unit being supported at a transverse horizontal axis substantially coinciding with the axis constituting the fulcrum for the pivoting movements of the vehicle body portion, and said lighting unit having an optical axis and being arranged to assume an attitude such that the optical axis of said lighting unit has a definite angular attitude relative to the vehicle chassis frame when the vehicle body portion is in its normal position.

4,194,237

LEVELING PLATE AND METHOD OF UTILIZING SAME

Albert H. Conklin, 377 Woonasquatucket Ave., North Providence, R.I. 02911

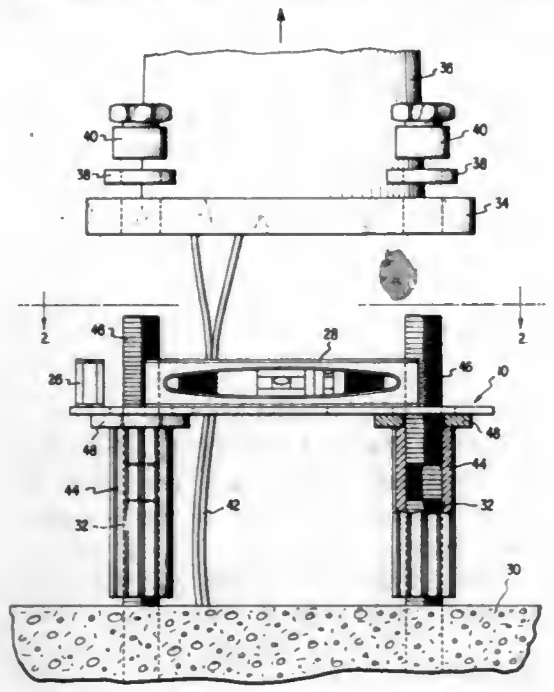
Filed Jul. 24, 1978, Ser. No. 927,493

Int. Cl.^{2} F21V *33/00*

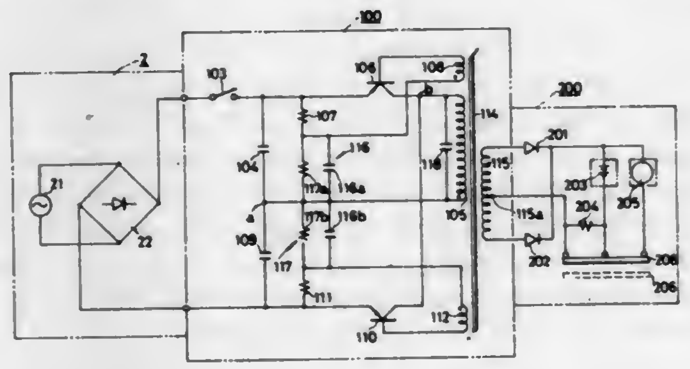
U.S. Cl. 362—253 **4 Claims**

1. A new article of manufacture comprising a leveling plate particularly adapted for leveling added supports for a light standard while the light standard remains electrically coupled, said leveling plate having holes therethrough in accordance

with the pattern of retaining bolts for the light standard, a notch through one edge of said plate for the reception of an attached electrical wire of the light standard, and level means carried by said plate for leveling said plate.



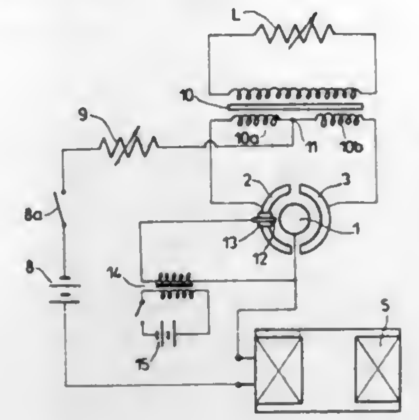
4,194,238
POWER SUPPLY APPARATUS
Takaaki Masaki, Tohru Morioka, both of Hyogo, Japan, assignor to Sanyo Electric Company, Ltd., Moriguchi, Japan
Filed Mar. 1, 1978, Ser. No. 882,413
Claims priority, application Japan, Mar. 4, 1977, 52-25301; Aug. 25, 1977, 52-114853[U]; Aug. 29, 1977, 52-116295[U]; Sep. 7, 1977, 52-108438; Nov. 18, 1977, 52-139596; Nov. 18, 1977, 52-156250[U]; Dec. 14, 1977, 52-152151; Dec. 14, 1977, 52-152152; Dec. 14, 1977, 52-152153[U]
Int. Cl.^{2} H02M *3/335*
U.S. Cl. 363—17 **19 Claims**



1. A power supply apparatus comprising a direct current voltage source, and an inverter for converting a direct current output from said direct current voltage source into an alternate current voltage, said inverter comprising:

- a first series connection of a pair of first and second dividing capacitors, said first series connection being coupled in parallel with said direct current voltage source,
- a second series connection of a pair of first and second transistors, each including emitter, base and collector electrodes, said series connection being coupled in parallel with said direct current voltage source,
- a pair of first and second base resistors,
- a saturable transformer including a saturable magnetic core, a primary winding wound on said saturable magnetic core, and a pair of first and second feedback windings wound on said saturable magnetic core and magnetically coupled to said primary winding,
- said primary winding being connected between the junction of said pair of first and second dividing capacitors of said first series connection and the junction of said pair of first and second transistors of said second series connection,
- each of said pair of first and second feedback windings being coupled between said base and emitter electrodes of each of said pair of first and second transistors through each of said pair of first and second base resistors, respectively, and
- impedance means connected between the junction of said first feedback winding and said first base resistor of said first transistor and the junction between said second feedback winding and said second base resistor of said second transistor.

4,194,239
ELECTRICAL INVERTOR APPARATUS
Krishnaswamy Jayaram, Rua Paulo Alves 110, Block A, Apt. 604, Inga, Niteroi, Rio de Janeiro, and Michael F. Reusch, Av. Epitacio Pessoa 1274, Ipanema, 20.000 Rio de Janeiro, both of Brazil
Filed Jul. 5, 1978, Ser. No. 922,014
Int. Cl.^{2} H02M *7/60*
U.S. Cl. 363—109 **25 Claims**



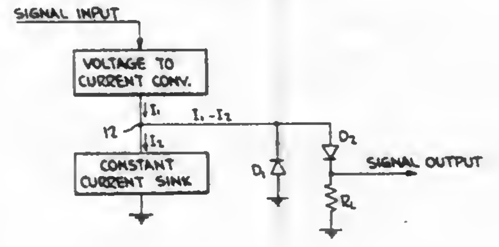
1. Electrical apparatus comprising in combination:

- a first central electrode;
- an even number of generally annular sector electrodes disposed coaxially around said first electrode and separated therefrom by a substantially constant continuous discharge gap said sector electrodes being spaced from each other by a gap substantially smaller than said discharge gap;
- said first electrode having a first terminal for connection to one side of a D.C. power supply;
- a second terminal for connection to the other side of said D.C. power supply and connected in parallel to each of said sector electrodes through respective inductive impedances;
- magnetic field producing means adapted to establish a unidirectional magnetic field within said discharge gap, nonparallel to any electric discharge between said first electrode and any one of said sector electrodes so as to shift successively and continuously said discharge from one sector electrode to the next about said first electrode; and
- inductive output means associated with said inductive impedances for producing an output.

4,194,240
PRECISION ENVELOPE DETECTOR AND LINEAR RECTIFIER CIRCUITRY
Thomas J. Davis, Richland, Wash., assignor to United States of America, Washington, D.C.
Filed May 2, 1978, Ser. No. 902,250
Int. Cl.^{2} H02M *7/06;* **G01R** *19/04*
U.S. Cl. 363—126 **6 Claims**

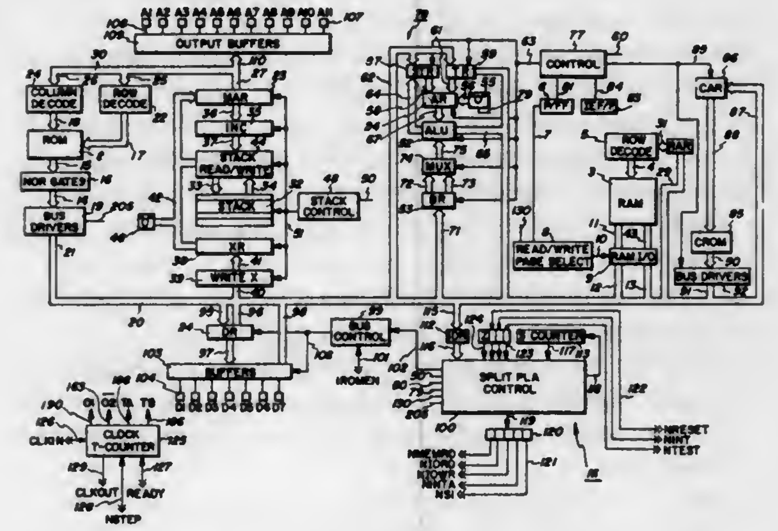
1. A linear rectifier for the rectification of an input low voltage, high frequency signal comprising:

- voltage-to-current converter means, having an input, said input connected to said signal, for transforming said input low voltage signal into variations in output current flow, said variations linearly related to said low voltage, high frequency signal, said converter means providing a constant output in the absence of an input signal;
- sink means connected to the output of said converter means, for absorbing a preset constant amount of current from said converter means;
- first diode means, having two ends and a polarity, one end of which is connected to a junction between said converter means and said sink means, and the other end of which is grounded; and



- second diode means having a polarity, said second diode means connected in series with a resistance means for providing a voltage drop across said resistance means when current flows therethrough, said second diode means and said resistance means together having two ends, one of which is connected to said junction and the other of which is grounded, said second diode connected to have a polarity opposite the polarity of said first diode.

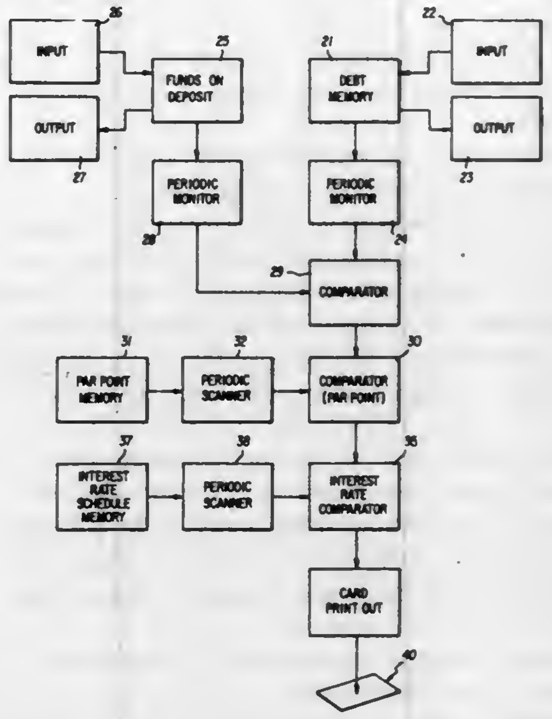
4,194,241
BIT MANIPULATION CIRCUITRY IN A MICROPROCESSOR
George E. Mager, Manhattan Beach, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Jul. 8, 1977, Ser. No. 814,051
Int. Cl.^{2} G06F *7/00, 9/08*
U.S. Cl. 364—200 **5 Claims**



1. In a digital processor including means for executing a plurality of instructions stored in a memory and carried from said memory in accordance with a plurality of machine cycles, each of said instructions including an operation code, bit manipulation apparatus comprising:

- first means for generating a particular bit-mask in response to a particular operational code for an instruction being executed;
- second means for storing said particular bit-mask,
- third means for storing a word in which a bit is to be manipulated;
- logic means for performing a particular logic operation on the output of said second means and the output of said third means;
- said first means is responsive to the three least significant bits of said particular operational code; and
- the first means generates a bit-mask in binary digits which is the complement of 2^i which is the number in base 10 represented by the three least significant bits of said particular operational code.

4,194,242
METHOD AND SYSTEM FOR DETERMINING INTEREST RATES
Robert Robbins, Atlanta, Ga., assignor to Patricia Ann Cotts; Nancy Fern Hamburger, both of Atlanta; Betty B. Robbins and William Norman Robbins, both of Decatur, all of, Ga.
Filed Sep. 22, 1976, Ser. No. 725,535
Int. Cl.^{2} G06F *13/00*
U.S. Cl. 364—200 **10 Claims**



1. A method for providing data regarding interest rates comprising the steps of:

- storing the value of a borrower's funds on deposit in a computer memory;
- storing the amount of a borrower's indebtedness in the computer memory;
- monitoring the computer memory periodically by a scanning means connected to the computer memory to determine the extent of the borrower's indebtedness and the value of the borrower's funds on deposit at a given time, the scanning means providing at its output a signal corresponding to the borrower's indebtedness and funds on deposit;
- comparing the borrower's funds on deposit to the borrower's indebtedness by a division circuit means which is connected to the scanning means to determine the ratio of output of the scanning means to form a Compensating Balance; and
- increasing the interest rate provided by a printout connected to the division circuit means, if the Compensating Balance is less than par point and decreasing the interest rate provided by the printout if the Compensating Balance is greater than par point.

4,194,243
DATA PROCESSING SYSTEM HAVING PORTIONS OF DATA ADDRESSING AND INSTRUCTION ADDRESSING INFORMATION PROVIDED BY A COMMON SOURCE

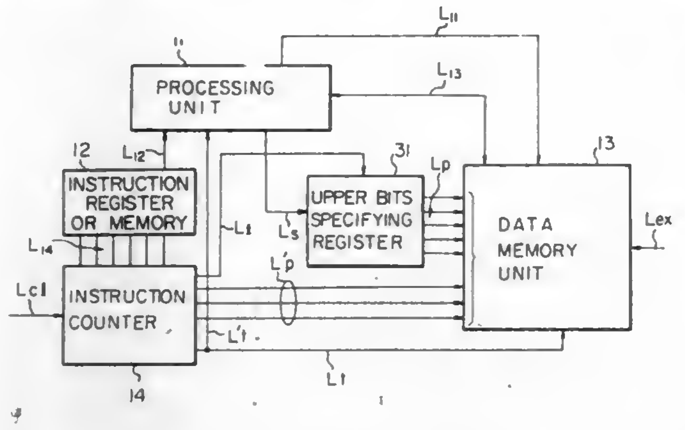
Toshitaka Tsuda, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Apr. 14, 1977, Ser. No. 787,494

Claims priority, application Japan, Apr. 30, 1976, 51-49494

Int. Cl.^{2} G06F *13/00*

U.S. Cl. 364—200 **21 Claims**



1. In a data processing system for processing data in accordance with read and write operations, comprising:

a processing unit for processing input data after said read operation in accordance with a plurality of instructions provided thereto and producing output data for said write operation:

instruction means for supplying said plurality of instructions successively to said processing unit;

instruction counter means driven by a clock pulse signal for providing instruction addressing information to said instruction means, said instruction means successively producing said plurality of instructions in accordance with said instruction addressing information, said instruction addressing information comprising upper and lower bits; and

a data memory unit having addressable storage areas for providing said input data to be processed in accordance with data addressing information, and for receiving said output data produced by said processing unit, said data addressing information comprising upper bits and lower bits;

said data processing system being characterized in that said input data is transmitted serially bit by bit from said data memory unit to said processing unit during the read operation, and said output data is transmitted serially bit by bit from said processing unit to said data memory unit during the write operation;

the improvement wherein said instruction counter means comprises an upper bits region for holding said upper bits of said instruction addressing information, and a lower bits region for holding said lower bits of both said instruction addressing information and said data addressing information;

said instruction counter means including means for synchronously providing the contents of said lower bits region of said instruction counter means in synchronization both to said instruction means as said lower bits of said instruction addressing information and to said data memory unit as said lower bits of said data addressing information, whereby said lower bits of said instruction addressing information and said data addressing information, respectively, are provided by a common source;

said instruction counter means also including first means for providing the contents of said upper bits region of said instruction counter means to said instruction means as said upper bits of said instruction addressing information;

said system further comprising generating means for continuously generating random bits partially defining successive addressable storage areas in said data memory unit to be addressed, and second means connected to said generating means for providing said random bits to said data memory unit as said upper bits of said data addressing information,

whereby said processing unit is instruction-addressed and said data memory unit is data-addressed in synchronization, one with the other, with resultant improved efficiency.

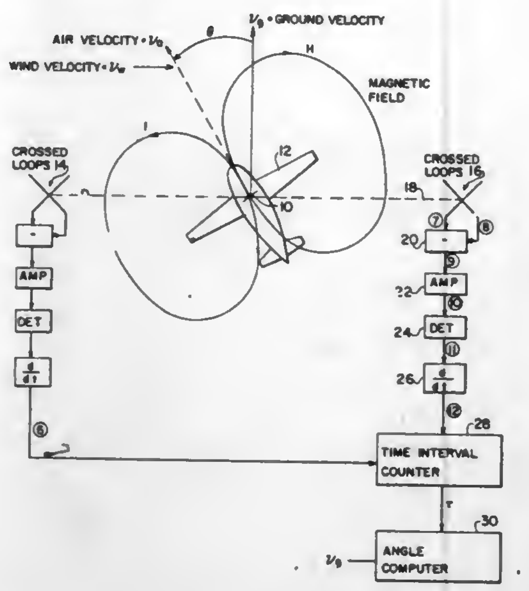
4,194,244
ANGLE SENSING SYSTEM

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 17, 1978, Ser. No. 934,662

Int. Cl.^{2} G01S *3/36*; G01P *13/02*

U.S. Cl. 364—428 **7 Claims**



7. Apparatus for determining the crab angle, θ of an aircraft which is coming in along a runway for a landing thereon and which is carrying a loop antenna which is radiating an electromagnetic audio-frequency sine wave, said apparatus being used in conjunction with means for determining the ground speed, v_g, of the aircraft and providing an output signal proportional thereto, said apparatus comprising:

a pair of magnetic-field interaction means, each located on a different side of the runway and each comprising:

a set of two crossed loops, each being mounted vertically and making an angle of 45° with a line of centers between the intersection points of the sets of loops, the line of centers being normal to the direction of the runway,

subtracting means for generating a difference signal from the outputs of the two crossed loops,

means for detecting and rectifying the output of the subtraction means to provide an envelope signal which has a zero value when the outputs of said loops are equal in magnitude,

means for differentiating the envelope signal to provide a sharp signal having its maximum absolute value when the envelope signal has its zero value, the time interval, T, between the sharp output of each differentiating means being a function of the crab angle, θ, of the aircraft;

time-interval-determining means, to which the outputs of said differentiating means are fed, for measuring the time interval, T, and providing an output signal in proportion thereto; and

angle-computing means, to which the time interval signal, T, and the ground speed signal, v_g, are fed, for computing the crab angle, θ, in accordance with the equation

$$\theta = (3/2D)v_g T$$

where D is the distance between the intersection points of the two sets of loops along the line of centers.

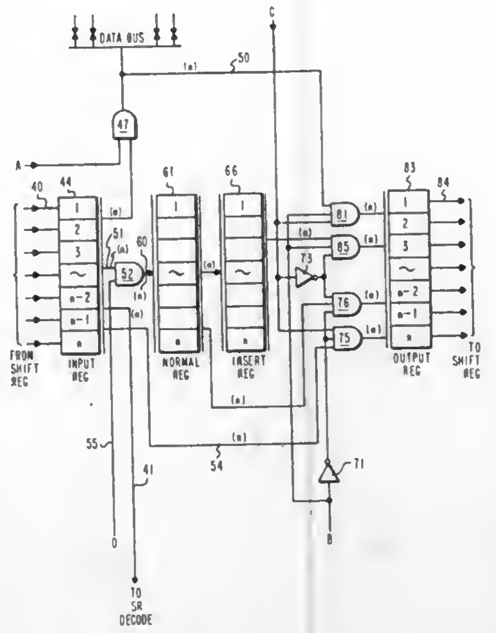
4,194,245
SYSTEM FOR RANDOMLY ACCESSING A RECIRCULATING MEMORY

Robert A. Pascoe, Round Rock; Charles N. Sprott, Austin, both of Tex., and Douglas W. Westcott, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1978, Ser. No. 883,442

Int. Cl.^{2} G11C *19/00*

U.S. Cl. 364—900 **4 Claims**



1. A memory control system for randomly relocating the accessible operating flag in a recirculating memory in one revolution of the memory comprising:

code means in said recirculating memory for defining the accessible operating flag in said memory;

means for receiving an address to be accessed in said memory;

means for decoding said address into a count representing the number of memory locations the code means is to be moved from its present location to the address to be accessed;

means for detecting said code means;

means for generating a control signal for removing said code means from recirculating in said recirculating memory in response to said means for detecting;

means for counting the number of codes recirculating in said memory while said code means is removed in response to said means for decoding; and

means for reinserting the code means in said recirculating memory at the address to be accessed when the means for counting has counted a number of codes equal to the count established by said means for decoding.

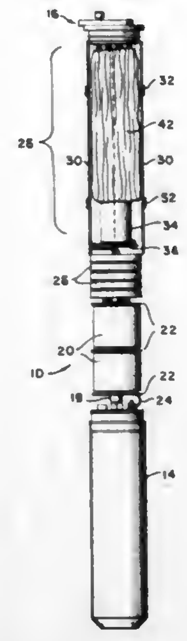
4,194,246
NOISEMAKER BEACON

Ralph P. Crist, Harrisburg, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1958, Ser. No. 734,803

Int. Cl.^{2} H04B *11/00*

U.S. Cl. 367—1 **6 Claims**



1. An acoustic jammer assembly constructed for ejection from a signal tube on a submarine, said assembly comprising a cylindrical casing for containing various elements of the jammer; a high frequency acoustic noisemaker attached to one end of said casing and comprising a thick wall cylinder having the same outer diameter as said casing and incuding an energizing motor; a sea cell battery physically connected to said and electrically connected to said motor for energizing said motor and mounted inside said casing; a flotation unit mounted inside said casing and physically connected to said battery; said flotation unit comprising a collapsed parachute, an inflatable balloon having a gas generating balloon inflating canister having a gas discharge opening in communication with the interior of said balloon, and a regulating valve in said balloon and actuated by said parachute for regulating the flotation depth of said flotation unit; a conical spring ejector compressed between said flotation unit and said battery for ejecting said flotation unit from said casing; a removable end cover plate for the casing, said cover plate including a trigger actuated mechanism so constructed as to be operated upon passage of the assembly through said signal tube thereby releasing the cover plate from the casing, whereby said compressed ejector spring may eject said flotation unit and allow water to come in contact with the gas generator and battery.

DESIGN PATENTS

GRANTED MAR. 18, 1980

ERRATA

For CLASS	See PATENT NO.
D24–017	254,504
D27–003	254,510
D30–006	254,511

DESIGNS

MARCH 18, 1980

254,456

WEDGIE

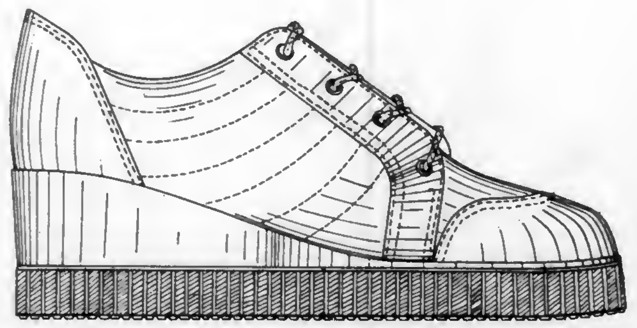
Norman H. Finn, Waban, Mass., assignor to The United States Shoe Corporation, Cincinnati, Ohio

Filed Feb. 7, 1978, Ser. No. 875,879

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—286



254,457

OPEN TOE WEDGIE SNEAKER WITH TOE AND HEAL GUARDS

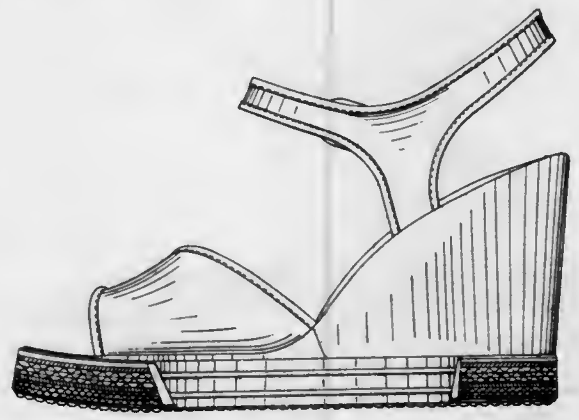
Norman H. Finn, Waban, Mass., assignor to The United States Shoe Corporation, Cincinnati, Ohio

Filed Nov. 23, 1977, Ser. No. 854,369

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—296



254,458

HAMMOCK-TYPE HANGING CHAIR

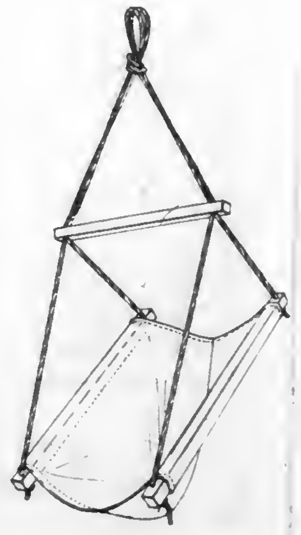
Anne E. Wakefield, 3553 Mission St., Apartment B, San Francisco, Calif. 94110

Filed Oct. 11, 1977, Ser. No. 841,145

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—53



254,459

CHAIR

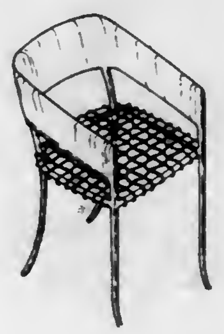
Jerome Eastman, 3 E. Ontario St., Chicago, Ill. 60611

Filed Aug. 15, 1977, Ser. No. 824,969

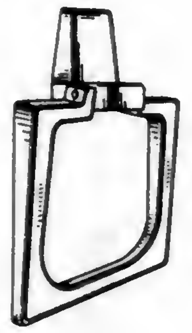
Term of patent 14 years

Int. Cl. D6—*03*

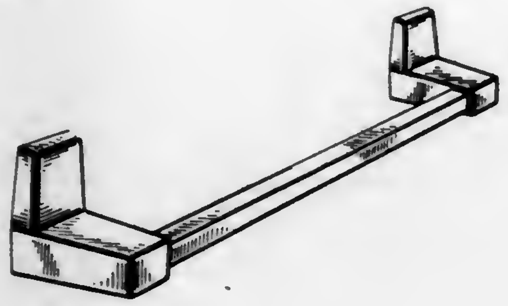
U.S. Cl. D6—70



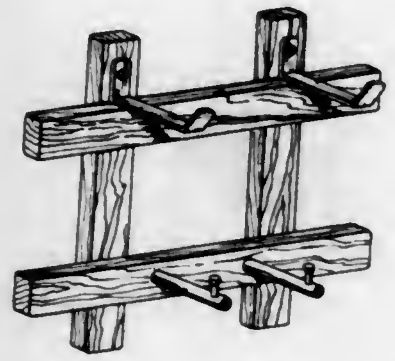
254,460
TOWEL RING
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Oct. 12, 1977, Ser. No. 841,540
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99



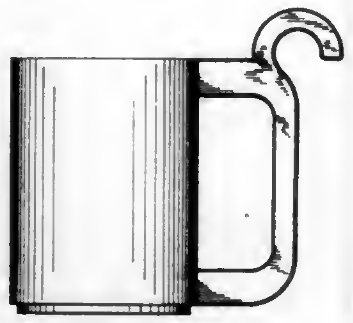
254,461
TOWEL BAR
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Oct. 12, 1977, Ser. No. 841,544
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99



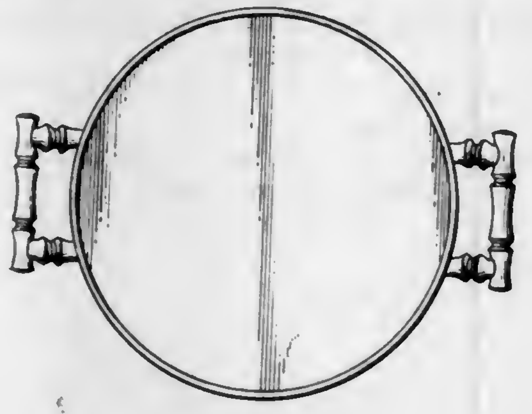
254,462
COMBINED HAIR DRYER AND CURLING IRON CADDY
Donald W. Heckathorn, 31556 Agoura Rd., Westlake Village, Calif. 91361
Filed May 19, 1978, Ser. No. 907,895
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114

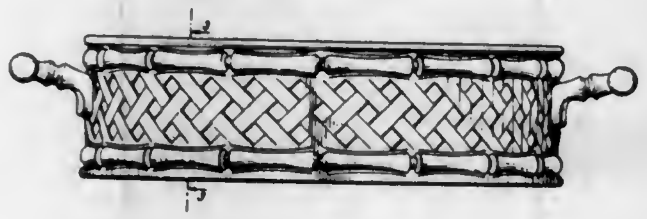


254,463
BEVERAGE CONTAINER
Michael C. Wilson, Glen Ellyn, Ill., assignor to Howw Manufacturing Company, Carol Stream, Ill.
Filed Dec. 14, 1977, Ser. No. 861,026
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9

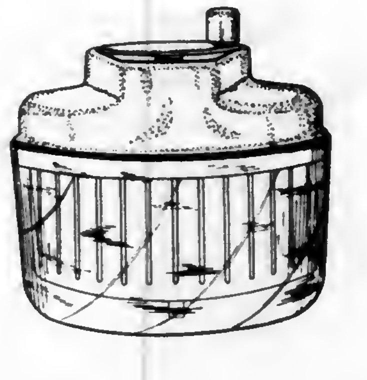


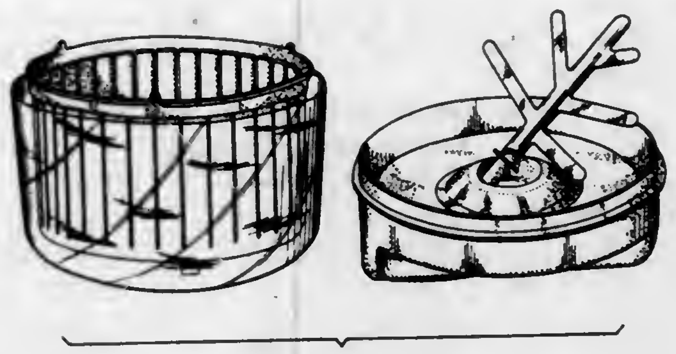
254,464
GALLERY TRAY
Stuart A. Young, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Jul. 5, 1977, Ser. No. 813,218
The portion of the term of this patent subsequent to Dec. 25, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—20



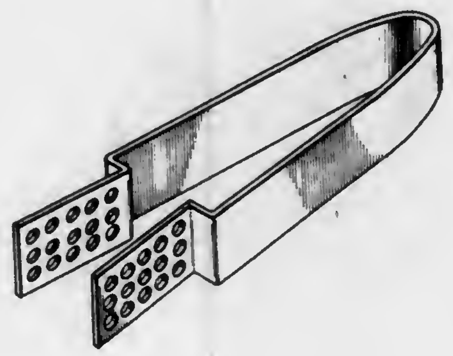


254,465
COMBINED SALAD DRYER AND TOSSER
Bernard Pauty, Fontaine les Dijon, France, assignor to SEB, Selongey, France
Filed May 3, 1977, Ser. No. 793,436
Claims priority, application France, Nov. 10, 1976, 76 135
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47

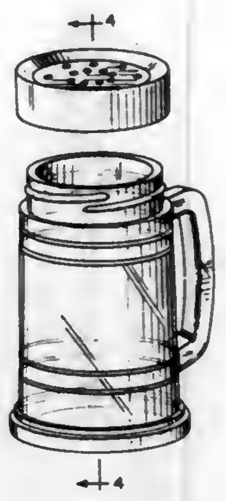




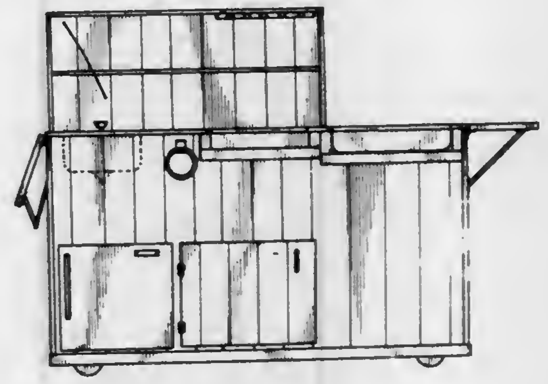
254,466
TEA BAG SQUEEZER
Louis A. Carson, 1432 Erin Ave., Upland, Calif. 91786
Filed Feb. 9, 1978, Ser. No. 876,548
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47



254,467
CONDIMENT SHAKER OR SIMILAR ARTICLE
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 610,095, Sep. 4, 1975, Pat. No. Des. 246,882. This application Jun. 16, 1977, Ser. No. 807,308
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—56

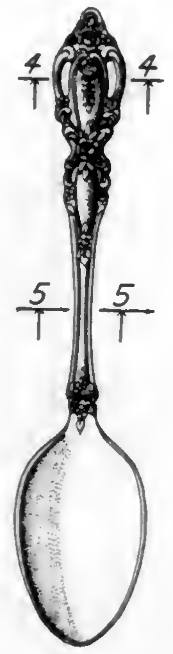


254,468
PATIO BAR AND BAR-B-QUE UNIT
Averil B. Cox, 20239 Arminta, Canoga Park, Calif. 91306
Filed Sep. 27, 1977, Ser. No. 837,050
Term of patent 14 years
Int. Cl. D7—*02;* D12—*14*
U.S. Cl. D7—108



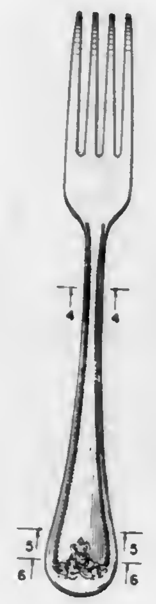
254,469
SPOON OR SIMILAR ARTICLE

Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 27, 1977, Ser. No. 865,011
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



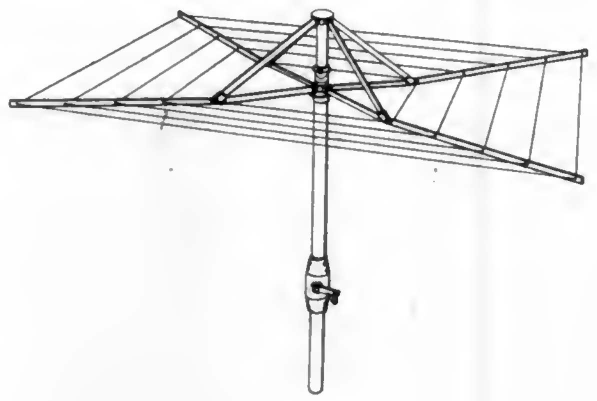
254,470
ARTICLE OF FLATWARE

William J. Knope, 153 Cottage St., Meriden, Conn. 06450
Division of Ser. No. 838,931, Oct. 3, 1977. This application May 25, 1979, Ser. No. 42,702
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



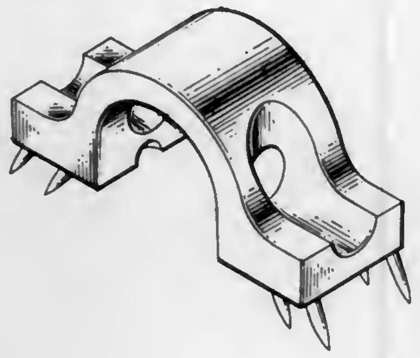
254,471
ROTARY CLOTHES HOIST

Terence D. Seabrook, Edwardstown, Australia, assignor to Hills Industries Limited, Edwardstown, Australia
Filed Jun. 14, 1976, Ser. No. 695,642
Claims priority, application Australia, Mar. 5, 1976, 68743/76
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—196



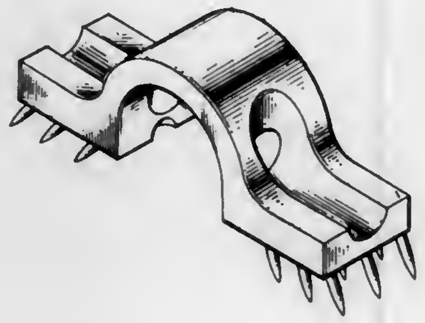
254,472
CARPET INSTALLING TOOL

Patrick W. Finucane, 287 Rosalie La., Palatine, Ill. 60067, and William A. Malvasio, 608 S. Browns Lake Dr., Burlington, Wis. 52105
Filed Feb. 6, 1978, Ser. No. 875,248
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—15



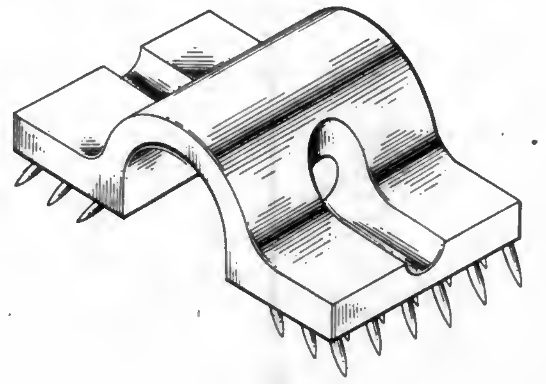
254,473
CARPET INSTALLING TOOL

Patrick W. Finucane, 287 Rosalie La., Palatine, Ill. 60067, and William A. Malvasio, 608 S. Browns Lake Dr., Burlington, Wis. 52105
Filed Feb. 6, 1978, Ser. No. 875,249
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—15



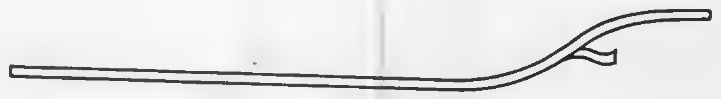
254,474
CARPET INSTALLING TOOL

Patrick W. Finucane, 287 Rosalie La., Palatine, Ill. 60067, and William A. Malvasio, 608 S. Browns Lake Dr., Burlington, Wis. 52105
Filed Feb. 6, 1978, Ser. No. 875,250
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—15



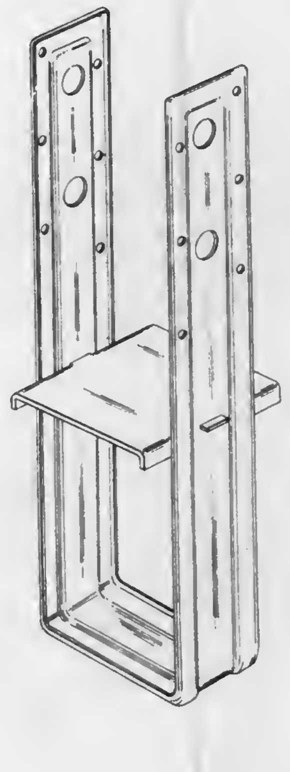
254,475
CAN OPENER

George F. Stover, 204 East Dr., Lebanon, Ind. 46052
Filed Feb. 22, 1977, Ser. No. 770,941
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—18



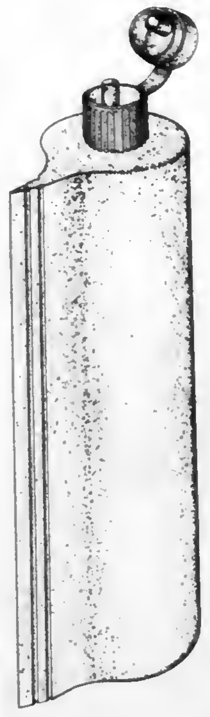
254,476
ARCHITECTURAL POST BASE

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.
Filed Nov. 17, 1977, Ser. No. 852,586
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



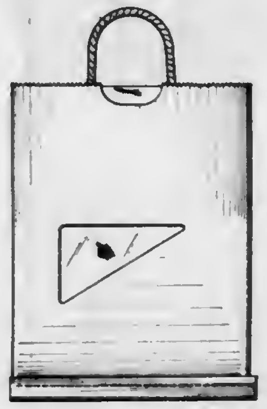
254,477
COMBINED BOTTLE AND SQUEEGEE

Frank J. Mack, Kinnelon, N.J., assignor to American Home Products Corp., New York, N.Y.
Filed Jun. 9, 1977, Ser. No. 805,200
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—10



254,478
PANTYHOSE PACKAGE

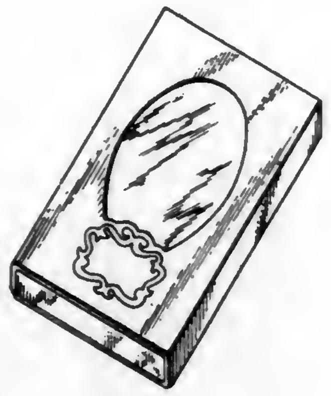
Barry G. Carroll, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Sep. 2, 1977, Ser. No. 830,495
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193



254,479
PACKAGING CONTAINER OR SIMILAR ARTICLE

Arthur L. Eilertson, Ipswich, Mass., assignor to Textron, Inc., Providence, R.I.

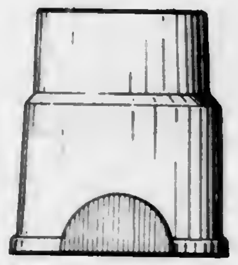
Filed Jul. 18, 1977, Ser. No. 816,605
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



254,480
CLOSURE

Ned J. Smalley, Perrysburg, Ohio, assignor to Owens-Illinois, Inc.

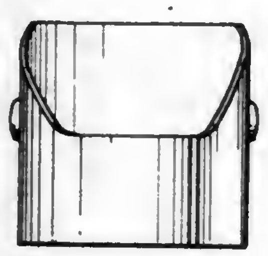
Filed Oct. 3, 1977, Ser. No. 838,514
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—254

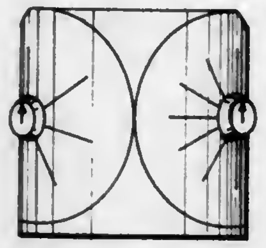


254,481
DISPENSING INDICATOR FOR A CONTAINER

Bette J. Hull, 78 Bartley Bull Pkwy., Brampton, Ontario, Canada (L6W 2J6)

Filed Mar. 21, 1978, Ser. No. 888,883
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—260

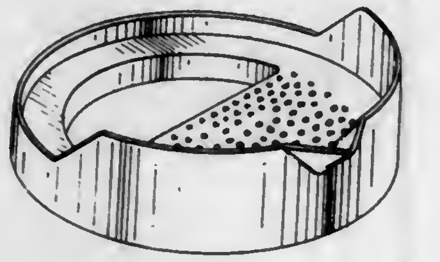




254,482
POURING ATTACHMENT FOR PAINT CANS

Charles J. Bell, 5984 Fiji St., Cypress, Calif. 90630

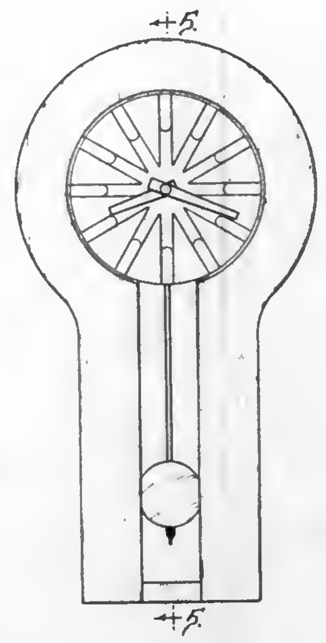
Filed May 26, 1978, Ser. No. 909,999
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—290



254,483
CLOCK

Richard K. Thomas, Elk Grove Village, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

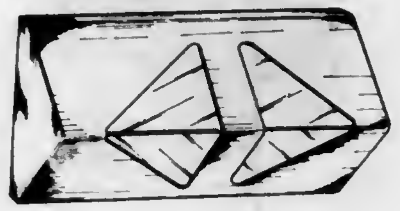
Filed Nov. 9, 1977, Ser. No. 849,909
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—1



254,484
UP AND DOWN DIRECTIONAL SIGNAL FOR AN ELEVATOR

Pekka Perjo, Helsinki, Finland, assignor to Kone Osakeyhtio, Helsinki, Finland

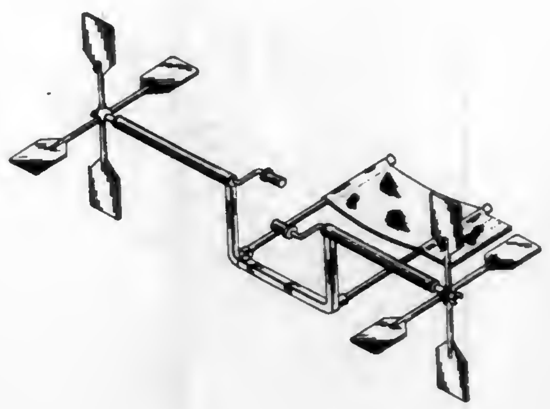
Filed Apr. 10, 1978, Ser. No. 895,867
Claims priority, application Finland, Dec. 8, 1977, 77731
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—108



254,485
PADDLE WHEEL APPARATUS

Roger C. Stevens, 5900 Camden Ave. North, Brooklyn Center, Minn. 55430

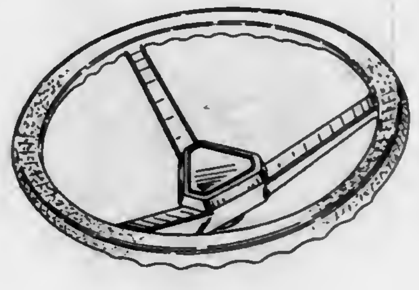
Filed Jan. 12, 1978, Ser. No. 869,030
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—70



254,486
STEERING WHEEL

Gregg C. Montgomery, Hinsdale, and Robert A. Skyer, Palatine, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 21, 1978, Ser. No. 879,168
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—176



254,487

HIGH VOLTAGE FUSE END FITTING

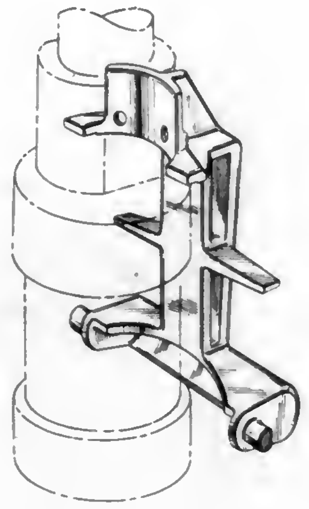
Bruce A. Biller, Chicago, and Henry W. Scherer, Mount Prospect, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Sep. 27, 1977, Ser. No. 837,242

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D13—35



254,488

MACHINE CONTROL FOOT PEDAL OR THE LIKE

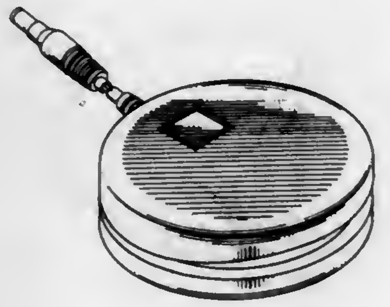
Vincent Giannotti, Jr., and Charles R. Leach, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,552

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D13—36



254,489

CASSETTE TAPE RECORDER AND PLAYER OR SIMILAR ARTICLE

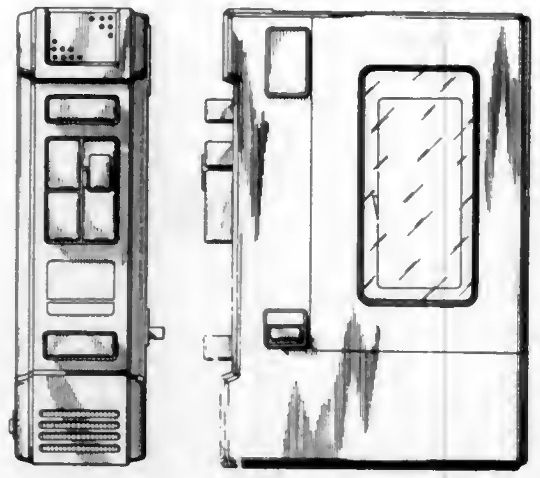
Richard Culbertson, Manlius, N.Y., assignor to General Electric Company

Filed Sep. 26, 1977, Ser. No. 836,407

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—6



254,490

LOUDSPEAKER WITH GRILLE

Hideyuki Matsubara, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan

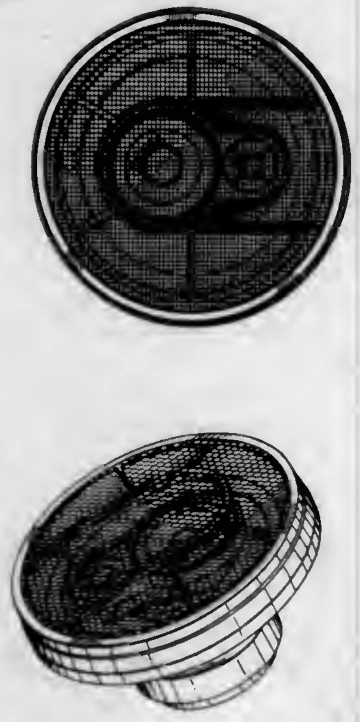
Filed Nov. 9, 1978, Ser. No. 959,197

Claims priority, application Japan, May 10, 1978, 53-19178

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—30



254,491

HIGH FREQUENCY LOUDSPEAKER

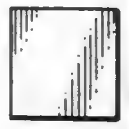
Gary C. Gillum, Hope, Ark., assignor to Klipsch and Associates, Inc., Hope, Ark.

Filed Nov. 14, 1977, Ser. No. 851,537

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—35



254,492

DUAL MAGNETIC DISC-CONSOLE UNIT FOR AN ELECTRONIC TYPING SYSTEM

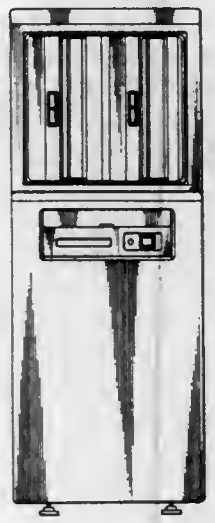
Wayne C. Cathey, Bedford, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1977, Ser. No. 837,775

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—46



254,493

STORED NUMBER TELEPHONE DIALING UNIT

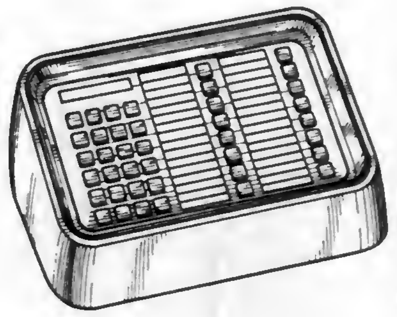
Raymond A. Grosso, Troy, and Alfred J. Prizlow, Bloomfield Hills, both of Mich., assignors to Microelectronic Communications Corp., Madison Heights, Mich.

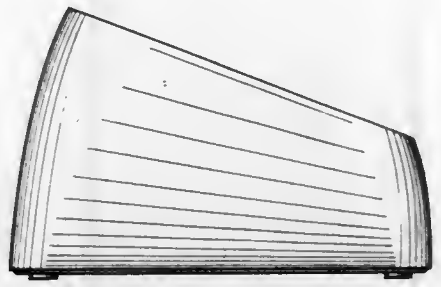
Filed Jan. 23, 1978, Ser. No. 871,418

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—66





254,494

CHEESE VAT

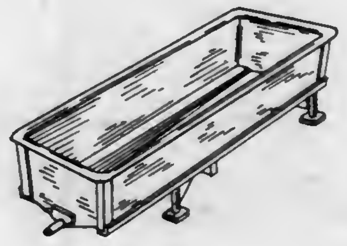
Donald G. Worden, Beaver Dam, Wis., assignor to Stainless Steel Fabricating, Inc., Columbus, Wis.

Filed Apr. 17, 1978, Ser. No. 896,918

Term of patent 14 years

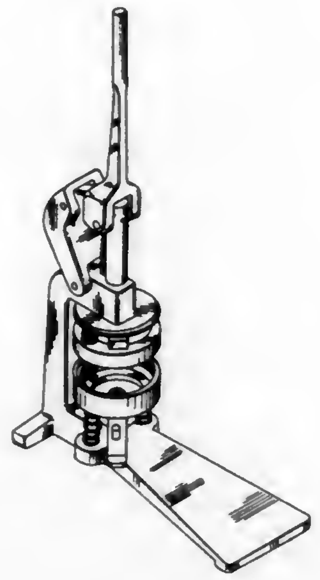
Int. Cl. D15—*08*

U.S. Cl. D15—102



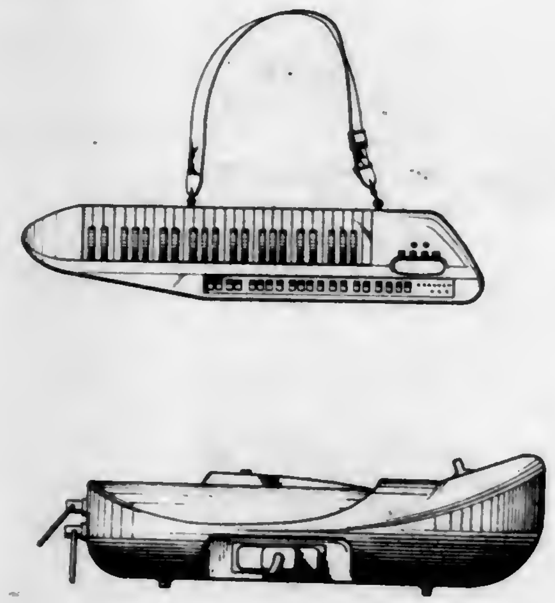
254,495
MACHINE FOR ASSEMBLING BUTTONS

Malcolm J. Roebuck, LaSalle, Ill., assignor to Badge-A-Minit Ltd., LaSalle, Ill.
Filed Nov. 13, 1978, Ser. No. 959,871
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—122



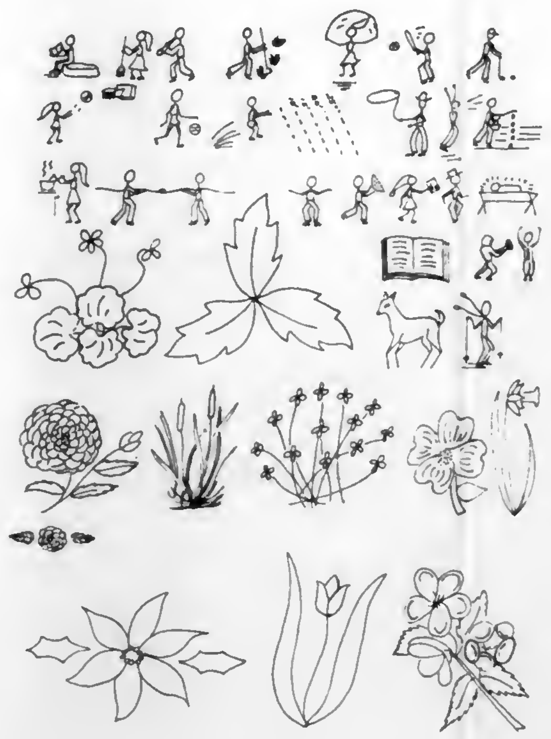
254,496
KEYBOARD INSTRUMENT FOR USE WITH A REMOTE SYNTHESIZER OR THE LIKE

Jeremy R. Hill, 87 Centre St., Dover, Mass. 02030
Filed Jan. 31, 1977, Ser. No. 763,997
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—1



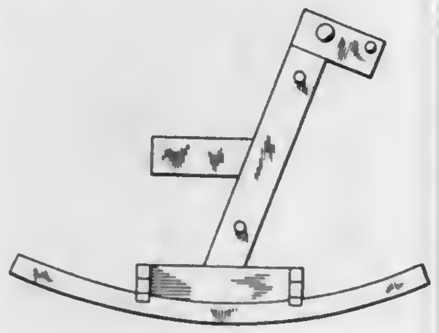
254,497
FONT OF ILLUSTRATION FIGURES FOR CHILDREN'S STORIES AND CARDS

Avis M. Dickey, South Milford, Ind., assignor to Dickey, Inc., South Milford, Ind.
Filed May 12, 1977, Ser. No. 796,208
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—33



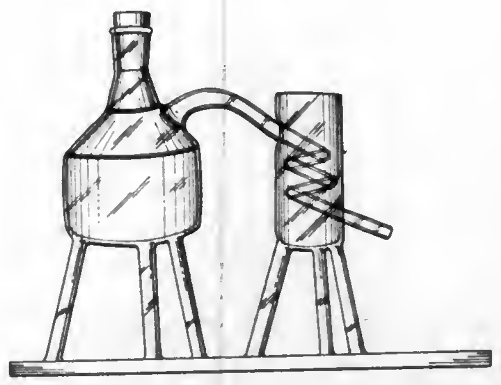
254,498
ROCKING HORSE

Robert H. Chich, 8855 N. Spruce Rd., Milwaukee, Wis. 53217
Filed Sep. 15, 1977, Ser. No. 833,601
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—70



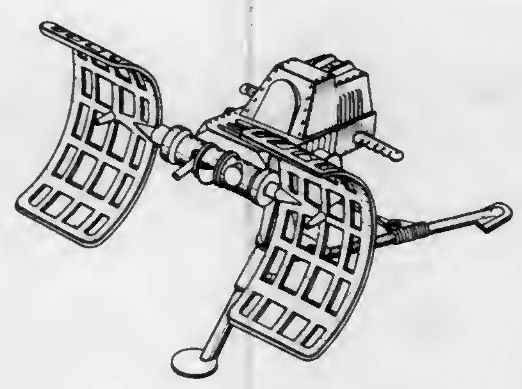
254,499
TOY DISTILLER

Ernest C. Steed, 4228 Manuela Ave., Palo Alto, Calif. 94306
Filed Jun. 20, 1977, Ser. No. 808,246
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109



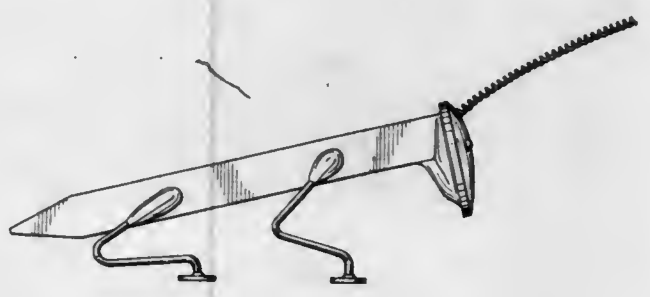
254,500
TOY SCANNER PACK

Fred D. Eddins, Mapleville, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Nov. 28, 1977, Ser. No. 856,025
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109



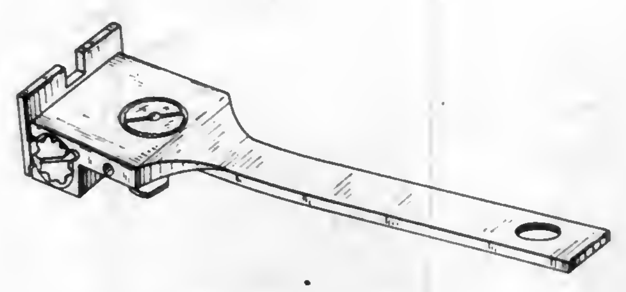
254,501
FIGURINE

Robert Hosek, 29 Albert St., Peru, Ind. 46970
Filed May 1, 1978, Ser. No. 901,737
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—185



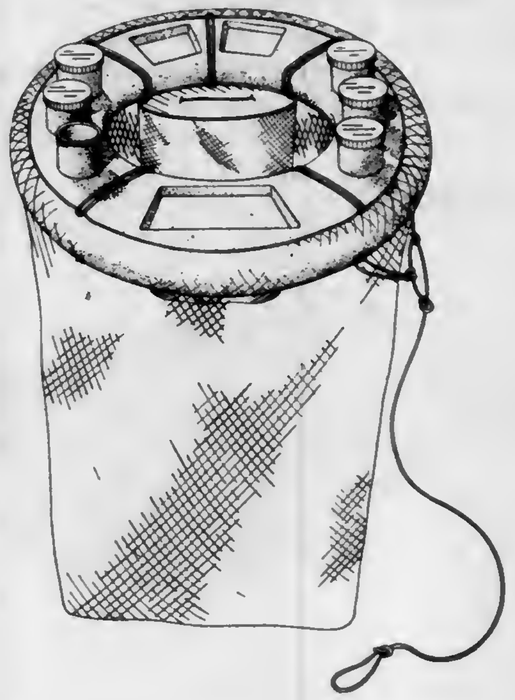
254,502
GUN SIGHT

Austin F. Behlert, 33 Herning Ave., Cranford, N.J. 07016
Filed Jan. 10, 1978, Ser. No. 868,305
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—8

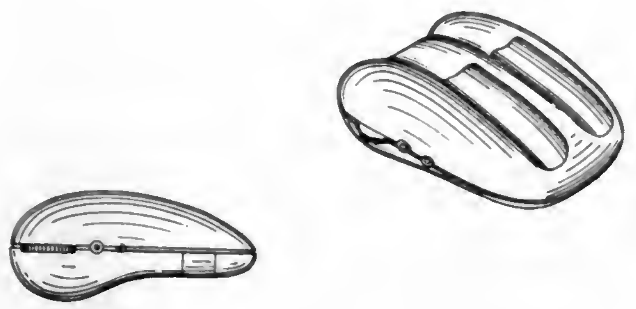


254,503
FLOATING FISH HOLDER

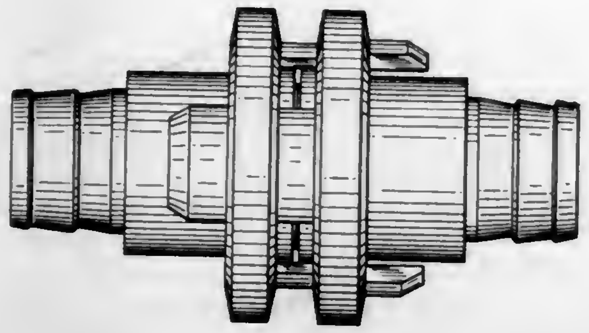
Lupe S. Belasquez, 4238 Wild Oak Dr., San Antonio, Tex. 78219
Filed Jun. 13, 1977, Ser. No. 806,011
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—18



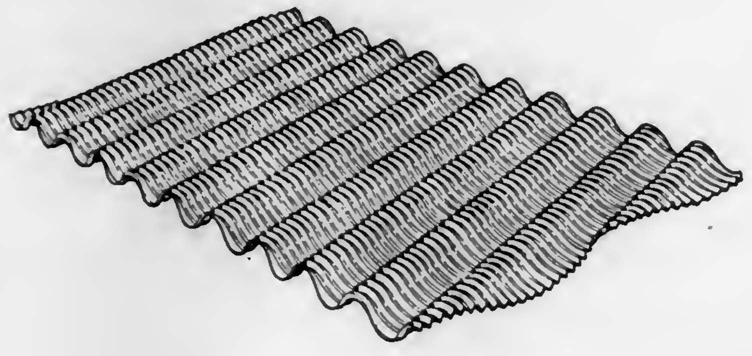
254,504
GALVANIC SKIN RESISTANCE/TEMPERATURE BIOFEEDBACK DEVICE
Harold K. Myers, 4300 deMaisonneuve Blvd., W. Montreal, Quebec, Canada
Filed Mar. 27, 1978, Ser. No. 890,216
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



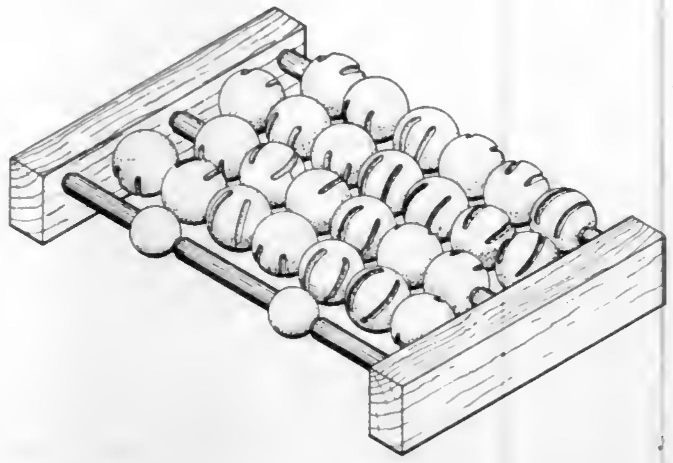
254,505
HOSE COUPLING
Frederick L. Parsons, 759 Morningside Rd., Ridgewood, N.J. 07450, and William G. Atkinson, Jr., Saddle River, N.J., assignors to Frederick L. Parsons
Filed Apr. 28, 1977, Ser. No. 792,024
Term of patent 7 years
Int. Cl. D23—*01*
U.S. Cl. D23—44



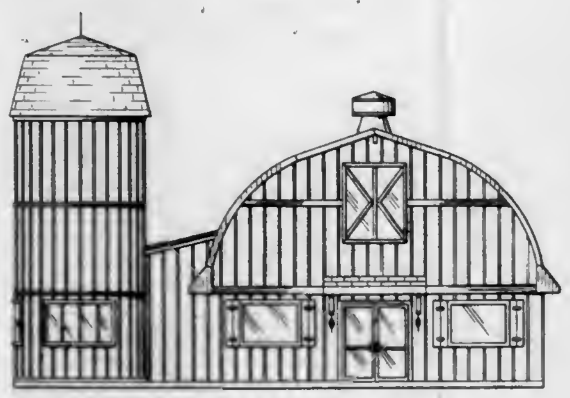
254,506
CORRUGATED METAL SHEET CONTACT BODY FOR HUMIDIFIERS
Roy Holmberg, Jönköping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Filed Oct. 3, 1977, Ser. No. 839,219
Claims priority, application Sweden, Apr. 1, 1977, 77-0750
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146



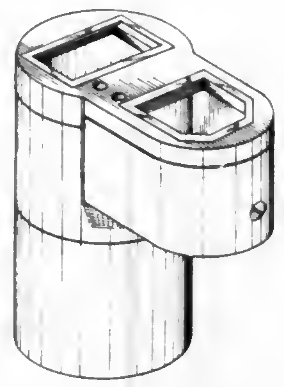
254,507
FOOT MASSAGER
James Redding, 320 Palo Alto Ave., Palo Alto, Calif. 94301
Filed Feb. 13, 1978, Ser. No. 877,420
Term of patent 3½ years
Int. Cl. D28—*03*
U.S. Cl. D24—36



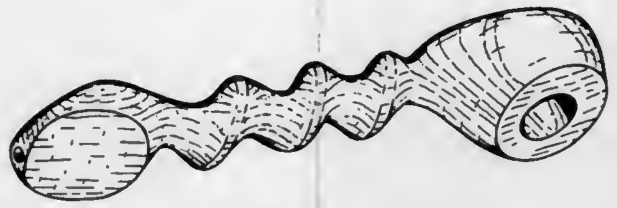
254,508
BUILDING
Howard Cooper, Chicago, Ill., assignor to Barn and Silo Stores Inc., Chicago, Ill.
Filed Nov. 28, 1978, Ser. No. 964,352
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—14



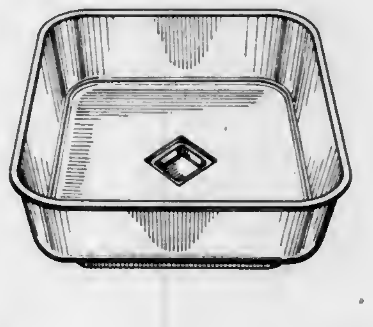
254,509
HOUSING FOR A PUMP LIFT STATION
Richard J. Migchelbrink, Jr., Uniontown, Ohio, assignor to Lindsay Excavating & Concrete Products Company
Filed Aug. 17, 1977, Ser. No. 825,415
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—36



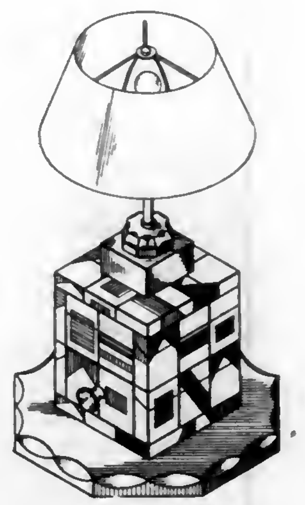
254,510
PIPE
Luther L. Shaak, State College, Pa., assignor to Quickdraw Accessories, Inc., State College, Pa.
Filed Dec. 30, 1977, Ser. No. 866,463
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03



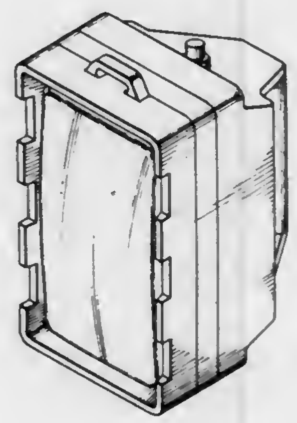
254,511
REARING TANK
Dale E. Young, II, Rte. 4, Box 4915-Z, Juneau, Ak. 99803; David K. Elie, 13551 35th Ave. NE., Seattle, Wash. 98125, and Peter K. Schoening, 5807 NE. 151st Ave., Bothell, Wash. 98011
Filed Jan. 30, 1978, Ser. No. 873,228
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6



254,512
LAMP
Milton Leathers, 1210 Petree #233, El Cajon, Calif. 92020
Filed Nov. 10, 1977, Ser. No. 850,494
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—51



254,513
HAND HELD SPOTLIGHT
Larry K. Dart, Costa Mesa, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Mar. 20, 1978, Ser. No. 890,700
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—50

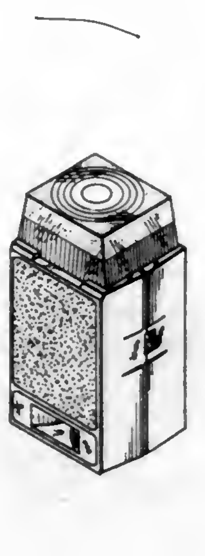


254,514
COMBINED POWER FAILURE LIGHT AND FLASH LIGHT

Thomas H. Nicholl, 1204 W. 27th St., Kansas City, Mo. 64108; Donald L. Rohrs, Overland Park, Kans., and John J. Collins, Kansas City, Mo., assignors to Thomas H. Nicholl, Kansas City, Mo.

Filed May 19, 1978, Ser. No. 907,606
Term of patent 14 years
Int. Cl. D26—*05, 02*

U.S. Cl. D26—26

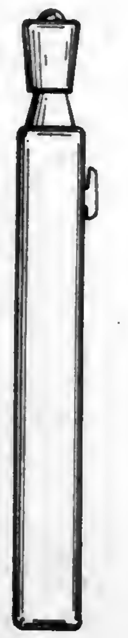


254,515
HAND HELD EXAMINATION LAMP WITH DISPOSABLE TIP

John F. Guth, St. Petersburg, Fla., assignor to Concept, Inc., Clearwater, Fla.

Filed Nov. 23, 1977, Ser. No. 854,400
Term of patent 14 years
Int. Cl. D26—*02*

U.S. Cl. D26—49



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PATENTS WERE ISSUED ON THE 18TH DAY OF MARCH, 1980

Note.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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  - Zumsteg, Horst, 4,193,285, Cl. 72-348.000.
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- Amax Inc.: *See—*
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- Barratt, Don C. Disposable receiver. 4,193,496, Cl. 206-380.000.
- Barrett, Fred, to Establissment Halgar. Manufacturing process of a thin metal sheet by electrolytic deposit. 4,193,846, Cl. 204-13.000.
- Barry, Vincent T., to Carrier Corporation. Apparatus for supplying a cooling liquid to a condenser of a refrigeration unit. 4,193,269, Cl. 62-171.000.
- Barto, LeRoy. Prefabricated wall or ceiling assembly. 4,193,239, Cl. 52-222.000.
- Barton, Derek H. R.; Long, Alan G.; Looker, Brian E.; Wilson, Edward M.; and Elphinstone, William G., to Glaxo Laboratories, Limited. Chemical compounds. 4,193,917, Cl. 260-239.00A.
- BASF Wyandotte Corporation: *See—*
  - Kramer, David A.; Argade, Shyam D.; and Balko, Edward N., 4,193,861, Cl. 204-296.000.
- Baudendistel, Hermann, deceased: *See—*
  - Vetter, Klaus; and Baudendistel, Hermann, deceased, 4,193,732, Cl. 414-609.000.
- Baudendistel, Rosemarie, heir: *See—*
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- Bauer, Kurt; Harder, Ulli; and Sturm, Wolfgang, to Haarmann & Reimer GmbH. Nitriles with odorant properties. 4,193,934, Cl. 260-465.00R.
- Bauer, Philip J. Organizer for dental clamps. 4,193,198, Cl. 433-77.000.
- Baulard-Caugan, Raymond G. Double-acting single-web swimming apparatus. 4,193,371, Cl. 115-22.200.
- Baum, John W., to General Electric Company. Coin-operated washing machine cycle time reducer. 4,193,488, Cl. 194-9.00T.
- Baumann, Marcus; Kvita, Vratislav; Roth, Martin; and Waterhouse, John S., to Ciba-Geigy Corporation. Imidyl compounds. 4,193,927, Cl. 260-326.260.
- Baur, Rudolf, to Swiss Aluminium Ltd. Lubricant for metal strip. 4,193,881, Cl. 252-17.000.
- Bayer Aktiengesellschaft: *See—*
  - Baatz, Gunther; Schafer, Walter; and Dahm, Manfred, 4,193,889, Cl. 252-316.000.
  - Dieterich, Dieter, 4,194,035, Cl. 528-67.000.
  - Enders, Edgar; Stendel, Wilhelm; and Hammann, Ingeborg, 4,194,008, Cl. 424-322.000.
  - Forster, Heinz; Klusacek, Hans; and Wenz, Arthur, 4,194,054, Cl. 562-493.000.
  - Niemers, Ekkehard; Wollweber, Hartmund; Kolling, Heinrich; and Thomas, Herbert, 4,194,004, Cl. 424-300.000.
  - Reischl, Artur; Hombach, Rudolf; and Dollhausen, Manfred, 4,193,832, Cl. 156-331.000.
  - Sirrenberg, Wilhelm; Klauke, Erich; Schramm, Jurgen; Hammann, Ingeborg; and Stendel, Wilhelm, 4,194,005, Cl. 424-304.000.
  - Tacke, Peter; Neuray, Dieter; and Michael, Dietrich, 4,193,907, Cl. 260-37.00N.
  - Wedemeyer, Karlfried; Kiel, Wolfgang; and Evertz, Werner, 4,193,937, Cl. 260-570.00R.
  - Wingler, Frank; Eicher, Theobald; Muller, Friedemann; Fischer, Winfried; and Prinz, Richard, 4,193,897, Cl. 260-17.00R.
- Bayshore Creative Products, Inc.: *See—*
  - Havens, Glenn G., 4,193,545, Cl. 239-109.000.
- BBC Brown Boveri & Company Limited: *See—*
  - Frutschi, Hansulrich, 4,193,266, Cl. 60-644.000.
  - Kurzi, Albert; and Mersiovsky, Willy, 4,193,202, Cl. 33-174.00L.
  - Ritter, Franz, 4,194,145, Cl. 318-799.000.
- Beard, Benjamin F., III. Mobile cleaning apparatus for removing debris from the surface of parking lots and the like. 4,193,159, Cl. 15-340.000.
- Beasley, Max M., to Tuftco Corporation. Low pile forming apparatus for tufting machine. 4,193,359, Cl. 112-79.00R.
- Beatrice Foods Co.: *See—*
  - Gladstone, Joseph, 4,193,549, Cl. 239-251.000.
- Bechgaard, Helle; and Pedersen, Arne M., to A/S Alfred Benzon. Multiple-units drug dose. 4,193,985, Cl. 424-19.000.
- Beck, Hans, to geobra Brandstaetter GmbH & Co., KG. Toy building. 4,193,221, Cl. 46-19.000.
- Becka, Michael M., to International Shoe Machine Corporation. Toe pulling over and lasting machine. 4,193,154, Cl. 12-10.100.
- Becker, Dieter: *See—*
  - Harth, Helmut; and Becker, Dieter, 4,193,987, Cl. 424-49.000.
- Beckerman, Howard L.; and Dob, Allan M., to Singer Company, The. Lint minimization in sewing machine bobbin alarm. 4,193,363, Cl. 112-278.000.
- Becton, Dickinson & Company: *See—*
  - Malinouskas, Donald, 4,194,179, Cl. 340-211.000.
- Beecham Group Limited: *See—*
  - Forward, Geoffrey C.; and Gawthorpe, Janet A., nee Baylis, 4,193,988, Cl. 424-52.000.
  - Goudie, Alexander C., 4,194,010, Cl. 424-341.000.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Bosik, Barry S., 4,194,091, Cl. 179-77.000.
  - Carides, James N.; and Murphy, Donald W., 4,194,062, Cl. 429-194.000.
  - Fitzgerald, John D., 4,193,177, Cl. 29-56.600.
  - Van Horn, Robert H., 4,193,201, Cl. 339-98.000.
- Belokin, Paul, Jr. Display rack assembly. 4,193,351, Cl. 108-59.000.
- Ben-Gurion University of the Negev Research & Development Authority: *See—*
  - Loeb, Sidney, 4,193,267, Cl. 60-649.000.
- Bendix Corporation, The: *See—*
  - Marchak, Roman O.; and Peterson, William A., Jr., 4,193,380, Cl. 123-32.0EG.
- Benincasa, John J.; and Hage, Marvin L., to United Technologies Corporation. Boat designed to withstand the force of underwater explosions. 4,193,367, Cl. 114-68.000.
- Bennett, Clive G.: *See—*
  - Adam, Colin M.; and Bennett, Clive G., 4,193,822, Cl. 148-3.000.
- Bensoam, Jean: *See—*
  - Muller, Alain; Mathey, Francois; and Bensoam, Jean, 4,193,978, Cl. 423-648.00R.
- Bent, Michael F.: *See—*
  - Whiteley, Glenn R.; and Bent, Michael F., 4,193,199, Cl. 33-1.0PT.
- Berber, Viktor A.; Pervushin, Evgeny S.; Murtazin, Khafiz M.; Kholin, Vladimir G.; and Galishnikov, Boris M. Apparatus for calibrating instruments for granulometric recording. 4,193,288, Cl. 73-1.00R.
- Bergman, Richard C.: *See—*
  - Rich, Joseph W.; and Bergman, Richard C., 4,194,169, Cl. 331-94.50G.
- Berkowitz, Milton. Hanger for hanging fabric. 4,193,504, Cl. 211-119.000.
- Bernard, Jean-Pierre L.: *See—*
  - Devienne, Andre M.; Igea, Gilbert L.; and Bernard, Jean-Pierre L., 4,193,429, Cl. 141-4.000.
- Bernard, Vincent E. Portion controlled frozen food. 4,193,272, Cl. 62-320.000.
- Bernardi, Carl E., to National Semiconductor Corporation. Automatic taping machine. 4,193,834, Cl. 156-521.000.
- Berseth, Michel, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Starting block switch assembly for timed swimming events. 4,194,101, Cl. 200-52.00R.
- Bertelli, Guido; Roma, Pierpaolo; and Locatelli, Renato, to Montedison S.p.A. Self-extinguishing polymeric compositions. 4,193,945, Cl. 525-2.000.
- Besenbruch, Gottfried E. A.: *See—*
  - Adams, Charles C.; Allen, Curtis L.; and Besenbruch, Gottfried E. A., 4,194,027, Cl. 427-249.000.
- Bessin, Pierre: *See—*
  - Laforest, Jacqueline; Bonnet, Jacqueline; and Bessin, Pierre, 4,194,003, Cl. 424-274.000.
- Biglin, Timothy J., to Horstmann Gear Company Limited, The. Ripple control systems. 4,194,128, Cl. 307-3.000.
- Bille, Heinz, to Maschinenfabrik Walter Scheele KG. Oscillatory pump for the transport of viscous materials. 4,193,743, Cl. 417-481.000.
- Bindhoff, Eduardo W.: *See—*
  - Lamberton, Bruce A.; and Bindhoff, Eduardo W., 4,193,461, Cl. 175-19.000.
- Birum, Gail H.; and Jansen, Richard F., to Monsanto Company. Phosphorus-containing propionates. 4,193,914, Cl. 260-45.85R.
- Bishop, Arthur E. Machine for manufacturing variable ratio racks. 4,193,722, Cl. 409-59.000.
- Bishow, Raymond L. Rocking, turning toy. 4,193,592, Cl. 272-114.000.
- Bissett, Fred L. Ski device. 4,193,609, Cl. 280-12.00K.
- Biwa, Tetuo: *See—*
  - Awane, Katunobu; Hattori, Hironori; Biwa, Tetuo; and Tamaki, Hiroshi, 4,194,214, Cl. 357-41.000.
- Bjorklund, Fritz L. G.; Sandberg, Carl-Olof; Sternbeck, Olaf; and Wern, Lars A., to Telefonaktiebolaget L M Ericsson. Two-terminal network comprising a transistor. 4,194,134, Cl. 307-255.000.
- Bjorklund, Tom B., to AB Bonnierforetagen. Process for quantitative determination of CAPA antigen or antibody. 4,193,981, Cl. 424-12.000.
- Black, Frank M. Columnar contaminant remover. 4,193,205, Cl. 34-9.000.

- Black, James L., to Merichem Company. Liquid sealing apparatus for sealing vapors in a tank. 4,193,967, Cl. 422-170.000.
- Blaschke, Kurt; and Roob, Josef, to Stahl- und Apparatebau Hans Leffer GmbH. Rotary boring head. 4,193,462, Cl. 175-292.000.
- Blaskowski, Henry J., to Combustion Engineering, Inc. Soot blower for pressurized furnace. 4,193,158, Cl. 15-317.000.
- Blatt, John A.; and Fox, Gordon J., to Blatt, Leland Francis. Adjustable shuttle mount for presses. 4,193,731, Cl. 414-589.000.
- Blatt, Leland Francis: *See—*
  - Blatt, John A.; and Fox, Gordon J., 4,193,731, Cl. 414-589.000.
- Blendax-Werke R. Schneider GmbH & Co.: *See—*
  - Harth, Helmut; and Becker, Dieter, 4,193,987, Cl. 424-49.000.
- Blessing, Hubert, to Levi Strauss & Co. Toggle controlled servo system. 4,193,365, Cl. 112-314.000.
- Bloom, Stanley M.; Hoffman, Arnold; and Norland, Kenneth S., to Polaroid Corporation. Method of electrodeposition. 4,193,847, Cl. 204-15.000.
- Bochan, John, to General Electric Company. Agitator mechanism for clothes washing machine. 4,193,275, Cl. 68-134.000.
- Bock, Jan: *See—*
  - Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, 4,193,901, Cl. 260-28.50B.
- Bodelson, Berth I. A.; and Nordenberg, Mats B., to Alfa-Laval AB. Centrifugal separator with presedimentation means. 4,193,537, Cl. 233-20.00A.
- Bodin, Leslie J., to Burroughs Corporation. Automatic centering of character strings. 4,194,197, Cl. 340-711.000.
- Boehler, Rolf, to Northern Telecom Limited. Rotary indexing apparatus for automatic device insertion on printed circuit boards. 4,193,186, Cl. 29-741.000.
- Boffa, Gioacchino: *See—*
  - Cipolli, Roberto; and Boffa, Gioacchino, 4,193,763, Cl. 8-21.00C.
- Bohner, Beat: *See—*
  - Rohr, Otto; Pissiotas, Georg; and Bohner, Beat, 4,193,790, Cl. 71-116.000.
- Boigegrain, Robert; Gachon, Michel; Maffrand, Jean-Pierre; and Maire, Gerard, to Parcor. Thieno[2,3-c] and [3,2-c]pyridines, process for their preparation and therapeutic applications thereof. 4,193,997, Cl. 424-256.000.
- Bondar, Martin M.: *See—*
  - Rudy, Michael W.; Kramer, Edward J.; Bondar, Martin M.; and Whitney, Ronald L., 4,193,685, Cl. 355-41.000.
- Bonnet, Jacqueline: *See—*
  - Laforest, Jacqueline; Bonnet, Jacqueline; and Bessin, Pierre, 4,194,003, Cl. 424-274.000.
- Borg-Warner Corporation: *See—*
  - Ille, David R., 4,193,263, Cl. 60-420.000.
  - Kelbel, Donald W., 4,193,316, Cl. 74-477.000.
- Borisuck, John F.; Coviello, William L.; and Sheedy, Gary W., to Uniroyal, Inc. Anvil for outsole slitting. 4,193,155, Cl. 12-40.000.
- Borzym, Alexander; and Borzym, John J., to Alpha Industries, Inc. Double dump runout table. 4,193,486, Cl. 193-35.00R.
- Borzym, John J.: *See—*
  - Borzym, Alexander; and Borzym, John J., 4,193,486, Cl. 193-35.00R.
- Bosik, Barry S., to Bell Telephone Laboratories, Incorporated. Line feed circuit. 4,194,091, Cl. 179-77.000.
- Bottussi, Elvio: *See—*
  - Novello, Renzo; and Bottussi, Elvio, 4,193,723, Cl. 409-122.000.
- Boulanger, Henry J.; and Rizzo, Salvatore P., to Texas Instruments Incorporated. Method for mounting electrically conductive wires to a substrate. 4,193,181, Cl. 29-509.000.
- Bounds, William E. Dual condiment dispenser. 4,193,521, Cl. 222-142.400.
- Bourquin, George W.; and LaFontain, Louis. Fishing apparatus. 4,193,220, Cl. 43-15.000.
- Bowler, Donald F. Water driven tool. 4,193,228, Cl. 51-170.00T.
- Bowman, George F.; and Prescher, Kenneth A. Fluid check valve device. 4,193,417, Cl. 137-192.000.
- Bowman, Raymond E.; and Greaves, Anthony, to Co-Steel International Limited. Method of slitting a double or triple stranded bar. 4,193,283, Cl. 72-204.000.
- Bowman, Rodney V.; and Francis, Martin H., to NCR Corporation. Signal generator. 4,193,539, Cl. 235-92.0NG.
- Boyd, Robert L.; Hamilton, David C.; Wood, Wilmer E.; Fleming, Joseph; and Wegmann, Raymond, to Ramsey Controls, Inc. Electrical mounting means for thermal conduction. 4,193,444, Cl. 165-76.000.
- Boyer, David C.; Danko, Arthur J.; and Ruehl, William E., to Illinois Tool Works Inc. Idler pulley. 4,193,310, Cl. 74-230.300.
- Bradam, William R., to NCR Corporation. Membrane keyboard apparatus with tactile feedback. 4,194,097, Cl. 200-5.00A.
- Braddock, William A.: *See—*
  - Felsing, Larry E., 4,193,614, Cl. 280-804.000.
- Brankling, David; and Crawford, John, to Orobis Limited. Polymer composition viscosity index improver additive and lubricating oil containing the additive. 4,194,057, Cl. 585-11.000.
- Branson, Charles D.; and Shopsky, Harvey J., to Robertshaw Controls Company. Condition responsive electrical switch construction and parts and methods therefor. 4,194,102, Cl. 200-67.00D.
- Brasseries Kronenbourg: *See—*
  - Dougados, Roland; Pierrot, Francois; and Wagner, Remy, 4,193,540, Cl. 235-454.000.
- Braukmann Armaturen A.G.: *See—*
  - Knauss, Erwin, 4,193,542, Cl. 236-34.500.
- Brazgovskaya, Alla I.: *See—*
  - Khodsky, Lev G.; Brazgovskaya, Alla I.; Kaminskaya, Valentina S.; and Podkletnov, Evgeny N., deceased, 4,193,808, Cl. 106-48.000.
- Breiner, Frank S.: *See—*
  - VandenHoek, Harold L.; and Breiner, Frank S., 4,193,233, Cl. 52-122.000.
- Brenner, Douglas; and Lundberg, Robert D., to Exxon Research & Engineering Co. Elastomeric systems having unusual memory characteristics. 4,193,899, Cl. 260-23.50A.
- Breton, Ernest J.; Wolf, Jack D.; and Worden, Dexter, to Teti, Joseph A., Jr.; and Teti, William C., part interest to each. Article of fibrillated polytetrafluoroethylene containing high volumes of particulate material and methods of making and using same. 4,194,040, Cl. 428-308.000.
- Briggs, Henry R., to Rolls-Royce Limited. Gas turbine engines. 4,193,741, Cl. 416-170.00R.
- Briggs, Roger A.; and Gilpin, Jo Ann, to Dow Chemical Company, The. Process for preparing rifamycin S using a strong acid cation exchange resin. 4,193,919, Cl. 260-239.30P.
- Brill, Joseph H. Process and apparatus for producing compost. 4,193,786, Cl. 71-9.000.
- Brinkley, John M.: *See—*
  - Ullman, Edwin F.; and Brinkley, John M., 4,193,983, Cl. 424-12.000.
- Bristol-Myers Company: *See—*
  - Hanrahan, James R.; and Levine, Richard G., 4,193,134, Cl. 2-16.000.
- British Broadcasting Corporation: *See—*
  - Drewery, John O., 4,194,219, Cl. 358-167.000.
- Britton, Thomas C.: *See—*
  - Trepanier, Donald L.; and Britton, Thomas C., 4,194,000, Cl. 424-270.000.
- Brooks, Ronald E.: *See—*
  - Slusarczuk, George M. J.; and Brooks, Ronald E., 4,193,866, Cl. 210-6.000.
- Brown, Joseph E., Jr. Carpet sample display case. 4,193,652, Cl. 312-280.000.
- Broyles, Wayne R., to Minichillo, Ronald A., a part interest. Ladder structure. 4,193,477, Cl. 182-194.000.
- Bruce-Lake Company: *See—*
  - Meisberger, Raymond F., 4,194,080, Cl. 174-45.00R.
- Brucker, Milton; Matika, Ronald J.; and McMican, Maurice E. Wastewater and wastewater solid processing system. 4,193,869, Cl. 210-44.000.
- Bruening, Wilhelm; de Andrade Bruening, Inai M. R.; and Martinez Concha, Francisco J., to Petroleo Brasileiro S.A.-Petrobras. Apparatus for the determination of chemical compounds by chemiluminescence with ozone. 4,193,963, Cl. 422-52.000.
- Brumm, Richard S., to Cashco, Incorporated. Low torque control valve. 4,193,578, Cl. 251-283.000.
- Brundage, Bert W., to Efficiency Systems, Inc. Hotel room status monitor and power control system. 4,194,181, Cl. 340-286.00R.
- Brunswick Corporation: *See—*
  - Gifford, Richard L., 4,193,562, Cl. 242-84.20G.
  - Stiner, Roy E., 4,193,561, Cl. 242-84.51A.
- Brust, David P.: *See—*
  - Campbell, Gerald A.; Hamilton, Lewis R.; and Brust, David P., 4,193,796, Cl. 430-227.000.
- Bubula, Thomas J.; Franz, Maurice F.; Johnson, Gordon W.; and Rinaldo, James D., to Caterpillar Tractor Co. Controls for combined hydrostatic and multiple speed range transmission units with automatic speed control and braking functions. 4,193,323, Cl. 74-733.000.
- Buckler, Robert T., to Miles Laboratories, Inc. Diphenylhydantoin derivatives. 4,194,048, Cl. 548-312.000.
- Bugamelli, Ralph, to Colt Industries Operating Corp. Carbureting discharge means. 4,193,947, Cl. 261-41.00D.
- Buhler, Marcel: *See—*
  - Hodel, Theodore; Buhler, Marcel; and Rehacek, Josef, 4,194,018, Cl. 426-580.000.
- Bula, Karl, to Sulzer Brothers Limited. Suspension system. 4,193,571, Cl. 248-343.000.
- Bull, Glen C., J. Non-aerosol type dispenser. 4,193,513, Cl. 222-1.000.
- Burgess, Carlton M., to General Motors Corporation. Radiator drain assembly. 4,193,575, Cl. 251-144.000.
- Burgos Pty. Limited: *See—*
  - Van Heel, Theodore; and Van Heel, Henry, 4,193,696, Cl. 366-66.000.
- Burke, Dennis J.: *See—*
  - Dillman, Terry R.; and Burke, Dennis J., 4,193,817, Cl. 127-46.00A.
- Burnett, James H. Stop motion and condition responsive apparatus for carding machines. 4,193,168, Cl. 19-0.250.
- Burr-Brown Research Corporation: *See—*
  - Payne, Francis L.; and Godsey, Ernest E., 4,194,147, Cl. 323-17.000.
- Burris, Michael V. Gilsonite emulsion compositions. 4,193,815, Cl. 106-202.000.
- Burroughs Corporation: *See—*
  - Bodin, Leslie J., 4,194,197, Cl. 340-711.000.
- Bushman, Thomas: *See—*
  - Miller, Scott; Bushman, Thomas; Kruger, Kurt; and Van Dyck, Kenneth, 4,193,704, Cl. 402-19.000.
- Butler, James R., to Fairchild Camera and Instrument Corporation. Input stage using junction field effect transistors for biasing. 4,194,136, Cl. 307-296.00R.

- Buxton, Gordon D.; and Buxton, John W. Device for arranging playing elements. 4,193,512, Cl. 221-185.000.
- Buxton, John W.: *See—*
  - Buxton, Gordon D.; and Buxton, John W., 4,193,512, Cl. 221-185.000.
- C. D. Sparling Company: *See—*
  - Guenther, Torbett B., 4,193,586, Cl. 256-69.000.
- C. Plath GmbH Nautisch Elektronische Technik: *See—*
  - Zauscher, Hermann, 4,194,207, Cl. 343-120.000.
- Cachia, Joseph M., to Allied Chemical Corporation. Motorized passive seat belt system. 4,193,613, Cl. 280-804.000.
- Cadillac Gage Company: *See—*
  - Jackson, Theodore A., 4,193,334, Cl. 89-41.00E.
- Calamari, Timothy A., Jr.: *See—*
  - Harper, Robert J., Jr.; Calamari, Timothy A., Jr.; and Schreiber, Sidney P., 4,194,032, Cl. 427-341.000.
- Calleance, David. Waterbed safety liner. 4,193,151, Cl. 5-452.000.
- Calpis Shokuhin Kogyo Kabushiki Kaisha: *See—*
  - Yasumatsu, Mutsuo; Katayama, Kenji; Takeuchi, Shozo; and Saito, Yoshio, 4,194,019, Cl. 426-580.000.
- Calspan Corporation: *See—*
  - Rich, Joseph W.; and Bergman, Richard C., 4,194,169, Cl. 331-94.50G.
- Cameron Iron Works, Inc.: *See—*
  - Baker, Gerald S.; and Hahn, Guerry L., 4,193,307, Cl. 73-701.000.
- Campbell, Bruce D., to Raychem Corporation. Heat recoverable closure with substrate protective means. 4,194,082, Cl. 174-74.00A.
- Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, to Eastman Kodak Company. Photographic film units containing a polymeric mordant which covalently bonds with certain dyes. 4,193,795, Cl. 430-213.000.
- Campbell, Gerald A.; Hamilton, Lewis R.; and Brust, David P., to Eastman Kodak Company. Polymers for use in image receiving elements for metallizable dyes in image transfer film units. 4,193,796, Cl. 430-227.000.
- Campbell, Robert W.: *See—*
  - Ferm, Richard L.; and Campbell, Robert W., 4,193,809, Cl. 106-97.000.
- Campbell Soup Company: *See—*
  - Early, James R.; and Lobach, Donald C., 4,193,528, Cl. 228-37.000.
- Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
  - Hara, Elmer H., 4,193,662, Cl. 350-96.150.
- Canadian Patents & Development Ltd.: *See—*
  - Shen, Kuo-Cheng, 4,193,814, Cl. 106-123.0LC.
- Canfield, Sheldon A.; and Karch, Walter J., to Owens-Corning Fiberglas Corporation. Batch sensor for glass-melting furnaces. 4,194,077, Cl. 13-6.000.
- Cannon, William N., to Eli Lilly and Company. Novel oxiodinium and thiaiodinium compounds. 4,193,935, Cl. 260-505.00R.
- Canon Kabushiki Kaisha: *See—*
  - Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; and Sagara, Seiji, 4,193,483, Cl. 192-26.000.
  - Tanaka, Hiroshi; and Tsuneda, Terukuni, 4,194,020, Cl. 427-16.000.
  - Tanigawa, Koichi; and Ishihara, Takayuki, 4,193,681, Cl. 355-3.0FU.
- Carides, James N.; and Murphy, Donald W., to Bell Telephone Laboratories, Incorporated. Rechargeable dichalcogenide cell. 4,194,062, Cl. 429-194.000.
- Carlisle, Denis R.; and Grun, Andrew R., to Rolls-Royce Limited. Combustion apparatus. 4,193,260, Cl. 60-737.000.
- Carlson, Alan J., to Metro-Tel Corp. Lineman's hand test set. 4,194,098, Cl. 179-175.000.
- Carmichael, Leland E.: *See—*
  - Appel, Max J. G.; Carmichael, Leland E.; and Scott, Fredric W., 4,193,990, Cl. 424-89.000.
  - Appel, Max J. G.; and Carmichael, Leland E., 4,193,991, Cl. 424-89.000.
- Carrier Corporation: *See—*
  - Barry, Vincent T., 4,193,269, Cl. 62-171.000.
  - Sood, Vijay K., 4,193,603, Cl. 277-3.000.
- Cashco, Incorporated: *See—*
  - Brumm, Richard S., 4,193,578, Cl. 251-283.000.
- Caspar, Jean-Pierre; and Lelong, Bernard, to Lafarge. Plaster obtained from phosphogypsum and its process of obtention. 4,193,812, Cl. 106-110.000.
- Cataldo, Roy S., to General Motors Corporation. Run-flat tire having internal support means. 4,193,436, Cl. 152-158.000.
- Caterpillar Tractor Co.: *See—*
  - Bubula, Thomas J.; Franz, Maurice F.; Johnson, Gordon W.; and Rinaldo, James D., 4,193,323, Cl. 74-733.000.
  - Cline, Lawrence R., 4,193,587, Cl. 267-170.000.
  - Simmons, Gerald P., 4,193,467, Cl. 180-271.000.
- Caunt, Anthony D.; Vincent, Peter I.; and Newton, Alan B., to Imperial Chemical Industries Limited. Transition metal catalyst. 4,193,893, Cl. 252-429.00B.
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- Cavazza, Claudio. Therapeutic application of acetyl-d,l-carnitine and other acyl derivatives of d,l-carnitine. 4,194,006, Cl. 424-311.000.
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  - Meier, Otto; and Scheidweiler, Andreas, 4,194,120, Cl. 250-381.000.
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- Chapman, Duane K.: *See—*
  - Whittington, Lawrence E.; Deviney, Marvin L., Jr.; Lewis, James E.; and Chapman, Duane K., 4,193,900, Cl. 260-28.50B.
- Charles, Herbert N., to Fram Corporation. Vibration isolator for flexible bladed fan. 4,193,740, Cl. 416-132.00A.
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- Chase, John D.; Woods, Hanbury J.; and Kennedy, Bruce W., to Gulf Canada Limited. Preparation of gasoline containing tertiaryamyl methyl ether. 4,193,770, Cl. 44-56.000.
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  - Chauvier, Fernand L. O. J., 4,193,156, Cl. 15-1.700.
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  - Pullukat, Thomas J.; Shida, Mitsuzo; and Hoff, Raymond E., 4,194,074, Cl. 526-100.000.
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  - Antoniades, Emilios P., 4,194,056, Cl. 562-516.000.
  - Ferm, Richard L.; and Campbell, Robert W., 4,193,809, Cl. 106-97.000.
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- Chicago Bridge & Iron Company: *See—*
  - DeGraaf, Douglas W.; and Tam, William A., 4,193,368, Cl. 114-230.000.
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- Christopherson, Warren A., to International Business Machines Corporation. Electronic signal level translating circuitry. 4,194,135, Cl. 307-260.000.
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  - Meyers, Peter S., 4,193,868, Cl. 210-35.000.
- Chrysler Corporation: *See—*
  - Lee, John; and Golin, Leo, 4,194,043, Cl. 428-582.000.
- Chrysler United Kingdom Limited: *See—*
  - Hobley, William J.; and Rollason, William I. M., 4,193,631, Cl. 297-408.000.
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  - Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., 4,193,886, Cl. 252-90.000.
- Chvapil, Milos, to Medi-Coll, Inc. Method for making collagen sponge. 4,193,813, Cl. 106-122.000.
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  - Abeler, Gerd, 4,193,913, Cl. 260-45.75S.
  - Audykowski, Thaddeus; and Moser, Roland, 4,193,905, Cl. 260-30.60R.
  - Back, Gerhard; and Fasciati, Alfred, 4,193,916, Cl. 260-146.00R.
  - Baumann, Marcus; Kvita, Vratislav; Roth, Martin; and Waterhouse, John S., 4,193,927, Cl. 260-326.260.
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Cline, Lawrence R., to Caterpillar Tractor Co. Recoil spring assembly. 4,193,587, Cl. 267-170.000.
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Cobb, Raymond L., to Phillips Petroleum Company. Pyrolysis of N-substituted-1-cyclohexene-1,2-dicarboximides. 4,193,924, Cl. 260-326.00C.
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Coffen, David, to Hoffmann-La Roche Inc. Lasalocid derivatives. 4,193,928, Cl. 260-345.70R.
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Collier, Samuel A. Rotary hydrostatic coupling. 4,193,484, Cl. 192-60.000.
Colt Industries Operating Corp.: *See—*
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Continental Group, Inc., The: *See—*
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Crist, Ralph P., to United States of America, Navy. Noisemaker beacon. 4,194,246, Cl. 367-1.000.
Crivello, James V., to General Electric Company. Method of making printing plates and printed circuit. 4,193,799, Cl. 430-319.000.
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Cushman, Donald R.; Pagen, Charles A.; and Schick, John W., to Mobil Oil Corporation. Controlled deposition of asphalt emulsions. 4,194,023, Cl. 427-138.000.

Cushman, Robert H., to Pennwalt Corporation. Method and apparatus for providing simultaneous displays in panoramic radiography. 4,194,121, Cl. 250-439.00P.
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D'Andrade, Bruce M.; and Tsui, Kwok Wa, to Arco Industries Ltd. Inertia wheel toy vehicle. 4,193,223, Cl. 46-209.000.
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Davis, Richard P. B.; Emblem, Harold G.; Shaw, Richard D.; and Shelley, Stanley J., to Zirconal Processes Limited. Module for furnace walls totally wrapped with thermally combustible material. 4,194,036, Cl. 428-74.000.
Davis, Thomas J., to United States of America, America. Precision envelope detector and linear rectifier circuitry. 4,194,240, Cl. 363-126.000.
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Devienne, Andre M.; Igea, Gilbert L.; and Bernard, Jean-Pierre L., to Uniroyal. Pneumatic tire inflation and method. 4,193,429, Cl. 141-4.000.
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Diegel, Herbert F. Adjustable width spool. 4,193,560, Cl. 242-71.900.
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  - Trepanier, Donald L.; and Britton, Thomas C., 4,194,000, Cl. 424-270.000.
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- Drewery, John O., to British Broadcasting Corporation. Noise reduction in electrical signals. 4,194,219, Cl. 358-167.000.
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- Duffield, Robert. Device for adding soap to shower water. 4,193,520, Cl. 222-133.000.
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- Dye, S. Owen, to ACF Industries, Incorporated. Means for increasing choke valve opening rate. 4,193,946, Cl. 261-39.00B.
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- Eaton-Leonard Corporation: *See—*
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- Eickmann, Karl. Radial piston machine with free-floating piston and piston-shoe assemblies. 4,193,336, Cl. 91-488.000.
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- Fetty, Rosabelle: *See—*
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- Finn, Melvin. Receptacle for bulk collection of waste paper and the like. 4,193,340, Cl. 100-34.000.
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- Fipke, Charles E. Particulate mineral separation process. 4,193,767, Cl. 23-230.0EP.
- Fischer, Edwin L. Cantilevered lifting and transporting device. 4,193,147, Cl. 5-81.00R.
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  - Lochte, Glen E.; and Milberger, Lionel J., 4,193,449, Cl. 166-72.000.
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  - Peterson, Don G.; and Harper, Judson M., 4,193,758, Cl. 432-27.000.
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  - Springer, Jerry L.; Wells, Charles M.; and Green, Wells L., 4,193,289, Cl. 73-27.00R.
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- Forsythe, Marlene L.; Laughlin, Amelia; and Laughlin, Wayne. Concealed device for removing animal droppings. 4,193,623, Cl. 294-1.0BB.
- Forward, Geoffrey C.; and Gawthorpe, Janet A., nee Baylis, to Beecham Group Limited. Oral hygiene compositions. 4,193,988, Cl. 424-52.000.
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  - Charles, Herbert N., 4,193,740, Cl. 416-132.00A.
- Frame, Wayne W., to Ball Corporation. Leakage current compensating circuit for semiconductor image sensor. 4,194,220, Cl. 358-221.000.
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- Frandsen, Warren E., to T & F Industries, Inc. Apparatus for carrying flexible goods. 4,193,313, Cl. 74-231.00P.
- Frangatos, Gerassimos, to Mobil Oil Corporation. Lubricant compositions. 4,193,883, Cl. 252-49.900.
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  - Mermelstein, Leon, 4,193,218, Cl. 40-374.000.
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  - Bubula, Thomas J.; Franz, Maurice F.; Johnson, Gordon W.; and Rinaldo, James D., 4,193,323, Cl. 74-733.000.
- Fratelli Novello S.p.A.: *See—*
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- Frederick, Cecil S., to Cutters Exchange, Inc. Turntable for cloth spreading machine. 4,193,589, Cl. 270-31.000.
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- Freese, Jens. Video game system. 4,193,598, Cl. 273-313.000.
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  - Glaser, Fritz, 4,193,362, Cl. 112-275.000.
- Frutschi, Hansulrich, to BBC Brown Boveri & Company Limited. Gas turbine power plant. 4,193,266, Cl. 60-644.000.
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  - Ikenoue, Shinpei; and Masuda, Takao, 4,193,804, Cl. 430-353.000.
  - Mukunoki, Yasuo; Naito, Hideki; and Mitsui, Akio, 4,193,802, Cl. 430-139.000.
  - Oono, Hiroshi; and Shiozawa, Etuo, 4,193,317, Cl. 74-479.000.
- Fujii, Toshihiro; and Yokota, Sekiji, to Hayakawa Rubber Company Limited. Water proofing compositions for cement mortar or concrete and method employing same. 4,193,831, Cl. 156-309.000.
- Fujino, Shoji, to Shirota Electric Furnace Material Co., Ltd. Endodontic therapy instrument. 4,193,408, Cl. 128-734.000.
- Fujita, Tomikazu: *See—*
  - Katsumata, Mitsuo; Sato, Hiroo; Ikeda, Yoshihiko; and Fujita, Tomikazu, 4,193,385, Cl. 123-198.0DC.
- Fujitsu Limited: *See—*
  - Tsuda, Toshitaka, 4,194,243, Cl. 364-200.000.
- Fukuma, Yositaka, to Sharp Kabushiki Kaisha. Cashier identifying administration in an electronic cash register. 4,194,176, Cl. 340-147.00R.
- Fulks, Robert G.; Enfield, Robert E.; and Sacher, Eric, to NCR Corporation. Method and apparatus for isolating faults in a logic circuit. 4,194,113, Cl. 371-20.000.
- Furst, Andor; Labler, Ludwig; and Meier, Werner, to Hoffmann-La Roche Inc. Pregnane derivatives. 4,193,921, Cl. 260-239.55R.
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  - Adelstein, Gilbert W., 4,194,045, Cl. 546-209.000.
  - Chorvat, Robert J., 4,193,930, Cl. 260-397.200.
  - Frank, Patricia; Kraychy, Stephen; and LeVon, Ernest F., 4,193,979, Cl. 424-1.500.
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  - Slawson, Richard S., 4,193,416, Cl. 137-75.000.
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  - Merkel, Daniel A.; Viglietti, John E.; and Gagin, William P., 4,193,195, Cl. 433-13.000.
- Gailey, J. Lynn: *See—*
  - Chalmers, Alexander A.; Gailey, J. Lynn; and Wollam, Carl A., 4,193,238, Cl. 52-211.000.
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  - Nutley, Hugh; and Gardner, Howard S., 4,194,124, Cl. 250-492.00R.
- Gargiulo, Antonio. Music-box casing. 4,193,648, Cl. 312-9.000.
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  - Gross, Gary; and Thies, James F., 4,193,145, Cl. 4-346.000.
- Gartner, Veit. Device for rupturing a frangible partition between separate chambers in a container. 4,193,698, Cl. 366-130.000.
- Gastmeier, William J.: *See—*
  - Guess, Joe F.; and Gastmeier, William J., 4,193,647, Cl. 310-324.000.
- Gathings, David L. Adjustable measuring guide attachment for a picture frame mitering apparatus. 4,193,331, Cl. 83-468.000.
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  - Hofmann, Dionys, 4,193,304, Cl. 73-462.000.
- Gebruder Buhler AG: *See—*
  - Ruegger, Edgar, 4,193,555, Cl. 241-37.000.
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  - Wyss, Franz J.; and Hug, Peter, 4,193,837, Cl. 159-6.00W.
- Geissler, Udo M., to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH. Simultaneous multi directional single source multiple reflector electronic photo flash unit. 4,194,234, Cl. 362-17.000.
- Gemmill, Robert M., Jr., to Mobil Oil Corporation. Corrosion inhibited lubricant composition. 4,193,882, Cl. 252-47.500.
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  - Adams, Charles C.; Allen, Curtis L.; and Besenbruch, Gottfried E. A., 4,194,027, Cl. 427-249.000.
  - Noren, Robert C.; and Spritzer, Michael H., 4,194,079, Cl. 13-25.000.
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  - Albinger, Harry, Jr., 4,194,192, Cl. 340-517.000.
  - Baum, John W., 4,193,488, Cl. 194-9.00T.
  - Bochan, John, 4,193,275, Cl. 68-134.000.
  - Crivello, James V., 4,193,799, Cl. 430-319.000.
  - Gregersen, Jens O.; and Sorensen, Sigurd B., 4,194,151, Cl. 455-76.000.
  - Klein, Keith W., 4,194,231, Cl. 361-45.000.

  - Landis, Delmer H., Jr.; Thomas, Theodore T., Jr.; and Haap, Charles J., 4,193,738, Cl. 415-115.000.
  - Salem, Robert J., 4,194,191, Cl. 340-515.000.
  - Slusarczuk, George M. J.; and Brooks, Ronald E., 4,193,866, Cl. 210-6.000.
  - Tassie, Douglas P., 4,193,335, Cl. 89-7.000.
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  - Burgess, Carlton M., 4,193,575, Cl. 251-144.000.
  - Cataldo, Roy S., 4,193,436, Cl. 152-158.000.
  - Horner, Thomas G.; and Ellis, Robert A., 4,193,314, Cl. 74-242.500.
  - Lee, Charles H.; and Fetters, Harry H., 4,193,618, Cl. 292-7.000.
  - Rogers, David W., 4,193,383, Cl. 123-136.000.
  - Wunderlich, Langley H., 4,193,481, Cl. 188-71.800.
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  - Sefton, Verner B.; Swinkels, Godefridus M.; Kirby, Charles R.; and Genik-Sas-Berezowsky, Roman M., 4,193,970, Cl. 423-141.000.
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- Gerritsen, Leendert A.; and Scholten, Joseph J. F., to Stamicarbon, B.V. Process for catalytic conversion of olefinically unsaturated compounds with hydrogen and/or carbon monoxide. 4,193,942, Cl. 260-604.0HF.
- Gerteis, Hans, to Heinkel Industriezentrifugen GmbH & Co., Firma. Filter centrifuge. 4,193,874, Cl. 210-232.000.
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  - Feng, Tom; and Ghosh, Amal K., 4,193,821, Cl. 148-1.500.
- Giddings, Brandford E.; Wardlow, Eddie, Jr.; and Mehosky, Brian L., to Standard Oil Company. Rapid removal of residual monomers from acrylonitrile copolymers. 4,193,903, Cl. 260-29.60R.
- Gifford, Richard L., to Brunswick Corporation. Anti-reverse device for fishing reel. 4,193,562, Cl. 242-84.20G.
- Giglia, Robert D.; and Clasen, Richard H., to American Cyanamid Company. Electrochromic devices having protective interlayers. 4,193,670, Cl. 350-357.000.
- Gilbert, Bruce. Perforating gun with paired shaped charger vertically spaced. 4,193,460, Cl. 175-4.600.
- Giles, William E. Motor vehicle ventilation device. 4,193,339, Cl. 98-2.140.
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  - Loup, Ronald L.; and Gill, Arthur W., 4,194,173, Cl. 335-260.000.
- Gill, Gerald L., Jr.; and Rioux, Philip J., to Kayex Corporation. Polishing apparatus. 4,193,226, Cl. 51-124.00R.
- Gilleman, Joseph T. G., to Sperry Rand Corporation. Vehicle protective system. 4,193,248, Cl. 56-10.200.
- Gillery, Frank H., to PPG Industries, Inc. Transparent, colorless, electrically conductive coating. 4,194,022, Cl. 427-109.000.
- Gillespie, Ronald G., to Texaco Development Corporation. Floating point amplifier means and method. 4,194,163, Cl. 330-86.000.
- Gilliland, John W.: *See—*
  - Clason, Stanley E.; and Gilliland, John W., 4,193,980, Cl. 424-3.000.
- Gilpin, Jo Ann: *See—*
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  - Baker, Dennis S.; and Davies, Glyndwr J., 4,193,645, Cl. 308-23.000.
- Gladstone, Joseph, to Beatrice Foods Co. Arm/rotor hub assembly. 4,193,549, Cl. 239-251.000.
- Glaser, Fritz, to Fritz Gegauf Aktiengesellschaft, Bernina-Nahmaschienfabrik. Device for locking the needle bar of a sewing machine in one of its end positions. 4,193,362, Cl. 112-275.000.
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  - Barton, Derek H. R.; Long, Alan G.; Looker, Brian E.; Wilson, Edward M.; and Elphinstone, William G., 4,193,917, Cl. 260-239.00A.
- Glendinning, William B., to United States of America, Army. Analog-to-digital conversion by charge coupled device. 4,194,187, Cl. 340-347.0AD.
- Godsey, Ernest E.: *See—*
  - Payne, Francis L.; and Godsey, Ernest E., 4,194,147, Cl. 323-17.000.
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- Goelz, David W.: *See—*
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- Goldie, Harry, to United States of America, Air Force. Combined receiver protector, AGC attenuator and sensitivity time control device. 4,194,200, Cl. 343-5.0SM.
- Goldstein, Theodore P., to Mobil Oil Corporation. Super-active clay catalyst and use thereof. 4,193,454, Cl. 166-302.000.
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  - Lee, John; and Golin, Leo, 4,194,043, Cl. 428-582.000.
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- Golobay, Gary L., to Conchemco, Incorporated. Brake lever. 4,193,318, Cl. 74-489.000.
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  - Pankratov, Vladimir I.; Konovalenko, Gennady P.; Prilipko, Ivan T.; and Gomberg, Moris L., 4,194,114, Cl. 250-308.000.
- Good, Thomas W.: *See—*
  - Pauly, Ronald R.; Good, Thomas W.; Hastings, John D.; and Ryan, Kevin D., 4,193,639, Cl. 301-9.0DH.
- Goodale, Clark W.; Morgan, Charles W.; Rhoton, Albert L.; and McNeil, David F., to United Foam Corporation. Method of manufacturing textured foam coatings and materials. 4,194,026, Cl. 427-244.000.
- Goodin, Raymon L. Pool cleaning system and apparatus. 4,193,870, Cl. 210-65.000.
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  - Sharp, David W.; Clavenna, LeRoy R.; Gorbaty, Martin L.; and Tsou, Joe M., 4,193,771, Cl. 48-197.00R.
- Gorbunov, Gennady S.: *See—*
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- Gostelow, Daniel W. F., to Wildt Mellor Bromley Limited. Yarn feed and change mechanisms. 4,193,274, Cl. 66-140.00R.
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  - Saito, Tadao; Nozawa, Takamitsu; Tsuchida, Haruo; Iizuka, Shigeo; and Goto, Takayuki, 4,193,551, Cl. 239-333.000.
- Goudie, Alexander C., to Beecham Group Limited. Pharmacologically active enol ether compounds. 4,194,010, Cl. 424-341.000.
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  - Wilson, David W., 4,194,185, Cl. 340-347.0AD.
- Grabmaier, Josef: *See—*
  - Aulich, Hubert; Grabmaier, Josef; and Eisenrith, Karl-Heinz, 4,193,782, Cl. 65-11.00R.
- Graf, Dieter. Vehicle attachment for increasing adhesion to the supporting surface by suction force. 4,193,469, Cl. 180-164.000.
- Grapes, Robert D.; and Watson, Donald J., to Magnetic Peripherals Inc. Disk indicator and ejector. 4,194,224, Cl. 360-97.000.
- Gray, James A.; and Lindfors, Randall V., to Zero-Max Industries, Inc. Adjustable shelf device. 4,193,650, Cl. 312-205.000.
- Greaves, Anthony: *See—*
  - Bowman, Raymond E.; and Greaves, Anthony, 4,193,283, Cl. 72-204.000.
- Green, John F., to Compact Industries, Inc. Cup and package of cups. 4,193,494, Cl. 206-217.000.
- Green, Wells L.: *See—*
  - Springer, Jerry L.; Wells, Charles M.; and Green, Wells L., 4,193,289, Cl. 73-27.00R.
- Greenhalgh, Peter F.: *See—*
  - Hildon, Anthony M.; and Greenhalgh, Peter F., 4,193,929, Cl. 260-348.250.
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- Griffith, Harold J., to Alton Box Board Company. Bulk materials container formed from substantially rectangular blank. 4,193,535, Cl. 229-52.00B.
- Gross, Gary; and Thies, James F., to Garon Processing Co. Toilet flushing valve mechanism. 4,193,145, Cl. 4-346.000.
- Gross, Valery N. Arrangement for continuously measuring the radioactivity of solutions of matters in a homogeneous mixture with a liquid scintillator. 4,194,117, Cl. 250-328.000.
- Grover, Melvin G.: *See—*
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- Gruber, William A. Removable cast for intermediate phase orthopedic rehabilitation. 4,193,395, Cl. 128-90.000.
- Grun, Andrew R.: *See—*
  - Carlisle, Denis R.; and Grun, Andrew R., 4,193,260, Cl. 60-737.000.
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- Guenther, Torbett B., to C. D. Sparling Company. Hand rail. 4,193,586, Cl. 256-69.000.
- Guess, Joe F.; and Gastmeier, William J., to Telex Communications, Inc. Piezoelectric ceramic transducers with uniform resonant frequency. 4,193,647, Cl. 310-324.000.
- Gulf Canada Limited: *See—*
  - Chase, John D.; Woods, Hanbury J.; and Kennedy, Bruce W., 4,193,770, Cl. 44-56.000.
- Gunderson, Arthur S. Combination wagon and sled. 4,193,608, Cl. 280-8.000.
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- Gurien, Harvey; and Teitel, Sidney, to Hoffmann-La Roche Inc. Tetrahydro 2-carbazolyl methyl malonate derivatives. 4,193,923, Cl. 260-315.000.

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Hallock, Robert L. Non-slotted clinch type nail. 4,193,333, Cl. 85-31.000.
Halm, Roland L., to Dow Corning Corporation. Method for preparing a thermal-stability additive and a thermally stabilized methylpolysiloxane and compositions therefrom. 4,193,885, Cl. 252-78.300.
Halverson, Henry J., to Olin Corporation. Projectile for centerfire pistol and revolver cartridges. 4,193,348, Cl. 102-91.000.
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Hamaguchi, Hiroshi; and Kawano, Tadaaki, to Sharp Kabushiki Kaisha. Developer powder supply in magnet brush development. 4,193,376, Cl. 118-658.000.
Hamano, Eizaburo; and Komatsu, Tetsuo, to Tokyo Shibaura Electric Co., Ltd. Beam-indexing color image-presentation cathode ray tube. 4,194,140, Cl. 313-471.000.
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  Campbell, Gerald A.; Hamilton, Lewis R.; and Brust, David P., 4,193,796, Cl. 430-227.000.
Hamilton, William M.; Scholl, Charles H.; Kruke, Jeffrey J.; and Akers, Larry D., to Nordson Corporation. Gear pump with means for dispersing gas into liquid. 4,193,745, Cl. 418-9.000.
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Hammond, Theodore A. Line shaft drive for powered roller conveyor. 4,193,492, Cl. 198-781.000.
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Hanson, Harold W., Jr.; and Doering, Beuford C., to Par-Way Co. Spray apparatus for applying ingredient coatings to food products. 4,193,373, Cl. 118-17.000.
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Harden, Richard L. Feeder for hay bales and stacks. 4,193,378, Cl. 119-60.000.
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  Peterson, Don G.; and Harper, Judson M., 4,193,758, Cl. 432-27.000.
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  Hershberger, David L., 4,194,161, Cl. 329-50.000.
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Hartemann, Pierre, to Thomson-CSF. Refractive stigmatic system for elastic surface waves. 4,193,473, Cl. 181-176.000.
Harth, Helmut; and Becker, Dieter, to Blendax-Werke R. Schneider GmbH & Co. Non-corrosive toothpaste. 4,193,987, Cl. 424-49.000.
Hartman, Arlin P., to American Seating Company. Handrail for telescoping seating system with removable rails. 4,193,229, Cl. 52-9.000.
Hartmann, John C.; and Maxemchuk, Nicholas F., to RCA Corporation. Bidirectional digital position encoder. 4,194,184, Cl. 340-347.00P.
Harvey Hubbell, Incorporated: *See—*
  Jaconette, Frank C., 4,193,660, Cl. 339-191.00R.
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Hasler, Alfred, to International Memories, Inc. Housing for disk drive unit. 4,194,225, Cl. 360-98.000.
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Hatanaka, Akio, to Sakura Color Products Corporation. Compositions for solid writing materials and writing implements. 4,193,906, Cl. 260-31.20R.
Hatten, Maurice E. Solar heating system. 4,193,390, Cl. 126-429.000.
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Hayakawa, Yoshikazu: *See—*
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Haygeman, Drew O.; and Haygeman, Robert M. Washer and carrier for elongated objects. 4,193,699, Cl. 366-130.000.
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  Haygeman, Drew O.; and Haygeman, Robert M., 4,193,699, Cl. 366-130.000.
Hays, Bill J. Ignition wire improvements. 4,193,651, Cl. 339-28.000.
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Hazama, Motoo, to Sumitomo Chemical Company, Limited. Process for producing an enamide. 4,194,050, Cl. 560-41.000.
Heck, Rudolf N., to Meadox Medicals, Inc. Warp-knitted double-velour prosthesis. 4,193,137, Cl. 3-1.400.
Heckelsberg, Robert E., to AMCA International Corporation. Panel mounting clip. 4,193,247, Cl. 52-713.000.
Heckenhauer, William G., to Dresser Industries, Inc. Multiple tip cutting bit for rotary drum-type cutter. 4,193,638, Cl. 299-89.000.
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Heim, Ernst; Imbery, Dieter; and Kliemann, Bruno, to Rhodia AG. Additive for smoking tobacco products, filter elements thereof and process for the preparation thereof. 4,193,412, Cl. 131-264.000.
Heinkel Industriezentrifugen GmbH & Co., Firma: *See—*
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Heinlein, Werner, to Robert Bosch GmbH. Automatic headlight tilting device for automobiles. 4,194,235, Cl. 362-38.000.
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Held, Kurt. Sliding surface seal on continuous laminating machines. 4,193,342, Cl. 100-154.000.
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Hencke, Dietmar, to LTG Lufttechnische GmbH. Air filtering apparatus. 4,193,779, Cl. 55-290.000.
Hengartner, Urs; Reymond, Gilbert; and Toome, Valdemar, to Hoffmann-La Roche Inc. Alkanoyloxylation of beta-ionone. 4,193,850, Cl. 204-79.000.
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Henningfield, Bernadine. Child's toilet apparatus. 4,193,142, Cl. 4-141.000.
Henry, Nelson R., to Woodman Company, Inc., The. Scale hopper door mechanism. 4,193,465, Cl. 177-108.000.
Hensler, Adolf, to Koflach Sportgerate Gesellschaft m.b.H. Fastener for instep portion of ski shoe. 4,193,215, Cl. 36-50.000.
Herbert, Werner; Kunz, Wunibald; and Pimiskern, Klaus, to Dornier System GmbH. Spinning pot. 4,193,253, Cl. 57-58.890.
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Hermans, Willem F.; and van Eijk, Louwrens J., to Stork Amsterdam B.V. Method for adjustably heating a liquid. 4,194,014, Cl. 426-231.000.
Hermanson, Terry. Umbrella canopy frame and staff construction. 4,193,415, Cl. 135-25.00R.
Herrmann, Henry O., Jr., to AMP Incorporated. Field repairable connector assembly. 4,193,655, Cl. 339-31.00R.
Hershberger, David L., to Harris Corporation. Switching modulators and demodulators utilizing modified switching signal. 4,194,161, Cl. 329-50.000.
Herubel, Jean F., to N. Schlumberger & Cie. Drawing device for sliver. 4,193,170, Cl. 19-127.000.
Hetherington, Robert D.; and Goelz, David W., to Poly-Glas Systems. High-viscosity volume balancing mixing head. 4,193,546, Cl. 239-112.000.
Hetzel, Henry T., to Hewlett-Packard Company. Aperture capacitor pickup. 4,194,084, Cl. 178-19.000.
Heuvel, Norman L. Disc-type airborne vehicle and radial flow gas turbine engine used therein. 4,193,568, Cl. 244-23.00C.
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  Hetzel, Henry T., 4,194,084, Cl. 178-19.000.
Hewson, John E. Differential pressure transducer process mounting support and manifold. 4,193,420, Cl. 137-356.000.
Heymann, Ronald E.: *See—*
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Hilditch, Edward A., to Cuprinol Limited. Compositions containing preservative metals and their use for the preservation of wood and like materials and as fungicides. 4,193,993, Cl. 424-141.000.
Hildon, Anthony M.; and Greenhalgh, Peter F., to Propylox a Societe Anonyme. Epoxidation. 4,193,929, Cl. 260-348.250.
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Hill Engineering Company Limited: *See—*
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Hinton, Arthur D.; and Mitchell, Morris E., to Steel Security Corporation. Security storage box. 4,193,353, Cl. 109-50.000.
Hirai, Kazuo; Kamata, Junich; Makiguchi, Sadao; and Iwai, Kazuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Radio receiving device for automotive use. 4,194,155, Cl. 455-345.000.
Hiser, Noble M. Folding table. 4,193,352, Cl. 108-126.000.
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  Shepherd, Gary D.; Fernandez, Ramon B.; Kapaun, R. Glenn; and Logan, Charles P., 4,193,252, Cl. 57-351.000.
Hitz, Gifford L. Sealed connection. 4,193,617, Cl. 285-336.000.
Hobley, William J.; and Rollason, William I. M., to Chrysler United Kingdom Limited. Head/neck support for vehicle seats. 4,193,631, Cl. 297-408.000.
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Hodel, Theodore; Buhler, Marcel; and Rehacek, Josef, to Societe d'Assistance Technique pour Produits Nestle S.A. Method of producing an aqueous soya suspension. 4,194,018, Cl. 426-580.000.
Hodge, Gerard: *See—*
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Hoffman, Arnold: *See—*
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Hoffman, Arthur R.; and Lammers, Gerald B., to International Business Machines Corporation. Charge electrode array for multi-nozzle ink jet array. 4,194,211, Cl. 346-75.000.
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  Farkas, Rudolf; and Moulin, Michel, 4,194,143, Cl. 315-241.00R.
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  Furst, Andor; Labler, Ludwig; and Meier, Werner, 4,193,921, Cl. 260-239.55R.
  Gurien, Harvey; and Teitel, Sidney, 4,193,923, Cl. 260-315.000.
  Hengartner, Urs; Reymond, Gilbert; and Toome, Valdemar, 4,193,850, Cl. 204-79.000.
  Loeliger, Peter, 4,193,931, Cl. 424-308.000.
  Mohacsi, Ernest, 4,194,044, Cl. 546-146.000.
  Valenta, Zdenek, 4,193,878, Cl. 260-586.00C.
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Holmes, Edward W., to Continental Group, Inc., The. Method of soldering tinplate can bodies with a sulfur resistant tin-alloy solder. 4,193,530, Cl. 228-263.000.
Holmes, William A. Portable water carrier and dispenser. 4,193,518, Cl. 222-105.000.
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Holzworth, Adolph. Guard for chain saw. 4,193,193, Cl. 30-382.000.
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Honigsbaum, Richard F. Air conditioning system having controllably coupled thermal storage capability. 4,193,271, Cl. 62-180.000.
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Hopwood, Howard R.; and Trunley, Roy, to Ciba-Geigy Aktiengesellschaft. Process for producing photographic silver halide material. 4,193,801, Cl. 430-570.000.
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Horiuchi, Isao. Fermented feed for ruminants and process for producing same. 4,194,012, Cl. 426-53.000.
Horiuchi, Masao; and Motozuka, Yasuyuki, to Matsushita Electric Industrial Co., Ltd. Holder for holding temperature detecting device employed in microwave ovens. 4,193,572, Cl. 248-535.000.
Horner, Thomas G.; and Ellis, Robert A., to General Motors Corporation. Timing chain snubber. 4,193,314, Cl. 74-242.500.

- Horowski, Reinhard: *See—*
  - Schmiechen, Ralph; Horowski, Reinhard; Palenschat, Dieter; Paschelke, Gert; Wachtel, Helmut; and Kehr, Wolfgang, 4,193,926, Cl. 260-326.50S.
- Horstmann Gear Company Limited, The: *See—*
  - Biglin, Timothy J., 4,194,128, Cl. 307-3.000.
- Hougen, Everett D. Arbor for annular hole cutter. 4,193,721, Cl. 408-68.000.
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  - Dondeyne, Alban; Marchasson, Maurice; Ravez, Paul; and Soubrier, Louis, 4,193,355, Cl. 110-336.000.
- Hrabal, Hans, to ENFO Grundlagen Forschungs AG. Lamina valve for reciprocating compressors. 4,193,424, Cl. 137-855.000.
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- Hughan, Robert R.: *See—*
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- Hughes Aircraft Company: *See—*
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  - Patterson, Matthew, 4,193,176, Cl. 29-25.140.
- Hughes, Donald W. K.; and Myers, Ronald W., to AMP Incorporated. Electrical connector receptacles. 4,193,654, Cl. 339-17.0LC.
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- Hunt, Leslie; Nicolson, Ian T.; and Whitfield, Thomas M., to Lever Brothers Co. Manufacture of marbled detergent bars. 4,193,752, Cl. 425-131.100.
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- Hunter, Lee. Vehicle wheel and tire balance testing machine. 4,193,305, Cl. 73-462.000.
- Huster, Lienhard B.: *See—*
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- Hwang, Un-pah: *See—*
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- Ifo Sanitar AB: *See—*
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  - Chang, Eng P.; Ilardo, Charles S.; and Slagowski, Eugene L., 4,194,072, Cl. 525-432.000.
- Ille, David R., to Borg-Warner Corporation. Fluid control system with individually variable flow control mechanism for each control section. 4,193,263, Cl. 60-420.000.
- Illinois Tool Works Inc.: *See—*
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  - Ruscoe, Colin N. E.; Alner, Henry G. H.; and Baldwin, Brian C., 4,194,001, Cl. 424-273.00R.
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- Incom International Inc.: *See—*
  - Langford, William D., 4,193,319, Cl. 74-501.00R.
- Industrial Air, Inc.: *See—*
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- Industrie Pirelli S.p.A.: *See—*
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  - Ferrentino, Antonio, 4,193,301, Cl. 73-207.000.
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  - Schlager, Kenneth J., 4,193,393, Cl. 128-710.000.
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  - Chu, Richard C.; Hwang, Un-pah; and Simons, Robert E., 4,193,445, Cl. 165-79.000.
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  - Sakmann, Walter, 4,193,703, Cl. 400-124.000.
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  - Andrews, Russell S., Jr.; and Moseley, Emmett V., 4,193,840, Cl. 162-49.000.
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  - Arnold, Bruce K., 4,193,665, Cl. 350-96.220.
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- Iverson, Dennis H. Machinery seal. 4,193,606, Cl. 277-205.000.
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  - Reid, Walter L., Jr.; Delano, Ralph L.; and Jepson, John W., 4,193,601, Cl. 273-167.00R.
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- Johnson, Philip: *See—*
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  - Reekstin, John P.; Plonski, Sigfried G.; and Jones, Addison B., 4,193,687, Cl. 356-150.000.
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  - Satterberg, Lars H.; and Eliasson, Hans, 4,193,505, Cl. 212-55.000.
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- Karol, Frederick J.: *See—*
  - Goeke, George L.; and Karol, Frederick J., 4,193,892, Cl. 252-428.000.
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  - Gill, Gerald L., Jr.; and Rioux, Philip J., 4,193,226, Cl. 51-124.00R.
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  - Miller, Roger L., 4,193,642, Cl. 303-97.000.
- Kemerica, Incorporated: *See—*
  - Cook, William H., 4,193,896, Cl. 260-2.300.
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- King, Arthur S. Selective multiple electrode waste water treating system. 4,193,859, Cl. 204-269.000.
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- Kinnucan, Walter F., Jr. Clip-and-sleeve arrangement for use with paving form and tie bar. 4,193,573, Cl. 249-9.000.
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- Kinsman, Gordon F.: *See—*
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  - Roberts, John S., 4,193,961, Cl. 264-176.00F.
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Meinert, Harry M.; and Long, John D., 4,193,458, Cl. 172-328.000.

Looker, Brian E.: *See—*
Barton, Derek H. R.; Long, Alan G.; Looker, Brian E.; Wilson, Edward M.; and Elphinstone, William G., 4,193,917, Cl. 260-239.00A.

Lookholder, Theodore W. Prefabricated unitary package which when sealed and irradiated conforms closely to contents and becomes impact-absorbing. 4,193,499, Cl. 206-524.000.

Lorenz, Edwin W. Clamp assembly. 4,193,173, Cl. 24-249.0LS.

Loucks, Richard S., to International Telephone and Telegraph Corporation. Noninteractive heater power supply. 4,194,160, Cl. 328-267.000.

Loup, Ronald L.; and Gill, Arthur W., to Double A Products Company. Solenoid construction. 4,194,173, Cl. 335-260.000.

Loveless, James C.; and Palmer, Darrel R., to Deseret Company, The. Intravenous needle assembly with air bleed plug. 4,193,400, Cl. 128-214.400.

Lovison, Paula J.; and Lovison, William D. Fingernail dryer. 4,193,209, Cl. 34-239.000.

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Lovison, Paula J.; and Lovison, William D., 4,193,209, Cl. 34-239.000.

LTG Lufttechnische GmbH: *See—*
Hencke, Dietmar, 4,193,779, Cl. 55-290.000.

Lucas Industries Limited: *See—*
Cullingford, Christopher V.; and Read, Martin A., 4,193,965, Cl. 422-95.000.

Lucas, James M.: *See—*
Teng, James; Lucas, James M.; and Stubits, Marcella C., 4,193,989, Cl. 424-60.000.

Lucey, Desmond C., to Rolls-Royce Limited. Device for turning the rotor of a gas turbine engine. 4,193,739, Cl. 415-118.000.

Luder, Jacques, to Compagnie Industrielle des Telecommunications. Device for detecting a frequency in a PCM coded signal. 4,194,092, Cl. 179-84.0VF.

Ludwig, Ralf: *See—*
Koch, Freidrich; Ludwig, Ralf; Gunther, Herbert; and Rebers, Gunter, 4,193,701, Cl. 366-159.000.

Lummus Company, The: *See—*
Tsao, Utah; and Sy, Angel, 4,193,944, Cl. 260-659.00R.

Lund, Ernest K., to Edgar Pickering (Blackburn) Limited. Knife block assembly tufting machines. 4,193,360, Cl. 112-79.00R.

Lundberg, George A., to E. J. Brooks Company. Lock for railroad switch. 4,193,276, Cl. 70-34.000.

Lundberg, John A.; Schafer, Robert J.; Toeniskoetter, Richard H.; and Pelfrey, Richard L., to Ashland Oil, Inc. Flower pot and method for making. 4,193,909, Cl. 260-42.150.

Lundberg, Robert D.: *See—*
Brenner, Douglas; and Lundberg, Robert D., 4,193,899, Cl. 260-23.50A.
Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, 4,193,901, Cl. 260-28.50B.

Lynnworth, Lawrence C., to Panametrics, Inc. Slow torsional wave densitometer. 4,193,291, Cl. 73-32.00A.

M. U. Engineering & Manufacturing, Inc.: *See—*
Skinner, James R., 4,193,668, Cl. 350-281.000.

MacGregor International S.A.: *See—*
Kummerman, Henri, 4,193,439, Cl. 160-188.000.

Machida, Kenji. Critical torque detector. 4,193,720, Cl. 408-11.000.

MacKenzie, Ronald, to Ford Motor Company. Self-adjusting cryogenic thermal interface assembly. 4,194,119, Cl. 250-352.000.

Maeder, Edward G., to National Can Corporation. Cup holder assembly. 4,193,279, Cl. 72-44.000.

Maffet, Vere, to UOP Inc. Processes for drying sewage sludge and filtering water. 4,193,206, Cl. 34-12.000.

Maffrand, Jean-Pierre: *See—*
Boigegrain, Robert; Gachon, Michel; Maffrand, Jean-Pierre; and Maire, Gerard, 4,193,997, Cl. 424-256.000.

Mager, George E., to Xerox Corporation. Bit manipulation circuitry in a microprocessor. 4,194,241, Cl. 364-200.000.

Magnaflux Corporation: *See—*
Flaherty, John J.; and Strauts, Eric J., 4,193,306, Cl. 73-629.000.

Magnavox Company, The: *See—*
Streeter, Robert D., 4,194,088, Cl. 179-1.0GS.

Magnetic Peripherals Inc.: *See—*
Duff, James A., 4,194,228, Cl. 360-133.000.
Grapes, Robert D.; and Watson, Donald J., 4,194,224, Cl. 360-97.000.

Mahaffey, Redge A.: *See—*
Pasour, John A.; Kapetanakos, Christos A.; Mahaffey, Redge A.; and Golden, Jeffry, 4,194,139, Cl. 313-153.000.

Maire, Gerard: *See—*
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Majoewsky, Steven T.: *See—*
Keller, Vernon P.; Alley, Don B.; and Majoewsky, Steven T., 4,193,478, Cl. 187-29.00R.

Makiguchi, Sadao: *See—*
Hirai, Kazuo; Kamata, Junich; Makiguchi, Sadao; and Iwai, Kazuhiro, 4,194,155, Cl. 455-345.000.

Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, to Exxon Research & Engineering Co. Process for the sulfonation of an elastomeric polymer. 4,193,901, Cl. 260-28.50B.

Malacheski, Joseph J.; and Zenda, Richard J. Hinge construction. 4,193,165, Cl. 16-191.000.

Malinouskas, Donald, to Becton, Dickinson & Company. Active antenna for medical telemetry monitoring systems. 4,194,179, Cl. 340-211.000.

Malkina, Vera M., Evgeny E. Podkletnov, administrators: *See—*
Khodsky, Lev G.; Brazgovskaya, Alla I.; Kaminskaya, Valentina S.; and Podkletnov, Evgeny N., deceased, 4,193,808, Cl. 106-48.000.

Malo, Lowell L., to ACF Industries, Incorporated. Railway car brake rigging. 4,193,480, Cl. 188-52.000.

Mantegani, Enzo. Kiln. 4,193,761, Cl. 432-128.000.

Marc, Michel, to Clint, Inc. Bicycle sprocket drive apparatus with elliptical pedal path. 4,193,324, Cl. 74-750.00B.

Marchak, Roman O.; and Peterson, William A., Jr., to Bendix Corporation, The. Start and warm up features for electronic fuel management systems. 4,193,380, Cl. 123-32.0EG.

Marchant, Ian M.; and Faville, Warwick S., to Kins Developments Limited. Rail clip assemblies. 4,193,544, Cl. 238-347.000.

Marchasson, Maurice: *See—*
Dondeyne, Alban; Marchasson, Maurice; Ravez, Paul; and Soubrier, Louis, 4,193,355, Cl. 110-336.000.

Marconi Instruments Limited: *See—*
Owen, David P., 4,194,164, Cl. 330-130.000.

Marin, Sergio. Scissors or similar cutting tools with plastic handles. 4,193,189, Cl. 30-260.000.

Marinello, Rosolino. Orbital compression chamber for the cure of internal wounds and inflammation of the ocular apparatus and central nervous system. 4,193,401, Cl. 128-260.000.

Marino, Francis C.; and Herman, Morton B., to Redactron Corporation. Interrogation of key switches using pulse width detection. 4,194,188, Cl. 340-365.00E.

Marino, Francis C., to Redactron Corporation. Magnetic recording detection. 4,194,223, Cl. 360-41.000.

Marlowe, William H.: *See—*
Ban, Thomas E.; and Marlowe, William H., 4,193,862, Cl. 208-11.00R.

Marmo, Anthony R., to Westinghouse Electric Corp. Pellet dimension checker. 4,193,502, Cl. 209-555.000.

Marquis, Edward T.; and Yeakey, Ernest L., to Texaco Development Corporation. Isatoic anhydride derivatives and use as chain-extenders. 4,194,070, Cl. 521-163.000.

Marritt, Clifford R.: *See—*
Williams, Robert E.; and Marritt, Clifford R., 4,193,410, Cl. 131-170.00R.

Marshall, Robert M., to Allied Chemical Corporation. Application of fluorocarbon compound to synthetic organic polymer yarn. 4,193,880, Cl. 252-8.800.

Marshall and Williams Company: *See—*
Richter, Hans H., 4,193,175, Cl. 26-94.000.

Martin, James L. Electrical switch controllable alternatively by an internal timer and by digital information from a remote source. 4,194,182, Cl. 340-310.00R.

Martin-Thomas Limited: *See—*
Crook, Roger L., 4,193,709, Cl. 403-191.000.

Martinez Concha, Francisco J.: *See—*
Bruening, Wilhelm; de Andrade Bruening, Inai M. R.; and Martinez Concha, Francisco J., 4,193,963, Cl. 422-52.000.

Martinez, Jorge M. Locked key ring. 4,193,278, Cl. 70-459.000.

Masaki, Masaru; and Yotsutani, Akio, to Nippon Electric Co., Ltd. Digital radio paging communication system. 4,194,153, Cl. 455-31.000.

Masaki, Takaaki, to Sanyo Electric Company, Ltd. Power supply apparatus. 4,194,238, Cl. 363-17.000.

Maschinenfabrik Walter Scheele KG: *See—*
Bille, Heinz, 4,193,743, Cl. 417-481.000.

Masser, Lloyd D., to Lear Siegler, Inc. Elastomeric suspension system for wheeled vehicles. 4,193,612, Cl. 280-681.000.

- Massey-Ferguson Services N.V.: *See—*
  - Williams, Derrick G., 4,193,734, Cl. 414-694.000.
- Massey, Roger G., to Parker & Harper Mfg. Co., Inc. Detachable handle for control devices. 4,193,579, Cl. 251-288.000.
- Massie, Lewis E. Engraving machines. 4,193,200, Cl. 33-25.00B.
- Masuda, Takao: *See—*
  - Ikenoue, Shinpei; and Masuda, Takao, 4,193,804, Cl. 430-353.000.
- Mathey, Francois: *See—*
  - Muller, Alain; Mathey, Francois; and Bensoam, Jean, 4,193,978, Cl. 423-648.00R.
- Matika, Ronald J.: *See—*
  - Brucker, Milton; Matika, Ronald J.; and McMican, Maurice E., 4,193,869, Cl. 210-44.000.
- Matsch, Ladislas C.: *See—*
  - Drnevich, Raymond F.; Matsch, Ladislas C.; and Srinath, Embar G., 4,193,854, Cl. 204-149.000.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Horiuchi, Masao; and Motozuka, Yasuyuki, 4,193,572, Cl. 248-535.000.
  - Inoue, Morio; Itoh, Kunio; and Asahi, Kunihiko, 4,193,835, Cl. 156-606.000.
  - Tanabe, Kenzo; and Kanno, Masashi, 4,194,158, Cl. 455-333.000.
- Matsushita, Yoshiaki, to VLSI Technology Research Association. Method of treating a silicon single crystal ingot. 4,193,783, Cl. 65-31.000.
- Matsuura, Tamizo: *See—*
  - Kotaka, Mitsuo; Ishikawa, Hirotoshi; Muraki, Kaisuke; Takahashi, Ryo; and Matsuura, Tamizo, 4,194,118, Cl. 250-343.000.
- Mauric, Claudine; and Wolf, Rainer, to Sandoz Ltd. Flame retardant regenerated cellulose containing a phosphoric acid or thiophosphoric acid amide. 4,193,805, Cl. 106-18.150.
- Maxemchuk, Nicholas F.: *See—*
  - Hartmann, John C.; and Maxemchuk, Nicholas F., 4,194,184, Cl. 340-347.00P.
- Maxwell, David A.: *See—*
  - Youmans, Albert P.; Allison, David F.; and Maxwell, David A., 4,193,836, Cl. 156-657.000.
- Maytag Company, The: *See—*
  - Noe, William J., 4,193,315, Cl. 74-242.11R.
- Mazier, Paul, to Souplesse Fonctionnelle Systematique S.F.Z. Apparatus for the manufacture of expansion bellows. 4,193,280, Cl. 72-59.000.
- Mazzei, Alessandro: *See—*
  - Dozzi, Giovanni; Cucinella, Salvatore; and Mazzei, Alessandro, 4,193,939, Cl. 260-583.00R.
- Mazzoni, Renato J.; Mistrick, George R.; and Rosskamp, Barent A., to PPG Industries, Inc. Multiple glazed unit having an adhesive cleat. 4,193,236, Cl. 52-172.000.
- McArthur, Alexander D.; Holsgrove, Robert J.; and Hodge, Gerard, to Persista, Inc. Coating roller. 4,193,178, Cl. 29-129.500.
- McBride, William R.: *See—*
  - Adicoff, Arnold; Finnegan, William G.; McBride, William R.; and Ayres, William M., 4,193,952, Cl. 264-3.00B.
- McCartney, William B.: *See—*
  - Willmore, Robert R.; and McCartney, William B., 4,194,205, Cl. 343-17.700.
- McCarty, Lewis C., Jr., to Novatronics, Inc. Guidance devices. 4,193,567, Cl. 244-3.160.
- McClung, Glen L.: *See—*
  - Jezek, Bruce W.; and McClung, Glen L., 4,193,328, Cl. 81-72.000.
- McCrary, Nathan O., Jr. Came cotting and molding tool and method of using same. 4,193,284, Cl. 72-325.000.
- McDaniel, Max P., to Phillips Petroleum Company. Olefin polymerization. 4,194,073, Cl. 526-98.000.
- McDermott, Peter; and Fattori, Lazzaro A., to Plastic Reel Corporation of America. Storage and shipping container. 4,193,497, Cl. 206-387.000.
- McDonough, Larry. Self-contained door alarm device. 4,194,193, Cl. 340-545.000.
- McDowell-Wellman Company: *See—*
  - Ban, Thomas E.; and Marlowe, William H., 4,193,862, Cl. 208-11.00R.
- McGarry, Patrick J.: *See—*
  - Posner, Louis L.; and McGarry, Patrick J., 4,193,225, Cl. 49-465.000.
- McGuire, Willis C.: *See—*
  - Epstein, Peter F.; and McGuire, Willis C., 4,193,933, Cl. 260-453.0RW.
- McHugh, Neil M., to Colgate-Palmolive Company. Color-yielding scouring cleanser compositions. 4,193,888, Cl. 252-99.000.
- McKay, Dwight L., to Phillips Petroleum Company. Passivation of metals on cracking catalyst with an antimony thiocarbamate. 4,193,891, Cl. 252-411.00R.
- McKerns, Kenneth W. Contraceptive, antibody generating, polypeptides. 4,193,915, Cl. 260-112.50R.
- McKinnon, Neil A.: *See—*
  - Bannister, Michael J.; McKinnon, Neil A.; and Hughan, Robert R., 4,193,857, Cl. 204-195.00S.
- McMican, Maurice E.: *See—*
  - Brucker, Milton; Matika, Ronald J.; and McMican, Maurice E., 4,193,869, Cl. 210-44.000.
- McNally, Ronald. Lavatory seat. 4,193,144, Cl. 4-229.000.
- McNeil, David F.: *See—*
  - Goodale, Clark W.; Morgan, Charles W.; Rhoton, Albert L.; and McNeil, David F., 4,194,026, Cl. 427-244.000.
- McPheasons Limited: *See—*
  - Kalnins, John Z., 4,193,956, Cl. 264-27.000.
- McQuay-Perfex Inc.: *See—*
  - Vogel, Kenneth E.; and Powlas, Jerome D., 4,193,781, Cl. 62-81.000.
- Mead Corporation, The: *See—*
  - Cooley, Jack S., 4,193,490, Cl. 198-451.000.
- Meadox Medicals, Inc.: *See—*
  - Heck, Rudolf N., 4,193,137, Cl. 3-1.400.
- Mecca, Angelo R.: *See—*
  - Sharland, Stanley G.; and Mecca, Angelo R., 4,193,375, Cl. 118-504.000.
- Medford, Richard D.; and Cooper, Jerry W., to Dayco Corporation. Vaccum cleaner hose construction having electrical conductors extending therealong and method of making same. 4,194,081, Cl. 174-47.000.
- Medi-Coll, Inc.: *See—*
  - Chvapil, Milos, 4,193,813, Cl. 106-122.000.
- Mehosky, Brian L.: *See—*
  - Giddings, Brandford E.; Wardlow, Eddie, Jr.; and Mehosky, Brian L., 4,193,903, Cl. 260-29.60R.
- Meier, Otto; and Scheidweiler, Andreas, to Cerberus AG. Adjustable ionization chamber. 4,194,120, Cl. 250-381.000.
- Meier, Werner: *See—*
  - Furst, Andor; Labler, Ludwig; and Meier, Werner, 4,193,921, Cl. 260-239.55R.
- Meijer, Peter J. N.; and Nieuwkamp, Johannes G. M., to Stamicarbon, B.V. Process for preparing 2-pyrrolidone. 4,193,925, Cl. 260-326.5FN.
- Meinert, Harry M.; and Long, John D., to Deere & Company. Tractor and implement and hydraulic system therefor. 4,193,458, Cl. 172-328.000.
- Meisberger, Raymond F., to Bruce-Lake Company. Utility line support structure. 4,194,080, Cl. 174-45.00R.
- Melan, Giuseppe-Fabrizio M.; and Nicouland, Jean R., to Saint-Gobain Industries. Strand attenuation and winding apparatus. 4,193,557, Cl. 242-18.00A.
- Memmott, Sharon S., to Zotos International, Inc. Rod selector guide. 4,193,615, Cl. 283-1.00A.
- Mendelson, Wilford L.: *See—*
  - Levinson, Sidney H.; and Mendelson, Wilford L., 4,193,941, Cl. 260-592.000.
- Menold, Robert F.: *See—*
  - Wise, Layton A.; and Menold, Robert F., 4,193,507, Cl. 215-12.00R.
- Merck & Co., Inc.: *See—*
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- Merck Sharp & Dohme (I.A.) Corp.: *See—*
  - Wasson, Burton K.; and Weinstock, Leonard M., 4,193,995, Cl. 424-250.000.
- Merichem Company: *See—*
  - Black, James L., 4,193,967, Cl. 422-170.000.
- Merkel, Daniel A.; Viglietti, John E.; and Gagin, William P., to American Orthodontics Corporation. Orthodontic appliance. 4,193,195, Cl. 433-13.000.
- Merkle, Josef, to Daimler-Benz Aktiengesellschaft. Truck with driver cab. 4,193,629, Cl. 296-190.000.
- Mermelstein, Leon, to Franklin Distributors Corporation. Translucent storage pages for filing film slides. 4,193,218, Cl. 40-374.000.
- Mero-Raumstruktur GmbH & Co. Wurzburg: *See—*
  - Eberlein, Helmut; Quenzel, Hermann; and Kornberger, Otto, 4,193,706, Cl. 403-19.000.
- Merrell, Kenneth C.; and Koegel, James H., to Robertshaw Controls Company. Portable liquid level maintenance monitor system for vehicles. 4,194,195, Cl. 340-661.000.
- Mersiovsky, Willy: *See—*
  - Kurzi, Albert; and Mersiovsky, Willy, 4,193,202, Cl. 33-174.00L.
- Messer Griesheim GmbH: *See—*
  - Springer, Donald A., 4,194,109, Cl. 219-386.000.
- Messick, Louis J., to United States of America, Navy. Microwave InP/SiO_2 insulated gate field effect transistor. 4,194,021, Cl. 427-95.000.
- Metal Bellows Corporation: *See—*
  - Tucker, Elton M.; and Prosl, Frank R., 4,193,397, Cl. 128-207.190.
- Metalwash Machinery Corporation: *See—*
  - Mirza, Rohinton M., 4,193,374, Cl. 118-58.000.
- Metcalfe, Kenneth A.; Clements, Alwin S.; and Wilson, Clive W., to Commonwealth of Australia, The. Liquid developers for electrostatic images. 4,193,794, Cl. 430-137.000.
- Metro-Tel Corp.: *See—*
  - Carlson, Alan J., 4,194,098, Cl. 179-175.000.
- Meyer, Gustavo A.: *See—*
  - Fekete, Simon O.; and Meyer, Gustavo A., 4,193,969, Cl. 423-139.000.
- Meyer, Larry P., to Nelson Irrigation Corporation. High capacity sprinkler head with improved brake mechanism. 4,193,548, Cl. 239-230.000.
- Meyer, Walter, to Deutsche Babcock Aktiengesellschaft. Arrangement for preventing excess pressure in the housing of shut-off valves. 4,193,418, Cl. 137-118.000.
- Meyers, Peter S., to Chromalloy American Corporation. Ion exchange method and apparatus. 4,193,868, Cl. 210-35.000.
- Michael, Dietrich: *See—*
  - Tacke, Peter; Neuray, Dieter; and Michael, Dietrich, 4,193,907, Cl. 260-37.00N.

- Michel, Friedbert: *See—*
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- Mickelson, John A., to W. H. Brady Co. Control panel overlay. 4,194,099, Cl. 200-5.00A.
- Micro Tec Instrumentation Inc.: *See—*
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- Microwave Semiconductor Corp.: *See—*
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- Mifune, Tadayoshi: *See—*
  - Kano, Yasuo; Furukawa, Shunsuke; and Mifune, Tadayoshi, 4,194,213, Cl. 357-24.000.
- Milberger, Lionel J.: *See—*
  - Lochte, Glen E.; and Milberger, Lionel J., 4,193,449, Cl. 166-72.000.
- Miles Laboratories, Inc.: *See—*
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  - Daunora, Louis G.; Lam, Charles T. W.; and Rapkin, Myron C., 4,193,766, Cl. 23-230.00R.
- Millen Industries, Inc.: *See—*
  - Schulman, Kenneth B., 4,193,533, Cl. 229-34.00R.
- Miller, Carl A.: *See—*
  - Dunn, C. E. Lee, Jr.; and Miller, Carl A., 4,193,509, Cl. 215-330.000.
- Miller, David C., III, to Miller, David Charles, III. Shock absorbing device for automobile boat trailers. 4,193,610, Cl. 280-414.00R.
- Miller, David Charles, III: *See—*
  - Miller, David C., III, 4,193,610, Cl. 280-414.00R.
- Miller, Dennis P.; and Tamaki, Masahiko, to Dow Chemical Company, The. Flame retardant composition for polyurethane comprising bromohydrin of pentaerythritol and an organophosphorus compound. 4,194,068, Cl. 521-107.000.
- Miller, Fredric N., to American Can Company. Multiple distributor heads for laying dry fibers. 4,193,751, Cl. 425-83.100.
- Miller, Roger L., to Kelsey Hayes Co. Skid control system. 4,193,642, Cl. 303-97.000.
- Miller, Scott; Bushman, Thomas; Kruger, Kurt; and Van Dyck, Kenneth, to Dennison Manufacturing Company. Fastener for wire bound media. 4,193,704, Cl. 402-19.000.
- Miller, Sidney A. Protective covering material for use such as shingles and siding. 4,193,898, Cl. 260-23.0XA.
- Milne, James A., to Pace Incorporated. Method of surface laminating. 4,193,830, Cl. 156-306.000.
- Mine Safety Appliances Company: *See—*
  - Wise, Layton A.; and Menold, Robert F., 4,193,507, Cl. 215-12.00R.
- Mines, Gordon L.: *See—*
  - Haller, Jacob S.; Mines, Gordon L.; and Mischnick, Meinert J., 4,193,187, Cl. 29-749.000.
- Minichillo, Ronald A.: *See—*
  - Broyles, Wayne R., 4,193,477, Cl. 182-194.000.
- Minke, Rudeger: *See—*
  - Schmidt, Werner; and Minke, Rudeger, 4,193,912, Cl. 260-45.75B.
- Minnesota Mining and Manufacturing Company: *See—*
  - Ebbinga, Richard D., 4,194,222, Cl. 360-18.000.
  - Knox, Michael P., 4,193,330, Cl. 83-364.000.
- Minolta Camera Kabushiki Kaisha: *See—*
  - Mori, Hiromi, 4,194,112, Cl. 235-132.00E.
  - Ueda, Hiroshi; Saito, Mitsuru; Nanba, Yasuhiro; and Kuramoto, Yoshio, 4,193,676, Cl. 354-106.000.
  - Yasukuni, Mitsuo; Ogura, Toshinobu; Omaki, Takanobu; and Tanaka, Masahide, 4,193,667, Cl. 350-187.000.
- Mirza, Rohinton M., to Metalwash Machinery Corporation. Can handling equipment. 4,193,374, Cl. 118-58.000.
- Misawa, Yutaka: *See—*
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- Mischnick, Meinert J.: *See—*
  - Haller, Jacob S.; Mines, Gordon L.; and Mischnick, Meinert J., 4,193,187, Cl. 29-749.000.
- Mistrick, George R.: *See—*
  - Mazzoni, Renato J.; Mistrick, George R.; and Rosskamp, Barent A., 4,193,236, Cl. 52-172.000.
- Mitchell, Carol J.: *See—*
  - Mitchell, Eugene C.; and Mitchell, Carol J., 4,194,122, Cl. 250-476.000.
- Mitchell, Eugene: *See—*
  - Mitchell, Eugene C.; and Mitchell, Carol J., 4,194,122, Cl. 250-476.000.
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- Mitchell, Morris E.: *See—*
  - Hinton, Arthur D.; and Mitchell, Morris E., 4,193,353, Cl. 109-50.000.
- Mitsubishi Chemical Industries, Limited: *See—*
  - Uchida, Mitsuo; Oguri, Yasuo; Saito, Junji; and Kawahara, Tsukasa, 4,193,958, Cl. 264-86.000.
- Mitsui, Akio: *See—*
  - Mukunoki, Yasuo; Naito, Hideki; and Mitsui, Akio, 4,193,802, Cl. 430-139.000.
- Mitsui Toatsu Chemicals Inc.: *See—*
  - Yamamoto, Ryuichi; Yamamoto, Kousuke; Nagata, Teruyuki; and Obata, Kenji, 4,193,932, Cl. 260-453.0PH.
- Miyashita, Masakazu; and Kanai, Akira, to Citizen Watch Co., Ltd. Servo control system. 4,193,644, Cl. 308-9.000.
- Mizunaga, Shinji: *See—*
  - Shindo, Akio; and Mizunaga, Shinji, 4,193,427, Cl. 139-54.000.
- Mobil Oil Corporation: *See—*
  - Chang, Clarence D., 4,193,864, Cl. 208-210.000.
  - Cushman, Donald R.; Pagen, Charles A.; and Schick, John W., 4,194,023, Cl. 427-138.000.
  - Frangatos, Gerassimos, 4,193,883, Cl. 252-49.900.
  - Gemmill, Robert M., Jr., 4,193,882, Cl. 252-47.500.
  - Goldstein, Theodore P., 4,193,454, Cl. 166-302.000.
  - Wilson, Peggy M.; and Pao, Julie, 4,193,452, Cl. 166-274.000.
- Mochizuki, Manabu; Suzuki, Kohji; Oyama, Hajime; and Ohnuma, Teruyuki, to Ricoh Company, Ltd. Electrophotographic apparatus comprising improved imaging system. 4,193,679, Cl. 355-1.000.
- Mochizuki, Yasuhiro; Hachino, Hiroaki; Yasuda, Yasumichi; Misawa, Yutaka; and Ogawa, Takuzo, to Hitachi, Ltd. Vapor phase diffusion of aluminum with or without boron. 4,193,826, Cl. 148-189.000.
- Modern Precision Engineers & Associates Limited: *See—*
  - Clements, Harold J.; and Ely, Frank, 4,193,341, Cl. 100-93.00P.
- Moench, Jerry D., to Motorola, Inc. Digital predecoding system. 4,194,130, Cl. 307-205.000.
- Mohacsi, Ernest, to Hoffmann-La Roche Inc. Process for preparing 3-phenoxy morphinans. 4,194,044, Cl. 546-146.000.
- Mohiuddin, Mohammed S. Illuminated master calendar and message recording system. 4,194,196, Cl. 340-711.000.
- Molins, Desmond W., to Molins Limited. Continuous web supply apparatus. 4,193,558, Cl. 242-58.400.
- Molins Limited: *See—*
  - Molins, Desmond W., 4,193,558, Cl. 242-58.400.
  - Williams, Robert E.; and Marritt, Clifford R., 4,193,410, Cl. 131-170.00R.
- Molloy, Bryan B.; and Schmiegel, Klaus K., to Eli Lilly and Company. Aryloxyphenylpropylamines for obtaining a psychotropic effect. 4,194,009, Cl. 424-330.000.
- Molyneux, George, to Radway Plastics Limited. Sills for building construction. 4,193,231, Cl. 52-97.000.
- Mondt, Josef; Rauterkus, Karl J.; and Rinno, Helmut, to Hoechst Aktiengesellschaft. Finely particulate plastics dispersions prepared by metering a mixture containing four monomers into an aqueous liquor containing an anionic emulsifier. 4,193,902, Cl. 260-29.6TA.
- Mongagnino, James G., to Pitney Bowes Inc. Sheet separator and feeding apparatus. 4,193,590, Cl. 271-119.000.
- Monitek, Inc.: *See—*
  - Wynn, William H., 4,193,692, Cl. 356-341.000.
- Monsanto Company: *See—*
  - Bachman, Gerald L.; and Vineyard, Billy D., 4,194,051, Cl. 560-60.000.
  - Birum, Gail H.; and Jansen, Richard F., 4,193,914, Cl. 260-45.85R.
  - Jarvis, William M.; and Kim, Keun Y., 4,193,973, Cl. 423-265.000.
  - Villadsen, John, 4,193,894, Cl. 252-440.000.
- Montedison S.p.A.: *See—*
  - Bertelli, Guido; Roma, Pierpaolo; and Locatelli, Renato, 4,193,945, Cl. 525-2.000.
- Moore Business Forms, Inc.: *See—*
  - Allen, Robert H., 4,193,501, Cl. 206-610.000.
- Moore, Charles E., Jr.: *See—*
  - Davis, Orland L., Jr.; and Moore, Charles E., Jr., 4,194,093, Cl. 179-99.00R.
- Moores, Peter R.; and Shoffner, James E., to Fiber Materials, Inc. Method of forming carbon composites. 4,193,828, Cl. 156-148.000.
- Morgan, Charles W.: *See—*
  - Goodale, Clark W.; Morgan, Charles W.; Rhoton, Albert L.; and McNeil, David F., 4,194,026, Cl. 427-244.000.
- Mori, Hiromi, to Minolta Camera Kabushiki Kaisha. Presetting counter device. 4,194,112, Cl. 235-132.00E.
- Morino, Hideki; and Yasui, Yasuyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Casing for power transmission unit for automotive vehicle. 4,193,322, Cl. 74-700.000.
- Morrison, Steven; and Lisle, Thomas K., Jr., to United States of America, Air Force. Digital hysteresis circuit. 4,194,186, Cl. 340-347.0AD.
- Morse, Glenn B. Torsional vibration dampener. 4,193,724, Cl. 409-141.000.
- Moseley, Emmett V.: *See—*
  - Andrews, Russell S., Jr.; and Moseley, Emmett V., 4,193,840, Cl. 162-49.000.
- Moser, Roland: *See—*
  - Audykowski, Thaddeus; and Moser, Roland, 4,193,905, Cl. 260-30.60R.
- Motai, Takeji, to Shin-Asahigawa Co., Ltd. Process for treating wood. 4,194,033, Cl. 427-351.000.
- Motoren-Werke Mannheim AG: *See—*
  - Dietrich, Werner; and Hiemesch, Oswald, 4,193,379, Cl. 123-32.00C.
- Motorola, Inc.: *See—*
  - Moench, Jerry D., 4,194,130, Cl. 307-205.000.
- Motozuka, Yasuyuki: *See—*
  - Horiuchi, Masao; and Motozuka, Yasuyuki, 4,193,572, Cl. 248-535.000.
- Mougin, Georges L., to ITI Limited. Wall for protecting tabular icebergs against the mechanical effects of waves. 4,193,712, Cl. 405-52.000.
- Moulin, Michel: *See—*
  - Farkas, Rudolf; and Moulin, Michel, 4,194,143, Cl. 315-241.00R.
- Mrazek, Dale A.; and Reinschmidt, Robert M., to National Semiconductor Corporation. Tristate logic buffer circuit with enhanced dynamic response. 4,194,131, Cl. 307-209.000.
- Mrazek, Dale A., to National Semiconductor Corporation. Tristate logic buffer circuit with reduced power consumption. 4,194,132, Cl. 307-209.000.

Mueller, Walter B., to W. R. Grace & Co. Multi-layer polyolefin shrink film. 4,194,039, Cl. 428-213.000.

Muenger, James R.; and Barber, Everett M., to Texaco Inc. Process for the generation of power from carbonaceous fuels with minimal atmospheric pollution. 4,193,259, Cl. 60-39.040.

Mukunoki, Yasuo; Naito, Hideki; and Mitsui, Akio, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material containing aromatic ester solvent. 4,193,802, Cl. 430-139.000.

Muller, Alain; Mathey, Francois; and Bensoam, Jean, to Compagnie Francaise de Raffinage. Production of hydrogen. 4,193,978, Cl. 423-648.00R.

Muller, Friedemann: *See—*
Wingler, Frank; Eicher, Theobald; Muller, Friedemann; Fischer, Winfried; and Prinz, Richard, 4,193,897, Cl. 260-17.00R.

Muller, Jurgen; Pfeifer, Josef; Rheude, Alfred; Erckel, Rolf; Farber, Heinrich; and Zrenner, Bernhard, to AGFA-Gevaert, A.G. Apparatus for developing latent images of X-rayed objects. 4,193,682, Cl. 355-10.000.

Mumford, Eustace H., to Owens-Illinois, Inc. Method of loading containers into an annealing lehr. 4,193,784, Cl. 65-69.000.

Murai, Yoshikazu; Tsuji, Okitsugu; and Sato, Atsushi, to Nippon Petrochemicals Co., Ltd. Fat-liquoring compositions for leather. 4,193,764, Cl. 8-94.220.

Muraki, Kaisuke: *See—*
Kotaka, Mitsuo; Ishikawa, Hirotoshi; Muraki, Kaisuke; Takahashi, Ryo; and Matsuura, Tamizo, 4,194,118, Cl. 250-343.000.

Murphy, Donald W.: *See—*
Carides, James N.; and Murphy, Donald W., 4,194,062, Cl. 429-194.000.

Murtazin, Khafiz M.: *See—*
Berber, Viktor A.; Pervushin, Evgeny S.; Murtazin, Khafiz M.; Kholin, Vladimir G.; and Galishnikov, Boris M., 4,193,288, Cl. 73-1.00R.

Myers, Ronald W.: *See—*
Hughes, Donald W. K.; and Myers, Ronald W., 4,193,654, Cl. 339-17.0LC.

N L Industries, Inc.: *See—*
Finlayson, Claude M., 4,193,806, Cl. 106-20.000.

N. Schlumberger & Cie: *See—*
Herubel, Jean F., 4,193,170, Cl. 19-127.000.

Nagano, Katsuto: *See—*
Nakajima, Takashi; Nagano, Katsuto; and Ishikawa, Kazumi, 4,194,108, Cl. 219-216.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Speed-changing device for bicycle. 4,193,309, Cl. 74-217.00B.

Nagata, Sachio: *See—*
Kojima, Rinzo; Shibata, Kazuhiro; and Nagata, Sachio, 4,193,825, Cl. 148-16.600.

Nagata, Teruyuki: *See—*
Yamamoto, Ryuichi; Yamamoto, Kousuke; Nagata, Teruyuki; and Obata, Kenji, 4,193,932, Cl. 260-453.0PH.

Nagy, Sandor: *See—*
Agocs, Pal; Fabian, Istvan; Gajdacsi, Andras; Nagy, Sandor; and Pinter, Zoltan, 4,193,922, Cl. 548-132.000.

Naito, Hideki: *See—*
Mukunoki, Yasuo; Naito, Hideki; and Mitsui, Akio, 4,193,802, Cl. 430-139.000.

Naito, Makoto. Apparatus for generating finely divided particulate bubbles. 4,193,949, Cl. 261-87.000.

Nakagawa, Yunosuke; and Kikuchi, Minoru, to Kao Soap Co., Ltd. Process for preparing foamable sodium percarbonate. 4,193,977, Cl. 423-415.00P.

Nakajima, Takashi; Nagano, Katsuto; and Ishikawa, Kazumi, to TDK Electronics Co., Ltd. Thermal printing head and method of making same. 4,194,108, Cl. 219-216.000.

Nakamura, Joji; and Furumi, Kihachiro, to Kabushiki Kaisha Komatsu Seisakusho. Method and apparatus for excavation. 4,193,634, Cl. 299-17.000.

Nakano, Kunihiro: *See—*
Hasegawa, Hiroshi; and Nakano, Kunihiro, 4,193,677, Cl. 354-127.000.

Namboodri, Chettoor G., to United Merchants and Manufacturers, Inc. Textile treatment process. 4,193,762, Cl. 8-14.000.

Nanaumi, Kazuyuki; and Baba, Koji, to Orion Machinery Co., Ltd. Heat exchanger for cooling system compressed air dehumidifiers. 4,193,443, Cl. 165-66.000.

Nanba, Yasuhiro: *See—*
Ueda, Hiroshi; Saito, Mitsuru; Nanba, Yasuhiro; and Kuramoto, Yoshio, 4,193,676, Cl. 354-106.000.

Narayanaswami, Subramaniyan: *See—*
Leeming, Michael R. G.; Narayanaswami, Subramaniyan; and Penrose, Alexander B., 4,193,994, Cl. 424-249.000.

National Can Corporation: *See—*
Maeder, Edward G., 4,193,279, Cl. 72-44.000.

National Research Development Corporation: *See—*
Wong, Henry H. Y., 4,193,234, Cl. 52-173.00R.

National Semiconductor Corporation: *See—*
Bernardi, Carl E., 4,193,834, Cl. 156-521.000.
Klein, Thomas, 4,193,183, Cl. 29-578.000.
Mrazek, Dale A.; and Reinschmidt, Robert M., 4,194,131, Cl. 307-209.000.
Mrazek, Dale A., 4,194,132, Cl. 307-209.000.

NCR Corporation: *See—*
Bowman, Rodney V.; and Francis, Martin H., 4,193,539, Cl. 235-92.0NG.
Bradam, William R., 4,194,097, Cl. 200-5.00A.
Fulks, Robert G.; Enfield, Robert E.; and Sacher, Eric, 4,194,113, Cl. 371-20.000.
Reynolds, Jack H., 4,194,144, Cl. 318-341.000.

Neff, Paul C., to Northwest Molded Products Corporation. Knob for a pan cover. 4,193,166, Cl. 16-121.000.

Neilsen, Roger P. Jack for lifting objects. 4,193,582, Cl. 254-131.000.

Nelson Irrigation Corporation: *See—*
Meyer, Larry P., 4,193,548, Cl. 239-230.000.

Nelson, Ned H. Ball retrieving and storage bag. 4,193,625, Cl. 294-19.00A.

Neogi, Amar N.: *See—*
Erickson, Charles E.; and Neogi, Amar N., 4,193,671, Cl. 351-160.00H.

Nerod, Irving, to American Can Company. Ultraviolet light curing apparatus for containers and the like. 4,193,204, Cl. 34-4.000.

Neumann, Gerhard M.; and Karelin, Jochen, to Delbag-Luftfilter GmbH. Method of mounting filter elements and mounting therefor. 4,193,844, Cl. 176-37.000.

Neuner, James A.; Einolf, Charles W., Jr.; and Szabo, Andras I., to Westinghouse Electric Corp. Apparatus for electrically converting an analog signal into a digital representation. 4,194,183, Cl. 340-347.0AD.

Neuray, Dieter: *See—*
Tacke, Peter; Neuray, Dieter; and Michael, Dietrich, 4,193,907, Cl. 260-37.00N.

Newton, Alan B.: *See—*
Caunt, Anthony D.; Vincent, Peter I.; and Newton, Alan B., 4,193,893, Cl. 252-429.00B.

Ng, Keng C.: *See—*
Weaver, Merle L.; and Ng, Keng C., 4,194,016, Cl. 426-419.000.

Niagara Cutter Inc.: *See—*
Oaks, Ronald R., 4,193,719, Cl. 407-49.000.

Nichols, Philip T.: *See—*
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., 4,193,413, Cl. 135-2.000.

Nichols, William B. Process and apparatuses for landing aircraft on water covered landing surfaces. 4,193,569, Cl. 244-100.00R.

Nicolson, Ian T.: *See—*
Hunt, Leslie; Nicolson, Ian T.; and Whitfield, Thomas M., 4,193,752, Cl. 425-131.100.

Nicouland, Jean R.: *See—*
Melan, Giuseppe-Fabrizio M.; and Nicouland, Jean R., 4,193,557, Cl. 242-18.00A.

Nieder, Gerhard: *See—*
Rockl, Gerhard; Nieder, Gerhard; and Schulz, Hans-Holger, 4,193,646, Cl. 308-187.100.

Nielson, Jay P. Self-propelled slip form machine. 4,193,750, Cl. 425-60.000.

Niemers, Ekkehard; Wollweber, Hartmund; Kolling, Heinrich; and Thomas, Herbert, to Bayer Aktiengesellschaft. Substituted benzenesulphonic acid esters, processes for their preparation and their use as medicaments. 4,194,004, Cl. 424-300.000.

Nieuwkamp, Johannes G. M.: *See—*
Meijer, Peter J. N.; and Nieuwkamp, Johannes G. M., 4,193,925, Cl. 260-326.5FN.

Niggemeier, Joseph F.; and Yeates, Richard P., to ACF Industries, Incorporated. Head insert for railway trailer hitch. 4,193,350, Cl. 410-64.000.

Nihon Denshi Kogyo Kabushiki Kaisha: *See—*
Kojima, Rinzo; Shibata, Kazuhiro; and Nagata, Sachio, 4,193,825, Cl. 148-16.600.

Nilsson, Erland: *See—*
Johansson, Bengt; and Nilsson, Erland, 4,194,138, Cl. 313-3.000.

Nipak, Inc.: *See—*
Spence, William M., 4,193,744, Cl. 417-567.000.

Nippon Electric Co., Ltd.: *See—*
Masaki, Masaru; and Yotsutani, Akio, 4,194,153, Cl. 455-31.000.
Yabe, Hideo; and Sato, Shohei, 4,194,090, Cl. 179-18.0ES.

Nippon Kogaku K.K.: *See—*
Hasegawa, Hiroshi; and Nakano, Kunihiro, 4,193,677, Cl. 354-127.000.
Ishibashi, Kazufumi; and Ichimura, Takeo, 4,193,807, Cl. 106-47.00Q.

Nippon Mining Co., Ltd.: *See—*
Sato, Junichi, 4,193,849, Cl. 204-38.00B.

Nippon Petrochemicals Co., Ltd.: *See—*
Murai, Yoshikazu; Tsuji, Okitsugu; and Sato, Atsushi, 4,193,764, Cl. 8-94.220.

Nissan Motor Company, Limited: *See—*
Aoyama, Syunichi, 4,193,381, Cl. 123-119.00A.
Shindo, Akio; and Mizunaga, Shinji, 4,193,427, Cl. 139-54.000.
Takahashi, Koichi; Hayakawa, Yoshikazu; and Usui, Keizaburo, 4,193,264, Cl. 60-397.000.

Nitsche, Joseph E.: *See—*
Dates, Harold F.; and Nitsche, Joseph E., 4,194,042, Cl. 428-332.000.

Nixon, Ralph D., to English Electric Valve Company Limited. Methods and apparatus for examination of surface temperature distribution. 4,193,302, Cl. 73-351.000.

Noda, Norio: *See—*
Shimada, Yoshio; Kagotani, Keiichi; Noda, Norio; Kawaharada, Hajime; and Watanabe, Kiyoshi, 4,194,065, Cl. 435-133.000.

Noe, William J., to Maytag Company, The. Belt drive system utilizing an adjustable idler mechanism. 4,193,315, Cl. 74-242.11R.

Nordenberg, Mats B.: *See—*
Bodelson, Berth I. A.; and Nordenberg, Mats B., 4,193,537, Cl. 233-20.00A.

Nordin, Bengt A. Device for transport and unloading of stacked logs. 4,193,730, Cl. 414-537.000.

Nordson Corporation: *See—*
Hamilton, William M.; Scholl, Charles H.; Kruke, Jeffrey J.; and Akers, Larry D., 4,193,745, Cl. 418-9.000.

Noren, Kjell S.; and Karlsson, Stig I., to AB Svensk Varmematning SVM. Apparatus for registering quantity values of corresponding volume or energy quantities by means of counters in a central station. 4,194,180, Cl. 340-183.000.

Noren, Robert C.; and Spritzer, Michael H., to General Atomic Company. Heating element and electrode assembly for high temperature furnaces. 4,194,079, Cl. 13-25.000.

Norland, Kenneth S.: *See—*
Bloom, Stanley M.; Hoffman, Arnold; and Norland, Kenneth S., 4,193,847, Cl. 204-15.000.

Norris, Lewis H.; and Dykes, Charles H., to Worchester Controls AG. Plug valve. 4,193,580, Cl. 251-309.000.

Northern Engineering Industries Limited: *See—*
Weston, Sidney, 4,193,510, Cl. 220-5.00A.

Northern Telecom Limited: *See—*
Boehler, Rolf, 4,193,186, Cl. 29-741.000.

Northup, Marcus A., Jr.: *See—*
Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., 4,193,886, Cl. 252-90.000.

Northwest Molded Products Corporation: *See—*
Neff, Paul C., 4,193,166, Cl. 16-121.000.

Novatronics, Inc.: *See—*
McCarty, Lewis C., Jr., 4,193,567, Cl. 244-3.160.

Novello, Renzo; and Bottussi, Elvio, to Fratelli Novello S.p.A. Template cutting device. 4,193,723, Cl. 409-122.000.

Nowlin, Oscar D.: *See—*
Dietz, Richard E.; and Nowlin, Oscar D., 4,194,076, Cl. 526-125.000.

Nozawa, Takamitsu: *See—*
Saito, Tadao; Nozawa, Takamitsu; Tsuchida, Haruo; Iizuka, Shigeo; and Goto, Takayuki, 4,193,551, Cl. 239-333.000.

Nu-Concept Computer Systems, Inc.: *See—*
Vandermark, Harold F., 4,193,160, Cl. 15-341.000.

Nutley, Hugh; and Gardner, Howard S. Method of preventing vapor explosions caused by contact of two liquids having different temperatures. 4,194,124, Cl. 250-492.00R.

Oaks, Ronald R., to Niagara Cutter Inc. Cutting tool. 4,193,719, Cl. 407-49.000.

Obata, Kenji: *See—*
Yamamoto, Ryuichi; Yamamoto, Kousuke; Nagata, Teruyuki; and Obata, Kenji, 4,193,932, Cl. 260-453.0PH.

Obenschain, Arthur W., to United States of America, Navy. Method and apparatus for reducing magnetometer errors. 4,194,150, Cl. 324-245.000.

Odoerfer, Hans F. Exterior wall composition. 4,193,240, Cl. 52-344.000.

Oesterling, Erwin: *See—*
Wahle, Gunter; Heitmann, Uwe; Oesterling, Erwin; and Dahlgrun, Rolf, 4,193,409, Cl. 131-23.00R.

Ogawa, Hiroshi: *See—*
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; and Sagara, Seiji, 4,193,483, Cl. 192-26.000.

Ogawa, Iwakichi, to Takara Co., Ltd. Combination vehicle and launcher toy assembly. 4,193,597, Cl. 273-405.000.

Ogawa, Takuzo: *See—*
Mochizuki, Yasuhiro; Hachino, Hiroaki; Yasuda, Yasumichi; Misawa, Yutaka; and Ogawa, Takuzo, 4,193,826, Cl. 148-189.000.

Ognevsky, Viktor A.: *See—*
Egorov, Viktor P.; Ognevsky, Viktor A.; Orlovsky, Anatoly G.; Ostrovsky, Grigory A.; Ryskind, Alexandr M.; Stepin, Anatoly L.; Trofimov, Oleg F.; and Shklyarov, Isaak N., 4,193,824, Cl. 148-12.400.

Ogura, Toshinobu: *See—*
Yasukuni, Mitsuo; Ogura, Toshinobu; Omaki, Takanobu; and Tanaka, Masahide, 4,193,667, Cl. 350-187.000.

Oguri, Yasuo: *See—*
Uchida, Mitsuo; Oguri, Yasuo; Saito, Junji; and Kawahara, Tsukasa, 4,193,958, Cl. 264-86.000.

Ohishi, Naoaki; Sakaida, Toshiaki; and Hasegawa, Mitsuru, to Showa Denko K. K. Method for preparing corundum particles. 4,193,768, Cl. 23-301.000.

Ohkubo, Hitoshi, to Tokyo Shibaura Electric Co., Ltd. Measuring apparatus for measuring a charging degree of liquid. 4,194,148, Cl. 324-453.000.

Ohmori, Masayuki, to Sony Corporation. Video projecting apparatus. 4,194,216, Cl. 358-60.000.

Ohnuma, Teruyuki: *See—*
Mochizuki, Manabu; Suzuki, Kohji; Oyama, Hajime; and Ohnuma, Teruyuki, 4,193,679, Cl. 355-1.000.

Okamoto, Toshihiko: *See—*
Shudo, Koichi; Okamoto, Toshihiko; Isogai, Yo; and Takahashi, Soshiro, 4,193,788, Cl. 71-94.000.

Okayama, Hirohumi, to Kato Electric and Machinery Co., Ltd. Rear hinge for holding lid of record player to console. 4,193,164, Cl. 16-141.000.

Okita, Koichi, to Sumitomo Electric Industries, Ltd. Composite structure vascular prostheses. 4,193,138, Cl. 3-1.400.

Okubo, Hachiro, to Kinki Printing Company, Ltd. Container with an internal divider. 4,193,532, Cl. 229-28.00R.

Okubo, Katsuyuki; Ueda, Nobuyasu; and Ono, Tetsumi, to Toray Industries, Inc. Sound insulating unit and sound barrier. 4,193,474, Cl. 181-287.000.

Olin Corporation: *See—*
Halverson, Henry J., 4,193,348, Cl. 102-91.000.

Olsson, Carl F. S. Method of stripping pulp bales and a machine therefor. 4,193,169, Cl. 19-80.00R.

Omaki, Takanobu: *See—*
Yasukuni, Mitsuo; Ogura, Toshinobu; Omaki, Takanobu; and Tanaka, Masahide, 4,193,667, Cl. 350-187.000.

Omura, Satoshi; Tanaka, Haruo; Awaya, Juichi; and Hata, Toju, to Kitasato Institute (Kitasato Kenkyusho), The. Production of nanaomycin B. 4,194,064, Cl. 435-125.000.

Ono, Tetsumi: *See—*
Okubo, Katsuyuki; Ueda, Nobuyasu; and Ono, Tetsumi, 4,193,474, Cl. 181-287.000.

Oono, Hiroshi; and Shiozawa, Etuo, to Fuji Photo Film Co., Ltd. Fine position control device. 4,193,317, Cl. 74-479.000.

Oosterling, Pieter A.; and van Zweeden, Adriaan, to Expert N.V. Baling device for agricultural crops. 4,193,251, Cl. 56-341.000.

Oota, Kazunari, to Kubota Ltd. Collapsible lever device for operating valve. 4,193,320, Cl. 74-535.000.

Ootsu, Fumio. Transducer for converting the energy of ocean currents. 4,193,265, Cl. 60-398.000.

Organisation Europeenne de Recherches Spatiales: *See—*
Thomas, Ronald, 4,193,820, Cl. 136-89.00P.

Orion Machinery Co., Ltd.: *See—*
Nanaumi, Kazuyuki; and Baba, Koji, 4,193,443, Cl. 165-66.000.

Orlovsky, Anatoly G.: *See—*
Egorov, Viktor P.; Ognevsky, Viktor A.; Orlovsky, Anatoly G.; Ostrovsky, Grigory A.; Ryskind, Alexandr M.; Stepin, Anatoly L.; Trofimov, Oleg F.; and Shklyarov, Isaak N., 4,193,824, Cl. 148-12.400.

Orlowski, Gerald J.; Wicklund, Rodney D.; Sandlas, Richard D.; and Weibler, Walter W., to Armour and Company. Apparatus for molding meat patties. 4,193,167, Cl. 17-32.000.

Orobis Limited: *See—*
Brankling, David; and Crawford, John, 4,194,057, Cl. 585-11.000.

Oshima, Yujiro, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Stratified charge type combustion process for internal combustion engine and internal combustion engine utilizing same. 4,193,382, Cl. 123-119.00A.

Osrodek Badawczo-Rozwojowy Monokrysztalow: *See—*
Langer, Teresa; Krukowska-Fulde, Barbara; and Langer, Jerzy, 4,194,141, Cl. 313-503.000.

Ostrovsky, Grigory A.: *See—*
Egorov, Viktor P.; Ognevsky, Viktor A.; Orlovsky, Anatoly G.; Ostrovsky, Grigory A.; Ryskind, Alexandr M.; Stepin, Anatoly L.; Trofimov, Oleg F.; and Shklyarov, Isaak N., 4,193,824, Cl. 148-12.400.

Otis Engineering Corporation: *See—*
Fisher, Ernest P., Jr., 4,193,450, Cl. 166-155.000.

Otsuka, Shuji: *See—*
Tobeta, Kanji; and Otsuka, Shuji, 4,193,256, Cl. 368-74.000.

Overman, David C. Apparatus for inserting and removing contact lenses. 4,193,622, Cl. 294-1.0CA.

Owen, David P., to Marconi Instruments Limited. Variable frequency sources. 4,194,164, Cl. 330-130.000.

Owens-Corning Fiberglas Corporation: *See—*
Canfield, Sheldon A.; and Karch, Walter J., 4,194,077, Cl. 13-6.000.

Owens-Illinois, Inc.: *See—*
Mumford, Eustace H., 4,193,784, Cl. 65-69.000.

Oy. E. Sarlin Ab: *See—*
Sarvanne, Hannu, 4,193,604, Cl. 277-117.000.

Oy Tampella AB: *See—*
Aario, Matti, 4,193,865, Cl. 209-240.000.

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Mochizuki, Manabu; Suzuki, Kohji; Oyama, Hajime; and Ohnuma, Teruyuki, 4,193,679, Cl. 355-1.000.

Pace Incorporated: *See—*
Milne, James A., 4,193,830, Cl. 156-306.000.

Pagen, Charles A.: *See—*
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Strunc, Gerald R., 4,193,329, Cl. 83-250.000.

Palange, Walter. Apparatus for use in producing knit fabrics. 4,193,273, Cl. 66-4.000.

Palenschat, Dieter: *See—*
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Palmer, Darrel R.: *See—*
Loveless, James C.; and Palmer, Darrel R., 4,193,400, Cl. 128-214.400.

Palomo Coll, Antonio L.: *See—*
Esteve Bianchini, Asuncion; and Palomo Coll, Antonio L., 4,193,918, Cl. 260-239.100.

Panametrics, Inc.: *See—*
Lynnworth, Lawrence C., 4,193,291, Cl. 73-32.00A.

Pankratov, Vladimir I.; Konovalenko, Gennady P.; Prilipko, Ivan T.; and Gomberg, Moris L., to Ukrainsky Nauchno-Issledovatelsky Institut Tselljulozno-Bumazhoi Promyshlennosti (UKRNIIB). Device for non-contact gauging of thickness or weight per unit area of sheet and like materials. 4,194,114, Cl. 250-308.000.

Pao, Julie: *See—*
Wilson, Peggy M.; and Pao, Julie, 4,193,452, Cl. 166-274.000.

Papineau, Milton D., to United States of America, Navy. Up-Doppler simulator. 4,194,167, Cl. 331-38.000.

Papinsick, John: *See—*
Lileck, John T.; Papinsick, John; and Steigerwalt, Edward J., 4,193,976, Cl. 423-406.000.

Par-Way Co.: *See—*
Hanson, Harold W., Jr.; and Doering, Beuford C., 4,193,373, Cl. 118-17.000.

Parcor: *See—*
Boigegrain, Robert; Gachon, Michel; Maffrand, Jean-Pierre; and Maire, Gerard, 4,193,997, Cl. 424-256.000.

Parker & Harper Mfg. Co., Inc.: *See—*
Massey, Roger G., 4,193,579, Cl. 251-288.000.

Parker, John A.: *See—*
Kourtides, Demetrius A.; and Parker, John A., 4,193,829, Cl. 156-276.000.

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Geissler, Udo M., 4,194,234, Cl. 362-17.000.

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Lang, Armin, 4,193,471, Cl. 180-154.000.

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Larssen, Steinar, 4,193,162, Cl. 16-2.000.

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Patterson, Matthew, to Hughes Aircraft Company. Multiple grid fabrication method. 4,193,176, Cl. 29-25.140.

Paul Revere Corporation: *See—*
Kessens, Norman J.; and Joray, Marvin L., 4,193,250, Cl. 56-208.000.

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Scholl, Gunter; and Pauls, Joachim, 4,194,060, Cl. 429-67.000.

Paulson, John K. Adjustable ball projecting device. 4,193,591, Cl. 272-78.000.

Pauly, Peter D.: *See—*
Stone, Herman; and Pauly, Peter D., 4,193,887, Cl. 252-91.000.

Pauly, Ronald R.; Good, Thomas W.; Hastings, John D.; and Ryan, Kevin D., to Tonka Corporation. Mountable wheel for toy vehicle. 4,193,639, Cl. 301-9.0DH.

Payne, Francis L.; and Godsey, Ernest E., to Burr-Brown Research Corporation. Parallel connected switching regulator system. 4,194,147, Cl. 323-17.000.

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Bechgaard, Helle; and Pedersen, Arne M., 4,193,985, Cl. 424-19.000.

Peichl, Rolf; and Kaulmann, Gunter, to Wilhelm Karmann GmbH. Bumpers for motor vehicles. 4,193,621, Cl. 293-142.000.

Pelfrey, Richard L.: *See—*
Lundberg, John A.; Schafer, Robert J.; Toeniskoetter, Richard H.; and Pelfrey, Richard L., 4,193,909, Cl. 260-42.150.

Pellerito, Alex. Connector apparatus for pressurized lines. 4,193,419, Cl. 137-322.000.

Pennwalt Corporation: *See—*
Cushman, Robert H., 4,194,121, Cl. 250-439.00P.

Penrose, Alexander B.: *See—*
Leeming, Michael R. G.; Narayanaswami, Subramaniyan; and Penrose, Alexander B., 4,193,994, Cl. 424-249.000.

Pentel Kabushiki Kaisha: *See—*
Abe, Kiyomi; and Takahashi, Hiromichi, 4,194,083, Cl. 178-18.000.

Perino, Didier: *See—*
Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier, 4,194,189, Cl. 340-373.000.

Permawick Company, Inc.: *See—*
Abel, Martin L., 4,193,960, Cl. 264-128.000.

Persista, Inc.: *See—*
McArthur, Alexander D.; Holsgrove, Robert J.; and Hodge, Gerard, 4,193,178, Cl. 29-129.500.

Pervushin, Evgeny S.: *See—*
Berber, Viktor A.; Pervushin, Evgeny S.; Murtazin, Khafiz M.; Kholin, Vladimir G.; and Galishnikov, Boris M., 4,193,288, Cl. 73-1.00R.

Peter, Cornelius, to Robert Bosch GmbH. Signal linearizing circuit for internal combustion engines. 4,193,300, Cl. 73-204.000.

Petersen, Arthur W.: *See—*
Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., 4,193,886, Cl. 252-90.000.

Peterson, Don G.; and Harper, Judson M., to Food Processes, Inc. Granular bed heating method. 4,193,758, Cl. 432-27.000.

Peterson, Edwin E. Rain-shielded welder's mask. 4,193,132, Cl. 2-8.000.

Peterson, William A., Jr.: *See—*
Marchak, Roman O.; and Peterson, William A., Jr., 4,193,380, Cl. 123-32.0EG.

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Bruening, Wilhelm; de Andrade Bruening, Inai M. R.; and Martinez Concha, Francisco J., 4,193,963, Cl. 422-52.000.

Petrolite Corporation: *See—*
Cheng, William J.; and Guthrie, David B., 4,193,769, Cl. 44-51.000.
Watkins, Leslie R., 4,193,856, Cl. 204-186.000.

Pettersson, Axel J. M.; and Johansson, Rolf K., to Saab-Scania Aktiebolag. Arrangement for a lighting unit in vehicles. 4,194,236, Cl. 362-66.000.

Pfeifer, Josef: *See—*
Muller, Jurgen; Pfeifer, Josef; Rheude, Alfred; Erckel, Rolf; Farber, Heinrich; and Zrenner, Bernhard, 4,193,682, Cl. 355-10.000.

Pfeiffer, James W., to Fairchild Camera and Instrument Corporation. Technique for applying polarizer material to liquid-crystal displays. 4,193,287, Cl. 29-593.000.

Pfeiffer, Ulrich: *See—*
Schiepe, Heinz; and Pfeiffer, Ulrich, 4,193,725, Cl. 414-83.000.

Pfizer Inc.: *See—*
Kraska, Allen R., 4,193,999, Cl. 424-267.000.
Leeming, Michael R. G.; Narayanaswami, Subramaniyan; and Penrose, Alexander B., 4,193,994, Cl. 424-249.000.
Schnur, Rodney C., 4,193,996, Cl. 424-256.000.

Phillips, Benjamin A., to Allied Chemical Corporation. Evaporation device and method with controlled refrigerant expansion and storage. 4,193,268, Cl. 62-101.000.

Phillips Petroleum Company: *See—*
Cobb, Raymond L., 4,193,924, Cl. 260-326.00C.
Dietz, Richard E.; and Selman, Charles M., 4,194,075, Cl. 526-125.000.
Dietz, Richard E.; and Nowlin, Oscar D., 4,194,076, Cl. 526-125.000.
McDaniel, Max P., 4,194,073, Cl. 526-98.000.
McKay, Dwight L., 4,193,891, Cl. 252-411.00R.
Stoller, Frederick L., 4,194,037, Cl. 428-92.000.

Piana, Renato. Covering for building structures and related installation method. 4,193,230, Cl. 52-90.000.

Piccagli, Ugo. Impermeable wall construction. 4,193,716, Cl. 405-267.000.

Picquendar, Jean-Edgar, to Thomson-CSF. Apparatus for filtering an electrical signal with a charge-coupled device. 4,194,172, Cl. 333-165.000.

Pierburg Luftfahrtgerate Union GmbH: *See—*
Holzem, Heinz; and Henning, Hans J., 4,193,299, Cl. 73-199.000.

Pierce, Kenney J., to Farah Manufacturing Company, Inc. Split waistband pants. 4,193,136, Cl. 2-237.000.

Pierrot, Francois: *See—*
Dougados, Roland; Pierrot, Francois; and Wagner, Remy, 4,193,540, Cl. 235-454.000.

Pierson, Darrell E.: *See—*
Allen, Richard C.; and Pierson, Darrell E., 4,193,207, Cl. 34-13.800.

Pietrowski, Anthony. Truck mounted roller. 4,193,710, Cl. 404-128.000.

Pilat, Michael J. Electrostatic aerosol scrubber and method of operation. 4,193,774, Cl. 55-10.000.

Pimiskern, Klaus: *See—*
Herbert, Werner; Kunz, Wunibald; and Pimiskern, Klaus, 4,193,253, Cl. 57-58.890.

Pinter, Zoltan: *See—*
Agocs, Pal; Fabian, Istvan; Gajdacsi, Andras; Nagy, Sandor; and Pinter, Zoltan, 4,193,922, Cl. 548-132.000.

Pissiotas, Georg: *See—*
Rohr, Otto; Pissiotas, Georg; and Bohner, Beat, 4,193,790, Cl. 71-116.000.

Pitney Bowes Inc.: *See—*
Mongagnino, James G., 4,193,590, Cl. 271-119.000.

Pittman, Loyal V., to Westinghouse Electric Corp. Reversing pump eccentric member. 4,193,747, Cl. 418-32.000.

Plastic Reel Corporation of America: *See—*
McDermott, Peter; and Fattori, Lazzaro A., 4,193,497, Cl. 206-387.000.

Plastics, Inc.: *See—*
Colato, Albert E., 4,194,015, Cl. 426-233.000.

Plath, C.: *See—*
Schuster, Jurgen, 4,193,432, Cl. 114-144.00C.

Plonski, Sigfried G.: *See—*
Reekstin, John P.; Plonski, Sigfried G.; and Jones, Addison B., 4,193,687, Cl. 356-150.000.

Plotkin, Gerald N., to United States of America, Navy. Infrared fuze test simulator. 4,193,297, Cl. 73-167.000.

Plummer, William T., to Polaroid Corporation. Photographic camera. 4,193,675, Cl. 354-86.000.

Poche, John M. Pivotable bucket with a rotatable earth moving mechanism. 4,193,217, Cl. 37-93.000.

Podkletnov, Evgeny N., deceased: *See—*
Khodsky, Lev G.; Brazgovskaya, Alla I.; Kaminskaya, Valentina S.; and Podkletnov, Evgeny N., deceased, 4,193,808, Cl. 106-48.000.

Pogue, Clarence W. Sea mammal gate. 4,193,219, Cl. 43-14.000.

Pohlenz, Jack B., to UOP Inc. Treating particle-containing SOx or NOx gas streams in parallel passage contactors. 4,193,972, Cl. 423-244.000.

Poiger, Hermann; and Huster, Lienhard B., to Societe d'Assistance Technique pour Produits Nestle S.A. Flavored bouillon base. 4,194,017, Cl. 426-533.000.

Polaroid Corporation: *See—*
Bloom, Stanley M.; Hoffman, Arnold; and Norland, Kenneth S., 4,193,847, Cl. 204-15.000.
Land, Edwin H.; and Kinsman, Gordon F., 4,194,061, Cl. 429-82.000.
Plummer, William T., 4,193,675, Cl. 354-86.000.

Poly-Glas Systems: *See—*
Hetherington, Robert D.; and Goelz, David W., 4,193,546, Cl. 239-112.000.

Polysius AG: *See—*
Wurr, Jurgen; Vering, Antonius; and Ermer, Bodo, 4,193,759, Cl. 432-78.000.

Ponticello, Ignazio S.: *See—*
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Popov, Jury S.: *See—*
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Portex, Inc.: *See—*
Stephens, Thomas P., 4,193,174, Cl. 24-249.00R.

Posner, Louis L.; and McGarry, Patrick J., to Thermal Economics, Inc. Auxiliary window element. 4,193,225, Cl. 49-465.000.

Potter, Blaine, to Double E Company, Inc. Core chuck. 4,193,633, Cl. 279-2.00R.

Powell, Joe A., to B. F. Goodrich Company, The. Self supporting tire. 4,193,437, Cl. 152-330.0RF.

Powlas, Jerome D.: *See—*
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PPG Industries, Inc.: *See—*
Crawford, Roger A.; and Hoekje, Howard H., 4,193,851, Cl. 204-101.000.
Gillery, Frank H., 4,194,022, Cl. 427-109.000.
Mazzoni, Renato J.; Mistrick, George R.; and Rosskamp, Barent A., 4,193,236, Cl. 52-172.000.
Thomaswick, Ronald J., 4,193,736, Cl. 414-786.000.
White, Preston S., 4,193,938, Cl. 260-582.000.

Precision Cosmet Corp.: *See—*
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Prella, Giovanni: *See—*
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Prescher, Kenneth A.: *See—*
Bowman, George F.; and Prescher, Kenneth A., 4,193,417, Cl. 137-192.000.

Press, Irving D., to Resistoflex Corporation. Method of forming a heat exchanger. 4,193,180, Cl. 29-157.400.

Prilipko, Ivan T.: *See—*
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Prinz, Richard: *See—*
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Procter & Gamble Company: *See—*
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Prolss, Ludwig, to Kilcher-Chemie AG. Method of producing an electrically conductive plastics material. 4,193,955, Cl. 264-23.000.

Propylox a Societe Anonyme: *See—*
Hildon, Anthony M.; and Greenhalgh, Peter F., 4,193,929, Cl. 260-348.250.

Prosl, Frank R.: *See—*
Tucker, Elton M.; and Prosl, Frank R., 4,193,397, Cl. 128-207.190.

Pullukat, Thomas J.; Shida, Mitsuzo; and Hoff, Raymond E., to Chemplex Company. Polymerization process. 4,194,074, Cl. 526-100.000.

Purdy, Chester A. Liquid proportioning device with insufficient supply and flow valves. 4,193,515, Cl. 222-57.000.

Purdy, Chester A.; and Purdy, George A., to Purdy Proportioners, Ltd. Liquid proportioner for mixing two liquids in a predetermined ratio. 4,193,516, Cl. 222-57.000.

Purdy, George A.: *See—*
Purdy, Chester A.; and Purdy, George A., 4,193,516, Cl. 222-57.000.

Purdy Proportioners, Ltd.: *See—*
Purdy, Chester A.; and Purdy, George A., 4,193,516, Cl. 222-57.000.

Quenzel, Hermann: *See—*
Eberlein, Helmut; Quenzel, Hermann; and Kornberger, Otto, 4,193,706, Cl. 403-19.000.

Quilici, Jean-Francois, to Renault Moteurs Developpement. Braking arrangement and brake, particularly for two-wheeled vehicles. 4,193,479, Cl. 188-2.00A.

R & G Energy Research Corporation: *See—*
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R. Perry & Company Limited: *See—*
Tyrer, Andrew C. R.; and Lace, David G., 4,193,153, Cl. 9-342.000.

R. W. Hartnett Company: *See—*
Ackley, Charles E., Sr.; and Ackley, Charles E., Jr., 4,193,343, Cl. 101-35.000.

Rabinow, Jacob, to Hall & Myers, a part interest. Escort memory using mirrors. 4,194,126, Cl. 250-566.000.

Radway Plastics Limited: *See—*
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Ramsey Controls, Inc.: *See—*
Boyd, Robert L.; Hamilton, David C.; Wood, Wilmer E.; Fleming, Joseph; and Wegmann, Raymond, 4,193,444, Cl. 165-76.000.

Ramsey, Robert C., to Electro-Voice, Incorporated. Microphone shock mount and assembly. 4,194,096, Cl. 179-147.000.

Rank Xerox Limited: *See—*
Yoshikawa, Akira; and Aota, Kouichi, 4,193,680, Cl. 355-3.00R.

Rapkin, Myron C.: *See—*
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Rasmussen, Knud A.: *See—*
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Rath, Heinz-Jorg: *See—*
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Rauterkus, Karl J.: *See—*
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Ravez, Paul: *See—*
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Ray, Donald R.: *See—*
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Raychem Corporation: *See—*
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RCA Corporation: *See—*
Fjarlie, Earl J., 4,193,691, Cl. 356-330.000.
Hartmann, John C.; and Maxemchuk, Nicholas F., 4,194,184, Cl. 340-347.00P.

Read, Martin A.: *See—*
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Rebers, Gunter: *See—*
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Marino, Francis C.; and Herman, Morton B., 4,194,188, Cl. 340-365.00E.
Marino, Francis C.; 4,194,223, Cl. 360-41.000.

Redfern, John T., to United States of America, Navy. Piezoelectric vibration detector for sensing a nearby intruder. 4,194,194, Cl. 340-566.000.

Redlich, Horst, to Ted Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec. Device for mechanically recording a signal having a bandwidth of several MHz, particularly for a video disc. 4,194,094, Cl. 179-100.41P.

Reekstin, John P.; Plonski, Sigfried G.; and Jones, Addison B., to Rockwell International Corporation. High resolution alignment technique and apparatus. 4,193,687, Cl. 356-150.000.

Refson, Bernard H., to Watson-Marlow Limited. Fluid displacement. 4,193,398, Cl. 128-213.00R.

Regie Nationale des Usines Renault: *See—*
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Rehacek, Josef; and Dasek, Jaroslav, to Societe d'Assistance Technique pour Produits Nestle S.A. Methionine-containing microgranulates and method of manufacture. 4,194,013, Cl. 426-96.000.

Rehacek, Josef: *See—*
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Reid, Walter L., Jr.; Delano, Ralph L.; and Jepson, John W., to Acushnet Company. Separate component construction wood type golf club. 4,193,601, Cl. 273-167.00R.

Reinecke, Erich, to WABCO Westinghouse GmbH. Brake valve. 4,193,641, Cl. 303-50.000.

Reinschmidt, Robert M.: *See—*
Mrazek, Dale A.; and Reinschmidt, Robert M., 4,194,131, Cl. 307-209.000.

Reischl, Artur; Hombach, Rudolf; and Dollhausen, Manfred, to Bayer Aktiengesellschaft. Method for making bonds. 4,193,832, Cl. 156-331.000.

Reiss, Mitchell: *See—*
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Renault Moteurs Developpement: *See—*
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Reneau, Raymond W.: *See—*
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Repke, Virginia L.; and Shepherd, Robert C., to Johnson & Johnson. Stretchable and conformable pad. 4,193,404, Cl. 128-280.000.

Resistoflex Corporation: *See—*
Press, Irving D., 4,193,180, Cl. 29-157.400.

Reusch, Michael F.: *See—*
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Rexnord Inc.: *See—*
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Dumbeck, Robert F., 4,194,178; Cl. 340-201.00R.

- Riddle, Charles F.; and Ritchey, Paul E., 4,193,468, Cl. 180-89.170.
- Reymond, Gilbert: *See—*
  - Hengartner, Urs; Reymond, Gilbert; and Toome, Valdemar, 4,193,850, Cl. 204-79.000.
- Reymond, Jean-Claude; and Hidalgo, Jean-Luc, to Thomson-CSF. Arrangement for locating radiating sources. 4,193,689, Cl. 356-152.000.
- Reynolds, Jack H., to NCR Corporation. Constant velocity driving means. 4,194,144, Cl. 318-341.000.
- Reynolds Metals Company: *See—*
  - Weston, David, 4,193,791, Cl. 75-2.000.
- Rhee, Jhoon G. Protective device for the hand. 4,193,135, Cl. 2-162.000.
- Rheude, Alfred: *See—*
  - Muller, Jurgen; Pfeifer, Josef; Rheude, Alfred; Erckel, Rolf; Farber, Heinrich; and Zrenner, Bernhard, 4,193,682, Cl. 355-10.000.
- Rhodia AG: *See—*
  - Heim, Ernst; Imbery, Dieter; and Kliemann, Bruno, 4,193,412, Cl. 131-264.000.
- Rhoton, Albert L.: *See—*
  - Goodale, Clark W.; Morgan, Charles W.; Rhoton, Albert L.; and McNeil, David F., 4,194,026, Cl. 427-244.000.
- Rich, Joseph W.; and Bergman, Richard C., to Calspan Corporation. Molecular laser operating on fundamental and overtone bands. 4,194,169, Cl. 331-94.50G.
- Richards Manufacturing Company, Inc.: *See—*
  - Treace, Harry T., 4,193,140, Cl. 3-1.911.
- Richardson, Charles B. Music synthesizing circuit. 4,193,332, Cl. 84-1.010.
- Richardson, Kenneth J., to Crystaloid Electronics Company. Liquid crystal device for direct display of analog information. 4,193,669, Cl. 350-334.000.
- Richter, Hans H., to Marshall and Williams Company. Method of operating a tentering clip. 4,193,175, Cl. 26-94.000.
- Ricoh Company, Ltd.: *See—*
  - Mochizuki, Manabu; Suzuki, Kohji; Oyama, Hajime; and Ohnuma, Teruyuki, 4,193,679, Cl. 355-1.000.
- Riddle, Charles F.; and Ritchey, Paul E., to Rexnord Inc. Combination vehicle underpan and maintenance platform. 4,193,468, Cl. 180-89.170.
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- Rioux, Philip J.: *See—*
  - Gill, Gerald L., Jr.; and Rioux, Philip J., 4,193,226, Cl. 51-124.00R.
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- Riusech, Sergio. Flow control valve for subsurface irrigation system. 4,193,711, Cl. 405-39.000.
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  - Jones, Addison B.; and Wittry, David B., 4,194,233, Cl. 361-233.000.
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  - Cederqvist, Gunnar; and Aberg, Ulf, 4,193,841, Cl. 162-152.000.
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  - Lewis, Sheldon N.; and Levy, Jerome F., 4,194,052, Cl. 560-155.000.
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  - Schoneberger, Edgar F.; and Dorn, Alfred, 4,193,345, Cl. 101-365.000.
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  - Briggs, Henry R., 4,193,741, Cl. 416-170.00R.
  - Carlisle, Denis R.; and Grun, Andrew R., 4,193,260, Cl. 60-737.000.
  - Lucey, Desmond C., 4,193,739, Cl. 415-118.000.
  - Snell, Leonard S., 4,193,262, Cl. 60-261.000.
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  - Ronning, Richard L., 4,193,208, Cl. 34-131.000.
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  - Blaschke, Kurt; and Roob, Josef, 4,193,462, Cl. 175-292.000.
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- Rossi, Jean-Francois. Spear gun. 4,193,386, Cl. 124-22.000.
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  - Baumann, Marcus; Kvita, Vratislav; Roth, Martin; and Waterhouse, John S., 4,193,927, Cl. 260-326.260.
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- Rowling, Sidney, to Spot-O-Gold Corporation. Multiple booklet and method of making the same. 4,193,498, Cl. 206-494.000.
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- Ruegger, Edgar, to Gebruder Buhler AG. Roll mill for feeding material to the roll gap. 4,193,555, Cl. 241-37.000.
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  - Boyer, David C.; Danko, Arthur J.; and Ruehl, William E., 4,193,310, Cl. 74-230.300.
- Rumpler, Jean-Jacques. Bottle stopper and method of using said stopper. 4,193,402, Cl. 128-272.000.
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- Rush, Charlie D. Transparent radiation penetrable stretcher panel. 4,193,148, Cl. 5-86.000.
- Rushing, John C. Method and apparatus for cleaning paper making felt. 4,193,842, Cl. 162-199.000.
- Russell, B. Carson. Furniture unit. 4,193,632, Cl. 297-446.000.
- Rutishauser, Albert. Transport device for a border-perforated strip-like web of data recording material. 4,193,527, Cl. 226-74.000.
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  - Pauly, Ronald R.; Good, Thomas W.; Hastings, John D.; and Ryan, Kevin D., 4,193,639, Cl. 301-9.0DH.
- Ryskind, Alexandr M.: *See—*
  - Egorov, Viktor P.; Ognevsky, Viktor A.; Orlovsky, Anatoly G.; Ostrovsky, Grigory A.; Ryskind, Alexandr M.; Stepin, Anatoly L.; Trofimov, Oleg F.; and Shklyarov, Isaak N., 4,193,824, Cl. 148-12.400.
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  - Fusaroli, Goffredo, 4,193,254, Cl. 57-105.000.

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  - Pettersson, Axel J. M.; and Johansson, Rolf K., 4,194,236, Cl. 362-66.000.
- Saby, Marc. Packing for eggs. 4,193,531, Cl. 229-2.5EC.
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  - Fulks, Robert G.; Enfield, Robert E.; and Sacher, Eric, 4,194,113, Cl. 371-20.000.
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- Sagara, Seiji: *See—*
  - Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; and Sagara, Seiji, 4,193,483, Cl. 192-26.000.
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  - Melan, Giuseppe-Fabrizio M.; and Nicouland, Jean R., 4,193,557, Cl. 242-18.00A.
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  - Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, 4,193,673, Cl. 354-23.00D.
- Saito, Yoshio: *See—*
  - Yasumatsu, Mutsuo; Katayama, Kenji; Takeuchi, Shozo; and Saito, Yoshio, 4,194,019, Cl. 426-580.000.
- Sakabe, Nobuyuki, to Shin-Shirasuna Electric Corp. FM tuner. 4,194,156, Cl. 455-214.000.
- Sakai, Kazumasa; and Watanuki, Hiroshi, to Trio Kabushiki Kaisha. Differential amplifier with a current mirror circuit. 4,194,166, Cl. 330-257.000.
- Sakaida, Kaku, to Trio Kabushiki Kaisha. Control circuit and FM stereo receiver using same. 4,194,087, Cl. 179-1.0GD.
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- Sakakibara, Naoji; and Hashimoto, Nobuyuki, to Aisin Seiki Kabushiki Kaisha. Electromagnetically operated valve unit. 4,193,421, Cl. 137-625.330.
- Sakmann, Walter, to International Business Machines Corporation. Matrix printer with piezoelectrically driven printing needles. 4,193,703, Cl. 400-124.000.
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  - Hatanaka, Akio, 4,193,906, Cl. 260-31.20R.
- Salem, Robert J., to General Electric Company. Smoke simulating test apparatus for smoke detectors. 4,194,191, Cl. 340-515.000.
- Salminen, Reijo K. Sailing boat and method of operating the same. 4,193,366, Cl. 114-39.000.
- Samuelsson, Sture L. Building block and module system for house building. 4,193,244, Cl. 52-582.000.
- Sandberg, Carl-Olof: *See—*
  - Bjorklund, Fritz L. G.; Sandberg, Carl-Olof; Sternbeck, Olaf; and Wern, Lars A., 4,194,134, Cl. 307-255.000.
- Sanders Associates, Inc.: *See—*
  - Baer, Ralph H.; and Cope, Leonard D., 4,194,198, Cl. 340-724.000.
- Sandhu, Mohammad A.; and Tingler, Kenneth L., to Eastman Kodak Company. Amorphous polyester adhesives for photographic materials comprising phthalic acid, linear and branched aliphatic glycol components. 4,193,803, Cl. 430-627.000.
- Sandlas, Richard D.: *See—*
  - Orlowski, Gerald J.; Wicklund, Rodney D.; Sandlas, Richard D.; and Weibler, Walter W., 4,193,167, Cl. 17-32.000.
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  - Kathawala, Faizulla G., 4,194,002, Cl. 424-274.000.
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  - Mauric, Claudine; and Wolf, Rainer, 4,193,805, Cl. 106-18.150.
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- Sanyo Electric Company, Ltd.: *See—*
  - Masaki, Takaaki, 4,194,238, Cl. 363-17.000.
- Sarson, Charles R.; and Acker, Richard C., to Dana Corporation. Quick connect fitting. 4,193,616, Cl. 285-39.000.
- Sarvanne, Hannu, to Oy. E. Sarlin Ab. Means for carrying a cable through a wall. 4,193,604, Cl. 277-117.000.
- Sasaki, Tadao, to Sony Corporation. Electronic tuning system. 4,194,159, Cl. 455-179.000.
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  - Katsumata, Mitsuo; Sato, Hiroo; Ikeda, Yoshihiko; and Fujita, Tomikazu, 4,193,385, Cl. 123-198.0DC.
- Sato, Junichi, to Nippon Mining Co., Ltd. Method for making a raw board for use in printed circuits. 4,193,849, Cl. 204-38.00B.
- Sato, Shohei: *See—*
  - Yabe, Hideo; and Sato, Shohei, 4,194,090, Cl. 179-18.0ES.
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  - Kaetsu, Isao; Watanabe, Hiroshi; Sato, Tomotaro; and Ito, Akihiko, 4,193,845, Cl. 435-182.000.
- Satterberg, Lars H.; and Eliasson, Hans, to Jonsereds AB. Arrangement in a hydraulically operated crane. 4,193,505, Cl. 212-55.000.
- Sauers, Marvin E., to Union Carbide Corporation. Phenolic resins and molding compositions for use in warm runner injection molding. 4,194,071, Cl. 525-480.000.
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- Savor, Dennis E.; and Hales, James W., to Combustion Engineering, Inc. Work table for a stepped platform. 4,193,735, Cl. 414-744.000.
- Scaringe, Robert P. Variable capacity thermal storage system employing thermal switching. 4,193,441, Cl. 165-32.000.
- Scelzi, Joseph I. Finger keyer for code transmission. 4,194,085, Cl. 178-101.000.
- Schafer, Robert J.: *See—*
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- Schafer, Walter: *See—*
  - Baatz, Gunther; Schafer, Walter; and Dahm, Manfred, 4,193,889, Cl. 252-316.000.
- Scheidweiler, A. Lee, to Energy Vent, Inc. Damper latch. 4,193,541, Cl. 236-1.00G.
- Scheidweiler, Andreas: *See—*
  - Meier, Otto; and Scheidweiler, Andreas, 4,194,120, Cl. 250-381.000.
- Schering Aktiengesellschaft: *See—*
  - Junghans, Klaus, 4,194,046, Cl. 546-259.000.
  - Schmiechen, Ralph; Horowski, Reinhard; Palenschat, Dieter; Paschelke, Gert; Wachtel, Helmut; and Kehr, Wolfgang, 4,193,926, Cl. 260-326.50S.
- Schick, John W.: *See—*
  - Cushman, Donald R.; Pagen, Charles A.; and Schick, John W., 4,194,023, Cl. 427-138.000.
- Schiefer, Erwin; and Lang, Gusztav, to Hilti Aktiengesellschaft. Clamping member for an adhesively secured anchor rod. 4,193,246, Cl. 52-698.000.
- Schiepe, Heinz; and Pfeiffer, Ulrich, to Heinz Schiepe, Grosshandel und Generalvertretung fur Holzbearbeitungsmaschinen, Firma. Stacking device for rod-like or board-shaped goods. 4,193,725, Cl. 414-83.000.
- Schindler, Rudolf A.: *See—*
  - United States of America, National Aeronautics and Space Administration; and Schindler, Rudolf A., 4,193,693, Cl. 356-346.000.
- Schlager, Kenneth J., to International Bio-Medical Industries. Diagnostic apparatus. 4,193,393, Cl. 128-710.000.
- Schmidt, Walter, to Swiss Aluminium Ltd. Process and device for checking substrate wafers. 4,194,127, Cl. 250-572.000.
- Schmidt, Werner; and Minke, Rudeger, to Dynamit Nobel Aktiengesellschaft. Preparation of high-viscosity mixtures containing thermoplastic polyesters. 4,193,912, Cl. 260-45.75B.
- Schmiechen, Ralph; Horowski, Reinhard; Palenschat, Dieter; Paschelke, Gert; Wachtel, Helmut; and Kehr, Wolfgang, to Schering Aktiengesellschaft. 4-(Polyalkoxy phenyl)-2-pyrrolidones. 4,193,926, Cl. 260-326.50S.
- Schmiegel, Klaus K.: *See—*
  - Molloy, Bryan B.; and Schmiegel, Klaus K., 4,194,009, Cl. 424-330.000.
- Schnur, Rodney C., to Pfizer Inc. Spiro-quinolone hydantoins. 4,193,996, Cl. 424-256.000.
- Schoell, Harry L. Planing boat hull. 4,193,370, Cl. 114-291.000.
- Schoenholz, Daniel; Petersen, Arthur W.; and Northup, Marcus A., Jr., to Church & Dwight Co., Inc. Novel low temperature cleaner. 4,193,886, Cl. 252-90.000.
- Scholl, Charles H.: *See—*
  - Hamilton, William M.; Scholl, Charles H.; Kruke, Jeffrey J.; and Akers, Larry D., 4,193,745, Cl. 418-9.000.
- Scholl, Gunter; and Pauls, Joachim. Electric accumulator and storage cell. 4,194,060, Cl. 429-67.000.
- Scholten, Joseph J. F.: *See—*
  - Gerritsen, Leendert A.; and Scholten, Joseph J. F., 4,193,942, Cl. 260-604.0HF.
- Schoneberger, Edgar F.; and Dorn, Alfred, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Device for adjustment of the ink flow on printing press inking units. 4,193,345, Cl. 101-365.000.
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  - Sirrenberg, Wilhelm; Klauke, Erich; Schramm, Jurgen; Hammann, Ingeborg; and Stendel, Wilhelm, 4,194,005, Cl. 424-304.000.
- Schreiber, Sidney P.: *See—*
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- Schrick, Gerd H.: *See—*
  - Tsui, James B. Y.; and Schrick, Gerd H., 4,194,206, Cl. 343-18.00E.
- Schulman, Kenneth B., to Millen Industries, Inc. Box construction. 4,193,533, Cl. 229-34.00R.
- Schulz, Hans-Holger: *See—*
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- Schuster, Hubert: *See—*
  - Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, 4,194,025, Cl. 427-215.000.
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- Schwarz, Gerhard, to Compur-Electronic Gesellschaft mit beschrankter Haftung. Apparatus for separating and measuring sample components. 4,193,538, Cl. 233-26.000.
- Schwauss, Waldemar B. Parlor game. 4,193,594, Cl. 273-1.00R.

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  - Appel, Max J. G.; Carmichael, Leland E.; and Scott, Fredric W., 4,193,990, Cl. 424-89.000.
- Scott, Jack D. Refrigeration system with compressor load transfer means. 4,193,270, Cl. 62-175.000.
- Scott, Robert G., to American Cleaning Equipment Corporation of Illinois. Vacuum apparatus with tilting container. 4,193,161, Cl. 15-352.000.
- Scott, Thomas G.: *See—*
  - Sustek, Alvin J., Jr.; and Scott, Thomas G., 4,193,290, Cl. 73-29.000.
- Scott, Victor J., to Leigh Products, Inc. By-pass door assembly. 4,193,500, Cl. 206-577.000.
- Scott, William A.: *See—*
  - Charmley, Richard P.; and Scott, William A., 4,193,948, Cl. 261-65.000.
- Sebestyen, Gyula: *See—*
  - Szantay, Csaba; Szabo, Lajos; Toth, Istvan; Kanyo, Erzsebet; Sebestyen, Gyula; and Virag, Sandor, 4,193,998, Cl. 424-258.000.
- Secheron Soudure S.A.: *See—*
  - Rudaz, Albi; and Ferrari, Albert, 4,194,106, Cl. 219-123.000.
- Sefton, Verner B.; Swinkels, Godefridus M.; Kirby, Charles R.; and Genik-Sas-Berezowsky, Roman M., to Cominco Ltd.; and Sherritt Gordon Mines Limited. Process for the precipitation of iron as jarosite. 4,193,970, Cl. 423-141.000.
- Seger, Ronald G.: *See—*
  - Trombley, Wayne E.; and Seger, Ronald G., 4,193,672, Cl. 351-160.00R.
- Seibert, Horst: *See—*
  - Wahrendorf, York A.; Frenzel, Herbert K.; Ambrosch, Adolf K.; Rasmussen, Knud A.; Seibert, Horst; and Dieckmann, Horst J., 4,193,718, Cl. 405-286.000.
- Seibold, Charles R., Jr. Closeable pillow, tote bag and the like. 4,193,152, Cl. 5-490.000.
- Sekiguchi, Yoji, to Katsura Machine Co., Ltd. Vibrating apparatus for forming concrete blocks. 4,193,754, Cl. 425-424.000.
- Sekiya, Fukuo: *See—*
  - Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,193,255, Cl. 368-34.000.
- Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Copolymerization in water soluble polyol with controlled reaction with the polyol and aqueous coatings containing the resulting copolymer solution. 4,193,904, Cl. 260-29.60H.
- Selman, Charles M.: *See—*
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- Servo Products Company: *See—*
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- Severus-Laubenteid, Harald, to Swiss Aluminium Ltd. Process for the production of composite material. 4,193,848, Cl. 204-28.000.
- SF-Vollverbundstein-Kooperation GmbH: *See—*
  - Wahrendorf, York A.; Frenzel, Herbert K.; Ambrosch, Adolf K.; Rasmussen, Knud A.; Seibert, Horst; and Dieckmann, Horst J., 4,193,718, Cl. 405-286.000.
- Shah, Raj: *See—*
  - Sekmakas, Kazys; and Shah, Raj, 4,193,904, Cl. 260-29.60H.
- Shannon, John M., to U.S. Philips Corporation. Charge coupled circuit arrangements and devices having controlled punch-through charge introduction. 4,194,133, Cl. 307-221.00D.
- Sharland, Stanley G.; and Mecca, Angelo R., to Lightfoot, Douglas M. Floor protecting door painting shield. 4,193,375, Cl. 118-504.000.
- Sharon, Zev. Anti-tilt bracket and clip assembly for adjustable drawers or similar articles. 4,193,649, Cl. 312-346.000.
- Sharp, David W.; Clavenna, LeRoy R.; Gorbaty, Martin L.; and Tsou, Joe M., to Exxon Research & Engineering Co. Alkali metal recovery from carbonaceous material conversion process. 4,193,771, Cl. 48-197.00R.
- Sharp, David W., to Exxon Research & Engineering Co. Process for carbonaceous material conversion and recovery of alkali metal catalyst constituents held by ion exchange sites in conversion residue. 4,193,772, Cl. 48-197.00R.
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  - Awane, Katunobu; Hattori, Hironori; Biwa, Tetuo; and Tamaki, Hiroshi, 4,194,214, Cl. 357-41.000.
  - Fukuma, Yositaka, 4,194,176, Cl. 340-147.00R.
  - Hamaguchi, Hiroshi; and Kawano, Tadaaki, 4,193,376, Cl. 118-658.000.
- Shaw, Richard D.: *See—*
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- Sheedy, Gary W.: *See—*
  - Borisuck, John F.; Coviello, William L.; and Sheedy, Gary W., 4,193,155, Cl. 12-40.000.
- Shell Internationale Research Maatschappij B.V.: *See—*
  - Staudinger, Gernot, 4,193,773, Cl. 48-210.000.
- Shell Oil Company: *See—*
  - Entwistle, Ian D., 4,193,789, Cl. 71-103.000.
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  - Sefton, Verner B.; Swinkels, Godefridus M.; Kirby, Charles R.; and Genik-Sas-Berezowsky, Roman M., 4,193,970, Cl. 423-141.000.
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  - Motai, Takeji, 4,194,033, Cl. 427-351.000.
- Shin-Shirasuna Electric Corp.: *See—*
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  - Fujino, Shoji, 4,193,408, Cl. 128-734.000.
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  - Moores, Peter R.; and Shoffner, James E., 4,193,828, Cl. 156-148.000.
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  - Aulich, Hubert; Grabmaier, Josef; and Eisenrith, Karl-Heinz, 4,193,782, Cl. 65-11.00R.
  - Stein, Hans-Jurgen, 4,194,201, Cl. 343-6.5LC.
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  - James, Forrest H., Jr.; and Silberman, Ira J., 4,193,430, Cl. 141-12.000.
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  - Beckerman, Howard L.; and Dob, Allan M., 4,193,363, Cl. 112-278.000.
  - Dotsko, Martin, 4,193,211, Cl. 35-12.00N.
  - Johnson, Ralph E., 4,193,361, Cl. 112-259.000.
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- Skulski, Peter J. Miniature guitar amplifier. 4,194,165, Cl. 252-255.000.
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- Slone, Ralph W. Electrical cable termination. 4,193,657, Cl. 339-63.00M.
- Slusarczuk, George M. J.; and Brooks, Ronald E., to General Electric Company. Ferrite flocculating system. 4,193,866, Cl. 210-6.000.
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- Smith, Charles R. Photosensitive color monitoring device and method of measurement of concentration of a colored component in a fluid. 4,193,694, Cl. 356-407.000.
- Smith, Dorsey T.: *See—*
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- Smith International, Inc.: *See—*
  - Dixon, Robert L., 4,193,464, Cl. 175-364.000.
  - Evans, Robert F., 4,193,463, Cl. 175-337.000.
- Smith, William N., to Robertshaw Controls Company. Electrical switch construction and method of making the same. 4,194,103, Cl. 200-67.00E.
- SmithKline Corporation: *See—*
  - Levinson, Sidney H.; and Mendelson, Wilford L., 4,193,941, Cl. 260-592.000.
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  - Invernizzi, Rutilio; and Prella, Giovanni, 4,194,011, Cl. 426-8.000.
  - Poiger, Hermann; and Huster, Lienhard B., 4,194,017, Cl. 426-533.000.
  - Rehacek, Josef; and Dasek, Jaroslav, 4,194,013, Cl. 426-96.000.
- Societe d'Optique, Precision Electronique et Mecanique-Sopelem: *See—*
  - de la Bouillerie, Geoffroy, 4,193,425, Cl. 137-861.000.
- Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
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- Solla, Anthony. Suspended stereo console and light show. 4,194,086, Cl. 179-1.00G.
- Sommers, Garold L. Bicycle attached beverage container carrier. 4,193,525, Cl. 224-35.000.
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  - Kano, Yasuo; Furukawa, Shunsuke; and Mifune, Tadayoshi, 4,194,213, Cl. 357-24.000.
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  - Sasaki, Tadao, 4,194,159, Cl. 455-179.000.
  - Shionoya, Toshio, 4,194,215, Cl. 358-56.000.
  - Uno, Takeshi, 4,194,157, Cl. 455-348.000.
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- Sorensen, Norman L., to Wisco Corporation. Bayonet structure for detachable sunroof. 4,193,628, Cl. 296-137.00B.
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- Southwest Utilities, Inc.: *See—*
  - Danford, Glenn S., 4,194,230, Cl. 361-1.000.
- Southwire Company: *See—*
  - Linne, Robert S., 4,193,823, Cl. 148-6.350.
- Spector, George: *See—*
  - Everett, Billy; and Spector, George, 4,193,394, Cl. 128-57.000.
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- Speronello, Barry K., to Engelhard Minerals & Chemicals Corporation. Beta alumina manufacture. 4,193,954, Cl. 264-13.000.
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  - Gilleman, Joseph T. G., 4,193,248, Cl. 56-10.200.
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- Springer, Jerry L.; Wells, Charles M.; and Green, Wells L., to Ford Motor Company. Ceramic insulator for an exhaust gas oxygen sensor. 4,193,289, Cl. 73-27.00R.
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- Stahl- und Apparatebau Hans Leffer GmbH: *See—*
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- Stahl, Werner; and Krappmann, Franz, to Krauss Maffei AG. Rotary filter. 4,193,875, Cl. 210-330.000.
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  - Meijer, Peter J. N.; and Nieuwkamp, Johannes G. M., 4,193,925, Cl. 260-326.5FN.
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- Standard Oil Company (Indiana): *See—*
  - Golinkin, Herbert S., 4,193,453, Cl. 166-295.000.
  - Lee, Richard J., 4,193,884, Cl. 252-51.50R.
- Stanley, Carl F. Water aerating device. 4,193,951, Cl. 261-91.000.
- Stanley Electric Co., Ltd.: *See—*
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- Stanztechnik GmbH R & S: *See—*
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- Staudinger, Gernot, to Shell Internationale Research Maatschappij B.V. Process for the partial combustion of pulverized coal. 4,193,773, Cl. 48-210.000.
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  - Baker, Don R., 4,193,787, Cl. 71-88.000.
  - Epstein, Peter F.; and McGuire, Willis C., 4,193,933, Cl. 260-453.0RW.
  - Lam, Hsiao-Ling, 4,194,029, Cl. 424-283.000.
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  - Hinton, Arthur D.; and Mitchell, Morris E., 4,193,353, Cl. 109-50.000.
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- Steele, Blake H. Self containing collapsible high chair. 4,193,630, Cl. 297-17.000.
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- Stein, Hans-Jurgen, to Siemens Aktiengesellschaft. Interrogator-responsor system. 4,194,201, Cl. 343-6.5LC.
- Steiner, Josef; and Michel, Friedbert, to Robert Bosch GmbH. Fuel injection system. 4,193,384, Cl. 123-179.00L.
- Steketee, Cornelis J. Collecting groups for straw bales and lifting said groups. 4,193,728, Cl. 414-460.000.

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  - Sirrenberg, Wilhelm; Klauke, Erich; Schramm, Jurgen; Hammann, Ingeborg; and Stendel, Wilhelm, 4,194,005, Cl. 424-304.000.
- Stenta, Richard A., to Stackpole Components Company. Push button adapter for slide switch. 4,194,104, Cl. 200-153.00J.
- Stepanian, Ernst A.: *See—*
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  - Kulikov, Valery A.; Stepanian, Ernst A.; and Stepaniants, Emilen A., 4,193,281, Cl. 72-130.000.
- Stephens, Thomas P., to Portex, Inc. Lever and fulcrum clamping assembly. 4,193,174, Cl. 24-249.00R.
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- Sternbeck, Olaf: *See—*
  - Bjorklund, Fritz L. G.; Sandberg, Carl-Olof; Sternbeck, Olaf; and Wern, Lars A., 4,194,134, Cl. 307-255.000.
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- Stiner, Roy E., to Brunswick Corporation. Clicker device for fishing reel. 4,193,561, Cl. 242-84.51A.
- Stockner, Josef; and Wildmoser, Alfred, to Linde Aktiengesellschaft. Apparatus for introducing gas into a liquid. 4,193,950, Cl. 261-87.000.
- Stoffel, James C., to Xerox Corporation. Automatic multimode continuous halftone line copy reproduction. 4,194,221, Cl. 358-283.000.
- Stoll, Kurt; and Hihn, Gerhard. Multiway valve. 4,193,423, Cl. 137-625.640.
- Stoller, Frederick L., to Phillips Petroleum Company. Flame-resistant fabric and method of forming same. 4,194,037, Cl. 428-92.000.
- Stone, Herman; and Pauly, Peter D., to Tenneco Chemicals, Inc. Filled detergent foam made by a one shot process. 4,193,887, Cl. 252-91.000.
- Stonehill, Bernard C.: *See—*
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- Stork Amsterdam B.V.: *See—*
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- Streeter, Robert D., to Magnavox Company, The. Modulation monitor for AM stereophonic broadcasts. 4,194,088, Cl. 179-1.0GS.
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  - Kotval, Peshotan S.; and Strock, Harold B., 4,193,974, Cl. 423-348.000.
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- Strunc, Gerald R., to Pako Corporation. Photographic paper cutter with damage avoidance back step motion. 4,193,329, Cl. 83-250.000.
- Stubits, Marcella C.: *See—*
  - Teng, James; Lucas, James M.; and Stubits, Marcella C., 4,193,989, Cl. 424-60.000.
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- Sullivan, Robert E.; Stern, William R.; and Vance, Bess L., to Anaconda Company, The. Process for recovering gallium. 4,193,968, Cl. 423-112.000.
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  - Bula, Karl, 4,193,571, Cl. 248-343.000.
  - Demuth, Hans, 4,193,428, Cl. 139-114.000.
  - Fah, Robert, 4,193,447, Cl. 165-145.000.
- Sumitomo Chemical Company, Limited: *See—*
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- Sumitomo Electric Industries, Ltd.: *See—*
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- Suroff, Leonard W.: *See—*
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  - Kuris, Arthur; and Suroff, Leonard W., 4,193,197, Cl. 433-82.000.
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  - Kayama, Nagaoki; and Suzuki, Kazuie, 4,193,298, Cl. 73-194.0EM.
- Suzuki, Kohji: *See—*
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- Svecia Silkscreen Maskiner AB: *See—*
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- Swain, James C. Yoke coupler for two eccentrically rotating members. 4,193,748, Cl. 418-173.000.
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  - Schmidt, Walter, 4,194,127, Cl. 250-572.000.
  - Severus-Laubenteid, Harald, 4,193,848, Cl. 204-28.000.
- Sy, Angel: *See—*
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- Syva Company: *See—*
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- Szabo, Andras I.: *See—*
  - Neuner, James A.; Einolf, Charles W., Jr.; and Szabo, Andras I., 4,194,183, Cl. 340-347.0AD.
- Szabo, Lajos: *See—*
  - Szantay, Csaba; Szabo, Lajos; Toth, Istvan; Kanyo, Erzsebet; Sebestyen, Gyula; and Virag, Sandor, 4,193,998, Cl. 424-258.000.
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- Taber, Gilbert L. Apparatus for manual manipulation of articles. 4,193,511, Cl. 221-66.000.
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  - Abe, Kiyomi; and Takahashi, Hiromichi, 4,194,083, Cl. 178-18.000.
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  - Kotaka, Mitsuo; Ishikawa, Hirotoshi; Muraki, Kaisuke; Takahashi, Ryo; and Matsuura, Tamizo, 4,194,118, Cl. 250-343.000.
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  - Shudo, Koichi; Okamoto, Toshihiko; Isogai, Yo; and Takahashi, Soshiro, 4,193,788, Cl. 71-94.000.
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  - DeGraaf, Douglas W.; and Tam, William A., 4,193,368, Cl. 114-230.000.
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- Tamaki, Masahiko: *See—*
  - Miller, Dennis P.; and Tamaki, Masahiko, 4,194,068, Cl. 521-107.000.
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  - Tobeta, Kanji; and Otsuka, Shuji, 4,193,256, Cl. 368-74.000.
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- Taylor, Paul F. Process for Class IIIB metals ore reduction. 4,193,792, Cl. 75-84.000.
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  - Nakajima, Takashi; Nagano, Katsuto; and Ishikawa, Kazumi, 4,194,108, Cl. 219-216.000.
- Technicon Instruments Corp.: *See—*
  - Keyes, Melvin H., 4,194,067, Cl. 435-190.000.
- Tecnoma: *See—*
  - Ballu, Vincent P. M., 4,193,547, Cl. 239-156.000.
- Ted Bildplatten Aktiengesellschaft AEG-Telefunken-Teldec: *See—*
  - Redlich, Horst, 4,194,094, Cl. 179-100.41P.
- Teitel, Sidney: *See—*
  - Gurien, Harvey; and Teitel, Sidney, 4,193,923, Cl. 260-315.000.
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  - Rockl, Gerhard; Nieder, Gerhard; and Schulz, Hans-Holger, 4,193,646, Cl. 308-187.100.
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  - Bjorklund, Fritz L. G.; Sandberg, Carl-Olof; Sternbeck, Olaf; and Wern, Lars A., 4,194,134, Cl. 307-255.000.
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  - Guess, Joe F.; and Gastmeier, William J., 4,193,647, Cl. 310-324.000.
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  - Sidi, Henri, 4,193,890, Cl. 252-407.000.
  - Stone, Herman; and Pauly, Peter D., 4,193,887, Cl. 252-91.000.
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  - Rudy, Michael W.; Kramer, Edward J.; Bondar, Martin M.; and Whitney, Ronald L., 4,193,685, Cl. 355-41.000.
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  - Breton, Ernest J.; Wolf, Jack D.; and Worden, Dexter, 4,194,040, Cl. 428-308.000.
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  - Gillespie, Ronald G., 4,194,163, Cl. 330-86.000.
  - Marquis, Edward T.; and Yeakey, Ernest L., 4,194,070, Cl. 521-163.000.
  - Speranza, George P.; and Zimmerman, Robert L., 4,194,069, Cl. 521-129.000.
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  - Muenger, James R.; and Barber, Everett M., 4,193,259, Cl. 60-39.040.
  - Sustek, Alvin J., Jr.; and Scott, Thomas G., 4,193,290, Cl. 73-29.000.
- Texas Instruments Incorporated: *See—*
  - Boulanger, Henry J.; and Rizzo, Salvatore P., 4,193,181, Cl. 29-509.000.
- Theakston, Harry A.: *See—*
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  - Posner, Louis L.; and McGarry, Patrick J., 4,193,225, Cl. 49-465.000.
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- Thomas, Ronald, to Organisation Europeenne de Recherches Spatiales. Interconnection device for solar cells. 4,193,820, Cl. 136-89.00P.
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- Thomaswick, Ronald J., to PPG Industries, Inc. Railway car loose sheet material shipping support loading arrangement. 4,193,736, Cl. 414-786.000.
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  - d'Auria, Luigi; Dubos, Jacques; and Jacques, Andre, 4,193,661, Cl. 350-96.160.
  - Hartemann, Pierre, 4,193,473, Cl. 181-176.000.
  - Picquendar, Jean-Edgar, 4,194,172, Cl. 333-165.000.
  - Reymond, Jean-Claude; and Hidalgo, Jean-Luc, 4,193,689, Cl. 356-152.000.
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- Tiner, Francis L. Panel repair kit. 4,193,243, Cl. 52-514.000.
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  - Sandhu, Mohammad A.; and Tingler, Kenneth L., 4,193,803, Cl. 430-627.000.
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  - Pauly, Ronald R.; Good, Thomas W.; Hastings, John D.; and Ryan, Kevin D., 4,193,639, Cl. 301-9.0DH.
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  - Hengartner, Urs; Reymond, Gilbert; and Toome, Valdemar, 4,193,850, Cl. 204-79.000.
- Toray Industries, Inc.: *See—*
  - Okubo, Katsuyuki; Ueda, Nobuyasu; and Ono, Tetsumi, 4,193,474, Cl. 181-287.000.
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  - Leon, F. Roland, 4,193,756, Cl. 432-3.000.
  - Vawter, R. Glenn; and Waitman, Charles S., 4,193,760, Cl. 432-96.000.
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  - Morino, Hideki; and Yasui, Yasuyoshi, 4,193,322, Cl. 74-700.000.
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  - Egorov, Viktor P.; Ognevsky, Viktor A.; Orlovsky, Anatoly G.; Ostrovsky, Grigory A.; Ryskind, Alexandr M.; Stepin, Anatoly L.; Trofimov, Oleg F.; and Shklyarov, Isaak N., 4,193,824, Cl. 148-12.400.
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  - Hopwood, Howard R.; and Trunley, Roy, 4,193,801, Cl. 430-570.000.
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  - English, William D., 4,193,261, Cl. 60-218.000.
  - Haller, Jacob S.; Mines, Gordon L.; and Mischnick, Meinert J., 4,193,187, Cl. 29-749.000.
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  - Beasley, Max M., 4,193,359, Cl. 112-79.00R.
- Turner, Henry H. Stem growth control device and method. 4,193,224, Cl. 47-58.000.
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  - Tyrer, Andrew C. R.; and Lace, David G., 4,193,153, Cl. 9-342.000.
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  - Okubo, Katsuyuki; Ueda, Nobuyasu; and Ono, Tetsumi, 4,193,474, Cl. 181-287.000.
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  - Pankratov, Vladimir I.; Konovalenko, Gennady P.; Prilipko, Ivan T.; and Gomberg, Moris L., 4,194,114, Cl. 250-308.000.
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  - Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; and Sagara, Seiji, 4,193,483, Cl. 192-26.000.
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  - Cheung, Harry, 4,193,793, Cl. 75-235.000.
  - Drnevich, Raymond F.; Matsch, Ladislas C.; and Srinath, Embar G., 4,193,854, Cl. 204-149.000.
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  - Sauers, Marvin E., 4,194,071, Cl. 525-480.000.
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  - Light, Steven D.; and Ward, John W., 4,193,895, Cl. 252-441.000.
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  - Devienne, Andre M.; Igea, Gilbert L.; and Bernard, Jean-Pierre L., 4,193,429, Cl. 141-4.000.
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  - Borisuck, John F.; Coviello, William L.; and Sheedy, Gary W., 4,193,155, Cl. 12-40.000.
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  - Goodale, Clark W.; Morgan, Charles W.; Rhoton, Albert L.; and McNeil, David F., 4,194,026, Cl. 427-244.000.
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  - Namboodri, Chettoor G., 4,193,762, Cl. 8-14.000.
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    - Weaver, Merle L.; and Ng, Keng C., 4,194,016, Cl. 426-419.000.
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    - Coulbourn, Charles B., Jr., 4,194,209, Cl. 343-753.000.
    - Goldie, Harry, 4,194,200, Cl. 343-5.0SM.
    - Morrison, Steven; and Lisle, Thomas K., Jr., 4,194,186, Cl. 340-347.0AD.
    - Tsui, James B. Y.; and Schrick, Gerd H., 4,194,206, Cl. 343-18.00E.
    - Willmore, Robert R.; and McCartney, William B., 4,194,205, Cl. 343-17.700.
  - America: *See—*
    - Davis, Thomas J., 4,194,240, Cl. 363-126.000.
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    - Garcia, Moises R., 4,193,286, Cl. 72-462.000.
    - Glendinning, William B., 4,194,187, Cl. 340-347.0AD.
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    - Childs, Everett L.; and Long, Jack L., 4,193,853, Cl. 204-129.950.
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    - Woollam, John A., 4,193,827, Cl. 149-1.000.
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    - Adicoff, Arnold; Finnegan, William G.; McBride, William R.; and Ayres, William M., 4,193,952, Cl. 264-3.00B.
    - Alpers, Frederick C., 4,194,204, Cl. 343-7.400.
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    - Crist, Ralph P., 4,194,246, Cl. 367-1.000.
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    - Dowgul, Ronald W., 4,193,966, Cl. 422-122.000.
    - Doyle, William E., 4,194,202, Cl. 343-7.0PF.
    - Gerard, William A., 4,194,142, Cl. 315-39.770.
    - Jelks, Edward C., 4,194,171, Cl. 333-149.000.
    - Kuck, John H., 4,194,203, Cl. 343-7.0PF.
    - Lewis, Bernard L., 4,194,244, Cl. 364-428.000.
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    - Obenschain, Arthur W., 4,194,150, Cl. 324-245.000.
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    - Plotkin, Gerald N., 4,193,297, Cl. 73-167.000.
    - Redfern, John T., 4,194,194, Cl. 340-566.000.
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  - Shannon, John M., 4,194,133, Cl. 307-221.00D.
- United Technologies Corporation: *See—*
  - Benincasa, John J.; and Hage, Marvin L., 4,193,367, Cl. 114-68.000.
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  - Langer, Teresa; Krukowska-Fulde, Barbara; and Langer, Jerzy, 4,194,141, Cl. 313-503.000.
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  - Neuner, James A.; Einolf, Charles W., Jr.; and Szabo, Andras I., 4,194,183, Cl. 340-347.0AD.
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- White, Jack E., to J & D Enterprises. Self-flushing ball seal disconnect. 4,193,576, Cl. 251-149.600.
- White, Preston S., to PPG Industries, Inc. Extraction of phenylenediamine from aqueous alkaline solution. 4,193,938, Cl. 260-582.000.
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- Willmore, Robert R.; and McCartney, William B., to United States of America, Air Force. R.F. Power and video modulation monitoring circuit for countermeasures system. 4,194,205, Cl. 343-17.700.
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- Wirz, Walter, to Fahrni, Peter. Continuous-flow mixer for the gluing of loose chips of wood, fibers, or other particles. 4,193,700, Cl. 366-156.000.
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- Wittry, David B., to Rockwell International Corporation. Lithographic apparatus. 4,194,123, Cl. 250-492.00A.
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- Wong, Henry H. Y., to National Research Development Corporation. Stabilizing of structures. 4,193,234, Cl. 52-173.00R.
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- Wood, Paul R. Fence slat cutting method and apparatus. 4,193,431, Cl. 144-134.00C.
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- Woodcock, Douglas G., to Edgar Pickering (Blackburn) Limited. Tufting machines. 4,193,358, Cl. 112-79.00A.
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- Woods, Hanbury J.: *See—*
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- Worchester Controls AG: *See—*
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- Wunderlich, Langley H., to General Motors Corporation. Drag free sliding caliper disc brake bushing. 4,193,481, Cl. 188-71.800.
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- Wustner, Helmut: *See—*
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  - Stoffel, James C., 4,194,221, Cl. 358-283.000.
- Yabe, Hideo; and Sato, Shohei, to Nippon Electric Co., Ltd. Decentralized-control type electronic switching system. 4,194,090, Cl. 179-18.0ES.
- Yamada, Takashi: *See—*
  - Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,193,255, Cl. 368-34.000.
- Yamamoto, Kousuke: *See—*
  - Yamamoto, Ryuichi; Yamamoto, Kousuke; Nagata, Teruyuki; and Obata, Kenji, 4,193,932, Cl. 260-453.0PH.
- Yamamoto, Ryuichi; Yamamoto, Kousuke; Nagata, Teruyuki; and Obata, Kenji, to Mitsui Toatsu Chemicals Inc. Process for preparing organic isocyanates. 4,193,932, Cl. 260-453.0PH.
- Yamamoto, Yoshinori; Imai, Hideo; and Ishimatsu, Yoshikazu, to Sony Corporation. Mode selecting assembly for recording and/or reproducing apparatus. 4,194,229, Cl. 360-137.000.
- Yamazaki, Shuichi; and Ban, Keisuki, to Honda Giken Kogyo Kabushiki Kaisha. Screw blower. 4,193,749, Cl. 418-201.000.
- Yang, Lien C.: *See—*
  - United States of America, National Aeronautics and Space Administration; and Yang, Lien C., 4,193,388, Cl. 126-263.000.
- Yasuda, Yasumichi: *See—*
  - Mochizuki, Yasuhiro; Hachino, Hiroaki; Yasuda, Yasumichi; Misawa, Yutaka; and Ogawa, Takuzo, 4,193,826, Cl. 148-189.000.
- Yasui, Yasuyoshi: *See—*
  - Morino, Hideki; and Yasui, Yasuyoshi, 4,193,322, Cl. 74-700.000.
- Yasukuni, Mitsuo; Ogura, Toshinobu; Omaki, Takanobu; and Tanaka, Masahide, to Minolta Camera Kabushiki Kaisha. Zoom lens system capable of constant magnification photography. 4,193,667, Cl. 350-187.000.
- Yasumatsu, Mutsuo; Katayama, Kenji; Takeuchi, Shozo; and Saito, Yoshio, to Calpis Shokuhin Kogyo Kabushiki Kaisha. Preparation of an acidified milk beverage. 4,194,019, Cl. 426-580.000.
- Yeakey, Ernest L.: *See—*
  - Marquis, Edward T.; and Yeakey, Ernest L., 4,194,070, Cl. 521-163.000.
- Yeates, Richard P.: *See—*
  - Niggemeier, Joseph F.; and Yeates, Richard P., 4,193,350, Cl. 410-64.000.
- Yokogawa Electric Works, Ltd.: *See—*
  - Kotaka, Mitsuo; Ishikawa, Hirotoshi; Muraki, Kaisuke; Takahashi, Ryo; and Matsuura, Tamizo, 4,194,118, Cl. 250-343.000.
- Yokota, Sekiji: *See—*
  - Fujii, Toshihiro; and Yokota, Sekiji, 4,193,831, Cl. 156-309.000.
- Yoshida Kogyo K.K.: *See—*
  - Kanzaka, Yoshihiro, 4,193,172, Cl. 24-205.15H.
- Yoshikawa, Akira; and Aota, Kouichi, to Rank Xerox Limited. Transfer sheet drying device for electrophotographic copying machine. 4,193,680, Cl. 355-3.00R.
- Yoshino Kogyosho Co., Ltd.: *See—*
  - Saito, Tadao; Nozawa, Takamitsu; Tsuchida, Haruo; Iizuka, Shigeo; and Goto, Takayuki, 4,193,551, Cl. 239-333.000.
- Yoshioka, Sunao. Apparatus for automatically producing flower-shaped decorations. 4,193,753, Cl. 425-311.000.
- Yotsutani, Akio: *See—*
  - Masaki, Masaru; and Yotsutani, Akio, 4,194,153, Cl. 455-31.000.
- Youmans, Albert P.; Allison, David F.; and Maxwell, David A., to Signetics Corporation. Method for making semiconductor structure. 4,193,836, Cl. 156-657.000.
- Young, Jack H.; Karle, David A.; and Halleck, Frank E., to American Sterilizer Company. Combined ultrasonic cleaning and biocidal treatment in a single pressure vessel. 4,193,818, Cl. 134-1.000.
- Young, John L., to Ex-Cell-O Corporation. Ultrasonic packaging machine. 4,193,833, Cl. 156-358.000.
- Yu, Ruey J.: *See—*
  - Van Scott, Eugene J.; and Yu, Ruey J., 4,194,007, Cl. 424-318.000.
- Zally, William J.: *See—*
  - Field, George F.; and Zally, William J., 4,194,049, Cl. 548-336.000.
- Zauscher, Hermann, to C. Plath GmbH Nautisch Elektronische Technik. Radiolocation system for determining the direction of incident electromagnetic waves. 4,194,207, Cl. 343-120.000.
- Zeiss-Stiftung, Carl: *See—*
  - Egle, Wilhelm, 4,194,116, Cl. 250-311.000.
- Zenda, Richard J.: *See—*
  - Malacheski, Joseph J.; and Zenda, Richard J., 4,193,165, Cl. 16-191.000.
- Zero-Max Industries, Inc.: *See—*
  - Gray, James A.; and Lindfors, Randall V., 4,193,650, Cl. 312-205.000.
- Zikolova, Svetlana S.: *See—*
  - Konstantinova, Rumyana G.; Zikolova, Svetlana S.; Apostolova, Velichka I.; and Toshkova, Tanya G., 4,193,920, Cl. 260-239.30P.
- Zimmer, Erich: *See—*
  - Langen, Hans; Ringel, Helmut; and Zimmer, Erich, 4,193,953, Cl. 264-0.500.
- Zimmerman, Robert L.: *See—*
  - Speranza, George P.; and Zimmerman, Robert L., 4,194,069, Cl. 521-129.000.
- Zirconal Processes Limited: *See—*
  - Davis, Richard P. B.; Emblem, Harold G.; Shaw, Richard D.; and Shelley, Stanley J., 4,194,036, Cl. 428-74.000.
- Zitz, Alfred: *See—*
  - Strahsner, Emanuel; and Zitz, Alfred, 4,193,778, Cl. 55-238.000.
- Zotos International, Inc.: *See—*
  - Memmott, Sharon S., 4,193,615, Cl. 283-1.00A.
- Zrenner, Bernhard: *See—*
  - Muller, Jurgen; Pfeifer, Josef; Rheude, Alfred; Erckel, Rolf; Farber, Heinrich; and Zrenner, Bernhard, 4,193,682, Cl. 355-10.000.
- Zumsteg, Horst, to Alcan Research and Development Limited. Method of deep-drawing of a container or the like from an aluminium material. 4,193,285, Cl. 72-348.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF MARCH, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Brinadd Company: *See—*
    - Jackson, Junius M., deceased; and Jackson, Betty A., executrix, Re. 30,230, Cl. 175-66.000.
- Bunker, Anthony J.: *See—*
    - Sampson, Keith G.; Jenkins, Victor F.; and Bunker, Anthony J., Re. 30,234, Cl. 525-162.000.
- Eastman Kodak Company: *See—*
    - Wright, Hal E., Re. 30,235, Cl. 542-447.000.
- Ikeda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Lens selection device. Re. 30,231, Cl. 350-183.000.
- Jackson, Betty A., executrix: *See—*
    - Jackson, Junius M., deceased; and Jackson, Betty A., executrix, Re. 30,230, Cl. 175-66.000.
- Jackson, Junius M., deceased; and by Jackson, Betty A., executrix, to Brinadd Company. Closed circuit method of circulating a substantially solid free drilling fluid. Re. 30,230, Cl. 175-66.000.
- Jenkins, Victor F.: *See—*
    - Sampson, Keith G.; Jenkins, Victor F.; and Bunker, Anthony J., Re. 30,234, Cl. 525-162.000.
- Lane, William C.; and Moffatt, Donald E., to Mead Corporation, The. Multiple layer decorated paper, laminate prepared therefrom and process. Re. 30,233, Cl. 428-207.000.
- Laporte Industries, Limited: *See—*
    - Sampson, Keith G.; Jenkins, Victor F.; and Bunker, Anthony J., Re. 30,234, Cl. 525-162.000.
- Mead Corporation, The: *See—*
    - Lane, William C.; and Moffatt, Donald E., Re. 30,233, Cl. 428-207.000.
- Minolta Camera Kabushiki Kaisha: *See—*
    - Ikeda, Hiroshi, Re. 30,231, Cl. 350-183.000.
- Moffatt, Donald E.: *See—*
    - Lane, William C.; and Moffatt, Donald E., Re. 30,233, Cl. 428-207.000.
- Polaroid Corporation: *See—*
    - Wright, Joseph H., Re. 30,232, Cl. 352-78.00R.
- Sampson, Keith G.; Jenkins, Victor F.; and Bunker, Anthony J., to Laporte Industries, Limited. Polymeric compositions. Re. 30,234, Cl. 525-162.000.
- Wright, Hal E., to Eastman Kodak Company. Photosensitive colorant materials. Re. 30,235, Cl. 542-447.000.
- Wright, Joseph H., to Polaroid Corporation. Large capacity film cassette. Re. 30,232, Cl. 352-78.00R.

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- Avron, Mordhay; and Ben-Amotz, Ami, to Yeda Research & Development Co. Ltd. Alga strain. 4,511, 3-18-80, Cl. 89.000.
- Ben-Amotz, Ami: *See—*
    - Avron, Mordhay; and Ben-Amotz, Ami, 4,511, Cl. 89.000.
- Moore, Ralph S. Miniature rose plant. 4,512, 3-18-80, Cl. 10.000.
- Yeda Research & Development Co. Ltd.: *See—*
    - Avron, Mordhay; and Ben-Amotz, Ami, 4,511, Cl. 89.000.

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- Aktiebolaget Svenska Flaktfabriken: *See—*
    - Holmberg, Roy, 254,506, Cl. D23-146.000.
- American Home Products Corp.: *See—*
    - Mack, Frank J., 254,477, Cl. D9-10.000.
- Amerock Corporation: *See—*
    - Tegner, Raymond U. H., 254,460, Cl. D6-99.000.
    - Tegner, Raymond U. H., 254,461, Cl. D6-99.000.
- Anchor Hocking Corporation: *See—*
    - Thrush, James L., 254,467, Cl. D7-56.000.
- Atkinson, William G., Jr.: *See—*
    - Parsons, Frederick L.; and Atkinson, William G., Jr., 254,505, Cl. D23-44.000.
- Badge-A-Minit Ltd.: *See—*
    - Roebuck, Malcolm J., 254,495, Cl. D15-122.000.
- Barn and Silo Stores Inc.: *See—*
    - Cooper, Howard, 254,508, Cl. D25-14.000.
- Behlert, Austin F. Gun sight. 254,502, 3-18-80, Cl. D22-8.000.
- Belasquez, Lupe S. Floating fish holder. 254,503, 3-18-80, Cl. D22-18.000.
- Bell, Charles J. Pouring attachment for paint cans. 254,482, 3-18-80, Cl. D9-290.000.
- Biller, Bruce A.; and Scherer, Henry W., to S & C Electric Company. High voltage fuse end fitting. 254,487, 3-18-80, Cl. D13-35.000.
- Burlington Industries, Inc.: *See—*
    - Carroll, Barry G., 254,478, Cl. D9-193.000.
- Carroll, Barry G., to Burlington Industries, Inc. Pantyhose package. 254,478, 3-18-80, Cl. D9-193.000.
- Carson, Louis A. Tea bag squeezer. 254,466, 3-18-80, Cl. D7-47.000.
- Cathey, Wayne C., to Xerox Corporation. Dual magnetic disc-console unit for an electronic typing system. 254,492, 3-18-80, Cl. D14-46.000.
- Chich, Robert H. Rocking horse. 254,498, 3-18-80, Cl. D21-70.000.
- Collins, John J.: *See—*
    - Nicholl, Thomas H.; Rohrs, Donald L.; and Collins, John J., 254,514, Cl. D26-26.000.
- Concept, Inc.: *See—*
    - Guth, John F., 254,515, Cl. D26-49.000.
- Cooper, Howard, to Barn and Silo Stores Inc. Building. 254,508, 3-18-80, Cl. D25-14.000.
- Cox, Averil B. Patio bar and bar-b-que unit. 254,468, 3-18-80, Cl. D7-108.000.
- Culbertson, Richard, to General Electric Company. Cassette tape recorder and player or similar article. 254,489, 3-18-80, Cl. D14-6.000.
- Dart, Larry K., to International Telephone and Telegraph Corporation. Hand held spotlight. 254,513, 3-18-80, Cl. D26-50.000.
- Dickey, Avis M., to Dickey, Inc. Font of illustration figures for children's stories and cards. 254,497, 3-18-80, Cl. D18-33.000.
- Dickey, Inc.: *See—*
    - Dickey, Avis M., 254,497, Cl. D18-33.000.
- Eastman, Jerome. Chair. 254,459, 3-18-80, Cl. D6-70.000.
- Eddins, Fred D., to Hasbro Industries, Inc. Toy scanner pack. 254,500, 3-18-80, Cl. D21-109.000.
- Eilertson, Arthur L., to Textron, Inc. Packaging container or similar article. 254,479, 3-18-80, Cl. D9-224.000.
- Elie, David K.: *See—*
    - Young, Dale E., II; Elie, David K.; and Schoening, Peter K., 254,511, Cl. D30-6.000.
- Finn, Norman H., to United States Shoe Corporation, The. Wedgie. 254,456, 3-18-80, Cl. D2-286.000.
- Finn, Norman H., to United States Shoe Corporation, The. Open toe wedgie sneaker with toe and heal guards. 254,457, 3-18-80, Cl. D2-296.000.
- Finucane, Patrick W.; and Malvasio, William A. Carpet installing tool. 254,472, 3-18-80, Cl. D8-15.000.
- Finucane, Patrick W.; and Malvasio, William A. Carpet installing tool. 254,473, 3-18-80, Cl. D8-15.000.
- Finucane, Patrick W.; and Malvasio, William A. Carpet installing tool. 254,474, 3-18-80, Cl. D8-15.000.

- General Electric Company: *See—*
    - Culbertson, Richard, 254,489, Cl. D14-6.000.
- Giannotti, Vincent, Jr.; and Leach, Charles R., to International Business Machines Corporation. Machine control foot pedal or the like. 254,488, 3-18-80, Cl. D13-36.000.
- Gilb, Tyrell T., to Simpson Manufacturing Co., Inc. Architectural post base. 254,476, 3-18-80, Cl. D8-354.000.
- Gillum, Gary C., to Klipsch and Associates, Inc. High frequency loudspeaker. 254,491, 3-18-80, Cl. D14-35.000.
- Grosso, Raymond A.; and Prizlow, Alfred J., to Microelectronic Communications Corp. Stored number telephone dialing unit. 254,493, 3-18-80, Cl. D14-66.000.
- Guth, John F., to Concept, Inc. Hand held examination lamp with disposable tip. 254,515, 3-18-80, Cl. D26-49.000.
- Hasbro Industries, Inc.: *See—*
    - Eddins, Fred D., 254,500, Cl. D21-109.000.
- Heckathorn, Donald W. Combined hair dryer and curling iron caddy. 254,462, 3-18-80, Cl. D6-114.000.
- Hill, Jeremy R. Keyboard instrument for use with a remote synthesizer or the like. 254,496, 3-18-80, Cl. D17-1.000.
- Hills Industries Limited: *See—*
    - Seabrook, Terence D., 254,471, Cl. D7-196.000.
- Holmberg, Roy, to Aktiebolaget Svenska Flaktfabriken. Corrugated metal sheet contact body for humidifiers. 254,506, 3-18-80, Cl. D23-146.000.
- Hosek, Robert. Figurine. 254,501, 3-18-80, Cl. D21-185.000.
- Howw Manufacturing Company: *See—*
    - Wilson, Michael C., 254,463, Cl. D7-9.000.
- Hull, Bette J. Dispensing indicator for a container. 254,481, 3-18-80, Cl. D9-260.000.
- International Business Machines Corporation: *See—*
    - Giannotti, Vincent, Jr.; and Leach, Charles R., 254,488, Cl. D13-36.000.
- International Harvester Company: *See—*
    - Montgomery, Gregg C.; and Skyer, Robert A., 254,486, Cl. D12-176.000.
- International Silver Company: *See—*
    - Young, Stuart A., 254,464, Cl. D7-20.000.
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    - Dart, Larry K., 254,513, Cl. D26-50.000.
- Klipsch and Associates, Inc.: *See—*
    - Gillum, Gary C., 254,491, Cl. D14-35.000.
- Knope, William J. Article of flatware. 254,470, 3-18-80, Cl. D7-137.000.
- Kone Osakeyhtio: *See—*
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- Leach, Charles R.: *See—*
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- Leathers, Milton. Lamp. 254,512, 3-18-80, Cl. D26-51.000.
- Lindsay Excavating & Concrete Products Company: *See—*
    - Migchelbrink, Richard J., Jr., 254,509, Cl. D25-36.000.
- Mack, Frank J., to American Home Products Corp. Combined bottle and squeegee. 254,477, 3-18-80, Cl. D9-10.000.
- Malvasio, William A.: *See—*
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    - Finucane, Patrick W.; and Malvasio, William A., 254,474, Cl. D8-15.000.
- Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 254,469, 3-18-80, Cl. D7-137.000.
- Matsubara, Hideyuki, to Pioneer Kabushiki Kaisha. Loudspeaker with grille. 254,490, 3-18-80, Cl. D14-30.000.
- Microelectronic Communications Corp.: *See—*
    - Grosso, Raymond A.; and Prizlow, Alfred J., 254,493, Cl. D14-66.000.
- Migchelbrink, Richard J., Jr., to Lindsay Excavating & Concrete Products Company. Housing for a pump lift station. 254,509, 3-18-80, Cl. D25-36.000.
- Montgomery, Gregg C.; and Skyer, Robert A., to International Harvester Company. Steering wheel. 254,486, 3-18-80, Cl. D12-176.000.
- Myers, Harold K. Galvanic skin resistance/temperature biofeedback device. 254,504, 3-18-80, Cl. D24-17.000.
- Nicholl, Thomas H.; Rohrs, Donald L.; and Collins, John J., to Nicholl, Thomas H. Combined power failure light and flash light. 254,514, 3-18-80, Cl. D26-26.000.
- Oneida Ltd.: *See—*
    - Manderfield, Ellen B., 254,469, Cl. D7-137.000.
- Owens-Illinois, Inc.: *See—*
    - Smalley, Ned J., 254,480, Cl. D9-254.000.
- Parsons, Frederick L.; and Atkinson, William G., Jr., to Parsons, Frederick L. Hose coupling. 254,505, 3-18-80, Cl. D23-44.000.
- Pauty, Bernard, to SEB. Combined salad dryer and tosser. 254,465, 3-18-80, Cl. D7-47.000.
- Perjo, Pekka, to Kone Osakeyhtio. Up and down directional signal for an elevator. 254,484, 3-18-80, Cl. D10-108.000.
- Pioneer Kabushiki Kaisha: *See—*
    - Matsubara, Hideyuki, 254,490, Cl. D14-30.000.
- Prizlow, Alfred J.: *See—*
    - Grosso, Raymond A.; and Prizlow, Alfred J., 254,493, Cl. D14-66.000.
- Quickdraw Accessories, Inc.: *See—*
    - Shaak, Luther L., 254,510, Cl. D27-03.000.
- Redding, James. Foot massager. 254,507, 3-18-80, Cl. D24-36.000.
- Roebuck, Malcolm J., to Badge-A-Minit Ltd. Machine for assembling buttons. 254,495, 3-18-80, Cl. D15-122.000.
- Rohrs, Donald L.: *See—*
    - Nicholl, Thomas H.; Rohrs, Donald L.; and Collins, John J., 254,514, Cl. D26-26.000.
- S & C Electric Company: *See—*
    - Biller, Bruce A.; and Scherer, Henry W., 254,487, Cl. D13-35.000.
- Scherer, Henry W.: *See—*
    - Biller, Bruce A.; and Scherer, Henry W., 254,487, Cl. D13-35.000.
- Schoening, Peter K.: *See—*
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- Seabrook, Terence D., to Hills Industries Limited. Rotary clothes hoist. 254,471, 3-18-80, Cl. D7-196.000.
- SEB: *See—*
    - Pauty, Bernard, 254,465, Cl. D7-47.000.
- Shaak, Luther L., to Quickdraw Accessories, Inc. Pipe. 254,510, 3-18-80, Cl. D27-03.000.
- Simpson Manufacturing Co., Inc.: *See—*
    - Gilb, Tyrell T., 254,476, Cl. D8-354.000.
- Skyer, Robert A.: *See—*
    - Montgomery, Gregg C.; and Skyer, Robert A., 254,486, Cl. D12-176.000.
- Smalley, Ned J., to Owens-Illinois, Inc. Closure. 254,480, 3-18-80, Cl. D9-254.000.
- Stainless Steel Fabricating, Inc.: *See—*
    - Worden, Donald G., 254,494, Cl. D15-102.000.
- Steed, Ernest C. Toy distiller. 254,499, 3-18-80, Cl. D21-109.000.
- Stevens, Roger C. Paddle wheel apparatus. 254,485, 3-18-80, Cl. D12-70.000.
- Stover, George F. Can opener. 254,475, 3-18-80, Cl. D8-18.000.
- Sunbeam Corporation: *See—*
    - Thomas, Richard K., 254,483, Cl. D10-1.000.
- Tegner, Raymond U. H., to Amerock Corporation. Towel ring. 254,460, 3-18-80, Cl. D6-99.000.
- Tegner, Raymond U. H., to Amerock Corporation. Towel bar 254,461, 3-18-80, Cl. D6-99.000.
- Textron, Inc.: *See—*
    - Eilertson, Arthur L., 254,479, Cl. D9-224.000.
- Thomas, Richard K., to Sunbeam Corporation. Clock. 254,483, 3-18-80, Cl. D10-1.000.
- Thrush, James L., to Anchor Hocking Corporation. Condiment shaker or similar article. 254,467, 3-18-80, Cl. D7-56.000.
- United States Shoe Corporation, The: *See—*
    - Finn, Norman H., 254,456, Cl. D2-286.000.
    - Finn, Norman H., 254,457, Cl. D2-296.000.
- Wakefield, Anne E. Hammock-type hanging chair. 254,458, 3-18-80, Cl. D6-53.000.
- Wilson, Michael C., to Howw Manufacturing Company. Beverage container. 254,463, 3-18-80, Cl. D7-9.000.
- Worden, Donald G., to Stainless Steel Fabricating, Inc. Cheese vat. 254,494, 3-18-80, Cl. D15-102.000.
- Xerox Corporation: *See—*
    - Cathey, Wayne C., 254,492, Cl. D14-46.000.
- Young, Dale E., II; Elie, David K.; and Schoening, Peter K. Rearing tank. 254,511, 3-18-80, Cl. D30-6.000.
- Young, Stuart A., to International Silver Company. Gallery tray. 254,464, 3-18-80, Cl. D7-20.000.

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CLASS 43

14	4,193,219
15	4,193,220

CLASS 44

51	4,193,769
56	4,193,770

CLASS 46

19	4,193,221
52	4,193,222
209	4,193,223

CLASS 47

58	4,193,224

CLASS 48

197 R	4,193,771
	4,193,772
210	4,193,773

CLASS 49

465	4,193,225

CLASS 51

124 R	4,193,226
165.77	4,193,227
170 T	4,193,228

CLASS 52

9	4,193,229
90	4,193,230
97	4,193,231
98	4,193,232
122	4,193,233
172	4,193,236
173 R	4,193,234
200	4,193,237
202	4,193,235
211	4,193,238
222	4,193,239
344	4,193,240
405	4,193,241
469	4,193,242
514	4,193,243
582	4,193,244
656	4,193,245
698	4,193,246
713	4,193,247

CLASS 55

10	4,193,774
17	4,193,775
49	4,193,776
96	4,193,777
238	4,193,778
290	4,193,779
378	4,193,780

CLASS 56

10.2	4,193,248
11.9	4,193,249
208	4,193,250
341	4,193,251

CLASS 57

58.89	4,193,253
105	4,193,254
351	4,193,252

CLASS 59

86	4,193,258

CLASS 60

39.04	4,193,259
218	4,193,261
261	4,193,262
397	4,193,264
398	4,193,265
420	4,193,263
644	4,193,266
649	4,193,267
737	4,193,260

CLASS 62

81	4,193,781
101	4,193,268
171	4,193,269
175	4,193,270
180	4,193,271
320	4,193,272

CLASS 65

11 R	4,193,782
31	4,193,783
69	4,193,784
285	4,193,785

CLASS 66

4	4,193,273
140 R	4,193,274

CLASS 68

134	4,193,275

CLASS 70

34	4,193,276
358	4,193,277
459	4,193,278

CLASS 71

9	4,193,786
88	4,193,787
94	4,193,788
103	4,193,789
116	4,193,790

CLASS 72

44	4,193,279
59	4,193,280
130	4,193,281
194	4,193,282
204	4,193,283
325	4,193,284
348	4,193,285
462	4,193,286

CLASS 73

1 R	4,193,288
27 R	4,193,289
29	4,193,290
32 A	4,193,291
38	4,193,292
64.1	4,193,293
141 A	4,193,294
146.8	4,193,295
167	4,193,297
194 EM	4,193,298
194 F	4,193,296
199	4,193,299
204	4,193,300
207	4,193,301
351	4,193,302
438	4,193,303
462	4,193,304
	4,193,305
629	4,193,306
701	4,193,307

CLASS 74

5.22	4,193,308
217 B	4,193,309
230.3	4,193,310
230.5	4,193,311
231 C	4,193,312
231 P	4,193,313
242.11 R	4,193,315
242.5	4,193,314
477	4,193,316
479	4,193,317
489	4,193,318
501 R	4,193,319
535	4,193,320
567	4,193,321
700	4,193,322
733	4,193,323
750 B	4,193,324
801	4,193,325

CLASS 75

2	4,193,791
84	4,193,792
235	4,193,793

CLASS 76

74	4,193,326

CLASS 81

55	4,193,327
72	4,193,328

CLASS 83

250	4,193,329
364	4,193,330
468	4,193,331

CLASS 84

1.01	4,193,332
484	4,193,257

CLASS 85

31	4,193,333

CLASS 89

7	4,193,335
41 E	4,193,334

CLASS 91

488	4,193,336

CLASS 92

31	4,193,337

CLASS 98

1	4,193,338
2.14	4,193,339

CLASS 100

34	4,193,340
93 P	4,193,341
154	4,193,342

CLASS 101

35	4,193,343
126	4,193,344
365	4,193,345

CLASS 102

18 R	4,193,346
38 CC	4,193,347
91	4,193,348

CLASS 106

18.15	4,193,805
20	4,193,806
47 Q	4,193,807
48	4,193,808
97	4,193,809
	4,193,810
	4,193,811
110	4,193,812
122	4,193,813
123 LC	4,193,814
202	4,193,815
277	4,193,816

CLASS 108

59	4,193,351
126	4,193,352

CLASS 109

50	4,193,353

CLASS 110

212	4,193,354
336	4,193,355

CLASS 111

6	4,193,356
34	4,193,357

CLASS 112

79 A	4,193,358
79 R	4,193,359
	4,193,360
259	4,193,361
275	4,193,362
278	4,193,363
281	4,193,364
314	4,193,365

CLASS 114

39	4,193,366
68	4,193,367
144 C	4,193,432
230	4,193,368
290	4,193,369
291	4,193,370

CLASS 115

22.2	4,193,371

CLASS 118

17	4,193,373
58	4,193,374
504	4,193,375
658	4,193,376
713	4,193,372

CLASS 119

20	4,193,377
60	4,193,378

CLASS 123

32 C	4,193,379
32 EG	4,193,380
119 A	4,193,381
	4,193,382
136	4,193,383
179 L	4,193,384
198 DC	4,193,385

CLASS 124

22	4,193,386

CLASS 126

121	4,193,387
263	4,193,388
429	4,193,390
430	4,193,543
438	4,193,391
451	4,193,389

CLASS 127

46 A	4,193,817

CLASS 128

1 R	4,193,392
57	4,193,394
90	4,193,395
152	4,193,396
204.18	4,193,406
207.19	4,193,397
213 R	4,193,398
214.4	4,193,399
	4,193,400
260	4,193,401
272	4,193,402
275	4,193,403
280	4,193,404
296	4,193,405
360	4,193,407
710	4,193,393
734	4,193,408

CLASS 131

23 R	4,193,409
170 R	4,193,410
171 R	4,193,411
264	4,193,412

CLASS 134

1	4,193,818

CLASS 135

2	4,193,413
4 R	4,193,414
25 R	4,193,415

CLASS 136

89 P	4,193,820
89 PC	4,193,819

CLASS 137

75	4,193,416
118	4,193,418
192	4,193,417
322	4,193,419
356	4,193,420
625.33	4,193,421
625.49	4,193,422
625.64	4,193,423
855	4,193,424
861	4,193,425

CLASS 138

109	4,193,426

CLASS 139

54	4,193,427
114	4,193,428

CLASS 141

4	4,193,429
12	4,193,430

CLASS 144

134 C	4,193,431

CLASS 145

30 R	4,193,433

CLASS 148

1.5	4,193,821
3	4,193,822
6.35	4,193,823
12.4	4,193,824
16.6	4,193,825
189	4,193,826

CLASS 149

1	4,193,827

CLASS 151

38	4,193,434
41.76	4,193,435

CLASS 152

158	4,193,436
330 RF	4,193,437

CLASS 156

148	4,193,828
276	4,193,829
306	4,193,830
309	4,193,831
331	4,193,832
358	4,193,833
521	4,193,834
606	4,193,835
657	4,193,836

CLASS 159

6 W	4,193,837

CLASS 160

166 A	4,193,438
188	4,193,439

CLASS 162

5	4,193,838
19	4,193,839
49	4,193,840
152	4,193,841
199	4,193,842

CLASS 164

432	4,193,440

CLASS 165

32	4,193,441
35	4,193,442
66	4,193,443
76	4,193,444
79	4,193,445
108	4,193,446
145	4,193,447

CLASSIFICATION OF PATENTS

CLASS 166	
60	4,193,448
72	4,193,449
155	4,193,450
248	4,193,451
274	4,193,452
295	4,193,453
302	4,193,454
359	4,193,455
CLASS 172	
272	4,193,456
276	4,193,457
328	4,193,458
CLASS 173	
43	4,193,459
CLASS 174	
45 R	4,194,080
47	4,194,081
74 A	4,194,082
CLASS 175	
4.6	4,193,460
19	4,193,461
66	Re.30,230
292	4,193,462
337	4,193,463
364	4,193,464
CLASS 176	
19 LD	4,193,843
37	4,193,844
CLASS 177	
108	4,193,465
CLASS 178	
18	4,194,083
19	4,194,084
101	4,194,085
CLASS 179	
1 G	4,194,086
1 GD	4,194,087
1 GS	4,194,088
6 E	4,194,089
18 ES	4,194,090
77	4,194,091
84 VF	4,194,092
99 R	4,194,093
100.41 P	4,194,094
113	4,194,095
147	4,194,096
175	4,194,098
CLASS 180	
15	4,193,466
89.17	4,193,468
117	4,193,470
154	4,193,471
164	4,193,469
271	4,193,467
CLASS 181	
118	4,193,472
176	4,193,473
287	4,193,474
CLASS 182	
8	4,193,475
164	4,193,476
194	4,193,477
CLASS 187	
29 R	4,193,478
CLASS 188	
2 A	4,193,479
52	4,193,480
71.8	4,193,481
CLASS 190	
41 B	4,193,482
CLASS 192	
26	4,193,483
60	4,193,484
85 CA	4,193,485
CLASS 193	
35 R	4,193,486
CLASS 194	
9 T	4,193,487
	4,193,488
CLASS 198	
406	4,193,489
451	4,193,490
476	4,193,491
781	4,193,492
	4,193,493
CLASS 200	
5 A	4,194,097
	4,194,099
50 A	4,194,100
52 R	4,194,101
67 D	4,194,102
67 E	4,194,103
153 J	4,194,104
159 B	4,194,105
CLASS 204	
13	4,193,846
15	4,193,847
28	4,193,848
38 B	4,193,849
79	4,193,850
101	4,193,851
129.46	4,193,852
129.95	4,193,853
149	4,193,854
158 R	4,193,855
186	4,193,856
195 S	4,193,857
268	4,193,858
269	4,193,859
284	4,193,860
296	4,193,861
CLASS 206	
217	4,193,494
315 R	4,193,495
380	4,193,496
387	4,193,497
494	4,193,498
524	4,193,499
577	4,193,500
610	4,193,501
CLASS 208	
11 R	4,193,862
139	4,193,863
210	4,193,864
CLASS 209	
240	4,193,865
393	4,193,503
555	4,193,502
CLASS 210	
6	4,193,866
20	4,193,867
35	4,193,868
44	4,193,869
65	4,193,870
142	4,193,871
143	4,193,872
170	4,193,873
232	4,193,874
330	4,193,875
489	4,193,876
520	4,193,877
CLASS 211	
119	4,193,504
CLASS 212	
55	4,193,505
CLASS 215	
11 C	4,193,506
12 R	4,193,507
226	4,193,508
330	4,193,509
CLASS 219	
75	4,194,107
123	4,194,106
216	4,194,108
386	4,194,109
CLASS 220	
5 A	4,193,510
CLASS 221	
66	4,193,511
185	4,193,512
CLASS 222	
1	4,193,513
4	4,193,514
57	4,193,515
	4,193,516
78	4,193,517
105	4,193,518
111	4,193,519
133	4,193,520
142.4	4,193,521
145	4,193,522
254	4,193,523
484	4,193,524
CLASS 224	
35	4,193,525
273	4,193,526
CLASS 226	
74	4,193,527
CLASS 228	
37	4,193,528
107	4,193,529
263	4,193,530
CLASS 229	
2.5 EC	4,193,531
28 R	4,193,532
34 R	4,193,533
44 CB	4,193,534
52 B	4,193,535
CLASS 233	
11	4,193,536
20 A	4,193,537
26	4,193,538
CLASS 235	
83	4,194,111
92 NG	4,193,539
132 E	4,194,112
450	4,194,110
454	4,193,540
CLASS 236	
1 G	4,193,541
34.5	4,193,542
CLASS 238	
347	4,193,544
CLASS 239	
109	4,193,545
112	4,193,546
156	4,193,547
230	4,193,548
251	4,193,549
314	4,193,550
333	4,193,551
533.13	4,193,552
586	4,193,553
CLASS 241	
19	4,193,554
37	4,193,555
186 R	4,193,556
CLASS 242	
18 A	4,193,557
58.4	4,193,558
67.1 R	4,193,559
71.9	4,193,560
84.2 G	4,193,562
84.51 A	4,193,561
85	4,193,563
107.4 A	4,193,564
	4,193,565
	4,193,566
CLASS 244	
3.16	4,193,567
23 C	4,193,568
100 R	4,193,569
165	4,193,570
CLASS 248	
343	4,193,571
535	4,193,572
CLASS 249	
9	4,193,573
CLASS 250	
308	4,194,114
	4,194,115
311	4,194,116
328	4,194,117
343	4,194,118
352	4,194,119
381	4,194,120
439 P	4,194,121
476	4,194,122
492 A	4,194,123
492 R	4,194,124
504	4,194,125
527	4,193,879
566	4,194,126
572	4,194,127
CLASS 251	
1 A	4,193,574
144	4,193,575
149.6	4,193,576
167	4,193,577
283	4,193,578
288	4,193,579
309	4,193,580
328	4,193,581
CLASS 252	
8.8	4,193,880
17	4,193,881
47.5	4,193,882
49.9	4,193,883
51.5 R	4,193,884
78.3	4,193,885
90	4,193,886
91	4,193,887
99	4,193,888
255	4,194,165
316	4,193,889
407	4,193,890
411 R	4,193,891
428	4,193,892
429 B	4,193,893
440	4,193,894
441	4,193,895
CLASS 254	
131	4,193,582
CLASS 256	
11	4,193,583
19	4,193,584
65	4,193,585
69	4,193,586
CLASS 260	
2.3	4,193,896
17 R	4,193,897
23 XA	4,193,898
23.5 A	4,193,899
28.5 B	4,193,900
	4,193,901
29.6 H	4,193,904
29.6 R	4,193,903
29.6 TA	4,193,902
30.6 R	4,193,905
31.2 R	4,193,906
37 N	4,193,907
40 R	4,193,908
42.15	4,193,909
42.43	4,193,910
45.7 P	4,193,911
45.75 B	4,193,912
45.75 S	4,193,913
45.85 R	4,193,914
112.5 R	4,193,915
146 R	4,193,916
239 A	4,193,917
239.1	4,193,918
239.3 P	4,193,919
	4,193,920
239.55 R	4,193,921
315	4,193,923
326 C	4,193,924
326.26	4,193,927
326.5 FN	4,193,925
326.5 S	4,193,926
345.7 R	4,193,928
348.25	4,193,929
397.2	4,193,930
453 PH	4,193,932
453 RW	4,193,933
465 R	4,193,934
505 R	4,193,935
557 R	4,193,936
570 R	4,193,937
582	4,193,938
583 R	4,193,939
586 C	4,193,878
586 F	4,193,940
592	4,193,941
604 HF	4,193,942
	4,193,943
659 R	4,193,944
CLASS 261	
39 B	4,193,946
41 D	4,193,947
65	4,193,948
87	4,193,949
	4,193,950
91	4,193,951
CLASS 264	
0.5	4,193,953
3 B	4,193,952
13	4,193,954
23	4,193,955
27	4,193,956
46.4	4,193,957
86	4,193,958
128	4,193,960
166	4,193,959
176 F	4,193,961
178 F	4,193,962
CLASS 267	
170	4,193,587
CLASS 269	
47	4,193,588
CLASS 270	
31	4,193,589
CLASS 271	
119	4,193,590
CLASS 272	
78	4,193,591
114	4,193,592
137	4,193,593
CLASS 273	
1 R	4,193,594
	4,193,595
11 C	4,193,596
143 R	4,193,599
148 R	4,193,600
167 R	4,193,601
236	4,193,602
313	4,193,598
405	4,193,597
CLASS 277	
3	4,193,603
117	4,193,604
184	4,193,605
205	4,193,606
CLASS 279	
1 DC	4,193,607
2 R	4,193,633
CLASS 280	
8	4,193,608
12 K	4,193,609
414 R	4,193,610
415 A	4,193,611
681	4,193,612
804	4,193,613
	4,193,614
CLASS 283	
1 A	4,193,615
CLASS 285	
39	4,193,616
336	4,193,617
CLASS 292	
7	4,193,618
168	4,193,619
169.17	4,193,620
CLASS 293	
142	4,193,621
CLASS 294	
1 BB	4,193,623
1 CA	4,193,622
19 A	4,193,625
19 R	4,193,624
54	4,193,626
82 R	4,193,627
CLASS 296	
137 B	4,193,628
190	4,193,629
CLASS 297	
17	4,193,630
408	4,193,631
446	4,193,632
CLASS 299	
17	4,193,634
	4,193,635
39	4,193,636
56	4,193,637
89	4,193,638
CLASS 301	
9 DH	4,193,639
37 AT	4,193,640
CLASS 303	
50	4,193,641
97	4,193,642
118	4,193,643
CLASS 307	
3	4,194,128
149	4,194,129
205	4,194,130
209	4,194,131
	4,194,132
221 D	4,194,133
255	4,194,134
260	4,194,135
296 R	4,194,136
CLASS 308	
9	4,193,644
23	4,193,645
187.1	4,193,646
CLASS 310	
52	4,194,137
324	4,193,647
CLASS 312	
9	4,193,648
205	4,193,650
280	4,193,652
346	4,193,649
CLASS 313	
3	4,194,138
153	4,194,139
471	4,194,140
503	4,194,141
CLASS 315	
39.77	4,194,142
241 R	4,194,143
CLASS 318	
341	4,194,144
799	4,194,145
CLASS 320	
44	4,194,146
CLASS 323	
17	4,194,147
CLASS 324	
220	4,194,149
245	4,194,150
453	4,194,148
CLASS 328	
267	4,194,160
CLASS 329	
50	4,194,161
CLASS 330	
4.3	4,194,162
86	4,194,163
130	4,194,164
257	4,194,166
CLASS 331	
38	4,194,167
94.5 C	4,194,168
94.5 G	4,194,169
94.5 N	4,194,170
CLASS 333	
149	4,194,171
165	4,194,172
CLASS 335	
260	4,194,173
CLASS 338	
308	4,194,174
CLASS 339	
17 D	4,193,653
	4,193,659
17 LC	4,193,654
28	4,193,651
31 R	4,193,655
45 M	4,193,656
63 M	4,193,657
97 P	4,193,658
98	4,193,201
191 R	4,193,660
CLASS 340	
52 D	4,194,175
147 R	4,194,176
152 T	4,194,177
183	4,194,180
201 R	4,194,178
211	4,194,179
286 R	4,194,181
310 R	4,194,182
347 AD	4,194,183
	4,194,185
	4,194,186
	4,194,187
347 P	4,194,184
365 E	4,194,188
373	4,194,189
407	4,194,190
515	4,194,191
517	4,194,192
545	4,194,193
566	4,194,194
661	4,194,195
711	4,194,196
	4,194,197
724	4,194,198
754	4,194,199
CLASS 343	
5 SM	4,194,200
6.5 LC	4,194,201
7 PF	4,194,202
	4,194,203
7.4	4,194,204
17.7	4,194,205
18 E	4,194,206
120	4,194,207
715	4,194,208
753	4,194,209
CLASS 346	
75	4,194,210
	4,194,211
CLASS 350	
96.15	4,193,662
96.16	4,193,661
96.18	4,193,663
96.21	4,193,664
96.22	4,193,665
174	4,193,666
183	Re.30,231
187	4,193,667

CLASSIFICATION OF PATENTS

281	4,193,668
334	4,193,669
357	4,193,670
CLASS 351	
160 H	4,193,671
160 R	4,193,672
CLASS 352	
78 R	Re.30,232
CLASS 354	
23 D	4,193,673
59	4,193,674
86	4,193,675
106	4,193,676
127	4,193,677
204	4,193,678
CLASS 355	
1	4,193,679
3 FU	4,193,681
3 R	4,193,680
10	4,193,682
	4,193,683
40	4,193,684
41	4,193,685
CLASS 356	
150	4,193,687
152	4,193,688
	4,193,689
301	4,193,690
330	4,193,691
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U.S. GOVERNMENT PRINTING OFFICE : O—1980

U.S. DEPARTMENT OF COMMERCE
Philip M. Klutznick, *Secretary*

PATENT AND TRADEMARK OFFICE
Sidney A. Diamond, *Commissioner*

APR 24

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DEPOSITORY 477B

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

March 25, 1980 Volume 992 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Jan. 28, 1980.

Department of the Treasury
United States Customs Service

(T.D. 80–70)

NOTICE OF RECORDATION OF TRADE NAME

COLT COMMUNICATIONS

On January 10, 1979, there was published in the FEDERAL REGISTER (44 FR 2217) a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name COLT COMMUNICATIONS. INC. The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 30 days from the date of publication of the notice.

The name "COLT COMMUNICATIONS" is hereby recorded as the trade name of Colt Communications, a corporation organized under the laws of the State of Illinois, located at 5424 West Touhy Avenue, Skokie, Illinois 60077, when applied to citizen band two way radio transceivers manufactured in Japan and Korea. No foreign firm is authorized to use the trade name sought to be recorded.

HARVEY B. FOX,
Acting Director, Office of
Regulations and Rulings.

Dated: Feb. 13, 1980.

Department of the Treasury
United States Customs Service

(TMK–2–RRUEE)

NOTICE OF APPLICATION FOR RECORDATION OF TRADE NAME

FLORASYNTH, INC.

Application has been filed pursuant to section 133.12 Customs Regulations (19 CFR 133.12), for recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124) of the trade name FLORASYNTH, INC. used by Florasynth, Inc., a corporation organized under the laws of the State of New York, located at 410 East 62nd Street, New York, New York 10021.

The applicant states that the trade name is applied to essences and aromatic ingredients used as bases for cosmetics, toilet preparations, perfumes and colognes, and as flavor in foods, beverages and tobacco products; essential oils, used as an odorant to mask disinfectants, insecticides, and similar products; extracts, flavors, oils and emulsions for use in making soft drink syrups and bases; non-alcoholic preparation for producing a foam in soft drinks and a flavoring agent used in the preparation of root beer; orange compound adapted to produce a cloud in nonalcoholic, maltless soft drink beverages and having flavoring ingredients; natural and synthetic organic flavors, extracts, oils, and blenders for alcoholic beverages; imitation vanilla bean flavor; grapefruit juice powder, lemon juice powder, lime juice powder, orange juice powder, and brown sugar powdered flavor; citrus oils for food purposes; onion powder and garlic powder; and coffee, manufactured in Brazil, Canada, England, France, Japan, Mexico and the United States. Various foreign subsidiaries are authorized to use the trade name. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Washington, D.C. 20229, in time to be received not later than 30 days from the date of publication of this notice in the FEDERAL REGISTER.

Notice of the action taken on the application for recordation of the trade name will be published in the FEDERAL REGISTER.

DONALD W. LEWIS,
Director, Office of
Regulations and Rulings.

Dated: Feb. 1, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,673,294, Re. S.N. 115,541, Filed Jan. 25, 1980, Cl. 264/75, METHOD FOR THE MANUFACTURE OF MARBLEIZED SOAP BARS, Raymond G. Matthaei, Owner of Record: *Lever Brothers Co., New York, N.Y.,* Attorney or Agent: Granville M. Brumbaugh, et al., Ex. Gp.: 147

3,723,474, Re. S.N. 106,619, Filed Dec. 26, 1979, Cl. 260/347.2, META-THIOCARBAMYL PHENYLENE AMIDES AND UREAS AND THEIR UTILITY AS HERBICIDES, Eugene G. Teach, et al., Owner of Record: *Stauffer Chemical Company, New York, N.Y.,* Attorney or Agent: Daniel C. Block, et al., Ex. Gp.: 121

3,776,991, Re. S.N. 111,514, Filed Jan. 11, 1980, Cl. 264/530, INJECTION BLOW MOLDING METHOD, Paul Marcus, Owner of Record: *Inventor,* Attorney or Agent: David S. Kane, et al., Ex. Gp.: 147

3,980,091, Re. S.N. 108,899, Filed Dec. 31, 1979, Cl. 132/7, QUATERNARY AMMONIUM COMPOUNDS IN PRETREATMENT OF HAIR BEFORE SHAMPOOING WITH AN ANIONIC SHAMPOO, George F. Dasher, et al., Owner of Record: *Alberto-Culver Company, Melrose Park, Ill.,* Attorney or Agent: Sidney Wallenstein, et al., Ex. Gp.: 333

4,034,131, Re. S.N. 094,992, Filed Nov. 16, 1979, Cl. 428/35, CONTAINER WITH IMPROVED HEAT SHRUNK CELLULAR SLEEVE, Roger R. Rhoads, Owner of Record: *Owens-Illinois, Inc., Toledo, Ohio,* Attorney or Agent: H. G. Bruss, et al., Ex. Gp.: 164

4,063,048, Re. S.N. 102,377, Filed Dec. 11, 1979, Cl. 179/107 R, IMPLANTABLE ELECTRONIC HEARING AID, Adam M. Kissiah, Jr., Owner of Record: *Inventor,* Attorney or Agent: Raymond F. Kramer, Ex. Gp.: 235

4,064,254, Re. S.N. 098,007, Filed Nov. 28, 1979, Cl. 424/267, SUBSTITUTED PIPERIDINES THERAPEUTIC PROCESS AND COMPOSITIONS, Stanley J. Dykstra, et al., Owner of Record: *Mead Johnson & Company, Evansville, Ind.,* Attorney or Agent: Robert E. Carnahan, et al, Ex. Gp.: 125

4,065,162, Re. S.N. 106,498, Filed Dec. 26, 1979, Cl. 292/340, LOCK STRIKE CONSTRUCTION, Ernest L. Schlage, Owner of Record: *Schlage Lock Company, San Francisco, Calif.,* Attorney or Agent: David W. Tibbott, et al., Ex. Gp.: 355

4,067,683, Re. S.N. 110,666, Filed Jan. 1, 1980, Cl. 431/11, METHOD AND APPARATUS FOR CONTROLLING FLUENCY OF HIGH VISCOSITY HYDROCARBON FLUIDS, William J. Klaila, Owner of Record: *by mesne assignments to Electromagnetic Energy Corp., New York, N.Y.,* Attorney or Agent: Roland T. Bryan, et al., Ex. Gp.: 345

4,069,420, Re. S.N. 112,599, Filed Jan. 16, 1980, Cl. 250/341, OPTIONAL GAS ANALYZER, Thaddeus C. Ross, Owner of Record: *Anarad Inc., Santa Barbara, Calif.,* Attorney or Agent: William R. Evans, et al., Ex. Gp.: 256

4,088,614, Re. S.N. 110,501, Filed Jan. 8, 1980, Cl. 521/163, FLAME RESISTANT POLYURETHANE FOAM AND PROCESS FOR PRODUCING THE SAME, Shigeo Mori, et al., Owner of Record: *Dai-Ichi Kogyo Seiyaku Co., Kyoto, Japan,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 144

4,097,175, Re. S.N. 109,260, Filed Jan. 3, 1980, Cl. 408/23, MACHINE FOR DRILLING HOLES IN RIGHT-ANGULAR WORK SURFACES, Yoshihiro Tsukiji, Owner of Record: *Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan,* Attorney or Agent: James E. Armstrong, III, et al., Ex. Gp.: 324

4,118,844, Re. S.N. 109,261, Filed Jan. 3, 1980, Cl. 29/27 C, MACHINE TOOL, Hiroshi Matsuzaki, et al., Owner of Record: *Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan,* Attorney or Agent: James E. Armstrong, III, et al., Ex. Gp.: 324

4,159,022, Re. S.N. 108,937, Filed Dec. 31, 1979, Cl. 128/214.4, CATHETER DELIVERY SYSTEM AND METHOD, Paul H. Pevsner, Owner of Record: *Inventor,* Attorney or Agent: B. Franklin Griffin, Jr., Ex. Gp.: 335

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Patent Applications Available for Licensing or Sale

As a service to owners of patent applications who desire to give public notice that their patent applications are available for licensing or sale, the Patent and Trademark Office **will publish notices in the** Official Gazette of Patent Applications Available for Licensing or Sale.

Except as noted below, this service is made available on the terms and conditions, including the fee, specified in the Commissioner's notice of October 29, 1954, 688 O.G. 627, which instituted the publication of notices of Patents Available for Licensing or Sale.*

Notices submitted for publication may refer to each application by some identifying number other than the application Serial No., and should include a brief descriptive title of the invention. The descriptive title need not be the title of the application.

Notices will be printed under the heading "Patent Applications Available for Licensing or Sale." The following statement will appear immediately below the heading as a preface to the notices:

> The applications listed below will not be open to inspection by the public, nor will any information concerning the same be given by the Patent and Trademark Office, except upon written authority from the owner in accordance with 37 CFR § 1.14.

Owners submitting notices for publication are requested to submit an accompanying letter which must be signed by the owner and contain the following authorization:

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LUTRELLE F. PARKER,
Acting Commissioner of
Patents and Trademarks.

Date: Mar. 3, 1980.

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*The text of the prior notice is as follows:

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The notices will be printed under an appropriate heading from time to time as a sufficient number accumulate to justify publication. Notices will be limited to the patent number, title of the patent, and name and address of the owner.

Since printing will be based upon information as furnished, the Patent Office cannot assume any responsibility for the contents of the notices.

Patent owners desiring to avail themselves of this service should include in their letters requesting publication the information specified in the second preceding paragraph. The charge for this service will be $3.00 for each patent concerning which notice is published.

National Technical Information Service

Government-Owned Inventions

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

Douglas J. Campion,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. Department of Agriculture

Program Agreements and Patent Branch, Administration
Service Division, Federal Bldg., Science and Education
Administration, Hyattsville, Md. 20782

Patent application 6–050,895. Method of Preparing Citrus Fruit Sections With Fresh Flavor and Appearance. Filed June 21, 1979.

Patent application 6–055,117. Protection of Insect Pheromones From Degradation by Ultraviolet Radiation. Filed July 5, 1979.

Patent application 6–061,322. Ternary Salts of Tris(Aminomethyl)Phosphines and Their Oxides. Filed July 26, 1979.

Patent application 6–062,824. Purification of Sucrose Esters of Fatty Acids by a Method of Ultrafiltration. Filed Aug. 1, 1979.

Patent 3,577,711. Apparatus for Removing Entrained Particles From Gases. Filed June 2, 1969. Patented May 4, 1971.

U.S. Department of Energy

Assistant General Counsel for Patents, Room A2–3018
Washington, D.C. 20545

Patent application 854,444. Single Transmission Line Interrogated Multiple Channel Data Acquisition System. Filed Nov. 23, 1977.

Patent 4,138,320. Fluidic Self-Actuating Control Assembly. Filed June 29, 1978. Patented Feb. 6, 1979. Not available NTIS.

Patent 4,138,622. High Temperature Electronic Gain Device. Filed Aug. 4, 1977. Patented Feb. 6, 1979. Not available NTIS.

Patent 4,139,724. Ceramic End Seal Design for High Temperature High Voltage Nuclear Instrumentation Cables. Filed Oct. 13, 1977. Patented Feb. 13, 1979. Not available NTIS.

Patent 4,140,176. Protective Tubes for Sodium Heated Water Tubes. Filed Mar. 26, 1978. Patented Feb. 20, 1979. Not available NTIS.

Patent 4,140,228. Dry Piston Coal Feeder. Filed Dec. 1, 1977. Patented Feb. 20, 1979. Not available NTIS.

U.S. Department of the Navy

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6–023,817. An Ultrasonic Focusing System for the Warming of Cardiac Tissue. Filed Mar. 26, 1979.

Patent application 6–024,645. Method of Age Testing Rubber Based Propellants. Filed Mar. 28, 1979.

Patent application 6–025,819. Method of Preparing Prostaglandin B1 Derivatives. Filed Apr. 2, 1979.

Patent application 6–025,822. G-Protection System. Filed Apr. 2, 1979.

Patent application 6–042,173. Acoustic Array Frequency Response Tester. Filed May 24, 1979.

Patent application 6–054,077. Optical Resonator Single-Mode Fiber Hydrophone. Filed July 2, 1979.

Patent application 6–059,405. Pulsed Ring Laser Fiber Gyro. Filed July 20, 1979.

Patent application 6–059,921. Holographic Terrain Surface Display System. Filed July 20, 1979.

Patent application 6–059,922. Holographic Storage of Terrain Data. Filed July 20, 1979.

Patent application 6–061,737. Far Field Target Designators. Filed July 30, 1979.

Patent application 6–061,975. Current Stabilized Underwater Platform. Filed July 30, 1979.

Patent application 6–062,668. Wide-Band Stationary Imaging Pyroelectric Camera. Filed Aug. 1, 1979.

Patent application 6–062,834. Multichannel RF Signal Generator. Filed Aug. 1, 1979.

Patent application 6–068,024. Digital Sidelobe Weighting Technique. Filed Aug. 20, 1979.

National Aeronautics and Space Administration

Assistant General Counsel for Patent Matters—NASA
Code GP–4, Washington, D.C. 20546

Patent application 6–054,538. High Speed, Glitch-Free Digital to Analog Converter. Filed July 3, 1979.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sunnyvale Patent Library*	(408) 736-0795
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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
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	St. Louis Public Library	(314) 241-2288 Ext. 214
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 23, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-9-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-3-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-2-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	5-30-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. E. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-31-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	11-16-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-16-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	8-21-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	3-20-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-14-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking: Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-5-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	1-15-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-18-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	10-2-78

Expiration of patents: The patents within the range of numbers indicated below expire during February 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,076,195 to 3,079,605, inclusive
Plant Patents	Numbers 2,224 to 2,231, inclusive

REISSUES

MARCH 25, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,236

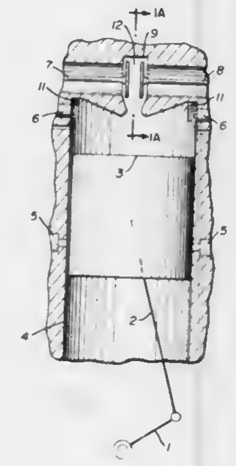
CLEAN SPARK IGNITION INTERNAL COMBUSTION ENGINE

Hui-Tzeng Ting, Apartment 306, 290 Potter Pl., Weehawken, N.J. 07087

Original No. 4,036,187, dated Jul. 19, 1977, Ser. No. 667,409, Mar. 16, 1976. Continuation-in-part of Ser. No. 376,304, Jul. 5, 1973, abandoned. Application for reissue May 11, 1978, Ser. No. 904,753

Int. Cl.^{2} F02B *19/10*

U.S. Cl. 123—32 SP **18 Claims**



1. In a four-stroke spark ignition engine having fuel injectors in the cylinder wall and a combustion chamber in the cylinder-head, the stratification of air-fuel mixture is obtained by the combined employment and unique arrangement of such devices as said combustion chamber which is divided into two separate chambers, the first chamber being bounded by the piston top at or near top dead center, the lower part of the cylinder-head, and a throat opening leading to the second chamber which is located on top of said first chamber; the inlet and exhaust valves which are located in said second chamber; the fuel injector or injectors which are located at or near the bottom dead center, and create atomized fuel droplets covering the vicinity of the piston top when injection takes place at the bottom dead center; and the spark plug or plugs which are located at or near the bottom of said first chamber, such that said stratification of air-fuel mixture is obtained with the rich mixture at or near the piston top during the end of intake stroke, and said stratification is maintained throughout the ensuing compression stroke due to the fact that the time interval of said compression stroke is extremely short as compared with the time required by natural diffusion or turbulence to undo said stratification such that at the instant of ignition a lean mixture is trapped in said second chamber, and a rich mixture is trapped in said first chamber where said spark plug or plugs give ignition to said rich mixture first, and the ignited mixture will reach more complete combustion later during the expansion stroke by mixing with the lean mixture released from said second chamber.

Re. 30,237

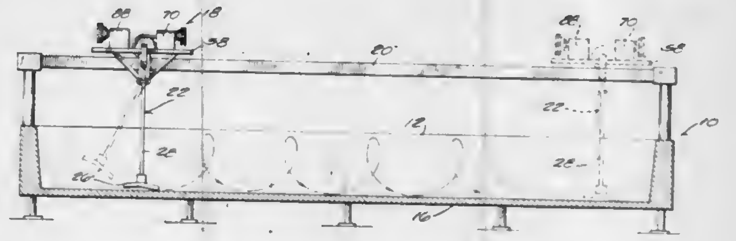
WING TYPE AGITATOR

Billy L. Born, Rockford, Ill., assignor to Stoelting Brothers Company, Kiel, Wis.

Original No. 3,856,273, dated Dec. 24, 1974, Ser. No. 372,963, Jun. 25, 1973. Application for reissue Jun. 12, 1978, Ser. No. 914,990

Int. Cl.^{2} B01F *13/00*

U.S. Cl. 366—261 **13 Claims**



1. Apparatus of the type described comprising, in combination,
- a vat having a bottom wall, spaced vertical side walls and an open top,
- a carriage,
- means supporting said carriage for horizontal movement relative to said vat generally parallel to said side walls,
- a stirring blade assembly extending through said open top into said vat, said stirring blade assembly including a blade member,
- means connecting said blade assembly to said carriage for horizontal movement therewith and for oscillating movement in a vertical plane relative to said carriage and said vat,
- said means connecting said blade assembly to said carriage including
  - a rotatable crank arm connected to and rotatably driven by said drive means for said blade assembly,
  - an elongated support arm connected to said blade member,
  - means pivotally connecting said support arm to said crank arm,
  - and guide means connected to said support arm and said carriage and movable with said carriage, said guide means supported for pivotal movement about a horizontal axis while permitting sliding movement of said support arm relative thereto so that as said support arm is raised and lowered by said crank arm said support arm can also pivot in a vertical plane generally about the pivot axis of said guide means and oscillate in a horizontal direction,
- *said guide means including*
  - *an elongated rod,*
  - *means connecting said elongated rod for swinging movement about said horizontal axis,*
  - *and sleeve means connected to said support arm and surrounding said elongated rod for sliding movement thereon,*
  - *said sleeve means and said support arm oscillating vertically on said elongated rod as said crank arm is rotated with said elongated rod also swinging about said horizontal axis,*
- and drive means for moving said carriage horizontally relative to said vat and for oscillating said blade assembly vertically so that said carriage and said blade assembly can be moved horizontally through a process medium in said vat with said blade assembly also moving vertically.

Re. 30,238
ADDITIVES TO IMPROVE THE FLOW OF HEAVY FUELS AND CRUDE OILS

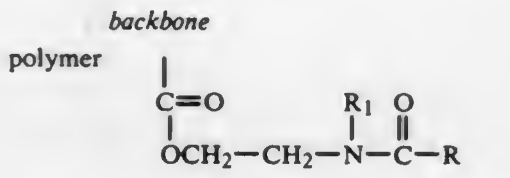
Edward H. Specht, Huntingdon Valley, and James H. O'Mara, Warminster, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Original No. 4,000,986, dated Jan. 4, 1977, Ser. No. 541,176, Jan. 15, 1975. Application for reissue Sep. 25, 1978, Ser. No. 945,940

Int. Cl.^{2} C10L *1/22*

U.S. Cl. 44—62 **8 Claims**

1. An improved hydrocarbon oil having a lower pour point and improved flow characteristics comprising (a) a major amount of the oil and (b) a minor amount in the range of about 0.005% to about 1.0% of a composition comprising an N-acylaminoethyl ester of a carboxylic acid-containing polymer having the general formula:



$$\text{polymer backbone}-C(=O)-OCH_2-CH_2-N(R_1)-C(=O)-R$$

where R is an alkyl or alkene group having about 11 to 29 carbon atoms, [and]0 where R_1 is H or an alkyl group having 1 to 4 carbon atoms, *and where the polymer backbone is derived from an olefin substituted or unsubstituted or from a copolymer of an olefin substituted or unsubstituted and at least one of an acid, an acid anhydride, and an ester.*

Re. 30,239
CELL PROLIFERATION AND TISSUE INVASION INHIBITOR

Klaus E. Kuettner, 426-B W. Webster, Chicago, Ill. 60614; Reuben Eisenstein, 6708 N. Keating, Lincolnwood, Ill. 60646, and Nino Sorgente, 1832 Edgecliffe Dr., Los Angeles, Calif. 90026

Original No. 4,042,457, dated Aug. 16, 1977, Ser. No. 630,275, Nov. 10, 1975. Application for reissue Jun. 5, 1978, Ser. No. 912,861

Int. Cl.^{2} A61K *35/32*

U.S. Cl. 424—95 **10 Claims**

1. The method of preparing a composition of matter having activity as an inhibitor of cell proliferation *and tissue invasion* comprising the steps of providing connective tissue having a high content of collagen or proteoglycans in condition for extraction, extracting said inhibitor from said tissue with an aqueous extraction medium which includes a solute which does not irreversibly denature the proteinaceous matter to be extracted, separating the resultant aqueous extract from the tissue, recovering from the aqueous extract substances having a molecular weight below about 50,000, treating the fraction of aqueous extract having a molecular weight below about 50,000 to remove salts therefrom, and dehydrating the resultant material.

Re. 30,240
ARTHROPODICIDAL AND NEMATOCIDAL PHOSPHORAMIDATES

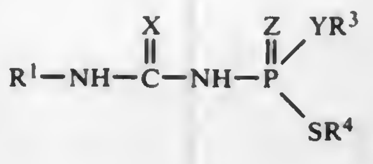
Harold E. Aller, Morristown; Edward E. Kilbourn, Chalfont; Ernest D. Weiler, Ambler, and William D. Weir, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Original No. 4,087,521, dated May 2, 1978, Ser. No. 662,743, Mar. 1, 1976. Application for reissue Jan. 8, 1979, Ser. No. 1,800

Int. Cl.^{2} A01N *9/36;* **C07F** *9/24*

U.S. Cl. 424—211 **10 Claims**

1. A method of controlling pests which comprises applying directly to the pests or to the loci to be freed of or protected from attack by such pests, a pesticidally effective amount of a compound of the formula



wherein

R^1 is a (C_6–C_{10}) aryl group, optionally substituted with up to five (C_1–C_4) alkyl groups, (C_1–C_4) alkoxyl groups, (C_1–C_4) alkylthio groups; (C_1–C_4) alkylsulfonyl groups, (C_1–C_4) hydroxyalkyl groups, (C_1–C_4) haloalkyl groups, cyano groups, nitro groups, hydroxyl groups, or halogen atoms;

R^3 is a (C_1–C_6) alkyl group;

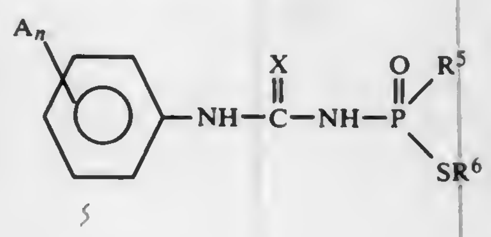
R^4 is a (C_3–C_4) alkyl group;

X is [an oxygen or] *a* sulfur atom;

Y is an oxygen or sulfur atom; and

Z is an oxygen or sulfur atom and the agronomically acceptable metal sales and metal salt complexes thereof.

2. A compound of the formula:



wherein

A is independently
  (a) a (C_1–C_4) alkyl group;
  (b) a (C_1–C_4) alkoxy group;
  (c) a (C_1–C_4) alkylthio group;
  (d) a trihalomethyl group; or
  (e) a halogen atom;

R^5 is a (C_1–C_4) alkylthio group or a (C_1–C_4) alkoxy group;

R^6 is a (C_3–C_4) alkyl group;

X is [an oxyge[illegible]r] *a* sulfur atom; and

n is an integer fro[illegible] to 3 and the agronomically acceptable metal salts and metal salt complexes thereof.

Re. 30,241
ESTERS OF 3-(HYDROXY OR HYDROXYMETHYL)-4-HYDROXYPHENYL AMINOMETHYL KETONES

Hiroaki Minatoya, East Greenbush, N.Y.; Benjamin F. Tullar, Laurel Park, N.C., and Walter D. Conway, Amherst, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

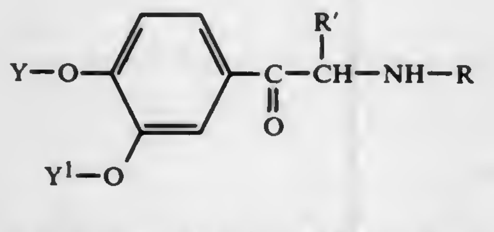
Original No. 3,904,671, dated Sep. 9, 1975, Ser. No. 123,834, Mar. 12, 1971. Continuation-in-part of Ser. No. 812,370, Apr. 1, 1969, abandoned. Application for reissue Jun. 20, 1977, Ser. No. 808,280

Claims priority, application Canada, Mar. 16, 1970, 077574

Int. Cl.^{2} C07C *93/20*

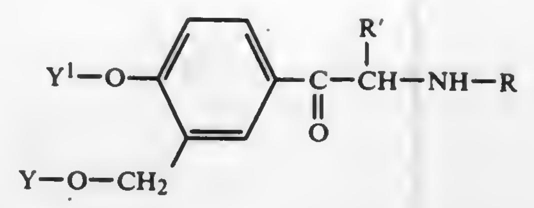
U.S. Cl. 560—73 **26 Claims**

1. A compound of the group consisting of: 3-(Y^1-O-)-4-(Y-O-)phenyl (R-NH-)(R')methyl ketones having the formula



Formula III

and 3-(Y-O-CH_2-)-4-(Y^1-O-)phenyl (R-NH-) (R')methyl ketones having the formula



Formula IV

wherein

R, in Formula III, is tert-butyl or cycloalkyl having 3–6 carbon atoms; and in Formula IV is hydrogen, alkyl having 1–4 carbon atoms, or cycloalkyl having 3–6 carbon atoms; and

wherein, in each formula:

[R is hydrogen, alkyl having 1–4 carbon atoms, or cycloalkyl having 3–6 carbon atoms;]

R' is hydrogen or alkyl having 1–3 carbon atoms;

Y' is hydrogen or an acyl member which is alkanoyl having 1–22 carbon atoms, cycloalkyl-C_nH_{2n}—CO— having a total of 4–10 carbon atoms of which 3–7 are ring carbon atoms in cycloalkyl and wherein n is zero, one, or two, 1- or 2-adamantanecarbonyl, phenoxyacetyl, naphthalenecarbonyl, or Z—C_nH_{2n}—CO— wherein n is zero, one or two and Z is phenyl or phenyl substituted by 1–3 members of the group consisting of alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, halo, or trifluoromethyl;

Y is one of the acyl members defined by Y^1, at least one of Y and Y^1 being Z—C_nH_{2n}—CO—; and

[wherein in Formula III at least one of Y and Y^1 contains no less than four carbon atoms when R is tert-butyl or cycloalkyl and no less than seven carbon atoms when R is hydrogen or alkyl other than tert-butyl; and in Formula IV at least one of Y and Y^1 contains no less than four carbon atoms; and] acid-addition salts thereof.

PLANT PATENTS

GRANTED MARCH 25, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,513
ROSE PLANT

Ernest Schwartz, deceased, late of Kingsville, Md. (by Hazel E. Schwartz, executrix), assignor to F. Harmon Saville, Nor'East Miniature Roses, Rowley, Mass.

Filed Oct. 27, 1978, Ser. No. 955,379

Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by long tapering buds opening into rich white hybrid tea-like, high centered, blooms borne primarily singly to a stem maintaining its color well upon aging.

4,514
PLANT OF THE ARACEAE FAMILY

Gilbert R. Longoria, P.O. Box 146, Mission, Tex. 78472

Filed Jan. 22, 1979, Ser. No. 5,147

Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct plant variety of the Araceae family substantially as shown and described herein.

PATENTS

GRANTED MAR. 25, 1980

ERRATA

For CLASS	See PATENT NO.
433–197	4,194,288
433–101	4,194,289
433–141	4,194,290
433–075	4,194,291
368–082	4,194,351
368–239	4,194,352
368–038	4,194,353
368–276	4,194,354
368–282	4,194,355
368–011	4,194,356
209–363	4,194,622
241–182	4,194,710
296–169	4,194,785
430–357	4,194,911
430–322	4,194,912
548–209	4,195,023
428–469	4,195,124
178–022	4,195,196
270–084	4,195,204
370–084	4,195,204
370–010	4,195,205
370–014	4,195,206
455–609	4,195,221
318–561	4,195,250
455–067	4,195,262
455–343	4,195,263
179–100.1 G	4,195,312
179–100.1 G	4,195,313
455–185	4,195,314

PATENTS

GRANTED MARCH 25, 1980

GENERAL AND MECHANICAL

4,194,247

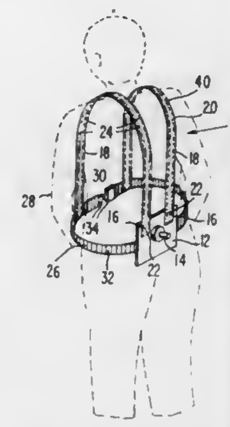
WEARABLE VENTILATION SYSTEM

Clarence Melander, Newark, Del., assignor to East Wind Industries, Inc., Dover, Del.

Filed Oct. 31, 1977, Ser. No. 846,947

Int. Cl.^{2} A41D *13/00*

U.S. Cl. 2—2 **16 Claims**



1. A wearable ventilation system comprising:
(a) a manifold of fabric material for receiving a ventilating gas and distributing same for ventilation;
(b) manifold inlet means defined in said manifold for receiving ventilating gas from a source and directing the flow of the gas into said manifold;
(c) manifold outlet means defined in said manifold to direct the ventilating gas for distribution; and
(d) gas distribution means formed of a flexible fabric material impregnated throughout with an elastomeric substance to prevent complete ventilation through the flexible fabric walls of said gas distribution means by preventing ventilating gas flow through the fabric material itself except at preselected desired locations, said gas distribution means defining a plurality of orifices therein to allow only controlled release of ventilating gas, only at preselected locations, through to the ventilated environment, said elastomer impregnated fabric material providing a flexibly walled gas distribution means in order to minimize movement restrictions and discomfort of the wearer, said gas distribution means connected in fluid flow communication with said manifold for receiving and distributing ventilating gas therefrom, said gas distribution means defining at least one port means therein to be positioned adjacent said manifold outlet means to facilitate said gas distribution means in receiving of ventilated gas from said manifold.

4,194,248

PROTECTIVE MITTEN

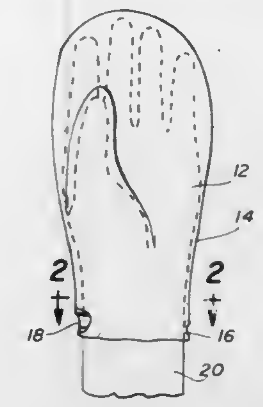
James A. Verschaeve, 52303 Chesterfield Rd., Mt. Clemens, Mich. 48043

Filed Sep. 13, 1978, Ser. No. 942,027

Int. Cl.^{2} A41D *19/01*

U.S. Cl. 2—158 **1 Claim**

1. A protective mitten for the hand when the same is coated with a moist medication, said mitten comprising:
an inner layer, fabricated of a material selected from a group of materials consisting of rubber, polyvinyl chloride, and polyethylene and wherein the inner material is a semipermeable moisture-proof membrane allowing air to pass therethrough but retaining moisture within said mitten; and
an outer layer fabricated from a material selected from a group of woven materials consisting of cotton, nylon and polyester or a combination thereof;
said inner and outer layers being laminated together to form a seamless mitten which defines a cavity therebetween to receive and loosely enclose said hand, said cavity having a first section adapted to receive the thumb of said hand and a second section adapted to receive the remaining fingers of said hand, said laminated layers having an opening through which said hand extends, said laminated layers having an elastic ring fitting around said opening to form a seal between said inner layer and the wrist of said hand for retaining the medication and perspiration within said cavity whereby said hand remains moist.



4,194,249

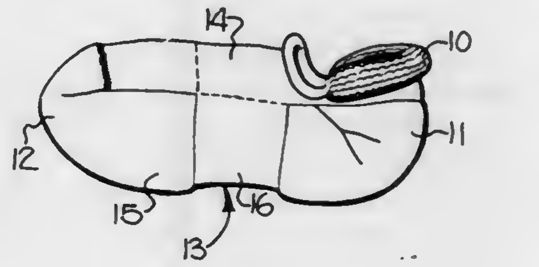
JOGGING AND RUNNING ATHLETIC SOCK

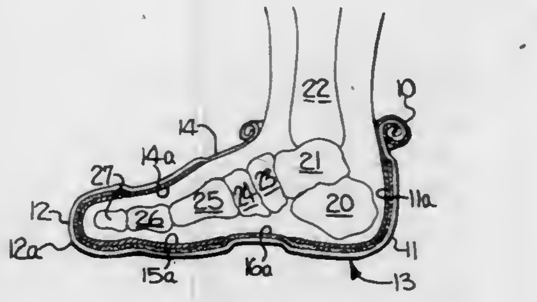
James L. Thorneburg, Statesville, N.C., assignor to Thorneburg Hosiery Co., Inc., Statesville, N.C.

Filed Feb. 14, 1979, Ser. No. 12,072

Int. Cl.^{2} A41B *11/00*

U.S. Cl. 2—239 **6 Claims**



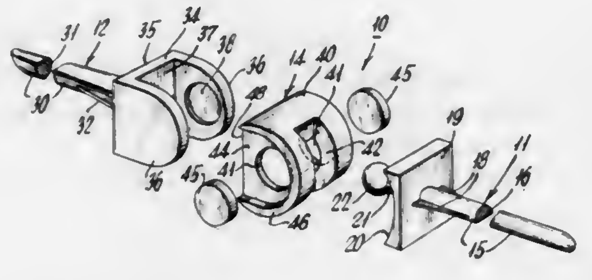


1. An athletic sock including ball, arch and heel terry areas and being particularly suitable for jogging and running by providing a greater amount of cushioning to the ball and heel than to the arch of the foot of the wearer, said sock being characterized by having a terry loop density in said arch area which is relatively less than the terry loop density in said ball and heel areas, said sock being knit throughout of body yarn, a first terry yarn knit with said body yarn and forming a first set of terry loops in said ball, arch and heel areas, and a second terry yarn knit with said body yarn and said first terry yarn in said ball and heel areas and forming a second set of terry loops

in said ball and heel areas, whereby said first and second sets of terry loops in said ball and heel areas form respective shock absorber cushions of greater terry loop density in said ball and heel areas than the terry loop density in said arch area for enhancing the cushioning provided in said ball and heel areas by absorbing and distributing shock on the ball and heel of the foot of the wearer and thereby reducing the shock normally imparted to the arch of the foot of the wearer so that normal articulation of the bones in the foot takes place when jogging and running.

4,194,250
LOAD-STABILIZING PROSTHETIC JOINT AND CONNECTING COMPONENT THEREOF

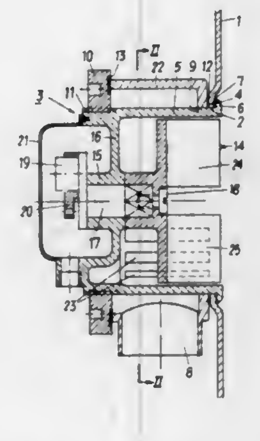
Peter S. Walker, Ridgewood, N.J., assignor to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Mar. 8, 1978, Ser. No. 884,777
Int. Cl.^{2} A61F *1/24*
U.S. Cl. 3—1.91 **11 Claims**



8. A prosthetic joint comprising: a first component adapted to be associated with a first bone, said component having an arcuate bearing surface facing away from said first bone, said first component having a shank terminating in a headed member, said headed member having a larger cross-sectional dimension than said shank in at least one plane; a second component adapted to be associated with a second bone adjacent to said first bone, said second component having a terminal portion at one end facing toward said headed member, said terminal portion having rigid wall means defining an open ended socket; and a third component for connecting said first and second components, an internal cavity within said third component for reception of said headed member, passage means in said third component communicating with said cavity, said passage means having a width dimension larger than the cross-sectional dimension of said shank but smaller than said larger cross-sectional dimension of said headed member, said third component being sufficiently flexible to permit said headed member to pass through said passage means and into said internal cavity, said rigid wall means on said second component embracing said third component and providing support therefor to prevent said headed member from passing outwardly of said passage means in use, said first component adapted to have lateral rocking movement with respect to said connected second and third components, and an arcuate bearing surface on said third component mating with the arcuate bearing surface on said first component, said bearing surfaces cooperating to carry the loading forces of and stabilize said joint in use, said joint including cooperative locking means between said second and third components responsive to contact by said headed member upon lateral displacement between said first and connected second and third components for preventing separation of said second and third components.

4,194,251
OVERFLOW VALVE

Walter Pennerstorfer, Dornbacherstrabe 93, A-1170 Wein, Austria
Filed Mar. 16, 1978, Ser. No. 887,247
Claims priority, application Austria, Mar. 31, 1977, 2260/77
Int. Cl.^{2} E03C *1/232*
U.S. Cl. 4—199 **4 Claims**

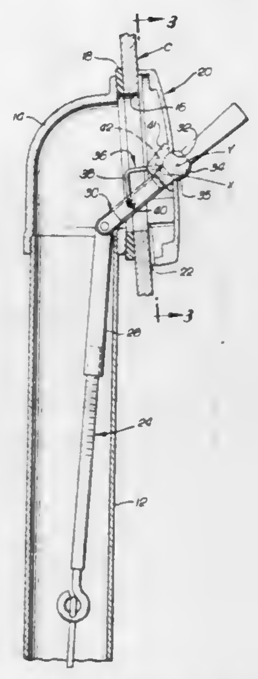


1. An overflow valve for coupling to an outlet pipe for a bath-tub or like receptacle, comprising:
- a cup-shaped housing having a bottom and provided with apertures in a lateral wall for outlet of water and having an outwardly bent-over edge whereby said housing may be mounted in an opening in a side wall of the receptacle with said edge against the inside of said wall and substantially flush thereto;
- an outer housing surrounding said cup-shaped housing and having an outlet for coupling to the outlet pipe;
- said cup-shaped housing being further provided on its circumference with a threaded portion to receive a barrel nut for holding said outer housing and said cup-shaped housing securely to the receptacle, and said apertures of said cup-shaped housing being disposed over the outlet of said outer housing for direct vertical drainage of liquid in said cup-shaped housing through said apertures and through said outer housing outlet into said outlet pipe; and
- means for actuating an outlet valve, said actuating means being mounted on the bottom of said cup-shaped housing and disposed over said apertures and, further, being recessed within the interior of said cup-shaped housing, said actuating means coupled to the outlet valve by a lift element means mounted on the bottom of the cup-shaped housing opposite from said actuating means.

4,194,252
BISTABLE TRIP OVERFLOW LEVER

Chang-Ling Tsuei, Los Angeles, Calif., assignor to Price-Pfister Brass Mfg. Co., Pacoima, Calif.
Filed Aug. 14, 1978, Ser. No. 933,486
Int. Cl.^{2} E03C *1/24*
U.S. Cl. 4—199 **4 Claims**

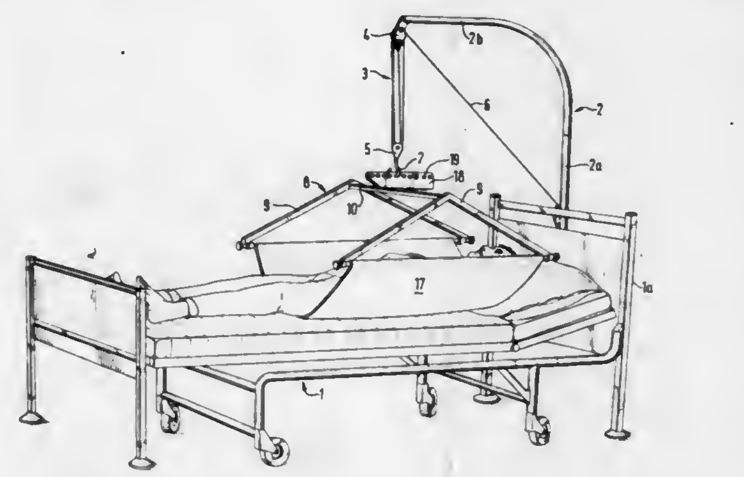
1. In a bistable drain plug trip lever mechanism:
- (a) a mounting plate having a hole providing access between its outer side and its inner side;
- (b) a trip lever projecting through the hole in the mounting plate, said lever having an outer handle end and an inner operating end; said operating end having a transverse opening;
- (c) said mounting plate and said lever having fulcrum means mounting said lever for angular movement, said fulcrum means defining a fulcrum axis;
- (d) means determining opposite limits to tilting movement of said lever;
- (e) means located on the inside of said mounting plate providing a bearing recess, said bearing recess defining a pivot axis spaced from, but substantially parallel to said fulcrum axis;
- (f) a compression spring having one part projected through said opening of said operating end of the lever to anchor said spring on said operating end, said spring having another part accommodated in said bearing recess; and



- (g) said spring being compressed to maximum when said lever is tilted to an intermediate position in which said hole, pivot axis and fulcrum axis are aligned whereby said lever is bistable between said opposite limits.

4,194,253
PERSON-LIFTING DEVICE

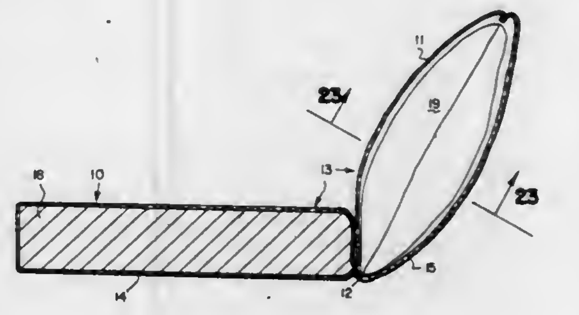
Adolf G. Ullvén, Edingsvagen 1, 45100 Uddevalla, Sweden
Filed May 12, 1978, Ser. No. 905,517
Claims priority, application Sweden, May 16, 1977, 7705683
Int. Cl.^{2} A61G *7/10*
U.S. Cl. 5—84 **6 Claims**



1. A lifting device, especially for use in connection with the care of a person confined to a bed, comprising: a vertically movable lifting element in the shape of a stiff yoke to extend transversely to the person, said yoke having a mid portion to extend above the person and ending in two opposite spaced corners, two spaced portions respectively extending downwardly from said two corners to extend on opposite sides of the person, said spaced portions being provided with brackets opening upwardly, a sheet-like carrying element for supporting the person during lifting, said element having two opposite ends with border hems, and two bar-shaped coupling means respectively passing through said hems, said coupling means having ends extending beyond said border hems and detachably received in said brackets, whereby said bar-shaped coupling means may be lifted out of said brackets.

4,194,254
FLOOR-SUPPORTED CUSHION ASSEMBLY AND METHOD OF MAKING SAME

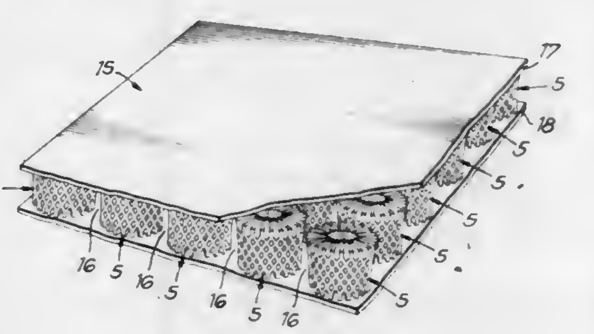
Kay A. Torrez, 924 E. Washington, Phoenix, Ariz. 85034
Division of Ser. No. 836,737, Aug. 26, 1977, Pat. No. 4,116,148.
This application Aug. 4, 1978, Ser. No. 931,028
Int. Cl.^{2} A47C *13/00, 7/14;* A47G *9/00*
U.S. Cl. 5—420 **9 Claims**



1. In a floor-supported cushion assembly:
- (a) a rectangularly shaped fabric envelope having a seat end portion and a back end portion spaced from said seat end portion;
- (b) a pad of foam material having the property of rigidity to a required degree removably received in said seat end portion;
- (c) a pillow comprising a pillowcase filled with a shredded foam material removably received in said back end portion;
- (d) a hinge between said end portions formed from the fabric of said envelope;
- (e) said envelope having a centrally located longitudinal slot extending into both of said end portions; and
- (f) a zipper attached to said envelope in said slot and operable to open and close said slot.

4,194,255
FOAM SPRING

Willy Poppe, Heimolenstraat 147, 2700 Sint-Niklaas, Belgium
Filed Oct. 6, 1978, Ser. No. 949,063
Int. Cl.^{2} A47C *27/08*
U.S. Cl. 5—481 **14 Claims**



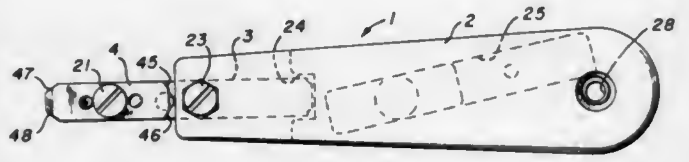
1. Elastic spring element, comprising a tubular body of synthetic foam material or the like, the wall of the body having a plurality of hollows arranged in staggered symmetry through its tubular wall, the cross-sectional width of which varies from practically zero at the inner surface of the body to a maximum value at the outer surface, no load being applied.

4,194,256
WIRE INSTALLING TOOL

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.
Filed Mar. 6, 1978, Ser. No. 883,887
Int. Cl.^{2} H01R *43/04*
U.S. Cl. 7—107 **7 Claims**

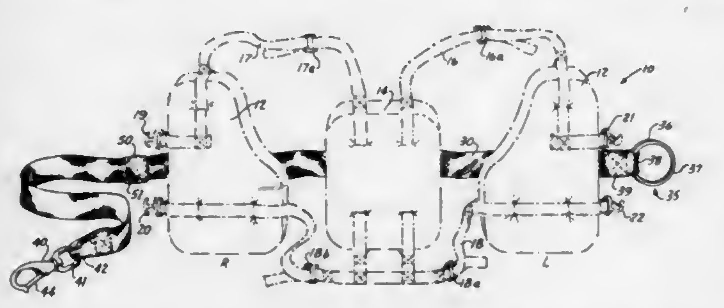
1. In a wire installing tool of the type having a handle, a stem having first and second reversible ends, said stem being revers-

ibly mounted on and extending from the handle, and blade means mounted on the stem, the improvement comprising:
- a first recess on said first end of said stem;
- a second recess on said second end of said stem;
- the depth of one of said recesses being greater than the other;
- mounting means on the first and second ends of said stem for receiving said blade means;
- said blade means being shorter than said stem means and being reversibly mounted on the end of said stem extending from the handle, said blade means when mounted on said first end of said stem cooperating with said first end to form a first cavity of first predetermined depth for installing wire on an electrical connector of first thickness and when mounted on said second end of said stem cooperating with said second end to form a second cavity of second predetermined depth for installing wire on an electrical connector of second thickness; and
- said blade means having a first end with a cutting edge for shearing wire upon mounting on an electrical connector, and said blade means having a second blunt end for mounting wire on an electrical connector without shearing.



4,194,257
LIFE VEST SAFETY HARNESS

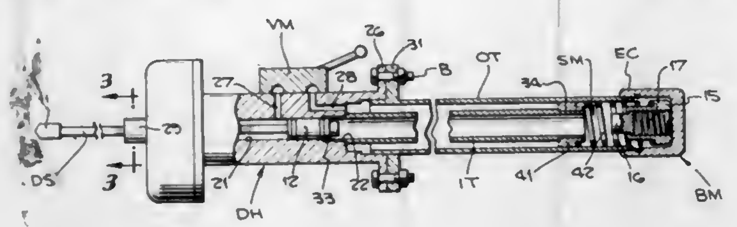
Kenneth R. Martin, Morgan City, La., and Clifford F. Drown, Rte. 1 P.O. Box 670, Morgan City, La. 70380, assignors to Clifford F. Drown, Morgan City, La.
Filed Jan. 30, 1978, Ser. No. 873,485
Int. Cl.² B63C *9/08*
U.S. Cl. 9—342 **10 Claims**



1. A safety fall prevention harness for use with a life vest, comprising:
- a. an elongated flexible strap member;
- b. means for securing said strap member to a conventional life vest, with said strap encircling and grasping the life vest and the human wearer;
- c. buckle means at one end portion of said flexible strap member, said buckle means providing a slideable connection forming an adjustable loop with said strap about the life vest and the torso of the wearer; said strap contacting the outer surface portion of the life vest during operation; and
- d. affixing means at the opposite end portion of said strap from said buckle means for affixing the end portion of said strap adjacent said affixing means to a desired point of security, said buckle means sliding to constrict said adjustable loop about the life vest when tensile force is applied to said affixing means as when the human wearer inadvertently falls.

4,194,258
MACHINE FOR REAMING TUBES OF DIFFERENT LENGTHS

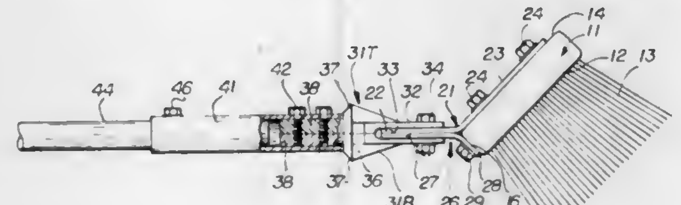
Lester L. Dillinger, 1569 W. 17th St., Long Beach, Calif. 90813
Filed Mar. 15, 1979, Ser. No. 21,108
Int. Cl.² B08B *9/02*
U.S. Cl. 15—104.1 R **6 Claims**



1. In a machine for reaming heat exchanger tubes, of the type including a drive shaft having a cutterhead on its forward end and a drive piston on its rearward end, means providing a cylindrical passageway for housing the drive piston and the rearward part of the shaft, and fluid drive means for applying fluid pressure alternately to the forward and rearward ends of the piston so as to drive the shaft in a longitudinal reciprocating movement, an improved construction for adapting the machine to heat exchangers of different lengths, comprising:
- a drive head which incorporates the forward end of said passageway;
- a pair of elongated concentric tubes;
- means removably securing the forward ends of said tubes to the rearward end of said drive head so that the inner one of said tubes then provides the remainder of the cylindrical passageway;
- means enclosing the rearward ends of said tubes but providing a fluid passageway therebetween; and
- the drive shaft and said tubes being removable from said drive head for purpose of replacing them with like members having a length corresponding to the length of a particular heat exchanger whose tubes are to be reamed.

4,194,259
ATTACHMENT MEANS FOR INDUSTRIAL PUSH BROOM HANDLES

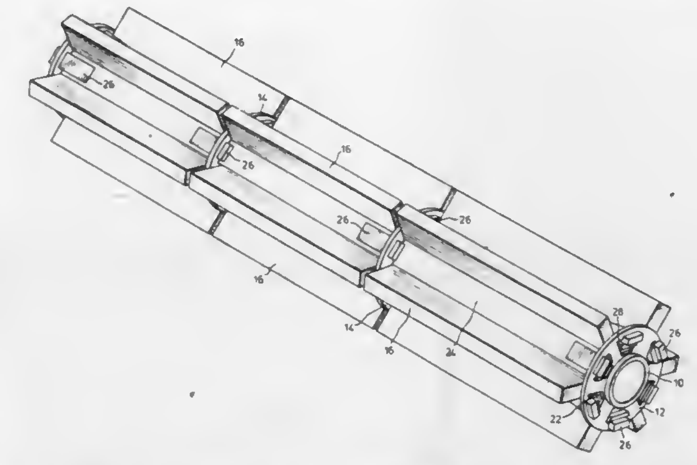
John F. Bauman, 432 Redwood Ave., Redwood City, Calif. 94061
Filed Aug. 28, 1978, Ser. No. 937,048
Int. Cl.² B25G *3/24*
U.S. Cl. 15—146 **5 Claims**



1. Attachment means to attach a handle to the back of a conventional push broom comprising a first member having a first flange fixed to the top face of said back, a second flange fixed to the back edge of said back and at least one upward-rearward extending broad, flat third flange, a clamp having first and second parts each being integral and rigid and having a plate and a proximal end, said third flange being rigidly clamped between said plates, and socket means secured to said proximal ends to receive an end of said handle.

4,194,260
ROTARY CLEANING DEVICE

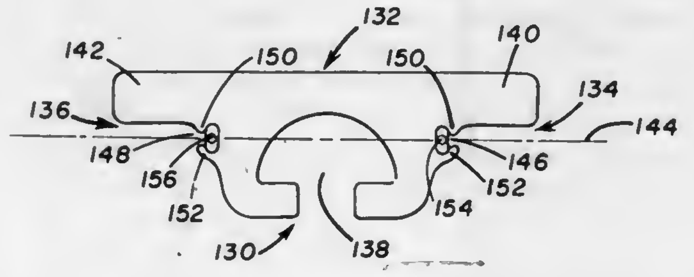
Harry L. Culp, R.R. No. 1, Vineland, Ontario, Canada (L0R 2C0)
Filed Mar. 26, 1979, Ser. No. 24,124
Int. Cl.² B05C *1/00*
U.S. Cl. 15—230.14 **6 Claims**



1. A rotary cleaning device comprising:
- (a) a central longitudinal cylindrical mandrel adapted for mounting the device to rotate about the longitudinal axis of the mandrel;
- (b) at least two spaced radial members mounted on the mandrel and extending radially therefrom and having retainer-receiving openings therein;
- (c) a plurality of radially outwardly extending cleaning members disposed around the circumference of the mandrel and extending between the said two radial members;
- (d) each cleaning member having along its length on opposite sides thereof circumferentially extending portions providing respective circumferentially extending shoulders spaced from the mandrel surface;
- (e) two retainer members, each disposed between each two immediately adjacent cleaning members with its ends engaged in the said retainer-receiving openings of the two spaced radial members, and engaging the respective cleaning member shoulder, and
- (f) a pair of axially-movable wedge members each engageable in a respective one of the said retainer-receiving openings to hold the retainer member in the opening and to urge the retainer member into retaining engagement with the engaged cleaning member shoulder.

4,194,261
HEATED WIPER ARRANGEMENT

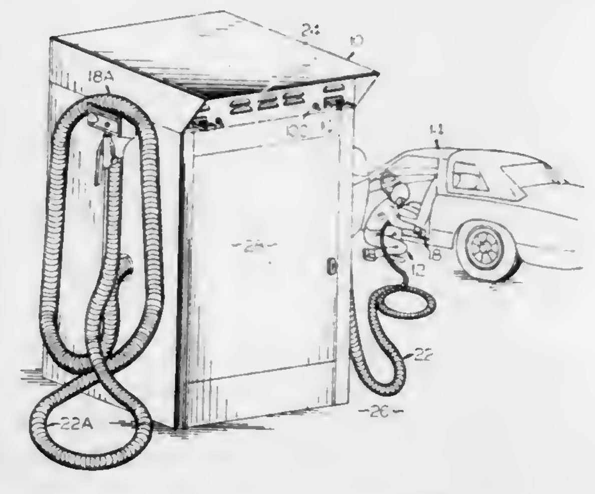
Truman D. Parkinson, Chardon, Ohio, assignor to Tutco, Inc., Cookeville, Tenn.
Filed May 1, 1978, Ser. No. 901,532
Int. Cl.² B60S *1/04*
U.S. Cl. 15—250.07 **11 Claims**



1. A heated wiper assembly for windshields and like surfaces comprising: an elongated wiper blade backing member constructed from a material designed to permit said member to flex over at least a portion of its longitudinal extent to conform to the contour of a surface to be wiped, said backing member having inner, outer and opposed side face areas with said inner face area having a wiper blade mounting groove extending longitudinally therealong and said backing member further including means for receiving an elongated heating element in operative communication therewith at least substantially over the longitudinal length thereof; an electrical heating element disposed in said receiving means; and means for preventing said heating element from being subjected to bending stresses imparted to said backing member during a wiping operation, comprising at least one inwardly extending open groove in said receiving means for receiving said heating element, said at least one groove comprising a wall area substantially located in the neutral zone of said backing member and said heating element extending along said wall area.

4,194,262
VACUUM EXTRACTION CLEANING MACHINE

Bill G. Finley, Bradford, and Terry L. Finley, Jonesboro, both of Ark., assignors to Rug Specialist Inc., Jonesboro, Ark.
Filed Sep. 29, 1978, Ser. No. 947,243
Int. Cl.² A47L *5/38*
U.S. Cl. 15—314 **5 Claims**



1. A vacuum extraction cleaning machine for cleaning upholstery, carpet and the like, said machine comprising:
- cleaning tool means for spraying cleaning solution on an area to be cleaned and for vacuum extracting used cleaning solution and dirt thereby cleaning said area;
- a pressurized source of cleaning solution, said source comprising:
  - a tank for containing concentrated chemical cleaner;
  - injector valve means adapted to be coupled to an external pressurized fresh water source for mixing concentrated cleaning chemical with water thereby outputting said cleaning solution, said injector valve means coupled to said chemical cleaner tank thereby siphoning and diluting chemical cleaner in response to fresh water flow; and
  - solenoid valve means for admitting fresh water into said injector valve means;
- flow path means extending between said cleaning solution source and said cleaning tool for delivering cleaning solution to said tool;
- means for generating vacuum during operation of said machine said vacuum generating means comprising an electrically driven motor;
- vacuum tank means coupled to said vacuum generating means for temporarily storing used cleaning solution extracted be said tool;
- hose means extending between said tool and said vacuum tank for supplying vacuum to said tool;
- timer means for electrically activating said vacuum generating means and said solenoid valve means for a predetermined time; and
- means for automatically draining said vacuum tank, said draining means comprising:
  - an output drain hole defined in said vacuum tank,
  - said hole comprising a rigid periphery; and
  - flapper door means flexibly suspended from said vacuum

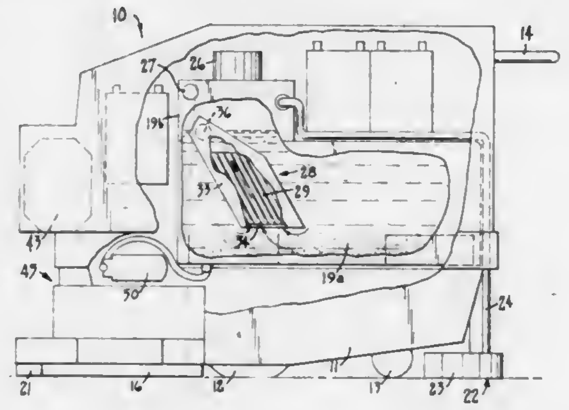
tank and adapted to sealingly contact said periphery for plugging said drain hole in response to vacuum existing inside said vacuum tank.

4,194,263

SCRUBBING MACHINE WITH WATER REGENERATION

Ferdinand J. Herpers, Minnetonka; Harley E. Kroll, Chaska; Alfred D. Carlson, Minneapolis, and Paul D. Dodge, Apple Valley, all of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Jun. 19, 1978, Ser. No. 916,929
Int. Cl.² A47L *11/30*
U.S. Cl. 15—353 **20 Claims**



1. A scrubbing device including a body portion suitable for movement along a surface to be scrubbed;

a pair of tank chambers and separator means communicating with each of said chambers, said separator means being capable of separating a dirty scrubbing solution into a clean solution portion and a solid matter portion, said separator means comprising a plurality of laminar flow zones, and said separator means conveying said clean portion into one of said chambers and said solid matter portion into the other of said chambers, said separator means including means for applying a back pressure to said laminar flow zones thereby minimizing short circuiting and non-uniform flow through said laminar flow zones;

applicator means communicating with said one tank chamber and adapted for applying scrubbing solution to a surface to be scrubbed;

means for metering the amount of scrubbing solution applied to said surface;

brush means for agitating said solution on said surface, and

pick up means for lifting said scrubbing solution from said surface and depositing said solution in said other tank chamber.

4,194,264

DOOR CHECK DEVICE

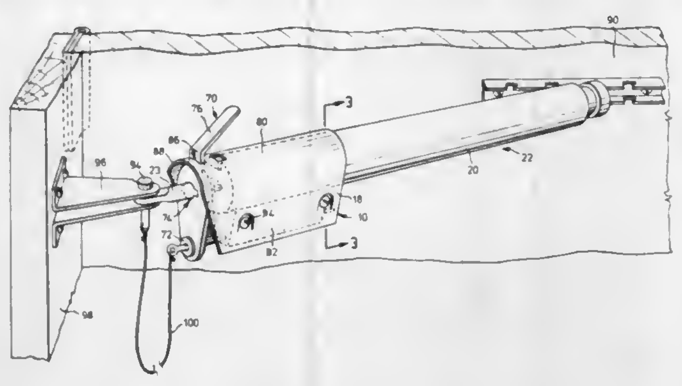
Gunter Stoffregen, P.O. Box 488, Coldwater, Ontario, Canada (L0K 1E0)

Filed Jul. 26, 1978, Ser. No. 928,184
Int. Cl.² E05F *3/10, 3/22*
U.S. Cl. 16—52 **12 Claims**

1. A latching device, for attachment to a door check unit having a cylinder and a piston with a piston rod, and serving releasably to secure a door in an open position, comprising:

a lever transversely disposable on the piston rod and freely slidable therealong, the lever being tiltable in the plane of the piston rod in one direction for releasable locking engagement therewith; and

cam and follower means engaging the lever and actuable from pre-set position to tilt the lever into locking engagement with the pistion rod when the door is opened beyond a predetermined limit and then released, the cam and follower means being returnable to said pre-set position on release of the lever from locking engagement with the piston rod.

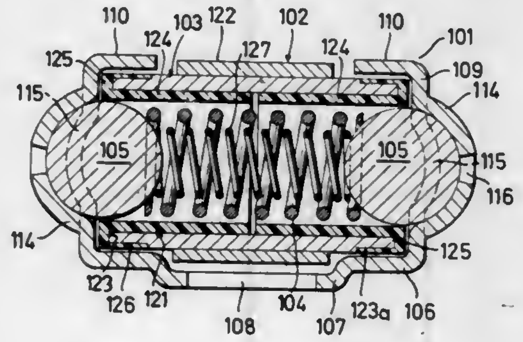


4,194,265

DOOR HOLDER

Waldemar Zimmermann, Velbert, Fed. Rep. of Germany, assignor to Friedr. Fingscheidt GmbH, Velbert, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 133
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1978, 2800256
Int. Cl.² E05F *5/02*
U.S. Cl. 16—82 **23 Claims**



1. A door holder, particularly for a door of a vehicle, comprising an elongated housing having at least one first fixing member located on said housing in correspondence with a desired open position of the door; guiding means movable along said housing in response to movement of the door between its closed and at least one open position thereof, said guiding means including an elongated sleeve movable in said housing lengthwise thereof in response to movement of the door, at least one second fixing member movable together with said sleeve along said housing in response to movement of the door into said one open position, said second fixing member being movable between a first position, in which said second fixing member is disengaged from said first fixing member and a second position in which said second fixing member engages said first fixing member to thereby arrest the door in said one open position thereof; means for preventing direct contact between said second fixing member and said sleeve during movement of said second member between said first and second positions; and resilient means for normally urging said second fixing member from said first position into said second position.

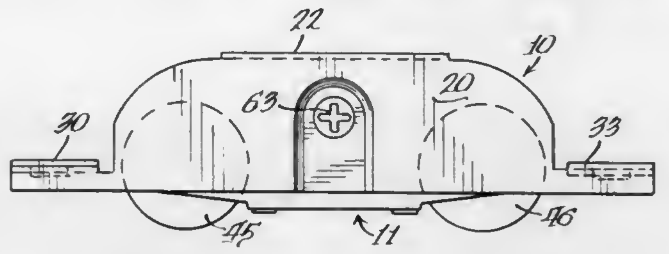
4,194,266

ADJUSTABLE ROLLER MECHANISM

Jerome W. Natzel, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Filed Jun. 29, 1978, Ser. No. 920,148
Int. Cl.² E05D *17/00*
U.S. Cl. 16—99 **12 Claims**

1. An adjustable roller mechanism for a sliding closure comprising, a housing, a shaft rotatably mounted in said housing, roller bracket means having roller means associated with said housing and movable transversely to the axis of rotation of said shaft, a cam rotatably mounted on said shaft and having a smooth, continuous cam surface engageable with said roller bracket means whereby said cam in different rotative positons causes different positions of extension of said roller bracket means relative to said housing, and gear reduction drive means operable for rotating said cam in response to rotation of said shaft.

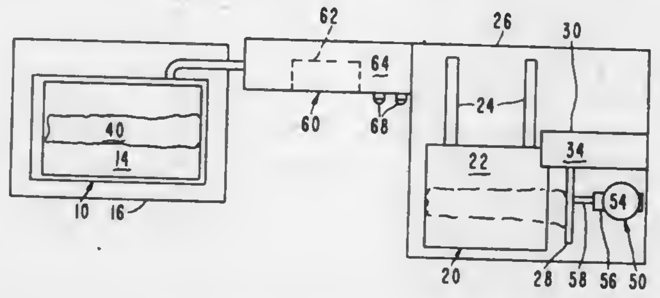


4,194,267

HANDLING PORK LOINS

Walter W. Johnson, Downers Grove; Harry F. Bernholdt, Lombard; Robert E. Murphy, Downers Grove, and John G. Killebrew, Hoffman Estates, all of Ill., assignors to Swift & Company, Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,091
Int. Cl.² A22C *17/00;* B26D *5/20*
U.S. Cl. 17—52 **9 Claims**



1. An improved method of trimming meat items of variable non-uniform weight and size to an appropriate accurate weight selected from a plurality of acceptable weights, said method comprising:

establishing a series of at least two contiguous weight ranges from the available spread of individual weights of said meat items wherein for each said range the increments of weight above a base weight for each range tend to vary linearly with increments of length measured from one end of said meat items;

determining the linear relationship between increments of weight and increments of length measured from said one end of said meat items for each said range;

thereafter measuring the weight of each successive meat item;

generating a first signal for each successive meat item, said first signal representing the amount of weight of said item;

assigning each successive meat item to an appropriate weight range in accordance with said first signal;

converting each said first signal to a second signal representing a number of increments of length of said meat item measured from said one end thereof that will include the excess weight of said item above a base weight in said appropriate weight range;

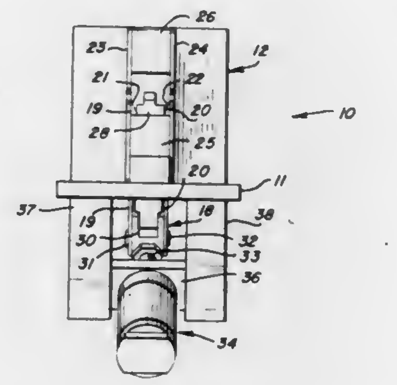
and severing a portion from each respective meat item measured by length from said one end, said portion being of a length corresponding to the number of increments represented by said second signal for each respective meat item.

4,194,268

APPARATUS AND METHOD FOR SEPARATION OF SAUSAGE CHUBS

Donald A. Deerwester, Lowell, Ind., assignor to George Pappageorge, Chicago, Ill., a part interest

Filed Sep. 28, 1978, Ser. No. 946,817
Int. Cl.² A22C *11/00*
U.S. Cl. 17—52 **17 Claims**



1. Apparatus for separation of sausage chubs which are interconnected by thin connecting portions, comprising: guide means arranged for extending between facing end surfaces of a pair of adjacent chubs and for receiving the associated connecting portion, and blade means supported for movement within said guide means and movable in a cutting direction within said guide means to sever the said associated connecting portion.

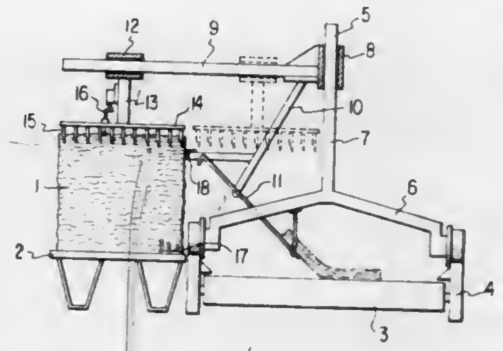
15. In a method of separating sausage chubs which are interconnected by thin connecting portions, the steps of providing blade means, providing guide means including spaced portions receiving the blade means therebetween, moving the guide means between a pair of chubs and into engagement with end surfaces thereof, and moving the blade means in a cutting direction within the guide means to sever the connecting portion.

4,194,269

APPARATUS FOR REMOVING COTTON OR THE LIKE FROM A BALE

Werner Reiche, and Hans Trützschler, both of Mönchen-Gladbach, Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Feb. 1, 1978, Ser. No. 874,358
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704240
Int. Cl.² D01G *7/06*
U.S. Cl. 19—81 **8 Claims**



1. In the combination of a bale opener having a conveyor belt and side walls extending along the belt in the conveying direction thereof, and apparatus for removing cotton or the like from a stationary bale, which apparatus includes a first frame, a plurality of tines for penetrating into the fiber material of the bale, the tines being secured to the frame in juxtaposition with one another, a carrier supporting the first frame for horizontal displacement, and a second frame supporting the carrier for movement in a vertical direction to push the tines into the

upper layer of a bale, the improvement wherein: said tines extend vertically and are rigidly fastened to said first frame; and said apparatus further comprises a carriage supporting said second frame and including means disposed to be movable along said side walls of said bale opener for permitting horizontal movement of said carriage parallel to the conveying direction of said belt.

4,194,270

APPARATUS FOR LAYING FIBER FLEECES OR THE LIKE ON A MOVING WITHDRAWAL BELT

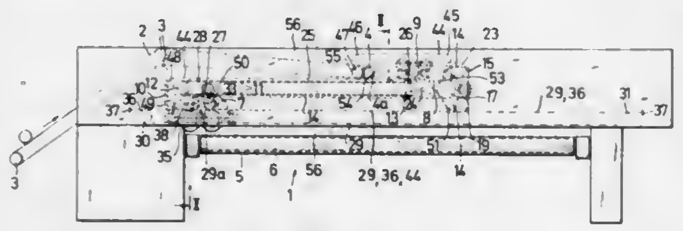
Eduard Hille, Hinderkingsweg 49, 4408 Dulmen i.W., Fed. Rep. of Germany

Continuation of Ser. No. 775,022, Mar. 7, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,012

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1976, 2609396; Dec. 3, 1976, 2654860

Int. Cl.² D04H *11/04*

U.S. Cl. 19—163 4 Claims



1. A device for uniformly laying fiber fleeces or the like delivered from a carding machine or the like onto a belt driven at a predetermined speed, said device comprising

(a) a feed belt extending between rollers;

(b) support means;

(c) a storage car, a layer car and a balance car;

(d) means mounting each of said cars on said support means for oscillating movement along respective substantially parallel paths, the path of said balance car being spaced from the end of said feed belt, the path of said storage car being below said feed belt and the path of said balance car, and the path of said layer car being below the path of said balance car;

(e) a first continuous conveyor belt extending below the end of said feed belt between spaced rollers on said storage car for receiving and conveying fleece in one direction along a path from said feed belt;

(f) a second continuous conveyor belt extending in said one direction from at least one roller on said balance car, about one end of the path of said first conveyor belt on a plurality of rollers on said storage car and then in the opposite direction to at least one roller on said layer car;

(g) means for driving said feed belt and said first and second conveyor belts, said drive means being adapted to drive said feed belt and said first conveyor belt at the same speed;

(h) flexible tension means connecting said balance car to said layer car, said flexible tension means passing over a roller on said storage car;

(i) reversible drive means for oscillating said layer car along its path;

(j) a fixed member extending along the path of said layer car and operatively connected through transmission means on said layer car to said at least one roller on said layer car, said transmission means being adapted to drive said at least one roller in a single direction as said layer car oscillates along its path; and

(k) a common continuous drive member extending from a roller driven by said first driven means, about rollers at opposite ends of said storage car and about a roller on said layer car and driven in one direction by said transmission means on said layer car;

(l) whereby said storage car with said first conveyor belt oscillates along its path at half the speed said layer car oscillates along its path, when the speed of said layer car is the same as the speed of said feed belt said balance car remains stationary and when the speed of said layer car differs from the speed of said feed belt said common continuous drive member changes the speed of said storage car to maintain it at half the speed of said layer car and said balance car moves along its path in a direction opposite to that of said layer layer to maintain said second conveyor belt under tension.

4,194,271

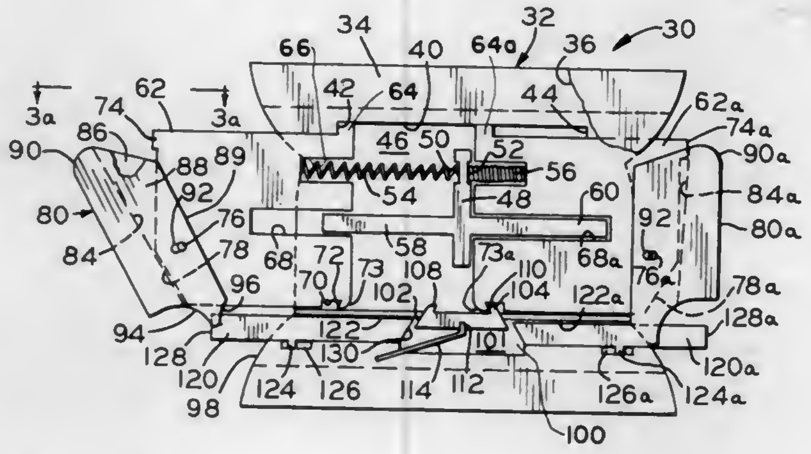
APPARATUS FOR RELEASABLY RETAINING ARTICLES IN POCKETS AND THE LIKE

Cecil E. Hamilton, 209 W. Lincoln Hwy., New Haven, Ind. 46774

Filed Apr. 28, 1978, Ser. No. 901,128

Int. Cl.² A44B *21/00*

U.S. Cl. 24—3 R 11 Claims



1. Apparatus for releasably retaining articles in pockets and the like comprising:

a housing;

a channel being formed in said housing in a direction substantially transverse to the direction of article withdrawal from the pocket;

at least one slide having a first end having a predetermined lateral segment and remaining lateral segments and being reciprocably movable in said channel between an inward position wherein said slide is positioned substantially within said channel and an extended position wherein said first end is extending substantially without said channel in pocket side engageable position;

first means for resiliently urging said slide to said extended position;

second means for releasably retaining said slide in said inward position upon a predetermined inward movement from said extended position;

third means for obtaining said releasable retention upon said predetermined inward movement when manual force is selectively applied to a predetermined lateral segment of said first end of said slide but for selectively preventing said predetermined inward movement when manual force is applied to any of the remaining lateral segments of said first end of said slide.

4,194,272

DEVICE FOR SEAMLESS ATTACHMENT OF BUTTONS

Felice Taffurelli, Milan, Italy, assignor to Sauro Albertini, Viganello, Switzerland

Filed Nov. 6, 1978, Ser. No. 957,990

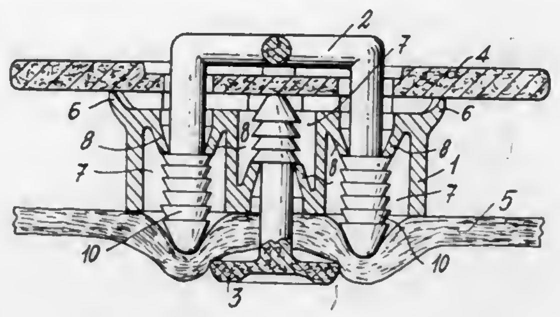
Claims priority, application Italy, Nov. 14, 1977, 2933 A/77

Int. Cl.² A44B *1/28, 1/18*

U.S. Cl. 24—90 R 7 Claims

1. A device for seamless attachment of buttons intended to be used on buttons having conventional holes, the device comprising a base element to be placed under the button, said base element including through holes designed to coincide with the button holes, and wherein retaining means are provided within said through holes for a fastening counter-element of the button, fastening means to be inserted in the button holes and designed for engagement with flats or projecting

ridges thereof in said retaining means provided in said through holes, and at least one fastening head for insertion through the fabric or cloth material, intended to pass through retaining means provided in a through hole of said base element.



4,194,273

ATTACHMENT FOR FISHING LINES AND TACKLE

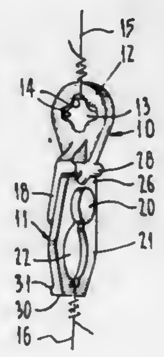
Ross S. Williams, 48 Karingal Dr., Frankston, Victoria, 3199, Australia

Filed Feb. 21, 1978, Ser. No. 879,495

Claims priority, application Australia, Feb. 21, 1977, PC9125

Int. Cl.² A01K *91/04*

U.S. Cl. 24—222 6 Claims



1. An attachment for fishing lines and tackle comprising moulded thermoplastic first and second members adapted for interlocking attachment to each other, said first member having ring means for the attachment of one or more fishing lines, said ring means having a central opening of irregular dimensions whereby a plurality of peripheral indentations are formed providing predetermined spaced line tying positions; said first member also having a stud with enlarged head for receiving and retaining said second member in locking engagement, said second member having a keyhole opening enabling said second member to pass over said stud and secure therebehind, said second member having an additional slot extending radially outwardly of the larger portion of said keyhole opening thereby providing for the attachment of a fishing line diametrically opposite the slot of said keyhole opening.

4,194,274

GARMENT GRIP CONSTRUCTION FOR HANGERS

Judd F. Garrison, Grand Rapids, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.

Filed Apr. 6, 1978, Ser. No. 893,962

Int. Cl.² A44B *21/00*

U.S. Cl. 24—248 R 10 Claims

1. An improved clamp usable for clamping garments in a generally vertical orientation, said clamp comprises:

a first clamp member having an inner surface;

a second clamp member having an inner surface;

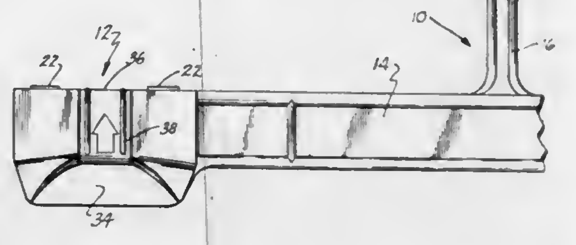
biasing means engaging said members for biasing said inner surfaces towards each other to exert a clamping force on an article placed between said members when said inner surfaces are in opposed, clamping relationship;

a first elongated ridge having a smoothly rounded crest and extending outwardly from said inner surface of said first clamping member;

a second elongated ridge extending from said inner surface of said first clamp member in spaced, generally parallel relationship with said first ridge to thereby define an elongated recess between said ridges, said second ridge having a smoothly curved surface having a radius of curvature greater than the radius of curvature of the crest of said first ridge;

a third ridge extending from said inner surface of said second clamp member, said third ridge extending at least partially into said elongated recess when said inner surfaces are in opposed clamping relationship whereby the clamping force generated by said biasing means has a vertical component along said second and third ridges and said article is clamped along line contact areas so that the clamping pressure on the article is increased; and

a plurality of elongated bar-like teeth, each having a length greater than its width and extending outwardly from said ridges and into an article clamped therebetween, said teeth being generally V-shaped in section and being tandemly arranged in a plurality of parallel rows wherein said inner surface of said second clamp member defines a concavity conforming to the surface of said second ridge and extending the width of said second clamp member.



4,194,275

SPREADER ROLL

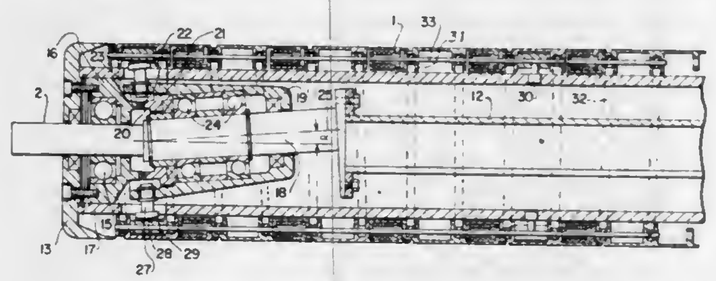
Fred H. Freuler, Bännlistrasse, Riedholz, Switzerland

Filed Sep. 1, 1977, Ser. No. 829,906

Claims priority, application Switzerland, Sep. 10, 1976, 11532/76

Int. Cl.² D06C *3/06*

U.S. Cl. 26—100 7 Claims



1. A spreader roll for processing machines of the type used in the paper, textile and plastics industries, comprising

a stationary shaft;

a carrier roll rotatably mounted on said shaft; a cylindrical roll body mounted about said shaft to rotate with said carrier roll, said roll body formed of a plurality of rigid cylinder-segments;

means for arranging said cylinder-segments about said carrier roll in parallel rows along the mantel lines of said roll body and for interconnecting said cylinder-segments to permit said cylinder-segments to move relative to each other and to have interdependent torque within said rows, said means comprising a plurality of separate, substantially rigid ring elements which encircle said carrier roll and hold said cylinder-segments in a radial direction, said ring elements being spaced from said carrier roll and freely movable relative thereto;

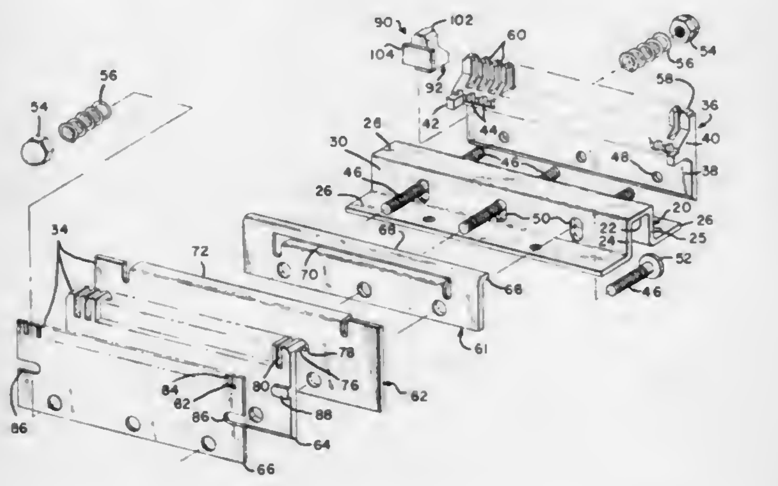
control means for moving said cylinder-segments mounted on said shaft to rotate with and inside of said roll body, the ends of said cylinder-segment rows being coupled to said control means;

whereby said cylinder-segments may be moved back-and-forth in a direction parallel to the longitudinal axis of said roll body upon rotation of said roll body, which movement being repeated with every revolution of said roll body.

4,194,276
CONNECTOR HOLDING FIXTURE

Daniel B. Grubb, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 14, 1978, Ser. No. 969,503
Int. Cl.^{2} H01R *43/00*
U.S. Cl. 29—56.6 **10 Claims**



1. A fixture for supporting an electrical connector in a predetermined position and for locating conductors in spaced relationship to the conductor-receiving portions of terminals in said connector preparatory to the insertion of said conductors into said conductor-receiving portions, said fixture comprising:

a channel-shaped frame member having a web and sidewalls, said web having an external surface which constitutes a connector supporting surface,

first and second connector clamping means, each of said clamping means being against the external surface of one of said sidewalls, said clamping means extending past said external surface of said web whereby a connector-receiving pocket is formed by said external surface of said web and said clamping means, each of said clamping means having free end portions which are spaced from said web, at least one of said clamping means being resiliently held against its respective sidewall and being movable away therefrom to permit placement of said connector in said pocket,

conductor locating means in said free end portions of said connector clamping means for locating said conductors in said free ends with portions of said conductors extending across said pocket,

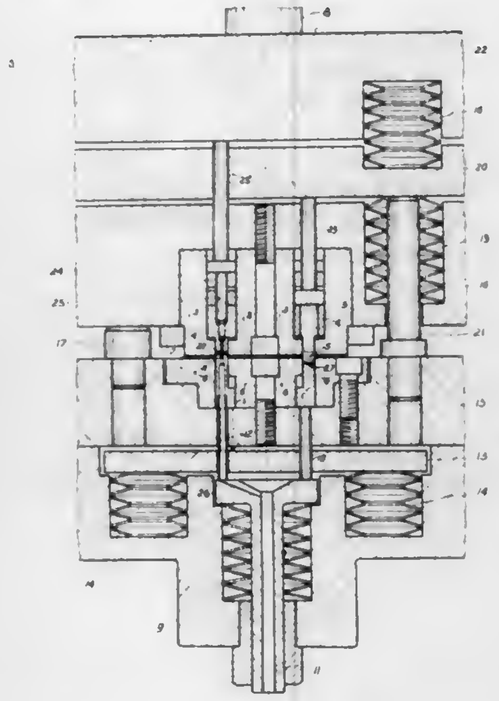
connector locating means for locating said connector on said connector supporting surface with said conductor-receiving portions of said terminals in alignment with conductors in said conductor locating means, said connector locating means comprising spaced-apart projections on one of said clamping means which are received in spaced-apart recesses in said connector, said projections being spaced-apart by distances which are the same as the spacing between said conductor-receiving portions of said terminals in said connector, whereby,

upon placement of said connector in said pocket and on said supporting surface, and placement of said conductors in said conductor locating means, said conductors can be moved laterally of their axes and into said conductor-receiving portions of said terminals.

4,194,277
METHOD AND DEVICE FOR STAMPING BALL RETAINERS

Efim Rubinshtein, and Abram Rubinshtein, both of 621 Avenue Z, Brooklyn, N.Y. 11223

Filed Nov. 13, 1978, Ser. No. 959,414
Int. Cl.^{2} B21D *53/12*
U.S. Cl. 29—148.4 C **13 Claims**

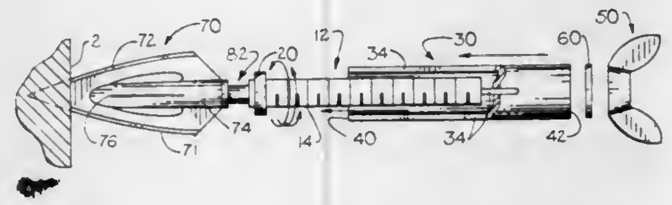


1. A method of stamping ball retainers from a metal band, comprising the steps of: pressing the metal band against a first punch to form rectangular platforms in the band, said first punch having rectangular lugs and spherical recesses; pressing a second punch against an opposite side surface of said band to the surface pressed against said first punch to form spherical seats on said band, said second punch having spherical lugs and rectangular recesses; calibrating said band by compressing said punches and said band together; and cutting out a ball retainer from the band.

4,194,278
BROADHEAD AND FIELD POINT EXTRACTOR TOOL

Fletcher T. Sanders, 2147 E. Southern, Phoenix, Ariz. 85040

Continuation-in-part of Ser. No. 563,791, Mar. 31, 1975, abandoned. This application Jul. 24, 1978, Ser. No. 927,652
Int. Cl.^{2} B23P *19/04*
U.S. Cl. 29—264 **1 Claim**



1. In combination with an existing arrowhead, said arrowhead including,

a body, and

blades attached to and outwardly projecting from said body, a device for extracting said arrowhead from an object in which said arrowhead is embedded and for minimizing the probability said arrowhead will be bent while being extracted, said device comprising,

(a) a rod detachably fixedly engaging said arrowhead such that the longitudinal axis of said arrowhead and of said rod are coaxial,

(b) an elongate sleeve having,

(i) a longitudinal axial bore sized to slidably receive said rod, and

(ii) longitudinal slots equally spaced circumferentially about said sleeve, extending from one end of said sleeve receiving said blades of said arrowhead, and

(c) means, engaging said rod, to simultaneously apply

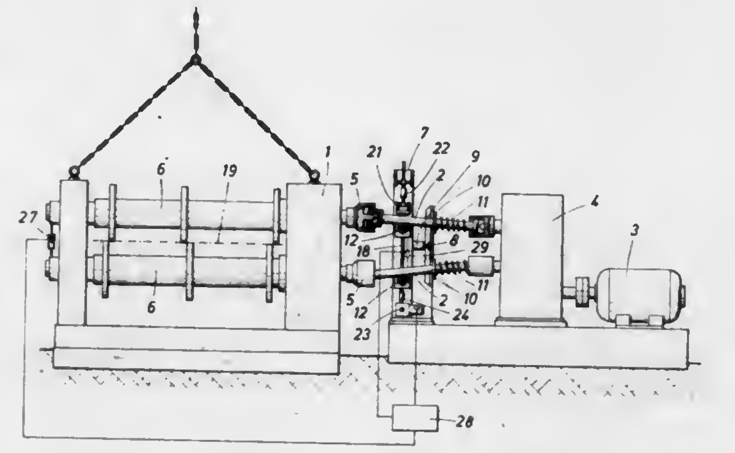
(i) a tensile force to said rod, and

(ii) a compressive force to said sleeve such that said arrowhead is drawn from and said sleeve is forced against said object.

4,194,279
APPARATUS FOR SUPPORTING TWO UNIVERSAL JOINT SHAFTS AND EQUIPMENT COMPRISING A STRIP-TREATING STAND ADAPTED TO BE DRIVEN BY SAID UNIVERSAL JOINT SHAFTS

Hubert Haslhofer, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Aug. 4, 1978, Ser. No. 931,396
Claims priority, application Austria, Sep. 27, 1977, 6881/77
Int. Cl.^{2} B25B *27/14*
U.S. Cl. 29—281.5 **14 Claims**



1. For use with two universal joint shafts arranged one over the other and adapted to be coupled to respective working shafts of a strip-treating stand and to drive said working shafts and to be shortened so as to be uncoupled from said working shafts,

apparatus for supporting said universal joint shafts when they are uncoupled from said working shafts, said apparatus comprising,

a support,

a carrier carried by said support and adjustable in height relative to said support,

two seating structures, which are carried by said carrier and adjustable in height relative thereto and have respective upwardly facing bearing surfaces engageable with respective ones of said universal joint shafts and adapted to support and clear the same, and

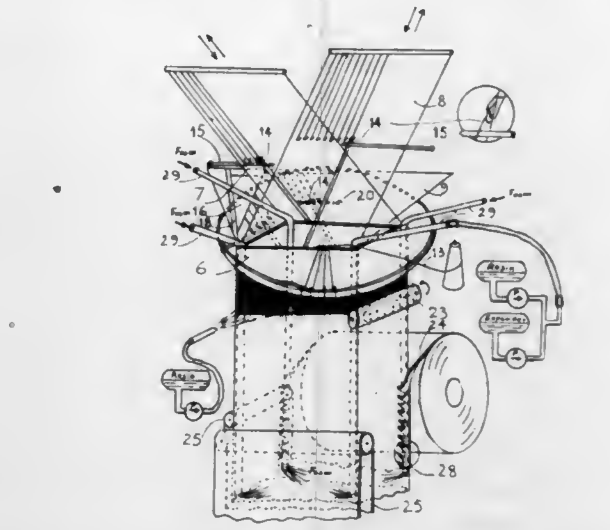
a seat-adjusting mechanism carried by said carrier and operatively connected to said seating structures and operable to adjust said bearing surfaces in height relative to said carrier only by equal distances in opposite directions.

4,194,280
PROCESS FOR THE MANUFACTURE OF RIGID AND IMPERVIOUS INSULATING PANELS

Michel Gondouin, 32 San Marino Dr., San Rafael, Calif. 94901

Filed Aug. 10, 1976, Ser. No. 713,231
Int. Cl.^{2} B23P *17/00;* **B29C** *17/14;* **B29D** *27/04*
U.S. Cl. 29—417 **16 Claims**

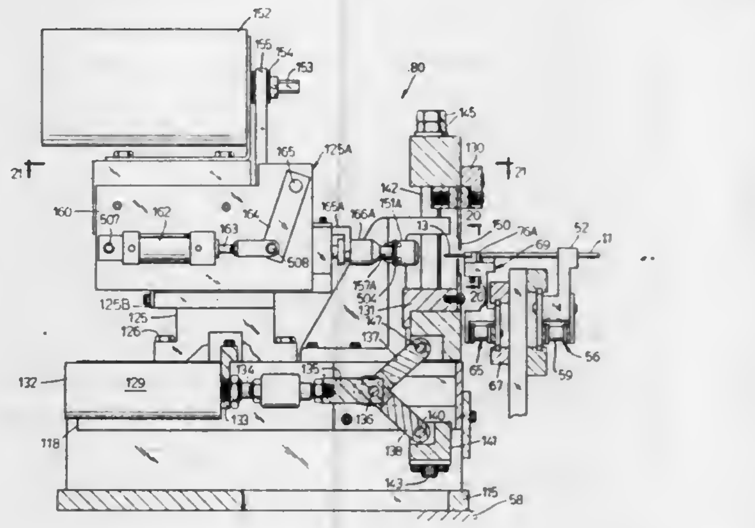
1. A process for making in a continuous operation an insulating fiberglass reinforced rigid foam panel of indefinite length and of parallelogram-shaped cross section, characterized by the following steps:1/ fabricating a tubular glass fabric envelope to which are attached glass reinforcing fibers oriented along three principal directions oblique with respect to the panel face, so that the resultant tension of said fibers is directed perpendicularly to the panel face, 2/ stretching said envelope and glass fiber over a holding frame, 3/ impregnating said glass fabric envelope with a thermosetting resin so as to make said envelope impervious to gas, 4/ folding of a metallic membrane so as to fasten its edges along the edges of said impervious envelope, 5/ filling said impervious envelope with a foaming gas saturated liquid resin so as to occupy the entire space separating said glass fibers, 6/ heat curing said expanded resin into a rigid foam, 7/ releasing said foam filled impervious envelope from the stretching forces applied by said holding frame so as to subject said rigid foam to compressive stresses applied primarily along the direction perpendicular to said panel face.



4,194,281
APPARATUS AND METHOD FOR STRIPPING WIRE LEADS

Ragnar Gudmestad, West Allis, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed Sep. 25, 1978, Ser. No. 945,563
Int. Cl.^{2} H02G *1/12;* **B21F** *7/00*
U.S. Cl. 29—867 **12 Claims**



7. A method of processing a wire comprising a stranded conductor covered with insulation comprising the steps of:

cutting into said insulation by means of a blade to provide a cut portion of insulation;

maintaining said blade adjacent said stranded conductor after cutting into said insulation;

rotating said cut portion of insulation relative to said stranded conductor therewithin to effect twisting of said stranded conductor;

and axially moving said cut portion of insulation relative to the twisted conductors to effect stripping while maintaining said wire axially stationary relative to said blade.

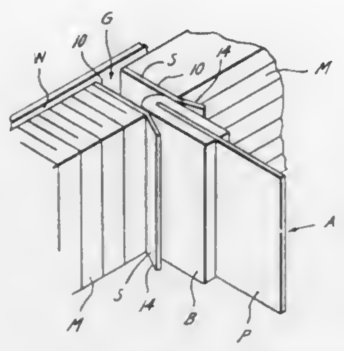
4,194,282
METHOD AND APPARATUS FOR FILLING SEAMS BETWEEN ADJACENT FIBER BLANKET INSULATION MODULES

Carlisle O. Byrd, Jr., Houston, Tex., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Apr. 28, 1978, Ser. No. 901,114

Int. Cl.^{2} B23P *11/02*

U.S. Cl. 29—451 **11 Claims**



1. Apparatus for inserting refractory fiber blanket material to fill a gap or seam between adjacent refractory fiber modules, comprising:
- (a) plural spacer plate members for insertion into a gap or seam between adjacent modules to permit insertion therein of the fiber material, wherein each of said plural spacer plate members comprises:
  - (i) a plate member having an inner portion extending inwardly a length substantially equal to the thickness of the modules;
  - (ii) said plate member having a width along at least said inner portion substantially equal to the width of the seam to be filled; and
  - (iii) said plate member further having an outer portion extending away from said gap or seam and said inner portion at an angle thereto to exert a compressive force on the fiber material as the material is forced inwardly by a pusher means; and
- (b) said pusher means for forcing the fiber material into said plural spacer plate members to fill the gap between adjacent modules.

7. A method of filling gaps or seams between adjacent refractory fiber modules with refractory fiber blanket material, utilizing the apparatus of claim 1 and comprising the steps of:
- (a) inserting said spacer plate members between modules adjacent the gaps to permit the fiber material to be inserted between the gap;
- (b) forcing the fiber material between the spacer plate members and into the gap; and
- (c) withdrawing the spacer plate members.

4,194,283
PROCESS FOR THE PRODUCTION OF A SINGLE TRANSISTOR MEMORY CELL

Kurt Hoffmann, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

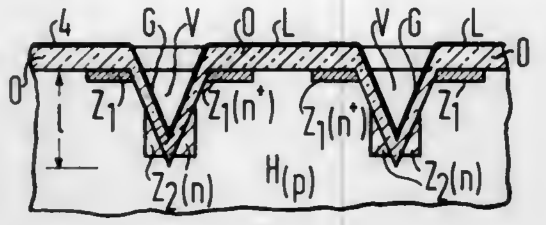
Filed Aug. 16, 1978, Ser. No. 934,263

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737073

Int. Cl.^{2} H01L *21/22*

U.S. Cl. 29—571 **13 Claims**

1. A method for producing a single transistor memory cell comprising the steps of:
- (a) providing a semiconductor body of first conductivity type having a major surface;
- (b) doping the body at a first area on the major surface to create a first zone extending from the major surface to a given depth and of second conductivity type opposite to the first conductivity type;
- (c) doping the body at a second area on the major surface and adjacent to the first to create a second zone extending from the major surface and of substantially lesser depth and of second conductivity type and a substantially higher conductivity than the first zone so that a pn junction at the second zone and the semiconductor body has a higher capacity than a pn junction at the first zone;



- (d) after doping at the first and second areas then producing a recess in the first zone from the major surface, said recess laterally extending at the major surface beyond the first zone to the second zone and becoming narrower below the major surface such that the first zone reaches a surface of the semiconductor body within the recess and at a level below where the second zone also reaches a surface of the recess; and
- (e) providing an insulated gate electrode in the recess.

4,194,284
METHOD OF MAKING INSULATED CONSTRUCTION ELEMENT

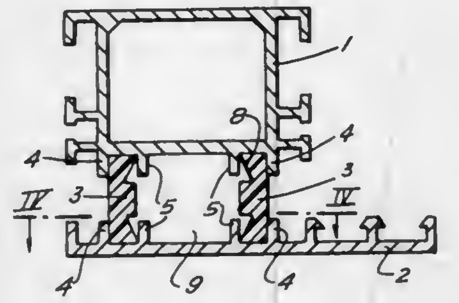
Manfred Diels; Karl W. Dienstuhl, both of Meinerzhagen; Tilo Jäger, and Eitel Höcker, both of Bielefeld, all of Fed. Rep. of Germany, assignors to Otto Fuchs KG, Meinerzhagen and Schüro Heinz Schürmann GmbH & Co., Bielefeld, both of, Fed. Rep. of Germany

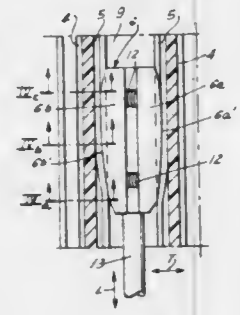
Division of Ser. No. 744,177, Nov. 22, 1976, Pat. No. 4,096,628. This application Jan. 24, 1978, Ser. No. 872,121

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1975, 2552700

Int. Cl.^{2} B21D *39/00;* **B23P** *11/00*

U.S. Cl. 29—509 **7 Claims**





1. A method of making a construction element, comprising the steps of sequentially positioning two elongated metallic profiles each formed with a pair of flanges forming a longitudinally extending groove parallel and opening toward each other; fitting an elongated bar of insulating material having a pair of longitudinally extending sides between said profiles with each of said sides received in a respective groove, and plastically and permanently deforming one of said flanges of each of said pairs into tight contact with said bar, said bar being formed at each of said sides with a recess opening laterally toward the respective one flange and each of said profiles being formed adjacent said one flange with a second flange, said permanent deformation being effected under displacement of the material of said one flanges into said recesses and by means of a tool having two faces and which is drawn longitudinally along said profiles with one face braced against said second flanges and the other face bearing on and deforming said one flanges.

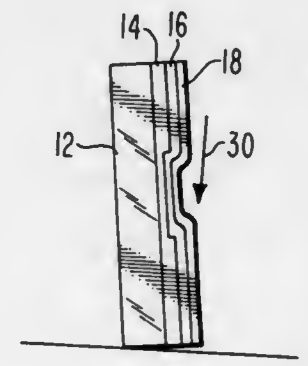
4,194,285
METHOD OF MAKING A FIELD EFFECT TRANSISTOR

Jitendra Goel, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 15, 1978, Ser. No. 915,653

Int. Cl.^{2} B01J *17/00*

U.S. Cl. 29—579 **7 Claims**



1. A method of making a field effect transistor comprising the steps of:
- (a) forming a recess in the surface of a body of semiconductor material,
- (b) depositing a layer of a metal on said surface of the body and the surface of said recess,
- (c) providing a layer of a photoresist over the metal layer,
- (d) subjecting the photoresist to light whose rays are at a small angle with respect to the surface of the body to so completely expose a narrow strip of the photoresist along an edge of said recess,
- (e) removing the completely exposed strip of the photoresist and the portion of the metal layer exposed thereunder,
- (f) forming a groove in the portion of the semiconductor body exposed by the removal of the portion of the metal layer, and
- (g) depositing a metal layer on the bottom of the groove.

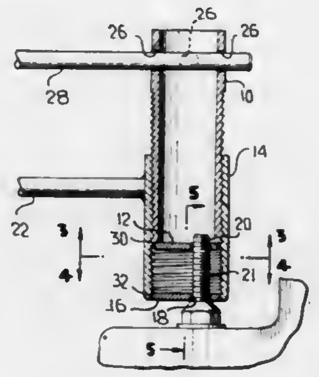
4,194,286
JOHNNY BOLT CUTTER

Paul Kearns, 12009 Judson Rd., Wheaton, Md. 20902

Filed Sep. 2, 1977, Ser. No. 830,137

Int. Cl.^{2} B26B *25/00*

U.S. Cl. 30—226 **2 Claims**



1. A cutting tool comprising an internally threaded pipe having its bottom end closed by a plate with an eccentrically located hole,

an externally threaded pipe having a closed bottom end formed by a plate with at least one eccentrically located hole,

said externally threaded pipe being threaded into said internally threaded pipe, and

handle means for forcibly turning said pipes relatively to each other when mounted over a bolt end passing through said holes to break or cut said bolt at the hole in said outer plate.

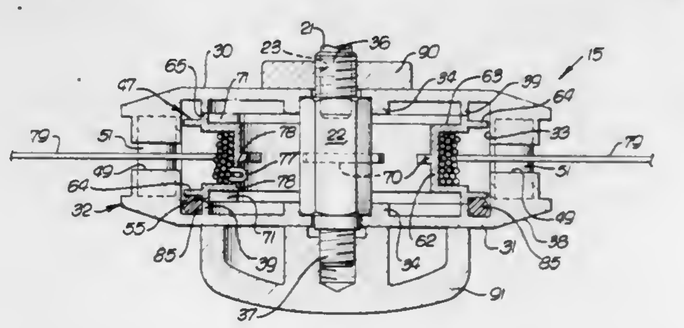
4,194,287
NYLON LINE VEGETATION CUTTER FEED

Vincent A. Palmieri, and John P. Palmieri, both of 3745 El Camino Dr., San Bernardino, Calif. 92410

Continuation-in-part of Ser. No. 925,045, Jul. 17, 1978. This application Mar. 1, 1979, Ser. No. 16,563

Int. Cl.^{2} A01G *3/06*

U.S. Cl. 30—276 **6 Claims**



1. In a flexible-line-whirling vegetation cutting hand tool, a rotary head for which is provided to be supported on and manipulated by a relatively long handle, the handle being equipped with power means for rapidly spinning said head on a vertical axis, the improvement comprising the following combination:
- a housing including a pair of complementary upper and lower housing portions united in an abutting relation in the radial vegetation cutting plane of the tool;
- matching opposed notches in meeting edges of said housing portions forming line emitting windows;
- matching, opposed, axially aligned roller capturing pairs of cups being formed in said housing portions circumferentially bordering said windows;
- means confined within said housing for delivering a supply of cutting line peripherally through said windows; and
- tubular rollers occupying said pairs of cups and captured thereby when said housing is assembled.

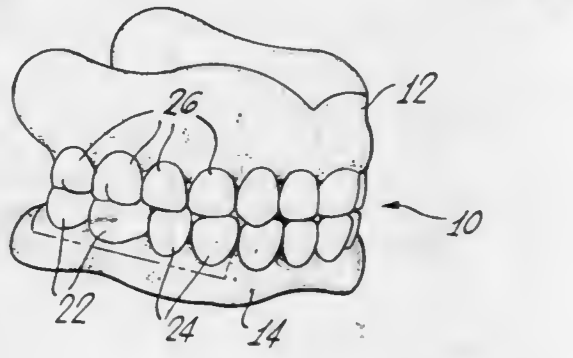
4,194,288
ARTIFICIAL TEETH THAT MINIMIZE STRESSES ON DENTURE SUPPORTING TISSUE

Martin A. Hass, 1105 El Medio Dr., Pacific Palisades, Calif. 90272, assignor to Martin A. Hass, Los Angeles, Calif.

Filed Feb. 6, 1978, Ser. No. 875,300

Int. Cl.^{2} A61C *13/00*

U.S. Cl. 433—197 **8 Claims**

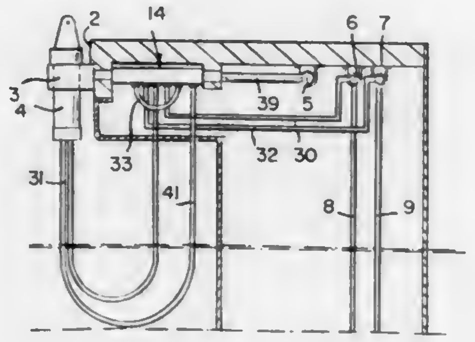


1. An artificial posterior tooth that minimizes side stresses comprising:

a substantially flat surface forming a major portion of the occlusal surface and lying within the plane of lateral tooth movement;
a channel for positioning bolus of food extending along the occlusal surface from one end of said tooth to the other, said channel dividing said flat surface into buccal and lingual portions; and
at least one spillway extending across at least one of said portions of said flat surface to said channel, thereby permitting the escape of fluids and comminuted material.

4,194,289
AIR AND WATER SUPPLY SYSTEM FOR DENTAL HANDPIECES

Vincenzo Neri, Corso Galileo Ferraris 104, Turin, Italy
Filed Sep. 20, 1978, Ser. No. 944,223
Claims priority, application Italy, Sep. 22, 1977, 69093 A/77
Int. Cl.² A61C *19/02*
U.S. Cl. 433—101 **6 Claims**



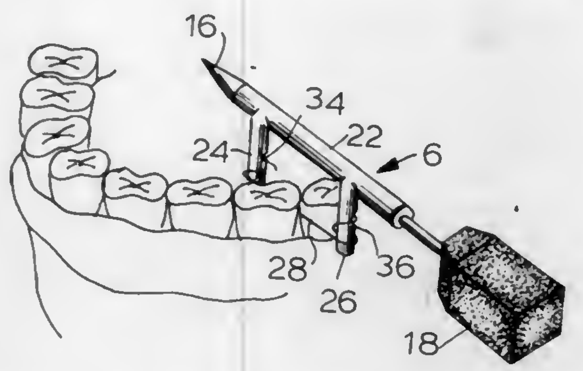
1. A system operable to control the supply of air under pressure and water to a dental handpiece of the air turbine-type held when not in use upon a support, said system comprising in combination:

(a) a first foot-actuated control valve connectable in a circuit between a handpiece and a source of air under pressure,
(b) a first intercepting valve downstream in said circuit with said first control valve and movable to open position to deliver air to drive said handpiece when said first foot-actuated valve is moved to open position to cause air to move said first intercepting valve to open position,
(c) a second intercepting valve in a circuit between a handpiece and a source of water,
(d) means connected to said first intercepting valve and adapted to be engaged by a handpiece when held in rest position within a support to prevent moving said second intercepting valve to open position but rendering said valve movable to open position upon removing said handpiece from said support, and
(e) a second foot-actuated control valve connectable to a source of air under pressure and in said circuit of said second intercepting valve, whereby when said second control valve is opened air is delivered to said second intercepting valve to open the same for delivery of water to said handpiece,
(f) said movement of said second foot-actuated control valve being possible only when said first intercepting valve has been moved to open position to effect operation of said handpiece.

4,194,290
BUCCAL HYGIENIC INSTRUMENT

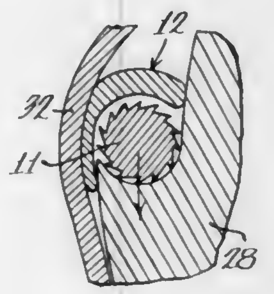
Orlando D. Vallhonrat, 8461 SW. 84 Ter., Miami, Fla. 33143
Filed Mar. 20, 1978, Ser. No. 890,636
Int. Cl.² A61C *15/00*
U.S. Cl. 433—141 **9 Claims**

1. A disposable buccal hygienic instrument comprising an elongate member having a pointed first end comprising a toothpick and an opposite second end, said elongate member including an intermediate zone and a laterally extending peg on the intermediate zone spaced from and adjacent the pointed end and another laterally extending peg on the intermediate zone adjacent the second end and each of said pegs being spanned by a strand of dental floss and means securing the ends of the dental floss to the pegs in spanning relation thereof; and a cleansing means fixed to the second end completely covering the same and said cleansing means including cleansing material.



4,194,291
DENTAL TOOL

Henry O. Gold, 1250 Willow Rd., Winnetka, Ill. 60093
Filed May 1, 1978, Ser. No. 901,687
Int. Cl.² A61C *3/02*
U.S. Cl. 433—75 **2 Claims**

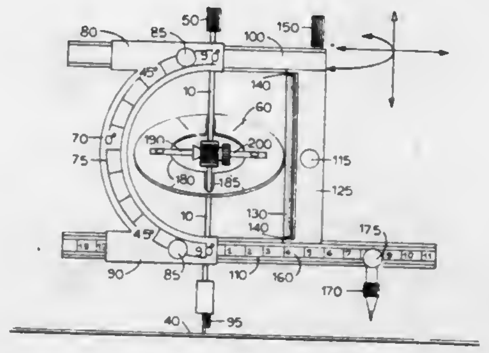


1. A dental instrument for preparing the gingival or cervical area of a tooth for receiving a tooth coverage, or crown, consisting of a rotary driven cutting instrument, a guide disposed adjacent to said cutting instrument and freely rotatable relative thereto, said guide surrounding a portion of said cutting instrument and defining at its lower end a shield which prevents the cutting instrument from contacting that which is protected by said shield, and a guide that limits the horizontal depth of cut and the vertical depth of cut into the tooth providing a uniformly prepared surface, the guide further defining indicia means at its lower end to clearly indicate the depth of penetration of said guide when the tool is used to prepare a tooth below the gum crest, said guide also defining a blunt end portion adapted to contact the bottom of the crevice and rest positively against the tooth surface beyond the rotary cutting instrument in which the guide is located to define the limit of penetration of said guide, both in an axial and horizontal direction.

4,194,292
DRAWING INSTRUMENT

Tadeusz P. Wojcik, 4 Ncilwrith Crescent, Guelph, Ontario, Canada (NIE 6J2)
Filed Dec. 9, 1977, Ser. No. 859,170
Int. Cl.² B43I *11/04*
U.S. Cl. 33—30 C **7 Claims**

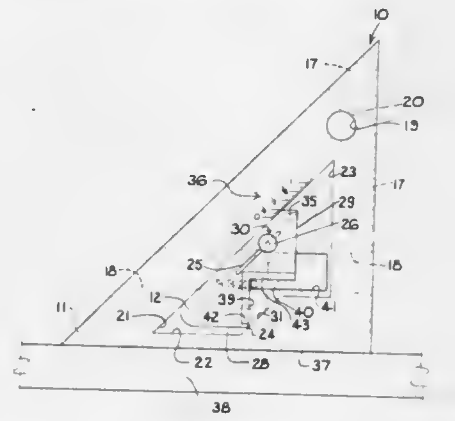
1. A drawing instrument comprising:
a vertical post;
a circular annular disc having an enlarged central opening, said post passing through the center of the disc;
manually adjustable means removably securing said disc to said post, said adjustable means permitting the angle between the plane of the disc and the axis of the post to be set at any valve between X and −X, where X as expressed in degrees can range between 0 and somewhat less than 180;
a first elongated vertical member having a central section in the form of a semicircle with horizontally elongated upper and lower hollow tracks at corresponding upper and lower ends of the section extending in the same direction and coplanar with the section, said post passing through said ends and tracks with clearance whereby said member can be moved vertically up and down with respect to the post and can also be rotated about the post;



a second elongated vertical member having a straight vertical central section provided with a guide mechanism separated therefrom and engagable with and disengagable from the outer periphery of the disc, said member having parallel horizontal upper and lower rails at corresponding upper and lower ends of the straight section, each of the rails slidably engaging a corresponding one of the tracks, said rails being horizontally movable in said tracks;
and marker means slidably engaging the lower rail and securable thereto.

4,194,293
LETTERING TRIANGLE

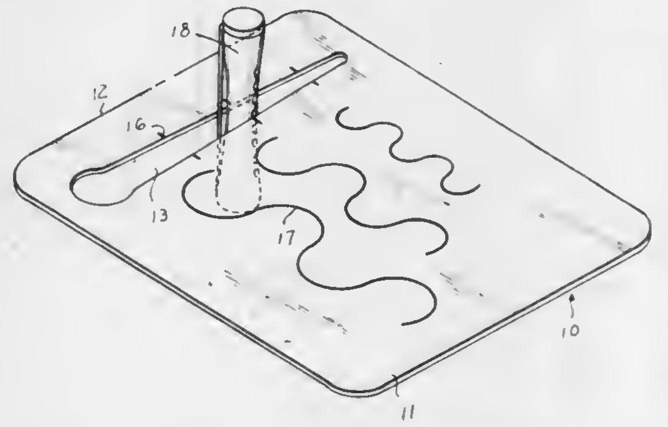
Stanley S. Coe, 3515 Glenwood Ave., Raleigh, N.C. 27612
Filed Apr. 9, 1979, Ser. No. 28,207
Int. Cl.² B43L *13/02*
U.S. Cl. 33—448 **8 Claims**



1. An adjustable lettering device, comprising:
(a) a thin flat plate member having a straight base side for slidably engaging a straightedge, or the like, during lettering and above said base side and inwardly of the boundaries of said plate member above said base side a defined flat slide surface formed on the top surface of said plate member, said slide surface having an opening for lettering located within the boundaries thereof and bounded by a lower lettering guide edge parallel to said base side;
(b) a thin flat guide member adapted to reside within the boundaries of said slide surface and slide thereon along a defined path above said opening, said guide member being formed in a lower right corner portion thereof with an open right angle notch formed by intersecting horizontal and vertical lettering guide edges parallel and perpendicular respectively to said base edge and adapted for adjustable positioning over said opening as said guide member is slid along said path;
(c) adjustable means for securing said guide member on said plate member in a selected position with respect to said opening whereby the vertical spacing between said plate member opening lower lettering guide edge and said guide member horizontal lettering guide edge and the length of said guide member vertical lettering guide edge can be regulated according to the size lettering desired; and
(d) mating measuring indicia formed on said plate and guide members enabling said guide member to be indexed on said plate member by matching respective indicia on said members according to the size lettering desired.

4,194,294
DEVICE IN PERMANENT WAVING

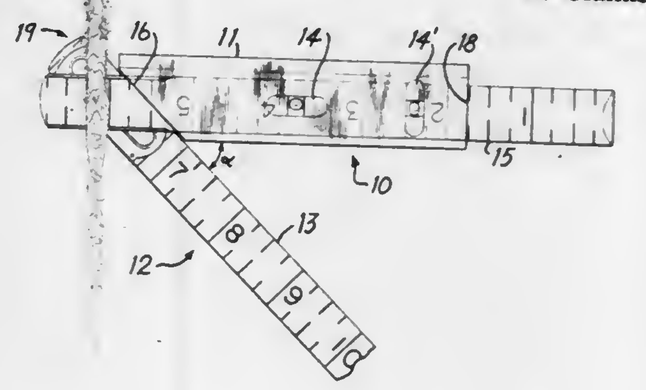
Gustave J. Klein, Great Neck, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Dec. 11, 1978, Ser. No. 967,953
Int. Cl.² G01B *5/08, 5/00*
U.S. Cl. 33—178 B **3 Claims**



1. A device for selecting a curling rod of a specified diameter to provide a curl of selected size and configuration in permanent waving with a reducing medium of known compostion, comprising a card which is provided with a horizontal tapered slot which has an enlargement beyond its widest end, a plurality of pairs of aligned vertical guide lines both above and below the slot, and in substantial alignment with each pair of guide lines a depiction of a curl showing its approximate size and configuration as obtained by the use of the curling rod of the measured diameter.

4,194,295
LEVEL AND ANGLE ATTACHMENT FOR A CARPENTER'S FOLDING RULER

Ernest G. Simuro, 624 Fenimore Rd., Mamaroneck, N.Y. 10543; Abraham A. Turk, and Nathan M. Turk, both of Rocking Horse Ranch, Highland, N.Y. 12528
Filed Aug. 17, 1978, Ser. No. 934,415
Int. Cl.² G01B *3/06*
U.S. Cl. 33—458 **10 Claims**



1. An attachment for a folding carpenter's ruler comprising:

an elongated member formed of first and second elongated bodies having a slot running along its longitudinal extension, said member having a generally rectangular cross-sectional shape with part of one side open to the slot so as to form two opposed longitudinal ridges, one each of the two opposed ridges being located on a separate one of the first and second bodies, said slot being dimensioned such that the ruler, at least between its folding joints, can be received in it, the ends of said member where the ruler extends being flat, one of said ends being at a 90° angle with the axis of said slot and the other being at some other angle less than 90°, said ends being designed such that a folding ruler inserted in said slot can be folded against one of the ends of the member so as to form an angle related to the angle between that end and the axis of the slot;

spring means for allowing the distance between the longitudinal ridges to be increased to such an extent that the ruler can be seated in the slot via the open side of the member, said spring means being at least one spring for holding the first and second bodies together so that the open side of the slot can be increased by exerting a force to expand said spring; and

at least one level located on said member at a predetermined angle with respect to the axis of said slot, whereby the ruler can be aligned with respect to a direction determined by the at least one level.

2. An attachment for a folding carpenter's ruler comprising:

an elongated member having a slot running along its longitudinal extension, said member having a generally rectangular cross-sectional shape with part of one side open to the slot so as to form at least one longitudinal ridge along the slot opening which faces another side wall of the slot, said slot being dimensioned such that the ruler, at least between its folding joints, can be received in it, the ends of said member where the ruler extends being flat, one of said ends being at a 90° angle with the axis of said slot and the other being at some other angle less than 90°, said ends being designed such that a folding ruler inserted in said slot can be folded against one of the ends of the member so as to form an angle related to the angle between that end and the axis of the slot;

spring means for allowing the slot opening to be increased to such an extent that the ruler can be seated in the slot via the open side of the member, said spring means being formed by a longitudinally bent band of spring material located in the slot along said another side wall of the slot so as to form a ridge opposing the at least one longitudinal ridge of the elongated member such that the open side of the slot can be increased by exerting a force to flatten the bend in said spring material; and

at least one level located on said member at a predetermined angle with respect to the axis of said slot, whereby the ruler can be aligned with respect to a direction determined by the at least one level.

4,194,296
VACUUM DRYING KILN

Vincenzo Pagnozzi, Via Ponte Romano, Rocchetta di Cairo (Savona), and Ernesto G. Pagnozzi, Via Camponuovo, Loppa, Cairo Montenotte (Savona), both of Italy

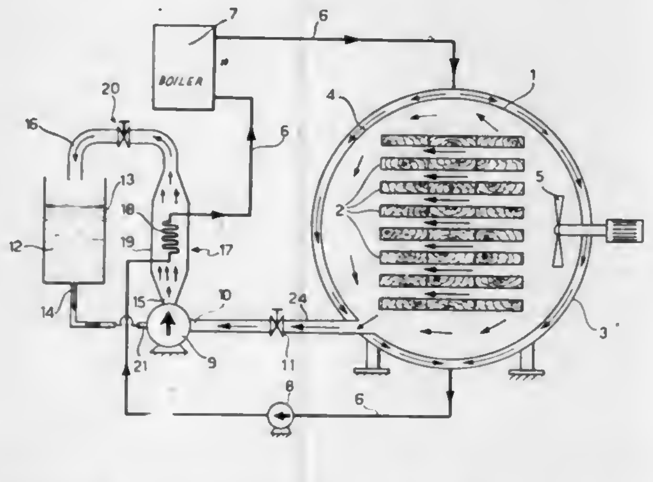
Filed May 4, 1978, Ser. No. 902,632
Claims priority, application Italy, May 17, 1977, 68116 A/77
Int. Cl.² F26B *5/04*
U.S. Cl. 34—16.5 **15 Claims**

12. A method of drying timber using a vacuum drying kiln having first and second drying chambers, heating means including a primary fluid operable to transfer heat to the interior of said chambers, a vacuum pump containing a secondary fluid and having an inlet and an outlet, means for selectively connecting the inlet to one of said chambers, a heat exchanger having a primary and secondary circuit and conduit means for selectively connecting said chambers directly to each other, comprising the steps of:

(a)—heating the interior of at least the second drying chamber to raise the temperature of timber placed therein;

(b)—evacuating said second chamber with said vacuum pump and extracting the heat from the air and water vapour drawn therefrom by means of said heat exchanger and transferring this heat into said first chamber;

(c)—placing said first and second chambers into communication with one another through said conduit means and isolated from the atmosphere so that the pressures therein are equalised at a subatmospheric pressure;



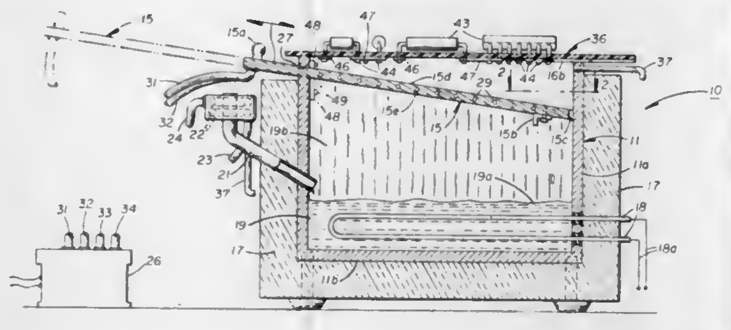
(d)—evacuating said first chamber with said vacuum pump, extracting the heat contained in the air and water vapour drawn therefrom by means of said heat exchanger and transferring this heat into the second chamber; and

(e)—repeating steps (b), (c), and (d) cyclically in this sequence until the moisture content of the timber in the two chambers has fallen to the required level.

4,194,297
METHOD AND APPARATUS FOR GENERATING A CONTROLLABLY EXPOSED VAPOR BODY FOR HEATING ARTICLES

Robert C. Pfahl, Jr., Hanover Township, Northampton County, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,305
Int. Cl.² F26B *7/00;* **F27B** *5/04*
U.S. Cl. 34—26 **24 Claims**



20. A method of performing a heating operation at an elevated temperature on only a selected underside surface of an article, comprising the steps of:

boiling a heat transfer liquid substantially at atmospheric pressure to form an initially co-extensive body of hot condensible vapor of the heat transfer liquid at the elevated temperature, while being permanently confined with respect to base and side boundaries;

positioning an article to at least in part define a first elevated boundary such that only the selected underside surface of the article is exposed to, and heated by, the vapor, while the article at the same time, at least in part, facilitates the confinement of the initially co-extensive vapor body below said first elevated boundary, and within said base and side boundaries, so as to minimize any loss of rising vapor to the atmosphere.

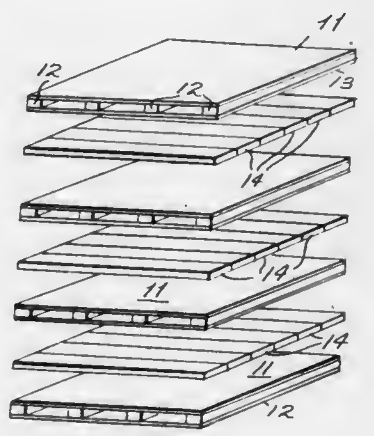
isolating each positioned article from at least the major portion of the initially co-extensive vapor body, said isolating step occurring at a second vapor-confining elevated boundary located closely adjacent, but below, said first elevated boundary, and after the completion of a vapor-condensation-induced heating operation on the article, but prior to the removal of the heated article from its first elevated boundary-defining position, and

cooling while confining at least substantially all of any minor portion of the initially co-extensive vapor body that may become entrapped between the first and second elevated vapor-confining boundaries, prior to the removal of the heated article from its first boundary-defining position, with any resulting vapor-entrapped condensate being directed back to the lower most region of the then confined major portion thereof for re-boiling and re-use as part of another single, co-extensive vapor body.

4,194,298
AIR DRYING OF REFRACTORY HARDWOODS

C. Arthur Hart, Raleigh, N.C., assignor to Research Triangle Institute, N.C.

Filed Jun. 2, 1978, Ser. No. 911,753
Int. Cl.² F26B *19/00*
U.S. Cl. 34—94 **4 Claims**

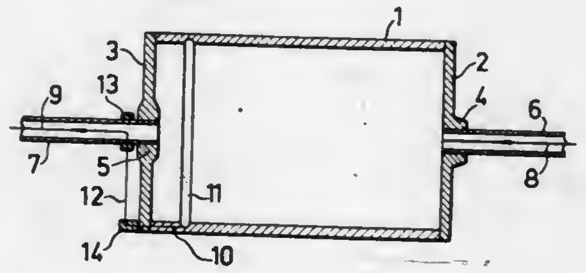


1. A stack of boards of refractory hardwoods and pallets consisting of a plurality of single layers of boards of refractory hardwoods alternating with pallets, each integral pallet consisting of two facing sheets of plywood with spacing means for spacing said facing sheets of plywood apart a predetermined distance.

4,194,299
CONDENSATE DISCHARGING DEVICE

Karl V. Wiberg, deceased, late of Sundsvall, Sweden, and Anna-Britta Wiberg, legal representative, Goteborg, Sweden, assignors to SCA Development Aktiebolag, Sweden

Filed Apr. 11, 1978, Ser. No. 895,353
Int. Cl.² F28F *5/02*
U.S. Cl. 34—124 **6 Claims**

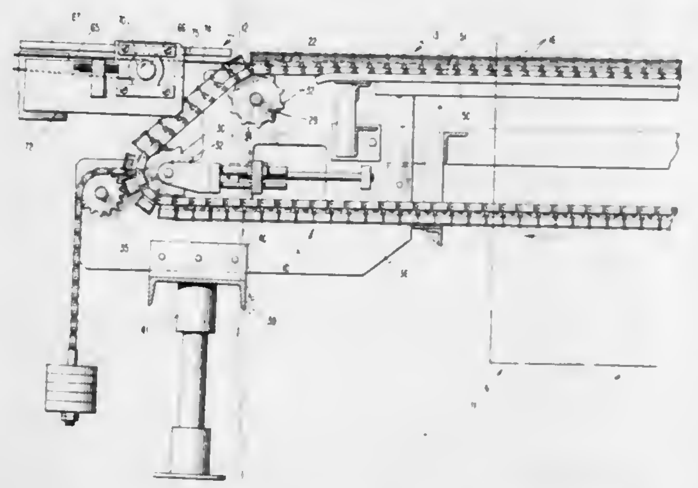


1. Apparatus for drying web materials comprising a cylindrical drum including a tubular jacket and a pair of end walls, means for supplying steam under pressure to the interior of said drum, condensate removal means for removing condensed steam formed within said drum, said condensate removal means comprising passage means extending axially within a portion of said tubular jacket and through one of said end walls, so that said condensate is removed from said drum at a point on the outer periphery of said drum formed by said tubular jacket, condensate collection means communicating with said passage means, said condensate collection means comprising groove means extending circumferentially about the inner surface of said tubular jacket for collecting said condensed steam formed within said drum and supplying said condensed steam to said passage means, throttle means communicating with said passage means exterior to said end wall, said throttle means being mounted on said drum at said outer periphery thereof, vacuum condensing means for condensing steam carried by said condensate, said condensing being carried out under reduced pressure, and discharge conduit means connecting said throttle means to said vacuum condensing means, said throttle means adapted to provide a pressure drop between said passage means and said discharge conduit so that the amount of steam carried by said condensate is limited to an amount of less than about 5 weight percent.

4,194,300
APPARATUS FOR HANDLING CREME FILLED SANDWICH COOKIES

George G. Swanson, Matawan, N.J.; Robert E. Strom, Hartsdale, N.Y., and Philip Jansen, N. Caldwell, N.J., assignors to Nabisco, Inc., East Hanover, N.J.

Filed Feb. 21, 1978, Ser. No. 879,087
Int. Cl.² F25D *25/04*
U.S. Cl. 34—217 **8 Claims**

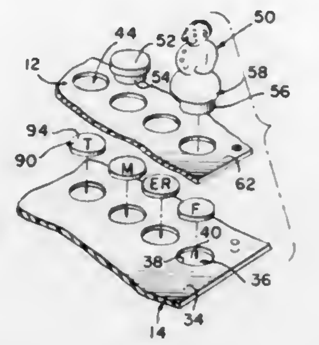


1. In a system for manufacturing round sandwich type comestible articles having rigid base cakes separated by a layer of filling material that is applied in a flowable state and subsequently hardens, apparatus for handling the articles during the hardening period while they pass through a cooling zone which comprises an endless segmented conveyor extending horizontally through said cooling zone for transporting horizontal columns of articles through said zone, said conveyor being formed of a plurality of pivotally interconnected segments, each segment having a bottom wall and a pair of sidewalls forming a portion of a continuous trough extending longitudinally of the conveyor, said side walls being divergent extending upwardly and outwardly from said bottom wall to tangentially engage the edges of the base cakes, said side walls of said segments being arranged to support the articles above the bottom wall of said segments, means for placing articles on said conveyor at one end thereof, and means for removing the articles from the conveyor at the other end thereof.

4,194,301
DEVICE FOR USE IN PAIRED ASSOCIATE LEARNING

Edward C. Caldwell, Box 147 - Rte. 7, Morgantown, W. Va. 26505

Filed May 10, 1978, Ser. No. 904,540
Int. Cl.^{2} G09B *1/06*
U.S. Cl. 35—9 R **10 Claims**



1. An educational device for use in paired associate learning situations, comprising:

a base;

a top sheet having a plurality of viewing holes defined therein and being removably positioned on said base, said base having a plurality of blind holes defined therein to be aligned with said top sheet viewing holes;

a plurality of stimulus discs removably held in said base blind holes, said stimulus discs including selected stimuli located thereon to be aligned with individual viewing holes of said plurality of viewing holes and visible through said individual holes, said selected stimuli on said stimulus discs each including one of a plurality of associated components, a component on one disc being combinable with a component on another disc to form a selected unit used with teaching techniques involved in paired associate learning situations; and

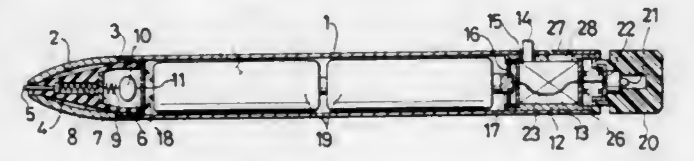
a plurality of stimulus covers releasably mounted on said top sheet to cover said viewing holes and prevent viewing therethrough so that viewing of said selected stimuli via said viewing holes is prevented by said viewing hole covering stimulus covers,

said stimulus covers each being removable from a viewing hole covering position to expose a selected stimulus aligned with such uncovered viewing hole so that removal of a plurality of stimulus covers exposes components involved in paired associate learning situations.

4,194,302
ANSWER-SPOTTING ELECTRIC INSTRUMENT

Kenji Takahashi, 15-4 Oyamadai, 2-chome, Setagaya-ku, Tokyo 158, Japan

Filed Oct. 16, 1978, Ser. No. 951,792
Claims priority, application Japan, Oct. 19, 1977, 52-140290
Int. Cl.^{2} G09B *7/06*
U.S. Cl. 35—9 C **6 Claims**



1. An answer-spotting electric instrument, comprising:

an elongated cylindrical main body having a hollow substantially conical tip cover at its forward longitudinal end porton, a longitudinal mid-portion and a rearward longitudinal end portion, said main body having an annular electrically conductive contact surface at the outer end of said tip cover, said main body having substantially the shape of a writing pen, said rearward longitudinal end portion of said body having sidewardly opening first and second apertures therethrough;

a sleeve made of electrically insulative material disposed inside said tip cover;

an elongated electrically conductive probe longitudinally slidably received in said sleeve so that said probe is electrically insulated from said main body, the outer end of said probe being extendable through the central opening of said annular contact surface and being radially spaced therefrom;

spring means for resiliently urging said probe outwardly from said main body;

battery means disposed inside said main body in said longitudinal mid-portion of said main body;

means electrically connecting one terminal of said battery means to said probe;

a number counter coaxially disposed inside said main body in said rearward longitudinal end portion thereof, said counter having a laterally movable, manually operable, actuating button projecting sidewardly through said first aperture in said main body and outwardly from said main body whereby said counter can be manually actuated to count numbers by depressing said actuating button, said counter having a counted number indicator laterally aligned with said second aperture so that the counted number can be viewed through said second aperture;

a cap-like push button longitudinally slidably mounted on the rearward longitudinal end of said main body;

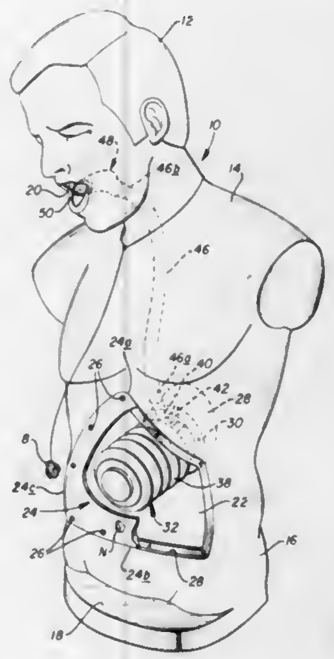
electrically operated signalling means mounted in said cap-like push button, and means electrically connecting one terminal of said signalling means to said annular contact surface and means electrically connecting the other terminal of said signalling means to the other terminal of said battery means; and

a reset lever attached to said cap-like push button and connected to said counter so that the counted number on the indicator of said counter is returned to zero when said cap-like push button is manually moved longitudinally relative to said main body.

4,194,303
ANTI-CHOKING MANIKIN

Robert D. Heller, Green Bay, Wis., assignor to Medical Plastics Laboratory, Inc., Gatesville, Tex.

Filed Jun. 2, 1978, Ser. No. 912,099
Int. Cl.^{2} G09B *23/30*
U.S. Cl. 35—17 **12 Claims**

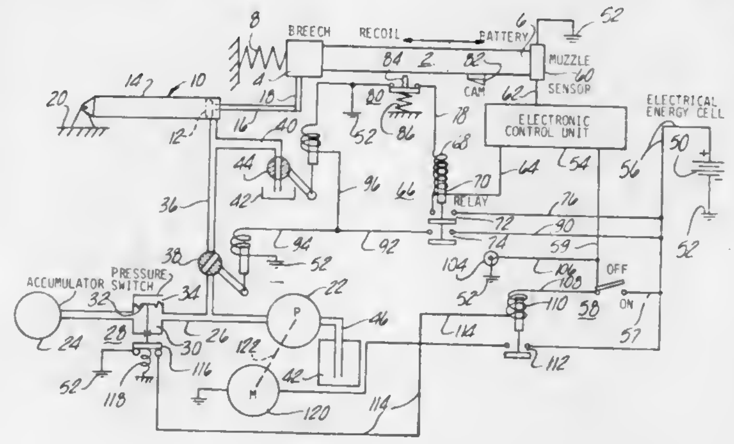


1. A device for teaching a technique for dislodging foreign matter from the throat of a choking victim comprising: a simulated human torso having a hollow abdominal cavity, the front abdominal area of the torso being flexible such that the front abdominal area may be pushed inwardly, said torso having an opening formed in the area of the mouth; pump means, said pump means having an outlet and an inlet; a tubular passageway communicating between the outlet of said pump and the opening in said torso in the area of the mouth; means flexibly securing said pump means in said abdominal cavity at an angle relative to the front abdominal area such that when the flexible front abdominal area is pushed inwardly and upwardly said pump means is actuated to pump fluid through the outlet and through the passageway to disloge foreign matter from said passageway and when the front abdominal area is thrust inwardly only and substantially perpendicular to the front abdominal area, said pump means slides away from said thrust to prevent air from being exhausted from said passageway.

4,194,304
LOADER AND RECOIL SIMULATION TRAINER FOR ARTILLERY CREWS

Lyle A. Wolcott, East Detroit, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 2, 1978, Ser. No. 957,121
Int. Cl.^{2} G09B *9/00;* F41F *27/00*
U.S. Cl. 35—25 **6 Claims**

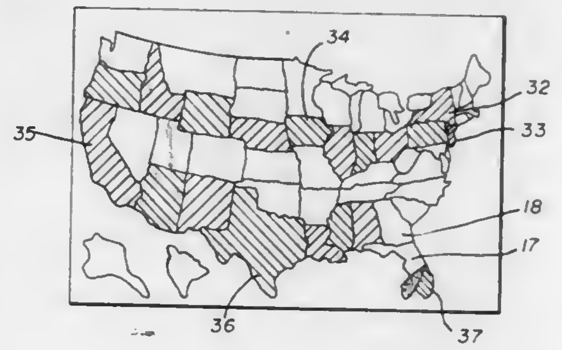


1. A loader-trainer for an artillery piece having a barrel mounted to reciprocate between its firing position and its fully recoiled position, and means to move the barrel through recoil and counterrecoil including an expansible chamber device reciprocable through a two-stroke cycle and a spring connected to store energy by elastic deformation through one of the strokes of said cycle and to return the stored energy to move the barrel through the other stroke of the two-stroke cycle, the invention comprising: an electrical energy cell; a source of fluid under pressure including a pump and an accumulator; an electric motor connected to drive the pump; a normally closed electric switch responsive to pressure in the accumulator and openable when accumulator pressure reaches a predetermined maximum; a normally open solenoid-operated power switch for the electric motor and actuable into closed-circuit position by energization of its solenoid; an operating circuit comprising a series connection of the energy cell, the solenoid of said power switch, and said pressure-responsive switch; a hydraulic connection from the accumulator to the expansible chamber device and including a normally closed valve connected to a solenoid energizable to open its connected valve; a hydraulic connection from the expansible chamber device to the pump via a reservoir and including a normally open valve connected to a solenoid energizable to close its connected valve; an electrical sensor to sense the passing of a projectile out through the muzzle end of the artillery piece; electrical means connected to receive a signal from said sensor, to energize the solenoids of the normally closed valve and the normally open valve to actuate the expansible chamber device for movement of the barrel from its firing position into its fully recoiled position; a normally closed recoil-opened switch in the electrical means and openable to deenergize the solenoids of the normally closed valve and the normally open valve; and means actuable by barrel movement to the fully recoiled position to open the normally closed recoil-opened switch in said electrical means.

4,194,305
ARTICULATED TRAVEL AND EDUCATIONAL MAP WITH PEEL-OFF DIVISIONS

Douglas J. Smith, 2029 Mt. Carmel Blvd., Toms River, N.J. 08753, and Irving L. Kutno, 15 Carol Pl., Freehold, N.J. 07728

Filed Apr. 3, 1978, Ser. No. 893,007
Int. Cl.^{2} G09B *29/00*
U.S. Cl. 35—42 **4 Claims**



1. A geographical display device comprising a first map imprinted on the upper side of a first, base layer;

a second map, identical in size and shape to said first map, imprinted on the upper side of a second, upper layer, said second layer having a pressure-sensitive backing on its lower side;

said second map being superimposed on said first map and held in place, along with said second layer, by said pressure-sensitive backing, against said first layer;

said second map being articulated along certain boundaries of the land of said second map, so that portions of said second layer and said second map, defined by said certain boundaries, can be pulled off said first layer to reveal the corresponding portions of said first map; and

means for holding said geographical display device in a desired position.

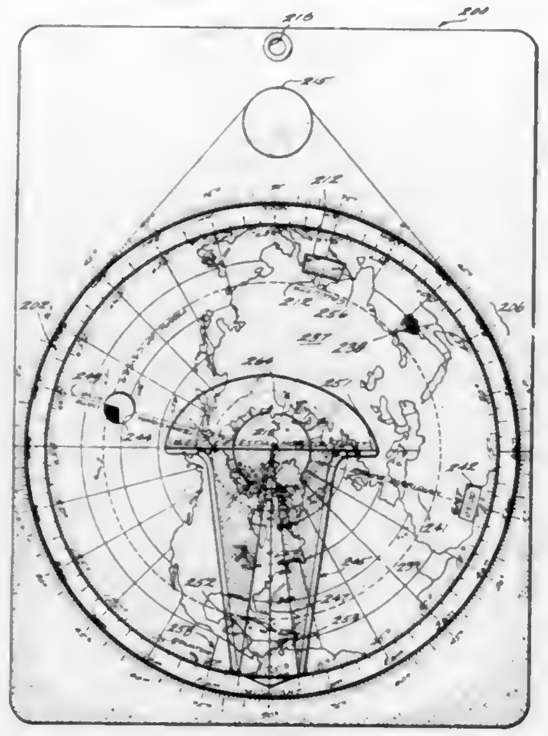
4,194,306
PLANETARIUM EDUCATIONAL DEVICE

Scott A. Rogers, 6510 Patterson Ave., Richmond, Va. 23226

Continuation-in-part of Ser. No. 772,229, Feb. 25, 1977, abandoned. This application Mar. 3, 1978, Ser. No. 883,289
Int. Cl.^{2} G09B *27/00*
U.S. Cl. 35—44 **18 Claims**

1. In an educational planetarium apparatus including a primary board acting as a support for the apparatus and having a plurality of groups of primary indicia thereon, a secondary board dimensionally smaller than said primary board, said secondary board rotatably mounted on said primary board and having a plurality of groups of secondary indicia thereon, said primary and secondary boards each having a first group of indicia which cooperatively show worldwide time zones,

said primary board including a second group of indicia comprising a plurality of markings each aligned with said first group of indicia on said first board, said plurality of markings on said primary board having first and second colored areas depicting respectively the particular day existing in the world, said first group of indicia on said secondary board including a representation of the International Date Line, said second board including means defining a first opening positioned on the International Date Line for successively showing each one of said second group of indicia on said first board as said second board is rotated.



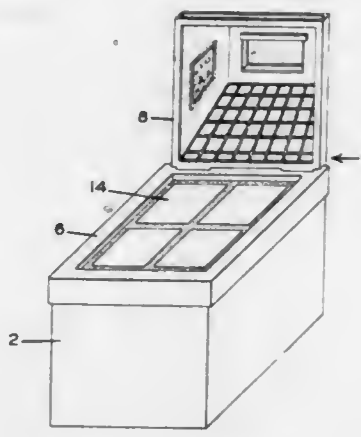
4,194,307
SAMPLE DISPLAY DEVICE

Ellis P. Payne, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Sep. 18, 1978, Ser. No. 942,985

Int. Cl.^{2} G09B *25/00*

U.S. Cl. 35—49 **3 Claims**



1. A display device comprising:
(a) a horizontal base member:
  (1) said base member having a planar surface means;
  (2) a ridge extending around and upward from the top surface of the planar surface means to form a pocket means to receive merchandise for display, said pocket means being sized to receive said merchandise with its edges abutting the sides of the ridge and being below the top of the ridge;
  (3) a flange extending around and downward from the bottom surface of the planar surface means to form a second pocket means to hold the base member in position, said second pocket means being sized to receive the outer size dimensions of a shipping carton capable of holding a stack of said merchandise, one piece of which is to be displayed;
(b) and a vertical display member:
  (1) said display member being affixed to one edge of said base member and being perpendicular thereto; and
  (2) said display member having means to receive a sheet of paper containing descriptive information about said merchandise.

4,194,308
BOOT BLANK

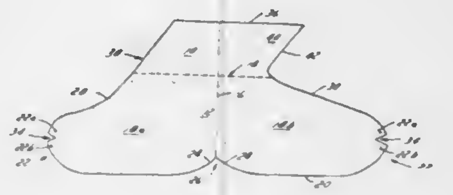
Ulf R. Karlsson, Borås, Sweden, assignor to L-LT-Produkter, Borås, Sweden

Filed May 18, 1978, Ser. No. 906,928

Claims priority, application Sweden, Jun. 15, 1977, 7706894

Int. Cl.^{2} A43B *1/02*

U.S. Cl. 36—9 R **10 Claims**



1. A boot blank for a wading boot or the like, comprising a body of flexible sheet material having an upper portion adapted to form an ankle-encircling member and a lower portion adapted to form a foot-encircling member, said upper and lower portions being adapted to be joined together to form a unitary body, said lower portion comprising a pair of side members each having a planar central portion meeting together along a central fold line for said boot blank, a substantially linear bottom margin, each bottom margin having a rounded shoulder proximate to said central fold line and together, said rounded shoulder of each portion forming an inwardly extending lower recess at said central fold line, said side members each having a rounded lateral side portion with an inwardly extending tapering side meeting said upper portion, said upper portion having a generally linear top margin with a pair of side portions, one of said side portions having an outwardly tapering side portion meeting one of said inwardly tapering side shoulders of said lower portion in an obtuse relationship, said upper portion having a triangularly shaped tab on the side opposed to said last-mentioned side, said triangularly shaped tab having an inwardly tapering side wall meeting said inwardly tapering side portion of said lower member in an acute angular relationship.

4,194,309
SKI BOOT

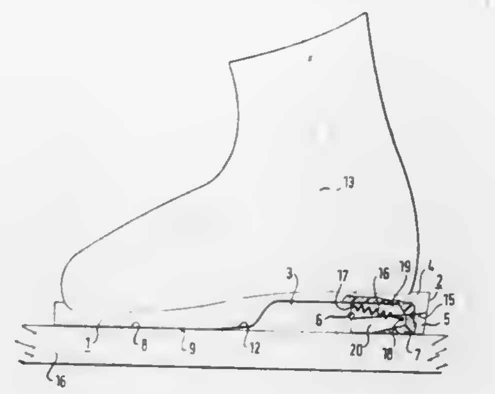
Hermann Kastinger, A 4863 Seewalchen, Austria

Continuation-in-part of Ser. No. 865,231, Dec. 27, 1977, abandoned. This application Nov. 15, 1978, Ser. No. 961,002

Int. Cl.^{2} A43B *5/04*

U.S. Cl. 36—117 **22 Claims**

1. A ski boot having a sole and a leg sheath with a forwardly inclined axis and with the boot being comprised of a relatively rigid material, a boot heel mounted on said sole and having upper and lower heel parts, a lower heel part socket positioned forwardly of said heel, a hinge connecting said upper and lower heel parts in hinged assembly together, the lower heel part being operable to function to provide a support for the upper heel part when the ski boot is in a first standing position and with the upper heel part then being in overlying relation to the lower heel part, the lower heel part being swingable on said hinge to a position to one side of said lower heel part and into said socket, thus exposing the upper heel part, the upper heel part being so sized with respect to said sole and said lower heel part enabling it to then function to engage ground when said boot is in a second more upright standing position whereby the inclined axis of the leg sheath is moved so that the boot wearer can walk with a more upright posture.



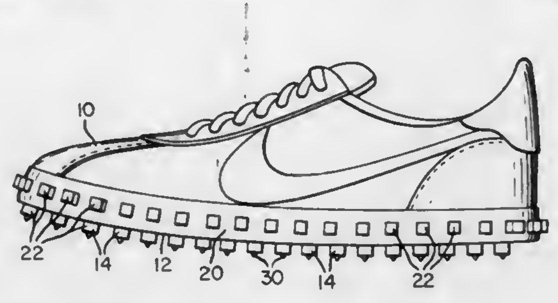
4,194,310
ATHLETIC SHOE FOR ARTIFICIAL TURF WITH MOLDED CLEATS ON THE SIDES THEREOF

William J. Bowerman, Eugene, Oreg., assignor to BRS, Inc., Beaverton, Oreg.

Filed Oct. 30, 1978, Ser. No. 955,784

Int. Cl.^{2} A43B *5/02, 13/04, 23/28*

U.S. Cl. 36—128 **15 Claims**



1. An athletic shoe comprising:
a shoe upper,
a shoe sole attached to said shoe upper;
said shoe sole including an outer sole layer of resilient material having a plurality of first cleats molded integral with said outer sole layer, said first cleats being spaced laterally and longitudinally along said sole, and positioned beneath the foot of the wearer; and
a cover strip of resilient material of less thickness than said outer sole layer adhered to the shoe upper, said cover strip extending partially over the outer surface of said shoe upper around the toe portion and along the opposite sides of the shoe upper and having a plurality of second cleats molded integral with said cover strip on the opposite sides of said shoe upper.

4,194,311
GRAVE DIGGING APPARATUS

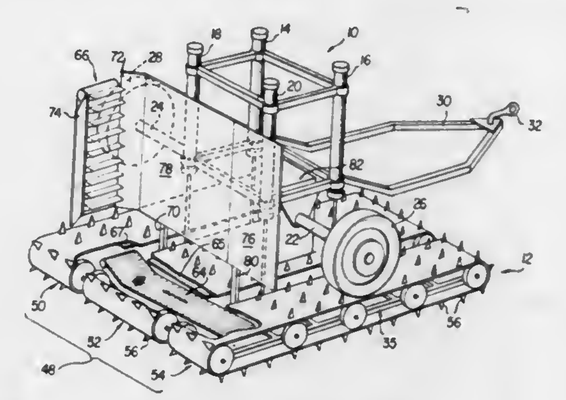
Jimmy Thames, 316 South St., Manning, S.C. 29102

Filed Jan. 17, 1978, Ser. No. 870,057

Int. Cl.^{2} E02F *3/08, 5/06*

U.S. Cl. 37—192 A **12 Claims**

1. An apparatus for excavating a grave of a predetermined depth comprising:
a support frame having a plurality of ground engaging wheels, said frame being selectively positionable at a gravesite and including a plurality of members selectively positioned with respect to the gravesite so as to engage the surface of the ground at a plurality of locations about the gravesite to thereby resist movement of the frame relative to said gravesite; and,
an excavation assembly for excavating earth at the gravesite, said excavation assembly being carried by said support frame and being selectively movable relative to the support frame in a vertical direction below the surface of the ground to the predetermined depth of the grave to be excavated but restrained from movement in a horizontal direction relative to the support frame, said excavation assembly including:
an articulated first endless conveyor means bearing a plurality of digging implements and configured in a horizontally elongated loop having a vertical height substantially less than the predetermined depth of the grave to be excavated for removing earth beneath the excavation assembly, the loop having a dimension in the direction of elongation approximately that of the length of the grave being excavated, and said first endless conveyor having a width approximately that of the width of the grave, so that the grave may be excavated in a single downward movement of the excavation assembly,
second endless conveyor means for collecting the earth excavated by said digging implements and for transporting the excavated earth, third endless conveyor means engaged to said excavation assembly for receiving the excavated earth from said second means and for vertically transporting the excavated earth received from said second conveyor means above the surface of the ground and away from the gravesite, and,
a motor carried by said excavation assembly for driving said conveyors along their endless paths.



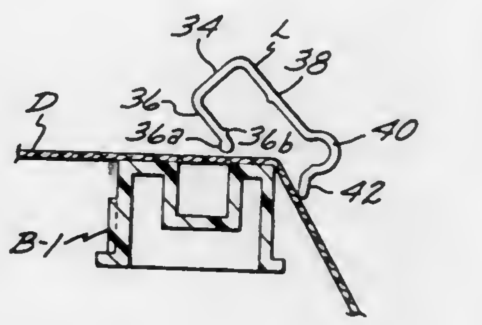
4,194,312
NEEDLEPOINT SUPPORTING FRAME AND CLIP ASSEMBLY

Dorothy Connors, Orange; Robert D. Chapman, Mission Viejo; Robert J. Winkler, and Timothy K. Winkler, both of Santa Ana, all of Calif., assignors to Alpha Nova Engineering, Inc., Santa Ana, Calif.

Filed Dec. 4, 1978, Ser. No. 966,053

Int. Cl.^{2} D06C *3/08;* **A44B** *21/00;* **B44D** *3/18*

U.S. Cl. 38—102.5 **7 Claims**



3. In combination with a hollow frame defined by four elongate connected members that are normally disposed to one

another at their connections, a plurality of clips for removably engaging said members and a sheet of pliable material to hold the latter positively in a taut position on said frame, each of said members having first and second ends, and a longitudinal portion of each of said members intermediate said first and second ends having a transverse cross-section defined by an elongate web that has first and second parallel flanges projecting from first and second longitudinal edges thereof, a lip that extends outwardly from a free longitudinal edge of said second flange, a longitudinal recess in said web intermediate said first and second edges thereof that is defined by first and second laterally spaced side walls that project from said web in the same direction as said first and second flanges and a cross piece that extends between said first and second side walls a substantial distance from said web, and each of said clips being formed from a rectangular sheet of a resilient material that has been shaped to define:

a. a longitudinal member that has first and second parallel side member;

b. a first normally disposed side member that extends from said first side members of said longitudinal member and has first and second sides and a longitudinally extending free edge, a longitudinal bead on said free edge, and a protuberance that projects from said second side of said first side member intermediate said bead and longitudinal member; and

c. a second normally disposed side member that extends from said second member, said second side member having a free edge portion that has a transverse semi-circular section that develops into a trigger, said clip capable of removably securing a peripheral edge portion of said sheet to said frame when said peripheral edge portion of said sheet is positioned to extend over said recess and project downwardly beyond said lip on said second flange, said peripheral edge portion being secured to said frame when said clip is moved towards said frame to force a first section of said peripheral edge portion of said sheet into said recess to be frictionally gripped between said bead and cross piece and between said protuberance and second side wall and a second section of said material to be frictionally gripped between said second flange and second side member and between said lip and said semi circular section of said free edge portion of said second side member, and said peripheral edge portion of said sheet being released from said frame when said trigger is manually engaged and used to pivot said clip transversely relative to said elongate member to a position where said semi-circular section and second side member are separated from said lip and second flange and said first side wall and bead may be lifted from said recess.

4,194,313

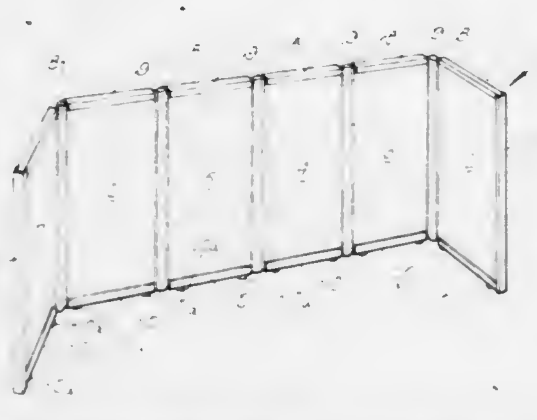
ARTICULATED PANEL DISPLAY

Jack G. Downing, Cincinnati, Ohio, assignor to Downing Displays, Inc., Cincinnati, Ohio

Filed Jun. 19, 1978, Ser. No. 916,934

Int. Cl.² E04B *2/74;* G09F *15/00*

U.S. Cl. 40—610 **3 Claims**



1. An articulated panel display comprising a plurality of panels hingedly connected together in side-by-side relation, said display being formed from a single length of honeycomb sheeting covered on its opposite surfaces with a flexible facing material, the opposite surfaces of the covered honeycomb sheeting being scored by spaced apart mating pairs of score lines, the areas between adjacent pairs of the score lines defining panel sections and the areas between the score lines in each air defining integral hinge forming bridges interconnecting.the panel sections, the hinge forming bridges having a width greater than the thickness of the honeycomb sheeting but not substantially greater than twice the thickness of said honeycomb sheeting, the honeycomb sheeting being crushed to essentially flat condition in the areas of the score lines and partially crushed in the areas of the hinge forming bridges, the hinge forming bridge areas being contoured to define back-to-back outwardly facing essentially arcuate surfaces, whereby the hinge forming bridges will form neatly rounded edges when adjoining panel sections are folded in relation to each other in either direction.

4,194,314

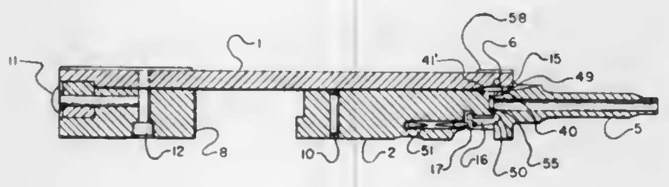
EJECTOR ASSEMBLY FOR A FIREARM ADAPTER

John P. Foote, Marietta, Ga., assignor to U.S. Armament Corporation, Gretna, La.

Division of Ser. No. 627,743, Oct. 31, 1975, Pat. No. 4,098,016. This application Feb. 25, 1977, Ser. No. 771,989

Int. Cl.² F41C *15/00*

U.S. Cl. 42—25 **5 Claims**



1. In an adapter for converting an at least partially automatic firearm having a firearm chamber to use different size ammunitions, the adapter having a barrel insert for extending into the firearm chamber and for receiving ammunition, and a bolt, the improvement comprising:

cartridge keeper means located on the bolt for applying pressure to the rim of the case of ammunition positioned in the barrel insert, said cartridge keeper means being made of thin resilient spring material; and

mounting means for mounting said cartridge keeper means on the bolt, said mounting means including an inverted U-shaped portion integrally formed of the same material with said cartridge keeper means and having a first and a second leg, the top of the inverted U-shaped portion of said mounting means extending along the top of the bolt and the first leg of the U-shaped portion which integrally connects with said cartridge keeper means extending alongside of the bolt, both the top and the first leg being exposed to the exterior of the bolt along their full length, said cartridge keeper means extending forwardly of said first leg.

4,194,315

RETRACTABLE FISH STRINGER

Michael G. Martin, Box 142; Ronald M. Carver, 405 S. Jefferson, and James E. Cafer, 210 S. Main, all of Vandalia, Mo. 63382

Filed Jun. 22, 1978, Ser. No. 917,796

Int. Cl.² A01K *65/00*

U.S. Cl. 43—55 **10 Claims**

1. A fish stringer comprising:

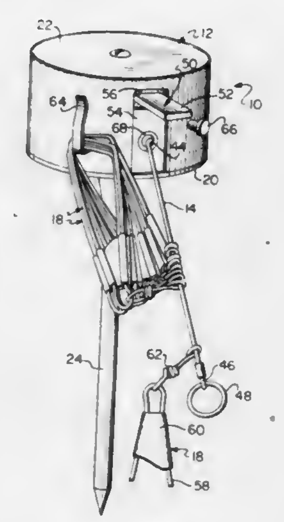
a rotatable spool;

a length of flexible line having a portion thereof normally wound about said spool and being selectively extensible from said spool;

a plurality of fish-holding elements each including

a line-engaging portion for securing the element to said line and for allowing the element to slide freely along the entire length of said line from the outermost end thereof to said spool; and

an elongated, relatively flat fish-holding portion coupled to said line-engaging portion,



said plurality of fish-holding elements being cooperatively configured and arranged for compact, side-by side abutment of said fish-holding portions during storage of the elements when the latter are not in use.

4,194,316

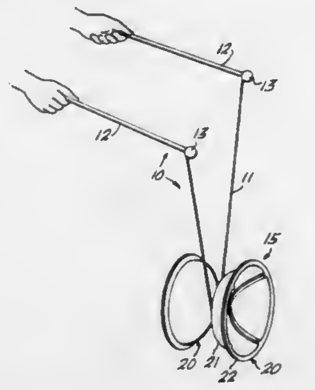
SELF BALANCING DIABOLO TOP WITH ATTACHMENT FOR VERTICAL SPINNING

Walter L. Jordon, 10443 SW. 185 Ter., Miami, Fla. 33157

Filed Aug. 25, 1978, Ser. No. 936,934

Int. Cl.² A63H *27/12*

U.S. Cl. 46—60 **11 Claims**



1. A spinner for a string manipulated diabolo toy having characteristics for self balancing on the string preparatory to spinning, comprising bowl-shaped halves having smooth convex exterior wall surfaces defining a medial relatively deep annular groove therebetween for engaging said string therein, said groove having a bottom along which said string engagingly extends and sidwalls formed by said convex exterior wall surfaces, said groove sidewalls being in relative close proximity to each other along a substantial radial distance from the bottom of the groove to engage said string and limit the angle of tilt of said spinner when at rest as said self balancing characteristic.

4,194,317

REMOTELY CONTROLLED AIRCRAFT

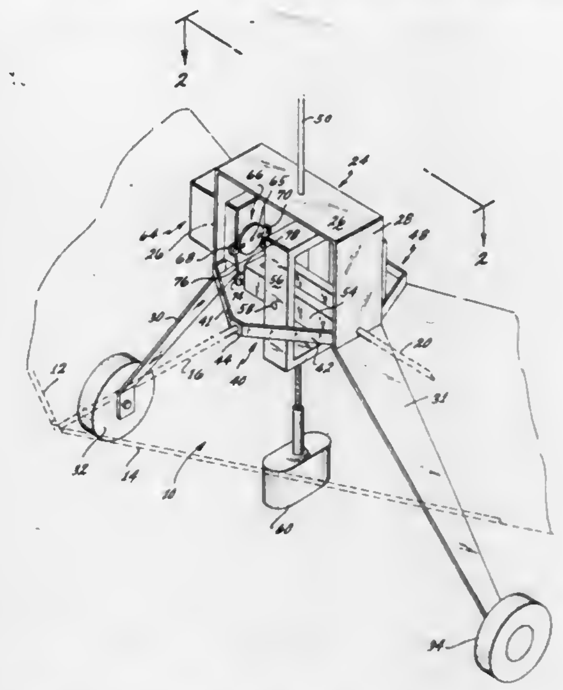
Al J. Kidd, 5436 W. Washington Blvd., Los Angeles, Calif. 90016

Filed Apr. 3, 1978, Ser. No. 892,991

Int. Cl.² A63H *27/02*

U.S. Cl. 46—76 R **7 Claims**

1. In a model aircraft, in combination, a wing structure, an adjustable control mass carried by the wing structure, supporting means for the control mass, said supporting means including mechanism whereby the control mass can be shifted laterally or can be shifted fore and aft and means responsive to remote radio signals during flight for causing the control means to be shifted laterally or shifted fore and aft for guiding the aircraft, the aircraft being free of ground connections thereto.



4,194,318

TOY AMBULANCE UNIT

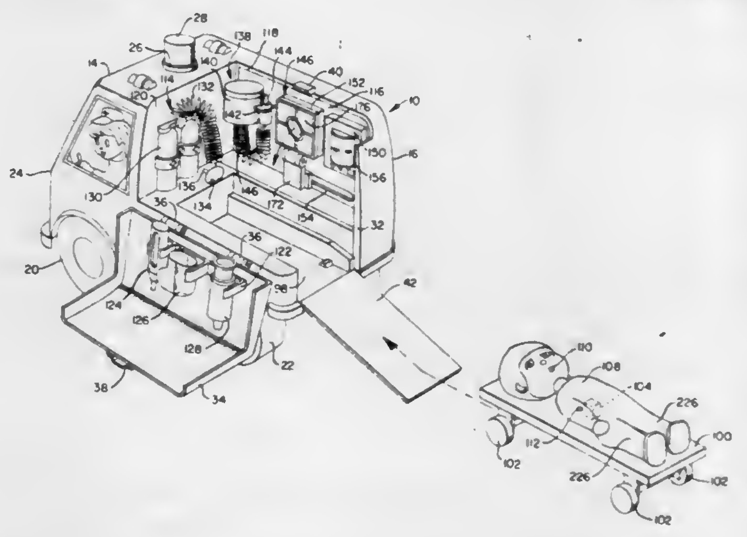
Saburo Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Dec. 18, 1978, Ser. No. 970,867

Claims priority, application Japan, Dec. 17, 1977, 52-170804[U]

Int. Cl.² A63H *11/10*

U.S. Cl. 46—202 **11 Claims**



1. A toy ambulance unit for use with a doll, comprising:

a toy ambulance vehicle having a a patient portion, a side door giving access to said patient portion, and a rear door giving access to said patient portion;

a medical panel mounted within said toy ambulance vehicle, said medical panel being accessible to said patient portion and providing a first plurality of toy medical devices, including at least a toy x-ray unit and a toy medical oscilloscope, said toy medical oscilloscope comprising a rotatable drum and said toy x-ray unit comprising means for displaying first and second representations of x-rays; and

means for mounting a second plurality of toy medical devices on said side door so that said toy medical devices are enclosed within said patient portion when said side door is closed.

4,194,319

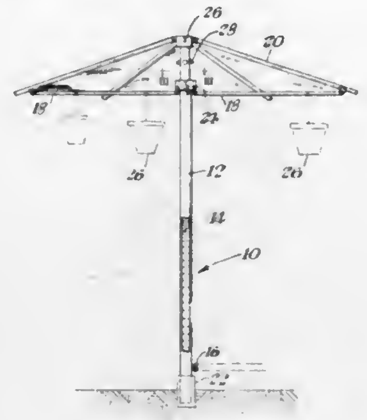
POTTED PLANT SUPPORT

Carroll O. Crawford, 14963-19th St., North, Loxahatchee, Fla. 33470

Filed Apr. 19, 1978, Ser. No. 897,914

Int. Cl.² A47G *7/00*

U.S. Cl. 47—27 **3 Claims**



1. A device for supporting one or more potted plants, comprising:

a rigid elongated vertical support member, said support member having a hollowed central chamber for receiving a fluid;

at least one sprinkler nozzle connected to the upper portion of said vertical support member and in fluid communication with the central portion of the vertical support member chamber;

a plurality of upper frame members connected to the upper end of said vertical support member at one end and disposed radially from the upper end of said vertical support member;

a panel connected to said upper frame members;

a sleeve disposed around said vertical support member;

a plurality of horizontally disposed, radially disposed rigid support members connected at their inside ends to said vertical support member sleeve and at the outside ends to said upper support members;

fluid inlet connecting means connected to said vertical support member; and

means for supporting said vertical support member in a vertical position.

4,194,320

PLANT GROWING UNIT

Ferdinand M. Svirklys, Toronto, Canada, assignor to Extrados Company Limited, Toronto, Canada

Filed Apr. 11, 1978, Ser. No. 895,342

Claims priority, application United Kingdom, Apr. 13, 1977, 15416/77

Int. Cl.² A01G *9/00;* A01K *67/00*

U.S. Cl. 47—59 **5 Claims**

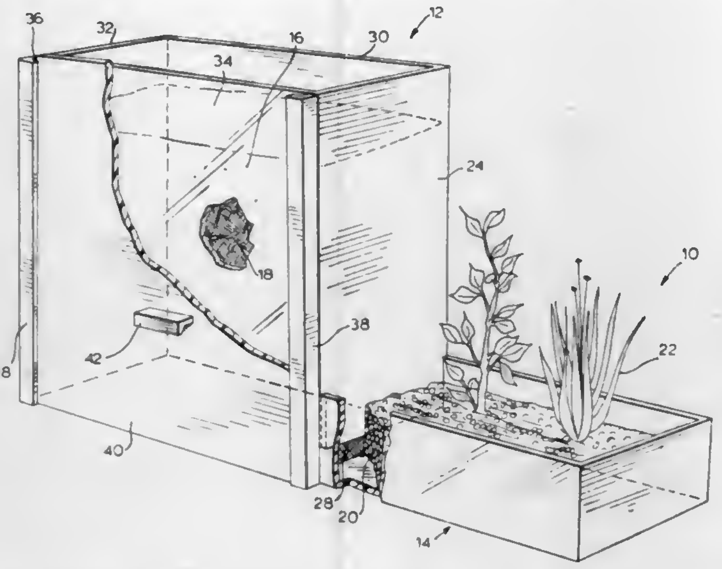
1. An integrally-formed plant growing unit constructed of transparent material, comprising

a soil container portion housing a bed of soil adapted to have earthworms living therein,

a hydroponic tray portion, containing gravel, joined to said soil container portion and adapted to have plants growing therein, and

means establishing a liquid flow communication between said bed of soil and the nutrient medium sustaining said plants,

said unit including an elongate bottom wall part of the length of which constitutes the bottom wall of said container portion and the remainder of the length of which constitutes the bottom wall of said tray portion, upstanding substantially parallel end walls one extending to a greater height than the other, said one wall constituting the end wall of said container portion and said other wall constituting the end wall of said tray portion, upstanding substantially parallel side walls, part of the length of which extend to the height of said one end wall and constitutes the side walls of said container portion and the remainder of the length of which extend to the height of said other end wall and constitute the side walls of said tray portion, and divider wall means separating said container portion from said tray portion and extending downwardly parallel to said end walls from the height of said one end wall to a location spaced from said bottom wall and below the height of said other end wall to define an unobstructed slot between the lower end of said divider wall means and said bottom wall constituting said means establishing fluid flow communication.



4,194,321

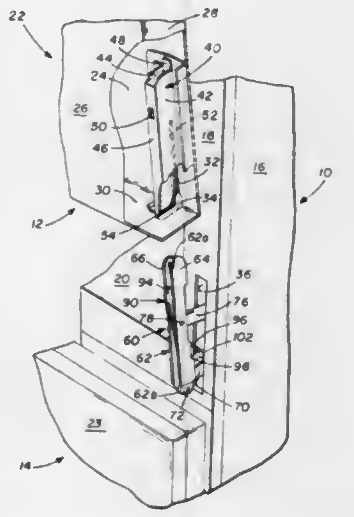
OVEN HINGE MECHANISM INCLUDING DETENT LOCK

Gerald W. Hess, Oxford, Miss., assignor to Chambers Corporation, Oxford, Miss.

Filed Dec. 5, 1977, Ser. No. 857,614

Int. Cl.² E05D *7/10;* F23M *7/00;* F24C *15/02*

U.S. Cl. 49—389 **19 Claims**



1. In a removable hinged door for an oven housing having an access opening to be covered by the door, the door movable through a plurality of positions between a substantially vertical closed position over the access opening and a substantially horizontal open position to provide access to the oven housing the combination comprising:

a hinge bracket pivotally secured to the oven housing;

a channel frame secured within the door for receiving said hinge bracket for rendering the door pivotally cooperative with said hinge bracket for movement between the door closed position and the door open position;

a lever secured to said hinge bracket for movement between first and second positions, such that in said first position said lever engages said channel frame to prevent removal of the door from said hinge bracket, and in said second position said lever disengages from said channel frame to permit removal of the door from said hinge bracket and further maintains said hinge bracket in a predetermined fixed position with respect to the oven housing when the door is removed from said hinge bracket; and

means extending from said lever for moving said lever between said first and second positions.

4,194,322

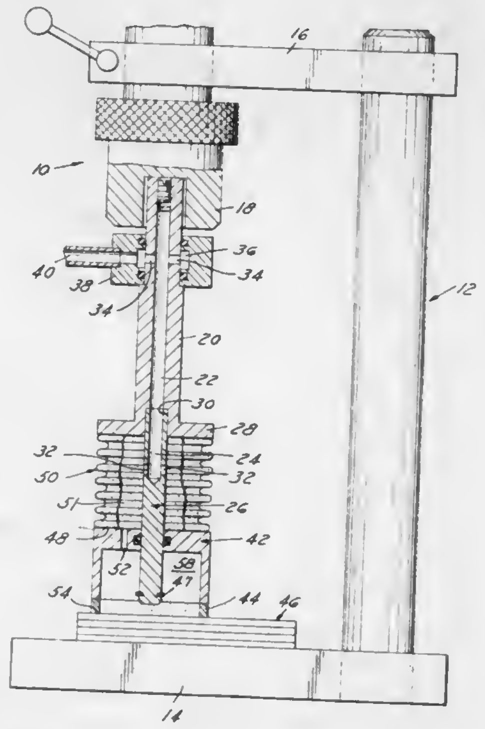
CONSTANT FORCE SHEET GLASS CUTTING DRILL ASSEMBLY

Dante S. Giardini, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 5, 1978, Ser. No: 912,902

Int. Cl.² B32B *35/00*

U.S. Cl. 51—81 R **14 Claims**



1. A portable, lightweight drill assembly for drilling through the surface of a piece of plate glass or the like, comprising, in combination, means for detachably mounting a drill motor or one side of the glass, the motor having a drill shaft mounted thereon, a core drill having a cutter face engageable with the glass, means operatively mounting the core drill on the drill shaft and operatively connecting the core drill to the shaft for simultaneous rotation together while permitting axial movement of the core drill relative to the shaft, fluid pressure means acting between the core drill and the shaft yieldably biasing the cutter face of the core drill against the glass surface whereby operation of the drill motor effects a simultaneous rotational and axial cutting movement of the core drill through the surface of the glass, the fluid pressure means including a source of fluid at variable pressure, and means maintaining a constant force on the core cutter face regardless of the change in pressure level of the fluid.

4,194,323

CENTERLESS GRINDER

Edwin W. Blocker, Jr., Herndon, Va., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 30, 1978, Ser. No. 965,222

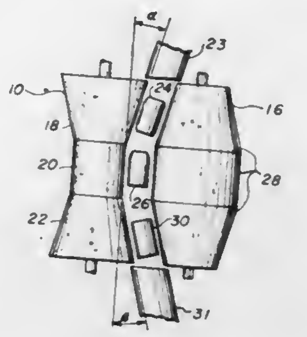
Int. Cl.² B24B *5/18*

U.S. Cl. 51—103 R **6 Claims**

1. An apparatus for grinding to a barrel shape, comprising:

a. a grinding wheel comprising a composite circumferential surface that includes a cylindrical surface, a first frustoconical surface joined at its smaller-radius edge to one edge of the cylindrical surface, and a second frustoconical surface joined at its smaller-radius edge to the other edge of the cylindrical surface, the radii of the smaller-radius edges of the frustoconical surfaces being equal to the radius of the cylindrical surfaces, the three surfaces thereby together forming a continuous composite surface; and

b. a regulating wheel comprising a circumferential surface shaped to mate with the composite surface of the grinding wheel, the axis of the regulating wheel being positioned nearly parallel to the axis of the grinding wheel, the regulating wheel being further positioned so that the circumferential surface of the regulating wheel faces but is spaced from the circumferential surface of the grinding wheel.



4,194,324

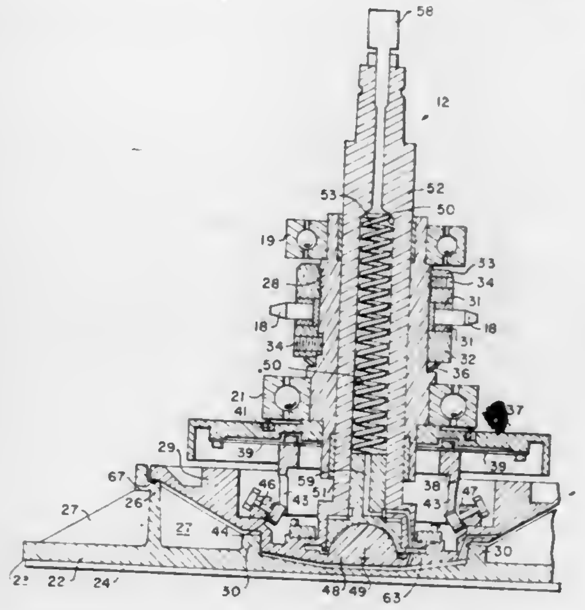
SEMICONDUCTOR WAFER POLISHING MACHINE AND WAFER CARRIER THEREFOR

Anthony C. Bonora, Atherton, and Karl Lorenz, Redwood City, both of Calif., assignors to Siltec Corporation, Menlo Park, Calif.

Filed Jan. 16, 1978, Ser. No. 869,652

Int. Cl.² B24B *29/00*

U.S. Cl. 51—131.5 **11 Claims**



1. A carrier for thin wafers to be treated comprising:

A. a rigid plate;

B. means on a first face of said plate to adhere thereto one or more wafers to be treated;

C. load bearing means on the side of said plate opposed to said first face to receive loading to press wafers mounted on said first face against a treating means; and

D. load distributing means on said side connecting said load bearing means with substantially the full area of said side opposed to that area of said first face to which wafers are to loading applied to said load bearing means is distributed over said full area;

E. said load bearing means comprising a flange projecting from said side generally centrally with respect to said full area and extending about a generally closed path thereon having a configuration generally the same as the configuration of the outer periphery of said full area, and said load distribution means includes a plurality of webs extending between said flange and said plate side both inwardly and outwardly of said generally closed path.

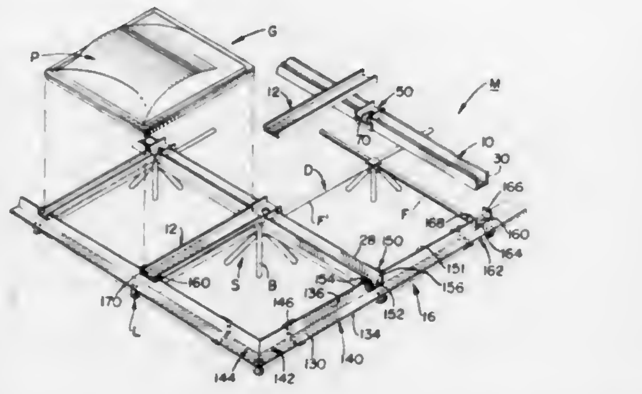
4,194,325
GUTTER SYSTEM FOR SKYLIGHTS OR THE LIKE

Stephen F. Chalpin, Jr., Overland Park, Kans., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Oct. 12, 1978, Ser. No. 950,709

Int. Cl.^{2} E04D *13/00*

U.S. Cl. 52—14 **12 Claims**



1. A gutter system for use with skylights or the like comprising:

a supporting means having an elevating means and a platform on said elevating means;

a primary gutter supported on said platform, said primary gutter including a pair of spaced walls each wall having a notch defined therein;

a channel connector nested in said notches and attached to said primary gutter to extend essentially perpendicular thereto, said channel connector having a drain hole defined therein for conducting water into said primary gutter; and

a first secondary gutter connected to said channel connector.

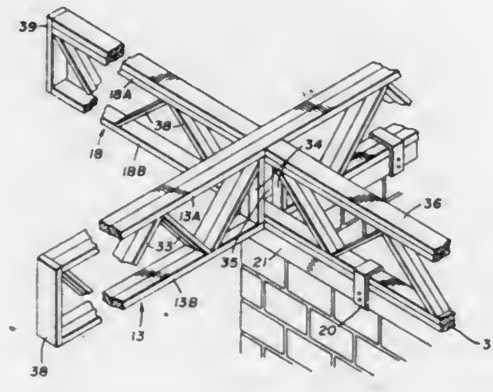
4,194,326
PEDESTAL HOUSE WITH CANTILEVERED CROSS TRUSS CONSTRUCTION

Bertram Zusman, 4112 Montecello Blvd., Youngstown, Ohio 44505

Filed Oct. 26, 1978, Ser. No. 955,124

Int. Cl.^{2} F04B *1/34*

U.S. Cl. 52—73 **5 Claims**



1. A pedestal house comprising an enclosure having a floor supporting structure and a foundation thereunder, said floor supporting structure consisting of a cantilevered crossed truss construction comprising several pairs of crossed horizontally disposed truss members, each member including vertically spaced top and bottom chord members and interconnecting web members, one of each pair of truss members being of a greater height than the other so that one truss member of each pair passes through an opening in the other, spacing members longitudinally of said other truss members so as to increase the height thereof to that of said higher truss members, a floor in said enclosure disposed on said crossed truss construction and outer and inner walls forming said enclosure positioned on said crossed truss construction and wherein the ends of said crossed trusses extend beyond said foundation to form cantilevered extensions supporting portions of said enclosure thereabove.

4,194,327
MODULAR RETICULAR BEARING STRUCTURE FOR DOMED SHELTERS

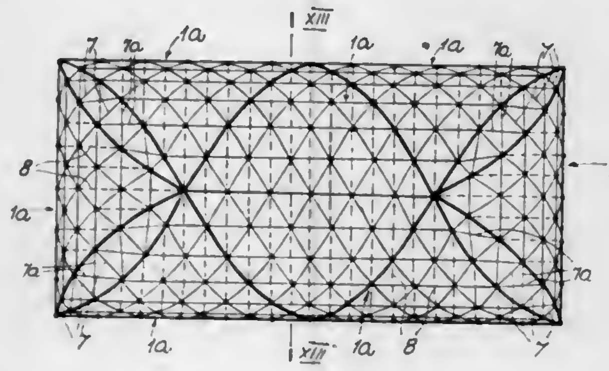
Giovanni Simone, via Bacchiglione 14, Milan, Italy

Filed Jan. 20, 1978, Ser. No. 871,331

Claims priority, application Italy, Jan. 21, 1977, 19512 A/77

Int. Cl.^{2} E04B *1/32*

U.S. Cl. 52—86 **10 Claims**



1. A modular reticular bearing structure for the formation of domed shelters of rectangular plan, the structure comprising a first, a second, a third and a fourth plurality of modular substantially isosceles triangular frames formed by a grid-like shell of outwardly curved section, said grid-like shell having polygonal meshes with their sides formed by oblique rigid strut-shaped elements of equal length, one joined to another at their ends by connecting joints, and being capable of being inscribed in a portion of a circular cylinder, said oblique strut-shaped elements being capable of being inscribed in crossed geodetic lines following a cylindric helix with constant pitch, said first plurality of frames extending upwardly from a first horizontal base line, said second plurality of frames and said third plurality of frames extending upwardly, respectively from second and third horizontal base lines which are parallel to one another, perpendicular to said first base line and extend from ends thereof, said fourth plurality of frames extending upwardly from a fourth base line which is parallel to said first base line, perpendicular to said second and third base lines and extends between other ends of said second and third base lines, fusiform areas being defined at respective corners of the structure between adjacent ones of said pluralities of frames.

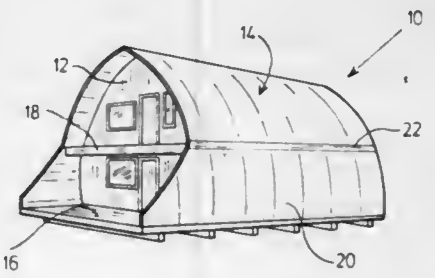
4,194,328
BUILDING CONSTRUCTION

John R. Peirson, and Deane A. L. Lynch, both of Peterborough, Canada, assignors to J. R. Pierson Building Systems Limited, Peterborough, Canada

Filed Jan. 5, 1978, Ser. No. 867,286

Int. Cl.^{2} E04B *1/32*

U.S. Cl. 52—86 **10 Claims**



1. In home building construction having rectangular floor plan, combination sidewall and roof extending from the building base to building peak, a substantial portion of said combination sidewall and roof being curved with its lower portion bulging outwardly, the remaining portion of said combination sidewall and roof being inclined linearly upwardly from said substantial portion to define the building peak, said combination sidewall and roof being constructed of a plurality of spaced apart parallel laminated rafters which extend from building base to peak, said combination sidewall and roof providing internally of said home a continuous surface on which a sheet of air-vapor barrier extends from building base to top over insulation material positioned between said rafters, the connection between sheets of barrier material being essentially impervious to moisture laiden air to prevent movement of air from within said building to outside said building.

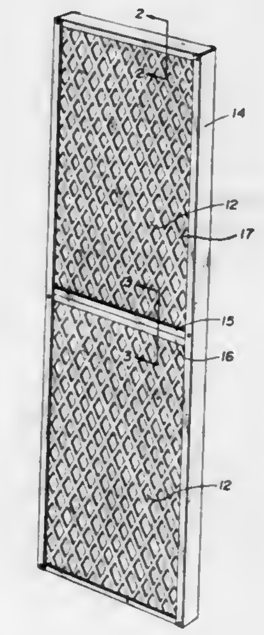
4,194,329
SOUND ABSORBING PANELS

Alan C. Wendt, 249 S., Poteet Barrington, Ill. 60010

Continuation of Ser. No. 650,633, Jan. 20, 1976, abandoned. This application Mar. 7, 1978, Ser. No. 884,447

Int. Cl.^{2} E04B *1/82*

U.S. Cl. 52—145 **23 Claims**



1. A sound absorbing panel for use in industrial sound control, said panel comprising a sound absorbing material being mineral fiber having a density of from four to six pounds per cubic foot wherein said sound absorbing material is completely enclosed in a heat shrunk plastic material and supported by a frame having an integral U-shaped cross-section, said U-shaped frame opening inwardly with flanges of the U-shape extended inwardly of the sound absorbing material enclosed in the heat shrunk plastic material and said frame extending about the outer edge of the heat shrunk plastic material enclosing the sound absorbing material.

4,194,330
NAILABLE STEEL FLOOR CHANNEL WITH ANTI-SKID SURFACE

James T. Smith, Valparaiso, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1978, Ser. No. 873,074

Int. Cl.^{2} E04F *11/16*

U.S. Cl. 52—177 **4 Claims**

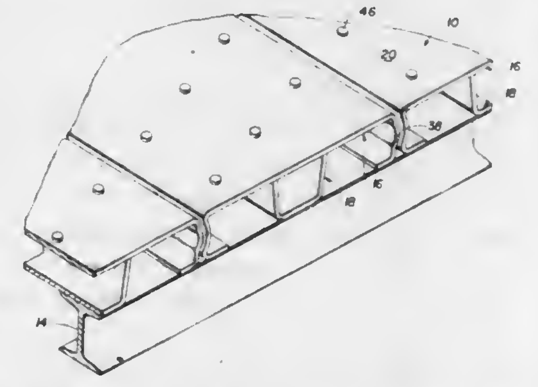
1. In a nailable steel floor construction including support means supporting a plurality of elongated substantially identical floor planking members, the planking members comprising,

a structural channel member roll formed from flat steel stock of substantially uniform thickness, the channel member having a central web defining a substantially flat load bearing surface and first and second downwardly depending flange members formed one on each side of the central web and each terminating at its lower edge in an inwardly turned ledge,

the first flange having a longitudinally extending outwardly concave corrugation formed thereon and the second flange having an outwardly convex corrugation which is substantially complementary to the concave corrugation on the first flange,

spacing means formed on at least one of the flanges at spaced intervals therealong for engaging the flange on an adjacent planking member in the floor construction to provide a nailing groove therebetween when the planking members are assembled into a floor,

an elongated substantially U-shaped reinforcing channel rigidly welded to the central web between the flanges and extending substantially the full length of the structural channel, the reinforcing channel having a base web disposed in a plane substantially parallel to the plane of the ledges on the first and second flanges and spaced slightly therefrom in the direction of said central web and upwardly extending legs formed one on each side edge of the base web and terminating in parallel spaced edges, the free edges being rigidly welded to the central web one on each side of the longitudinal center line thereof, and



a plurality of anti-skid projections of generally cylindrical configuration integrally formed on and projecting outwardly from the load bearing surface of the central web, the anti-skid projections being die pressed from the material of the flat steel stock located in substantially parallel rows extending longitudinally of the structural channel, the anti-skid projections each having a top surface extending generally parallel to and spaced from the load bearing surface of the central web and side edges extending substantially perpendicular to the load support surface of the central web, said top surface and said side edges intersecting at an angle to provide an abrupt, relatively sharp top peripheral edge on the anti-skid projections.

4,194,331
SYSTEM FOR ENHANCING THE PROPERTIES OF WINDOWS AND THE LIKE

Alan R. Gingle, 5728 S. Blackstone, Apt. 308, Chicago, Ill. 60637, and Terrance D. Gingle, 1136 E. Cunningham Dr., Palatine, Ill. 60067

Filed Apr. 17, 1978, Ser. No. 897,229

Int. Cl.^{2} E06B *3/64, 3/28*

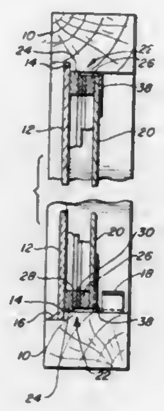
U.S. Cl. 52—203 **10 Claims**

1. In combination:

a window having a sash and at least one fixed pane of flat translucent material surrounded by and fixedly mounted along its edges within said sash,

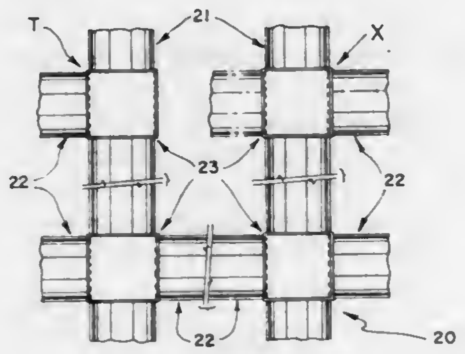
an insulating pane of flat, translucent material of approximately the same shape and of a size slightly smaller than the exposed surface of said fixed pane so that said insulating pane fits interior to said sash,

insulating strip means for holding said insulating pane to said fixedly mounted pane including a first insulating spacer strip means having one surface bonded to and along the periphery of said fixed pane and an oppositely facing selectively engageable surface and a second insulating spacer strip means having one surface bonded to and along the periphery of said insulating pane and an oppositely facing selectively engageable surface which intermates with the engageable surface of said first spacer strip means to hold said insulating pane in spaced parallel relation to said fixed pane, said insulating spacer strip means being of material having a low thermal conductivity being sufficiently thick to create an air space between said panes,



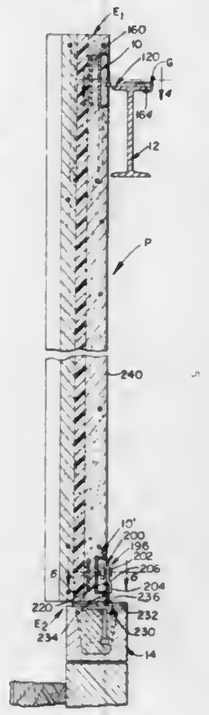
an insulating strip adhesively mounted to the outside edges of said insulating pane so as to be removable therewith, said insulating strip having a portion which overlaps said spacer strip on the opposite side of said pane and a flexible portion extending outward around the periphery of said insulating pane and into overlapping engagement with said sash so as to create an enclosed air space around the outer periphery of said insulating pane in addition to the air space between the panes.

4,194,332
ELECTRICAL WIRING DISTRIBUTION SYSTEM
Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Feb. 2, 1978, Ser. No. 874,537
Int. Cl.^{2} E04B *5/48*
U.S. Cl. 52—220 **14 Claims**



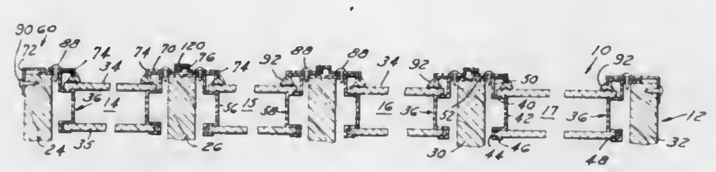
1. An electrical wiring distributing floor structure comprising:
- a substructure presenting an upper surface;
- an uninterrupted main unit supported on said upper surface and having opposite longitudinal edges, said main unit including alternating crests and valleys connected by webs and presenting at least one lengthwise trough defined by one of said valleys and the confronting webs connected thereto;
- spaced generally parallel main passageways defined in part by said main unit;
- a feeder unit supported on said upper surface and extending transversely away from said main unit;
- spaced generally parallel feeder passageways defined in part by said feeder unit and terminating in open feeder passageway ends adjacent to one of said longitudinal edges;
- a housing having a removable cover, enclosing a full-width segment of said main unit and said open feeder passageway ends, said housing having opposed sidewalls extending across said full-width segment in unobstructing relation with said lengthwise trough;
- a covering layer of concerte surrounding said housing;
- a partition extending transversely of said full-width segment in unobstructing relation with said lengthwise trough, said partition dividing the interior of said housing into a first compartment communicating with one of said feeder passageways of said feeder unit and a second compartment communicating with the others of said feeder passageways of said feeder unit;
- a first of said main passageways having a first access opening establishing communication with said first compartment;
- a second of said main passageways having a second access opening establishing communication with said second compartment;
- first and second capping means enclosing those portions of a common lengthwise trough on opposite sides of said housing thereby to provide substantially unobstructed additional main passageways communicating with said second compartment; and
- isolator means extending horizontally between the crests on opposite sides of said common lengthwise trough, isolating said first compartment from said common lengthwise trough.

4,194,333
ATTACHMENT FOR MOUNTING CONCRETE WALL PANELS ON A BUILDING
W. Donald Paton, Aurora, and Thomas W. Steenson, Richmond Hill, both of Canada, assignors to Butler Manufacturing Company, Kansas City, Mo.
Filed May 24, 1978, Ser. No. 908,965
Int. Cl.^{2} E04B *1/41*
U.S. Cl. 52—235 **8 Claims**



1. An attaching means for attaching wall panels to a building comprising:
- a plurality of first inserts mounted in a wall panel near one end thereof;
- a plurality of second inserts mounted in such wall panel near another end thereof which is remote from said one end;
- said inserts each including elongate chamber defining means defining a first chamber for accommodating concrete, said chamber having open ends so concrete can flow freely therethrough and thereinto for securely mounting said each insert in a wall panel, said chamber defining means including a pair of opposed U-shaped side members each having one leg thereof extending toward the other side member and located to be essentially coplanar with one leg of the other side member and spaced apart therefrom to define said elongate slot between said one legs, and elongate slot defining means on said each insert;
- a partition mounted in each of said inserts and including means for separating said first chambers from said slot and defining a slot chamber which is essentially isolated from said first chamber and which remains essentially free of concrete, said partition being U-shaped and having the legs thereof connected to said side member one legs so that said chamber is defined by said one legs, said partition and portions of said side members;
- a plurality of tongue elements each having tongue slots defined therein near one end thereof, said tongue slots having rounded bottom edges and slidably engaging an elongate slot defining means of one of said first inserts with said tongue one ends being received in one of said first insert slot chambers so that said each tongue is slidably connected to said one insert with the other ends thereof projecting outwardly therefrom, a tongue clamp element on each tongue connecting the other end of said each tongue to a building to connect a panel to such building with the sliding engagement between said each tongue and said first insert allowing relative vertical movement between a building connected panel and the building to which such panel is connected, said tongue clamps including a head for fitting over a beam and locking means attaching each tongue clamp to a tongue;
- a plurality of bottom clamp elements each associated with one of said second inserts and each including a fastening means secured to one of said second inserts, mounting means on a building, said each bottom clamp element fastening means being slidably engaged with said mounting means to connect a panel to a building such that relative movement between a building connected panel and the building to which such panel is connected is permitted.

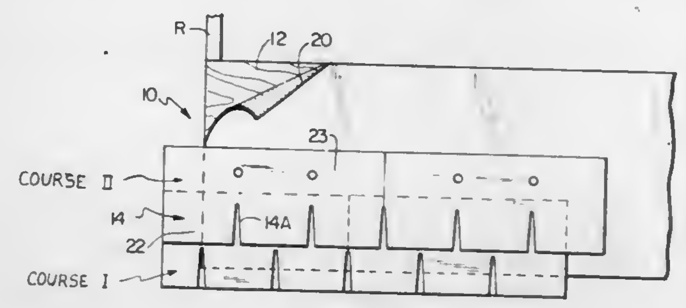
4,194,334
SELF-SEALING SOLAR COLLECTOR SHIELD
Joseph W. Katona, Walled Lake, Mich., assignor to Mills Products, Inc., Farmington, Mich.
Filed Jun. 5, 1978, Ser. No. 912,755
Int. Cl.^{2} E04B *1/62*
U.S. Cl. 52—397 **12 Claims**



1. A self-contained window unit adapted to be assembled in a solar collector shield or the like having means defining a window opening, said window unit comprising a glass pane, retaining means for said pane comprising a window frame extending along the peripheral edge portions of said pane, a mounting frame secured to said window frame for mounting said window unit in said window opening, and a peripheral seal carried by said mounting frame, said peripheral seal having a first portion in sealing contact with said glass pane and a second portion in sealing contact with said window frame.

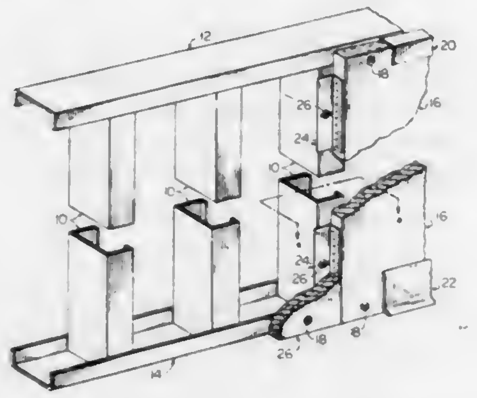
4,194,335
SINGLE SHEATHING ROOF PANEL
John N. Diamond, P.O. Box 93, Malvern, Pa. 19355
Continuation-in-part of Ser. No. 858,836, Dec. 8, 1977, abandoned. This application Mar. 29, 1978, Ser. No. 891,326
Int. Cl.^{2} E04D *1/00*
U.S. Cl. 52—419 **9 Claims**

1. A kit of prefabricated panels for roof construction including only four panels, said panels having characteristic end configurations designed to achieve an interlocking and interwoven relationship of shingles at the ends of selected panels which are butted together on a roof and a staggered overlapping relationship between the shingles on adjacent top and bottom edges when said panels are positioned in a vertical array of panel courses on a roof, said shingles of said panels including strips with upper straight edges along which said strips are secured to base sheets of said panels and lower incised unsecured edges in the provision of a plurality of unsecured liftable tabs, said shingle strips being self-sealing, one to the other in response to the heat of the sun comprising:
- a base sheet for each of said four panels having at least one end to be butted against a selected said at least one end of another panel;
- a first panel having four courses of shingles thereon extending longitudinally of said panel, said courses overlapping adjacent courses transversely of said panel, a first course of said shingles having a top layer of shingles and a bottom layer of shingles, the end shingles of the respective courses having a predetermined characteristic positional relationship to said at least one end of said base sheet wherein,
  - the end shingle of said top layer of said first course is flush with said at least one end while the bottom layer overlaps said at least one end,
  - the end shingle of a second course overlaps said at least one end,
  - the end shingle of a third course is flush with said at least one end, and
  - the end shingle of a fourth course overlaps said at least one end;
- a second panel having four courses of shingles thereon extending longitudinally of said panel, said courses overlapping adjacent courses transversely of said panel, a first course of said shingles having a top layer of shingles and a bottom layer of shingles, the end shingles of the respective courses having a predetermined characteristic positional relationship to said at least one end of said base sheet wherein,
  - the end shingle of said top layer of said first course is flush with said at least one end while the end shingle of said bottom layer is indented inwardly of the panel from said at least one end,
  - the end shingle of a second course is indented inwardly of the panel from said at least one end,
  - the end shingle of a third course is flush with said at least one end, and
  - the end shingle of a fourth course is indented inwardly of the panel from said at least one end;
- a third panel having five courses of shingles thereon extending longitudinally of said panel, said courses overlapping adjacent courses transversely of said panel, the end shingles of the respective courses having a predetermined characteristic positional relationship to said at least one end of said base sheet wherein,
  - the end shingle of a first course is flush with said at least one end,
  - the end shingle of a second course overlaps said at least one end,
  - the end shingle of a third course is flush with said at least one end,
  - the end shingle of a fourth course overlaps said at least one end, and
  - the end shingle of a fifth course is flush with said at least one end;
- a fourth panel having five courses of shingles thereon ex-



tending longitudinally of said panel, said courses overlapping adjacent courses transversely of said panel, the end shingles of the respective courses having a predetermined characteristic positional relationship to said at least one end of said base sheet wherein,
the end shingle of a first course is flush with said at least one end,
the end shingle of a second course is indented inwardly of the panel with respect to said at least one end,
the end shingle of a third course is flush with said at least one end,
the end shingle of a fourth course is indented inwardly of the panel with respect to said at least one end, and
the end shingle of a fifth course is flush with said at least one end.

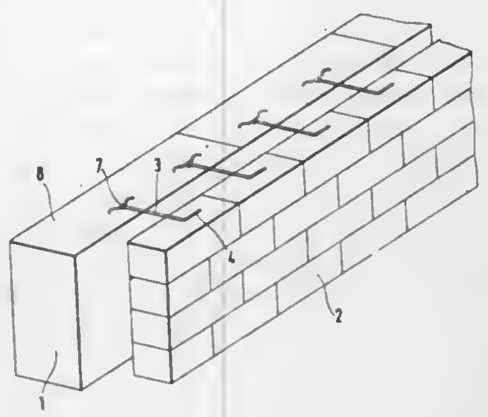
4,194,336
CONCEALABLE RETAINING CLIP FOR WALLBOARDS
Roger N. Weinar, 168 W. Woodside Ave., Buffalo, N.Y. 14220
Filed Nov. 21, 1977, Ser. No. 853,046
Int. Cl.^{2} E04B *5/52*
U.S. Cl. 52—481 **11 Claims**



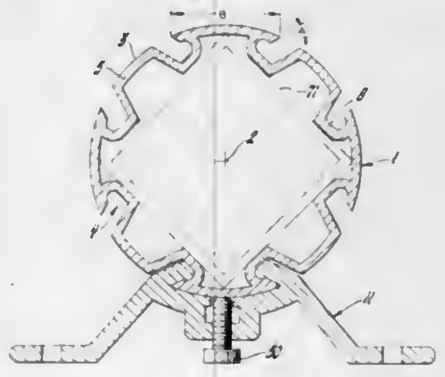
1. A concealable retaining clip for wallboards to hold them to framing members which comprises:
(A) a substantially flat plate portion which is fastenable to a framing member;
(B) a barb carrier portion which is a substantially perpendicular extension of said plate portion; and
(C) a plurality of spaced apart barbs carried by the barb carrier portion and having impaling edges thereof directed toward the plane of the plate from said barb carrier portion in alternately opposing outward directions away from the plane of the barb carrier portion so that said barbs may hold adjacent wallboards in position with one such wallboard pressing against the substantially flat plate portion of the retaining clip and the other pressing against a framing member to which said clip is fastenable.

4,194,337
MOUNTING ELEMENT
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3 (Tumlingen), Federal Rep. of Germany
Filed Nov. 8, 1978, Ser. No. 958,990
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752032
Int. Cl.^{2} E04B *1/38*
U.S. Cl. 52—713 **11 Claims**

1. A mounting element for connecting a ventilated cladding structure to a support wall, particularly one composed of aerated cement blocks, with the use of a wire anchoring member having one end mortared in a joint of the cladding structure, the mounting element comprising an eye-like receiving portion arranged to receive another end of the wire anchoring member, and a plate-like holding portion arranged to be driven into the supported wall retained in the latter and connected with said eye-like receiving portion so as to connect the support wall through said eye-like receiving portion and said anchoring member, with the cladding structure.



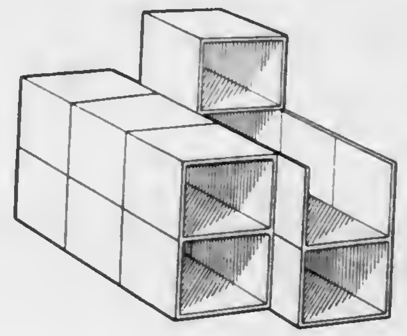
4,194,338
CONSTRUCTION COMPONENTS, ASSEMBLIES THEREOF, AND METHODS OF MAKING AND USING SAME
Ronald H. Trafton, 527 Berry Patch La., Pontiac, Mich. 48054
Continuation-in-part of Ser. No. 835,008, Sep. 20, 1977, Pat. No. 4,142,343. This application Dec. 22, 1978, Ser. No. 972,394
Int. Cl.^{2} E04C *3/32*
U.S. Cl. 52—721 **10 Claims**



1. An apparatus comprising:
an elongated support member having a major longitudinal central axis and an outer periphery which includes at least one groove therein;
said elongated support member having a tubular configuration which has a substantially constant wall thickness;
said groove being disposed substantially parallel to said major longitudinal central axis of said elongated support member;
said groove having an arcuate side wall portion and a substantially flat side wall portion;
said groove including a flat base portion which is disposed in a flat plane that is oriented substantially perpendicular to a radius emanating from said major longitudinal central axis of said elongated support member; and
interconnecting means for assembling at least one said elongated support member into a building structure member.

4,194,339
METHOD FOR CONSTRUCTING TOWN HOUSES AND THE LIKE
John S. Fisher, 23310 Aetna St., Woodland Hills, Calif. 91364
Continuation of Ser. No. 823,459, Aug. 10, 1977, abandoned, which is a division of Ser. No. 364,808, May 29, 1973, Pat. No. 4,073,102. This application Aug. 7, 1978, Ser. No. 931,307
Int. Cl.^{2} E04B *1/00*
U.S. Cl. 52—745 **8 Claims**

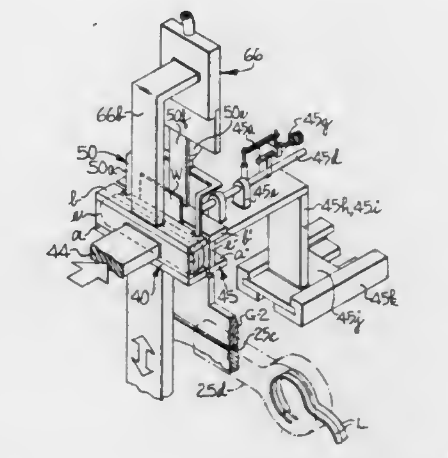
1. A building construction method for providing at a building site a plurality of adjoining plural-story building units, comprising the following steps:
- A. at a prefabricating site remote from the building site:
  - 1. casting a large number of reinforced concrete modules of two basic types:
    - a. for understories, U-shaped modules having a floor slab integral with two parallel load-bearing sidewalls which are laterally spaced apart by the floor slab at the full width of the building unit with which they are to be used, each of said U-shaped modules having an open top,
    - b. for the top stories only, tube-shaped modules having two parallel load-bearing sidewalls spaced apart laterally from each other at the full width of the building unit with which they are to be used and joined to each other by a floor slab and a ceiling slab, both integral with said sidewalls,
  - 2. prefinishing each module so that finishing at the building site is minimized, said prefinishing including finishing the bottom of each module, except those to be used on the lowest story, to provide a suitable ceiling for the story therebelow,
- B. transporting from said prefabricating site to said building site a sufficient number of modules, unconnected to each other, for making the building to be built there,
- C. at said building site:
  - 1. providing foundation structure for each of said building units,
  - 2. placing on said foundation structure for each said building unit a first-story series of U-shaped modules, there being a plurality of such modules for each building unit with their sidewalls aligned along two parallel planes, so that the modules are longitudinally aligned,



  - 3. spacing apart the sidewalls of adjacent building units to provide a double-wall thickness and an airspace between each pair of adjacent building units,
  - 4. permanently securing said modules to said foundation structure and permanently securing the modules for each building unit together,
  - 5. anchoring to said foundation at the bottom of said airspace a plurality of vertically extending post-tensioning strands extending up between modules in the airspace,
  - 6. positioning polystyrene rods horizontally between the upper edges of the adjacent sidewalls of modules of adjoining units, spanning the airspace therebetween to maintain it and to help convert the airspace therebetween into a dead-air space,
  - 7. for each additional story except the uppermost story of each unit, placing and permanently securing in place on top of the story therebelow, additional U-shaped modules with the bearing walls of each upper story in line with those of the modules therebelow,
  - 8. positioning polystyrene rods horizontally as in step C-6 for each story of U-shaped modules,
  - 9. for the uppermost story only, placing and permanently securing in place to each other and to the U-shaped modules of the stories directly therebelow, tube-shaped modules with their sidewalls vertically aligned with those of the U-shaped modules therebelow,
  - 10. positioning polystyrene rods, as in step C-6, horizontally between the upper edges of the tube-shaped modules of adjoining units,
  - 11. positioning polystyrene rods vertically at each vertical extremity of the airspace of adjoining units for the full height of each module, so that the airspace is fully enclosed,
  - 12. post-tensioning the post-tensioning strands, with means bearing against the upper portions of said tube-shaped units, and
  - 13. roofing over the structure over the slab ceilings of said uppermost story,

whereby redundancy of ceilings and walls is avoided in each building unit and double thickness with dead-air space are provided between adjacent living units.

4,194,340
APPARATUS FOR PACKAGING SHOELACES: ESPECIALLY OF THE ROUND TYPE
Newman McIntyre, Shelby, N.C., assignor to McIntyre Packaging Company, Shelby, N.C.
Filed Mar. 15, 1978, Ser. No. 886,660
Int. Cl.^{2} B65B *63/04, 11/08*
U.S. Cl. 53—119 **12 Claims**



1. In an apparatus for packaging shoelaces having winding means for winding shoelaces into circular convolutions and means for flattening and thereby elongating the convolutions while moving the same away from the winding means; the combination therewith of
a first lace receiving unit defining a first elongate lace confining channel therein and normally occupying a first position for receiving and confining therein the flattened shoelace convolutions from the winding means, and said first lace receiving unit having an elongate opening in one side thereof communicating with said first channel,
a second lace receiving unit spaced vertically away from said first lace receiving unit in its first position and defining a second elongate lace confining channel therein, said second lace receiving unit also having an elongate opening in one side thereof communicating with said second channel,
means for positioning a wrapper to extend across a medial portion of the opening in said second lace receiving unit,
reciprocating means for moving said first lace receiving unit in a substantially vertical direction to a second position in proximal side-by-side relation to said second lave receiving unit with said elongate openings of the units in substantially aligned communicating relationship and so that the wrapper then is disposed between said first and second lace receiving units,
means for transferring the flattened shoelace convolutions from said first channel, through said elongate openings into said second channel so that the wrapper is wrapped partially around the flattened convolutions and comprising a plunger positioned and movably mounted within said first channel and extending longitudinally thereof and serving to define a channel wall movable transversely within the channel,

means for then moving at least one of said lace receiving units away from the other lace receiving unit to provide therebetween a space for accommodating a folding operation,

folding means movable into the space between said receiving units for folding opposite ends of the wrapper into overlapping relation against the corresponding side of the shoelace convolutions, and

means for removing the thus wrapped shoelace convolutions from said second lace receiving unit and comprising a plunger positioned and movably mounted within said second elongate channel and extending longitudinally thereof and serving to define a channel wall movable transversely within the channel.

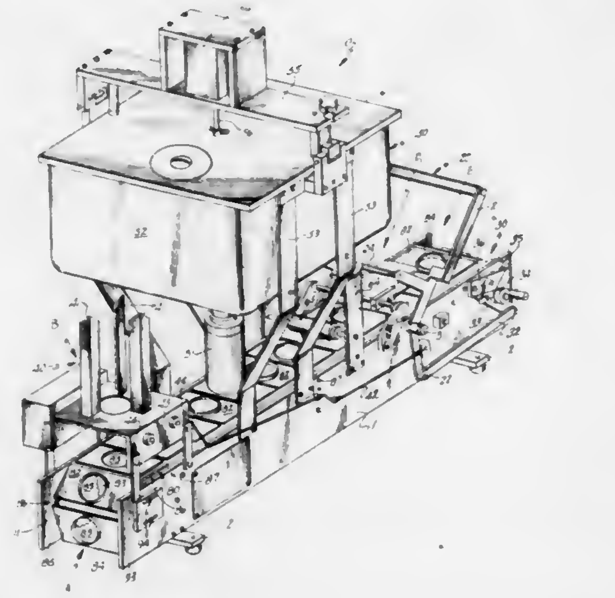
4,194,341
HAND OPERATED FILLING AND SEALING DEVICE

Lee S. Kihnke, and Gary Kruse, both of Spring Lake, Mich., assignors to JSJ Corporation, Grand Haven, Mich.

Filed Dec. 5, 1977, Ser. No. 857,426

Int. Cl.² B65B *3/06*

U.S. Cl. 53—282 **18 Claims**



1. A manually operated portion packaging apparatus for denesting, filling and sealing of a container in a sequential series of manually initiated step operations, said portion packaging apparatus including:

a handle means positionable between an up and a down position for initiating said step operations, a complete cycle of said handle means including movement of said handle means from said up position to said down position and back to said up position, said cycle being repeated for sequential operations of said portion packaging apparatus;

a rotatable endless conveyor means having a plurality of container receiving means therein and movable in a downstream direction;

coupling means for intermittently moving said conveyor means one step in response to movement of said handle means from said up position to said down position;

a container dispenser means positioned above one of said container receiving means when said handle means is in said down position and coupled to said handle means so that one container is released when said handle is moved from said down position to said up position;

a material dispenser means positioned above an other of said container receiving means while said container dispenser means is positioned above said one container receiving means and when said handle means is in said down position and coupled to said handle means so that when said handle is in said down position, a predetermined quantity of the material from said material dispenser means is released and deposited in said other container carried by said conveyor chain;

a sealing means for closing a filled container, said sealing means including a sealing film dispenser for positioning a sealing film on still an other container while said container dispenser means is positioned above said one container receiving means, said sealing means also including a heating element for applying heat to said sealing film positioned on a container, said heating element being coupled to said handle means so said heating element is in an inoperable position displaced from said sealing film when said handle means is in an up position and said heating element is in an operable position contacting said sealing film when said handle means is in a down position; and

a cutter means for cutting said sealing film downstream of said operable position of said heating element, said cutter means coupled to said handle means so as to be positioned in an inoperable position displaced from said sealing film when said handle means is in an up position and positioned in an operable position adjacent said sealing film when said handle means is in a down position.

4,194,342
FOLDED PAPER EDGE OPENING PROCESS

Joseph Savit, Glencoe, Ill., assignor to AES Technology Systems, Inc., Elk Grove Village, Ill.

Filed Sep. 27, 1978, Ser. No. 946,347

Int. Cl.² B65B *43/26, 69/00*

U.S. Cl. 53—492 **12 Claims**

1. In the method of opening envelopes made of cellulosic paper in which at least one chemical reagent is applied to at least one edge of each envelope followed by the application of heat and mild mechanical action thereto, the improvement wherein said chemical reagent comprises as the sole reactant with cellulosic paper a non-noxious organic acid having at least one pK value at room temperature between about 1.5 and about 5.

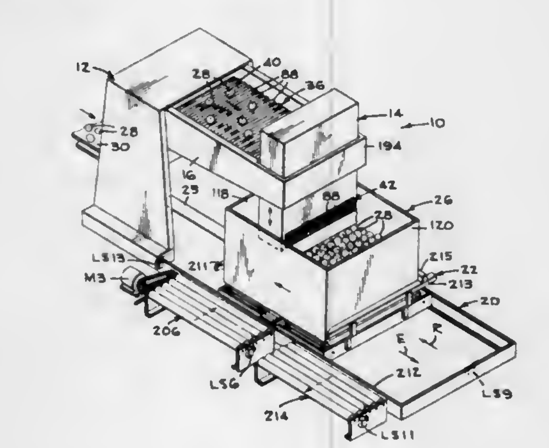
4,194,343
DRY BIN FILLER

Harold E. Myers, and Charles E. Sheetz, both of Woodstock, Va., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 19, 1976, Ser. No. 649,933

Int. Cl.² B65B *57/14, 39/12*

U.S. Cl. 53—493 **7 Claims**



1. An apparatus for gently transferring irregularly sized, fragile articles from a supply conveyor to a storage bin, said apparatus comprising:

means defining a transversely elongate inlet portion for receipt of said articles;

means defining a transversely elongate discharge portion for depositing said articles in said bin, said elongate inlet and discharge portions accomodating a row of articles;

means for establishing relative movement between said bin and said elongate discharge portion in a direction transverse to the elongate direction of said discharge portion;

means including a pair of opposed article gripping conveyors for downwardly conveying said articles between said inlet portion and said discharge portion, said gripping conveyors having opposed elongate resilient means for gently cradling and suspending said articles between vertically adjacent pairs of said opposed resilient means, and said resilient means being uniformly spaced along each conveyor in the direction of movement thereof by an interval selected according to the size range of said articles conveyed therebetween;

means connected to said means defining said discharge portion for gently directing said articles from a lower end of said opposed gripping conveyors into said bin;

means for reversing said directing means to discharge said articles alternately from opposite sides of said elongate discharge portion in accordance with the direction of relative motion of said bin and discharge portion; and

means for coordinating the operation of said reversing means with the position of said articles in said discharge portion to prevent the movement of said directing means when any of said articles have just excited said discharge portion thereby eliminating possible damage to said any of said articles by the movement of said directing means.

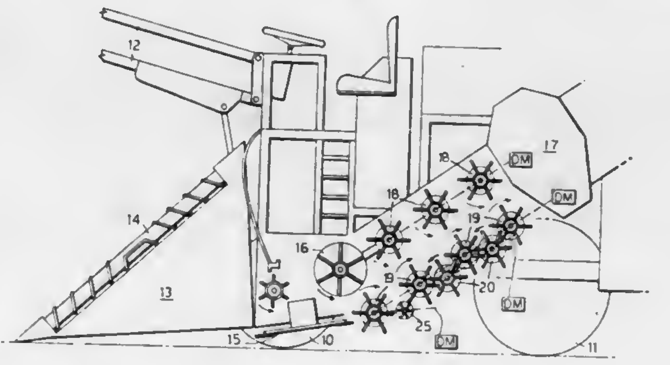
4,194,344
SUGAR CANE HARVESTERS

Mizzi Joseph M., Halifax Rd., Ingham Queensland, Australia

Filed May 8, 1978, Ser. No. 903,793

Int. Cl.² A01D *45/10*

U.S. Cl. 56—13.9 **6 Claims**



1. A sugar cane harvester of the type having a frame and a cane stalk feed conveyor, comprising:

(a) a series of upper feed rollers mounted on said frame, and means for driving said feed rollers in a first direction,

(b) a series of lower feed rollers mounted on said frame, and means for driving said lower feed rollers in a second direction opposite to the direction of said upper feed rollers, each of said lower feed rollers being formed with a series of longitudinal, radially extending and arcuately spaced vanes the outer edges of which are serrated, said upper and lower feed rollers being adapted to convey cane stalks between them;

(c) a plurality of cleaning rollers mounted on said frame, each of said cleaning rollers being positioned between successive lower feed rollers, with the plane containing the uppermost parts of the cleaning rollers being below the plane containing the uppermost parts of the lower feed rollers, each of said cleaning rollers being formed with a series of longitudinal, radially extending and arcuately spaced vanes the outer edges of which are serrated, the vanes of said cleaning rollers and adjacent lower feed rollers being in intermeshing relationship, and means for driving said cleaning rollers in a direction opposite to the direction of rotation of said lower feed rollers, whereby leafy matter is torn away from the conveyed cane stalks.

4,194,345
LAWNMOWER

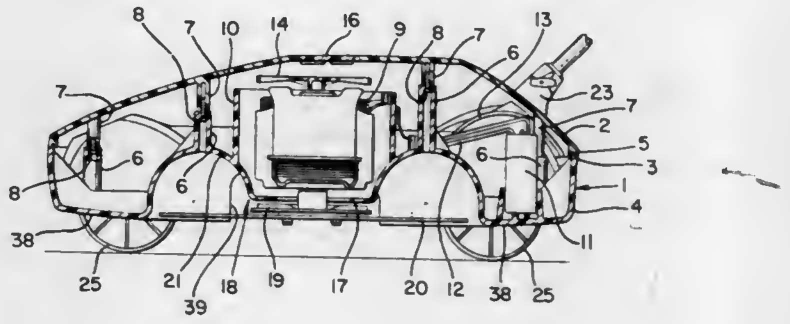
Peter P. Pioch, Idstein, and Rainer Bachmann, Hohenstein, both of Fed. Rep. of Germany, assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 14, 1978, Ser. No. 915,627

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727157

Int. Cl.² A01D *35/20*

U.S. Cl. 56—17.5 **22 Claims**



1. A rotary lawnmower having a rotary cutting blade defining a cutting plane comprising:

a one-piece dish-like body defining the chassis of the lawnmower and having a substantially continuous bottom wall at least a portion of which is substantially in the plane defined by the cutting blade;

said dish-like body further having a wall extending upwardly from said bottom wall to define the outermost peripheral sidewall of said body;

said outermost peripheral side wall including an uppermost edge extending about the entire periphery of said body;

a motor equipped with an output drive shaft having a free end, said motor being mounted in said body so as to cause said free end to penetrate said bottom wall for carrying the cutting blade thereon; and,

a cover coextensive with said uppermost edge of said outermost peripheral side wall, said cover being engageable with said outermost side wall at said uppermost edge to conjointly define with said dish-like body a housing enclosing said motor.

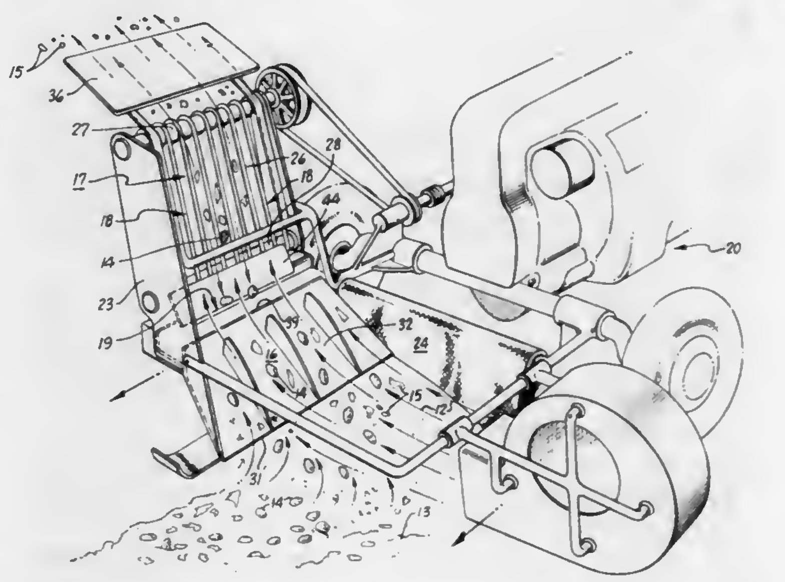
4,194,346
HARVEST SEPARATOR

Charles C. Ingalls, P.O. Box 382, Ceres, Calif. 95307

Filed Feb. 27, 1978, Ser. No. 881,542

Int. Cl.² A01D *51/00*

U.S. Cl. 56—328 R **4 Claims**



1. A mobile apparatus for harvesting nuts and the like together with various harvest debris which particles have been placed in elongated windrows on the orchard floor, comprising:

a. a mobile frame which is movable over the orchard floor along a path substantially parallel to said windrows;
b. means for blowing an airstream of air generally parallel to said orchard floor and substantially transverse to said windrow whereby said particles are entrained in said airstream;
c. a ramp inclined upwardly along a longitudinal axis having a leading edge at substantially the level of the orchard floor and a trailing edge elevated above the orchard floor, said ramp being positioned with its longitudinal axis in said airstream and said particles entrained therein and with the trailing edge being downstream of the leading edge, whereby said airstream and said particles entrained therein are deflected upwardly at a first predetermined angle causing a verticle vector being imposed in the line of travel of said particles thereby causing gravity to decelerate high mass-to-area particles at a faster rate than lower mass-to-area particles;
d. conveying means having an upstream side and a downstream side with respect to said airstream, such conveying means located with the upstream side adjacent to and lower than said trailing edge of the ramp whereby a portion of the high mass-to-area particles, the nuts and the like, descend over the edge of said trailing edge of said ramp and onto said conveying means due to deceleration by gravity and the balance of said particles remain entrained in said airstream; and
e. an upwardly movable surface,
  (1) having an upper portion and a lower portion and positioned with its lower portion substantially adjacent to said downstream side of said conveying means,
  (2) inclined upwards along a longitudinal axis in substantial alignment with the longitudinal axis of said ramp, said inclination being such as to further deflect the particles therein by a second predetermined angle causing an increased vertical vector to be imposed in the line of travel of said particles thereby causing gravity to decelerate high mass-to-area particles at a faster rate than the low mass-to-area particles whereby a portion of said debris is carried in said stream to the upper portion of the movable surface without contacting the movable surface,
  (3) the upwardly movable surface having openings over a predetermined area thereof, said openings being smaller than the size of the nuts and the like whereby the force by which the airstream forces the nuts and the like against the movable surface is less than the pull of gravity thereon causing the nuts and the like to descend onto the conveying means below and whereby the debris is held by the airstream against said movable surface with sufficient force to cause the movable surface to move said debris to the upper portion of said movable surface where it is ejected into the airstream and carried away from the apparatus.

4,194,347

METHOD AND APPARATUS FOR SHAKING TREES GROWN IN ROWS

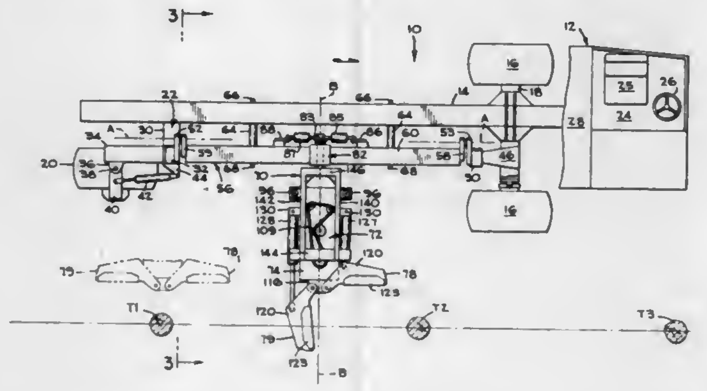
Ronald L. Peters, Modesto, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 10, 1978, Ser. No. 885,147

Int. Cl.² A01D *46/00*

U.S. Cl. 56—328 TS **7 Claims**

1. An apparatus for sequentially shaking the trunks of trees in a row of trees comprising:
a carrier vehicle adapted to be driven along a generally straight path of travel which is parallel to the row of trees to be harvested; and
a tree shaking and clamping assembly resiliently mounted to said carrier vehicle to extend transversely with respect to said straight path of travel, said assembly including
a housing;
a first clamping arm pivotally mounted on said housing for rotation about an axis which is proximal to said row of trees to be shaken, said arm being pivotable through an arcuate path from a stowed position extending forwardly of and generally parallel said path of travel to a transversely extended position adapted to engage the leading side of the trunk of a tree to be shaken;
a second clamping arm pivotally mounted to said housing for rotation about an axis which is parallel to the axis of rotation of said first clamping arm, said second clamping arm being mounted to the rear of said first arm, said second arm being pivotable through an arcuate path from a stowed position extending rearwardly of and generally parallel to said path of travel to a transversely extended position adapted to engage the trailing side of the trunk of a tree to be shaken;
first means mounted to said housing for pivoting said first clamping arm;
second means mounted to said housing for pivoting said second clamping arm, said first and second means being selectively and independently operable; and,
means for applying shaking forces to said arms.



4,194,348

HAYMAKING MACHINE WITH ROTARY RAKE HEADS

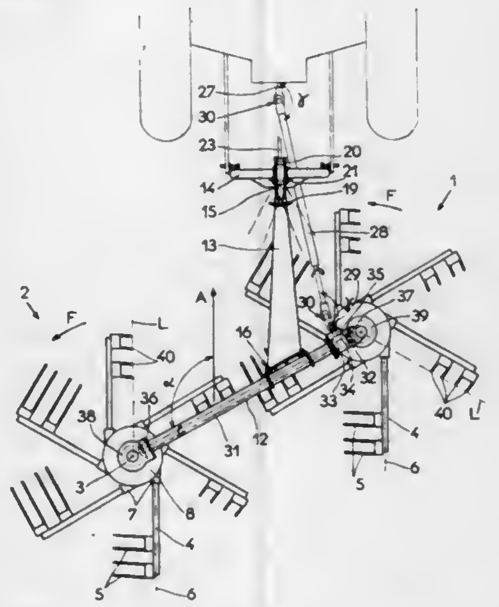
Frederic Gerlinger, Ottersthal, France, assignor to Kuhn, S.A., Saverne, France

Filed Feb. 28, 1978, Ser. No. 882,215

Claims priority, application France, Mar. 4, 1977, 77 06885

Int. Cl.² A01D *79/00*

U.S. Cl. 56—377 **7 Claims**



1. A haymaking machine for the lateral windrowing of fodder, comprising at least two rotary rake heads which are driven in rotation so as to turn in the same direction about substantially vertical axes, several tool-carrier arms mounted on each said rake head for oscillation about their longitudinal axes, said arms extending outwardly from adjacent the vertical axis of their associated rake heads, control mechanism disposed about said vertical axes for oscillating said arms so as to cause the working tools, over a partial zone of their trajectory, to

pivot upward and in the direction opposite to the direction of rotation of the rotary rake heads, a support chassis that interconnects said rake heads and which is disposed obliquely in relation to the direction of travel of the machine, a hitch device permitting coupling of the machine to the three-point hoist device of a propelling tractor, and a connection beam which connects the chassis to the hitch device, and a substantially vertical pivot spindle which connects the front end of said beam to the hitch device, the rear end of said beam being rigidly connected to said chassis in such manner as to retain said chassis during normal operation in a position in which it constantly forms an obtuse angle with the direction of travel of the machine.

4,194,349

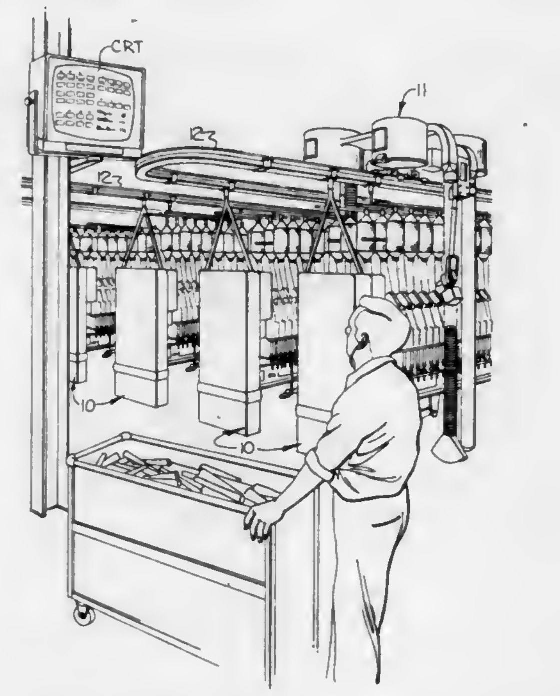
APPARATUS AND METHOD FOR GATHERING AND DISPLAYING INFORMATION

John E. Lane, Littleton, Mass., assignor to Parks-Cramer Company, Fitchburg, Mass.

Filed Apr. 26, 1978, Ser. No. 900,267

Int. Cl.² D01H *13/32*

U.S. Cl. 57—265 **60 Claims**



1. In apparatus for displaying information regarding the operating conditions of a group of ring spinning machines in a textile mill wherein each machine has delivery rolls from which strand material issues and intermediate guides through which strand material passes and ring rails by which strand material is formed into packages during winding thereof, and wherein the apparatus has at least one traveling unit supported for travel along a predetermined path for traversing one or more of the machines, detectors mounted on the traveling unit for monitoring ends of strand material normally being formed by a traversed machine, and a data system responsive to the detectors for determining the ends down condition of the traversed machine from the conditions of the monitored ends, an improvement comprising:
rotation sensor means mounted on each machine of the group for signalling revolutions of the delivery rolls of the machine,
processor means operatively communicating with each of said sensor means of the group of machines and responsive to sensor signals for determining from said signals an operating condition of respective ones of the machines of the group and for generating display signals indicative of the determined conditions of the machines, and
visual display means operatively communicating with said processor means and responsive to generated display signals for presenting a visual display of the determined condition of at least a selected one of the group of machines.

4,194,350

THREAD DEFLECTING ELEMENT FOR A DRAW-TEXTURING MACHINE

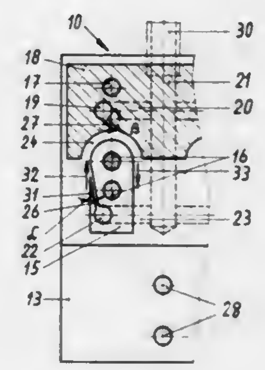
Hans Schellenberg, and Walter Vetterli, both of Winterthur, Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Jul. 24, 1978, Ser. No. 927,574

Claims priority, application Switzerland, Jul. 23, 1977, 9117/77

Int. Cl.² D01H *13/04, 13/08*

U.S. Cl. 57—352 **18 Claims**



1. A thread deflecting element for a heater of a draw-texturing machine, said element comprising
means defining an arcuate groove for passage of a thread, said groove having a thread entrance at one end and a thread exit at an opposite end;
a first duct merging into said groove from a side within the curvature of said groove; and
a second duct merging into said groove from an opposite side outside said curvature of said groove.

4,194,351

ELECTRONIC TIMEPIECE

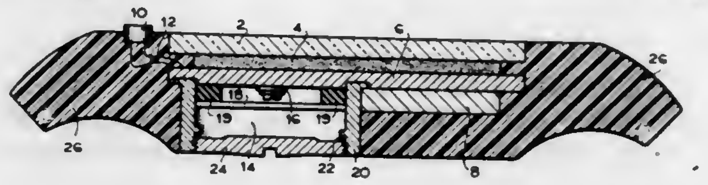
Kazunari Kume, and Yasushi Nomura, both of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1977, Ser. No. 853,864

Claims priority, application Japan, Nov. 26, 1976, 51-141174

Int. Cl.² G04C *3/00*

U.S. Cl. 368—82 **7 Claims**



1. In an electronic timepiece including a unitary, interconnected structure comprising a windshield, display means adjacent the windshield, timepiece driving means including a time reference signal source for driving the display means, a battery cell case receiving a battery cell supplying the timepiece driving means with driving energy, and external switch means for externally controlling said timepiece driving means and a molded casing made of resin formed about and incorporating into a unit said windshield, said display means, said timepiece driving means, said battery cell case and said external switch means the improvement comprising said timepiece driving means including a printed circuit board carrying the time reference signal source, wherein said display means is sandwiched between the windshield and the printed circuit board, and wherein said battery cell case is adjacent the printed circuit board and has a partition therein forming first chamber for enclosing a trimmer capacitor attached to the printed circuit board and forming a second chamber for receiving the battery cell supplying the timepiece driving means with driving energy.

4,194,352

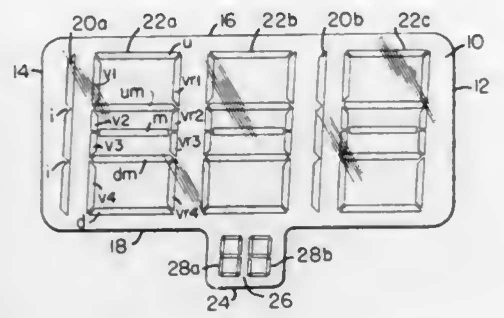
COMPACT, MULTI-FUNCTIONAL DIGITAL TIME DISPLAYS

Berj A. Terzian, 66 Hirst Rd., Briarcliff Manor, N.Y. 10510

Continuation-in-part of Ser. No. 861,115, Dec. 16, 1977, and Ser. No. 886,121, Mar. 13, 1978. This application Aug. 11, 1978, Ser. No. 932,921

Int. Cl.^{2} G04B *19/30*

U.S. Cl. 368—239 **23 Claims**



1. Digital time displays which comprise:
(a) a plurality of 13-element arrays of digital time display elements;
(b) each array comprising five horizontal line display elements spaced vertically apart from each other, with the respective left and right ends thereof in substantial vertical alignment;
(c) each array further comprising two sets of four vertical line display elements bridging, respectively, the aligned left ends and the aligned right ends of the five horizontal elements, whereby in each array,
(i) the highest, central and lowest horizontal elements and all the vertical elements are selectively displayable in combinations to display relatively large digits,
(ii) the highest, second highest and second lowest horizontal elements and the vertical elements bridging the aligned ends thereof are selectively displayable in combinations to display smaller digits, relative to (i), in a relatively upper position, and
(iii) the lowest, seocnd lowest and second highest horizontal elements and the vertical elements bridging the aligned ends thereof are selectively displayable to display smaller digits, relative to (i), in a relatively lower position.

4,194,353

ANALOG DISPLAY CALENDAR WATCH

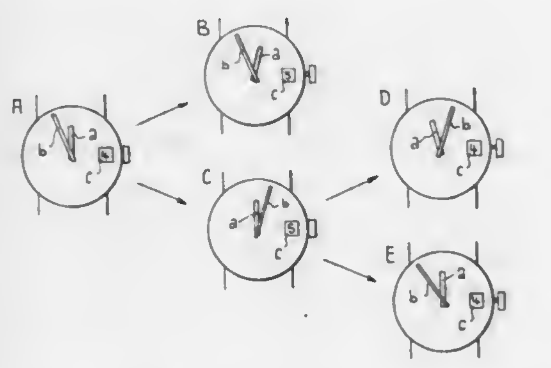
Michel Thomi; Michel Groothuis, and Serge Meylan, all of St.-Imier, Switzerland, assignors to Compagnie des Moutres Longines Francillon SA, St.-Imier, Switzerland

Filed May 19, 1978, Ser. No. 907,701

Claims priority, application Switzerland, May 27, 1977, 6538/77

Int. Cl.^{2} G04B *19/24, 27/00*

U.S. Cl. 368—38 **5 Claims**



1. An analog digital display calendar watch, comprising:
an hour hand capable of being rotatably advanced or reversed by steps of 1/12 of a turn;
a wheel making one rotation every 24 hours as indicated by the watch, said 24-hour wheel having a pin;
a rocker lever mounted on the watch, said pin rocking said lever once every ≧hours;
a pinion rotatably carried on said rocker lever for engaging said 24-hour wheel;
a plate secured to said pinion having a catch;
a calendar disc having spaced teeth for engagement with said catch; and
a jumper engaging said disc teeth for positioning said disc;
said rocking of said lever causing said catch to engage between two consecutive teeth of said calendar disc, so that said disc is automatically and rapidly driven in a direction corresponding to that of said hour hand, regardless of the mode of advance and direction of rotation of said hours hand.

4,194,354

TIMER

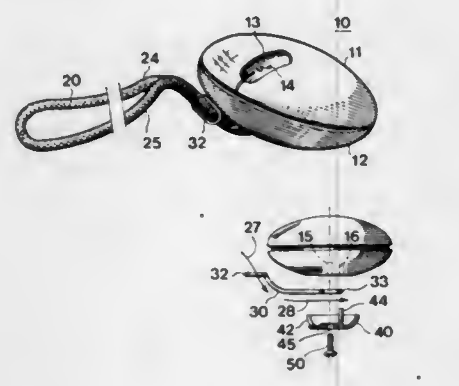
Paul Terraillon, Le Mont Gosse, 74 560 Monnetier-Mornex, France

Filed May 8, 1978, Ser. No. 903,495

Claims priority, application Switzerland, Feb. 6, 1978, 1283/78

Int. Cl.^{2} G04B *37/12;* **A47G** *29/00;* **F16G** *11/00*

U.S. Cl. 368—276 **1 Claim**



1. A timer having a clock mechanism and a case housing, said timer also including a stirrup, said stirrup being shaped generally to conform to the outer shape of the housing adjacent thereto, one end of said stirrup having an eyelet, the other end of said stirrup having a loop, a cord, said cord being doubled to have two strands, the two strands of said cord passing frictionally through said loop and along said stirrup toward said eyelet and terminating adjacent said eyelet, a cap, a notch in the periphery of said cap, said strands and said stirrup extending through said notch, means for attaching said cap to an adjacent part of said case with said eyelet and the ends of said strands therebetween.

4,194,355

CONNECTION STRUCTURE FOR WATCH CASE AND BAND

Mitsuo Nishida, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1978, Ser. No. 879,583

Claims priority, application Japan, Feb. 26, 1977, 52-21958[U]

Int. Cl.^{2} G04B *37/12*

U.S. Cl. 368—282 **5 Claims**

1. A connection structure between a watch casing and a watchband comprising:
(a) a body for said watch casing,

(b) at least one internal module incorporated within said body,
(c) a recess formed at the bottom surface of said body,
(d) a plurality of electrical connector pins each having one end exposed at an upper portion of said recess and each being connected to at least one of said internal modules,
(e) a connector block of an elastic insulating material disposed in said recess and provided with a plurality of resilient conductors extending between an upper and lower surface thereof, said resilient conductors electrically connected to said electrical connector pins at the upper surface of the connector block,
(f) a flexible insulating material provided at the proximal end of said watchband with a projection received in said recess,
(g) at least one external module attached to said watchband,
(h) a plurality of connector wires embedded in said watch band, each end of said wires being connected to an individual terminal in contact with one of said resilient conductors at the lower surface of the connector block, the other end of said wires connected to at least one of said external modules, and
(i) a back cover compressing said projection and said connector block against the casing body.

4,194,356

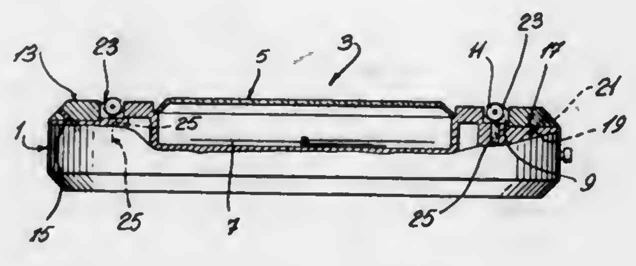
THERMO WRIST WATCH

Nick Mazzilli, 7540 Garnier St., Apt. 3, Montreal, Quebec, Canada

Filed Mar. 23, 1978, Ser. No. 889,562

Int. Cl.^{2} G04B *47/06*

U.S. Cl. 368—11 **10 Claims**



1. A watch and thermometer arrangement, comprising:
a dial face having a crystal covering;
means, for carrying a thermometer, comprising a channel, outside of said crystal cover, surrounding said dial face;
a thermometer mounted in said means for carrying a thermometer;
said thermometer being mounted on a plurality of spaced y-shaped stands in said channel;
each said y-shaped stand comprising a vertical post and a u-shaped cradle mounted at one end of the vertical post;
the thermometer being carried in the cradles of the y-shaped stands;
at least the cradle of each y-shaped stand being made of an insulating material.

4,194,357

AUTO IGNITION TEMPERATURE CONTROL SYSTEM

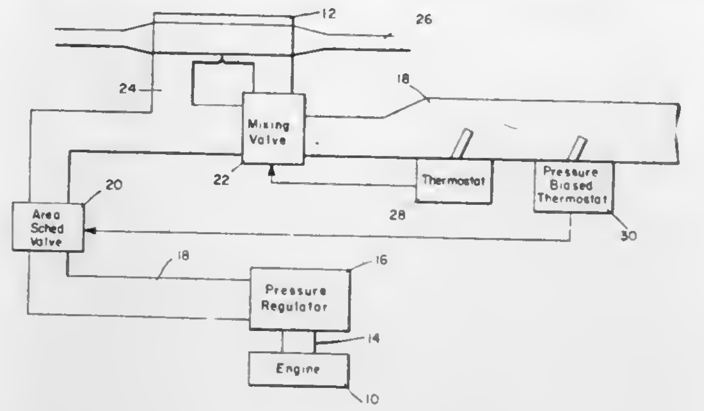
Dan S. Matulich, Rolling Hills Estates, Calif., and B. Franklin Saylor, Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 704,903, Jul. 13, 1976, Pat. No. 4,102,387. This application Mar. 14, 1978, Ser. No. 886,388

Int. Cl.^{2} F28F *27/00*

U.S. Cl. 60—39.02 **6 Claims**

1. An auto-ignition temperature control system for holding surfaces adjacent fuel vapors to temperatures below a predetermined schedule, said system comprising:
means for thermal conditioning turbine engine bleed air;
first thermostat means for controlling said thermal conditioning means;
valve means for limiting flow of bleed air through said thermal conditioning means;



second thermostat means for controlling said valve means to limit output of said thermal conditioning means to a threshold temperature; and
pressure responsive means for varying said threshold temperature with altitude to approximate said predetermined schedule.

4,194,358

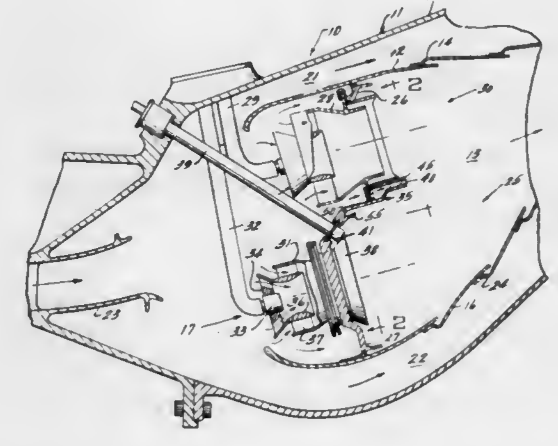
DOUBLE ANNULAR COMBUSTOR CONFIGURATION

Richard E. Stenger, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 15, 1977, Ser. No. 860,933

Int. Cl.^{2} F02C *7/22*

U.S. Cl. 60—39.06 **15 Claims**



1. An improved double annular combustor of the type having concentrically disposed pilot and main stage sections, wherein the pilot stage section has inner combustor domes and means for fueling said inner combustor domes for lower power operation and the main stage section has outer combustor domes and means for fueling said outer combustor domes only for higher power operation, said pilot stage section being disposed radially inward of the main stage section.

4,194,359

MEANS FOR IMPROVING THE PERFORMANCE OF BURNER SHROUD DIFFUSERS

Edward T. Brookman, East Hampton; Robert P. Lohmann, South Windsor, and Stanley J. Markowski, East Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1977, Ser. No. 859,881

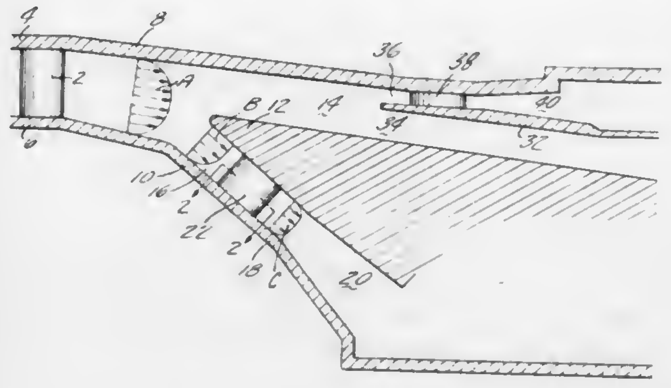
Int. Cl.^{2} F02C *3/14*

U.S. Cl. 60—39.36 **3 Claims**

1. A burner shroud construction including:
inner and outer walls defining a passage for air flow from the

compressor, the air flow adjacent the walls being slower than the mid-stream flow;

a splitter element cooperating with one of said walls and spaced therefrom to divide the air into combustion air on one side of the splitter and shroud air which receives the flow adjacent said one wall such that on the other side between the splitter and said one of said walls the air enters with a skewed velocity profile, said element and said cooperating wall defining therebetween a shroud passage;



a row of turning vanes extending across said shroud passage to change the flow in said passage and produce a pressure differential on opposite sides of each vane thereby producing vortices between adjacent vanes; and

said shroud passage, downstream of the vanes having diverging walls to form a diffuser, the vortices induced by the vanes being a secondary transverse flow thereby improving and making more uniform the velocity profile across the shroud passage at the upstream end of the diffuser to increase the pressure recovery in the diffuser.

4,194,360
POWER TAKE-OFF ARRANGEMENTS

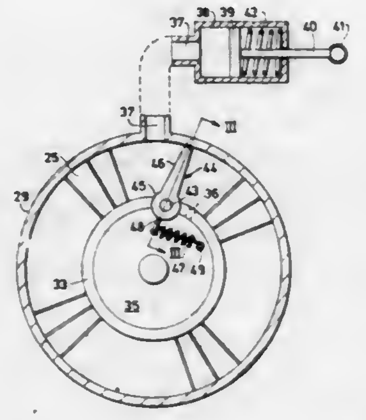
Helmut J. Stieger, Langtree Lodge, Cave Rd., Brough, Humberside, England

Filed Mar. 15, 1978, Ser. No. 886,855

Claims priority, application United Kingdom, Mar. 16, 1977, 11036/77; Sep. 27, 1977, 40091/77

Int. Cl.^{2} F16D ***33/00***

U.S. Cl. 60—325 **28 Claims**



1. A power take-off arrangement comprising a high pressure liquid pump intended to be rotated over a relatively wide speed range by a power source and means for maintaining a liquid outlet from said pump at a substantially constant pressure at speeds above a predetermined speed within said speed range, wherein the pump comprises a fixed casing defining an annular liquid chamber, a rotor with a vaned annulus rotatable in said annular liquid chamber, a liquid inlet to said annular chamber, a liquid outlet from said annular chamber, and a gate between said inlet and said outlet intended to allow passage of the rotor thereby whilst obstructing the flow of liquid along said annular chamber externally of the vanes of the rotor.

4,194,361
ELECTRO-MECHANICAL CONTROL SYSTEM FOR HYDRAULIC DISPLACEMENT PUMPS, SUCH AS SWASH PLATE OR ECCENTER PUMPS

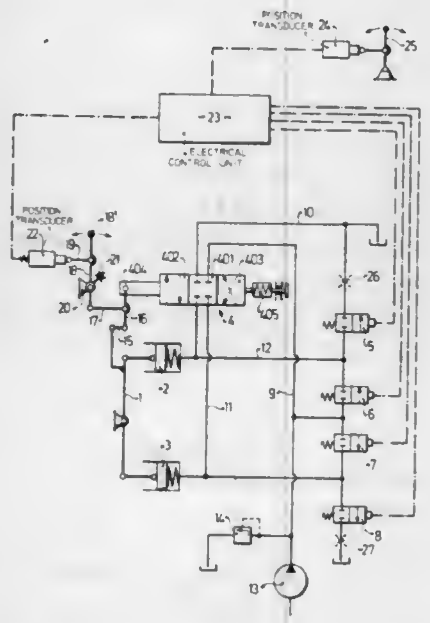
Arnold Pahl, Gerlingen; Hans-Jürgen van der Kolk, Sersheim, and Manfred Lixenfeld, Mettmann, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,598

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727555

Int. Cl.^{2} F15B *9/00*

U.S. Cl. 60—388 **13 Claims**



1. Electro-mechanical control system for hydraulic displacement pumps, such as swash plate or eccentric pumps, having

a movable, mechanical element (**1**, **28**) controlling the pump displacement;

hydraulic piston means **2**, **3**; **2′**, **3′**) acting on the mechanical element and controlling the displacement of the pump as a function of its position;

a pressure fluid source (**13**)¯supplying hydraulic pressure fluid to operate said piston means;

an electrical control unit (**23**) and command means (**24**, **25**) connected to said control unit (**23**) to enter commands to control said mechanical element (**1**, **28**)

and comprising, in accordance with the invention,

a group of selectively electrically energizable valve means (**5**, **6**, **7**, **8**) electrically connected to and controlled by said control unit and hydraulically connecting said source (**13**) and said piston means (**2**, **3**; **2′**, **3′**) to selectively apply pressurized hydraulic fluid to said piston means under command of said control unit (**23**);

a main control valve (**4**, **4′**) connected to said source and to said valve means (**5**, **6**, **7**, **8**);

a manual control lever (**18**, **30**) for said first control valve (**4**);

a position transducer (**22**) coupled to said manual control lever and electrically connected to said electrical control unit (**23**);

mechanical linkage means (**15**, **16**, **17**, **18**, **19**; **29**) interconnecting said mechanical element **1**,**28**), and said manual control lever (**18**, **30**) to provide feedback signals from said mechanical element (**1**, **28**) to said control unit and thereby provide a closed control loop for the control unit—valve means—mechanical element positioning system;

and means (**405**) normally maintaining said main control valve (**4**, **4′**) in position (**401**) in which fluid flow from the source (**13**) through the main control valve (**4**) is interrupted, while permitting movement of said manual control lever (**18**, **30**) by said link means under automatic control and while further permitting manual override under conditions of failure in the electrical system connected to said electrical control unit and direct control of said main control valve (**4**, **4′**) and hence control of application of pressurized hydraulic fluid to said piston means (**2**, **3**; **2′**, **3′**).

4,194,362
CONTROL SYSTEM FOR A HYDROSTATIC DRIVE

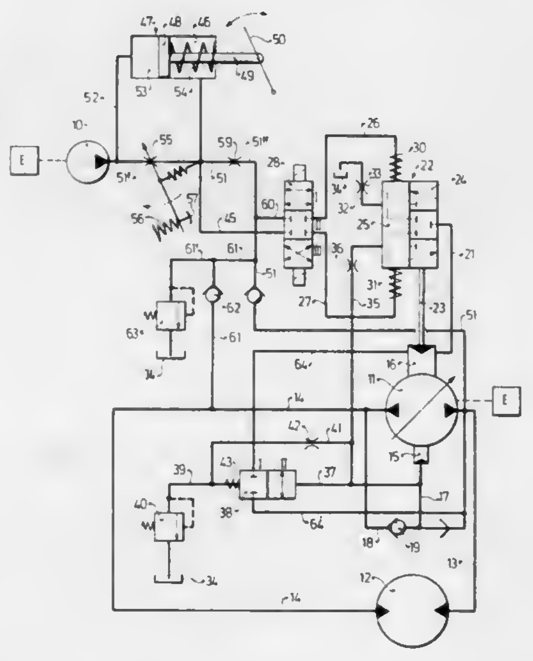
Gerhard Nonnenmacher, Korntal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,142

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729512

Int. Cl.^{2} F16D *31/00;* **F16H** *39/46*

U.S. Cl. 60—431 **15 Claims**



1. In a control system for a hydrostatic drive which includes a hydraulic motor and is powered by an ungoverned combustion engine having a movable throttle flap, a combination comprising adjustable-flow rate main hydraulic pump means; fixed-flow rate auxiliary hydraulic pump means operatively connected with said main hydraulic pump means; a fluid supply conduit connected with said auxiliary hydraulic pump means for supplying the main hydraulic pump means with hydraulic fluid; first throttle means in said fluid supply conduit and operative for producing, in dependence upon variations in the rotational speed of the combustion engine, a first signal for initiating adjustments in the flow rate of said main hydraulic pump means; and second throttle means also interposed in said fluid supply conduit and operative for producing in response to variations of the load on the hydraulic motor, a second signal for initiating movements of the engine throttle flap.

4,194,363
FLUID HORSEPOWER CONTROL SYSTEM

John E. G. Young, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 21, 1979, Ser. No. 13,493

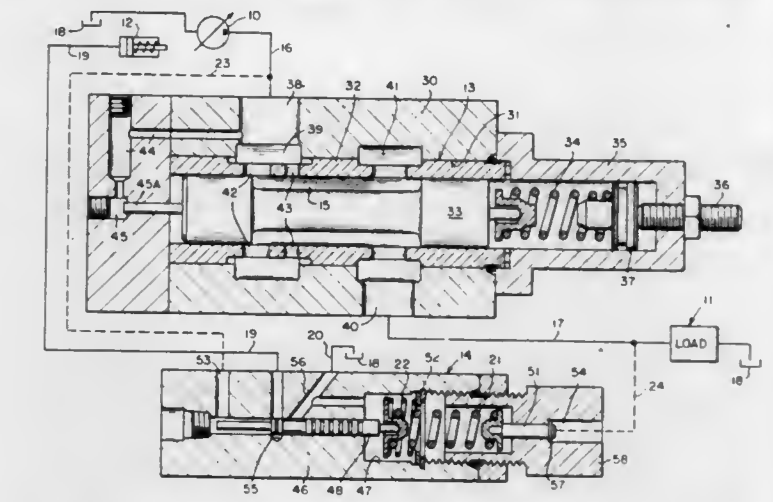
Int. Cl.^{2} F16H *39/46*

U.S. Cl. 60—445 **7 Claims**

1. A fluid horsepower control system adapted to operate a variable fluid load by output of a variable displacement pump having a variable cam and a control cylinder governed by flow and pressure responsive means for regulating displacement of the pump wherein improved pressure and flow responsive means for governing the variable displacement pump comprises;

(a) normally open flow control means having a pressure compensated variable orifice connected between output of the pump and input to a fluid load for maintaining a pump discharge rate of flow from the pump to the load inversely proportional to the pump discharge pressure, and

(b) load sense control valve means governed by pressure differential across the orifice for selectively applying or relieving pressure on a piston of the control cylinder of the pump to adjust pump displacement to maintain substantially constant maximum horsepower output of the pump under variable load conditions;



(c) whereby the load can utilize substantially constant horsepower approaching a prime mover input torque curve without requiring mechanical feedback from the cam of the pump.

4,194,364
ARRANGEMENT FOR CONTROLLING THE OPERATION OF A FLUID-DISPLACEMENT MACHINE

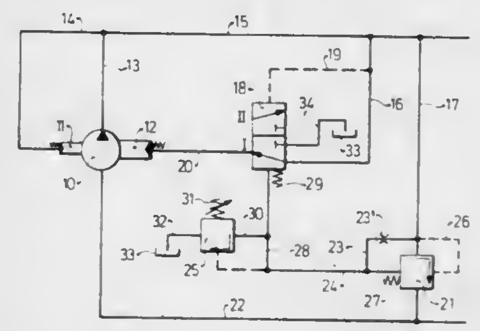
Arnold Pahl, Ditzingen, and Gerhard Nonnenmacher, Korntal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,867

Claims priority, application Fed. Rep. of Germany, May 21, 1977, 2723074

Int. Cl.^{2} F16H *39/46*

U.S. Cl. 60—445 **10 Claims**

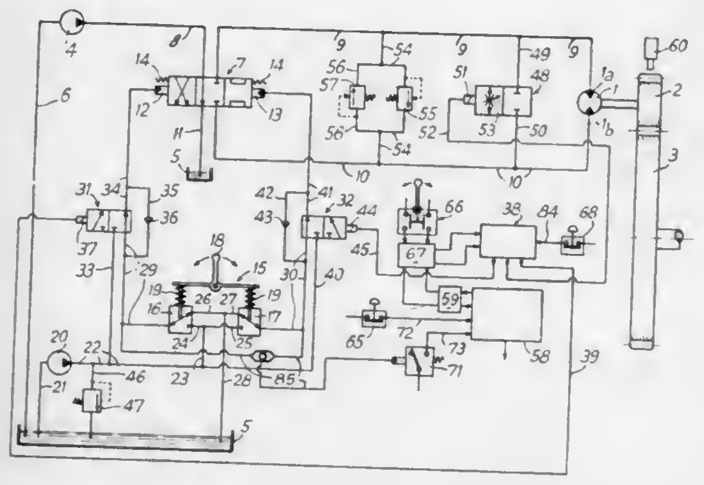


1. In a fluid-flow system of the type including a high-pressure conduit, a throughput-adjustable fluid-displacement machine, a throughput-adjusting device for the machine, a control valve interposed between the throughput-adjusting device and the high pressure conduit, and a pressure-limiting valve communicating with the high-pressure conduit, the improvement comprising a regulating valve commonly associated with said throughput-adjusting device via said control valve and with said pressure-limiting valve; and said control and pressure limiting valves being so constructed that the magnitude of the force required to open said pressure limiting valve exceeds that of the force required to actuate said control valve to a position thereof in which said through-put adjusting device adjusts said machine toward lower throughputs.

4,194,365
HYDRAULIC MOTOR CONTROL

Rene G. Stoufflet, Le Plessis Belleville, and Victor Yeou, Meaux, both of France, assignors to Poclain, Le Plessis-Belleville, France

Filed Jun. 8, 1978, Ser. No. 914,065
Claims priority, application France, Jun. 23, 1977, 77 19309
Int. Cl.² F15B *9/08, 9/14*
U.S. Cl. 60—468 **4 Claims**

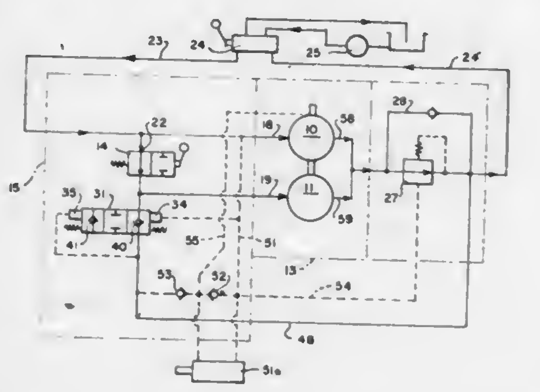


1. A device for automatic stoppage of the rotation of a hydraulic motor having a main control regulator and two hydraulic fluid supply pipes connecting the motor to the main control regulator, the device comprising: a power actuated valve connected between the supply pipes in parallel with the motor, the valve having a closed position and an open position in which flow through the valve is via a throttle orifice, and being under the control of control means arranged such that the valve is in its closed position when the said main control regulator is permitting normal rotation of the motor but is brought into its open position upon closure of the said main control regulator; means for detecting a predetermined angular position of the motor with respect to the desired position of stoppage; and means responsive to said detecting means for closing the valve.

4,194,366
TWO SPEED VALVES AND BI-DIRECTIONAL MOTOR SYSTEM

John D. Petro, Youngstown, Ohio, assignor to Commerical Shearing, Inc., Youngstown, Ohio

Filed Jun. 13, 1978, Ser. No. 915,189
Int. Cl.² F15B *11/16*
U.S. Cl. 60—483 **7 Claims**

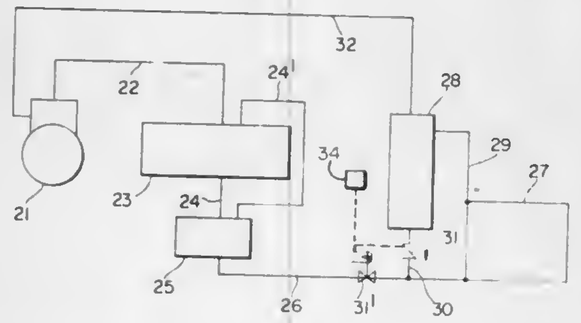


1. A bi-directional motor system comprising a pair of bi-directional motors, a source of fluid under pressure, directional valve means receiving fluid from the source of fluid under pressure and delivering the same selectively to one side or the other of the two motors, a counterbalance valve on one side of said motors between said directional valve means and one side of the two motors, a two speed valve means on the other side of said motors between said directional valve means and the two motors selectively delivering fluid to the other side of at least one of said motors, said valve having a first position wherein the fluid is delivered equally to both said motors for low speed rotation and a second position wherein all fluid is delivered to one of said motors for high speed rotation, flow sensing valve means communicating with the two speed valve means and with said one side of said motors, said flow sensing valve means being closed when the two speed valve is in first position and open to recirculate fluid from said one side of the motors through the other of said motors when said two speed valve is in its second position.

4,194,367
APPARATUS FOR PRODUCING ICE

Ingvar Lavik, Gjettum, Norway, assignor to A/S Finsam Industries Ltd., Grimstad, Norway

Filed May 30, 1978, Ser. No. 911,042
Int. Cl.² F25B *43/00*
U.S. Cl. 62—138 **4 Claims**



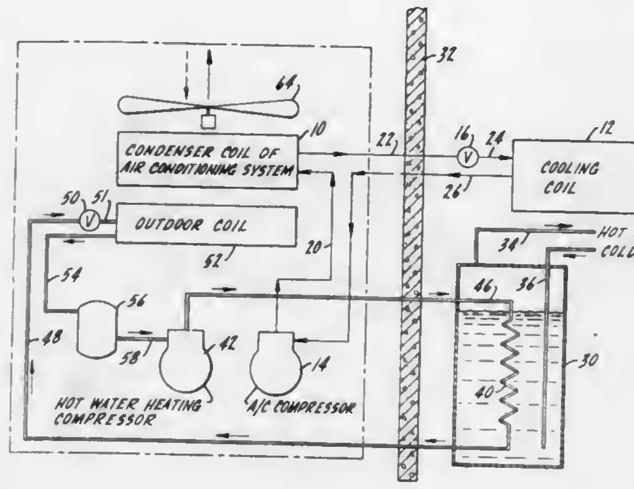
1. An apparatus for producing ice comprising a compressor which via a liquid separator is supplied with cooling medium from an evaporator and which transfers compressed medium to a condenser, the condenser being connected to a liquid receiver which in turn is connected to the evaporator, the improvement comprising a first controllable valve which is connected in a communication path between the liquid receiver and the evaporator, and which during the freezing period is closed and during the thawing period is open so that condensate from the condenser is accumulated in the liquid receiver without being transferred to the evaporator during the freezing period, and a second controllable valve, which is connected in a return path between the liquid separator and the evaporator, and which is open during the freezing period and closed during the thawing period and means for controlling the first and second valves so that during the freezing period, a self-circulation of the cooling medium taking place between the liquid separator and the evaporator, and so that during the thawing period, the self-circulation of the cooling medium between the liquid separator and the evaporator is stopped and the accumulated condensate in the liquid receiver is supplied to the liquid separator via the evaporator, the condensate giving off heat to the evaporator.

4,194,368
COMBINATION SPLIT SYSTEM AIR CONDITIONER AND COMPRESSION CYCLE DOMESTIC HOT WATER HEATING APPARATUS

Vijay O. Bahel, Schaumburg; Richard R. Kuehner, Mt. Prospect, and Richard H. Rosenberg, Wilmette, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 4, 1976, Ser. No. 729,503
Int. Cl.² F25B *27/02, 13/00, 7/00*
U.S. Cl. 62—238 **5 Claims**

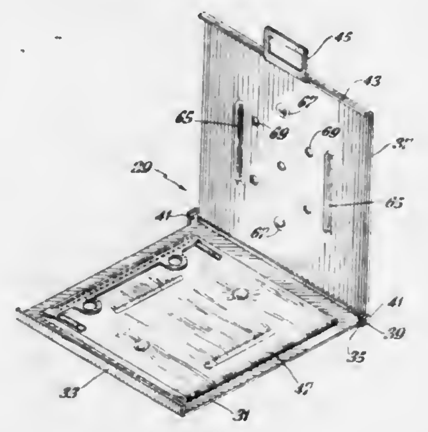
1. The combination comprising: a split system air conditioning apparatus including a refrigerant compressor, a condenser, an expansion device and an evaporator all connected in closed circuit, series flow relation; a compression cycle system supplying thermal energy to a hot water reservoir, said system including a refrigerant compressor, a condenser, an expansion device and an evaporator all connected in closed circuit, series flow relation, said split system air conditioner condenser and said compression cycle evaporator being in mutual heat exchange relation, including means for circulating air in series, first over said compression cycle evaporator and then over said air conditioner condenser such that the air cooled by contact with said evaporator reduces the operating temperature of said condenser.



4,194,369
CRYOGENICALLY FROZEN PACKAGE ARTICLES

Clifford C. Faust, Riverside, and Philip F. Cilia, Bridgeview, both of Ill., assignors to Delmed, Inc., Newton, Mass.

Continuation of Ser. No. 326,062, Jan. 23, 1973, abandoned, which is a division of Ser. No. 176,214, Aug. 30, 1971, Pat. No. 3,875,754. This application Nov. 11, 1974, Ser. No. 522,877
Int. Cl.² F25D *3/08*
U.S. Cl. 62—371 **3 Claims**



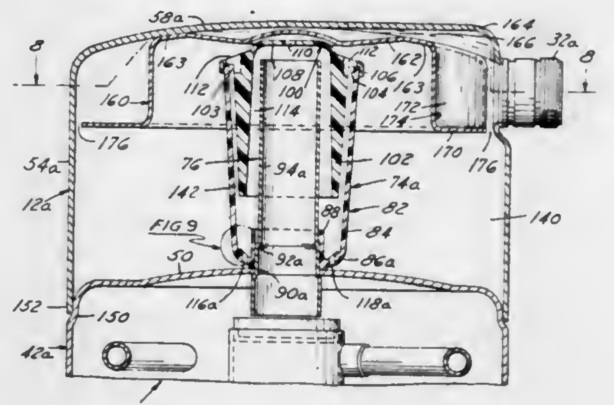
1. A unitary package article consisting of, in combination a viable frozen fluid which has been rapidly frozen at a cryogenic temperature on the order of about −196° C., a pouch of plastic film material containing said frozen fluid disposed in a substantially uniformly flat thin layer-like cross section, and a pair of plates each having a surface respectively contiguous to respective substantially flat surfaces of said pouch, wherein at least one of the pair of plates is a foraminous plate.

4,194,370
ACCUMULATOR FOR REFRIGERATION SYSTEM

Robert L. Morse, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 846,702, Oct. 31, 1977, Pat. No. 4,147,479, which is a continuation-in-part of Ser. No. 714,050, Aug. 13, 1976, abandoned. This application Feb. 26, 1979, Ser. No. 14,967
Int. Cl.² F25B *43/00*
U.S. Cl. 62—503 **5 Claims**

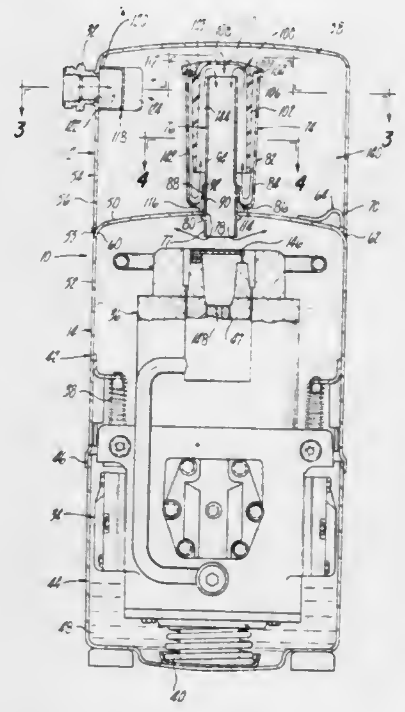
1. In a gas-liquid separating and liquid storage device for a refrigeration system having a reservoir in which fluid is whirled about an upright axis of said reservoir, an improved gas outlet means disposed centrally of said reservoir comprising an upright tube open at the opposite ends thereof, a cup surrounding at least a portion of said tube and having an open upper end disposed near the upper end of said tube and a bottom wall joined in sealed relation to the exterior of said tube, said bottom wall having at least one liquid metering orifice extending therethrough and a cap mounted on the upper end of said cup, said cup having a top wall overlying the upper end of said tube in spaced relation therefrom with a pressure equalizing vent in said top wall communicating with the space over said tube upper end, said cap also having a sleeve dependent therefrom extending into the annular space defined between said tube and cup with the lower end of said sleeve spaced above said cup bottom wall, said cap top wall having inlet means for communicating the reservoir with the annular space defined between said cup and said cup sleeve, the lower end of said tube serving as the gas exit from said reservoir.



4,194,371
REFRIGERATION SYSTEM WITH COMPRESSOR MOUNTED ACCUMULATOR

Robert L. Morse, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 846,702, Oct. 31, 1977, Pat. No. 4,147,479, which is a continuation-in-part of Ser. No. 714,050, Aug. 13, 1976, abandoned. This application Feb. 26, 1979, Ser. No. 14,968
Int. Cl.² F25B *43/00*
U.S. Cl. 62—503 **5 Claims**



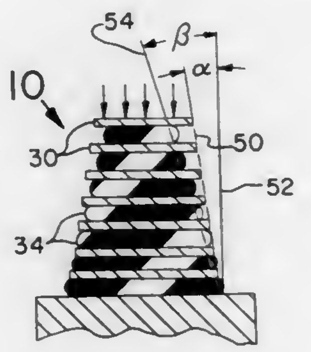
1. In a refrigeration apparatus having a compressor, a condenser, an evaporator, fluid conduit means forming a closed refrigerant circuit connecting said compressor, said condenser and said evaporator and including a return conduit connected to said evaporator for removing refrigerant therefrom, and pressure reducing means disposed in said circuit between said condenser and said evaporator for reducing the pressure of condensed refrigerant flowing into said evaporator, the im-

provement comprising gas-liquid separating and liquid storage means disposed in said circuit between said evaporator and said compressor including a closed container mounted on said compressor in heat exchange relationship therewith and having a fluid inlet connected to said return conduit disposed at a predetermined distance above the level of liquid to be stored in said container, an outlet conduit connected by said circuit to the suction side of said compressor comprising an upstanding standpipe means disposed in said container having an open inlet end communicating with the interior of said container above the level of liquid stored therein, said container being of sufficient height between said open inlet end and the level of liquid contained therein to permit any liquid phase in the refrigerant stream entering said container from said return conduit to be separated for collection in said container in surrounding relationship to the lower portion of said standpipe means while permitting the gaseous phase of said refrigerant stream to pass through the interior of said container and into said inlet end for removal to said compressor, first orifice means in said standpipe means below the level of liquid refrigerant stored in said container for continuously admitting small amounts of liquid therethrough for discharge into said standpipe means at a relatively slow controlled rate during operation of said compressor, and second orifice means in said standpipe means disposed in the region of said container where said gaseous phase collects and between said compressor and the portion of said standpipe means submerged in the liquid in said container for equalizing the gaseous pressures within said container surrounding said standpipe means with that in said standpipe means upon shutdown of said compressor to prevent the build-up of a sufficient pressure differential to cause any liquid contained in said standpipe means to be lifted into said outlet conduit for flow into the suction side of said compressor.

4,194,372
FLEXIBLE DRIVE COUPLING

Alan J. Hannibal, Fairview, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Dec. 26, 1978, Ser. No. 973,474
Int. Cl.² F16D *3/64*
U.S. Cl. 64—11 R **7 Claims**

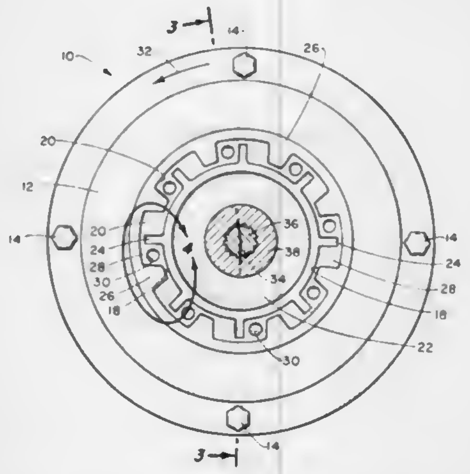


1. A flexible drive coupling comprising:
(a) means defining a hub that has a central longitudinal axis and an outer surface that circumscribes the axis;
(b) means defining an outer member that has formed in it a central opening and that is disposed so as to circumscribe the hub and to be generally concentric with the central axis of the hub, the outer member having a circumferential inner surface that is presented to and is spaced radially from the outer surface of the hub; and
(c) means defining a flexing section that has formed in it a central opening, that interconnects the hub and the outer member, and that is disposed between and in contact with the outer surface of the hub and the inner surface of the outer member, the flexing section including a plurality of helically wound, radially alternating and juxtaposed layers of resilient material and of a substantially inextensible material, the layers of resilient material and inextensible material when viewed in section taken transversely through the layers and generally parallel to the central axis of the hub having widths that diminish with increasing radial distance from the hub, the widths of successive layers of resilient material diminishing with increasing radial distance from the hub at a faster rate than the widths of successive and intervening layers of inextensible material.

4,194,373
SHOCK ISOLATION COUPLING

Frederick A. Jennings, Woodland Hills, and Thomas C. Bowen, Westlake Village, both of Calif., assignors to Sportscoach Corporation, Chatsworth, Calif.

Filed Feb. 13, 1978, Ser. No. 877,267
Int. Cl.² F16D *3/14, 3/64*
U.S. Cl. 64—14 **3 Claims**



1. A shock isolating coupling for use in a drive train, said coupling comprising:
a drive plate adapted to be driven by an engine, said drive plate having a centrally located opening therein, said drive plate adpated to rotate about a first axis, said first axis passing through the center of said opening;
a driven plate located within said opening the peripheral edge of which is spaced from the wall of said opening forming a space therebetween, said driven plate adapted to rotate about a second axis which coincides with said first axis, protuberance means extending from the peripheral edge of said driven plate; and
an elastomeric material having been poured within said space completely filling said space and surrounding said protuberance means but forming therein precisely located gaps, said elastomeric material having different deflection characteristics on each side of said protuberance means due to the formation and location of said gaps.

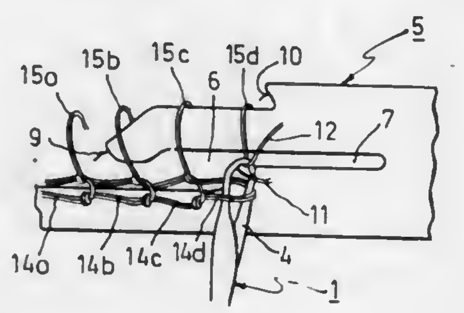
4,194,374
PROCESS FOR KNITTING A SINGLE-FACED PILE FABRIC

José M. D. Güell, Barcelona, Spain, assignor to Jumberca, S.A., Spain

Filed May 11, 1978, Ser. No. 904,875
Claims priority, application Spain, Jun. 3, 1977, 459450
Int. Cl.² D04B *9/12, 15/06*
U.S. Cl. 66—93 **1 Claim**

1. A process for knitting a single-faced pile fabric characterized in that the knitting operation is effected with sinkers each having a throat longitudinally extended at its closed end, a sloping shoulder on a lower edge of said throat and a re-entrant bevel on the leading portion of an upper edge of said throat, all supplemented by a notch on the upper edge of the sinker and in that, to develop an operative cycle, starting from the feed stage wherein the sinker is in its position of maximum withdrawal, a base yarn is laid in the sinker throat threshold and a pile yarn over the sinker by a corresponding yarnguide, the sinker is caused to move forward, thereby aiding a needle latch to introduce the base yarn in the sinker throat with the aid of

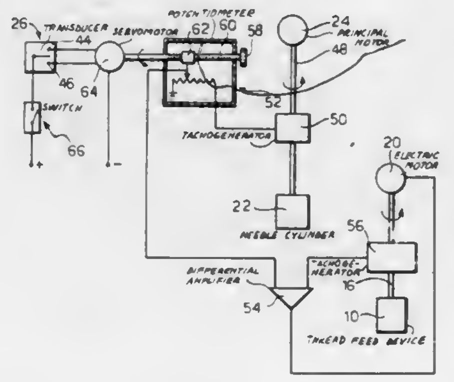
its leading re-entrant bevel and cause said yarn to penetrate deeply into the throat, while the pile yarn is placed in a needle hook above the sinker, the needle is then drawn down, starting the sinking of both yarns, while the sinker is caused to push the base yarn with the sloping shoulder into the needle hook, whereafter the needle is drawn down to its lowermost position and forms a new stitch, the needle then being raised at the same time as the sinker is caused to continue its forward movement, preventing the previous stitch from being rehooked, the sinker then being stopped until said needle reaches its uppermost position, thereby stretching the pile portion superimposed on the base stitch at the expense of the corresponding pile loop portions extending therefrom by having made them pass over the thickest portion of the needle, and the base yarn stitches, having likewise been stretched, being caused to recover their normal length on being pulled by a take-up beam, the sinker being made to resume its forward movement, thereby pulling the pile stitch loop, hooked in the upper notch, thereby tightening the pile stitch around the needle stem, eliminating the said stretching, the needle finally being drawn down and the sinker being withdrawn backward, closing the cycle with knocking off of the pile loops from this sinker.



4,194,375
APPARATUS FOR ADJUSTING THE THREAD FEED RATE OF A CIRCULAR KNITTING MACHINE

Giovanni Marchisio, Turin, Italy, assignor to Giovanni Marchisio & C. S.r.l., Rivoli, Italy

Filed May 3, 1978, Ser. No. 902,537
Claims priority, application Italy, May 18, 1977, 68132 A/77
Int. Cl.² D04B *15/48*
U.S. Cl. 66—132 T **3 Claims**

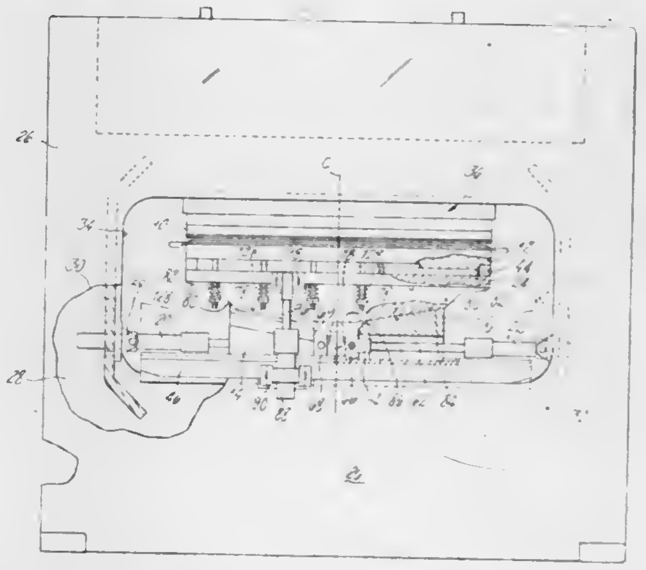


1. Apparatus for adjusting the rate of feed, and hence the tension of the threads of a multiple-feed circular knitting machine of the type including:
a needle actuating mechanism,
a first rotary drive for driving said needle actuating mechanism at a predetermined speed,
a plurality of thread feeds, and
a second common rotary drive for driving each of said thread feeds at a speed which is variable with respect to that of said first rotary drive, said apparatus including:
transducer means mountable on the machine to be sensitive to the tension of one of said feed threads and responsive to variations therein to generate first and second electrical signals respectively whenever the tension of said one feed thread is one of greater than and less than a predetermined value;
means controlling said second rotary drive;
means interconnecting in use said transducer means and said control means operating to feed said first and second signals to said control means;
means interconnecting in use said control means and said second rotary drive, whereby the speed of said second rotary drive is increased on receipt by said control means of said first electrical signal and decreased on receipt by said control means of said second electrical signal respectively in order to bring the tension of said threads to said predetermined value;
selective enabling means operable selectively to enable said control means whereby to bring the apparatus into operation when required; and
said second rotary drive further comprising an electric motor having an electronic speed control circuit which receives an electrical input signal dependent on the speed of said first rotary drive, means incorporated in said electronic speed control circuit for adjusting the ratio between the speeds of said first and second rotary drives and means connecting said adjusting means to said control means.

4,194,376
LEATHER PRESS

Robert K. Valks, Wetherby, and Brian W. Botham, Bradford, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Apr. 13, 1978, Ser. No. 895,740
Claims priority, application United Kingdom, Apr. 16, 1977, 15875/77
Int. Cl.² C14B *1/30*
U.S. Cl. 69—48 **12 Claims**



1. A machine for effecting an operation on an article, said machine comprising:
a first platen and a second platen mounted in a frame of said machine;
a first closing means for urging movement of the first and second platens relative to one another, said article being disposed therebetween; and
a second closing means for applying a predetermined pressure on said article disposed between said first and second platens;
said first closing means comprising at least two wedge members having sloped surfaces in sliding engagement with a supporting surface of at least one of said platens, and wedge driving means to synchronously cause said movement of said wedge members.

4,194,377

LOCKING MEANS FOR AUTOMOBILE DOORS

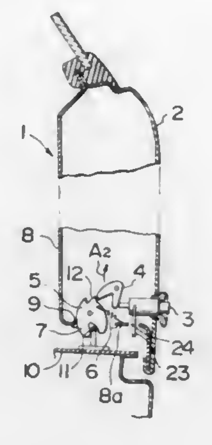
Tatsuo Maeda, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Aug. 22, 1978, Ser. No. 935,867

Claims priority, application Japan, Aug. 24, 1977, 52/114006[U]

Int. Cl.² E05B *17/00, 33/00;* **E05C** *3/06*

U.S. Cl. 70—360 **6 Claims**



1. Push-button type locking means for automobile doors comprising pivotable latching means movable between a latching position wherein it is in latching engagement with striker means and an unlatching position wherein it is disengaged from said striker means, means for biasing said latching means into the unlatching position, claw means movable between an operative position wherein it is engaged with the latching means so as to hold the latching means in the latching position and an inoperative position wherein it releases the latching means so as to allow the latching means to move under the biasing force of the biasing means into the unlatching position, a lock body carrying push-button means for axial movement with respect thereto, said push-button means including rotatable means having a portion adapted to engage when the push-button means is axially depressed to cause the axial movement thereof with said claw means to force the latter into the inoperative position, swingable lever means having a manually actuable portion, said rotatable means having abutting means adapted to engage with cooperative abutting means on said lever means to prevent the axial movement of the push-button means, said lever means being movable between a locking position wherein the abutting means on the lever means engages with the abutting means on the rotatable means to prevent the axial movement of the push-button means and an unlocking position wherein said abutting means on said lever means is retracted to allow the axial movement of the push-button, said rotatable element being provided with means engageable with said lever means to rotate, when the push-button means is rotated by the key in unlocking direction, the lever means into the unlocking position.

4,194,378

COMBINATION LOCK EXTRACTION APPARATUS

David L. Swindler, Franklin, and Donald W. Selby, Oxford, both of Ohio, assignors to Square D Company, Palatine, Ill.

Filed Jan. 26, 1978, Ser. No. 872,410

Int. Cl.² E05B *27/08*

U.S. Cl. 70—363 **24 Claims**

1. A combination comprising

a plurality of combination lock cylinders,

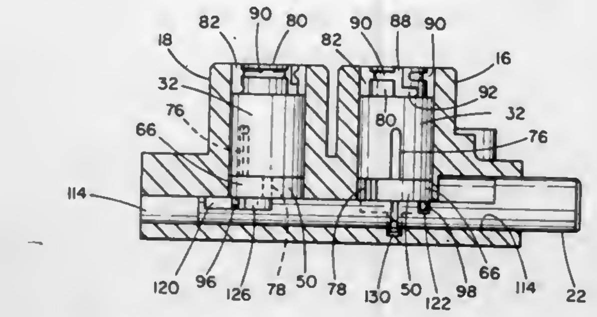
a selected housing for each lock cylinder,

a common bolt for said lock cylinders having a selected position,

a respective tumbler barrel carried by each lock cylinder and adapted to receive a respective operating key,

a plurality of axially movable tumbler pins carried by each lock cylinder to prevent rotation of a respective tumbler barrel and movement of said bolt from said selected position, said pins moved along the axis of a respective cylinder by a respective received operating key to enable initial rotation of a respective tumbler barrel in a respective initial direction for controlling said bolt to enable movement of said bolt from said selected position, each lock cylinder also adapted to receive a lock cylinder extraction key common to each cylinder for axially moving said pins to enable initial rotation by said extraction key of the respective barrel in a direction opposite each respective direction,

means effective only in response to said bolt being in said selected position for enabling initial rotation of the respective barrel by said extraction key only in a direction opposite the respective direction and for enabling extraction of the respective lock cylinder from the selected housing.



4,194,379

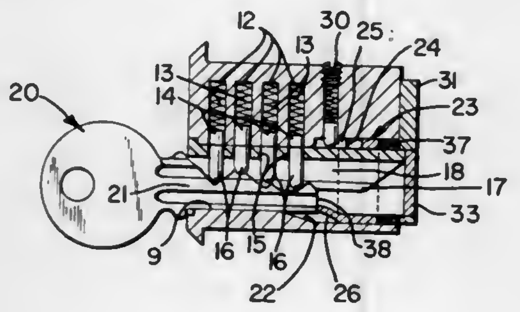
PICK-PROOF LOCK

Harry E. Dice, Sr., Silver Spring, Md., assignor to George K. C. Hardesty, Mayo, Md., a part interest

Filed Apr. 12, 1978, Ser. No. 895,708

Int. Cl.² E05B *63/00*

U.S. Cl. 70—421 **5 Claims**



1. A key operated lock cylinder including a shell having a longitudinally extending bore, a cylinder plug rotatively mounted in said bore, said shell having longitudinally spaced parallel sockets opening into said bore, spring pressed pin tumblers slidably mounted in said sockets, said plug having a keyway and being provided with radial bores opening into said keyway and outwardly of the plug periphery for alignment with said sockets in one position of rotation of the plug, pin tumblers slidably mounted in said plug bores and extending into the keyway and abutting the pin tumblers of the shell; said shell bore being enlarged beyond an innermost one of said sockets, a rotation limiting pin mounted radially in said shell and extending into said enlarged bore portion in close proximity to a part of the periphery of the plug, a collar slidably mounted on said plug within said enlarged bore portion and having a notch opening outwardly of the forward end thereof in which said rotation limiting pin is received, a compression spring carried by the plug within said enlarged bore portion and bearing against and urging the collar in a forward direction, said collar having a finger projecting into the keyway for non-rotatably connecting the collar to the plug, and a key having a blade notched to cause the pin tumblers to assume unlocked positions and having a forward end for engaging said finger to move said collar rearwardly and out of engagement with the pin to permit the key to rotate the plug within the shell to effect unlocking of the lock.

4,194,380

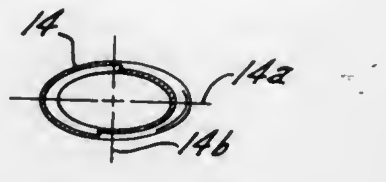
CORRUGATED ELLIPTICAL WAVEGUIDE WITH PERMANENT TWIST

Fred Brown, Calumet City, and Anthony D. Vinezeano, Markham, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Division of Ser. No. 811,053, Jun. 29, 1977, Pat. No. 4,144,510. This application Nov. 24, 1978, Ser. No. 963,389

Int. Cl.² B21D *11/14*

U.S. Cl. 72—64 **6 Claims**



1. A method of converting corrugated circular waveguide to corrugated elliptical waveguide with a permanent twist, said method comprising the steps of

(a) passing a single, unitary, fluid-impervious corrugated circular waveguide between a pair of forming tools defining an elliptical cross-sectional opening for converting the circular waveguide passed therethrough to elliptical waveguide, and

(b) gripping a preselected portion of the corrugated waveguide and turning that portion of the waveguide around its axis while the waveguide is being passed between said forming tools to form a permanent twist in the elliptical waveguide.

4,194,381

DEVICE FOR THE COLD WORKING OF HEAT EXCHANGER TUBING FOR THE ATTACHMENT OF SPIRAL FINS

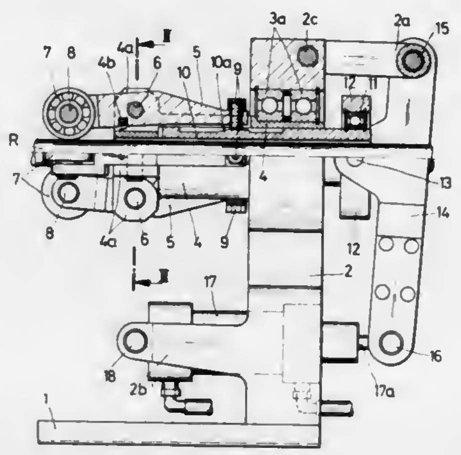
Alfred Joekel, Essen-Werden, Fed. Rep. of Germany, assignor to Balcke-Durr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Division of Ser. No. 709,130, Jul. 27, 1976, Pat. No. 4,103,408. This application Jul. 10, 1978, Ser. No. 923,170

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1975, 2534217

Int. Cl.² B21D *17/04*

U.S. Cl. 72—100 **7 Claims**



1. A device for the cold rolling of one or more narrow longitudinal lands on the cylindrical outer surface of a rotating length of smooth round tubing, which device is designed for use in conjunction with a machine for the production of finned heat transfer tubing, where one or more continuous metal strips are wound onto said tubing, the device comprising in combination:

a console adapted for mounting on said fin winding machine, at a fixed distance from a point where the continuous metal strips are wound around the tubing, the console reaching across the rotational axis of said length of tubing and forming a large journal bore with which it surrounds the tubing concentrically;

a hollow supporting spindle rotatably mounted in the journal bore of the console, so as to extend in concentric alignment with the tubing;

at least two cooperating pressure rollers mounted on the supporting spindle, and at least one of them having a surface profile for the cold rolling of said land, the rollers being adapted to roll axially along the tubing, while revolving with the latter as a result of the rotatability of the supporting spindle;

means for adjusting the cold rolling pressure by adjusting the transverse distance between the cooperating rollers; and

means for selectively interrupting the cold rolling action of the pressure rollers on the rotating length of tubing, for the preservation of certain length portions of tubing without lands.

4,194,382

ROLLING MILL

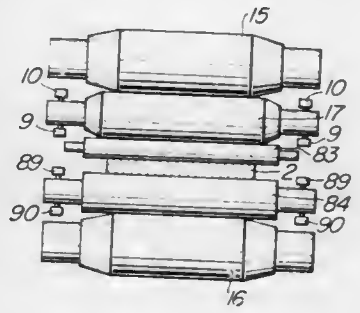
Toshiyuki Kajiwara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 14, 1977, Ser. No. 851,203

Claims priority, application Japan, Nov. 26, 1976, 51/141141; Mar. 14, 1977, 52/27054

Int. Cl.² B21B *29/00, 35/12, 31/32*

U.S. Cl. 72—243 **32 Claims**



1. A rolling mill comprising a pair of upper and lower work rolls defining therebetween a nip for material to be rolled, upper and lower backup rolls respectively backing said upper and lower work rolls, an intermediate roll interposed in at least one of positions between said upper work and the lower backup roll, said intermediate roll having a diameter and rigidity greater than the diameter and rigidity of the adjacent one of said work rolls and having a diameter less than the diameter of the backup rolls, and means associated with said intermediate roll to apply bending forces on the same.

4,194,383

MODULAR TRANSDUCER ASSEMBLY FOR ROLLING MILL ROLL ADJUSTMENT MECHANISM

Paul Huzyak, Salem, Ohio, assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

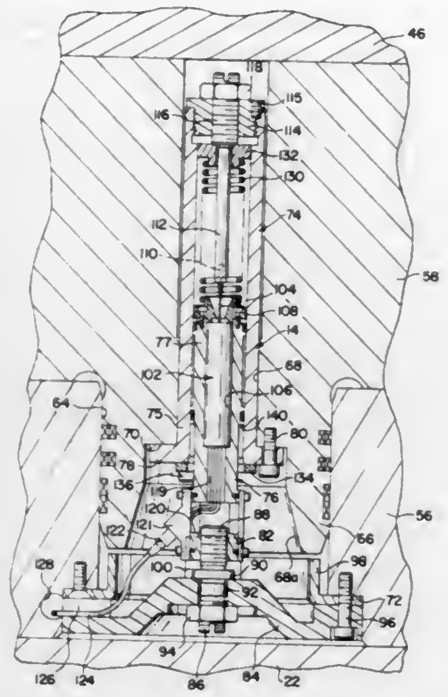
Filed Jun. 22, 1978, Ser. No. 917,964

Int. Cl.² B21B *37/08*

U.S. Cl. 72—245 **23 Claims**

1. A modular transducer assembly for mounting between relatively reciprocable first and second members of a roll mill gap adjusting mechanism comprising, linearly extendable and retractable housing means having opposite ends in the direction of extension and retraction, transducer means including first and second transducer components supported in said housing means each with respect to one of said opposite ends for displacement relative to one another in said direction and in response to extension and retraction of said housing means, means mounting said housing means between said first and second roll mill members with said opposite ends exposed with respect thereto and for said housing means to extend and re-

tract in response to relative reciprocation of said roll mill members, said first and second transducer components having a null position with respect to one another, and means at each



of said opposite ends of said housing means for adjusting the corresponding one of said first and second transducer components relative to the other to obtain null positioning when said housing means is mounted between said roll mill members.

4,194,384
METHOD OF MANUFACTURING HEAT-TRANSFER WALL FOR VAPOR CONDENSATION

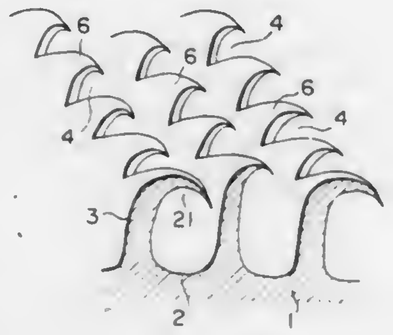
Kunio Fujie, Tokyo; Wataru Nakayama; Heikichi Kuwahara, both of Kashiwa; Takahiro Daikoku, Ibaraki, and Kimio Kakizaki, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of, Japan

Division of Ser. No. 647,787, Jan. 9, 1976, abandoned. This application Jun. 8, 1978, Ser. No. 913,823

Claims priority, application Japan, Jan. 13, 1975, 50-5626; Sep. 22, 1975, 50-114479

Int. Cl.^{2} B21D *53/06*

U.S. Cl. 72—325 **8 Claims**



1. A method of manufacturing a heat-transfer wall for vapor condensation in such a way that hot vapor is condensed by contact with the wall surface at a low temperature, the method comprising the steps of:

(a) forming, on the heat-transfer surface, a number of shallow grooves substantially in parallel at a pitch of not more than one millimeter between the grooves; and

(b) forming, on the heat-transfer surface and in the direction across said shallow grooves formed in the step (a), a number of grooves not more than two millimeters in depth and deeper than the grooves formed in the step (a) and also forming ridges severed by said deep grooves and not more than two millimeters in depth as measured from the bottoms of said deep grooves, each said ridge having a sharply tapered edge and a number of notches with sharp, tapering edges and inclined bottoms, by cutting and turning up the heat-transfer surface in the plowing manner, or by cutting at an angle to the surface to turn up the material upright, through the relative movement of said heat-transfer surface and/or the plowing tool across said shallow grooves.

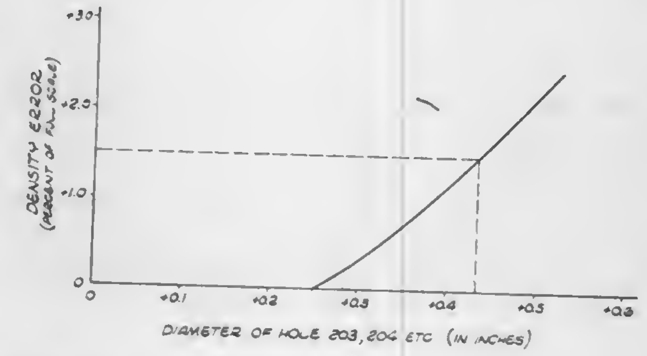
4,194,385
DENSITOMETER CALIBRATION METHOD

Milton H. November, Hacienda Heights, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,179

Int. Cl.^{2} G01N *9/00*

U.S. Cl. 73—1 R **5 Claims**



5. The method of calibrating a densitometer, said method comprising the steps of: determining a hole diameter of a vibration densitometer probe; determining the hole size function of density error of a vibration densitometer; and tailoring a production unit hole by reboring the hole thereof in accordance with the diameter indicated by the said function at the determined density error of the production unit to reduce said error toward zero.

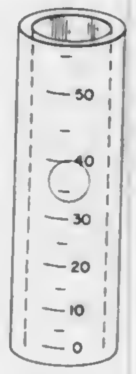
4,194,386
VARIABLE AREA METERING TUBE AND METHOD OF MANUFACTURE

E. Craig Waters, Lansdale, Pa., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Apr. 17, 1978, Ser. No. 896,656

Int. Cl.^{2} G01F *25/00*

U.S. Cl. 73—3 **1 Claim**



1. In a process for manufacturing a first variable area metering tube on a first mandrel machined to conform to a second mandrel, said second mandrel being substantially free of dimensional and surface irregularities and being useful to produce a second metering tube which is substantially free of variations in its cross-sectional flow area and for which a calibration curve is prepared which in combination with a linear graduated scale applied to said second tube indicates the fluid flow rate through said second tube, said first mandrel having dimensional or surface irregularities such that said first tube made thereon has variations in its cross-sectional flow area which preclude application thereto of a linear graduated scale to indicate in combination with said calibration curve for said second tube the fluid flow rate through said first tube, the

improvement of applying a non-linear graduated scale to said first tube, wherein said non-linear scale compensates for said variations in the cross-sectional flow area of said first tube and readings from said non-linear scale are capable of translation into fluid flow rates through said first tube from said calibration curve for said second tube, which comprises:

(a) creating a known fluid flow rate through said first tube;

(b) marking the float position on said first tube at said known flow rate;

(c) determining the scale reading corresponding to said known flow rate from said calibration curve for said second tube;

(d) marking said first tube with said scale reading opposite the float position at said known flow rate; and

(e) repeating steps (a)-(d) sequentially over a predetermined range of flow rates through said first tube to thereby apply said non-linear scale to said first tube.

4,194,387
TESTING APPARATUS

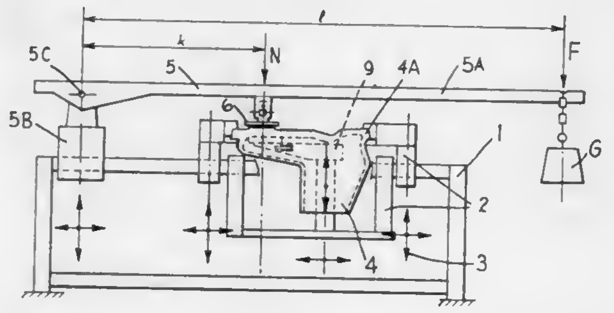
Rupert Hofbauer, and Josef Svoboda, both of Schwechat, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Jul. 26, 1978, Ser. No. 928,167

Claims priority, application Austria, Aug. 16, 1977, 5902/77

Int. Cl.^{2} G01N *19/02*

U.S. Cl. 73—9 **6 Claims**



1. A testing apparatus for determining the sliding characteristics of a ski boot sole, comprising:

a frame;

fastening means for fastening a ski boot to said frame;

a sliding piece means for engaging a part of said boot sole to be tested;

first load applying means mounted on said frame for applying a first load force to said sliding piece and in a first direction perpendicular to the surface of said boot sole;

second load applying means mounted on said frame for applying a second load force to said sliding piece and in a second direction parallel to said surface of said boot sole, said second load applying means including an electric motor having a rotary output and first means for converting said rotary output to a linear movement, said sliding piece means being operatively secured to a linearly movable part of said first means; and

measuring means for measuring the magnitude of said second load force.

4,194,388
CAN TESTING DEVICE

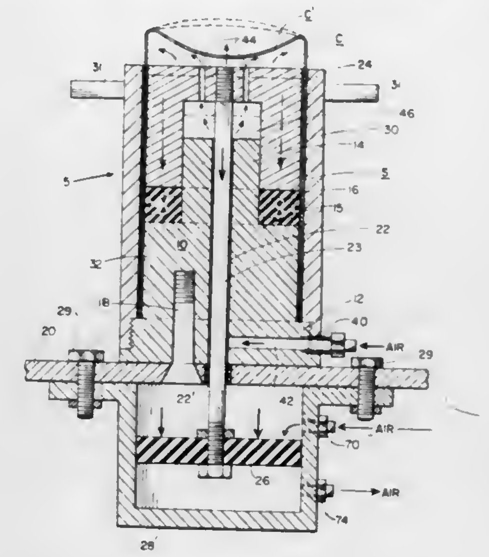
Thomas A. Mack, Valparaiso, Ind., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 18, 1978, Ser. No. 970,682

Int. Cl.^{2} G01M *3/32*

U.S. Cl. 73—37 **16 Claims**

1. A can end buckle-testing device of the type described comprising the combination of a mandrel means for receiving an open ended can body, a ring-like sealing member of elastic compressible material arranged on said mandrel means so as to encompass a selected portion of the outer part of the mandrel means, a selectively controlled piston means slidably disposed relative to the mandrel means for compressing the sealing member and for forcing the sealing member into contact with the inside of the wall of a can body disposed on the mandrel means, means including piping and valve means for selectively introducing fluid under pressure into and through the mandrel means and into the interior of the sealed can body disposed on said mandrel means and intermediate the sealing member and the end of said can body during compression of the sealing member, and fluid source means connectable simultaneously both to said piston means and said valve means so as to effect introduction of pressure testing fluid into the interior of the can body and against the end thereof simultaneously with the maintenance of the compression of the sealing member.



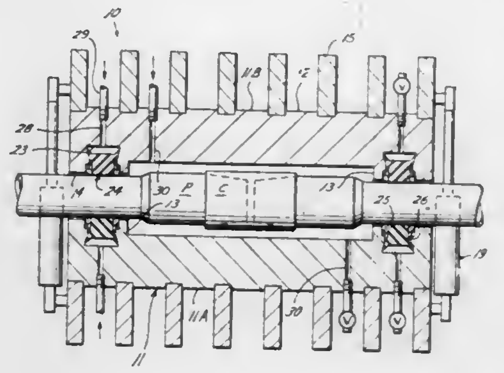
4,194,389
APPARATUS FOR PRESSURE TESTING PIPE

Jerry D. Laging, Apartado 88, Anaco, Venezuela

Filed Mar. 20, 1978, Ser. No. 888,238

Int. Cl.^{2} G01M *3/28*

U.S. Cl. 73—46 **22 Claims**



1. Apparatus for use in pressure testing a section of pipe, comprising a hollow housing including arcuate sections each having a curved side wall and end walls at opposite ends of the side wall, the inner edge of each end wall having a recess to fit closely about the pipe at one end of the section to be tested when adjacent housing sections are disposed about the pipe section in edge-to-edge relation, means for releasably locking the housing sections in edge-to-edge relation when so disposed, each housing section having a continuous groove formed in the edges of the ends and side walls thereof, a seal strip carried within each groove for engaging a corresponding seal strip in the groove of an adjacent section and for engaging about the pipe at each end of the section to be tested so as to sealably enclose a test chamber about said pipe section, and means for admitting and exhausting test fluid to and from said test chamber.

6. Apparatus for use in pressure testing a section of pipe, comprising a hollow housing including arcuate sections each having a curved side wall and end walls at opposite ends of the side wall, the inner edge of each end wall having a recess to fit closely about the pipe at one end of the section to be tested, means hingedly connecting the housing sections to one another

except at one pair of adjacent edges, so that they may be swung between a closed position about the pipe in which they are disposed in edge-to-edge relation, and an open position to receive said pipe section between said one pair of adjacent edges, and means on the housing sections for sealably enclosing a test chamber about the pipe, means for admitting and exhausting test fluid to and from the test chamber, the side wall of each arcuate housing section having axially spaced reinforcing ribs about the outer side thereof, and means for releasably locking said one pair of adjacent edges to one another including locking parts on the ribs of one housing section which project from the edge thereon for fitting within slots between adjacent ribs at the edge of the other section, when the sections are in edge-to-edge relation, holes through the locking parts and through the ribs of the other section which are axially aligned with one another when said locking parts are so fitted, and first and second sets of rod segments axially slidable within the aligned holes and being of lengths which are substantially equal to that of the holes through the locking parts and the distance between adjacent slots in said other section, respectively, so that said segments may be shifted axially between a locking position in which said second set of rod segments extend through said locking parts and ribs on said other housing section on opposite sides of the slot in which said locking parts are received, and an unlocking position in which said second set of segments extend through holes in ribs on each side of the slots and the first segments are disposed within the holes in the locking parts.

4,194,390
METHOD OF AND APPARATUS FOR ASCERTAINING THE STATE OF AGGREGATION OF A MEDIUM

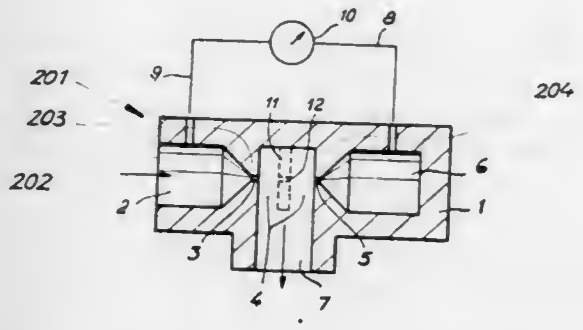
Hans Deinlein-Kalb, Nuremberg, Fed. Rep. of Germany, assignor to Klinger AG, Zug, Switzerland

Filed May 10, 1978, Ser. No. 905,180

Claims priority, application Austria, May 11, 1977, 3382/77

Int. Cl.² G01N *15/06*

U.S. Cl. 73—61 R **7 Claims**



1. A method of ascertaining the state of aggregation of a medium, said method comprising directing a flow of the medium to a first of a series of at least two coaxially arranged nozzles, arranging the nozzles so that the flow from the first nozzle will proceed unimpaired towards the second nozzle, comparing the initial pressure of said medium upstream of said series of nozzles with a further pressure prevailing in a closed space arranged downstream of the first nozzle, and correlating any correspondingly appearing differential pressure as a measurement value for indication of the state of aggregation of the medium.

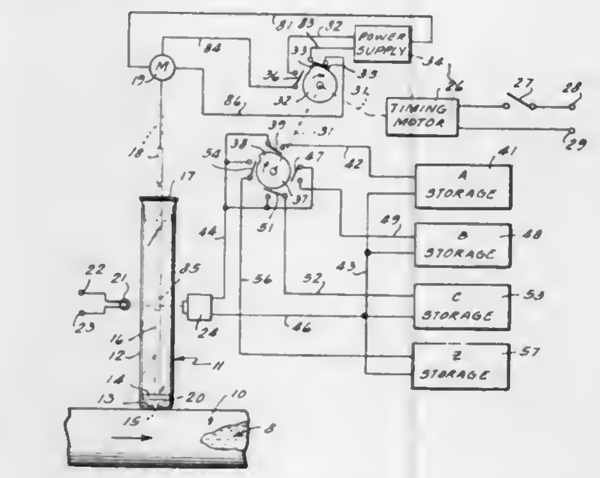
4,194,391
DEVICE FOR DETERMINING SETTLING RATES OF SOLIDS OR PARTICULATE BEARING LIQUID IN A CONTINUOUS PROCESS OR FLOWING STREAM

Roy R. Rosenberger, Wheaton, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Oct. 3, 1977, Ser. No. 838,752

Int. Cl.² G01N *15/04*

U.S. Cl. 73—61.4 **6 Claims**



1. Apparatus for determining the settling rates of solids or particulate in moving liquid comprising a container fluidly communicating with said moving liquid, means for filing and emptying said container, motor means for controlling said filing and emptying means, transparent portions of side walls of said container, a light source mounted on one side of said container adjacent one of said transparent portions, a light sensor mounted on the opposite of said container adjacent the other transparent portion to measure light transmissivity, a timing motor connected to said motor means to cause it to fill and empty said container, a switch means connected to said timing motor and having a plurality of switches which are closed at different times by said timing motor, one side of said light sensor connected to one terminal of each of said plurality of switches, a plurality of storage means with first input terminals connected to the other side of said light sensor, a second terminal of each of said plurality of switches respectively connected to second input terminals of each of said plurality of storage means, a first subtractor receiving input signals from a first and a second of said plurality of storage means and subtracting said signals, a first time signal generator supplying an output signal proportional to the difference in times when the transmissivity signals were supplied to said first and second storage means, a first divider receiving the outputs of said first subtractor and said first time signal generator and dividing the subtractor signal by the time signal, and a first indicator receiving the output of said first divider to indicate the settling rate.

4,194,392
MEASURING ADHESIVE FORCE

Serge Lombard, Les Ulis, and Patrick Borg, Rueil Malmaison, both of France, assignors to ATO Chimie, Courbevoie, France

Filed May 12, 1978, Ser. No. 905,150

Claims priority, application France, Jun. 10, 1977, 77 17808; Jan. 10, 1978, 78 00495

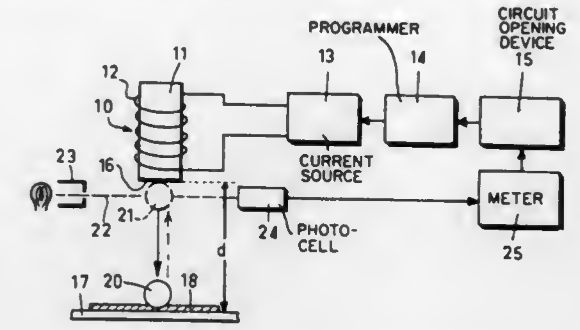
Int. Cl.² G01N *3/08*

U.S. Cl. 73—150 A **10 Claims**

1. A method for determining the adhesive power of a supported pressure sensitive adhesive which comprises:

(a) dropping a ball from a predetermined starting point at a given time, onto the surface of a pressure sensitive adhesive coated support, placed in a horizontal plane at a predetermined distance below the starting point, to cause said ball to become adherent to said adhesive;

(b) subsequently applying a preprogrammed vertical, upwardly directed monotonically increasing separating pulling force at a first rate to the ball to successively balance the weight of the ball, and thereafter at a second rate less than said first rate to overcome the adhesion force exerted by the adhesive and return the ball to the initial starting point thereof at a subsequent time, the adhesive power of said adhesive being a function of the time interval between the dropping of the ball and return of the ball to said initial starting point; and



(c) generating a signal having a value corresponding to the interval between said given and subsequent times.

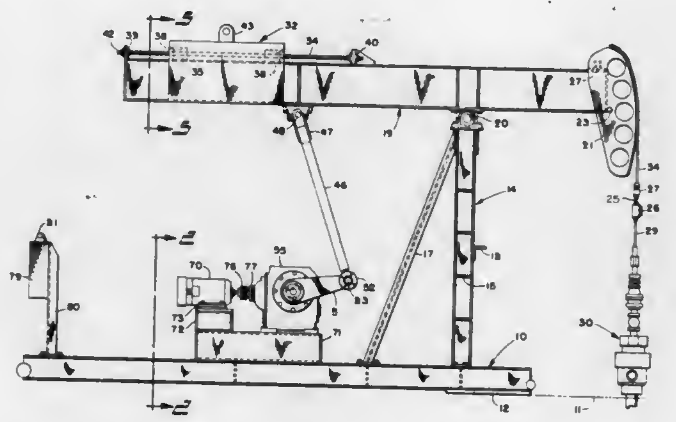
4,194,393
WELL DRIVING AND MONITORING SYSTEM

Robert E. Boley, Massillon, Ohio, assignor to Stallion Corporation, Massillon, Ohio

Filed Apr. 13, 1978, Ser. No. 896,046

Int. Cl.² G01L *3/14*

U.S. Cl. 73—151 **11 Claims**



1. A well driving system comprising a prime mover and a transmission, said transmission including a shaft subject to axial movement in response to well loads, a transducer mounted on said shaft within said transmission, means to employ the signal produced by said transducer to monitor such well loads, said transmission being a worm gear transmission and said shaft being the worm shaft, said transmission including a worm wheel in mesh with the worm and secured to an output shaft projecting laterally symmetrically on each side of said transmission, cranks connected to each end of said output shaft, each crank including a tapered hub, a mating tapered bushing secured to each end of the output shaft, and screw means securing said hub and bushing together.

4,194,394
FLOW METER

Reiner Barthölomäus, Neuendorf, Fed. Rep. of Germany, assignor to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

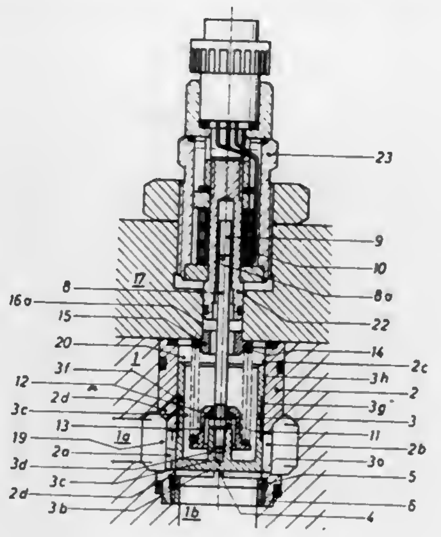
Filed May 15, 1978, Ser. No. 905,869

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722239

Int. Cl.² G01F *1/28*

U.S. Cl. 73—207 **10 Claims**

1. In a flow meter, a combination comprising: a housing defining a fluid inlet passage and a fluid outlet passage; a piston arranged in said housing for reciprocating movement between said passages, said piston defining a jacket surface, a base surface and a control edge between the two surfaces, said control edge and said jacket surface being arranged for controlling the opening of said passages during the movement of the piston; spring means biasing said piston into a zero flow position in which the piston closes the communication between said passages; flow distributing means arranged between the passages for adjusting the flow rate of the fluid in response to the movement of said piston, and including a sleeve attached to said piston and projecting into said fluid inlet passage, said sleeve being provided with a plurality of slots for passing the fluid from said inlet passage into said outlet passage; and an electrical position detector coupled with the piston to generate an electrical signal proportional to the displacement of the piston.



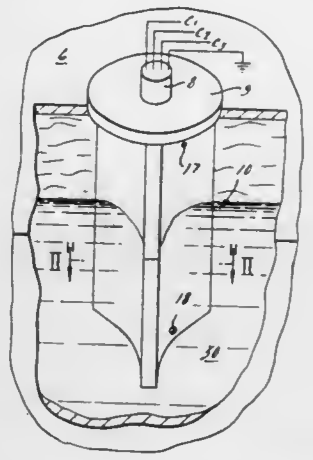
4,194,395
CAPACITIVE LIQUID LEVEL SENSOR

Tony J. Wood, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1978, Ser. No. 971,751

Int. Cl.² G01F *73/26*

U.S. Cl. 73—304 C **20 Claims**



1. A capacitive fuel sender mounted in a fuel storage tank for sensing the level of fuel over a predetermined height range comprising:

a cylindrical housing, extending along a line perpendicular to the expected level of said fuel in said storage tank, being formed of an electrically conductive material and defining a common capacitive plate;

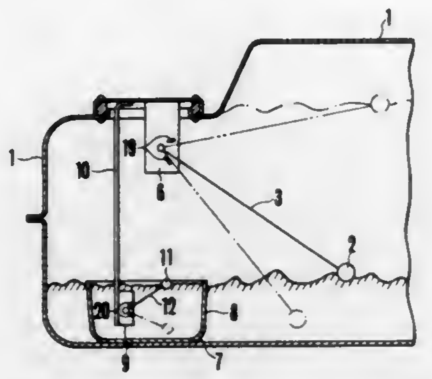
a plurality of capacitive plates within said housing extending parallel to said line and being continuously separated over said predetermined height range; and

a dielectric between said plates including air above said fuel level and fuel at said level and below; wherein said sender includes a plurality of capacitors; and

said capacitive plates within said housing define the individual ones of said plurality of said capacitors each in combination with said common capacitive plate.

4,194,396
AUTOMOBILE FUEL GAUGE SYSTEM

Eiji Ohsawa, Ebina, and Yoshiro Yoshikawa, Hiratsuka, both of Japan, assignors to Nissan Shatai Co., Ltd., Japan
Filed Jun. 27, 1978, Ser. No. 919,447
Claims priority, application Japan, Jul. 7, 1977, 52-89145[U]
Int. Cl.² G01F *23/06, 23/10*
U.S. Cl. 73—311 **3 Claims**



1. An automobile fuel gauge system comprising:

a main sensor unit for a main indicating system in a fuel tank; an auxiliary chamber fixedly provided at the bottom of the fuel tank and having a hole at its lower side to provide a fuel passage from said tank into said auxiliary chamber, an auxiliary sensor unit and an auxiliary indicating system being provided in said chamber, and dial means comprising a main dial section connected to said main sensor unit to indicate the amount of fuel in said tank and an auxiliary dial section connected to said auxiliary sensor unit to provide electric signals to said auxiliary indicating system to indicate the amount of fuel in said tank only when the level of fuel in said tank is below the level of fuel necessary to drive said auxiliary sensor unit to its maximum fuel position.

4,194,397
APPARATUS FOR INDICATING THE LEVEL OF A FLUID

Mieji Yasuda, Osaka, Japan, assignor to Junzo Ozaki, Osaka, Japan
Filed Aug. 7, 1978, Ser. No. 931,548
Claims priority, application Japan, Apr. 21, 1978, 53-48076
Int. Cl.² G01F *23/06*
U.S. Cl. 73—314 **6 Claims**

1. An apparatus for indicating the level of the surface of a fluid in a tank comprising:

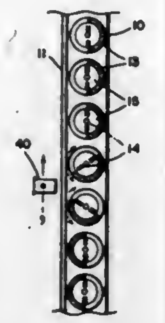
a vertically disposed non-magnetic column coupled to said tank such that fluid in said tank flows into said column;

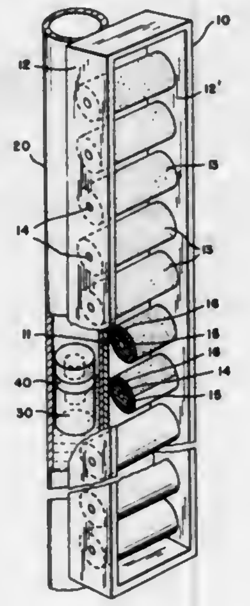
a non-magnetic level indicator housing provided adjacent said column;

a plurality of horizontally disposed magnetic rotors rotatably coupled to said housing each of said rotors comprising a cylindrical magnet having one half of a one magnetic polarity and another half of another magnetic polarity and having an end face divided in half into two different colors, each of said color halves covering one quarter of each half of said cylindrical magnet of different polarities;

a cylindrical float provided in said column; and

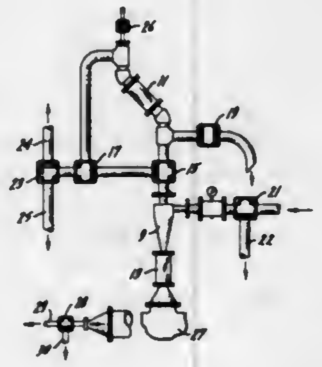
a magnetic member provided in said float; whereby each of magnetic rotors is rotated one half revolution by said magnetic member in said float when said float passes by each of said magnetic rotors to indicate said level as a level wherein orientation of said two different colors changes.





4,194,398
SIGHT GLASS AND SAMPLING SYSTEM

Edward A. Gastrock, Metairie, La., assignor to Charles L. Stewart, Glencoe, Ill. and Gastrock Protein Corporation, Metairie, La.
Division of Ser. No. 721,203, Sep. 8, 1976, Pat. No. 4,139,646. This application Nov. 13, 1978, Ser. No. 960,095
Int. Cl.² G01N *1/10*
U.S. Cl. 73—422 TC **3 Claims**



1. A sight glass and sampling system for the output of a liquid processing device including:

a sight glass connected to the outlet of said liquid processing device.

a first three-way valve controlling the flow from the outlet of said liquid processing device to the inlet of said sight glass,

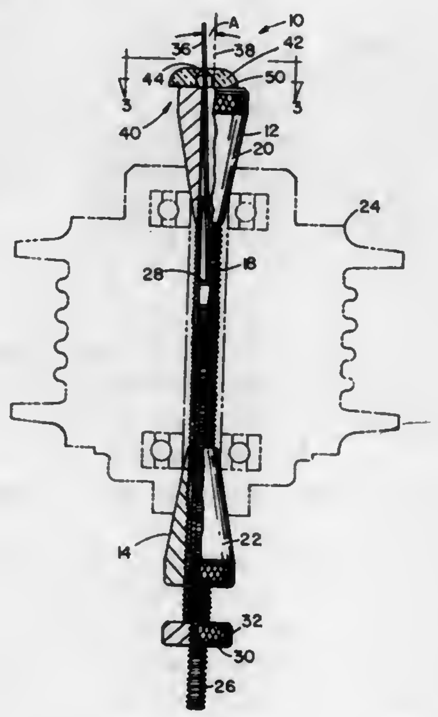
a second three-way valve controlling the outlet from said sight glass,

a valve controlled sample conduit connected between said first and second three-way valves, and

a by-pass conduit connecting said first and second three-way valves and controlled by said valves.

4,194,399
WHEEL BALANCING TOOL

E. Robert Wilson, 5745 S. Huron St., Littleton, Colo. 80120
Filed Oct. 5, 1978, Ser. No. 948,966
Int. Cl.² G01M *1/12*
U.S. Cl. 73—486 **9 Claims**



1. A balancing tool comprising:

a hollow shaft having a substantially smooth bore and an axis;

two spaced adapter means attached coaxial to the shaft for engaging portions of an article to be balanced, and wherein at least one of the adapter means is adjustable to desired axial positions along portions of the hollow shaft;

a rod means having a first end portion substantially coaxially disposed within the bore of the hollow shaft and having a second portion extending from the bore of the hollow shaft, said first end portion slidably axially movable in portions of the bore and defining a suspension point substantially coincident with the shaft axis;

a stop means adjustable axially along an extending portion of the rod means for maintaining the suspension point of a desired position in the bore;

a bushing between the shaft and first end portion to help hold the rod in position as the stop means is adjusted;

a suspension member extending into the hollow shaft and attached to the rod means at the suspension point and substantially coincident with the hollow shaft axis; and

indicator means for showing a relative position between the suspension member and the hollow shaft.

4,194,400
ULTRASONIC INSPECTION METHOD

Bonner W. Staff, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Dec. 21, 1977, Ser. No. 862,791
Int. Cl.² G01N *29/04*
U.S. Cl. 73—623 **3 Claims**

1. In a method for the ultrasonic examination for a defect in the vicinity of a hole in a portion of a member while the member is assembled in an article which includes an outer wall having an access port available to a surface of the member, the member portion being inaccessible to straight line ultrasonic signals within the member from said member surface, the steps of:

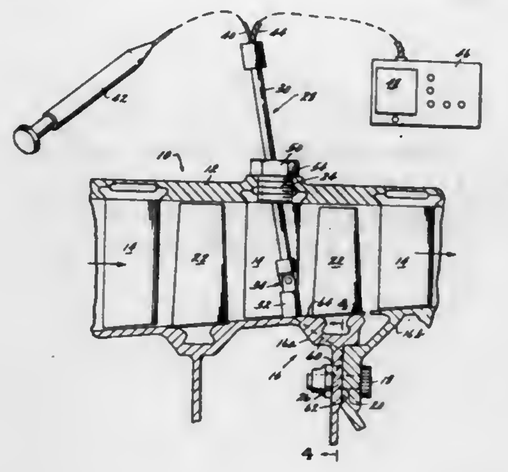
providing a predetermined normal ultrasonic signal form associated with the member portion and the hole;

placing a face of an ultrasonic transducer through the access port and into operating position at the member surface;

activating the transducer to direct a first ultrasonic signal within the member through the member surface and toward at least one boundary of the member remote from the member portion, the signal being directed along a path within the member in respect to the boundary and the member portion such that the first signal is deflected from the boundary toward the member portion;

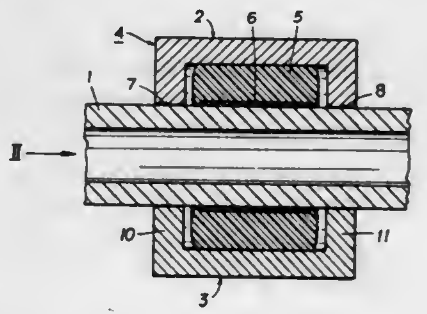
receiving from the member portion, through the transducer, a second ultrasonic signal which is a reflection of the first signal; and then,

comparing the form of the second signal with the predetermined normal signal form to examine for the presence of a defect in the member portion.



4,194,401
TRANSDUCER FOR MEASURING THE INTERNAL PRESSURE IN PIPES

Peter Claassen; Rudolf Zeiringer, and Helmut List, all of Graz, Austria, assignors to Hans List, Graz, Austria
Filed Nov. 9, 1978, Ser. No. 959,213
Claims priority, application Austria, Nov. 11, 1977, 8099/77
Int. Cl.² G01L *9/04*
U.S. Cl. 73—730 **12 Claims**



1. A transducer device for measuring the internal pressure in a pipe by detecting deformations in the outer surface thereof, such as an injection pipe feeding fuel to a diesel engine, comprising a rigid housing for enclosing the pipe whose outer surface deformation is to be measured, and at least one elastic sensor element having a surface capable of contact with the outer surface of said enclosed pipe, said sensor element being capable of stretching due to deformation of said pipe due to frictional contact therewith, said sensor element being located inside said housing and adjacent to at least a part of the outer surface of the pipe, means for fixedly mounting said rigid housing on the pipe such that said sensor element can contact the outer surface of said enclosed pipe, and an elastic endorsing element positioned between the rigid housing and the sensor element for elastically forcing the sensor element against the outer surface of the enclosed pipe, the deformation of the pipe

resulting from pressures therein being transmitted frictionally to the sensor element.

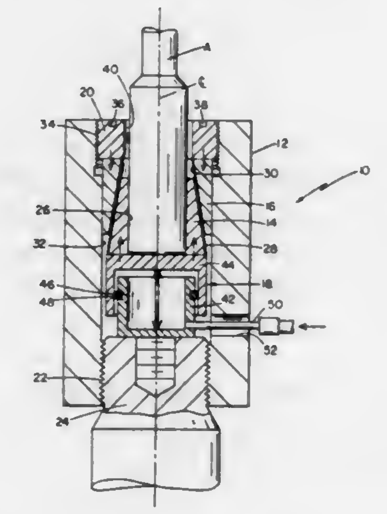
4,194,402
TESTING MACHINE GRIP

Joseph P. De Nicola, Hingham, Mass., assignor to Instron Corporation, Canton, Mass.

Filed Aug. 31, 1978, Ser. No. 938,697

Int. Cl.² G01N *3/04*

U.S. Cl. 73—859 **6 Claims**



1. In a materials testing machine of the type having
a pair of grips for gripping two ends of a test specimen,
power means for applying loads to said test specimen through said grips, and
control means for controlling said power means,
the improvement wherein each of said grips comprises:
a housing,
at least first and second wedge members positioned in said housing,
  each of said wedge members having an aperture therethrough, the aperture of said first wedge member positioned for receiving a test specimen and said first wedge member having a gripping surface defining its said aperture, and the aperture of said second wedge member positioned for receiving said first wedge member,
  said wedge members being movable with respect to each other and each of said wedge members having an inclined portion directed oppositely to the inclined portion of said other wedge member, and
means for preloading said wedge members to cause them to move with respect to each other,
wherein said wedge members are annular,
wherein said apertures are circular in cross section,
wherein said aperture of said first wedge member and said gripping surface are cylindrical, said first wedge member has a frustoconical outer shape, said aperture of said second wedge member is frustoconical in shape and is directed axially oppositely to said inclination of said first wedge member's outer shape, said second wedge member has a cylindrical outer shape, said housing has a cylindrical bore for receiving said second wedge member,
wherein said first wedge member is longitudinally split,
whereby said wedge members interact to exert a gripping force on said test specimen through said first wedge member's gripping surface.

4,194,403
PUSH-BUTTON OPERATED DEVICE FOR STORING A PLURALITY OF POSITIONS OF A MOVABLE MEMBER

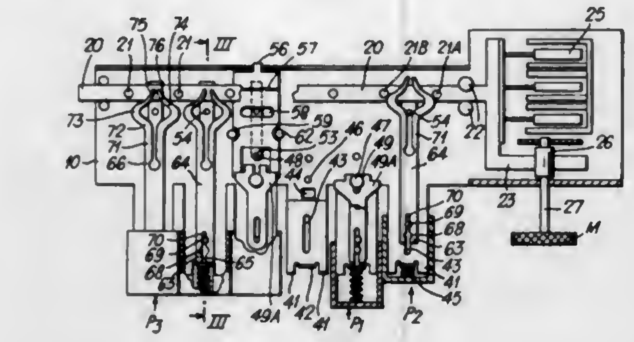
Giovanni Santoro, Rome, Italy, assignor to Werbetronic AG, Maureen Liechtenstein, Italy

Filed Jun. 21, 1977, Ser. No. 808,625

Claims priority, application Italy, Jun. 25, 1976, 50161 A/76; May 18, 1977, 49462 A/77

Int. Cl.² F16H *35/18*

U.S. Cl. 74—10.33 **12 Claims**



1. A push button controlled device for storing a plurality of positions of a movable member thereof, the position of said member controlling the variable condition of a second device mechanically connected thereto, and said positions of said movable member being preselected through said push buttons and selected by the latter when depressing the corresponding push button, said device comprising: a supporting plate said movable member (20) being slidingly supported on the plate and said movable member having a plurality of pairs of pins mounted thereon for enabling selection of said positions; a control unit (M) for manually controlling the positions of said movable member; a friction device allowing relative movements between said movable member and said manually operated control unit; and a plurality of storing and selecting units provided with said push buttons and having means for storing and selecting said positions of said movable member, said means being adapted to cooperate with said plurality of pairs of pins of said movable member.

4,194,404
CRANK ASSEMBLY FOR RECIPROCATING PISTON MACHINES

Valentin Jager, deceased, late of Darmstadt, Fed. Rep. of Germany, and by Klara B. E. Jager, heir, Saalbaustrasse 40, D-6100 Darmstadt, Fed. Rep. of Germany

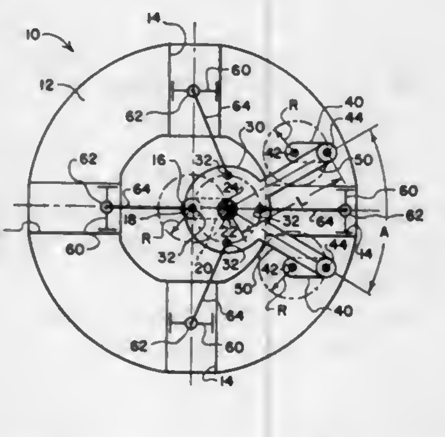
Continuation of Ser. No. 744,468, Nov. 24, 1976, abandoned.

This application Jul. 12, 1978, Ser. No. 923,919

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554687

Int. Cl.² F16H *21/22*

U.S. Cl. 74—44 **12 Claims**



1. In a machine of the type having a body, a crankshaft journaled by the body for rotation about a crankshaft axis, a crank pin carried on the crankshaft, and a plurality of connecting rods, a crank assembly for drivingly coupling the connecting rods to the crank pin, comprising:

(a) an articulation member journaled on the crank pin for movement about the axis of the crank pin;
(b) connection means for pivotally connecting the connecting rods to the articulation member;
(c) constraining means interconnecting the articulation member and the body of the machine for confining freedom of movement of the articulation member and for preventing it from rotating as it travels with the crank pin in a circular path about the crankshaft axis;
(d) the constraining means consisting of two auxiliary cranks each having one shaft portion journaled by the body for rotation about a separate auxiliary crank axis, and another shaft portion journaled by the articulation member for movement relative to the body portion about a separate auxiliary shaft portion axis;
(e) the distances between the axes of the shaft portions of each auxiliary crank being equal to the distance between the axes of the crankshaft and the crank pin; and,
(f) the crankshaft axis, the crank pin axis, the auxiliary crank axes and the auxiliary shaft portion axes extending in parallel relationship and being arranged such that all of these axes do not extend in a common plane at anytime during rotation of the crankshaft.

4,194,405
VIBRATOR DEVICES

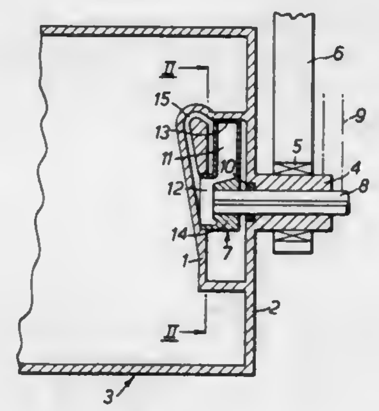
Lionel A. Reynolds, Maryhill, Cheltenham Rd., Painswick, Stroud, England

Filed Jun. 26, 1978, Ser. No. 918,956

Claims priority, application United Kingdom, Jul. 23, 1977, 31037/77; Dec. 7, 1977, 50836/77

Int. Cl.² F16H *33/10*

U.S. Cl. 74—87 **10 Claims**



6. A device according to claim 5, wherein an out-of-balance mass the rotation of which produces a vibratory force transmitted to the casing by said fluid pressure consists entirely of the fluid contained in the rotor and which the swept surface of the casing, and means to control the magnitude of the vibratory force comprise a restrictor valve through which said cavity is supplied to make up fluid leakage at the tip of the rotor between the rotor and the casing, the restrictor valve being adjustable to vary the mass of fluid in the cavity.

4,194,406
LEVER MECHANISM

John Böhlmark, Mora, Sweden, assignor to F M Mattsson Aktiebolag, Mora, Sweden

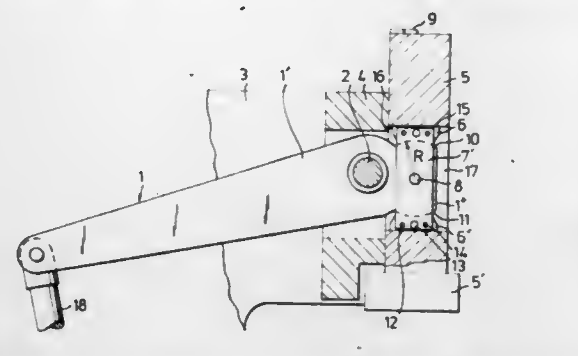
Filed Mar. 6, 1978, Ser. No. 883,924

Claims priority, application Sweden, Mar. 17, 1977, 7703074

Int. Cl.² F16H *21/44*

U.S. Cl. 74—110 **3 Claims**

1. A lever mechanism comprising a lever (1) which is pivotally mounted between its ends on a pivot shaft (2) and one lever arm (1') of which lever is arranged to have a force applied thereto while the other lever arm (1") of which lever has an end portion arranged to transmit, via two mutually opposed part-cylindrical surfaces (10, 11), movement and force to a working element (5) adapted to be moved along a guide means (9) carrying said working element in response to movement of the lever, characterised in that cooperating with respective part-cylindrical surfaces (10, 11) on said end portion is a part-cylindrical surface on a slide block (6) having the same radius as the part-cylindrical surface cooperating with said end portion, said slide block having remote from its part-cylindrical surface a planar slide surface (15) which is parallel with the shaft of the part-cylindrical surface of the slide block and which planar slide surface is arranged to slidably abut a planar surface (16) on said working element (5); and in that the two slide blocks are non-rotatably connected to one another via their planar slide surfaces in parallel planes by means of dogging elements (7) which in turn are pivotally mounted on a central rotation shaft (8) arranged between the two part-cylindrical surfaces of the end portions.



4,194,407
VARIABLE SPEED TRANSMISSION

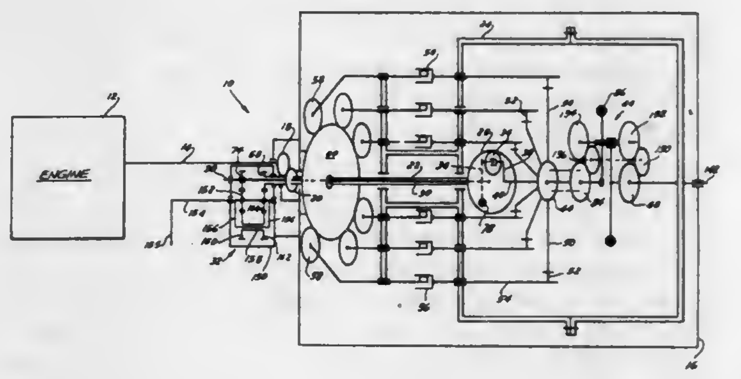
Laird B. Gogins, Salt Lake City, Utah, assignor to Power-Matic Corporation, Salt Lake City, Utah

Division of Ser. No. 751,952, Dec. 17, 1976, Pat. No. 4,116,083.

This application Sep. 25, 1978, Ser. No. 945,123

Int. Cl.² F16H *29/04*

U.S. Cl. 74—117 **8 Claims**



1. A variable throw crank assembly for use in oscillating a drive control element about a fixed point with a variable eccentricity comprising a first hollow shaft, a control shaft rotatably mounted in said hollow shaft, a first crank secured to the control shaft in eccentric parallel relation, a ring gear mounted on said hollow shaft surrounding said first crank; a pinion gear rotatably mounted on said first crank in meshing engagement with said ring gear; a second crank secured to said pinion gear in eccentric parallel relation to the first crank and defining a crank pin having at least one position aligned with the axis of the control shaft, and means for selectively rotating said control shaft within said hollow shaft whereby movement of said pinion with respect to the ring gear causes the pinion gear to rotate, thereby to vary the eccentricity of said crank pin with respect to the axis of said hollow shaft.

4,194,408
GEAR-SHIFT CONTROL FOR BICYCLE TRANSMISSION

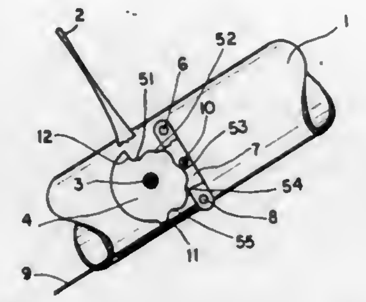
Eberhard Hedrich, Osdorfer Landstr. 161, 2000 Hamburg 53, Fed. Rep. of Germany

Filed Oct. 31, 1977, Ser. No. 847,049

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650011

Int. Cl.² F16H *9/00*

U.S. Cl. 74—217 B **5 Claims**



1. A bicycle transmission adapted to establish a plurality of speed ratios between a pedal shaft and a traction-wheel shaft journaled in a frame, comprising:

at least one first sprocket on one of said shafts;

a plurality of second sprockets of progressively varying diameters on the other of said shafts;

an endless chain capable of connecting said first sprocket with any of said second sprockets;

gear-shifting means for relatively axially displacing said chain and said second sprockets to transfer the chain from one second sprocket to an adjoining one;

a control member on said frame within reach of a user;

a cam disk rotatable by said control member about an axis and provided with a plurality of substantially equispaced peripheral notches respectively assigned to said second sprockets and disposed at progressively varying distances from said axis; and

a rocker arm pivoted to said frame at one end and having another end linked with said gear-shifting means by a spring-loaded cable, said arm carrying between said ends a cam-follower element juxtaposed with said disk for entering any confronting notch thereof under stress from said cable, thereby indexing said control member in any selected working position while acting through said cable upon said gear-shifting means to maintain said chain in operative alignment with the corresponding second sprocket.

4,194,409
FRONT DERAILLEUR FOR A BICYCLE PROVIDED WITH A SWINGINGLY MOVABLE CHAIN GUIDE

Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

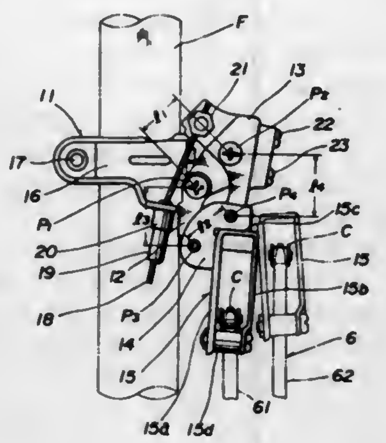
Filed Jul. 10, 1978, Ser. No. 923,355

Claims priority, application Japan, Jul. 12, 1977, 52-92844

Int. Cl.² F16H *9/00*

U.S. Cl. 74—217 B **8 Claims**

1. A front derailleur for a bicycle which is adapted to shift a chain between different diameter sprockets of a front sprocket assembly comprising: a base member secured to the frame of a bicycle, two linkage members each having a first end portion and a second end portion, and a movable member with a chain guide mounted thereon, said two linkage members having their first end portions pivotally connected with said base member, and said movable member being pivotally connected with the second end portion of each linkage member such that said base member, two linkage members and movable member are pivotably coupled to constitute a four-connected component linkage mechanism which swingingly moves said chain guide in a non-parallel relation with respect to said bicycle frame, the amount of movement of a chain guiding portion of said chain guide being larger than the amount of movement of said movable member with respect to the base member in the axial direction of the sprocket assembly.



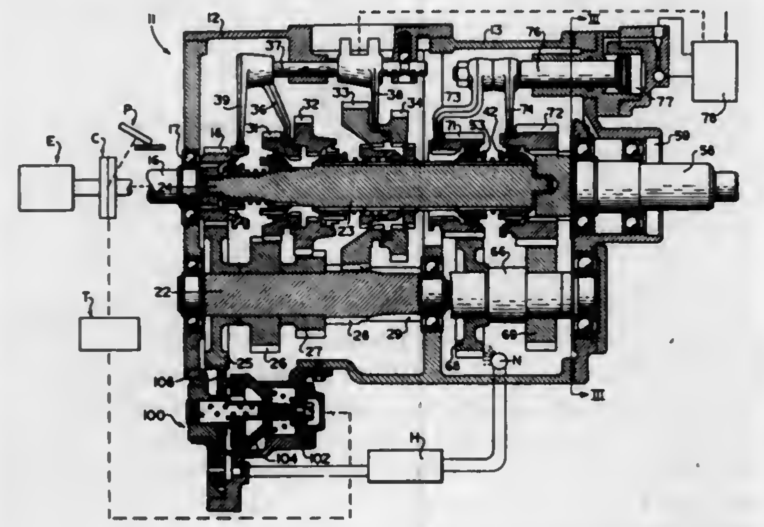
4,194,410
BLOCKED TRANSMISSION

Elmer A. Richards, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 5, 1977, Ser. No. 822,306

Int. Cl.² F16D *23/06, 67/04*

U.S. Cl. 74—339 **39 Claims**



1. An improved, change gear, blocked transmission having an input shaft rotatably driven by a one-way prime mover through a normally engaged selectively disengaged friction master clutch, input gearing constantly meshingly engaged with the input shaft, axially engageable jaw clutches for rotationally fixing one of said input gears to a driven shaft, relatively nondeformable blockers for blocking engagement of said jaw clutches when the jaw clutch members thereof are at nonsynchronous rotation, said blockers rotationally carried by one of said jaw clutch members with a limited degree of relative rotational freedom, said blocker effective to block engagement of said jaw clutches when rotated relative to said one jaw clutch member, the improvement comprising:

means effective to decelerate and momentarily positively reverse rotate the input shaft of said transmission said means including a first gear meshingly engaged with said input gearing.

4,194,411
STEERING COLUMN SUPPORT ASSEMBLY

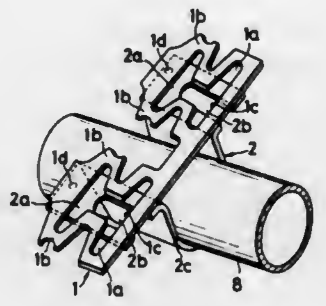
Shigeru Manabe, Kashihara, and Shuzo Hirakushi, Yao, both of Japan, assignors to Koyo Seiko Company Limited, Osaka, Japan

Filed Mar. 31, 1978, Ser. No. 893,323

Claims priority, application Japan, Apr. 6, 1977, 52-39716; Feb. 6, 1978, 53-13150

Int. Cl.² B62D *1/18*

U.S. Cl. 74—492 **14 Claims**



1. In a device for supporting on a vehicle body a steering column housing a steering shaft having a steering wheel at its upper end and connected to a steering gear at its lower end, a steering column support assembly having an energy absorbing function and comprising a support member secured to the steering column and having planar portions fastened to the vehicle body, and a frame-shaped energy absorbing member superposed on the planar portions of the support member and having at least one elongate deformation promoting aperture punched therein to form zigzag substantial portions in parallel to the axis of the column and subject to bending elastic deformation when absorbing energy, the absorbing member having one end secured to the planar portions of the support member and the other end having an inner edge positioned close to the steering wheel and defining the aperture and further including bolt means extending through the support member for fastening the support member to the vehicle body with said bolt means being positioned in contact with the inner edge.

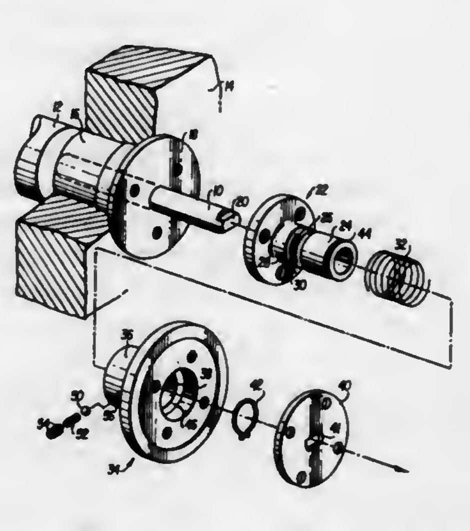
4,194,412
HANDWHEEL DISENGAGE MECHANISM

Harold E. Boyer, Anna, Ohio, assignor to Graphics Equipment International Corp., Chicago, Ill.

Filed Oct. 20, 1976, Ser. No. 734,211

Int. Cl.² G05G *1/10*

U.S. Cl. 74—554 **8 Claims**



1. An automatic disengaging mechanism for automatically disengaging a first member from a shaft when the shaft rotates in a predetermined direction and for preventing engagement of the first member with the shaft when the shaft rotates above a predetermined speed in said predetermined direction, said disengaging mechanism comprising:

a stationary frame having said shaft rotatably mounted thereon, said stationary frame including a second member, said shaft passing through a shaft cavity in said second member;

said first member also being rotatably mounted on said second member adjacent said shaft and being axially movable relative to said stationary frame, said first member including an engaging and disengaging means for engaging said shaft when said first member is in an engaging axial position so that said shaft and first member rotate together and for disengaging said shaft when said first member is in a disengaging axial position so that said shaft and first member can rotate independently;

said first member defining a cylindrically-shaped cavity surface and said second member including a complementary cylindrically-shaped surface positioned in the cylindrically-shaped cavity;

said complementary cylindrically-shaped surface including at least three grooves thereon, the first of the grooves encircling the shaft axis, the second of said grooves also encircling the shaft axis but being axially spaced from the first groove, and the third of said grooves spiraling about the shaft axis between the first and second grooves; and

said cylindrically-shaped cavity surface including a cam for riding in said grooves.

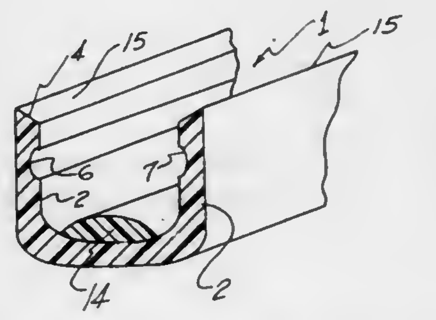
4,194,413
CHAIN GUARD AND METHODS OF MAKING AND USING THE SAME

Bernhard K. Hentze, 7852 Folk, Maplewood, Mo. 63143

Filed Sep. 16, 1977, Ser. No. 833,715

Int. Cl.² F16P *1/00*

U.S. Cl. 74—611 **3 Claims**



1. A chain guard for use with a chain drive provided with roller links secured together by pin links provided with pins comprising,

an elongated elastic and flexible tubular element with its ends secured together to form a loop, said element provided with a channel opening inwardly of said loop and communicating with the interior space of the tubular element, thereby providing a "U" shaped cross section to said elongated element, the inner surface of said element beveled and a pair of arcuate elongated channels provided on the interior walls of said element, said arcuate elongated channels having a width substantially less than the length of a leg of "U" shaped cross section, and disposed to accept said pins from said pin links.

4,194,414
PLANETARY SPEED REDUCER

Akira Satoh, Susono, and Teisuke Ishizaka, Toyama, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Kabushiki Kaisha Fujikoshi, Toyama, both of, Japan

Filed Sep. 29, 1977, Ser. No. 837,885

Claims priority, application Japan, Oct. 8, 1976, 51-121055

Int. Cl.² F16H *37/06, 57/00*

U.S. Cl. 74—674 **12 Claims**

1. A speed changer for high speed rotation, comprising:

a casing;

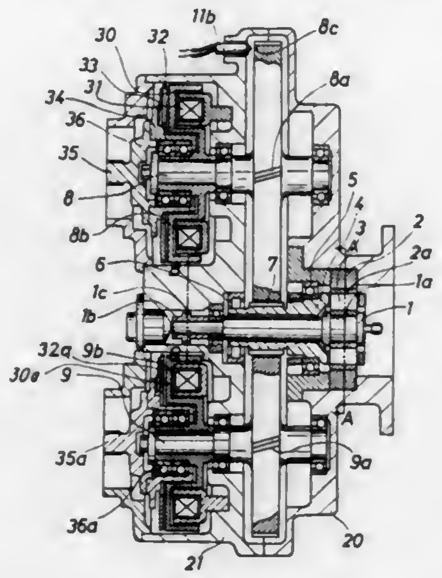
a first stage including

a first shaft having a first rolling track formed on the surface thereof,

a planetary roller friction reducer comprising a fixed outer ring contained within said casing and surrounding said first shaft adjacent one end of said shaft, said outer ring having a second rolling track formed on the inner surface thereof,

a planetary roller carrier having a plurality of cavities therein situated between said first and second rolling tracks, said carrier being rotatably supported by said casing and concentric with said first shaft, the other end of said first shaft projecting beyond said carrier, and

a plurality of hollow cylindrical planetary rollers positioned within respective cavities of said carrier and in rolling contact with said first and second rolling tracks, and rollers being preloaded by an interference fit in the radial direction between said first and second rolling tracks, said carrier and plurality of hollow cylindrical planetary rollers orbitally revolving together about said first shaft; and



a second stage including

a pinion formed integrally with said carrier,

a gear rotatably mounted in mesh with said pinion, and

a second shaft affixed to said gear, said speed changer functioning as a speed reducer when said first shaft has an input torque applied thereto and said second shaft is connected to an output load, and as a speed increaser when an input torque is applied to said second shaft and an output load connected to said first shaft.

4,194,415

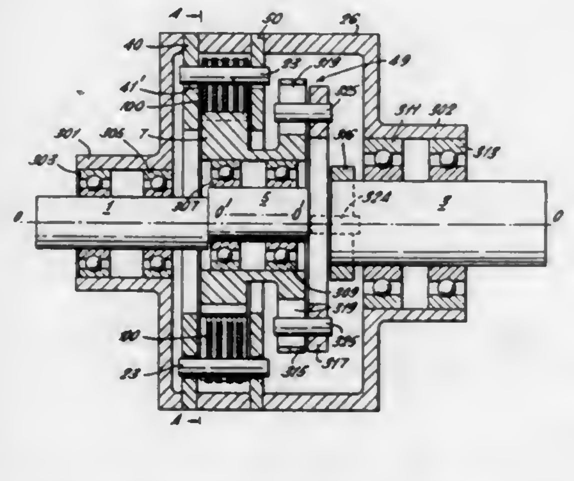
QUADRANT DRIVE

Frank W. Kennington, Les Ruisseaux House, St. Brelade, Jersey, Channel Islands, and Panayotis C. Dimitracopoulos, P.O. Box N. 7776, Nassau, The Bahamas

Filed May 8, 1978, Ser. No. 904,024

Int. Cl.² F16H *1/28*

U.S. Cl. 74—805 **23 Claims**



1. A motion transmitting device including eccentric means, wheel means having portions shaped to engage with linked but independently movable meshing elements, and movement-limiting means including a datum member, wherein said eccentric means is arranged to cause said meshing elements sequentially to enter into and subsequently to move out of engagement with said portions of said wheel means, said meshing elements being individually guided by said movement-limiting means within predetermined limits or orbital motion relative to said datum member such that a plurality of adjacent areas of said meshing elements are always simultaneously in engagement with, and stationary relative to, a corresponding number of said portions, said movement-limiting means including a plurality of individual connector elements, first profiles on said datum member and second profiles on said meshing elements, each of said connector elements being in engagement with respective said first and said second profiles to be held in captive dependency, the profiles constraining the engaging meshing elements to follow said orbital motion.

4,194,416

CONTROL SYSTEM FOR HYDRAULIC PRESSURE REGULATING VALVE IN AUTOMATIC TRANSMISSION CONNECTED TO MULTI-CYLINDER I.C. ENGINE WITH MEANS FOR OPERATING THE ENGINE ON SELECTED CYLINDERS OF ALL

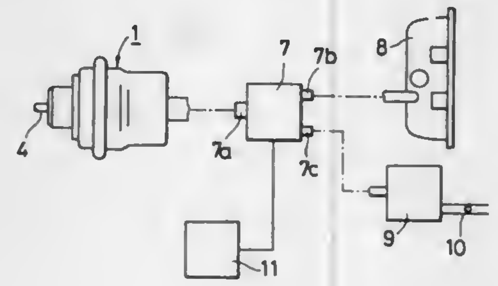
Fukashi Sugasawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 26, 1978, Ser. No. 945,876

Claims priority, application Japan, Oct. 12, 1977, 52-121414

Int. Cl.² B60K *41/18*

U.S. Cl. 74—859 **3 Claims**



1. A control system for a hydraulic pressure regulating valve in a hydraulic control circuit of an automatic transmission connected to a multi-cylinder internal combustion engine to be driven thereby, the engine having an intake manifold as a source of induction vacuum and being provided with means for operating the engine on selected cylinders of all under a predetermined engine operating condition, said control system comprising:

a source of a predetermined vacuum;

a diaphragm device operatively connected to said hydraulic pressure regulating valve, said diaphragm device including a spring means for biasing a valve member of said hydraulic pressure regulating valve in one direction, and a diaphragm operatively connected to said valve member and having one side in communication with the atmosphere;

fluid network means, including a valve means, for connecting said diaphragm device to said intake manifold and to said source of the predetermined vacuum to cause said diaphragm device to move said valve member, in the opposite direction against said spring means, in response to a pressure difference between the atmospheric pressure and the induction vacuum within said intake manifold; and

said valve means being operable in response to a signal representing that said engine runs on the selected cylinders of all for applying the predetermined vacuum to said diaphragm device on the opposite side of said diaphragm to help said diaphragm device in moving said valve member in the opposite direction.

4,194,417

APPARATUS FOR IMPROVING FUEL ECONOMY OF MULTI-CYLINDER I. C. ENGINE FOLLOWED BY AUTOMATIC TRANSMISSION VIA HYDROKINETIC UNIT

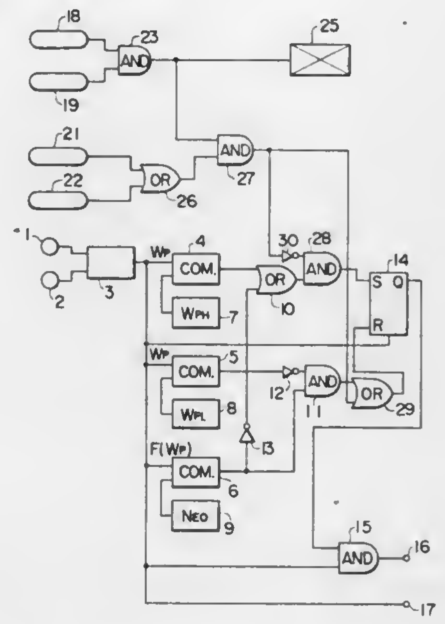
Fumiaki Kato, Yokohama; Haruhiko Itzuka, Yokosuka; Fukashi Sugasawa, Yokohama, and Junichiro Matsumoto, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 26, 1978, Ser. No. 945,877

Claims priority, application Japan, Oct. 12, 1977, 52-121416

Int. Cl.² B60K *41/04*

U.S. Cl. 74—866 **2 Claims**



1. In a vehicle comprising a multi-cylinder internal combustion engine which is provided with means for operating the engine on selected cylinders of all, and an automatic transmission connected to the engine via a hydrokinetic unit to be driven by the engine through the hydrokinetic unit, the automatic transmission including a hydraulic control circuit having a source of hydraulic pressure, a sump, a control unit, each for operating a friction element and a manually operable selector valve having an inlet port connected to the source of hydraulic pressure, a drain port connected to said sump and an outlet port connectable to said control unit the manually operable selector valve having a first position in which communication between the outlet port and the inlet port is cut off and communication between the outlet port and the drain port is established and having a second position in which the communication between the outlet port and the inlet port is established and the communication between the outlet port and the drain port is cut off:

switch valve means disposed in said fluid line means and having a drain port connected to said sump, said switch valve means being operative to permit communication between said manually operable selector valve and said drain port thereof when actuated;

solenoid means for actuating said switching valve means when energized;

vehicle speed sensing means for detecting that said vehicle is at a standstill;

load sensing means for detecting that load applied to said engine is below a predetermined level;

selector valve condition sensing means for detecting that said selector valve means is in the first position thereof;

switch valve condition sensing means for detecting that said switch valve means has been actuated;

means for producing a signal supplied to said solenoid means to energize the same when said vehicle speed sensing means detects that said vehicle is at a standstill and said load sensing means detects that load applied to said engine is below the predetermined level;

means for producing a second signal when said selector valve condition sensing means detects that said selector valve means is in the first position thereof or when said switch valve condition sensing means detects that said switch valve means has been actuated; and

means for causing said engine operating means to permit said engine to operate on the selected cylinders of all in response to said signals.

4,194,418

CIRCUIT ARRANGEMENT FOR THE REGULATION OF THE TRANSMISSION STAGES ON AN AUTOMATIC GEAR CHANGER

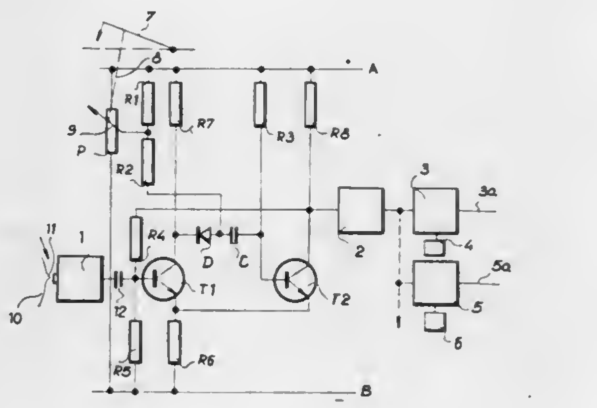
Ctirad Pecháček, and Richard Sehnal, both of Prague, Czechoslovakia, assignors to Ustav pro vyzkum motorovych vozidel, Prague, Czechoslovakia

Filed Aug. 21, 1978, Ser. No. 935,094

Claims priority, application Czechoslovakia, Aug. 19, 1977, 5459/77

Int. Cl.² B60K *41/18*

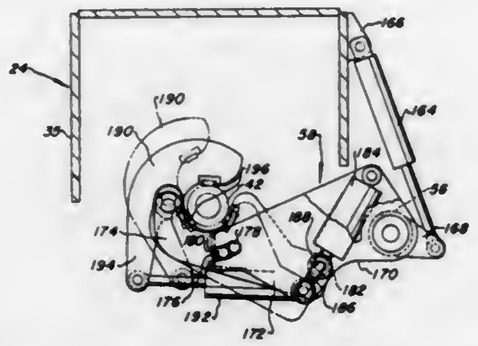
U.S. Cl. 74—866 **8 Claims**



1. Arrangement for the regulation of the points of shift between the transmission stages of an automatic gear changer of a motor vehicle provided with an accelerator and said automatic gear changer, comprising a direct current voltage supply source, a pick-up device responsive to the speed of the vehicle, a monostable circuit comprising a first, input transistor and a second, uppput transistor, means electrically connecting the output of the pick-up device to the base of the first transistor, circuit means comprising a condenser and a variable resistor for determining the time constant of the resistor for determining the time constant of the monostable circuit, the variable resistor being provided with a sliding contact mechanically connected to the accelerator of the vehicle, means electrically connecting the full resistance of the variable resistor across the opposite terminals of the voltage supply source, a filter having an input and an output, means electrically connecting the collector of the second transistor to the input of the filter and to the positive terminal of the voltage supply circuit, a logic circuit having two inputs and an output, a source of a reference voltage for the shifting of the gear changer from one stage to another connected to one of the inputs of the logic circuit, the other of the inputs of the logic circuit being connected to the output of the filter, the logic circuit being adapted to compare the output voltage of the filter with the reference voltage, the collector of the first transistor being connected by a circuit including a series connected diode and a condenser with the base of the second transistor, circuit means connecting the base of the second transistor with the positive terminal of the voltage supply source, the cathode of the diode being electrically connected to the collector of the first resistor, the junction point between the diode and the condenser being electrically connected to the positive terminal of the voltage supply source, and the sliding contact of the variable resistor being electrically connected to the positive terminal of the voltage supply source, and means for varying the speed at which the automatic gear changer changes from said one stage to said other stage thereof, said last-named means being electrically connected to and controlled by the output of the logic circuit.

4,194,419
DRILL PIPE HANDLING MECHANISM

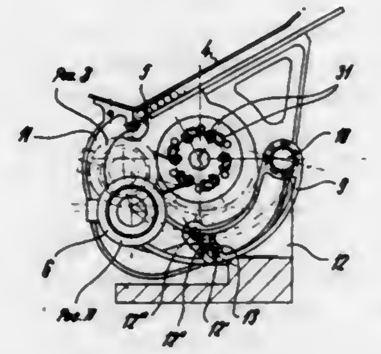
Ray M. Mitchhart, and Hans Zingl, both of Dallas, Tex., assignors to Cooper Industries, Inc., Houston, Tex.
Division of Ser. No. 815,347, Jul. 13, 1977, Pat. No. 4,128,135. This application Aug. 14, 1978, Ser. No. 933,324
Int. Cl.² B25B *13/50*
U.S. Cl. 81—57.33 **5 Claims**



1. A power actuated breakout wrench adapted to be mounted on a drilling rig which includes a drill stem made up of one or more drill pipe sections, said breakout wrench including an arm mounted on said drill rig for pivotal movement into and out of a position for engaging a drill pipe section with said breakout wrench, a first jaw mounted on said arm for engaging a drill pipe section, a second jaw mounted on said first jaw and movable between a clamping and nonclamping position with respect to said drill pipe section, a first hydraulic cylinder actuator connected to said arm and said first jaw, and means forming a connection between said first jaw and said arm for causing said first jaw to slide along said arm in a substantially arcuate path with respect to said arm in response to the actuation of said first cylinder actuator for rotating, with respect to said arm, a drill pipe section clamped by said first jaw and said second jaw.

4,194,420
AUTOMATIC BAR-LOADING APPARATUS FOR A MULTI-SPINDLE AUTOMATIC LATHE

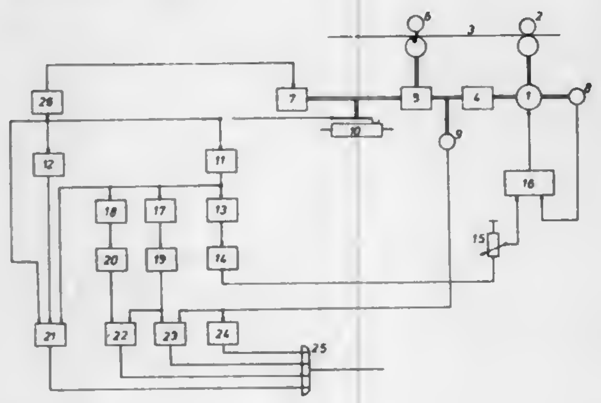
Hermann Flisch, Maienfeld, Switzerland, assignor to Eunipp AG, Zug, Switzerland
Filed Feb. 14, 1979, Ser. No. 12,229
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807771
Int. Cl.² B23B *15/00*
U.S. Cl. 82—2.7 **2 Claims**



1. Apparatus for automatically loading rods for feeding to a multi-spindle automatic lathe, the apparatus being of the type having a loading drum arranged coaxially with a spindle drum and angularly fixed therewith, the loading drum having a number of guide tubes, corresponding to the number of spindles and aligned with the spindles; a rod magazine; a rod separator apparatus; and, a feeding apparatus for the rod stock in the guide tubes and the spindles, which are provided with feeding jaws; the improvement therein comprising:
a traverse rod (10) fixed parallel to the guide tubes,
bails (11) and arms (9) pivotably supported by the traverse (10), the bails (11) and arms (9) carrying the rod magazine (4), the rod separator apparatus (5), and the rod feeding apparatus (6,7,8), and
means for fixing the bails (11) and arms (9) in a chosen angular position.

4,194,421
SAFETY SYSTEM FOR THE DRIVE OF A SYNCHRONOUS CROSS CUTTER

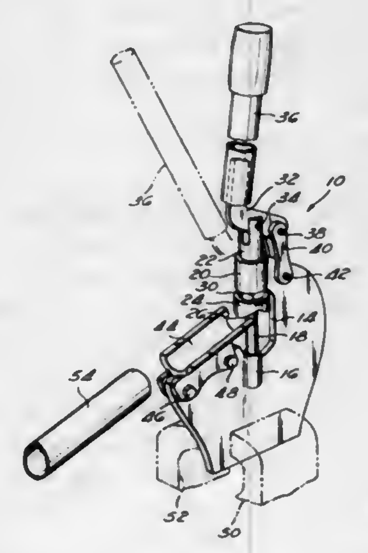
Heiko Knoll, and Wilfried Kurth, both of Duesseldorf, Fed. Rep. of Germany, assignors to Jagenberg Werke Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany
Filed Jul. 12, 1978, Ser. No. 923,870
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739191
Int. Cl.² B26D *5/00*
U.S. Cl. 83—62.1 **10 Claims**



1. In a safety system for the drive of a cross cutter for a web of material, having an electrical or mechanical synchronizing system between the drives of the feed means and cutting means which is adjustable for the size of the piece to be cut and which consists of an adjustable asymmetrical mechanism and has speed control means associated with the drive of the feed means to limit the speed of the feed means on the basis of a signal corresponding to the setting of the asymmetrical mechanism, wherein the improvement comprises function generator means for generating a signal to be applied to the speed control means which is directly dependent thereon to define the speed value for the drive of the feed means and wherein the function generator means is responsive to the asymmetrical mechanism for size-related, maximum permissible web velocity.

4,194,422
TUBING NOTCHER

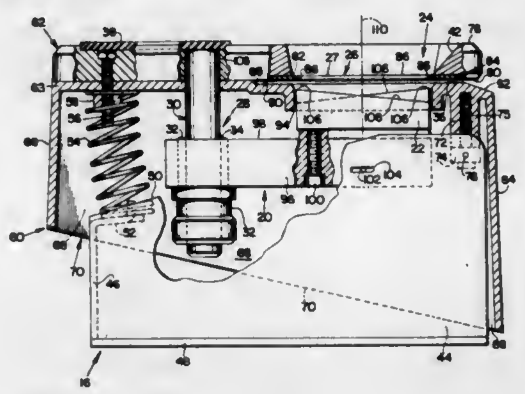
David A. Williams, 2484 Pinto Ln., Norco, Calif. 91760
Filed Oct. 2, 1978, Ser. No. 947,717
Int. Cl.² B26D *3/10, 3/14*
U.S. Cl. 83—581 **3 Claims**



1. A tubing notcher comprising:
a housing;
a cutter assembly movably mounted on said housing along a longitudinal axis, said cutter assembly including a cutter, said cutter having a cutting edge, said cutting edge being arcuate;
actuation means connected to said cutter, said actuation means for moving said cutter between a cutting position and a non-cutting position;
guide means mounted on said housing adjacent said cutter, said guide means having a longitudinal center axis, said longitudinal center axis being inclined in respect to said longitudinal axis with the inclination being slightly less than a right angle, whereby the tube is to be located upon said guide means with said cutter being positioned within the open end of said tube and upon said cutter being moved by said actuation means the open end of said tube is arcuately cut,
said cutting edge comprising a segment of a circle with the circle being concentrically disposed about said longitudinal axis,
said cutter being fixedly secured to a rod intermediate the ends thereof, each end of said rod being slidingly mounted within a sleeve, with there being two separate spaced apart sleeves, each of said sleeves being fixedly secured to said housing, the portion of said rod directly adjacent said cutting edge being substantially smaller in cross-section than the area of said circle of said cutting edge to permit insertion of said cutting edge into said open end of said tube, whereby a single size of cutter may be employed to cut various different diameter tubes.

4,194,423
COMPACT DIE CUTTING APPARATUS

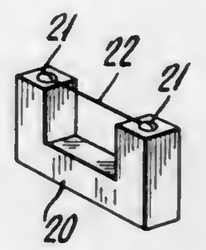
Norman W. Cutler, Jr., Braintree, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sep. 5, 1978, Ser. No. 939,423
Int. Cl.² B26D *5/10*
U.S. Cl. 83—589 **13 Claims**



1. A die cutting apparatus for cutting selected sections out of a web of material, said die cutting apparatus comprising:
a base section for supporting said apparatus and mounting various apparatus components thereon, said base section including an upper portion and a lower portion;
actuating means for actuation operation of said apparatus, said actuating means being pivotally coupled to said upper portion of said base section for angular displacement toward and away from said lower portion of said base section;
a cutting die disposed on said actuating means for angular displacement therewith and including a die aperture bounded by a cutting edge portion of said cutting die;
a punch device including a punch cutting head having a cutting edge portion thereof, said punch being mounted on said lower portion of said base section for pivotal angular displacement and sliding motion relative thereto and said punch cutting head being configured to be operatively aligned with said die aperture for receiving said cutting edge portion of said die in response to said cutting die being advanced along a substantially perpendicular path of travel therebetween into operative relation with said punch cutting head when said actuator means is angularly displaced toward said lower portion of said base section and said punch device mounted thereon whereby said cutting edge portions of said cutting die and said punch cutting head cooperate to cut out a selected section of a portion of a web of material located between said cutting edge portions; and
punch aligning means, responsive to angular displacement of said actuating means towards and away from said lower base section portion and said punch device thereon, for automatically angularly displacing and sliding said punch device relative to said lower base section to maintain said punch cutting head in operative alignment with said cutting die aperture such that relative movement between said cutting die and said punch cutting head is confined to said substantially perpendicular path of travel therebetween.

4,194,424
APPARATUS FOR LONGITUDINAL SLICING OF CYLINDRICAL BODY

Edward C. O'Rourke, West Point, and W. Wardle Fullerton, King of Prussia, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Nov. 13, 1978, Ser. No. 960,680
Int. Cl.² B26D *3/00*
U.S. Cl. 83—870 **2 Claims**



1. A device for slicing cylindrical columns of gels comprising a base and two transparent rectangular-shaped blocks and a U-shaped frame having a thin wire stretched across the terminal ends of the U-shaped frame; said blocks provided at one end with a hinge so that opposing faces of said blocks may be brought together; each of said blocks being provided with a depression in the face which matches the face in the other block, and when brought together, provides a cylindrical shaped recess adapted for firmly holding a cylindrical column of acrylamide gel; said blocks having said oppossing faces provided with recessed faces adjacent the cylindrical depression, whereby a thin wire may be passed longitudinally between said blocks to slice a gel column held therebetween.

4,194,425
KEY CODE GENERATOR

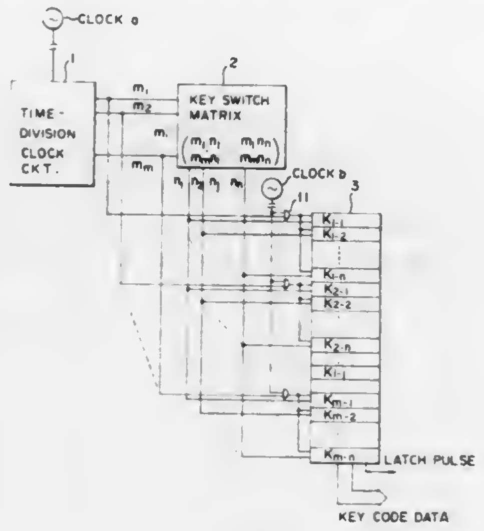
Hiroshi Kitagawa, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Mamamatsu, Japan
Filed Aug. 24, 1977, Ser. No. 827,214
Int. Cl.² G10H *1/00;* **H04J** *1/00*
U.S. Cl. 84—1.01 **1 Claim**

1. A Key code generator comprising:
first and second clocks, each producing a respective predetermined clock output;
a plurality of key code generator circuits, each key code generator circuit respectively corresponding to one of a corresponding plurality of key switches, and each key code generator circuit comprised of a first memory circuit for storing therein the state of the corresponding key switch by means of said predetermined first clock, a second memory circuit for storing therein the output from said first memory circuit, a transition detector circuit for detecting the change of state of the key switch to its depressed and then released state from the output from said first and second memory circuits, means for generating a key code corresponding to the key switch from the

output from the transition detector circuit, and means for applying the first clock to the second memory circuit to complete the key code generation;

priority means for achieving the transition detecting operation in the key code generator circuit group in accordance with a predetermined priority to thereby generate the key codes from the key code generator circuits in decreasing order of priority while temporarily inhibiting the outputs from the transition detector circuits of lower priority to prevent the key code generation therefrom;

control means for inhibiting the key code generation based on the depression of a key in favor of the key code generation based on the release of a key; and



a time division circuit comprised of an (m×n) key switch matrix circuit composed of said plurality of key switches, each key switch respectively connected with one of the key code generator circuits, means for transferring key switch information from the key switch matrix circuit for each octave, the key switch information being time divided into m groups of switches with n switches in each group by said second clock which is of a lower speed than said first clock, and a control circuit for sequentially storing at said lower speed the key switch information into the key code generator circuits, and wherein said key code generator circuits are correspondingly divided into m blocks, each block composed of n key code generator circuits.

4,194,426

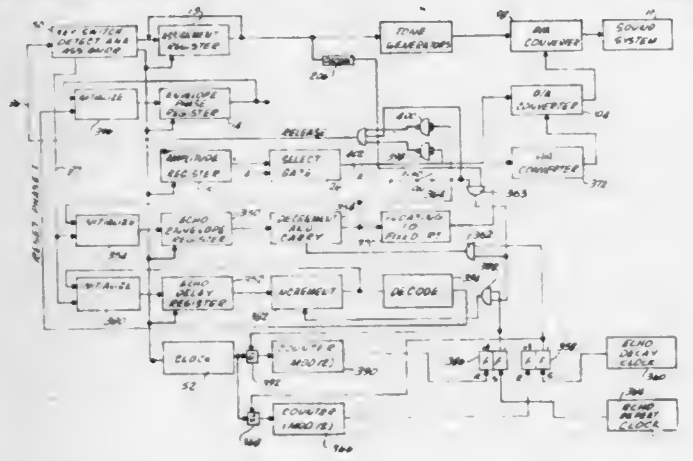
ECHO EFFECT CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

Filed Mar. 13, 1978, Ser. No. 885,552

Int. Cl.^{2} G10H *1/02*

U.S. Cl. 84—1.24 **7 Claims**



1. In a polyphonic tone synthesizer of a type having a keyboard in which one of a plurality of tone generators is assigned to a key when the key is depressed for generating a musical tone having a pitch determined by the particular key, apparatus for producing an echo effect comprising:

an echo envelope register storing a control word for each tone generator, an echo delay register for storing a control word for each tone generator, means for initializing to a predetermined value the control words in the echo envelope register and the echo delay register associated with a particular tone generator when the tone generator is assigned to a depressed key, means including an echo decay clock for periodically changing the value of each of the control words in the echo envelope register at a first predetermined rate, means including an echo repeat clock for periodically changing the value of each of the control words in the echo delay register at a second predetermined rate, means responsive to each control word in the echo delay register for activating the associated tone generator to generate a tone of predetermined duration each time the associated control word in the echo delay register is changed by the echo repeat clock, and means responsive to each control word in the echo envelope register for controlling the peak amplitude of the successive tones generated by the associated tone generator.

5. In a polyphonic digital tone synthesizer in which a plurality of different tones may be generated simultaneously using a plurality of digital tone generators in response to activating a corresponding number of keys on a keyboard, each key when depressed generating and storing a separate control word in the register means having bits identifying the particular key, each control word being assigned to a tone generator when the particular key is depressed for controlling the pitch of the tone generated by the tone generator in response to the bits identifying the key, apparatus comprising means including an echo repeat clock for pulsing the output of the tone generated by the tone generator in response to activation of a key at the repetition rate of the repeat clock, means responsive to actuation of a key for setting a group of bits in the control word associated with the particular key in the register means to an initial value, means for periodically decrementing the value of said group of bits in the control words in the register means, and amplitude control means responsive to said group of bits in the control words for controlling the peak amplitude of the pulsed tone generated by the tone generator, said means reducing the amplitude as the value of said group of bits is decremented.

4,194,427

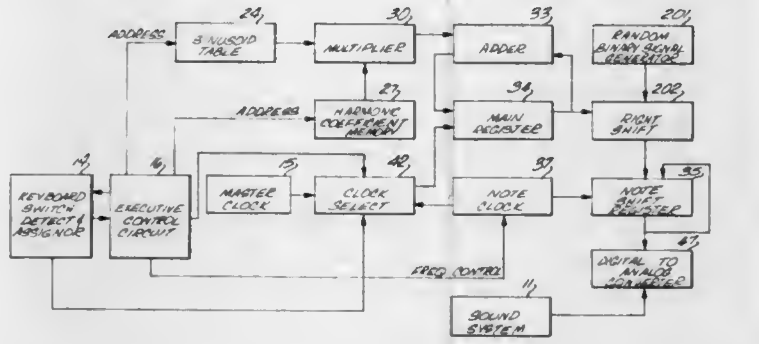
GENERATION OF NOISE-LIKE TONES IN AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

Filed Mar. 27, 1978, Ser. No. 890,249

Int. Cl.^{2} G10H *1/02*

U.S. Cl. 84—1.24 **8 Claims**



1. An electronic tone synthesizer for generating an audio signal having a predetermined waveform in which noise is superimposed on the audio signal, comprising: a group of digital words representing the relative amplitudes of equally spaced points defining the waveform of an audio signal, a digital-to-analog converter, means transferring the digital words sequentially from the generating means and applying the words in repetitive sequence to the converter, the transferring means including means for modifying the digital value of any selected word as it is being transferred, a random signal generator for generating an output signal at random time intervals, and means responsive to the random output signal for momentarily activating said means for modifying a word being transferred, whereby the digital words are modified at random during transfer.

8. A tone synthesizer comprising source means providing a group of words representing respectively the amplitudes of equally spaced points defining the waveform of a musical tone, digital-to-analog converter, means transferring said group of words in timed sequence from the source means and applying the words to the converter, and a random signal generator for generating timing pulses at random time intervals, said transferring means including means responsive to the timing pulses from said random signal generator for modifying the values of those digital words transferred in time coincidence with the pulses from the random signal generator.

4,194,428

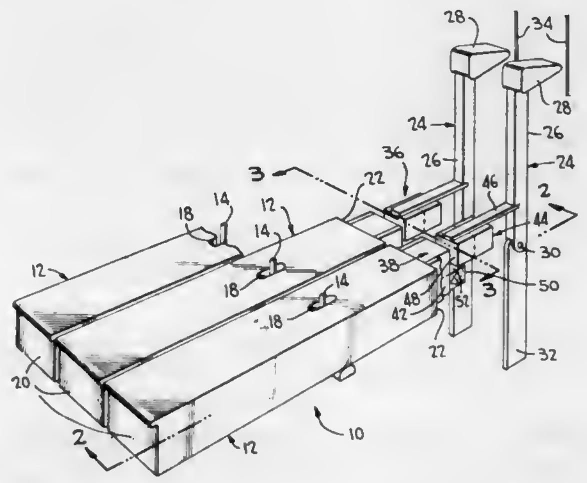
KEYBOARD MUSICAL INSTRUMENT

Bill E. McFarlin, Rte. 1, Box 5, Williston, N. Dak. 58801

Filed Dec. 7, 1978, Ser. No. 967,126

Int. Cl.^{2} G10C *3/16*

U.S. Cl. 84—236 **7 Claims**



1. A keyboard musical instrument comprising

resonator means for producing an audible tone;

hammer means movable from a rest position in a generally horizontal direction to strike said resonator means;

pivotally mounted key means having a playing end and an actuating end for operating said hammer means, said key means being movable when said playing end is depressed to move said actuating end in a substantially vertical direction; and

magnetic action means for coupling said actuating end of said key means with said hammer means including

first magnet means mounted on said actuating end of said key means having a first pole of a first polarity and a second pole of a second polarity opposite said first polarity, said first and second poles being disposed one above the other, and

second magnet means mounted on said hammer means having a pole of said second polarity disposed in horizontal alignment with said first pole of said first magnet means when said hammer means is in said rest position such that said first magnet means attracts said second magnet means to hold said hammer means at said rest position and said first magnet means repels said second magnet means when said playing end of said key means is depressed to align said second pole of said first magnet means with said pole of said second magnet means whereby said hammer means is impelled to strike said resonator means when said playing end of said key means is moved.

4,194,429

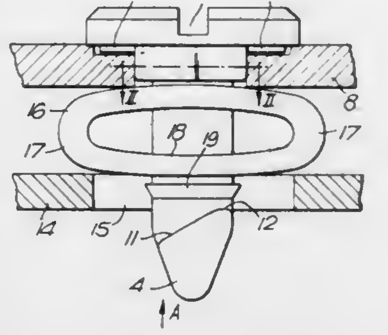
QUICK RELEASE FASTENERS

Andrew C. W. Wright, Farnham, England, assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed May 8, 1978, Ser. No. 904,010

Int. Cl.^{2} F16B *21/02*

U.S. Cl. 85—5 P **5 Claims**



1. A quarter-turn fastener for fastening first and second members together comprising a plastics stud and a spacer, said stud having a head and a shank, said shank having at its end remote from said head a cross-head and at the end adjacent said head an abutment adapted to engage the side of an aperture through which said stud is mounted in use on rotation of said stud through a quarter of a turn to prevent further rotation in the same direction, said spacer being resilient and tubular and forming a first pair of opposing sides to engage with adjacent facing surfaces on the first and second members respectively and a second pair of opposing sides substantially perpendicular to the same adjacent facing surfaces, the second pair of opposing sides preventing contact between the two members and the first pair of opposing sides providing the required resilience for maintaining the cross-head of said stud in engagement with one of the two members to retain the two members in fastened interengagement, and said first pair of opposing sides defining apertures through which the shank of the stud passes.

4,194,430

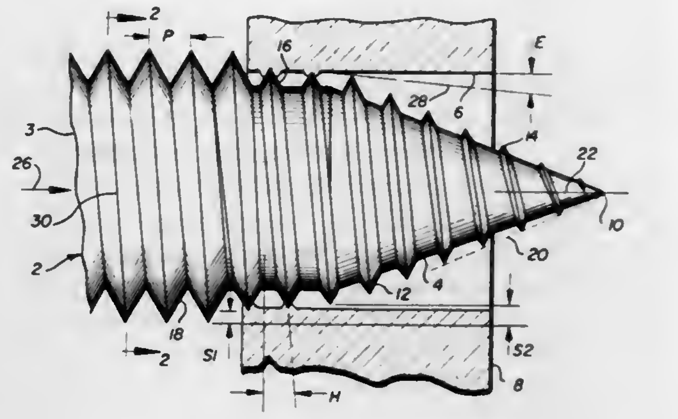
THREAD-FORMING SCREW WITH STEP TAPER

Herman G. Muenchinger, South Dartmouth, Mass., assignor to Research Engineering & Manufacturing, Inc., New Bedford, Mass.

Filed May 5, 1978, Ser. No. 902,098

Int. Cl.^{2} F16B *25/00*

U.S. Cl. 85—46 **10 Claims**



1. A thread-forming screw fastener comprising a shank that has a portion thereof constituting an entrance end at which the screw is inserted into a hole in a workpiece, said portion having a tip and helical thread, the crest of the thread tapering toward said tip, said thread having a contour defining means for swaging a thread in the workpiece hole, said thread taper having a first section with a first taper and a second section with a second taper, the first section being intermediate the tip and the second section, the taper on the second section being

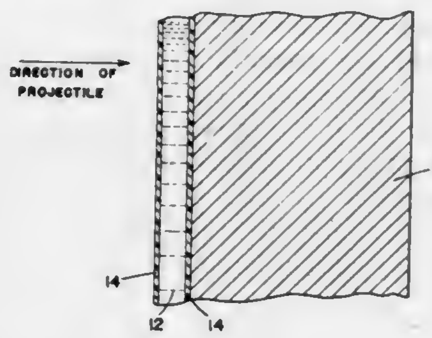
less than the taper on the first section, the second section being substantially where the thread-swaging action commences when said entrance end is inserted into the workpiece hole such that said first section serves to enter and locate initially the fastener in the workpiece hole but with said first taper thereof being of a magnitude that would result in excessive end pressure for thread starting if extended through said second section, the shank having a third section adjacent to the second section and said thread extending into the third section, said third section being where the screw is maintained in holding relation with the thread formed in the workpiece hole, there being a taper from the third section into the second section, the second section thereby forming a step taper of less than about three pitch in axial length between the third section and the first section and constituting a means to decrease the end pressure required to effect said thread starting.

4,194,431

ACTIVE ARMOR

Harold Markus, Philadelphia, and Joseph M. McCaughey, Ambler, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 5, 1966, Ser. No. 564,497
Int. Cl.^{2} F41H *5/04, 5/12*
U.S. Cl. 89—36 A **4 Claims**



1. The combination with a metallic armor plate, of a protective layer of liquid reactant therefor comprising a small amount of water intimately commingled with an amalgam selected from the group consisting of sodium amalgam containing about 1 to 2 weight percent sodium, potassium amalgam containing about 0.75 to 1.5 weight percent potassium and lithium amalgam containing about 1 to 2 weight percent lithium, and means providing a relatively-thin inert barrier between the material of said plate and the protective layer.

4,194,432

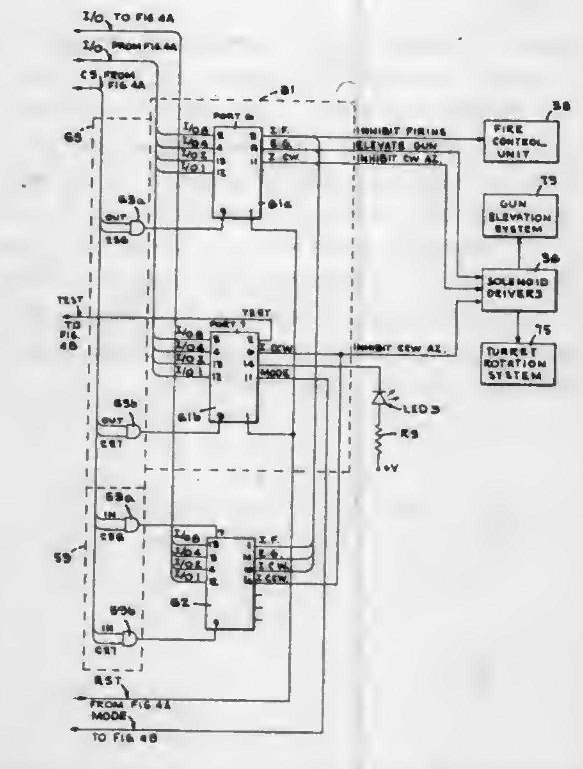
APPARATUS FOR MAXIMIZING THE FIRING FIELD OF A ROTATABLE GUN

Raymond J. Conway, Mountain View, and Hasmukh T. Shah, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Nov. 25, 1977, Ser, No. 854,942
Int. Cl.^{2} F41G *5/14*
U.S. Cl. 89—41 C **26 Claims**

1. A gun control system for a gun rotatable in an azimuthal direction and simultaneously elevatable in a vertical direction, said gun being mounted upon a deck having a plurality of barriers thereon, said system comprising:

- means for providing signals representative of the size and location of each of said barriers;
- means for sensing the horizontal and the vertical angular positions of said gun and for providing signals representative of said positions;
- means for periodically comparing successive signals indicative of the horizontal angular positions of said gun and for periodically calculating the horizontal speed of movement of said gun from said periodic comparison;
- means for periodically comparing the current vertical angular position of the gun with the size of a barrier being approached and determining an elevation time required to elevate the gun at a fixed elevation speed to clear the barrier, means for providing a signal at a time sufficiently in advance to elevate the gun at said fixed speed to clear the barrier when the gun is moving toward the barrier at an elevation lower than the height of the barrier, said last named means utilizing both the periodically calculated horizontal speed of movement of the gun and the periodically determined elevation time so that initiation of gun elevation for barrier avoidance is a function of both elevation position and azimuth position and velocity whereby the gun will be elevated to narrowly clear the barrier to thereby maximize the field of fire of the gun.



4,194,433

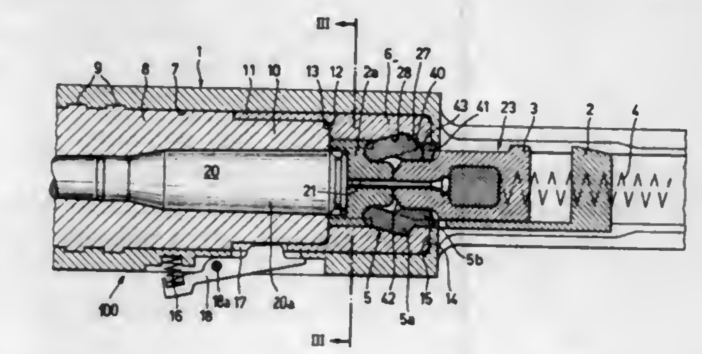
BREECHBLOCK FOR AN AUTOMATIC FIRING WEAPON

Jürg Zellweger, Neerach, and Ernst Hürlemann, Zürich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Mar. 21, 1978, Ser. No. 888,669

Claims priority, application Switzerland, Mar. 31, 1977, 4018/77

Int. Cl.^{2} F41D *3/00*
U.S. Cl. 89—190 **5 Claims**



1. A breechblock for an automatic firing weapon comprising:

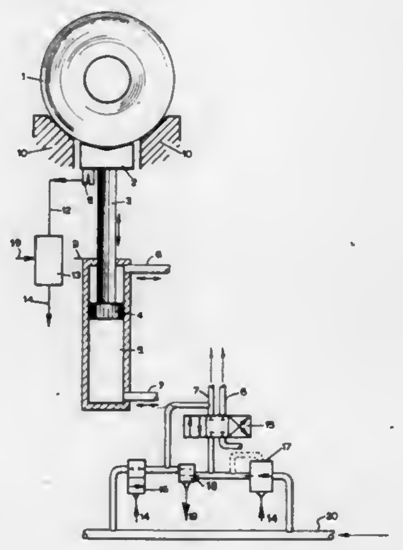
- a breechblock housing having a bore;
- a weapon barrel rigidly secured in said bore;
- securing means for securing said weapon barrel in said bore;
- a breechblock body displaceably arranged in said breechblock housing;
- two blocking bodies pivotably mounted on said breechblock body for locking the breechblock body with said breechblock housing;
- a locking body possessing a substantially sleeve-shaped configuration and arranged substantially coaxially with respect to the weapon barrel in said bore of the breechblock housing;
- said locking body having two arresting surfaces at each of which bears one of said blocking bodies;
- said locking body having a rear end face and a further face spaced from said rear end face;
- said breechblock housing having shoulder means;
- said weapon barrel having a rear end surface;
- said locking body being held by means of its rear end face in abutting relation with said shoulder means of said breechblock housing and by means of its further face in abutting relation with said rear end surface of the weapon barrel;
- said rear end face of the locking body being provided with a cut-out extending substantially transversely with respect to the lengthwise axis of the weapon; and
- said cut-out having two opposed side walls, each side wall forming one of said arresting surfaces.

4,194,434

DEVICE FOR CONTROLLING A LONGITUDINALLY MOVABLE DRIVING MEANS

Albertus Italiaander, Uitgeest; Arie Kruk, Akersloot; Willem G. Nat, Ijmuiden, and Nicolaas M. J. Rees, Bloemendaal, all of Netherlands, assignors to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Feb. 17, 1977, Ser. No. 765,240
Int. Cl.^{2} F15B *13/16;* F01B *25/04*
U.S. Cl. 91—20 **6 Claims**



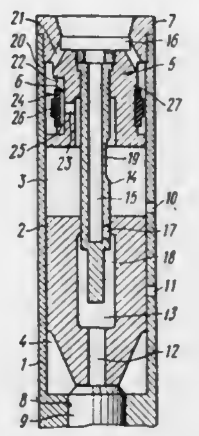
1. A device for controlling both the displacement of, and the transmittal of force by, a longitudinally movable driving means, comprising a piston rod which is hydraulically movable inside a cylinder, means for emitting and receiving ultrasonic waves, which are transmitted between a movable and a fixed part of the driving means, a logic circuit and a controllable source of force, said means for receiving being electronically connected to said controllable source of force via said logic circuit, said logic circuit allowing movement of the driving means with a small force into a position in which a counteracting force exceeds the driving force, whereupon the driving force is increased and stabilised at a value at which the counteracting force is compensated and the driving means is additionally moved over an adjustable length of path.

4,194,435

PERCUSSION MECHANISM

Viktor A. Gaun; Anatoly V. Belousov; Vadim D. Petukhov; Gennady I. Suxov; Nikolai A. Belyaev; Vitaly K. Alyabiev, and Klimenty E. Rassomakhin, all of Novosibirsk, U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR, Novosibirsk, U.S.S.R.

Filed Jun. 30, 1977, Ser. No. 811,836
Claims priority, application U.S.S.R., Jul. 7, 1976, 2391708
Int. Cl.^{2} F01L *21/02*
U.S. Cl. 91—234 **11 Claims**



1. A percussion mechanism actuated by a pressurized fluid supplied from a source of pressurized fluid, comprising a housing (1) with an internal cylindrical space and exhaust ports (10, 11);

- a fluid actuated piston (2) positioned for axial reciprocation in said space of said housing and dividing said space into a working stroke chamber (3) of a variation volume and an idle stroke chamber (4) of a variable volume, and each of said chambers communicating with one of said exhaust ports;
- fluid distributing means (5) including pressure responsive surfaces (24) adapted to create passages (25, 23) for distributing the fluid into said working stroke chamber (3) of the mechanism;
- a distribution unit (14), having inlet means (15) for distributing the fluid into at least one of said chambers (3, 4), accommodated in said housing (1) adjacent to said working stroke chamber (3) and being in mutual cooperative association with said fluid distributing means (5) and said piston for establishing means of communication (17, 19) between said chambers (3, 4) and the source of pressurized fluid;
- a work-performing member (9) accommodated in said housing (1) to receive impacts from said piston (2) reciprocated by the action of the fluid;
- said surfaces (24) being carried by said fluid distribution means (5) and including a resilient annular valve element (24); valve seats (6) provided in a surface of said fluid distribution means (5), their number equalling that of the passage means (23) of said fluid distribution means (5), said resilient annular valve element (24) being stretched tight about the surface of said fluid distribution means (5) in opposition to said passage means (23) and encircling said fluid distribution means (5) about its periphery, an internal surface of said resilient annular valve element (24) with said valve seat (6) defining at least inlet one passage (25) for controlling fluid flow about said fluid distributing means (5), whereby said portion is repeatedly driven up and down in said housing by the action of said fluid flowing into and out of said chambers and said exhaust ports via said inlet means and said passage means.

4,194,436

SPEEDUP DEVICE FOR RECIPROCATING CYLINDERS

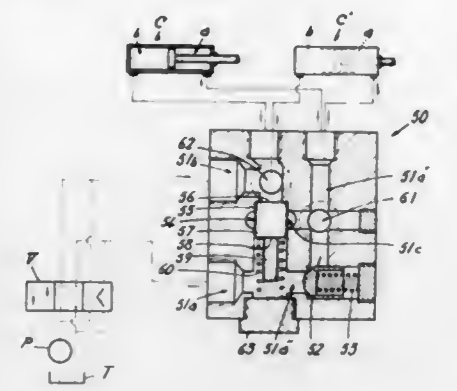
Yusuke Imada, Itami, Japan, assignor to Sanyo Kiki Kabushiki Kaisha, Kyogo, Japan

Filed Jun. 8, 1977, Ser. No. 804,846

Claims priority, application Japan, Jun. 10, 1976, 51-75993

Int. Cl.^{2} F15B *13/042*

U.S. Cl. 91—420 **1 Claim**



1. In a machine utilizing a fluid actuated reciprocating piston/cylinder mechanism, a power transmitting rod connected to one side of the piston to define a retraction chamber and the side of the piston opposite the power transmitting rod defining an extension chamber, the volume of the retraction chamber being less than the volume of the extension chamber; a directional control valve for alternately fluidly connecting a source of pressurized fluid and a reservoir with a pair of control valve outlets adapted for controlling alternate extension and retraction of the power transmitting rod; wherein the improvement comprises a two valve speed-up valve unit comprising:

- a speed-up valve housing;
- an extension chamber valve inlet in fluid communication with one of said control valve outlets;
- a retraction chamber valve inlet in fluid communication with the other of said control valve outlets;
- an extension chamber valve outlet in fluid communication with the piston/cylinder extension chamber;
- a retraction chamber valve outlet in fluid communication with the piston/cylinder retraction chamber;
- a first fluid passage interconnecting said retraction chamber valve inlet and said retraction chamber valve outlet;
- a check valve interposed in said first fluid passage and having a first position wherein fluid flow through said first fluid passage is completely blocked and a second position wherein fluid flow is permitted, said check valve being actuated by fluid pressure in said first fluid passage;
- check valve biasing means for normally biasing said check valve to said first fluid blocking position;
- a second fluid passage interconnecting said extension chamber valve inlet and said extension chamber valve outlet;
- a circulation valve means comprising a single unitary piston element, said piston element comprising a solid cylindrical plug having opposed faces with a centrally located valve stem extending from one of said faces for engaging said housing when said circulation valve means is open, said plug being slidable in a bore opening directly into said first passage upstream of said check valve, said circulation valve means being positioned in a third fluid passage comprising a first portion extending between said piston element and said retraction chamber valve outlet and a second portion element extending between said piston element and said extension chamber valve outlet, said first portion joining with said piston element along a longitudinal side of said piston element, and said second portion joining with said piston element along the other face of said piston element, whereby only fluid pressure in said second portion of said third passage can actuate said circulation valve to an open position wherein said first and second portions of said third passage are joined, said circulation valve being normally biased to a closed position by a single circulation valve biasing means interposed between said housing and said one face and surrounding said valve stem wherein fluid flow in said third fluid passage between said first and second portions is blocked;
- wherein when said power transmitting rod is retracted, said control valve is actuated to fluidly connect said pump with said first fluid passage and to connect said reservoir with said second fluid passage, said pressurized fluid in said first fluid passage acting on said check valve to cause said check valve to assume said second position, whereby fluid flows to said piston/cylinder retraction chamber and, as said power transmitting rod retracts, fluid flows from said extension chamber through said second passage and control valve to said reservoir, said circulation valve assuming said closed fluid blocking position under the force of said circulation valve biasing means and fluid acting on said one face; and
- wherein when said power transmitting rod is extended, said control valve is actuated to fluidly connect said pump with said second fluid passage, said pressurized fluid in said second fluid passage acting on said circulation valve means to cause said circulation valve means to assume said open position whereby fluid flow in said third fluid passage between said retraction chamber valve outlet and said extension chamber valve outlet is permitted, said check valve assuming said first position under the force of said check valve biasing means, whereby fluid flows from said pump to said piston/cylinder extension chamber and, as said power transmitting rod extends, fluid flows from said retraction chamber through said third fluid passage to said piston/cylinder extension chamber, whereby an increased volume flow rate of fluid flows to said extension chamber during power rod extension to compensate for the increased volume of said extension chamber.

4,194,437

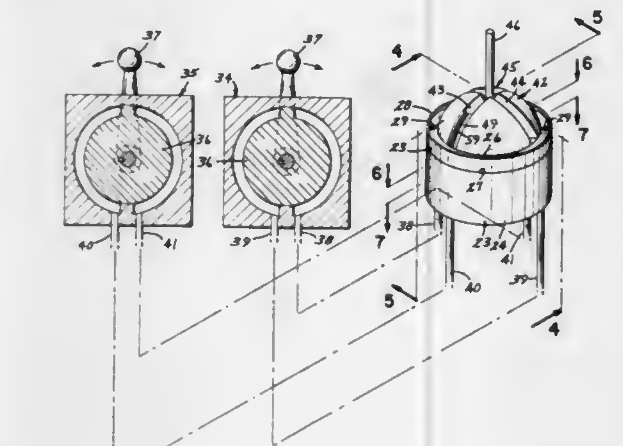
HYDRAULIC SERVO MECHANISM

Mark E. Rosheim, 1851 Chester, Apt. No. 4, Royal Oak, Mich. 48072

Filed Mar. 9, 1978, Ser. No. 884,903

Int. Cl.^{2} F01C *9/00;* **F15B** *7/00*

U.S. Cl. 92—120 **13 Claims**



1. A fluid-servo mechanism comprising:

(a) a base structure defining a generally hemispherical seat and a pair of opposed radially inwardly opening circumferentially extending guide channels disposed in a plane passing through the radial center of said seat;

(b) a generally spherical body rotatably mounted in seating engagement with said seat and having a pair of intersecting, radially outwardly opening channels extending circumferentially of said body and disposed in planes extending through the center of said body and normal to each other;

(c) a pair of trunnion elements mounted in said structure in said first mentioned plane and having portions thereof disposed in diametrically opposite portions of one of said radially outwardly opening channels;

(d) and a second pair of trunnion elements having portions disposed in said radially inwardly opening guide channels and other portions disposed in diametrically opposite portions of the other one of said radially outwardly opening channels;

(e) said base structure having fluid ports for connection to a source of fluid under pressure, and fluid passageways communicating with different ones of said ports and respective portions of said radially outwardly opening channels.

4,194,438

FLEXIBLE TUBE BAGGING MACHINE

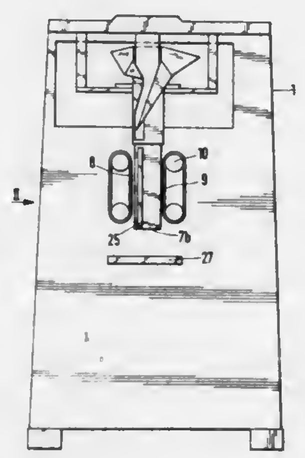
Florian Schmachtel, Grossen-Linden, Fed. Rep. of Germany, assignor to ROVEMA Verpackungsmaschinen GmbH & Co. KG., Giessen, Fed. Rep. of Germany

Filed Dec. 19, 1977, Ser. No. 861,975

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657790

Int. Cl.^{2} B31B *1/38*

U.S. Cl. 93—20 **1 Claim**



1. In a flexible tube bagging machine having a feed device for a foil, a shaping member over which said foil is drawn and formed into a tube and a foil transfer device arranged downstream of said shaping member, said shaping member having a sleeve portion and a collar for engaging said foil, said collar being secured to said sleeve portion, said collar guiding said foil inside of said sleeve portion, said collar having a collar neck portion and two collar chest portions connected to said collar neck portion and facing outwardly from a front side of said machine, said collar chest portions converging in a conveying direction of said foil and effecting a guiding of the lateral edges of said foil toward one another, the improvement comprising wherein said sleeve portion has a rectangular cross section, the long sides of which extend parallel to said front side of said machine, wherein said sleeve portion has a cutout portion on said outwardly facing long side thereof, wherein said collar chest portions extend along the opposed edges of said cutout, wherein said collar chest portions are of different length, wherein the longer collar chest portion extends through a central plane extending through a central longitudinal axis of said sleeve portion to a position adjacent an opposed edge of said cutout and being perpendicular to said front side of said machine and wherein said collar neck portion is asymmetrical with respect to said central plane and the part which lies on the side of said longer collar chest portion is wider than the other part thereof.

4,194,439

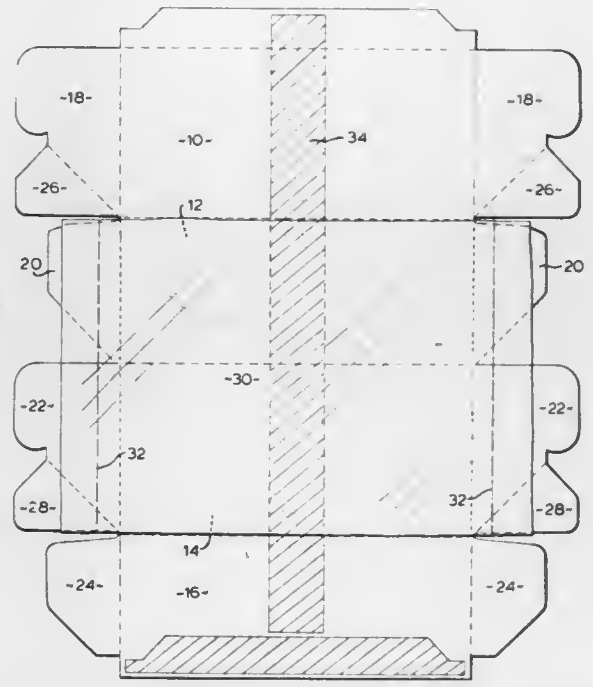
METHOD OF MAKING COLLAPSIBLE PAPERBOARD CUP

John Zimmermann, Willowdale, Canada, assignor to Somerville Belkin Industries Limited, London, Canada

Filed Jan. 3, 1978, Ser. No. 866,561

Int. Cl.^{2} B31B *7/00*

U.S. Cl. 93—36.05 **3 Claims**



1. A method of making a folded cup assembly comprising the steps of:

- taking a flat blank for a tubular assembly that has side panels and bottom flaps for a lock bottom at each end;
- taking a length of plastics sheet material in lay flat tubular form with a transversely extending seal line adjacent each of its ends;
- said length of plastics material having a lay flat width equal to one-half the combined width of said panels of said blank;
- applying adhesive to the blank including a band of adhesive transversely across all of the side panels of said blank intermediate the ends of the side panels;
- laying said length of plastics sheet material on said blank with its width extending across adjacent side panels; and
- folding the side panels and bottom flaps of said flat blank to make a tubular folded cup assembly with said liner adhered to the inside of the side panels thereof over said band of adhesive that extends across said side panels, said folded cup assembly being separable to form two individual cups by cutting said folded blank transversely of said side panels between the edges of said band of adhesive that extends transversely of said side panels.

4,194,440

METHOD AND APPARATUS FOR MAKING DRUM-SHAPED CARDBOARD CONTAINERS

Rudolf Görig, Kanalstrasse 12, D-7064 Remshalden 1, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,683

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1977, 2705596

Int. Cl.^{2} B31B *17/26*

U.S. Cl. 93—39 C **21 Claims**

1. Method of making a cardboard container of circular or polygonal, generally cylindrical form, open at one end,

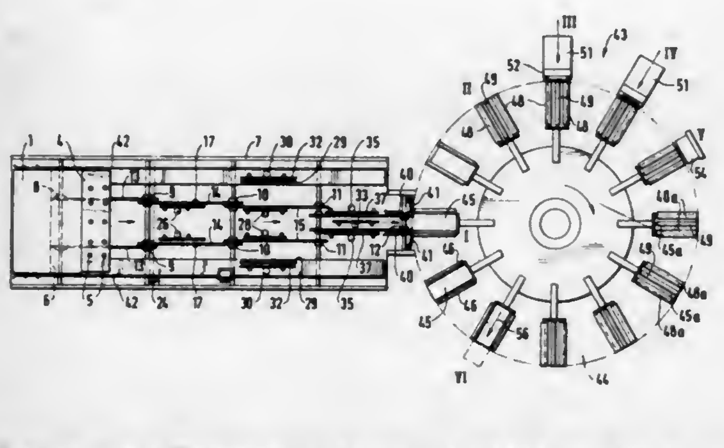
- comprising, in accordance with the invention, the steps of
- providing a flat, essentially rectangular blank (6) having one dimension of approximately the height of the container and another dimension slightly longer than the developed circumference of the container;
- applying a strip of adhesive along a longitudinal edge of the

blank parallel to the axis of the cylinder when the container is formed;

preforming the blank to have generally U-shaped cross section in advance of the step of wrapping the blank around a mandrel (**45**, **45***a*);

wrapping the blank around the mandrel (**45**, **45***a*) of the general shape of the container to form an open sleeve;

overlapping edge portions of the blank to form an axially extending seam line;



adhering the adhesive strip along the sleeve surface at the overlapping portions to form an adhesive seam (**50**);

providing a preformed bottom (**53**) of at least approximately the cross-sectional shape of the tube;

introducing the preformed bottom into the open sleeve spaced by a small distance from the bottom edge of the sleeve;

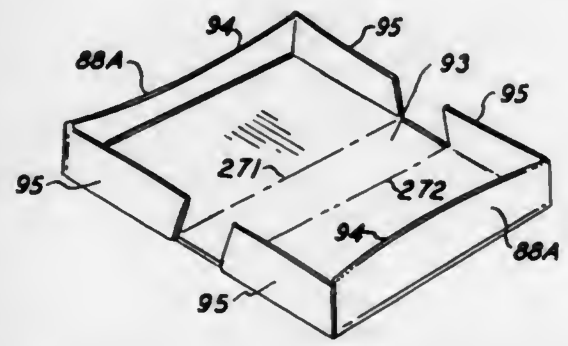
and securing the preformed bottom in the sleeve.

4,194,441
METHOD AND APPARATUS FOR FORMING PAPER BOXES AND THE LIKE
Donald F. Williams, 15 W. Mason St., Santa Barbara, Calif. 93102, and Charles L. Phy, Rte. 2, Box 143, McEwen, Tenn. 37101

Filed Apr. 12, 1977, Ser. No. 786,955

Int. Cl.^{2} B31B *1/46*

U.S. Cl. 93—51 HW **14 Claims**



1. Apparatus for forming from pre-cut blanks a box having a bottom, side flaps, and end flaps with inner and outer portions, and comprising a movable forming head, means for inserting a box blank in the path of the forming head, a former matrix, means for impelling the forming head and the blank to traverse the former matrix, means for bending the side flaps and end flaps with respect to the box bottom into a tray configuration in the former matrix, means for securing the side flaps to the end flaps at the junctures thereof, means for doubling the end flaps to overlap the inner and outer portions of each end flap, means for distorting the overlapped end flaps into a concave configuration with respect to the tray, and means for permanently fixing the portions of each of the distorted flaps together while distorted.

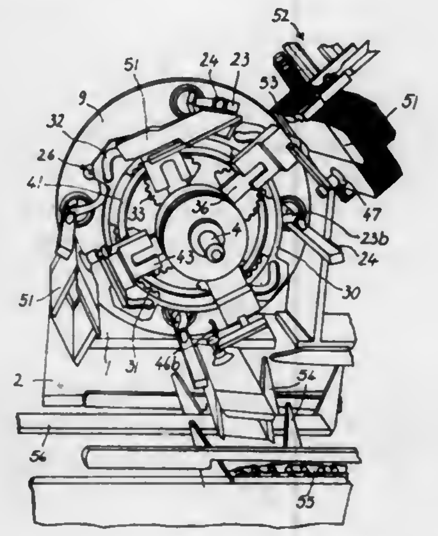
4,194,442
DEVICE FOR PICKING UP SEMI-RIGID SHEET-LIKE ELEMENTS FROM A MAGAZINE AND TRANSFERRING THEM ONTO A CONVEYOR
Guglielmo Martelli, Via Gaibola, 13/3, Bologna, Italy

Filed Mar. 16, 1978, Ser. No. 888,044

Claims priority, application Italy, Mar. 18, 1977, 3374 A/77

Int. Cl.^{2} B65G *59/06*

U.S. Cl. 93—53 SD **2 Claims**



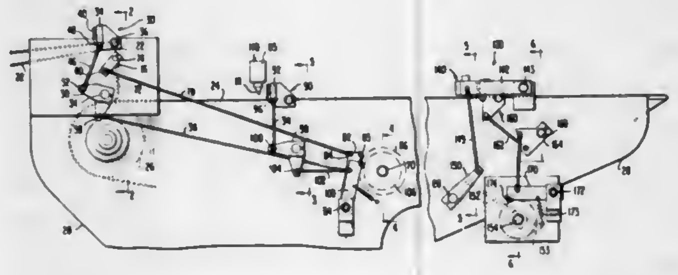
1. A device for picking up semirigid sheet-like elements from a magazine, characterized in that it comprises a rotating body driven of continuous motion and supported by a normally horizontal and fixed shaft, a radial cam mounted on said shaft and fixed with respect to said rotating body, at least one arm mounted on said shaft for oscillation in a plane normal thereto and serving as a radial guide for an attaching block of a gripping member for the sheet-like elements contained in the magazine, a planet gear carried idly by said arm and provided with an eccentric pin for engagement with said radial cam, said planet gear meshing with a gear segment rigid with said rotating body and concentrical with said shaft, and a cam provided on said rotating body at said gear segment and being engaged by a pin projecting from said block for defining the displacement of the block between a position wherein the gripping member is spaced apart from the magazine and a position wherein said gripping member is approached thereto to pick up said sheet-like elements, said radial cam being contoured such as to cause an advanced oscillatory movement of said arm prior to the latter reaching the magazine and the stopping of said arm with respect to the magazine when the gripping member is in its position of sheet-like element picking up.

4,194,443
COOKIE CAPPER APPARATUS
Herman D. Mims, P.O. Box 26794, Charlotte, N.C. 28213

Filed Aug. 8, 1975, Ser. No. 603,051

Int. Cl.^{2} A23P *1/00;* **A21C** *9/04*

U.S. Cl. 99—450.4 **7 Claims**



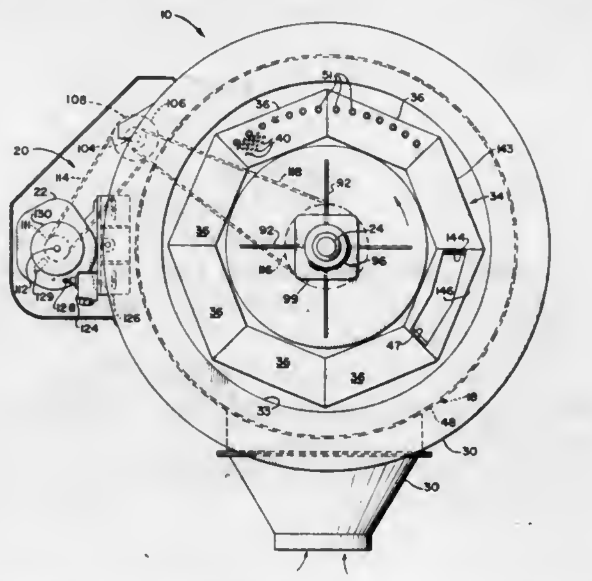
1. A cookie capper apparatus comprising first conveyor means for supporting and conveying a plurality of rows of baked cookie halves, second conveyor means having one end thereof disposed beneath said first conveyor means in alignment therewith, said conveyor means being vertically spaced apart a sufficient distance so that during free-fall of the cookie halves from said first conveyor means to said second conveyor means the cookie halves will flip 180°, means selectively movable into position for engaging alternate rows of cookie halves to prevent said alternate rows of cookie halves from flipping 180° as they fall from said first conveyor means to said second conveyor means, filling means for automatically depositing a predetermined amount of filling on those cookie halves which have flipped 180° as they travel along said second conveyor means, vacuum transfer means for sequentially picking up each row of cookie halves which do not have filling thereon and depositing the unfilled cookie halves on the filled cookie halves to cap the same to provide a filled cookie.

4,194,444
PARTICULATE SOLIDS
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.

Filed Nov. 5, 1975, Ser. No. 628,907

Int. Cl.^{2} F25D *17/02;* **F26F** *17/12*

U.S. Cl. 99—479 **8 Claims**



1. Apparatus for processing particulate solids which includes a reactor comprising: a shell; means in said shell for supporting a bed of solids to be processed; means for so directing a flow of fluid upwardly though said reactor as to cause the solids to circulate in a vertical pattern therein; and means for introducing a liquid separately from said fluid and in finely divided form into the reactor at a level generally coincident with that of the flow directing means and into contact with the solids circulating in said reactor, the means for effecting a flow of process fluid upwardly through the reactor comprising a horizontally oriented means having fluid passages therethrough in the lower reaches of the reactor and the means for contacting the solids with a finely divided liquid comprising nozzles for spraying the liquid into the reactor adjacent said passages so that the particles of the liquid will be entrained in the process fluid and thereby brought into intimate contact with the particulate solids.

4,194,445
SELF-ADJUSTING HUSKER
Helmut Gemsjäger, Brunswick, Fed. Rep. of Germany, assignor to Buhler-Miag GmbH, Brunswick, Fed. Rep. of Germany

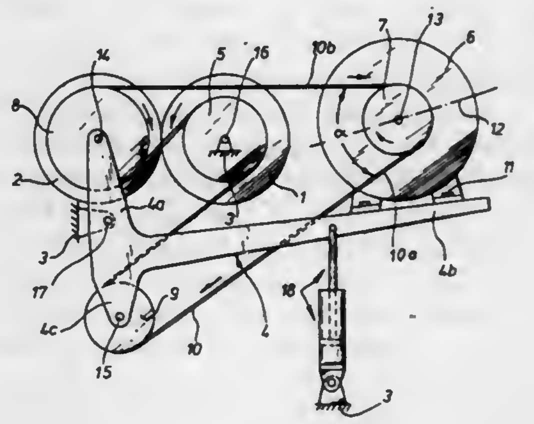
Filed Feb. 3, 1978, Ser. No. 874,873

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705334

Int. Cl.^{2} B02B *3/04*

U.S. Cl. 99—618 **24 Claims**

1. A decorticating device, particularly a grain husker, comprising a support; a pair of cooperating decorticating rollers one of which is mounted on said support for rotation about a stationary axis; a carrier; means for rotatably mounting the decorticating roller on said carrier; means for displaceably mounting said carrier on said support for movement of said other decorticating roller closer to and farther away from said stationary axis; and means for rotating said decorticating rollers, including two driven pulleys one of which is connected to said one and the other to said other decorticating roller for joint rotation therewith, at least one idler pulley, a driving pulley, means for setting said driving pulley in rotation including a motor, and means for transmitting the rotation of the driving pulley to said driven and idler pulleys, including at least one endless element trained about all of said pulleys, said motor with said driving pulley, said other driven pulley and said idler pulley being supported on said carrier for displacement therewith in such a manner that said other decorticating roller is urged by gravitational force toward the roller mounted for rotation about said stationary axis to automatically compensate for any wear of the peripheral roller surfaces, without changing the tension in said endless element.



4,194,446
ROLLS, SUCH AS FILLED CALENDER ROLLS, HAVING DEFLECTION COMPENSATION
Jaakko Palovaara, Jyväskylä, Finland, assignor to Valmet Oy Finland

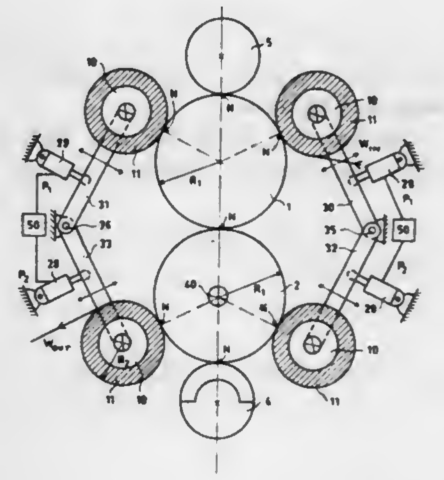
Continuation of Ser. No. 826,169, Aug. 19, 1977, abandoned.

This application Sep. 27, 1978, Ser. No. 946,157

Claims priority, application Finland, Aug. 20, 1976, 762392

Int. Cl.^{2} B30B *3/04*

U.S. Cl. 100—162 B **3 Claims**



1. Calender apparatus comprising a plurality of hard rolls including at least two parallely extending hard surfaced rolls substantially vertically disposed one above the other, the surfaces of which are in line contact with each other defining a first nip; at least one filled roll extending parallel to said hard rolls, said filled roll comprising an inner shaft, an outer shell coaxially surrounding said shaft, the inner surface of said shell being spaced from said shaft to define an annular gap therewith, and means for supporting said shell for rotary movement with respect to said shaft around the common axis of said shaft and shell, the outer surface of said outer shell of said filled roll being in line contact with the surface of one of said hard rolls defining a second nip, the angle defined by the lines extending

between said first nip, the axis of rotation of said hard roll in contact with said filled roll and said second nip being between 90° and 180°; means for selectively adjusting the pressure exerted by said at least one filled roll on said hard roll at said second nip; first deflection-compensating means operatively associated with said filled roll inner shaft for applying on the interior of said shell a first vertically upwardly directed force to compensate for the weight of said filled roll, said first deflection-compensating means including a slide shoe situated against and slidably engaging substantially the entire length of the inner surface of said shell, said shaft being formed with an exterior elongated groove, and an elongated pressure member situated in said groove for slidable fluid-tight movement therein radially toward and away from the axis of said shaft, said pressure member being operatively connected with substantially the entire length of said slide shoe for transmitting pressure thereto, and said shaft being formed with a passage means for communicating with a source of fluid under pressure, said passage means communicating with a surface of said pressure member which is directed inwardly toward the axis of said shaft for applying the fluid under pressure to said pressure member for acting therethrough on said slide shoe to provide for deflection-compensation and second independently controllable deflection-compensating means for applying on the interior of said shell a second force directed substantially outwardly in the direction defined between the axis of rotation of said filled roll and said second nip to compensate for the tendency of said filled roll to be deflected as a result of pressure at said second nip, said second deflection-compensating means including a pair of elongated sealing means extending across said gap between said shaft and inner surface of said shell for fluid-tightly sealing an angular portion of said gap which extends about said axis between said pair of sealing means, said shaft being formed with a passage means for providing communication between said angular portion of said gap and a source of fluid under pressure, whereby through said fluid under pressure it is possible to provide at said angular portion of said gap a pressure acting on said shell to achieve a desired deflection-compensation, the magnitude of said second force being independently adjustable relative to the magnitude of the pressure exerted by said filled roll on said hard roll at said second nip as determined by said selective pressure adjusting means.

4,194,447
STENCIL LOADING IN STENCIL DUPLICATORS

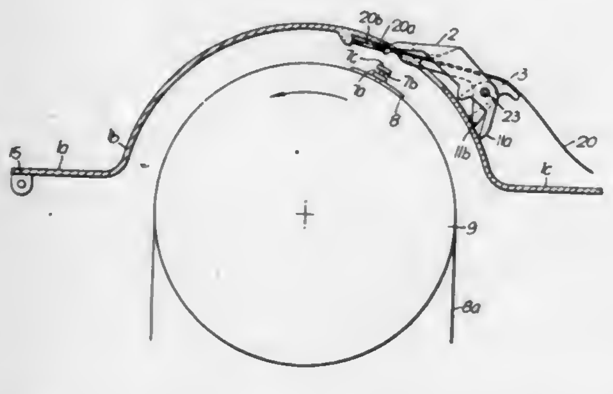
Albert G. R. Gates, London, England, assignor to Gestetner Limited, London, England

Filed Apr. 12, 1978, Ser. No. 895,753

Claims priority, application United Kingdom, Apr. 29, 1977, 18132/77

Int. Cl.^{2} B05C *17/08*

U.S. Cl. 101—128.1 **12 Claims**



1. A stencil duplicator having rotatable support means rotatable about an axis and having a surface for carrying a stencil having a relatively stiff heading strip with holes therein, a plurality of pins carried by said rotatable support means to engage said heading strip of the stencil to hold the stencil on the rotatable support means during printing, and means for loading said stencil onto said rotatable support means, the loading means comprising:

(a) a pair of guide members;

(b) means mounting said guide members for pivotal movement between a first position in which said heading strip of the stencil can be registered in a predetermined position spaced from said surface of the rotatable support means, and a second position in which the guide members will hold the heading strip of the stencil in a location through which location said pins travel during rotation of the rotatable support means, whereby when the stencil is in said location said pins carried by the rotatable support can sweep past said guide members and enter said holes in the heading strip of the stencil thereby entraining the stencil to be wound onto said surface of the rotatable support;

(c) edge means on both said guide members defining a nip through which said heading strip of the stencil may be inserted for loading; and

(d) stop means on said guide members positioned to hold said guide members with said nip having a width which is greater in the first position of said guide members than in said second position thereof to facilitate insertion of a stencil in said first position and to tension the stencil as it is dragged through the nip and is wound onto the rotatable support means in said second position.

4,194,448
PRINTING DEVICE ESPECIALLY FOR LABELLING APPLIANCES

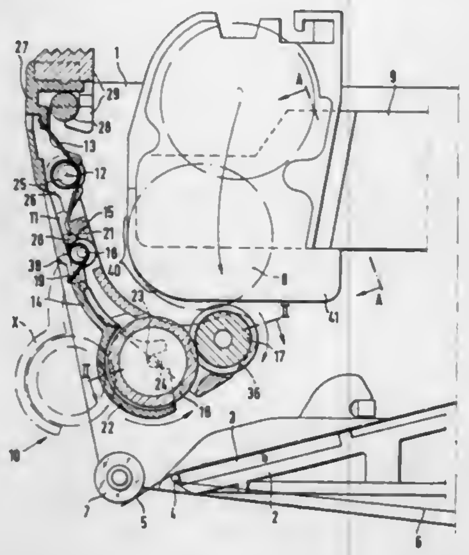
Werner Becker, and Kurt Schrotz, both of Hirschhorn, Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Sep. 6, 1977, Ser. No. 831,287

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639927

Int. Cl.^{2} B41J *3/60;* **B41F** *1/48, 31/30*

U.S. Cl. 101—295 **10 Claims**



1. In a printing device such as labelling appliance having a printing table, a printer movably mounted with respect to the table, an ink carrier which inks printing types carried by said printer, an inking pivot member which holds said ink carrier at the free end thereof and which is pivotable against the force of a return spring, said pivot member being adapted to be pivoted out of the path of movement of the printer when the printer moves toward the printing table, the improvement comprising

said ink carrier being a resilient transfer roller which is freely rotatably mounted with respect to said inking pivot member and including a dense, readily wettable surface;

an inking roller that stores ink, said inking roller being made of a finely porous material;

an inking roller support having side walls where each wall has an open-ended bearing recess which opens toward said transfer roller for freely rotatably supporting said inking rollef about an axis parallel to the axis of rotation of said transfer roller, said inking roller support being pivotably supported by the inking pivot member about an axis which is parallel to and spaced between the pivot axes of the inking pivot member and the transfer roller; and

a pressure spring for biasing the inking roller support so that said inking roller normally engages said transfer roller to ink the transfer roller upon relative rotation of the inking and transfer rollers where said relative rotation is due to frictional contact between the inking and transfer rollers, said inking roller being exchangeable by pivoting said inking roller support away from inking pivot member to thereby remove the inking roller out of contact with the transfer roller and thus permit the removal of the inking roller from the open-ended bearing recesses of the side walls of the inking roller support and the replacement thereof.

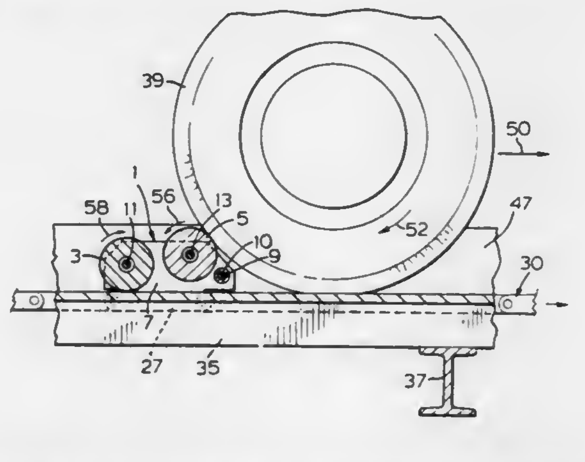
4,194,449
DOUBLE DOLLY

Arisma J. Breau, 131 North Bonnington Avenue, Scarboro, Ontario, Canada

Continuation-in-part of Ser. No. 756,125, Jan. 3, 1977, abandoned. This application May 30, 1978, Ser. No. 910,606

Int. Cl.^{2} B61B *13/00*

U.S. Cl. 104—172 B **3 Claims**



1. A double dolly for use on a conveyor in moving an object over a supporting surface; said dolly consisting of a first roller which rotates about a first axle, a second roller which rotates about a second axle with its lower reach being above the lower reach of the first roller, a frame for securing said rollers and axles to the conveyor, and a safety bar secured to said frame in advance of and below said second roller proximate the supporting surface; said second roller being freely rotatable when free of load and being positioned to prevent contact between said first roller and the object which said second roller rotatably engages; said first roller being a support roller for transferring load exerted on said dolly to the supporting surface; said safety bar being clear of the supporting surface when the dolly is free of load and being adapted to rotatably engage the supporting surface and to prevent binding upon coming into contact therewith when the dolly is under load.

4,194,450
RAILWAY HOPPER CAR DOOR OPERATING MECHANISM

Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 27, 1977, Ser. No. 864,342

Int. Cl.^{2} B61D *7/04, 7/06, 7/18, 7/26*

U.S. Cl. 105—253 **10 Claims**

1. A bottom dump railway hopper car having an underframe and a hopper having a pair of laterally spaced bottom discharge openings and a pair of discharge gates associated therewith hinged from said hopper for movement between open and closed positions, the improvement comprising a gate operating mechanism operatively associated therewith comprising:

an actuating shaft rotatable about its longitudinal axis in a first direction to open and a second direction to close said discharge gates and located between the ends of said hopper car,

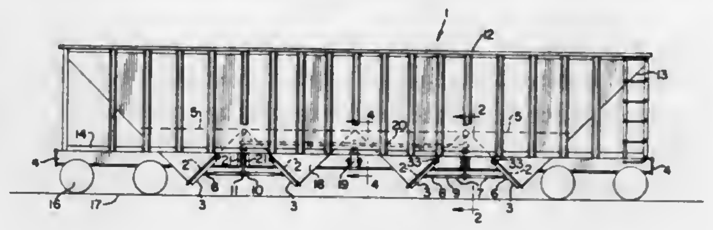
lever means rigidly affixed to said actuating shaft and extending outwardly therefrom,

vertical levers pendulously connected to said underframe of said hopper car and having pivot means attaching said vertical levers and having lower ends,

linkages operatively connecting said lever means to each vertical lever in order to swing said vertical levers outward when said lever means rotate in said first direction,

strut means having first and second ends, said first ends being pivotally connected to the lower ends of said vertical levers, and

said discharge gates hingly connected to said hopper and having a pivotal connection with the second ends of said strut means.



10. A bottom dump railway car having an underframe and a hopper having discharge openings arranged in pairs on opposite sides of the car center sill and swinging gates associated therewith, said swinging gates being hinged from said hopper for movement between open and closed positions and to swing toward the adjacent swinging gate of the associated pair, an improved swinging gate operating mechanism including:

a selectively movable actuating member mounted on the underframe,

pivot means attaching a vertical lever to the car underframe and disposing the vertical lever for transverse swinging movement away from the center sill to open the swinging gates and toward the center still to close the swinging gates;

linkage means operatively connecting the acutating member and said vertical lever such that movement of the actuating member causes the vertical lever to swing,

said vertical lever having a lower portion; and

strut means extending in opposite directions from the lower portion of the vertical lever and connecting the vertical lever and associated swinging gates, whereby selective movement of said vertical lever causes said strut means to be drawn in the direction of movement, thereby opening and closing said discharge openings.

4,194,451
RAILWAY CAR CENTER SILL

James L. Dehner, Poway, Calif., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 27, 1978, Ser. No. 881,304

Int. Cl.^{2} B61D *17/00*

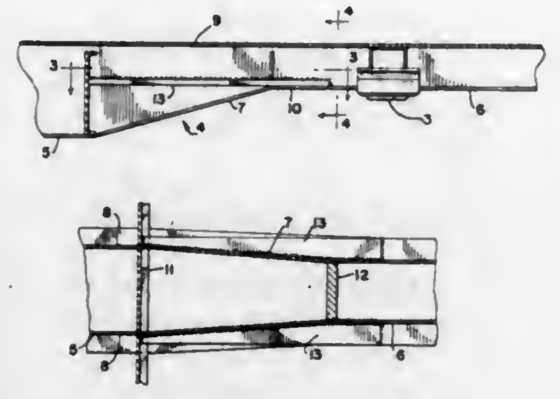
U.S. Cl. 105—416 **6 Claims**

1. A center sill for a railway car comprising a center section, opposite end sections, and transition sections between said center and end sections,

each of said sections including laterally spaced vertical webs and top and bottom cover plates fixed to said webs,

said center section being of greater width and depth than said end sections with said bottom cover plate extending horizontally along said center section and sloping upwardly therefrom through said transition section and continuing horizontally outwardly along said end sections, whereby said bottom cover plate is bent at the ends of each of said transition sections, said vertical webs extending longitudinally along said center section parallel to one another and sloping inwardly toward one another through said transition sections and continuing parallel to one another along said end sections, whereby said vertical webs are also bent at the ends of each of said transition sections, and

means for reinforcing the bent portions of said bottom cover plate and said vertical webs at the ends of each transition section including a pair of longitudinally extending horizontal plates, one of said plates being connected to each vertical web and extending from the adjacent portion of the center section of the sill through the transition section and into the end section in substantially the horizontal plane of the end section portion of said bottom cover plate.



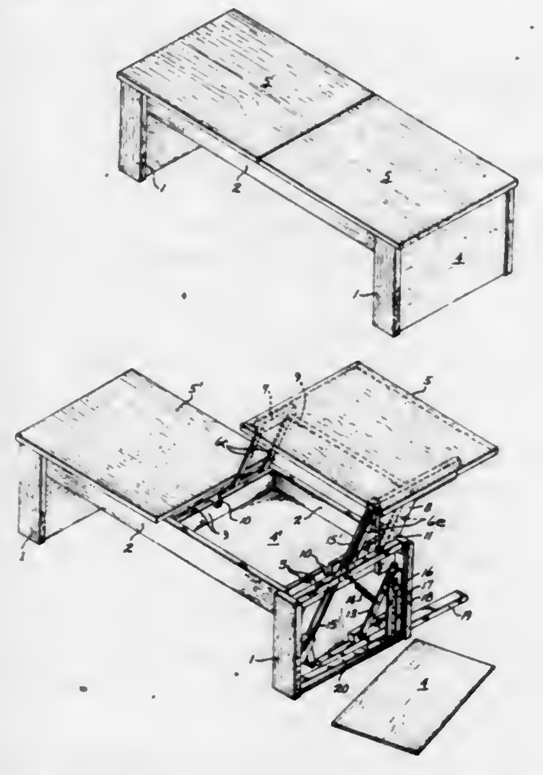
4,194,452
CONVERTIBLE TABLE

William H. Crowther, 4605 State Route 2, Everett, Wash. 98205, and Gregory A. Carpenter, 5325 - 89th St. NE., Marysville,, Wash. 98270

Filed Jun. 12, 1978, Ser. No. 914,442

Int. Cl.^{2} A47B *11/00, 81/00*

U.S. Cl. 108—138 **15 Claims**



1. A convertible table comprising a table base for engaging a supporting surface, a tabletop normally supported in horizontal position overlying said table base, means connecting said top and said base enabling shifting of said top between its normal position principally over said base and a position in which said top is displaced laterally at least partially offset from said base, a stabilizer projectable outward from said base to deter tipping of the table, and actuating means for projecting said stabilizer automatically by shifting of said top to offset position.

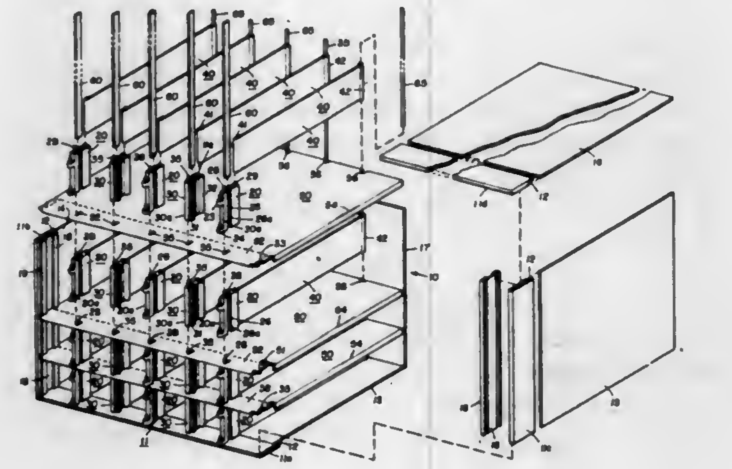
4,194,453
SAFE DEPOSIT BOX NESTS AND METHOD OF CONSTRUCTING SAME

Larry I. Cutter, Cedar Rapids, Iowa, assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Dec. 8, 1977, Ser. No. 858,740

Int. Cl.^{2} E05G *1/08*

U.S. Cl. 109—56 **6 Claims**



1. In safe deposit box nest construction incorporating one or more modular assemblies, each assembly including: an outer rectangular housing having an open front and top, bottom, side and rear walls and forward framing having bottom, side and top members forming separate forward extensions of the respective housing bottom, side and top walls, the forward framing defining the front of the housing; the housing containing a plurality of laterally and vertically adjacent safe deposit box compartments extending from the housing rear wall and opening through the front of the housing; the compartments being at least partially formed first by a plurality of parallel horizontally spaced vertical posts and separate partitions with the partitions extending rearwardly from the posts, the posts and partitions being divided into laterally spaced sets thereof with the posts and partitions of each set being in vertical alignment, and second by one or more parallel vertically spaced horizontal shelves of metallic sheet material, the posts and shelves forming forward edge portions of the compartments with each of the shelves extending between and separating vertically adjacent posts and partitions; and doors closing the fronts of the compartments, each door being hinged about a vertical axis to one of the posts, the improvement comprising: an extruded metallic member of uniform cross-section forming each post, the posts of each set thereof including integrally formed vertically aligned first channels longitudinally therethrough disposed between forward and rearward edge portions of said posts and integrally formed vertically aligned second channels longitudinally therethrough disposed rearwardly of the first channels and opening through the rear of said posts, the partitions associated with said set of posts having integrally formed forward edge portions slidably receivable in interlocking engagement with the second channels; a fold of said sheet material rearwardly upon itself of uniform thickness and forming the forward edge portion of each shelf, vertically adjacent posts and doors being separated by said folds; a post locating member slidable in and extending through the first channels and the folds of the shelves, the first channels and the post locating members providing an interlocking engagement therebetween effective to locate the posts of each set thereof against movement relative to the shelves without the need of additional fastening means between the posts and the post locating members, the uppermost and lowermost ends of the posts of each set butting against the top and bottom framing members respectively; and means securing the uppermost and lowermost ends of the post locating members to the top and bottom framing members.

4,194,454
METHOD FOR INCINERATING SLUDGES

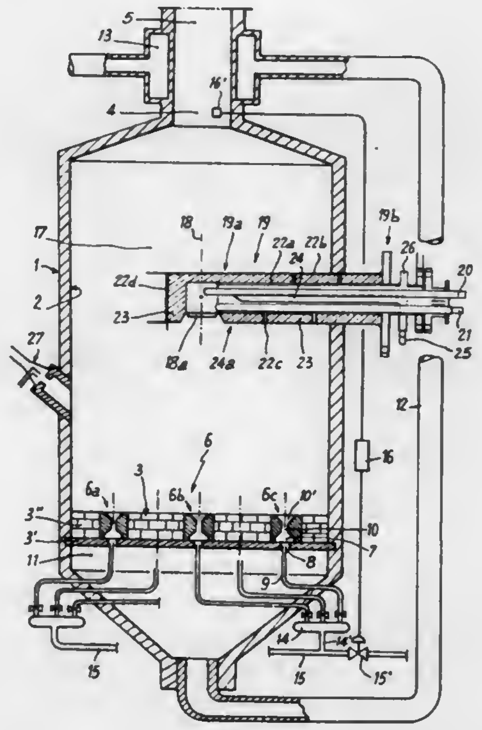
Jean Lalanne; Jean-Pierre Nivert, both of Artix, and Daniel Tarascou, Pau, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Sep. 26, 1978, Ser. No. 946,092

Claims priority, application France, Sep. 29, 1977, 77 29264

Int. Cl.^{2} F23G *5/12*

U.S. Cl. 110—238 **10 Claims**



1. A method for incinerating sludge, comprising the steps of:
- delivering a mixture of combustible gas with a large amount of excess air to a plurality of locations distributed over the lower part of an incineration zone;
- initiating the combustion of said mixture;
- injecting sludge into a limited space while imparting to said sludge a rotational motion about an axis, and causing said sludge to leave said space in the form of a sludge outlet jet, and finely pulverizing the sludge in the incineration zone;
- evacuating the incineration products from the incineration zone by carrying them along with the gaseous combustion products;

said method being characterized by the further steps of:
- rendering said mixture of combustible gas with excess air extremely homogeneous, prior to said step of delivering it to said locations in said incineration zone, and
- directing plurality of air jets onto said sludge outlet jet in a substantially tangential direction with respect to the latter, for carrying out said step of finely pulverizing the sludge outlet jet.

4,194,455
METHOD OF AND FURNACE FOR BURNING WASTE MATERIAL

Heinz Mallek, Linnich-Tetz; Dorothee Ermisch, Jülich, and Werner Jablonski, Linnich-Tetz, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich, Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

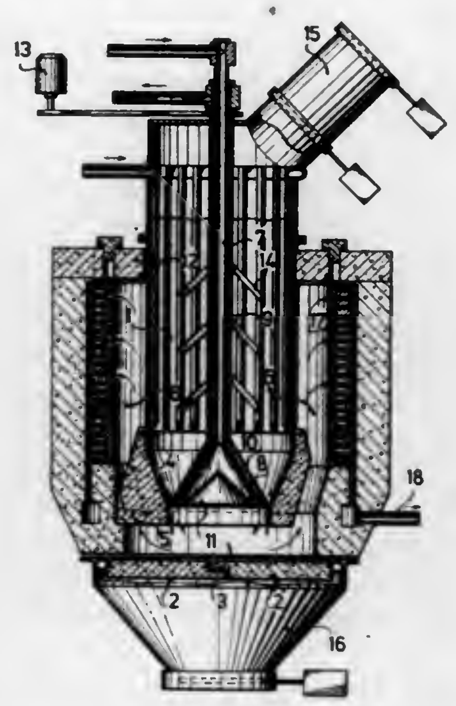
Filed Aug. 3, 1978, Ser. No. 930,515

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734973

Int. Cl.^{2} F23G *5/12*

U.S. Cl. 110—251 **4 Claims**

1. A method of burning waste material, which includes in combination the steps of: heating said waste material while preventing access of air thereto to thereby form waste gases and degasified waste including combustible gases; passing in a flow the thus formed waste gases and degasified waste to an area of combustion; constricting said flow in a location prior to its reaching said area of combustion while admixing fresh air at a below stoichiometric quantity ratio to said flow to destructively distill said waste material to form further combustible gases; admixing additional fresh air to said flow so that both said waste gases and said degasified waste are combusted in common at said constricting location; and removing a portion of said combustible gases from said constricting location.



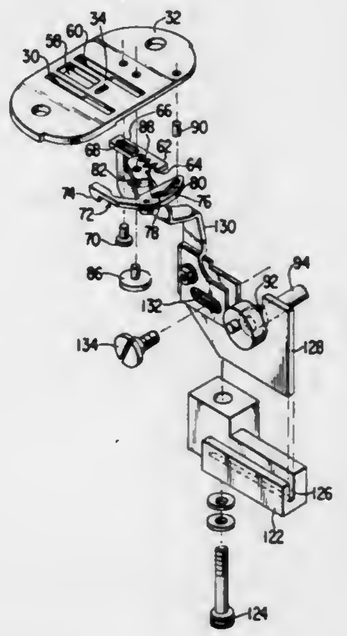
4,194,456
BLIND STITCH MECHANISM

William J. Edwards, Cranbury, and Herbert T. Hurler, Elizabeth, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,785

Int. Cl.^{2} D05B *1/24*

U.S. Cl. 112—176 **6 Claims**



1. In a sewing machine having a bed including a portion of said bed defining a stitch forming area, a cavity formed in said bed, a loop taker including a loop seizing beak rotatably journalled on a vertical axis in said bed, a needle bar reciprocatorily driven toward and away from said stitch forming area in timed relation to the rotation of said loop taker, said needle bar having fastened thereto a thread carrying needle, a feed dog having at least one component of motion adjustable by operator influenced motion varying means for moving fabric toward and away from said stitch forming area in timed relation to the reciprocation of said needle bar, a removable blind stitch throat plate having at least one aperture for accommodating said feed dog located at said stitch forming area of said bed and a needle slot for accommodating said needle, a

feed drive shaft rotatably driven in timed relation to the reciprocation of said needle bar, feed dog motion imparting means driven by said feed drive shaft for imparting fabric feeding motion to said feed dog, a blind stitch mechanism characterized by: a hook needle carried parallel to said throat carrying needle by said needle bar, said hook needle having a body with a longitudinal recess and a thread engaging hook, a latch member slidably constrained within said recess for motion toward and away from said thread engaging hook, a thread deflecting member having a thread engaging finger, said thread deflecting member being pivotally carried beneath said throat plate for engaging a loop of thread seized by the beak of said loop taker from said thread carrying needle and deflecting it around said hook needle, a drive mechanism for said thread deflecting member separate from said feed dog motion imparting means, and independent of said operator influenced feed motion varying means, and means drivingly connecting said thread deflecting member drive mechanism with said feed drive shaft for driving said thread deflecting member into engagement with said loop of thread carried by said loop taker and around the body of said hook needle in timed relation to the reciprocation of said needle bar.

4,194,457

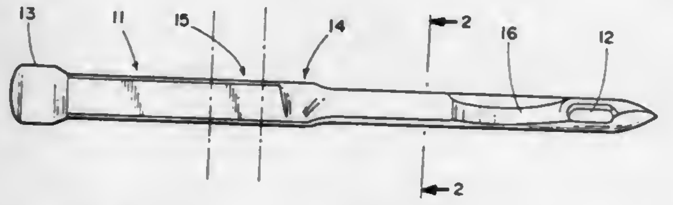
TUFTING MACHINE NEEDLES

Ronald Parsons, Blackburn, England, assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Nov. 22, 1978, Ser. No. 963,093

Int. Cl.² D05B *85/00;* D05C *15/00*

U.S. Cl. 112—222 **2 Claims**



1. A needle for embedding within the body of a tufting machine needle module comprising a generally flat elongated element having a point at one end thereof and a yarn receiving eye adjacent said point, said element having a width greater than its thickness, said eye comprising an aperture extending transversely through the surfaces defining the thickness, a first region on non-uniform cross-sectional form within that longitudinal extent of the needle remote from the point intended for location within the body of the module, said first region comprising a localized region of increased width and reduced thickness relative to the transverse dimensions of an adjacent part of the elongate element, a pick-up area adjacent the eye, and a second region having, in at least one direction, a locating means defined by a predetermined transverse dimension intermediate the first region and the said pick-up area, said first and second regions lying substantially in the same plane, the said element being twisted intermediate the second region and the pick-up area to provide a set whereby that part of the element which provides the pick-up area lies in a plane inclined at a small acute angle relative to the plane of the first and second regions.

4,194,458

WINDSURFER WITH AUXILIARY PROPULSION EQUIPMENT

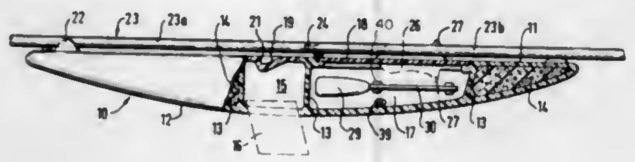
Manfred Messing, Reutlingen, Fed. Rep. of Germany, assignor to Lotte Kronwitter, nee Staiber, Guenznerg, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,854

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1976, 2652129

Int. Cl.² B63H *9/04*

U.S. Cl. 114—39 **10 Claims**



1. A windsurfer comprising:
an elongated floatable surfer body having an upper surface and formed with an openable storage compartment which is configurated as a recess in said body;
a daggerboard mountable on said body in a position projecting downwardly therefrom;
a removable lid formed as a flat plate having one side provided with a raised seat and another generally flat side, said lid fitting over said compartment in a windsurfing position with said seat engaged in said compartment and said flat side up, and in a riding position with said seat up so as to support a user in a sitting position and said flat side turned toward said compartment;
a mast securable to said upper surface of said body;
a boom secured to said mast; and
means engageable in water supporting said body for propelling said body in the water and storable in said compartment, said means for propelling including two paddles receivable in said compartment and each having a respective handle, said mast being formed at its ends with recesses each adapted to snugly receive a respective paddle handle in such a position that said mast with said paddles in said recess is a double-blade kayak-type paddle.

4,194,459

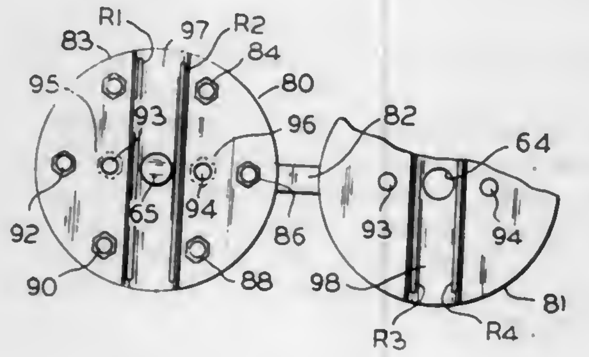
BOATS HARDWARE SYSTEM

Walter E. Lisowski, Addison, Ill., assignor to Helm Products, Inc., Addison, Ill.

Continuation-in-part of Ser. No. 761,793, Jan. 24, 1977, abandoned. This application Sep. 19, 1977, Ser. No. 834,416

Int. Cl.² B63B *9/00*

U.S. Cl. 114—221 R **6 Claims**



1. A hardware system for boats which resists torque tending to rotate said hardware around a rail comprising a hinged pair of opposing massive plastic discrete unitary members, said opposing members including mounting means distributed around the periphery thereof, whereby a device may be mounted on one of said opposing members, each of said discrete members having a single straight semi-circular cove consisting of a single smooth internal bore with no branching channels formed across a width of said plastic unit, said straight cove being shaped and dimensioned to fit over a correspondingly shaped exclusively straight section of a boat's rail, friction means comprising a rubber-like plug embedded in a hole located at substantially the central point of the bottom of said cove for creating torque-resisting friction between said massive plastic members and said boat's rail, and clamping means comprising a bolt with a large diameter head which can be tightened by hand without requiring tools for clamping said rail in said cove with a force which compresses said plug between said members and said rail, said bolt extending through both of said members, thereby securing said members on said rail wherein at least one smooth longitudinal rib means is formed in said cove to more precisely fit the cove to a rail, said rib means forming a section which gives a customized fit for said cove if the rail has a cross section that does not exactly match the cross section of the cove, whereby the rib means fill the space between said cove and said rail but do not bite into or mar the rail.

4,194,460

VIBRATION ABSORBED ENGINE EXHAUST MEANS FOR MOTOR PROPELLED BOATS

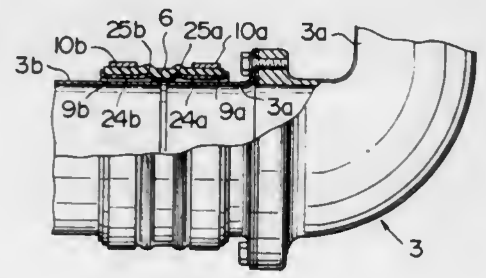
Masato Sato, Akashi, and Takemi Inoue, Kakogawa, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Ikuta, Japan

Filed Jan. 4, 1978, Ser. No. 866,911

Claims priority, application Japan, Jan. 13, 1977, 52-3601[U]

Int. Cl.² B63H *21/32*

U.S. Cl. 115—73 **7 Claims**



1. Motor-propelled boat comprising a boat hull, internal combustion engine means mounted on said boat hull through resilient mounting means and adapted to drive propulsion means, said engine means including body means, exhaust means connected with said body means, and cooling water jacket means formed in said body means for passing cooling water therethrough, said exhaust means including first pipe means rigidly connected with the body means and second pipe means connected with the first pipe means through resilient connecting means, said cooling water jacket means having outlet means, connected with the first pipe means so that the cooling water which has passed through the jacket means is discharged into the first pipe means, said second pipe means being further supported through resilient support means by said body means of the engine means.

4,194,461

DOOR ALARM TOY

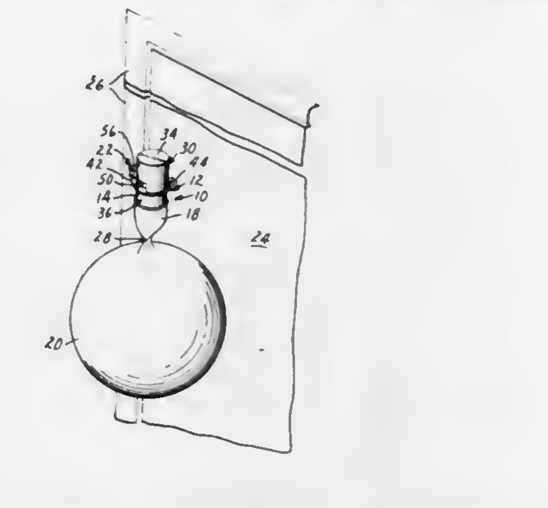
James F. Kubiatowicz, Minneapolis, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.

Filed Apr. 19, 1978, Ser. No. 897,791

Int. Cl.² A63H *5/00;* G08B *13/08*

U.S. Cl. 116—77 **6 Claims**

1. An assembled door alarm toy comprising in combination:
a resilient elastic balloon having a neck portion adjacent an opening;
an air operated whistle having an air inlet flue and a flange around said air inlet flue inserted in the opening of said balloon with the neck of the balloon stretched about said flange; and
means attached to said whistle adapted to be inserted and compressed in the space between a door and a frame around the door for frictionally engaging the adjacent surfaces of both the door and the frame with one side of the flange positioned along the outer surface of the door or frame so that with said balloon inflated and twisted adjacent said flange, and said means attached to said whistle inserted in said space with a portion of the side surface of the balloon spaced from the flange pressed against and



in frictional engagement with the outer surface of the door or frame, friction between said side surface of the balloon and the door or frame will prevent the balloon from rotating to remove the twist in the balloon and said friction and twist will provide the only means for maintaining the balloon in an inflated condition until the door is opened, whereupon the toy will fall, the balloon will untwist and deflation of the balloon will sound the whistle.

4,194,462

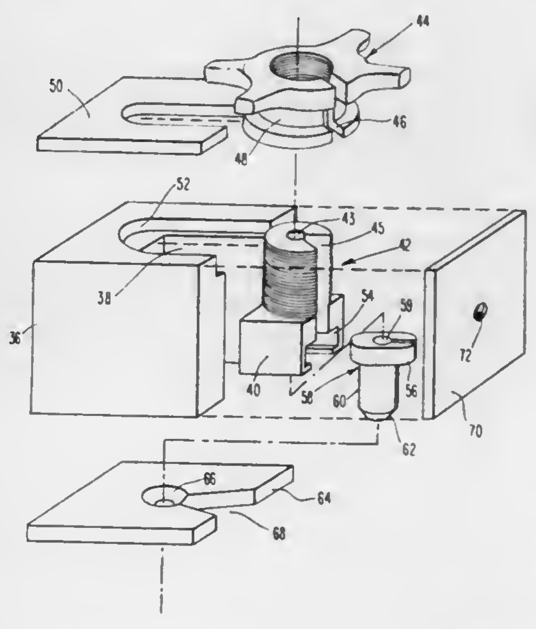
OPTICAL WAVEGUIDE COATING ASSEMBLY

Daniel H. Knowles, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,509

Int. Cl.² B05C *3/02;* C03C *25/02;* C03B *37/00;* B05C *3/12*

U.S. Cl. 118—405 **11 Claims**



1. A coating applicator for coating the surface of a moving optical waveguide of indeterminate length, comprising:
a coating die having an aperture extending therethrough and defining a split extending from said aperture to one edge thereof to provide access to the aperture throughout its length, said die having a first tapered surface lying generally about the longitudinal axis of said aperture;
a housing for receiving said coating die, said housing defining a recess extending substantially throughout the length thereof and including means for locating said coating die so that said split is in registration with said recess;

a die closing member adjacent said housing recess and defining an opening and a slot extending from the opening to the edge thereof and registering with the recess of said housing, said member further including a second tapered surface disposed about said opening and mating with said first tapered surface of said coating die;

pressure developing means associated with said housing for urging said coating die toward said die closing member whereby said first and second tapered surfaces cooperate to cause said split to close;

cover means in proximate relationship with said applicator housing and closing said recess; and

a reservoir coupled in fluid flow relationship with the aperture of said coating die for supplying coating material thereto.

4,194,463

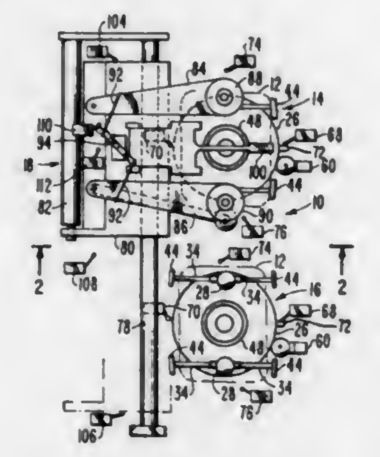
APPARATUS FOR APPLYING SEALING MATERIAL TO A CATHODE-RAY TUBE

Laurence B. Kimbrough, and Marinus Van Renssen, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,611

Int. Cl.^{2} B05C *5/02*

U.S. Cl. 118—409 **1 Claim**



1. An apparatus for applying a bead of sealing material to a sealing surface of a cathode ray tube funnel comprising:

two stations, each adaptable for receiving cathode ray tube funnels of various sizes, each station including a plurality of locating pads for holding and horizontally positioning a tube funnel and means for raising and lowering a cathode ray tube funnel, and

a carriage moveable between said two stations, said carriage including means for distributing a bead of sealing material and means for vertically locating the position of a cathode-ray tube funnel comprising a funnel locator pivotally mounted on the carriage for providing positive contact with the funnel sealing surface when the funnel is raised thereagainst.

4,194,464

RECORD CARE PAD

John F. Dye, Muncie, Ind., and Virgil F. Friebel, Longmont, Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Jan. 3, 1978, Ser. No. 866,352

Int. Cl.^{2} B05C *13/02*

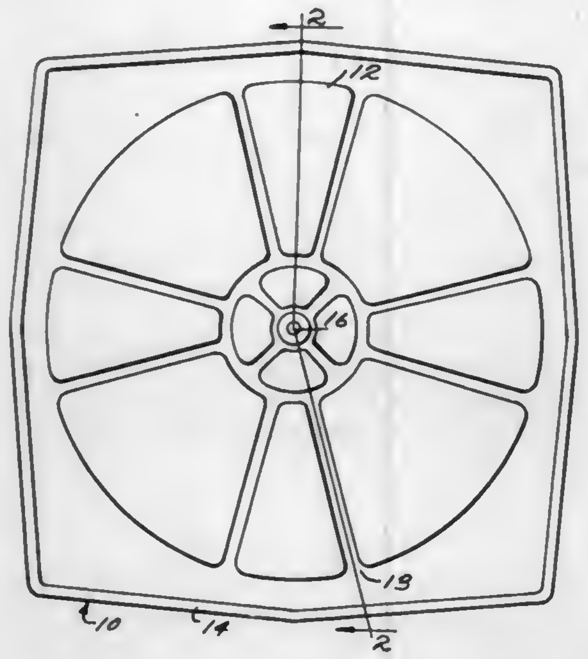
U.S. Cl. 118—501 **41 Claims**

1. Apparatus for positioning a phonograph record at a stationary location during treatment with a fluid without damaging said record, said apparatus comprising:

a base pad having dimensions larger than the dimensions of the largest record to be held stationary at said location, said pad being composed of a nonabrasive material;

friction means for preventing said record from sliding or rotating during said treatment; and

support means for preventing the lower surface of said record from resting in said fluid that may flow off of said record during said treatment, said support means including a plurality of raised coplanar pedestal portions attached to said pad, distributing over substantially the entire area of said pad covered by said record during said treatment, said portions being separated from each other so as to form interconnected channels therebetween.



4,194,465

MAGNETIC BRUSH DEVELOPER DEVICE

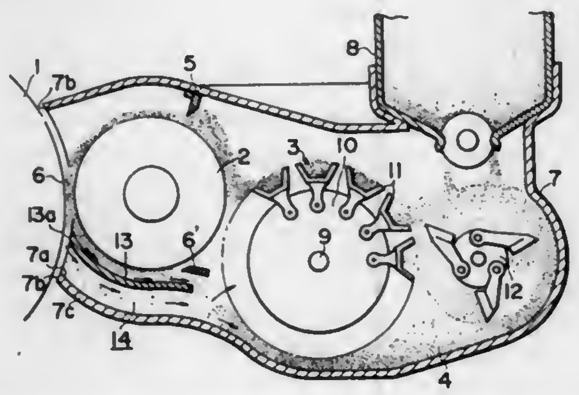
Takuzo Tsukamoto; Tamotsu Sakamoto, and Yoshikazu Okamoto, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1977, Ser. No. 846,655

Claims priority, application Japan, Feb. 24, 1977, 52-20726[U]

Int. Cl.^{2} G03G *13/09*

U.S. Cl. 118—658 **2 Claims**



1. In a xerographic copying machine of the type having a rotatable photosensitive member, a developer housing positioned closely adjacent to the periphery of said rotatable photosensitive member, and a magnetic brush roll located within said developer housing opposite said rotatable photosensitive member, the improvement comprising:

at least one air current blade provided along the lower outer periphery of the surface of said magnetic brush roll and positioned to be adjacent at one end thereof to said rotatable photosensitive member and extending back into the interior of said developer housing to conduct the air stream above the surface of said magnetic brush roll toward the interior of said developer housing and to collect the boundary layer of air entrained by the rotation of said rotatable photosensitive member, said developer housing having an opening adjacent said rotatable photosensitive member and spaced from said air current blade so that an air circulating path is defined by the outer wall of said developer housing and said air current blade whereby entrained air carrying excess toner is recirculated back into said developer housing; and

a developer carrying bucket located within said developer housing for supplying developer to said magnetic brush roll, said developer carrying bucket being composed of a plurality of U-shaped buckets mounted around two discs spaced within said developer housing on a rotary shaft, sufficient space between said two discs and among said plurality of U-shaped buckets being provided to permit free air flow, said air current blade extending to the vicinity of said developer carrying bucket.

4,194,466

ELECTROPHOTOGRAPHIC APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC CHARGE IMAGES

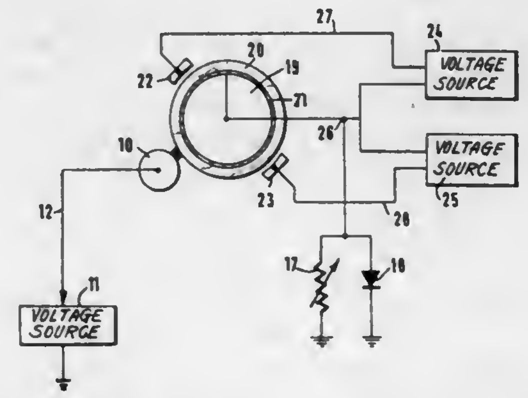
Helmuth Haberhauer, Taunusstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,698

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 2651646

Int. Cl.^{2} G03G *13/09*

U.S. Cl. 118—657 **8 Claims**



1. Apparatus for developing latent electrostatic charge images, comprising

(a) image carrier means including a conductive backing layer, and a photoconductive layer for receiving a latent electrostatic charge image;

(b) magnetic developer means for depositing a developer mixture on said photoconductive layer;

(c) means establishing a potential difference between said magnetic developer means and said backing layer, including

  (1) a first voltage source connected with said magnetic developer means; and

  (2) voltage breakdown prevention means including a high-ohmic resistor connecting said backing layer with ground;

(d) charge corona means arranged adjacent said image carrier photoconductive layer;

(e) transfer corona means arranged adjacent said image carrier photoconductive layer; and

(f) second and third voltage sources including first terminals of one polarity connected with said backing layer, the second terminals of opposite polarity of said second and third voltage sources being connected with said charge corona means and with said transfer corona means, respectively.

4,194,467

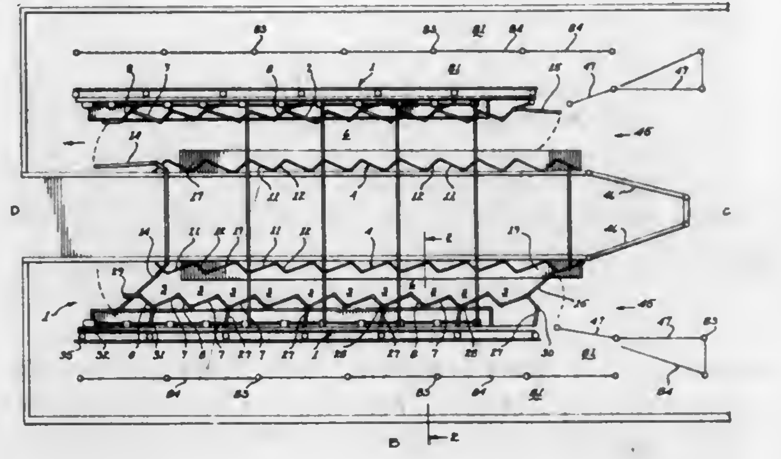
COW MILKING SYSTEM

Floyd P. Nielsen, and Bernard O. Anderson, both of Glendale, Ariz., assignors to Nielsen Industries, Inc., Phoenix, Ariz.

Filed Jun. 19, 1978, Ser. No. 916,633

Int. Cl.^{2} A01K *1/12*

U.S. Cl. 119—14.03 **7 Claims**



1. A cow milking system comprising:

a. floor means having means defining an aisle, said aisle having:

  (1) a milking side, and

  (2) a head side;

b. a fixed fence disposed on said milking side;

c. means for supporting said fixed fence;

d. a moveable herring-bone fence

  (1) disposed on said head side, and

  (2) having means for engaging the shoulders of the cows; said fence being adapted to move as an integral unit; and

e. means for supporting said movable fence, and

f. means for moving said fence as a unit in and out of said aisle, whereby successive groups of cows of different sizes can be positioned advantageously relative said milking side by moving said fence, and said aisle can be widened temporarily for ingress and egress.

4,194,468

FORCED-FLOW BOILER INSTALLATION AND METHOD OF OPERATING THE SAME

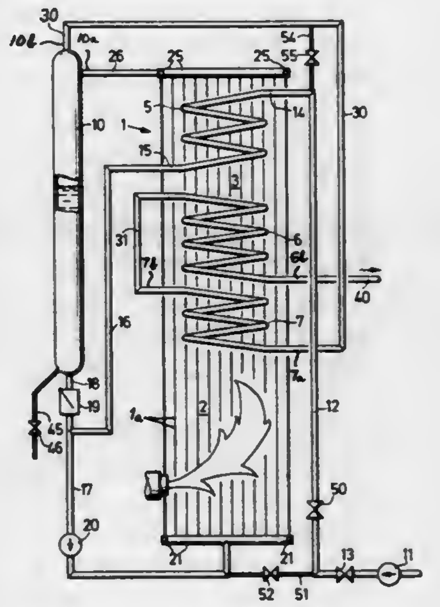
Walter Augsburger, Hettlingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 25, 1978, Ser. No. 936,944

Claims priority, application Switzerland, Sep. 2, 1977, 10719/77

Int. Cl.^{2} F22B *35/14*

U.S. Cl. 122—406 ST **7 Claims**



1. A forced-flow type boiler installation comprising:

a feed pump;

an economizer;

- an evaporator;
- a water separator;
- said feed pump, economizer, evaporator and water separator being connected in series;
- said separator having a water outlet and said evaporator having an inlet;
- a circulation line means having a circulation pump leading from the water outlet of the separator to the inlet of the evaporator;
- filling line means having a valve;
- a closure valve connected following the feed pump;
- said filling line meahs branching-off between the feed pump and the closure valve connected following the feed pump;
- said filling line means bypassing the economizer and leading to the inlet of the evaporator; and
- means for venting the economizer at the region of its maximum geodetic height.

4,194,469

COMPACT V-TYPE INTERNAL COMBUSTION ENGINE

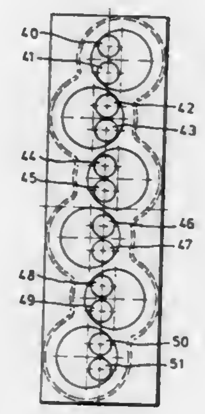
Hermann Krüger, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 931,206

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2740173

Int. Cl.^{2} F02B *75/22*

U.S. Cl. 123—54 R **5 Claims**



1. In a V-type internal combustion engine including a plurality of pistons and cylinders having a common cylinder head and a plurality of valves associated with the pistons and cylinders, said pistons acting on a crankshaft and said pistons and cylinders arranged in two banks, the cylinders of the first bank arranged interstitially with the cylinders of the second bank in a longitudinal direction, the improvement wherein each cylinder has at least one recess therein, one said recess for each adjacent cylinder, each said recess facing an adjacent cylinder and extending partially along said cylinder from the crankshaft-side thereof, and wherein said valves are arranged along a straight line.

4,194,470

TWO-CYCLE INTERNAL COMBUSTION ENGINE HAVING BOOST PORT

Richard W. Magner, 613 S. Ivy Way, Denver, Colo. 80224

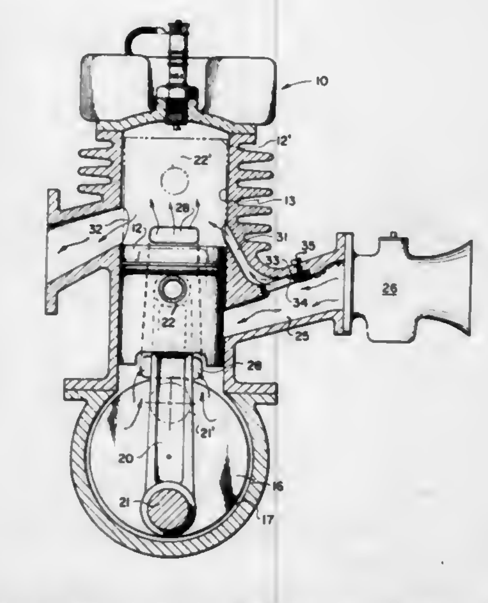
Filed Mar. 13, 1978, Ser. No. 886,028

Int. Cl.^{2} F02B *33/04*

U.S. Cl. 123—73 A **6 Claims**

1. In a two-cycle internal combustion engine having a crankcase, a cylinder communicating with the crankcase, a combustion chamber defined at the end of the cylinder opposite the crankcase, a piston slidably mounted in the cylinder, a crankshaft rotatably mounted in the crankcase, a connecting rod extending between the piston and the crankshaft, a transfer port defined between the crankcase and cylinder, an inlet channel communicating with the crankcase at one end, with an air-fuel mixture providing means at the other end, and backflow timing means controlling communication of air-fuel mixture providing means and the crankcase, the improvement comprising:

- a boost port defined between the inlet channel at a position between the air-fuel mixture providing means and the backflow timing means with the inlet channel being unobstructed between the air mixture providing means and the entrance to the boost port, the boost port extending to and communicating through the cylinder at a position above the piston crown when the piston is in a downstroke orientation; and



- a valve means positioned at the boost port and oriented to permit flow only from the inlet channel and preclude flow in the opposite direction;
- whereby an air-fuel mixture may flow from the air-fuel mixture providing means to the inlet channel into the crankcase, and also through the boost port into the cylinder, and upon termination by the backflow timing means of flow into the crankcase, flow may be selectively provided into the cylinder at high operating speeds through the boost port, while reverse flow through the boost port is precluded at low operating speeds.

4,194,471

INTERNAL COMBUSTION ENGINE EXHAUST GAS MONITORING SYSTEM

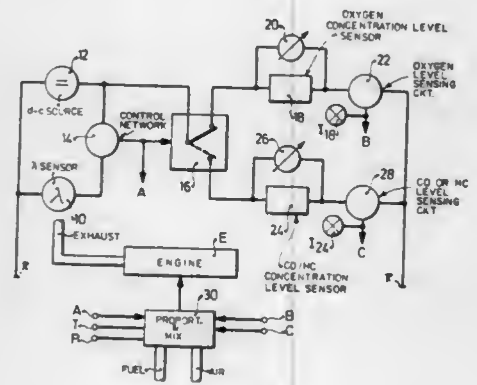
Detlef Baresel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1978, Ser. No. 882,177

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709215

Int. Cl.^{2} F02B *75/10*

U.S. Cl. 123—119 EC **21 Claims**



1. Exhaust gas monitoring system to supervise the composition of exhaust gases emitted from an internal combustion engine (E)

comprising the combination of

- a first exhaust composition sensor (**10**) located in sensing relation with respect to the exhaust gas stream from the internal combustion engine and providing an output signal which changes between discrete values upon transition of the composition of the exhaust gases between reducing and oxidizing state;
- and air-fuel ratio control means (**30**) connected to and controlled by the first sensor (**10**) and controlling the relative proportion of air and fuel applied to the engine (E),
- with
- a second exhaust composition sensor (**18**) located in sensing relation with respect to the exhaust gas stream from the internal combustion engine comprising a material having an electrical characteristic which changes in an analog manner as a function of the level of concentration of oxygen present in the exhaust gases;
- and an oxygen level sensing circuit connected to and controlled by said second sensor (**18**) responsive to said change in the electrical characteristic and providing an oxygen level output signal (B) if said characteristic and hence the oxygen concentration level in the exhaust gases exceeds a predetermined limit.

19. Exhaust gas monitoring system to supervise the composition of exhaust gases emitted from an internal combustion engine (E)

comprising the combination of

- a first exhaust composition sensor (**10**) located in sensing relation with respect to the exhaust gas stream from the internal combustion engine and providing an output signal which changes between discrete values upon transition of the composition of the exhaust gases between reducing and oxidizing state;
- and an air-fuel ratio control means (**30**) connected to and controlled by the first sensor and controlling the relative proportion of air and fuel applied to the engine (E),
- with
- a second exhaust composition sensor (**18**) located in sensing relation with respect to the exhaust gas stream from the internal combustion engine comprising a material having an electrical characteristic which changes in an analog manner as a function of the level of concentration of oxygen present in the exhaust gases;
- and an oxygen level sensing circuit (**22**) connected to and controlled by said sensor (**18**) responsive to said change in the electrical characteristic and providing an oxygen level output signal, said oxygen level output signal being connected to and additionally controlling the air-fuel ratio control means (**30**) and additionally controlling the relative proportion of air and fuel applied to the engine.

4,194,472

EXHAUST GAS RECIRCULATION SYSTEM OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

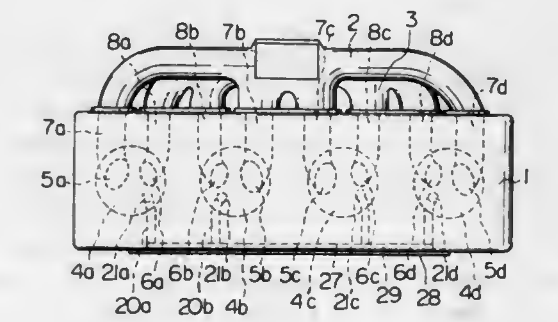
Masuo Amano, Okazaki, and Toshio Tanahashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 21, 1978, Ser. No. 888,733

Claims priority, application Japan, Dec. 2, 1977, 52-144674

Int. Cl.^{2} F02M *25/06*

U.S. Cl. 123—119 A **6 Claims**



1. A multi-cylinder engine having a plurality of cylinders, each having an intake valve and an exhaust valve, said engine comprising:

- a common exhaust gas passage;
- a plurality of exhaust gas branches, each interconnecting its respective cylinder with said common exhaust passage;
- a plurality of auxiliary valves, each of which is located in its respective exhaust gas branch and opens in the latter half of the exhaust stroke and at the end of the intake stroke of the corresponding cylinder, so that the auxiliary valve of one cylinder opens in the exhaust stroke thereof in synchronization with the opening operation of the auxiliary valve of another cylinder, which opens in the intake stroke thereof, for spouting out the exhaust gas into said other cylinder from said one cylinder; and
- means for controlling a valve parameter of said auxiliary valves to feed the exhaust gas uniformly into all of the cylinders, said auxiliary valves having a first opening relationship in which a pair of said auxiliary valves of the cylinders arranged adjacent to each other open in synchronization with each other and a second opening relationship in which a pair of said auxiliary valves of the cylinders arranged not adjacent to each other open in synchronization with each other, said controlling means causing the difference in said valve parameter between the auxiliary valves having said first opening relationship and the auxiliary valves having said second opening relationship, and wherein said valve parameter is the valve lift, the valve lift of the auxiliary valves which have said first opening relationship being smaller than that of the auxiliary valves which have said second opening relationship.

4,194,473

FOUR-CYCLE SPARK IGNITION INTERNAL COMBUSTION ENGINE

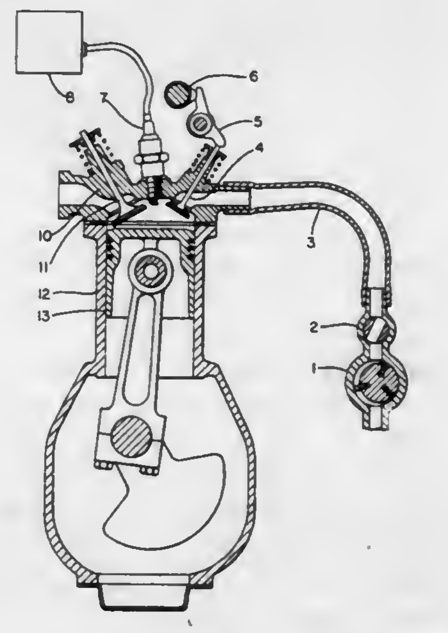
Ichiro Hidaki, 473-1, Yoshiocho, Miyakonojo-shi, Miyazaki, Japan

Filed Apr. 20, 1978, Ser. No. 898,128

Claims priority, application Japan, Apr. 23, 1977, 52/47690

Int. Cl.^{2} F07M *25/06*

U.S. Cl. 123—119 A **5 Claims**



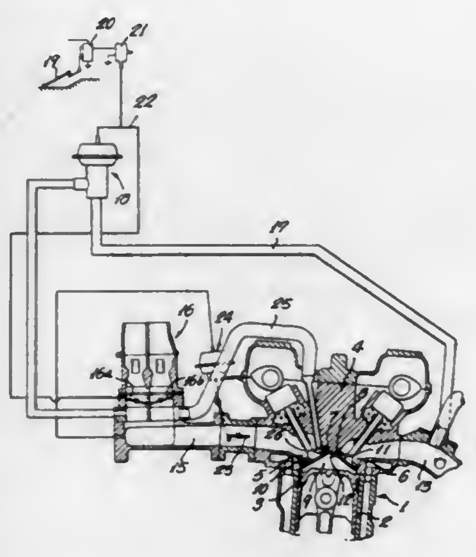
5. In a high-compression, four-cycle, spark ignition, reciprocating piston-type, internal combustion engine having a cylinder, a cylinder head forming a combustion chamber with said cylinder, a piston reciprocable in said cylinder, intake and exhaust ports in said head communicating with said cylinder and intake and exhaust valves for opening and closing said intake and exhaust ports, the improvement which comprises: said engine has a scavenging gas passageway in the cylinder head and said scavenging gas passageway has a scavenging gas inlet port at one end thereof communicating with the upper end of the cylinder; a poppet valve in said scavenging gas inlet port for opening and closing communication between said scavenging gas passageway and said cylinder; a gas flow regu-

lator valve in said scavenging gas passageway; a scavenging gas pump having an outlet connected to the other end of said scavenging gas passageway, said scavenging gas pump having an inlet connected to receive cooled exhaust gas from the engine; and means for regulating the spark ignition point so that spark ignition occurs at a time close to but shortly after the knocking limit ignition point of the fuel-gas mixture used in the engine whereby to achieve improved thermal efficiency without knocking.

4,194,474

EGR RECIRCULATION AT LOW LOAD IN INTERNAL COMBUSTION ENGINES

Yoshinori Endo, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Continuation of Ser. No. 839,359, Oct. 4, 1977, abandoned. This application Jun. 1, 1978, Ser. No. 911,299
Claims priority, application Japan, Mar. 9, 1977, 52-106029
Int. Cl.² F02M ***25/06***
U.S. Cl. 123—119 A **9 Claims**

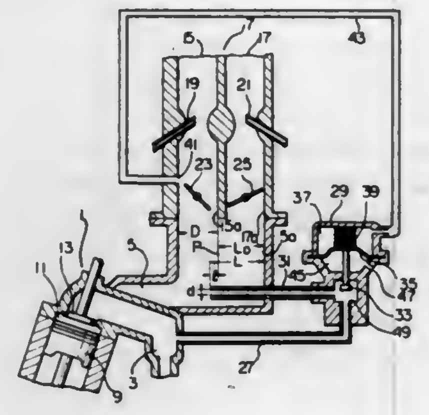


1. In an internal combustion engine having a variable volume chamber in which combustion occurs, a main intake passage communicating with said chamber through a main intake port for delivering a charge thereto, an exhaust passage communicating with said chamber for receiving a burned charge exhausted therefrom, and an emission system for discharging exhaust gas from said exhaust passage for further treatment by combustion within said chamber, the improvement comprising an auxiliary intake passage having an inlet communicating with said main intake passage and an outlet communicating with said chamber through auxiliary port means, said auxiliary intake passage having an effective cross-sectional area substantially less than the effective cross-sectional area of said main intake passage for causing a given mass flow of charge through said auxiliary intake port to enter said chamber at a significantly greater velocity, throttle valve means for controlling the ratio of flow into said chamber through said main intake port to the flow into said chamber through said auxiliary intake port means, and means for delivering exhaust gases from said emission system to said main intake passage in a location to minimize the effects of pulsation thereof and for introduction at a high velocity into said chamber through said auxiliary intake port means under the control of said throttle valve means.

4,194,475

INTERNAL COMBUSTION ENGINE WITH AN EXHAUST GAS RECIRCULATION SYSTEM

Junichi Saiki, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jun. 23, 1978, Ser. No. 918,381
Claims priority, application Japan, Apr. 25, 1978, 53-48326
Int. Cl.² F02M ***25/06***
U.S. Cl. 123—119 A **4 Claims**



1. An internal combustion engine with an exhaust gas recirculation system comprising:

a carburetor which is communicated with an intake air supply and provided with a primary system and a secondary system;

an intake passage, the entrance portion of which being communicated with said carburetor and which is branched into a plurality of exit portions at the branch portion thereof, said exit portions being communicated with combustion chambers of said engine, respectively;

an exhaust passage which is communicated with said engine for discharging the exhaust gas;

an exhaust gas supply pipe which is disposed on a wall of the intake passage located between said entrance portion and said branch portion and communicated with said exhaust passage for recirculating a part of the exhaust gas, the top end of said exhaust gas supply pipe projecting from said wall and being opened to a space having a predetermined positional relationship with the prolongation of a wall of said primary system; and

said primary system of said carburetor is located nearer to an engine body than said secondary system, said secondary system of said carburetor is located adjacent to said primary system, and said wall on which said exhaust gas supply pipe is disposed is located farther from said engine body than said primary system.

4,194,476

DEVICE FOR FEEDING OTTO CYCLE ENGINES WITH LEAN COMBUSTIBLE MIXTURES

Claudio Lombardi, Alessandria, and Lorenzo Belletti, Turin, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy
Filed Jun. 6, 1978, Ser. No. 913,157
Claims priority, application Italy, Jun. 9, 1977, 68336 A/77; Mar. 30, 1978, 67702 A/78
Int. Cl.² F02M ***31/00***
U.S. Cl. 123—122 H **6 Claims**

1. Device for feeding air/fuel mixture to a multicylinder spark ignition Otto cycle engine, comprising a carburettor, a main induction manifold, a carburettor outlet pipe connected to said main induction manifold, induction pipes communicating with said main induction manifold, a heat exchanger having passages for through flow of engine exhaust gases, the heat exchanger being interposed between said carburettor outlet pipe and said main induction manifold to preheat mixture fed to the engine, wherein the improvements comprise:

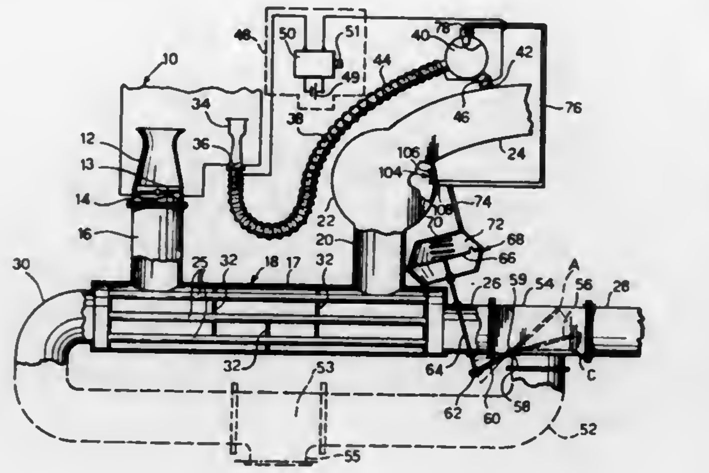
an auxiliary induction manifold adjacent said main induction manifold and having outlet pipes communicating with the said induction pipes;

an auxiliary pipe connecting the said auxiliary induction manifold to said carburettor;

an electrical resistance heating element associated with said auxiliary pipe;

means for feeding combustible mixture from said carburettor in the idling state of the engine only through said auxiliary pipe, and

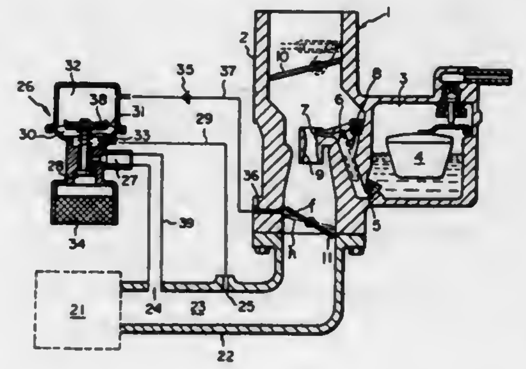
a timer switch for energising said resistance heating element for a predetermined time interval following operation of said switch.



4,194,477

DEVICE FOR ADMISSION OF SECONDARY AIR TO INTERNAL COMBUSTION ENGINE INTAKE

Keiichi Sugiyama, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Mar. 27, 1978, Ser. No. 890,678
Claims priority, application Japan, Apr. 14, 1977, 52-45773
Int. Cl.² F02M ***23/04***
U.S. Cl. 123—124 R **3 Claims**

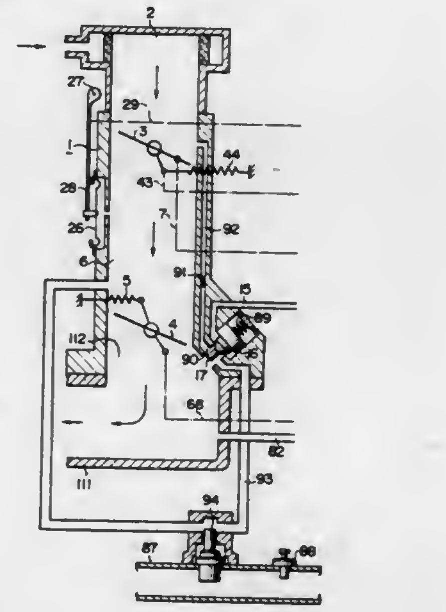


1. A secondary air admission device for an engine provided with a control valve for admitting secondary air into a suction passage downstream from a carburetor which includes a throttle valve in a bore downstream from said carburetor, characterized in that the control valve is constituted by a first diaphragm chamber communicated with the suction passage, a valve member opened and closed by the pressure variation in said first diaphragm chamber, and a second diaphragm chamber isolated from the first diaphragm chamber by a diaphragm which supports the valve member, a vent port is opened in said bore, said vent port being communicated with said second diaphragm chamber through a check valve, said vent port opening into said bore at an intermediate portion between the throttle valve position at the time of fast idle opening and the throttle valve position at the time of hot idle opening.

4,194,478

AIR-FUEL RATIO CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Masaharu Sumiyoshi; Setsuro Sekiya; Katsuhiko Motosugi, all of Toyota; Junzo Uozumi, Nagoya; Tsuneo Ando, Chiryu; Yuzo Takeuchi, and Mikio Minoura, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd, Ohbu, both of, Japan
Filed Apr. 25, 1978, Ser. No. 900,011
Claims priority, application Japan, Apr. 27, 1977, 52-48930
Int. Cl.² F02M ***39/00, 7/00***
U.S. Cl. 123—139 AW **14 Claims**

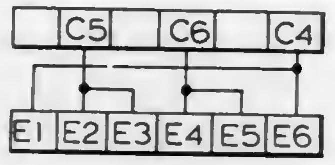


1. An air-fuel ratio control system for an internal combustion engine comprising an intake conduit, a throttle valve disposed in said intake conduit, a fuel discharge port opened to said intake conduit and a fuel feed conduit for supplying fuel to said discharge port; said control system comprising an air valve disposed in said intake conduit upstream of said throttle valve thereby to define an air pressure chamber between said throttle valve and said air valve in said intake conduit; control means for controlling the opening area of said air valve in response to variation in pressure in the air pressure chamber defined between said throttle valve and said air valve so as to maintain the pressure in the air pressure chamber substantially constant; a variable throttle means disposed in said fuel feed conduit for controlling the quantity of fuel to be supplied through said feed conduit to said discharge port; means for interlocking said variable throttle means with said air valve in such a way that the flow sectional area of said variable throttle means is always maintained substantially in proportion to the opening area of said air valve; a fuel pressure differential device composed of a first pressure chamber subjected to a pressure equivalent to the pressure in said fuel feed conduit downstream of said variable throttle means, a second pressure chamber, means for maintaining said second pressure chamber at a pressure different from the pressure in said first pressure chamber and a constant differential pressure valve disposed in said fuel feed conduit downstream of said variable throttle means and responsive to variation in the pressure difference between said first and second pressure chambers for controlling the pressure in said feed conduit downstream of said variable throttle means at a pressure having a predetermined difference from the pressure in said second pressure chamber; a first fluid source maintained at a high pressure; a second fluid source maintained at a low pressure; a fluid circuit arranged in such a way that fluid flows from said first fluid source to said second fluid source via said second pressure chamber; and at least two flow control means disposed in said fluid circuit, each being responsive to variation of one of parameters representing environmental and/or operating conditions of said internal combustion engine for controlling fluid flow in said fluid circuit thereby to correct the pressure in said second pressure chamber.

4,194,479
STACKARUK ENGINE

Arthur Stackaruk, 194 Church St., Bowmanville, Ontario, Canada

Filed Mar. 17, 1977, Ser. No. 778,626
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 C **13 Claims**

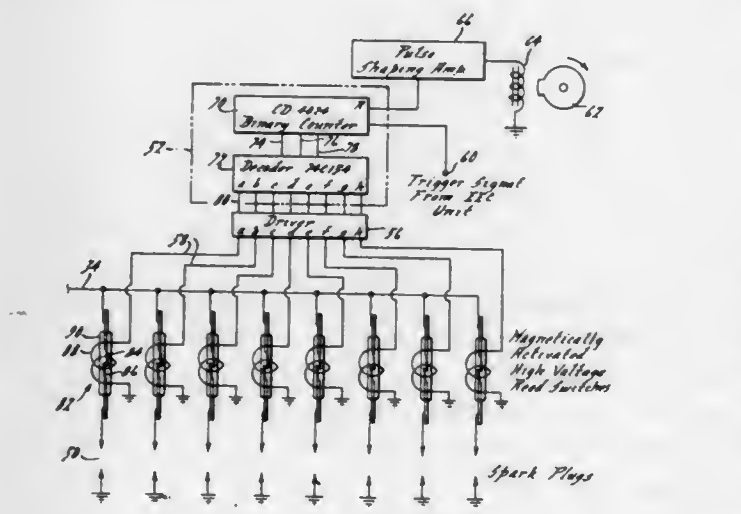


1. In the combination of a four stroke internal combustion engine comprising n cylinders, where n is an even number in the range of 4 to 8, each said cylinder normally having a piston mounted for reciprocal movement therein and ignition spark generating means including a single spark plug in each said cylinder for generating a first ignition spark as each respective said piston is in the vicinity of top dead center on the compression stroke, a crankshaft having n cranked journals establishing a normal firing sequence for said engine, the improvement wherein half of said cylinders are rendered inoperable, said inoperable cylinders being non-adjacent in said firing sequence, and wherein the ignition spark normally supplied to a cylinder rendered inoperable is supplied to an adjacent operable cylinder in said normal firing sequence to generate a second ignition spark at the respective single spark plug with an angular retard within the range of about 90° to about 180° from said first spark, as measured at the engine flywheel.

4,194,480
VOLTAGE DISTRIBUTOR FOR A SPARK IGNITION ENGINE

William G. Rado, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1977, Ser. No. 862,707
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 ND **1 Claim**



1. A voltage distributor for a spark ignition internal combustion engine having a camshaft, a plurality of combustion chambers, and at least one spark plug for each of said combustion chambers, said distributor supplying voltage to said spark plugs in a sequence corresponding to the firing order of said engine, said distributor comprising:

an ignition coil having primary and secondary windings, said secondary winding having an output lead;

switch means having a plurality of output leads each of which is connected to a different one of said spark plugs, said switch means being controllable to cause said secondary winding output lead sequentially to make and break electrical contact with said switch means output leads in a sequence corresponding to the firing order of said engine;

trigger means, coupled to said primary winding, for causing voltage pulses to occur on said secondary winding output lead, said voltage pulses having a magnitude sufficient to produce a spark discharge in the spark plug to which said secondary winding output lead is electrically connected through said switch means, said trigger means generating trigger pulses at a repetition frequency equal to the repetition frequency of said voltage pulses;

a stepper motor and a stepper motor decoder, said stepper motor decoder causing said stepper motor to rotate a predetermined amount upon the occurrence of each of said trigger pulses and said stepper motor controlling said switch means, thereby, to cause said sequential making and breaking of electrical contact;

means for generating a synchronizing pulse for each revolution of the camshaft of said engine;

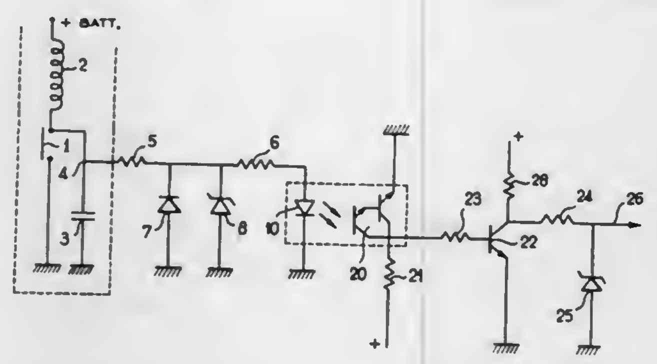
means for generating an electrical signal when said stepper motor is in a predetermined position relative to a predetermined switch means output lead; and

gate circuit means for allowing clock pulses to be applied to said stepper motor decoder until said synchronizing pulse and electrical signal simultaneously occur.

4,194,481
BREAKER SIGNAL PICK-UP AND SHAPING CIRCUIT

Marc Leblanc, Montreuil, and Bernard Lepretre, Boulogne, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Brillancourt, France

Filed Jan. 10, 1978, Ser. No. 868,375
Claims priority, application France, Jan. 21, 1977, 77 01721
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 E **3 Claims**

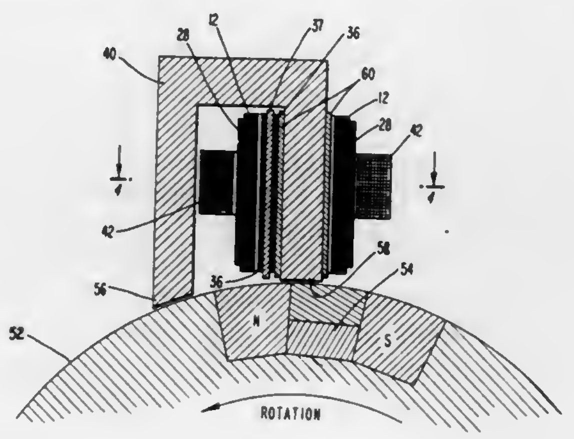


1. An electronic circuit for an ignition coil electrically connected to the positive terminal of the battery, a circuit breaker connected in series with the ignition coil and positive battery terminal, a capacitor connected in parallel with said circuit breaker, a series circuit including a first resistor connected in series with a parallel connected rectifying diode and calibrating first Zener diode, said series circuit connected in parallel with said capacitor, an optical coupler comprising a light emitting means for emitting light and a light receiving means for receiving the emitted light from the light emitting means, said light emitting means connected in series with a second resistor, said serially connected light emitting means and second resistor connected in parallel with said parallel connected rectifying diode and calibrating Zener diode combination, a transistor having a base, emitter, and a collector, said light receiving means connected to the base of said transistor, said transistor emitter connected to a ground, and said transistor collector connected to the positive terminal of the battery, and a third resistor connected in series with a second Zener diode, said serially connected third resistor and second Zener diode connected in parallel with the emitter and collector terminals of the transistor.

4,194,482
SELF GENERATING IGNITION SYSTEM

Robert V. Jackson, Los Angeles, Calif., assignor to McCulloch Corporation, Md.

Filed May 23, 1978, Ser. No. 908,720
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 CC **15 Claims**



1. A magneto ignition system for use with an internal combustion engine, comprising:

a first core,

a first winding mounted on said first core across which a primary voltage is generated responsive to flux in said first core,

switching means connected across said first winding for completing a circuit through said first winding,

a secondary high voltage winding mounted on said first core for generating a voltage output for said ignition system,

a second core positioned next adjacent and spaced from said first core,

a second winding mounted on said second core,

a rotor having a permanent magnet for producing varying flux through said first and second cores to induce voltages across the respective first winding and second winding,

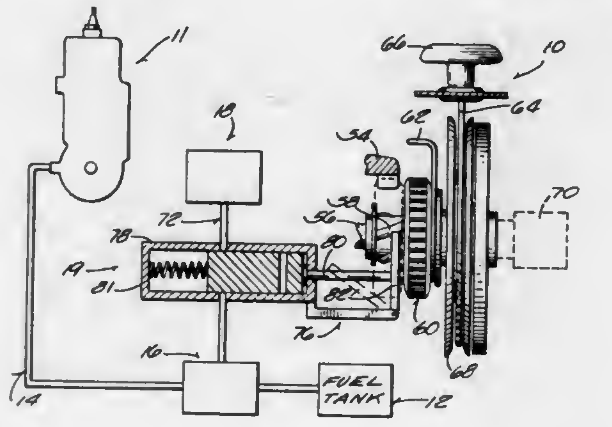
means responsive to the voltage generated in said second winding for interrupting the flow of current through said circuit means, and

means responsive to said varying flux through said first core for simultaneously generating (i) a reverse bias voltage in series with said voltage responsive means applied across said switching means and (ii) a forward bias voltage applied across said switching means in synchronism with said primary voltage to increase the rate of interruption of current therethrough.

4,194,483
AUTOMATIC FUEL PRIMING SYSTEM

Richard M. McChesney, Waukegan, and Robert K. Turner, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 21, 1977, Ser. No. 835,417
Int. Cl.² F02M *1/16*
U.S. Cl. 123—187.5 R **14 Claims**

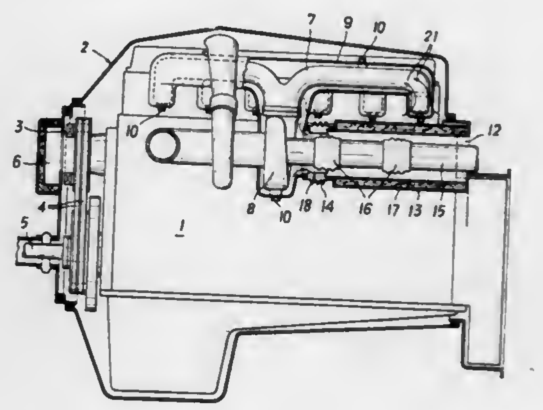


1. An engine comprising a combustion chamber, a source of pulsating pressure, a fuel source, a starter mechanism, fuel conduit means connected in communication with said fuel source for introducing fuel into said combustion chamber, fuel pumping means connected in communication with said fuel conduit means and operable for pumping fuel through said fuel conduit means in response to said pulsating pressure, pulse conduit means connecting said fuel pumping means in communication with said source of pulsating pressure, valve means connected in communication with said pulse conduit means for controlling the admission of said pulsation pressure to said fuel pumping means, and means for selectively operating said valve means when said starter mechanism is activated.

4,194,484
INTERNAL COMBUSTION ENGINE HAVING A NOISE SUPPRESSING ENCAPSULATION

Karl Kirchweger; Heinz Fachbach; Gerhard Thien, and Josef Greier, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Dec. 6, 1977, Ser. No. 858,030
Claims priority, application Austria, Dec. 10, 1976, 9171/76
Int. Cl.² F02B *77/00;* F01P *1/02*
U.S. Cl. 123—195 C **8 Claims**



1. An internal combustion engine having an exhaust system, a noise-suppressing encapsulation and a blower for ventilation of said encapsulation, comprising: cooling air ducts being formed within the encapsulation by means of partitions through which the cooling air flows in two partial streams, one of said cooling air ducts forming a first partial air stream enclosing and cooling the engine, the other cooling air duct being imperviously divided from the first, and forming a second partial air stream enclosing and cooling the parts of the exhaust system arranged within the encapsulation including the exhaust pipe and the exhaust manifold all of said exhaust system parts being surrounded by a jacket spaced away from the exhaust pipes, said second partial air stream flowing through a space formed between said parts of the exhaust system and said jacket, the jacket being secured to the engine leaving gaps in the vicinity of the securing points for the entry of the cooling air, said jacket being made of sheet metal and simultaneously serving as a partition for the separation of said two partial air streams, and said jacket leading the air stream within it separated from the other air stream out of the encapsulation.

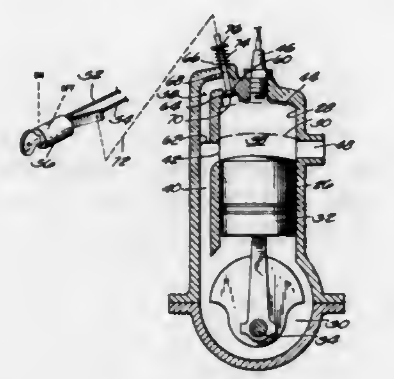
4,194,485
THROTTLING PASSAGEWAY TO DECREASE COAST-DOWN TIME OF LAWN MOWER ENGINES

Donald K. Stephenson, Sussex, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 27, 1978, Ser. No. 928,554
Int. Cl.² F02B *77/08*
U.S. Cl. 123—198 DC **7 Claims**

1. A lawn mower comprising a frame, a rotatable cutter blade supported on said frame, an internal combustion engine supported on said frame and including an engine block having a cylinder, a piston mounted inside said cylinder for reciproca-

tive movement between top dead center and bottom dead center positions and cooperating with said cylinder to form a combustion chamber, and an exhaust port in said engine block for exhausting gases from said combustion chamber, said piston closing said exhaust port during movement from the bottom dead center position toward the top dead center position, a spark plug mounted on said engine block and having electrodes communicating with said combustion chamber, an electrical ignition circuit for supplying ignition current to said spark plug, a switch connected in said ignition circuit and movable between an engine operating position to permit flow of ignition current to said spark plug and an engine shutoff position to interrupt flow of ignition current to said spark plug, and means for reducing the coast-down time of said engine including means defining a flow passage having a discharge port and an inlet port opening into said combustion chamber, the ratio of the volume swept by said piston (cubic inches), during movement from closure of said exhaust port to the top dead center position, to the minimum cross sectional flow area of said flow passage (square inches) being about 320 to about 480 inches, a valve disposed in said flow passage for movement between a closed position to prevent flow through said flow passage and an open position to permit flow through said flow passage, and means connecting said switch to said valve for moving said valve to the open position in response to movement of said switch from the engine operating position to the engine shutoff position and for moving said valve to the closed position in response to movement of said switch from the engine shutoff position to the engine operating position.



4,194,486
IGNITION MEANS FOR ROTARY PISTON ENGINES

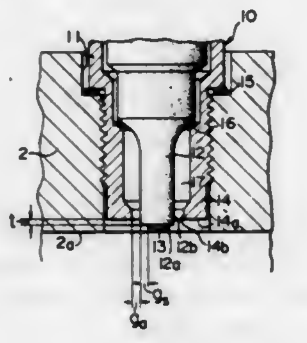
Haruhiko Satow; Tadakazu Ueda, both of Hiroshima, and Ikuo Ogasawara, Nagoya, all of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, and NGK Spark Plug Co., Ltd., Nagoya, both of Japan

Filed Feb. 14, 1978, Ser. No. 877,732

Claims priority, application Japan, Feb. 15, 1977, 52/17825[U]; Feb. 15, 1977, 52/17826[U]

Int. Cl.² F02B *53/12*

U.S. Cl. 123—210 **3 Claims**



1. Rotary piston engine comprising a casing which includes a rotor housing having opposite sides and an inner wall surface of trochoidal configuration and a pair of side housings secured to the opposite sides of the rotor housing and having inner wall surfaces which define a rotor cavity together with the inner wall surface of the rotor housing, a substantially polygonal rotor disposed in said rotor cavity for rotation with apex portions in sliding contact with the trochoidal inner wall surface of the rotor housing, ignition means including bore means formed in the inner wall surface of the casing and ignition plug means disposed in said bore means, said ignition plug means being of surface gap and air gap discharge type having a discharge end constituted by inner and outer electrodes spaced apart from each other through a surface gap discharge distance defined by a surface of an insulative sleeve encircling the inner electrode and an air gap discharge distance defined between the insulative sleeve and the outer electrode, said surface gap discharge distance being not less than 0.6 mm and not greater than 1.3 mm, said air gap discharge distance being not less than 0.7 mm and not greater than 1.4 mm, said surface gap discharge distance being not greater than said air gap discharge distance, the outer electrode having a tip end axially retreated with respect to the surface of the insulative sleeve by a distance between 0.3–1.0 mm, and said ignition plug means being located with the discharge end disposed in proximity to the inner wall surface of the casing.

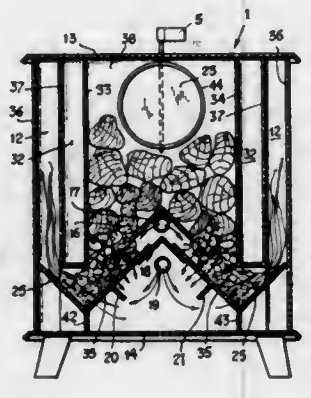
4,194,487
DOWNDRAFT WOODBURNING STOVE

John Y. Cadwallader, Sycamoore La., West Arlington, Vt. 05250, and Edward J. Frasier, 307 Elm St., Bennington, Vt. 05201

Filed Aug. 2, 1976, Ser. No. 711,065

Int. Cl.² F24B *7/04*

U.S. Cl. 126—61 **4 Claims**



1. A downdraft stove comprising a stove body within which are one or more slanting grates with means for supporting same in said body and also within which are internal members of one or more walls extending upwards from a point above the lowest point of said slanting grates so as to form a space between said members and grates with at least one air inlet nozzle below said grates, one or more air inlet nozzles above said grates and longitudinal elements above said nozzles to provide a clear passageway for combustion air whereby progressively burning coals descend to said space and whereby all smoke, air and gases pass through said space insuring their complete ignition.

4,194,488
HOME HEATING SYSTEM

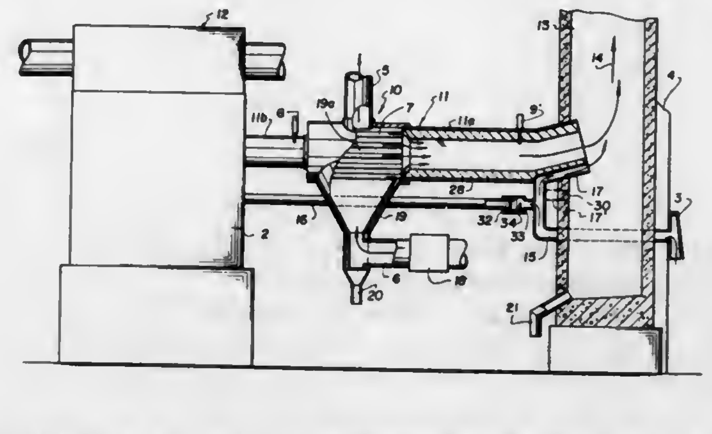
Leslie Bellaff, River Edge, N.J., assignor to William W. Weaver, Va.

Filed Sep. 27, 1978, Ser. No. 946,188

Int. Cl.² F24H *3/00;* **F24B** *7/00*

U.S. Cl. 126—112 **10 Claims**

1. In a house heating system having a furnace with a combustion chamber for burning fuel and creating heat, a chimney with a draft therein, an improvement comprising: an exhaust flue connected between the combustion chamber and the chimney for venting heated exhaust products from the furnace; a heat reclaimer connected into said exhaust flue between the combustion chamber and the chimney for reclaiming heat from the heated exhaust product; a first uninsulated flue portion of said exhaust flue connected between the combustion chamber and said heat reclaimer; a second insulated flue portion of said exhaust flue connected between said heat reclaimer and the chimney; a combustion air line connected to the combustion chamber; an outside air line connected between the outside of the house and said combustion air line to supply outside air to the combustion chamber; an outside air return line connected between the junction of said combustion air and outside air line, and the chimney; and a flow sensing and regulating means associated with said combustion air and balancing air lines for providing a flow of outside air to the combustion chamber when fuel is burned therein and for providing a flow of air in said balancing air line with substantially no air flow in said combustion air line when fuel is not burned within the combustion chamber; said heat reclaimer comprising a housing, an exhaust passage through said housing for the passage of exhaust from said exhaust flue, a cool medium passage in said housing, a cool medium inlet line connected to said housing for inletting cool medium from the house, a warm medium outlet line connected to said housing for warm medium coming from said heat reclaimer, and a liquid drain at the bottom of said housing communicating with said exhaust passage for draining condensed liquids from the exhaust passage.



4,194,489
COMBINATIONAL FIREPLACE UNIT

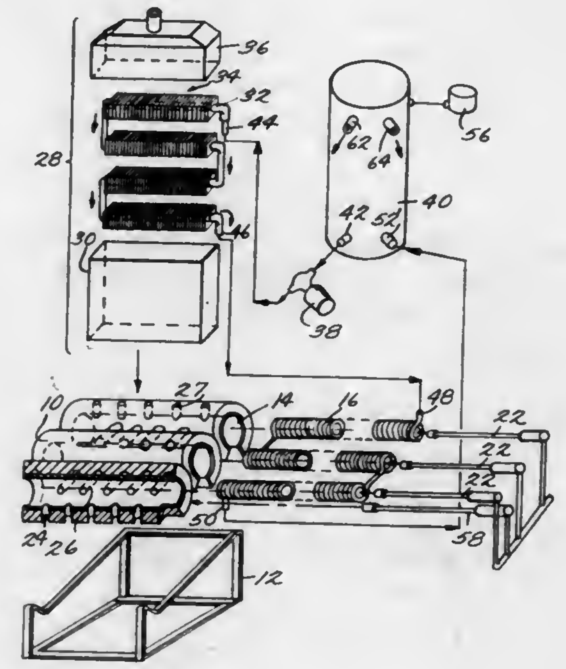
Samuel J. Swain, 824 Dixie St., Carrollton, Ga. 30117

Continuation-in-part of Ser. No. 635,422, Nov. 26, 1975, Pat. No. 4,061,133. This application Nov. 16, 1977, Ser. No. 852,083

The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.

Int. Cl.² F24D *3/08*

U.S. Cl. 126—127 **17 Claims**



1. A combinational fireplace, fluid heating system comprising:

a plurality of log-shaped members having means defining a hollowed center portion and having means for transferring air from below said members to said center portion thereof, at least one of said members having aperture means extending from said center portion to the outside of said member proximate the top thereof;

means for connecting said center portions of adjacent members;

means for supporting said plurality of members;

spiral shaped tubing extending within said hollowed center portion and substantially throughout the length of said plurality of members, for conducting fluid;

first fuel burning means extending along the longitudinal axis defined by said spiral tubing within said plurality of membeers, for heating said fluid passing through said spiral tubing; and

means for preheating said fluid using the exhausted energy from said first burning means.

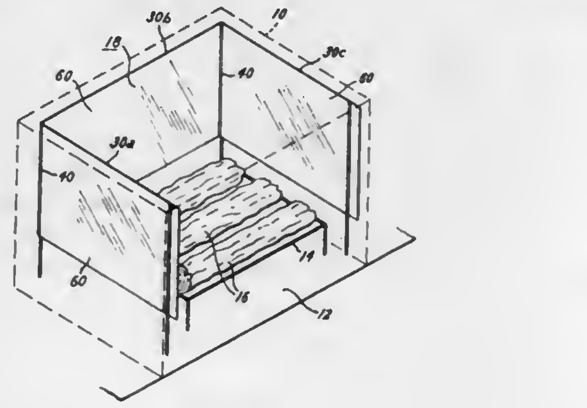
4,194,490
FIREPLACE THERMAL REFLECTOR APPARATUS

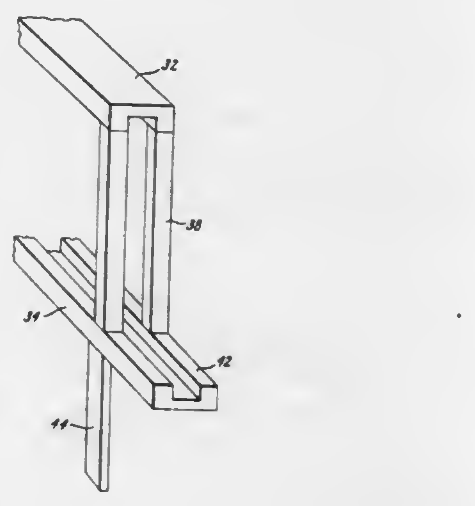
James J. Crnkovic, 70 Elmwood Ave., Glenolden, Pa. 19036

Filed Aug. 8, 1977, Ser. No. 822,902

Int. Cl.² F24B *1/18;* **F24C** *15/22*

U.S. Cl. 126—141 **2 Claims**





1. A free standing fireplace reflector apparatus for reflecting radiant heat energy into the room in which the fireplace is located, comprising:

a rear frame, including a pair of legs, receiving a first reflector panel; and

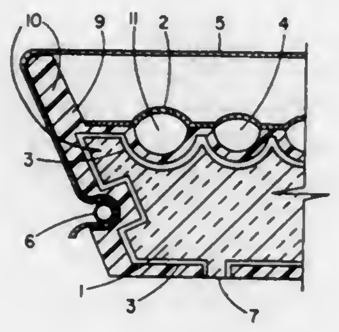
a pair of side frames, pivotally connected to said rear frame so that the apparatus may be adjusted to fit into fireplaces having different side angles, each of said side frames having a leg connected thereto at the end opposite from said pivot; said frames receiving respectively a second and third reflector panel; each of said side frames and said rear frame including:

an upper horizontal grooved member and a lower horizontal grooved member receiving and slidably engaging one of said panels in said grooves; and

a pair of vertical members connected to their respective upper and lower grooved members at the opposite ends thereof, wherein each of said pairs of vertical members includes one vertical member having a groove therein receiving an end of a reflector panel when said panel is positioned in said frame and one vertical member having a slot therein permitting said panel to pass therethrough so that said panel is properly positioned to slide between the upper and lower grooved members into the vertical grooved member in each of said frames.

4,194,491
SOLAR COLLECTOR PANEL

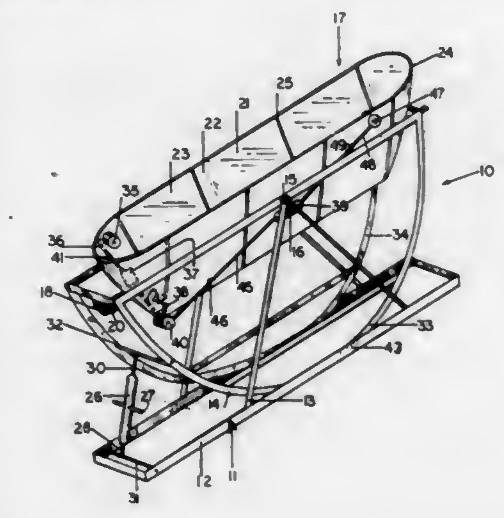
Eugene J. Randall, 603 Chambers Dr., Huntsville, Ala. 35801
Filed May 17, 1977, Ser. No. 797,668
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—417 **13 Claims**



1. A solar collector panel comprising:
a. a base made of structural foam having a top with concave channels therein and having a manifold concave channel along the perimeter of said concave channels and connecting said concave channels, said base having an entry access hole connected to said manifold concave channel and having an exit access hole connected from said manifold, concave channel; and
b. A thermoplastic lens bonded to the top of the base adjacent on each side of said channels and spanning the concave channels of the base, whereby the channels form transfer passages which carry a liquid media which absorbs solar energy as it flows through the passages, said thermoplastic lens disposed for expansion or contraction in response to expansion or contraction of said liquid media and having an ovular configuration which will enhance incident angle absorption responsive to said expansion.

4,194,492
SOLAR HEATING APPARATUS

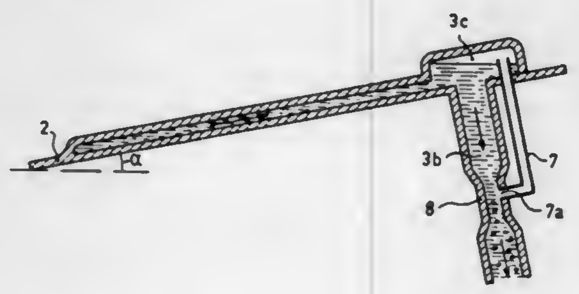
Gerald J. Tremblay, 7015 Leighton Way, Orlando, Fla. 32807
Filed Oct. 3, 1977, Ser. No. 838,666
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—425 **14 Claims**



1. A solar fluid heater comprising in combination:
a frame having a base and a movable portion;
solar collector means for collecting and concentrating solar energy, said solar collector means being movably attached to said frame;
inclination adjustment means for adjusting said solar collector means for different inclinations of the earth relative to the sun, said inclination adjustment means being attached between said frame base and said movable portion;
solar tracking means for moving said solar collector means on said frame during daylight hours responsive to the displacement of a liquid from one reservoir mounted on said collector means whereby said solar collector means may be directed to follow the sun; and
flow control means for controlling the gravity flow of liquid from said one liquid reservoir to adjust the rate of movement of said solar collector means.

4,194,493
SOLAR COLLECTOR

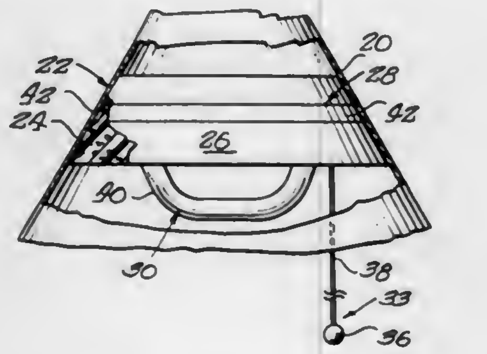
Johan C. De Grijs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 2, 1978, Ser. No. 882,576
Claims priority, application Netherlands, Apr. 7, 1977, 7703837
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—442 **3 Claims**



1. A solar collector comprising a heat exchanger which has a duct for transferring heat obtained from incident solar radiation during operation to a liquid heat transport medium conducted through the duct and containing a gas, the solar collector being arranged during operation at an angle relative to the horizontal, said liquid heat transport medium duct thereby including an upper portion constituting a collecting reservoir for gas released from the liquid heat transport medium, a constriction formed in the liquid heat transport medium duct downstream from the collecting reservoir and having a cross-sectional flow area smaller than that of the collecting reservoir, and a gas exhaust duct in open communication between the collecting reservoir and said constriction.

4,194,494
FIREPLACE PLUG

Cyril Wagner, 856 Rosemary Ter., Deerfield, Ill. 60015
Filed Nov. 4, 1977, Ser. No. 848,764
Int. Cl.^{2} F23J *13/08*
U.S. Cl. 126—319 **4 Claims**

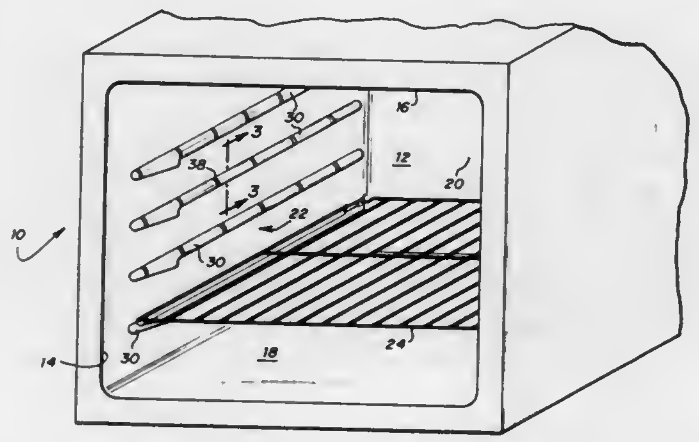


1. A fireplace plug for closing the metallic throat of a fireplace during periods of nonuse comprising:

a plug shape foam body having a wall complementary to the shape of the fireplace throat for mating with said throat;
a substantially continuous magnetic strip extending along said wall for magnetic attraction to the metallic throat and for securing the wall to the throat;
a handle depending from the underside of said body; and
a depending indicator means hanging downwardly from the body for indicating that the fireplace plug has closed the throat of the fireplace.

4,194,495
OVEN LINER AND RACK DESIGN

Richard M. Scherer, Oxford, Miss., assignor to Chambers Corporation, Oxford, Miss.
Filed Nov. 11, 1977, Ser. No. 850,652
Int. Cl.^{2} F24C *15/16*
U.S. Cl. 126—339 **3 Claims**

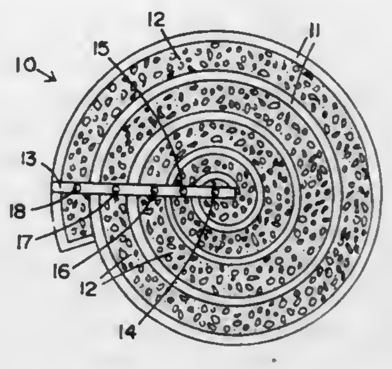


1. For use in an oven liner of the type having canted ribs formed in the side walls thereof, the ribs being formed by relatively shallow smoothly converging upper and lower canted surfaces, an improved oven rack dimensioned to be slidably supported on the upper surface of the ribs and stabilized thereon comprising:
a mesh defined by rigidly connected substantially coplanar structural members having two substantially parallel sides;
guiding means for slidably guiding said rack into and out of the oven cavity, said means disposed substantially perpendicular to the mesh along two parallel sides thereof and including;
a supporting surface extending at an angle to the mesh for supporting the rack on the upper surface of the ribs;
a stabilizing surface disposed substantially perpendicular to the mesh, normally clear of the ribs but capable of abutting with adjacent ribs to prevent excessive lateral displacement of the rack; and
an arresting surface depending at an angle from the mesh, disposed beneath and normally clear of the adjacent rib for preventing excessive vertical displacement of the rack.

4,194,496
SOLAR HEAT STORAGE SYSTEMS

Norman G. Carlson, 2431 S. Shore Blvd., White Bear Lake, Minn. 55110
Filed Mar. 30, 1978, Ser. No. 891,732
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—430 **7 Claims**

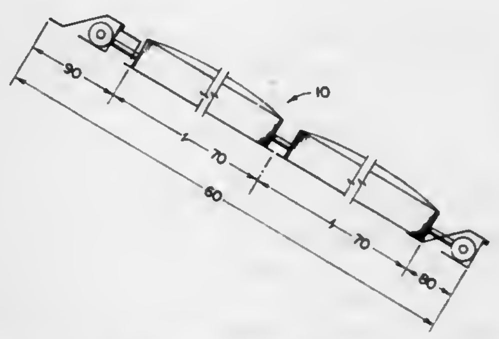
1. The method of storing solar heat including:
forming a solar storage unit having a spiral passage containing heat storage means located in the spiral passage;
forming air ducts at radially spaced distances along said spiral passage and supplying heated air through at least one of said air ducts to said heat storage means removing the air through another of said air ducts in said spiral passage.
2. A solar storage unit comprising:
a top member, and a bottom member having a central portion and an outer portion;
a wall connecting said top member to said bottom member, said wall having one end located in the central portion between said top member and said bottom member, said wall spiraling outward to thereby produce a spiral passage from said central portion to said outer portion, heat storage means located in said spiral passage;



a set of air ducts radially spaced from the central portion of said solar storage unit to said outer portion of said storage unit to thereby provide air passages to said spiral chamber intermediate the central portion and the outer portion of said solar storage unit.

4,194,497
METHOD AND APPARATUS FOR INSTALLING SOLAR COLLECTOR PANELS

Eben J. Gramer, 5441 E. Nassau Cir., Englewood, Colo. 80110, and William E. Kugler, 2989 S. Detroit Way, Denver, Colo. 80210
Filed May 24, 1978, Ser. No. 908,962
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—432 **9 Claims**



1. A method for installing solar collector panels as part of the roof of a building, said roof having vertical roof joists spaced at predetermined distances, said method comprising the steps of:
scribing chalk lines on the roof, the chalk lines being located to define the center of each vertical roof joist and to define the upper and lower horizontal ends of the panels,
affixing a lower support bracket aligned along the lower chalk line through the roof to the joists,
affixing an upper support bracket aligned along the upper chalk line through the roof to the joists,
affixing a center rail between the upper and lower support brackets along each vertical chalk line through the roof to the joists, and
installing a plurality of collector panels between the vertical rails, the collector panels engaging the upper and lower support brackets.
7. An apparatus for installing solar collector panels as part of the roofing material on the roof of a building, said roof being formed from tar paper covered plywood over support joists spaced at predetermined distances, said apparatus comprising:
upper and lower angle mounting brackets, each of said brackets having first and second edges, each of said brackets further having an outwardly extending lip along said first edge with a first plurality of affixation holes formed along a line near said second edge of said bracket, the aforesaid affixation holes being spaced to align with the

center of said support joists of said building and with a second plurality of affixation holes formed along said line, the aforesaid holes being spaced to align with the centerline between said joists, said first edge of said upper bracket having a plurality of insertion holes formed in a line near said tip, said plurality of insertion holes being spaced to align with the center line between said joists,

means engaging said first plurality of affixation holes of said mounting brackets for firmly attaching said upper and lower brackets through said tar paper and through said plywood to said support joists, each of said brackets being mounted horizontally on said roof with said first edge extending upwardly and with said lip oriented downwardly,

means for attaching said upper and lower brackets through said second plurality of affixation holes to said plywood,

upper and lower manifolds, each of said manifolds having a cylindrical main body portion with ports extending from opposing ends of said main body and with one or a plurality of outwardly extending ports disposed along a longitudinal line extending the length of said main body, the aforesaid ports of said upper manifold being oriented to engage through said insertion holes when said upper manifold is placed on said upper bracket, said ports of said lower manifold being oriented to align over said second plurality of affixation holes when said lower manifold is placed on said lower bracket,

upper and lower manifold cover plates for mounting over said manifolds and said brackets, each of said cover plates having a first surface parallel with said roof containing a first plurality of affixation holes, the aforesaid affixation holes being spaced to align with the center of said support joists, and a second plurality of affixation holes oriented on the center lines between said joists, each of said cover plates further having a second surface angularly extending upwardly over said manifolds, the second surface of said lower cover plate having a plurality of formed insertion holes, the aforesaid insertion holes being oriented to coincide with said centerlines between said support joists and receptive of outwardly extending ports from said lower manifold, each of said cover plates having a third surface extending from said second surface and parallel to said first surface over said manifolds, said third surface being integral with an inwardly directed channel, said channel being capable of engaging said lip of said mounting bracket, said inwardly directed channel terminating in a downwardly extending flange,

means engaging said first plurality of affixation holes of said cover plates for firmly attaching said upper and lower plates through said tar paper and said plywood to said support joists, each of said cover plates being mounted over said manifolds with said channels engaging said lips of said mounting brackets,

means engaging said second plurality of affixation holes of said cover plates for attaching said upper and lower plates through said tar paper to said roof,

a plurality of vertical rails, each of said vertical rails being mounted through the roof and to the joists between the upper and lower mounting brackets on said roof,

means for coupling one or a plurality of said panels to said upper and lower manifolds between said vertical rails, and

means for connecting said ports on the opposing ends to adjacent manifolds in fluid communication.

8. A modular manifold system for interconnecting a plurality of solar collector panels together in fluid communication with a fluid source on the roof of a building, said roof being supported by roof joists spaced at a predetermined distance, each of said solar collector panels having upper and lower fluid ports and means for interconnecting a plurality of said solar collector panels together in a plurality vertical rows, each of said rows containing a number of stacked solar collector panels, said manifold system comprising:

a plurality of lower manifolds, each of said lower manifolds having a plurality of connectors spaced at said predetermined distance from each other, each of said connectors being capable of engaging in fluid communication the lowermost solar collector panel in each of said rows, each of said lower manifolds further having side connectors axially extending at opposing longitudinal ends,

means receptive of the side connectors of adjacent lower manifolds for coupling adjacent lower manifolds together in fluid communication with each other,

means for mounting said lower manifolds on said roof to said joists said mounting means including a cover plate with a plurality of openings therein, through each of which extends one of said plurality of connectors, the connectors of said mounted lower manifold being oriented to coincide with the centerlines between said joists,

a plurality of upper manifolds, each of said upper manifolds having a plurality of connectors spaced at a predetermined distance from each other, each of the aforesaid connectors being capable of engaging in fluid communication the uppermost solar collector panel in each of said rows, each of said upper manifolds further having side connectors axially extending at opposing longitudinal ends,

means receptive of the side connectors of adjacent upper manifolds for coupling said adjacent upper manifolds together in fluid communication with each other,

means for mounting said upper manifolds on said roof to said joists, said mounting means having a plurality of openings therein through each of which extends one of said plurality of connectors, the connectors of said mounted upper manifold being oriented to coincide with said centerlines, and

means for interconnecting said upper and lower manifolds in fluid communication with said fluid source.

4,194,498

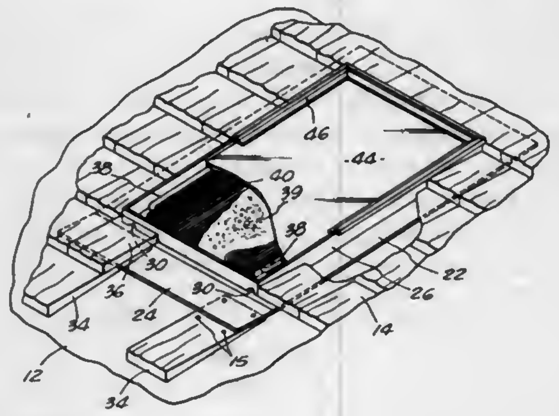
SOLAR COLLECTOR CELL AND ROOF FLASHING ASSEMBLY AND METHOD OF CONSTRUCTING A ROOF WITH SUCH AN ASSEMBLY

Myron D. Mayerovitch, Yorba Linda, Calif., assignor to Frank Mayer, Yorba Linda, Calif.

Filed Jul. 13, 1978, Ser. No. 924,135

Int. Cl.^{2} F24J *3/02*

U.S. Cl. 126—450 **4 Claims**



1. A method for constructing an inclined shake roof that incorporates a solar collector structure and may be functionally deployed at the time of roof construction and also may be camouflaged for later functional deployment with a minimum of roof modification; the method comprising the steps of:

a. installing an improved solar collector cell container and roof flashing assembly of the type having a plurality of contiguous substantially vertical walls forming a container for receiving an apparatus for heating a liquid by sunlight incident upon such a roof; and having the improvement comprising:

a roof flashing having a substantially planar base portion underlying said vertical walls and extending perpendicular to and beyond said walls external to said container to form a substantially contiguous flange along the external perimeter of said container;

said roof flashing also having a substantially planar ramp portion integral with said flange along at least a portion thereof and extending from said flange at an obtuse angle with respect to said base portion, a substantially straight crease line being formed along the junction between said ramp portion and the flange portion from which it extends;

said roof flashing being adapted to receive a plurality of roof shakes overlying and substantially covering said ramp portion and said flange to be secured thereto whereby said roof flashing may be hidden from view and said ramp may be bent down toward and in forced engagement with said roof;

b. filling the container of said assembly with a temporary filler material that substantially occupies the entire enclosed volumne of said container; and

c. installing roof shakes on said flashing base, and on said filler material.

3. In a solar collector cell and roof flashing assembly of the type adapted for installation on an inclined shake roof of a building structure and having a plurality of contiguous substantially vertical walls forming a container for receiving an apparatus for heating a liquid by sunlight incident upon such a roof, the improvement comprising:

a roof flashing having a substantially planar base portion underlying said vertical walls and extending perpendicular to and beyond said walls external to said container to form a substantially continuous flange along the external perimeter of said container;

said roof flashing also having a substantially planar ramp portion integral with said flange along at least a portion thereof and extending from said flange at an obtuse angle with respect to said base portion, a substantially straight crease line being formed along the junction between said ramp portion and the flange portion from which it extends;

said roof flashing being adapted to receive a plurality of roof shakes overlying and substantially covering said ramp portion and said flange for being secured thereto on such a roof, whereby said roof flashing may be hidden from view and said ramp may be bent down toward, and in forced engagement with, said roof.

4,194,499

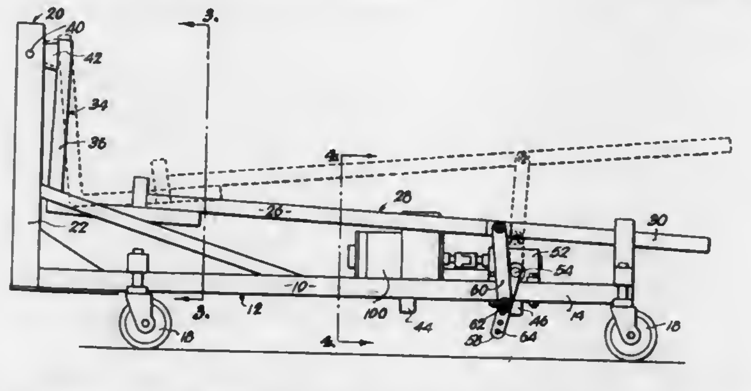
BED FOR STIMULATING CIRCULATION

Thomas L. Donnelly, Jr., 2304 Norwood, Independence, Mo. 64052

Filed Mar. 5, 1979, Ser. No. 17,125

Int. Cl.^{2} A61H *1/00*

U.S. Cl. 128—24 R **12 Claims**



1. Therapeutic apparatus for treatment of patients requiring stimulation of blood circulation, said apparatus including:

an elongated, normally horizontal frame adapted to support bedding upon which the patient lies during treatment, with the patient's head at one end of the frame;

means at said end pivotally supporting the frame for swinging movement about a horizontal axis disposed transversely of the frame at an elevation substantially the same as that of said head of the patient on the bedding; and

power means coupled with the frame remote from said end for swinging the frame about said axis to a first, longitudinally inclined position sloping upwardly toward the opposite end of the frame or to a second, longitudinally inclined position sloping downwardly toward said opposite end.

4,194,500

GRAVITY ORTHOPEDIC DEVICE

Anthony J. Grimaldi, 2901 S. Bayshore Dr., Apt. 16, Miami, Fla. 33133

Filed Jul. 15, 1977, Ser. No. 816,010

Int. Cl.^{2} A61H *1/02*

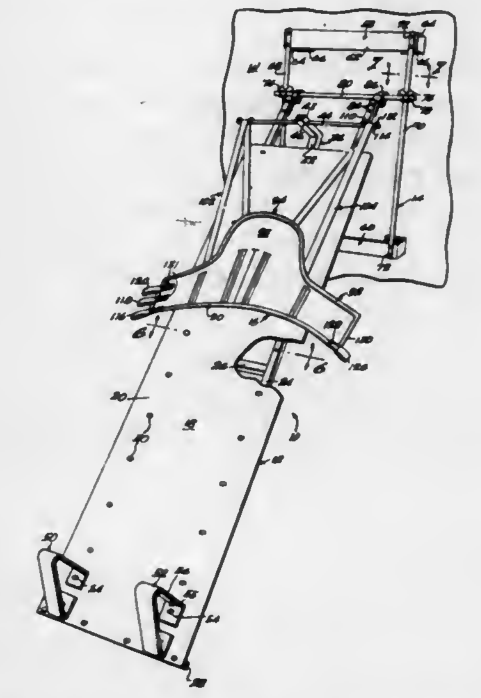
U.S. Cl. 128—75 **18 Claims**

1. A gravity orthopedic device comprising,

a board sized to accommodate persons with a relatively wide range of heights, the board providing a support surface for an orthopedic patient having a top end, opposed side edges and a bottom end for engagement against a bottom support surface such as a floor,

a bracket assembly for attachment to an already existing permanent type support structure, such as a wall, at a predetermined height above the bottom support surface, the bracket assembly includes a vertically adjustable transverse rod having opposed end portions and means for selectively supporting said transverse rod within a range of predetermined height above the bottom support surface,

the means to selectively support comprises a pair of spaced apart vertical, parallel slide rods, a collar for sliding engagement on each of said slide rods, attachment means connecting said opposed ends to the respective collars and set screw means in each of said collars to provide for fixed engagement with the respective slide rods,



the means to selectively support includes top and bottom transverse plates connecting between respective top and bottom ends of said vertical slide rods,

means for engaging the mid-section of the patient's body, and

connecting means between said means to engage and said top end in a manner so as to suspend the patient's body along said patient's support surface above the bottom support surface.

4,194,501

FIRST AID SPLINT FOR CERVICAL SPINE INJURIES

Russell A. Watt, 6393 Jadeite Ave., Alta Loma, Calif. 91701

Filed Jul. 31, 1978, Ser. No. 929,388

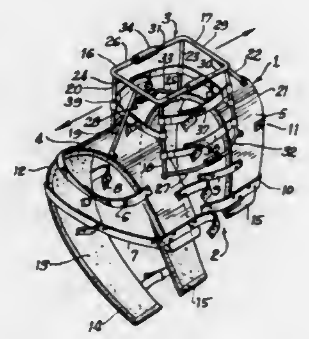
Int. Cl.^{2} A61H *1/02*

U.S. Cl. 128—75 **6 Claims**

1. A device for immobilizing the head and cervical spine of an injury victim which comprises:

a body harness having first and second half sections, means for releasibly connecting said half sections together,

said body harness being adopted to embrace the thoracic region, the shoulders, the sides and the back of a victim,
a head cage comprising a first and second pair of elongated rigid members and first and second U shaped members,
said first pair being mounted on said first half section in spaced relationship such that said first pair of rigid members projects substantially upward around the head of a victim when said harness is worn by a victim,
said second pair being mounted on said second half section in spaced relation such that said second pair of rigid members project substantially upward around the head of a victim when said harness is worn by a victim,
said first U shaped member being mounted horizontally on said first pair of rigid members,

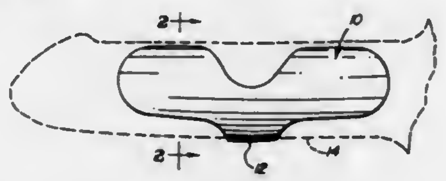


said second U shaped member being mounted horizontally on said second pair of rigid members,
said U shaped members being sized and positioned such that they extend completely around the head of a victim when said harness is worn by a victim,
means for releasibly connecting the ends of the U shaped members together,
said head cage further comprising an inflatable air pillow shaped like an open toroid insertable within said first and second pair of rigid members such that when said harness is worn said pillow is positioned between said rigid members and the neck of a victim and when inflated said pillow immobilizes the head of a victim within the confines of said rigid members by encircling the neck of a victim.

4,194,502

EXTERNALLY APPLIED SUPPORT FOR A PENIS

John F. Eckels, 981 Deltona Blvd., Deltona, Fla. 32725
Filed Mar. 27, 1979, Ser. No. 24,310
Int. Cl.^{2} A61F *5/00*
U.S. Cl. 128—79 **15 Claims**



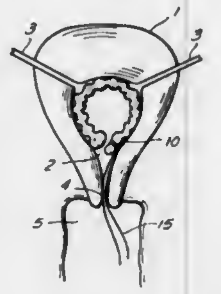
1. An externally applied support for a penis comprising:
a. a curved base formed as a section of a resilient tubular member having a first radius equal to the radius of said penis, said base having first and second sides;
b. a resilient first side member coupled to the first side of said base, formed as a second section of said tubular member and having first and second laterally symmetrical brace elements helically sweeping above and away from said base and adapted to partially support and encircle a first side of said penis; and
c. a resilient second side member coupled to the second side of said base, formed as a third section of said tubular member and having first and second laterally symmetrical brace elements helically sweeping above and away from said base and adapted to partially encircle and support a second side of said penis, the second side of said penis being diammetrically opposed to the first side.

4,194,503

INTRA-UTERINE CONTRACEPTIVE DEVICE

Laszlo K. Csatary, 1913 Windsor Rd., Alexandria, Va. 22307
Filed Nov. 28, 1977, Ser. No. 855,414
Int. Cl.^{2} A61F *5/46*
U.S. Cl. 128—130 **6 Claims**

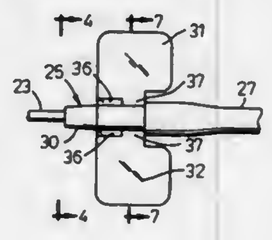
1. An intra-uterine contraceptive device comprising an inner base ring made from a resilient material and formed into a generally circular shape having a free end formed into a bulbous shape, and a jelly-like material formed on said inner ring into a plurality of bead-like protrusions over the length of said inner ring.

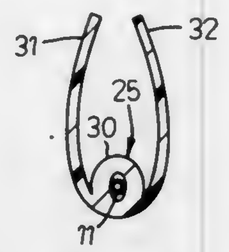


4,194,504

WINGED CATHETER PLACEMENT ASSEMBLY

Jack L. Harms, Mundelein, and Charles H. Seberg, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 12, 1978, Ser. No. 950,941
Int. Cl.^{2} A61M *5/00*
U.S. Cl. 128—214.4 **8 Claims**



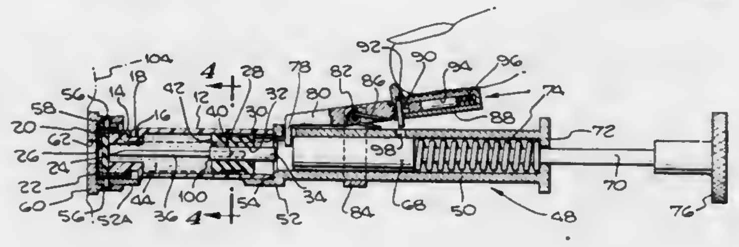


1. In an intravenous catheter assembly including
(1) a catheter unit comprising:
(a) a flexible plastic catheter having a distally tapered distal end,
(b) a winged catheter insertion means comprising a resilient tubular body having a lumen therethrough and a pair of wings having substantially uniform thickness extending oppositely therefrom, the proximal end of said catheter in communication with said lumen of said catheter insertion means via its distal end,
(c) a flexible tubing having its distal end in communication with said lumen of said catheter insertion means via its proximal end,
(d) a tube hub having a lumen therethrough, the proximal end of said flexible tubing in communication with said lumen of said tube hub via its distal end, and
(2) a needle inserted through said catheter, winged catheter insertion means, flexible tubing and tube hub, said needle having a sharpened distal end extending beyond said distal end of said catheter and a proximal end attached to a needle hub; the improvement which comprises:
an area of reduced thickness on each of said wings along a portion of the width thereof substantially adjacent to said tubular body and providing improved flexibility to said wings, the remainder of said wing width portion providing an unreduced thickness portion, said lumen of said winged catheter insertion means having a diameter opposite the unreduced portions of said wings adjacent said tubular body predetermined to only capture said needle within said tubular body by the distortion of said lumen of said winged catheter insertions means when said wings are simultaneously held in a substantially vertical position.

4,194,505

CONTAINERIZED HYPODERMIC MODULE

William L. Schmitz, Hemet, Calif., assignor to Vac-O-Cast, Inc., Hemt, Calif.
Filed Sep. 15, 1978, Ser. No. 942,533
Int. Cl.^{2} A61M *5/20*
U.S. Cl. 128—218 D **21 Claims**



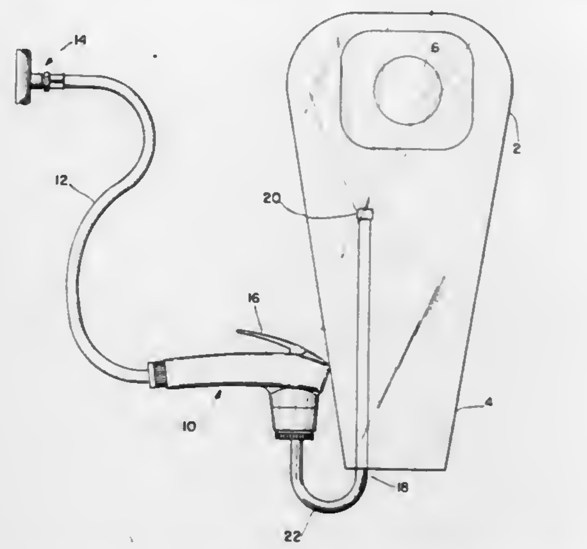
1. A self-contained hypodermic syringe dosage module for insertion into an injector comprising:
a cylindrical barrel having open forward and rearward ends, the forward end of said barrel having a pierceable seal across it,
the rearward end portion of said barrel having a piston in sliding sealing relation to the interior wall thereof,
said barrel, between said seal and said piston, defining a medicament chamber,
said piston having a longitudinal bore therethrough,
a tissue piercing needle unit having a longitudinal lumen therein from the forward end and terminating short of the rear end thereof, said needle unit having a liquid inlet port in flow communication with said lumen rearwardly of its forward end,
said needle shank portion being supported in the longitudinal bore of said piston with the inlet port of said shank portion located in and sealed by the wall of said bore,
said needle, forwardly of said shank portion, being freely supported in said medicament chamber by said piston,
said needle initially being movable longitudinally relative to said piston to pierce the seal at the forward end of said barrel and to expose said shank inlet port forwardly of said piston to permit flow of liquid medicament in said barrel into said port and said lumen.

4,194,506

KIT FOR AN OSTOMATE

Paul A. Voorhies, 1517 Gardenia Dr., Metairie, La. 70005
Filed Nov. 22, 1977, Ser. No. 853,919
Int. Cl.^{2} A61F *5/44*
U.S. Cl. 128—283 **5 Claims**

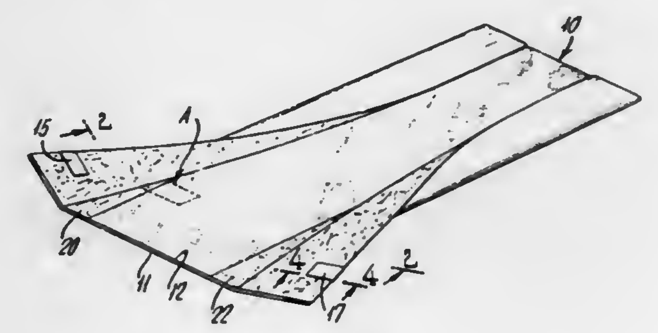
1. An improved kit for an ostomate, comprising, in combination:
A. a drainable stoma bag appliance of the type consisting of a flexible, vertically elongated, member having a closed top end, which includes an orifice with a sealing ring means for sealing connection of said orifice about the stoma of the ostomate, and a bottom end, which is downwardly open and adapted for a closure means to close said open end; and
B. a directional water flushing appliance, comprising a hand-operated positive shut-off valve member which is connected, at an inlet end, to a means for supplying water pressure, and at an outlet end to a directional water outlet tube; wherein,
C. said water outlet tube consists of a rigid J-shaped tubular conduit, the short leg thereof ending at a proximate end which is attached to said valve outlet and the long leg thereof being substantially equal to the vertical distance between the top and bottom ends of said stoma bag appliance and ending at a distal end which includes at least one spray orifice adapted to issue a directional water spray therefrom, in a direction substantially colinear to said long leg, whereby the ostomate is enabled to insert said long leg upwardly within the downwardly open end of said stoma bag appliance and manipulate a directional flushing action to selective portions of the interior of said stoma bag.



4,194,507

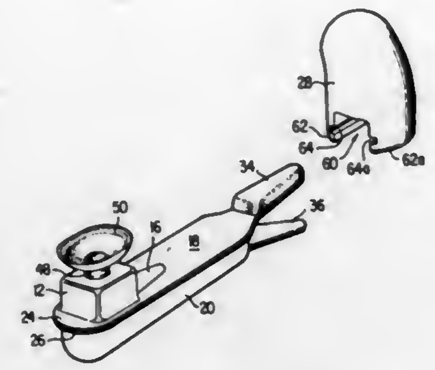
DISPOSABLE DIAPER INNER FACING

Irving S. Ness, Princeton Borough, and Michael R. Fechillas, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.
Continuation of Ser. No. 663,323, Mar. 31, 1976, Pat. No. 4,085,754. This application Oct. 17, 1977, Ser. No. 842,759
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.^{2} A61F *13/16*
U.S. Cl. 128—287 **6 Claims**



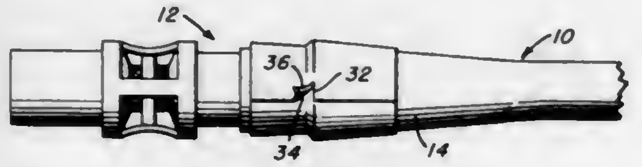
1. In a disposable diaper of the type having a fluid impervious outer facing, a fluid pervious inner facing, an absorbent core between said facings and adhesive tabs for fastening the diaper around the wearer thereof, an improved inner facing comprising a porous nonwoven fabric having at least one entire surface thereof being treated with a water insoluble adhesive release agent whereby that surface is capable of being a releasable surface for said adhesive tape tabs, said porous nonwoven fabric having a multiplicity of openings therethrough, which are sufficiently large to allow fluid to pass through after said fabric has been treated with a water insoluble adhesive release agent, causing said treated fabric to be pervious to fluid.

4,194,508
EXTERNAL FEMALE URINARY DRAINAGE DEVICE
Kenneth E. Anderson, P.O. Box 656, Moline, Ill. 61265
Filed Mar. 28, 1978, Ser. No. 891,095
Int. Cl.^{2} A61F *5/44*
U.S. Cl. 128—295 20 Claims



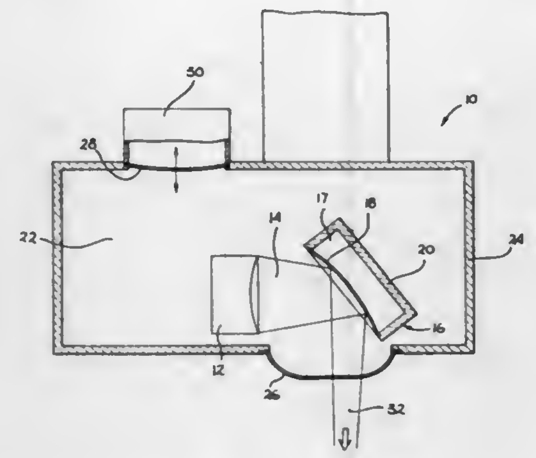
1. A urine collecting device for female subjects, as for incontinent females; comprising a flexible cup-shaped cap for external application in sealing disposition around the urethral orifice, a substantially closed housing which is elongate from forward to rearward ends to be disposed along the uro-genital and labial folds region preventing leakage of urine therealong, conduit means, means supporting said conduit means at the forward end of the housing and permitting movement relative thereto for comfortable fitting and adjustment, said conduit means being in liquid communication with the interior of said cap and the forward end of said housing for directing discharged urine into said housing; the cap, conduit means and housing being relatively small sized and shaped for enclosure of the cap and conduit means and at least partial enclosure of the housing for containment and support thereof by the labial folds in said region; and a discharge connection at the rearward end of the housing for discharge of collected urine therefrom.

4,194,509
PRECONNECTED CATHETER DRAINAGE SYSTEM
Keldon S. Pickering, Basking Ridge, and Keith T. Ferguson, Scotch Plains, both of N.J., assignors to C. R. Bard, Inc., Murray Hill, N.J.
Filed Apr. 11, 1978, Ser. No. 895,459
Int. Cl.^{2} A61M *27/00*
U.S. Cl. 128—350 R 8 Claims



1. For use in a preconnected assembly for drainage and the like, a catheter, a drainage tube adaptor, said catheter having a proximal end, said adaptor being preconnected to said proximal end of said catheter, said drainage tube adaptor including a projecting end portion telescopically and frictionally received within the catheter through the proximal end of the catheter, a juncture defined between the proximal end of the catheter and the adaptor end portion, and means for maintaining the connection of said drainage tube adaptor to said catheter, said means comprises a heat shrinkable material encircling the juncture and extending about both the end portion of the adaptor and the proximal end of the catheter to each side of the juncture to both effect a sealing thereof and provide a visual indication of a disconnection effort.

4,194,510
ULTRASONIC FOCUSING SYSTEM
Andrew P. Proudian, Chatsworth, Calif., assignor to Second Foundation, Inc., Woodland Hills, Calif.
Filed Jun. 15, 1978, Ser. No. 915,783
Int. Cl.^{2} A61B *10/00*
U.S. Cl. 128—660 25 Claims



1. An ultrasonic focusing system comprising:

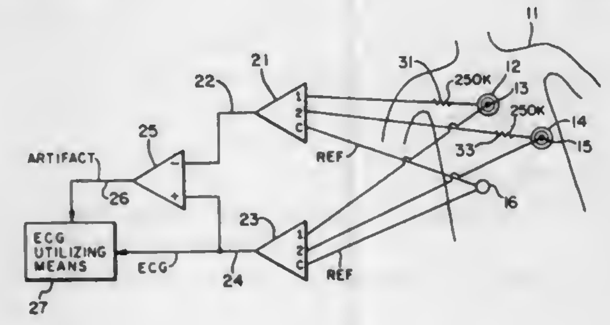
a housing substantially filled with a liquid media;

an ultrasonic transducer disposed within said housing for emitting ultrasonic waves and detecting echoes of said ultrasonic waves;

reflector means disposed within said housing so as to intercept and redirect said ultrasonic waves and said echoes, said reflector means comprised of a flexible acoustically reflective membrane; and

control means disposed within said housing and coupled to said reflector means via said liquid media, whereby said control means periodically deforms said reflective membrane such that said ultrasonic waves are reflected to converge at a point a preselected distance beyond said reflector means, and such that said echoes are reflected so as to be substantially in focus at said ultrasonic transducer substantially throughout the range of distances of interest over which the echoes are detected.

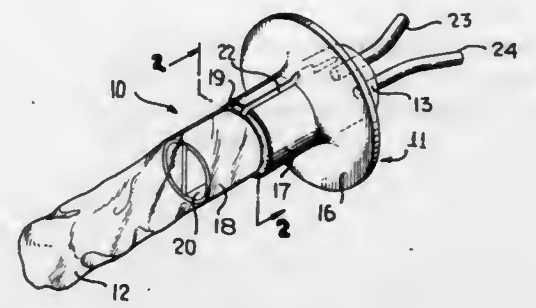
4,194,511
DETECTING CAPACITIVELY COUPLED ECG BASELINE SHIFT
Charles L. Feldman, Sudbury, Mass., assignor to Electronics for Medicine, Inc., Pleasantville, N.Y.
Filed Aug. 18, 1978, Ser. No. 934,883
Int. Cl.^{2} A61B *5/04*
U.S. Cl. 128—696 10 Claims



1. In apparatus for providing an ECG signal having first and second multielement electrode means each having elements closely spaced but insulatedly separated for connection to respective surface portions of a patient with the ECG potential between said elements being negligible, the improvement comprising,

resistive means in series with at least one of said elements of sufficiently high resistance to significantly unbalance capacitively coupled baseline shift artifact.

4,194,512
PROBE FOR NYSTAGMUS TESTING
Thomas M. Foti, 10937 Deborah Dr., Potomac, Md. 20854
Filed Jun. 8, 1977, Ser. No. 804,732
Int. Cl.^{2} A61B *5/00*
U.S. Cl. 128—742 10 Claims



1. Apparatus for transferring thermal energy from a test fluid to an ear canal of a patient comprising:

a expansible receptacle for said test fluid, said receptacle being sufficiently small to be inserted into said ear canal and sufficiently flexible to be expanded to conform to at least a portion of said ear canal upon internal pressurization of said receptacle by said test fluid;

wherein said receptacle is made from plastic of membrane-like thickness to permit efficient transfer of thermal enery therethrough from test fluid in said receptacle;

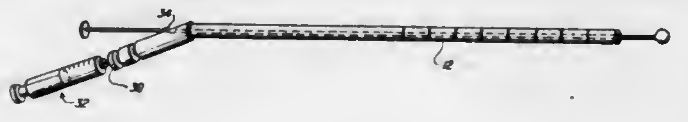
an inlet passage for delivering test fluid under pressure into said receptacle;

an outlet passage for conducting test fluid under pressure out of said receptacle;

an ear mold secured to said receptacle, said ear mold having a forward section insertable into said ear canal, said mold adapted to be partially inserted into said ear canal with said forward section and said receptacle extending further into said ear canal, said receptacle attached to said forward section in sealing relationship and

vent passage means defined in the forward section of said ear mold externally of said receptacle for exhausting air from around the exterior of said receptacle in the area of said forward section to ambient.

4,194,513
ANTENATAL CELL EXTRACTING DEVICE AND METHOD
Samuel A. Rhine, Concord, Mass.; Joseph F. Thompson, and Catherine G. Palmer, both of Indianapolis, Ind., assignors to Indiana University Foundation, Bloomington, Ind.
Filed May 5, 1977, Ser. No. 793,914
Int. Cl.^{2} A61B *10/00*
U.S. Cl. 128—750 7 Claims



1. A sterile antenatal cell extracting device comprising:

flexible, plastic tube means having a proximal end and a distal end adapted for cervical insertion into a pregnant female;

flexible closure means comprising a flexible sleeve covering the proximal end of the tube means, with the plunger means passing through the sleeve;

plunger means provided within the lumen of the tube means and passing through the closure means at the proximal end of the tube means being movable with respect to the tube means;

valve means in association with the distal ends of the plunger means and of the tube means, movement of the plunger means with respect to the tube means causing the valve means to open and close the distal end of the tube means; and

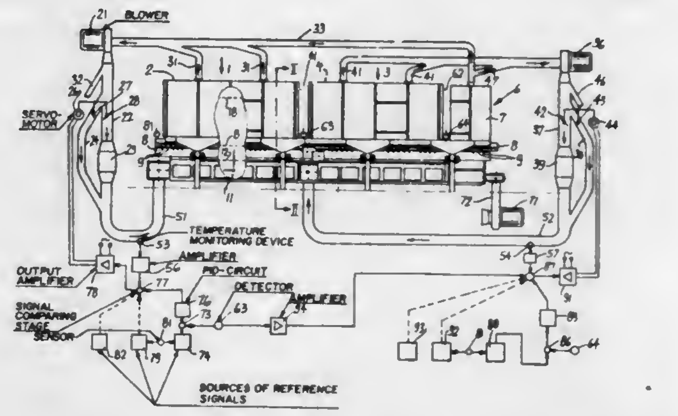
means for causing fluid to flow selectively into and out of the tube means when the valve means is open,

whereby sterile antenatal cells may be extracted from the pregnant female.

4,194,514
REMOVAL OF RADIOACTIVE LEAD AND POLONIUM FROM TOBACCO
Ramsey G. Campbell, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Filed Sep. 27, 1976, Ser. No. 726,388
Int. Cl.^{2} A24B *15/02, 15/04*
U.S. Cl. 131—17 R 39 Claims

1. A process for reducing the radioactive lead and polonium content of tobacco which comprises treating uncured tobacco leaves with an aqueous solution containing about 0.01% to about 1.0% by weight of an acid.

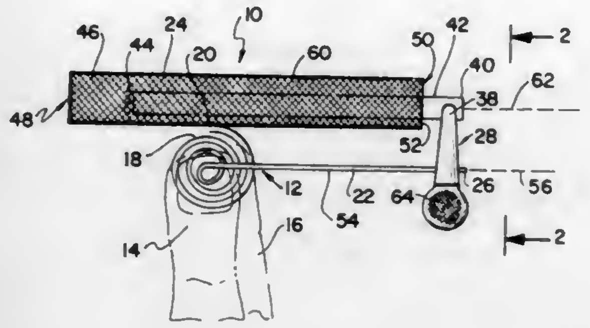
4,194,515
METHOD AND APPARATUS FOR CONDITIONING BURLEY OR GREENLEAF TOBACCO
Gerhard Graalmann, Wohltorf; Reinhard Hohm, Pinneberg; Peter Schwarz, Rellingen, and Wilfried Muhsil, Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany
Filed Sep. 22, 1977, Ser. No. 835,489
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647438
Int. Cl.^{2} A24B *3/10, 3/12*
U.S. Cl. 131—135 10 Claims



1. A method of reducing the moisture content of tobacco, especially burley or greenleaf tobacco, comprising the steps of transporting a continuous stream of moist tobacco along a predetermined path; subjecting successive increments of said stream to a first adjustable heating action in a first portion of said path; measuring the temperature of tobacco downstream of said first portion; comparing the measured temperature with a first reference value; adjusting said first heating action when the measured temperature deviates from said reference value; subjecting successive increments of said stream to a second adjustable heating action in a second portion of said path downstream of said first portion; measuring the temperature of tobacco downstream of said second portion; comparing the measured temperature of twice heated tobacco with a second reference value; adjusting said second heating action when the measured temperature of twice heated tobacco deviates from said second reference value; and adjusting said second heating action when the measured temperature of once heated tobacco deviates from said first reference value so as to intensify said second heating action when the measured temperature of once heated tobacco is less than that denoted by said first reference value and vice versa.

4,194,516
CIGARETTE HOLDER

Jerome Morgan, 149 S. 15th Ave., Maywood, Ill. 60153
Filed Oct. 20, 1977, Ser. No. 843,864
Int. Cl.^{2} A24F *13/16*
U.S. Cl. 131—174 **7 Claims**



1. A cigarette holder comprising an elongated cylindrical tube of screening, one end of said tube having an open mouth portion, the other end of said tube having a circular cap of screening fixedly secured thereto, a wire-like element, one end of said wire-like element having a flat helical shape, said flat helical shape having a portion thereof fixedly secured to the exterior surface of said tube at a location intermediate the ends thereof, a portion of the length of said wire-like element adjacent the other end of said wire-like element extending parallel to the longitudinal axis of said tube and spaced parallelly and outwardly from the exterior surface of said tube, said portion of said wire-like element substantially residing in a plane defined by said flat helical shape, a pair of arms, each of said pair of arms pivotably secured to said other end of said wire-like element, means to bias one end of each of said arms toward one another, the other end of said each of said arms extending outwardly from said other end of said wire-like element, the longitudinal axis of each of said pair of arms extending perpendicular to said other end of said wire-like element.

4,194,517
FILTER FOR CIGARETTES, CIGARILLOS OR PIPES

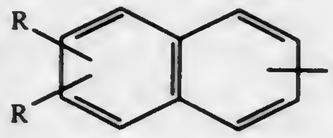
Horst Borowski, Hamburg, Fed. Rep. of Germany, assignor to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany
Filed Sep. 28, 1977, Ser. No. 837,559
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2645036
Int. Cl.^{2} A24B *15/02*
U.S. Cl. 131—261 R **17 Claims**

1. An improved fibrous filter for removing harmful chemicals from tobacco smoke,

containing at least one compound selected from the group consisting of

$$(RO)\,PO\,(OH)_2 \qquad (I)$$

$$(RO)_2\,PO\,(OH) \qquad (II)$$

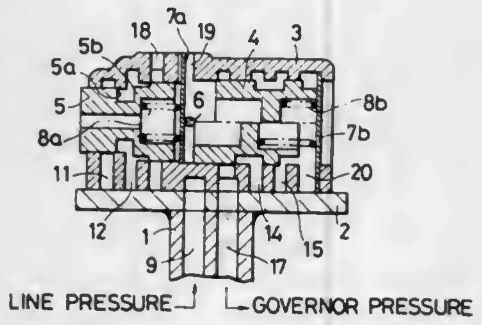


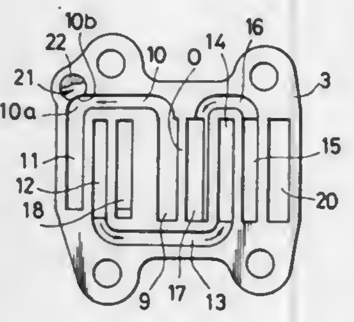
(III)

wherein R represents a straight-chain, branched, or cyclic aliphatic radical, said compound being insoluble in water and miscible with an organic solvent.

4,194,518
GOVERNOR HAVING ABILITY OF REMOVING DUST FROM WORKING FLUID IN AUTOMATIC TRANSMISSION

Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo; Kunio Ohtsuka, Yokohama, and Takahiro Yamamori, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Japan
Continuation-in-part of Ser. No. 947,127, Sep. 29, 1978, abandoned. This application Apr. 3, 1979, Ser. No. 26,580
Claims priority, application Japan, Sep. 13, 1978, 53-112644
Int. Cl.^{2} G05D *13/08*
U.S. Cl. 137—15 **6 Claims**

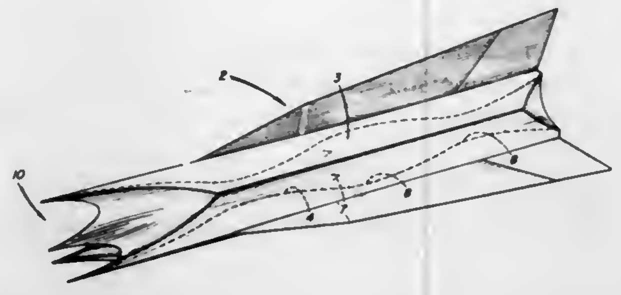




6. The method of removing dust contained in a working fluid circulating through a hydraulic control system of an automotive automatic transmission, comprising the step of using a governor by forming within a rotatable housing thereof a chamber which communicates with a fluid pressure passage for the working fluid so as to collect dust contained in the working fluid.

4,194,519
HYPERSONIC MODULAR INLET

Clifford B. Baker, and James L. Keirsey, both of Rockville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 18, 1964, Ser. No. 412,267
Int. Cl.^{2} F02K *11/00*
U.S. Cl. 137—15.1 **8 Claims**



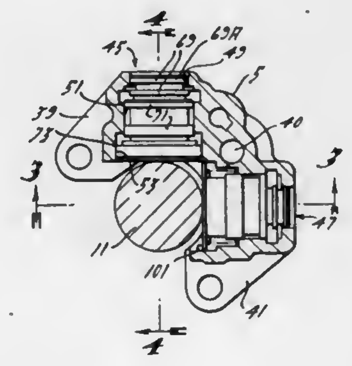
1. In an aerial vehicle, a hypersonic modular inlet comprising

an innerbody having a plurality of equally spaced inlet ducts extending longitudinally thereof, said inlets ducts having interior compression surfaces intersecting along the upstream end of said innerbody and forming hyperbolically curved leading edges between said inlet ducts, and

a cowling surrounding said innerbody and enclosing said inlet ducts.

4,194,520
TWO STAGE HYDRAULIC GOVERNOR

Uno Kuusik, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 24, 1978, Ser. No. 899,686
Int. Cl.^{2} G05D *13/36*
U.S. Cl. 137—54 **2 Claims**



1. A speed hydraulic governor for controlling the pressure at which fluid is directed from a fluid pressure source to actuating elements of an automatic transmission having an output shaft, the governor comprising:

A. housing means adapted to be carried for rotation with said output shaft and radially removable therefrom;

B. a primary spool valve member having a plurality of speed lands and mounted for reciprocal movement within a primary bore formed in said housing means along a first axis normal to the axis of said output shaft, operative under the influence of centrifugal force during rotation of said shaft to direct fluid from said pressure source to said actuating elements at a governed pressure level varying directly with the rotational speed of said shaft, and including a fluid pressure responsive portion;

C. a secondary spool valve member having a plurality of spaced lands and mounted for reciprocal movement within a secondary bore formed in said housing along a second axis normal to said first axis and to the axis of said shaft and operative under the influence of centrifugal force during rotation of said shaft to direct fluid from said pressure source to said primary valve pressure responsive portion at a pressure level varying directly with the rotational speed of said shaft;

D. means for resiliently biasing said secondary valve member to a position wherein said directing of fluid is not effected until a predetermined rotational speed is attained; and

E. vent means formed on each of said primary and secondary spool valve members for effecting the venting of fluid radially outwardly from said output shaft under the influence of centrifugal force during a portion of said reciprocal movement.

4,194,521
FIRE PROTECTIVE STRUCTURE

Fred L. Banta, Edgewood, Ky., assignor to Burndy Corporation, Norwalk, Conn.
Filed Jul. 20, 1977, Ser. No. 817,402
Int. Cl.^{2} E04B *1/94;* **F16L** *3/02;* **H01B** *7/34*
U.S. Cl. 137—67 **13 Claims**

1. A ventilating structure for permitting free air circulation therethrough under ordinary ambient temperature conditions and for shielding objects on one side thereof from smoke, heat and flame originating on the opposite side thereof under extraordinary ambient temperature conditions, wherein:

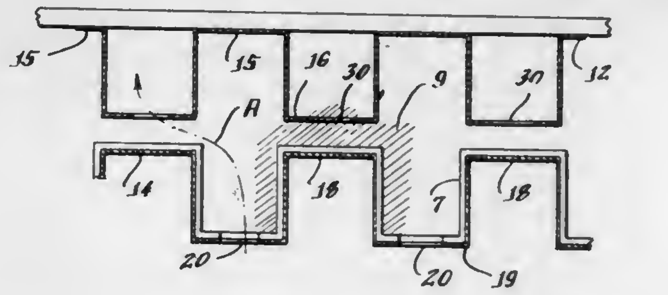
said structure has an overall flat plate-like configuration characterized by an overall surface area significantly greater than the cross-section area thereof;

said structure comprising a pair of wall portions each defining a surface of said plate-like structure;

each of said wall portions having a plurality of closely spaced ventilating openings therethrough distributed substantially uniformly over the surface of said wall portions and dimensioned such that the total area of said openings is a significant portion of the overall area defined by each such wall portion, while the area of any one opening is substantially less than a significant portion of the overall area of such wall portion;

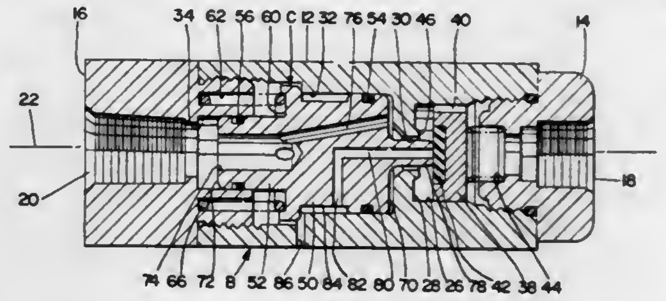
said wall portions being closely positioned in substantially parallel spaced-apart relationship so that the ventilating openings in one of said wall portions are not in alignment with the ventilating openings in the other of said wall portions, for defining a space therebetween through which air may flow freely in through the ventilating openings in said one wall portion and out through the openings in the said other wall portion under ordinary ambient temperature conditions; and

intumescent material positioned in the space between said wall portions distributed substantially uniformly throughout the length and width of said space and located so as to permit free flow of air through said structure under ordinary ambient temperature conditions, for obstructing the flow of air through said structure upon said material being activated into intumescent char under extraordinary ambient temperature conditions.



4,194,522
AIR PRESSURE REGULATOR

Richard L. Lucas, Owosso, and John J. Allen, Corunna, both of Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed Apr. 3, 1978, Ser. No. 893,194
Int. Cl.^{2} F16K *31/12;* **G05D** *11/00*
U.S. Cl. 137—116.5 **2 Claims**



1. A pressure regulator comprising: a housing having inlet and outlet ports along a common axis, a first bore in said housing adjacent said inlet port, a second bore in said housing adjacent said outlet port, said second bore being stepped to define a large diameter second bore portion facing said first bore and a small diameter second bore portion facing said oulet port, a central housing passage connecting said bores and having a seat facing said first bore, a movable valve member in said first bore having flow passages therearound for flow of fluid therepast from said inlet port through said housing passage, first biasing means for normally biasing said valve mem-

ber toward said seat, a stepped piston positioned in said second bore and having a first piston end facing said housing passage and a second piston end facing said outlet port, piston passages through said piston between said first and second piston ends, a stem extending from said first piston end through said housing passage in radially-spaced relationship thereto, second biasing means for normally biasing said piston toward said inlet port for engaging said stem with said valve member and displacing said valve member away from said seat for flow of fluid from said inlet port to said outlet port around said valve member, through said housing passage and through said piston passages, said piston being responsive to a predetermined fluid pressure in said outlet port to move toward said outlet port for engaging said valve member with said seat to block fluid flow from said inlet port through said housing passage, axially-spaced seals between said piston and said large and small diameter second bore portions, a lateral housing exhaust passage in said housing communicating with said second bore between said seals, and a piston exhaust passage extending centrally through said stem and then laterally to open outwardly of said piston between said seals.

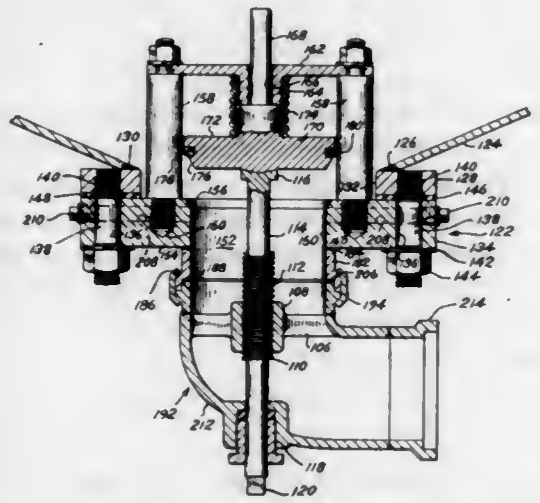
4,194,523
LOADING AND UNLOADING VALVES

Eugene Lubieniecki, Blue Island, Ill., assignor to North American Car Association, Chicago, Ill.

Filed Oct. 3, 1977, Ser. No. 838,639

Int. Cl.² F16K *1/02*

U.S. Cl. 137—238 **10 Claims**



1. A tank loading and unloading valve comprising:

flat flange means having a pair of substantially flat, planar surfaces on each side thereof,

mounting means for mounting one planar surface of said flange means adjacent an opening in the tank,

a chamber in said flange means, said chamber extending through said flange means and opening to the opposite surfaces of said flange means,

valve means removably mounted to said one of said planar surfaces, said valve means including plug means for movement into a first position in which said plug means normally closes said opening in said flange means at said one planar surface, and to a second position in which said plug means opens said opening, said valve means also including a valve stem extending from one side of said plug means and guide means for said plug means, said valve stem and guide means extending into the opening in the tank,

plate means for closing said opening at the other surface of said flange means when the tank is in transit,

adapter means comprising connector means for connecting a material handling conduit to said opening at said other surface and said chamber, said adapter means including biasing means operable from the side of said valve adjacent said other surface of said flange means for contacting said plug means on its side opposite said valve stem to bias said plug means to said second position when said adapter means is mounted adjacent said opening at said other surface in place of said plate means, and

mounting means for removably mounting said plate means when said valve is in transit and said adapter means in place of said plate means when the tank is to be loaded or unloaded adjacent the other surface of said flange means in covering relationship to said opening in said flange means at said other surface and said chamber.

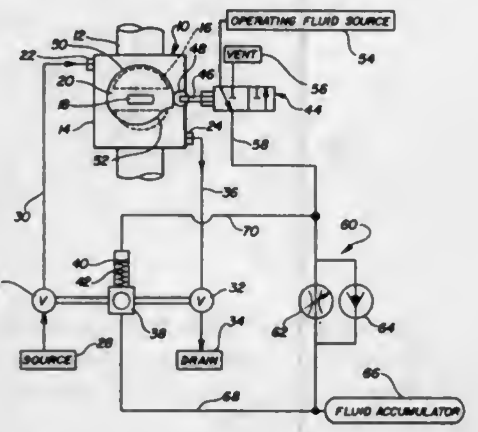
4,194,524
VALVE CHAMBER FLUSHING SYSTEM

Charles H. Wicke, Richmond, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed May 22, 1978, Ser. No. 908,413

Int. Cl.² F16K *31/163, 51/00*

U.S. Cl. 137—240 **10 Claims**



1. A system to flush the valve body of a lading carrying valve in a lading handling network which must have the valve chamber thereof flushed when the valve is moved between open and closed positions, comprising:

an auxiliary inlet and outlet to said valve body through which a flushing fluid can pass through said valve body;

a pair of flush valves each in separate fluid communication with said auxiliary inlet and said auxiliary outlet, one of said flush valves being in fluid communication with a source of flush fluid and the other of the flush valves being in fluid communication with a suitable drain;

a valve actuator operably connected to said flush valves to open and close them; and

a flush valve control means operably connected to said lading carrying valve and in fluid communication with said valve actuator, said flush valve control means being actuated by said lading carrying valve upon movement of said lading carrying valve between said open and closed positions in order to sequence said valve actuator to open said flush valves in order to pass a flush fluid from said source through said valve chamber to said drain for flushing said valve chamber and to close said flush valves after a predetermined period of time to stop flow of said flush fluid through said valve chamber.

4,194,525
FLOAT ARM OPERATED VALVE

Edmund E. Struckman, 46 Charles Henwood Ave., Southridge, and Harold S. Larsen, 27b Northcliffe Ave., Westville, both of Durban, Natal, South Africa

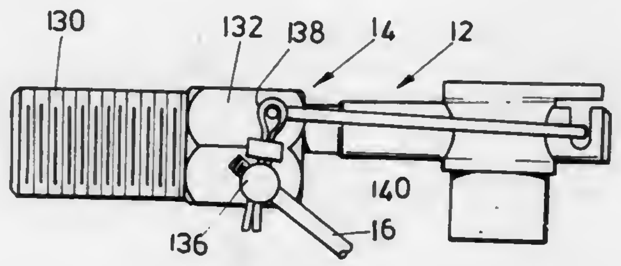
Filed Mar. 6, 1978, Ser. No. 883,946

Claims priority, application South Africa, Oct. 5, 1977, 77/5972

Int. Cl.² F16K *31/18, 33/00*

U.S. Cl. 137—438 **2 Claims**

1. A liquid level control valve including a piston member formed with a passage between an inlet and an outlet and extending from a body provided with means for connecting the passage to a liquid supply; a cylinder member slidable over the piston member between a first and a second position, the cylinder member being formed with a transverse perforation whereby liquid can flow along a flow path including the passage in the piston, the cylinder member and the perforation; means for obturating the flow path when the cylinder member is moved to the first position; a spindle journalled on the body for pivotal movement about a substantially horizontal axis; a lever arm transverse to and connected to the spindle at one end and connectable to a float at its other end so that the spindle will rotate in response to movement of the float on a body of liquid the level of which is to be controlled; at least one radial projection on the spindle; and a linkage pivotally connected between the radial projection and the cylinder member so that movement of the float causes the cylinder member to move between its first and second positions.



4,194,526
NOZZLE REGULATING DEVICE

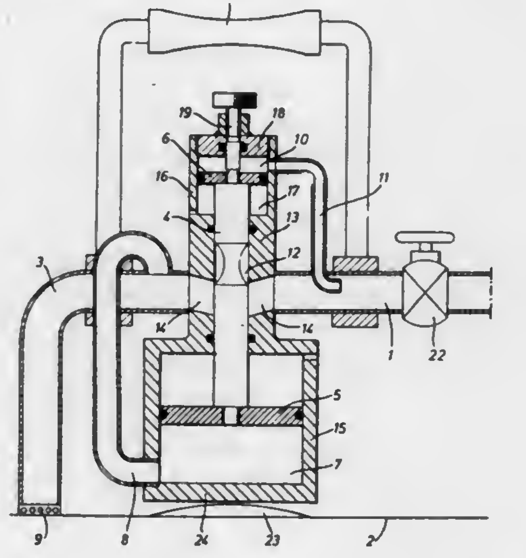
Thore Strömberg, Nordengatan 5, 602 36 Norrköping, Sweden

Filed Nov. 1, 1977, Ser. No. 847,693

Claims priority, application Sweden, Nov. 4, 1976, 76122670

Int. Cl.² G05D *9/04*

U.S. Cl. 137—498 **10 Claims**



1. A nozzle regulating device for automatically regulating the suction drawn by a suction hose at a nozzle having suction inlet means for drawing up fluid from a vessel, said nozzle regulating device comprising:

(a) a housing defining two cylinders with differently sized diameters and having openings located between said cylinders,

(b) said housing openings being interconnected to first and second pipe sections which connect to said suction inlet means and said suction hose, respectively,

(c) a valve stem encircled by a channel for interconnecting said housing openings and said stem being fitted to slide freely and be in sealing contact with a central bore in said housing,

(d) a servo piston disposed at each of the ends of said valve stem,

(e) one said piston having a considerably larger diameter than the other said piston,

(f) each said servo piston being fitted with a sliding seal in said cylinders which are co-axial with the valve stem,

(g) a first drive space located in the larger cylinder and on the side of the larger servo piston opposed to the valve stem,

(h) first pipe means for connecting the first drive space to said first pipe section which couples the suction inlet means to one of the housing openings,

(i) a second drive space located in the smaller cylinder and on the side of the smaller servo piston opposite the valve stem, and

(j) second pipe means for connecting the second drive space to said second pipe section which couples the suction hose to the other one of the housing openings,

(k) said servo piston being effective to cause the valve stem to slide within the housing bore and increase the opening area of the encircling channel within the housing openings in response to any change in pressure in the suction hose and first drive space on covering of the suction inlet means with said fluid in the vessel and reduce said opening area on clearing of fluid from said suction inlet means.

4,194,527
PRESSURE LIMITING VALVE

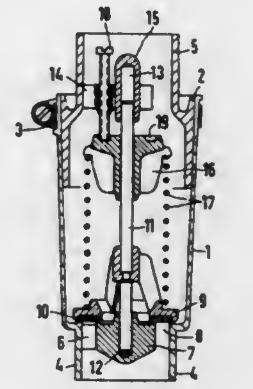
Siegfried Schönwald; Eberhard Breyer, both of Bad Neustadt, and Hans-Georg Trojahn, Saal, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1977, Ser. No. 852,592

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1976, 2654077

Int. Cl.² F16K *15/06*

U.S. Cl. 137—543 **3 Claims**



1. A pressure limiting valve comprising a valve housing having therein a passage opening; a valve disk for closing said passage opening; a rod shaped guide member attached to said valve disk; first and second means each having a guide passage therein attached to the valve housing for guiding the respective ends of said rod shaped guide member; an abutment disposed about said rod shaped guide member between and spaced from said first and second means for sliding motion thereon; a coil spring disposed between said abutment and said valve disk for holding said valve disk against said passage opening; a setting screw engaging said abutment for adjusting the position of said abutment to determine the operating pressure of the pressure limiting valve; and means causing said guide member and said abutment to be tilted relative to each other such that said guide member slides within said abutment with friction.

4,194,528
SPHERICAL VALVE SEAL PISTON DETECTING AND LOCKING ARRANGEMENT

James L. Kepler, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Apr. 17, 1978, Ser. No. 897,188

Int. Cl.² F16K *43/00*

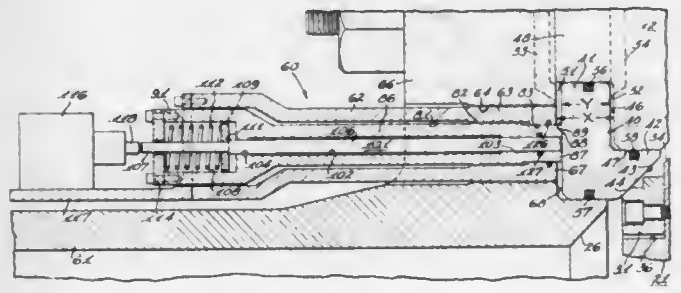
U.S. Cl. 137—554 **4 Claims**

1. A spherical valve including a housing having a fluid inlet and a fluid outlet, and provided with an annular groove surrounding said fluid inlet;

a rotor rotatably supported within said housing, said rotor having a fluid flow passage therein for selective alignment with the inlet and outlet of housing to permit fluid through the housing;

a first seal element on the rotor;

a second seal element movably carried by said housing within said annular groove and adapted to be selectively engaged with the first seal element on the rotor when the rotor is in a position wherein the fluid flow passage is not interconnecting the inlet and outlet of the housing, the engagement of said second seal element with said first seal element operating to block fluid flows, said second seal element being movably disposed within said annular groove and constructed and arranged to form a first fluid chamber on one side thereof, said first chamber when pressurized operating to move said second seal element out of sealing engagement with said first seal element, and a second fluid chamber on the opposite of said second seal element and operable when pressurized to effect movement of said second seal element into fluid sealing engagement with said first seal element;



means for supplying fluid under pressure to said first and said second chambers selectively;

a tubular locking member defining an axial bore movable into and out of positive engagement with said second seal element, said locking member when in engagement with said second seal element operating to positively lock said second seal element in sealing engagement with said first seal element; said locking member having an axial bore therethrough, said locking number having a pilot end portion and a threaded portion adjacent to and inwardly of the pilot end portion;

a threaded bore in said valve housing in communication with said second fluid chamber, said bore having a cylindrical guide portion adjacent the inner axial end of the said bore;

tool accepting means on the external end of said locking member to facilitate the manipulation of the said locking member into and out of locking engagement with said second seal element; and,

fluid sealing means operable between the cylindrical guide surface of said bore and the pilot end of said locking member.

4,194,529

CONTROL VALVE HAVING INTEGRAL VISUAL INDICATOR FOR FLUID SAFETY SYSTEMS

Melvin J. Hargraves, Lafayette, La., and Clifford M. Peters, Longview, Tex., assignors to W-K-M Wellhead Systems, Inc., Shreveport, La.

Continuation of Ser. No. 705,747, Jul. 15, 1976, Pat. No. 4,137,942. This application Sep. 21, 1978, Ser. No. 944,456

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.^{2} F16K *37/00*

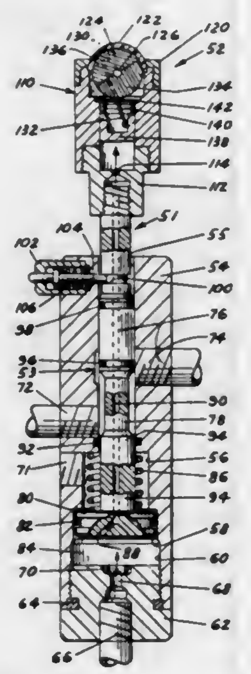
U.S. Cl. 137—557 **9 Claims**

1. In a control valve structure having a hollow housing, an elongate slide valve mounted in said housing for longitudinal movement therein, means urging the slide valve to a seated position thereof, manually accessible means on the slide valve located outwardly of the housing and adapted to be manually manipulated to displace the slide valve from its seated position, and port means in said housing for applying a sensed fluid pressure to said slide valve in a manner to maintain the slide valve displaced from its seated position when the sensed fluid pressure is sufficiently high to overcome said urging means, the improvement comprising:

visual indicator means mounted on said manually accessible means for movement between a first position to indicate a first operating condition and a second position to indicate a second operating condition;

means for biasing said visual indicator means to one of said first and second positions;

a passageway in said slide valve located and arranged to receive and apply pressurized fluid to said indicator means



under all conditions of operation when said slide valve is displaced from its seated position and said port means is exposed to fluid under pressure; and

pressure responsive means for maintaining said indicator means in the other of said first and second positions thereof whenever a predetermined high fluid pressure is applied at any time to said passageway, said indicator means moving to said one position thereof under the influence of said biasing means whenever the pressure applied to said passageway is below said predetermined high fluid pressure.

4,194,530

RESTRICTIVE VENT

Joseph V. Milo, Elizabeth, N.J., assignor to Universal Valve Co., Inc., Elizabeth, N.J.

Continuation of Ser. No. 673,991, Apr. 5, 1976, abandoned. This application May 30, 1978, Ser. No. 910,483

Int. Cl.^{2} F16K *45/02*

U.S. Cl. 137—587 **6 Claims**

1. In a vent fitting for use in the vent line from a flammable liquid storage tank, which vent line defines a circular vapor path of uniform diameter to lead flammable vapors from the tank to atmosphere, the fitting comprising

a hollow, cylindrical body including a sidewall section which defines a first hollow, cylindrical channel;

the sidewall section being provided with an orifice, the orifice communicating with the hollow channel,

the cross sectional area of the orifice being less than the cross sectional area of the circular vapor path;

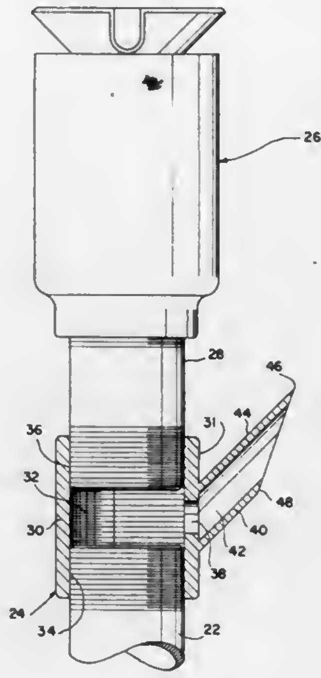
a vapor directing conduit angularly affixed to the sidewall section about the orifice,

the conduit defining a second interior channel, the second interior channel communicating with the first hollow, cylindrical channel through the orifice,

the conduit being affixed to the sidewall section at an angle of more than zero degrees and less than ninety degrees,

the conduit terminating outwardly in an extended weather shield designed to shield the second interior channel from the entrance of rain,

the weather shield comprising an upper outer end and a lower outer end, the upper end terminating outwardly further from the sidewall section than the lower outer end;



whereby at least part of the vapors within the vent line can travel to atmosphere through a path including the first cylindrical channel, the orifice and the second interior channel.

4,194,531

ROTARY VALVES

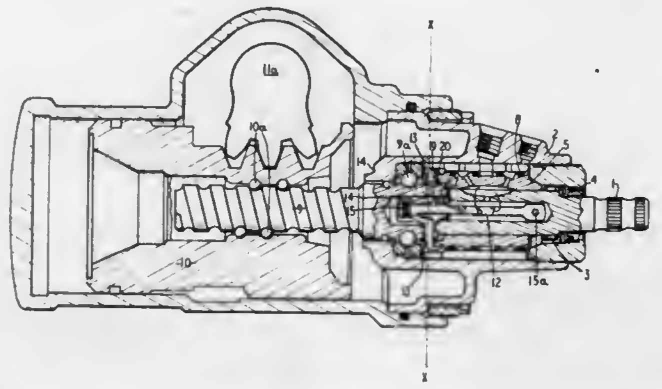
Arthur E. Bishop, 17 Burton St., Mosman, N.S.W. 2088, Australia

Filed Jul. 6, 1977, Ser. No. 813,272

Claims priority, application Australia, Jul. 9, 1976, PC6610; Oct. 26, 1976, PC7893

Int. Cl.^{2} F15B *9/10*

U.S. Cl. 137—596 **8 Claims**



1. An improved rotary hydraulic valve to control the hydraulic assistance in power steering gears for automotive vehicles, comprising a valve input member, a coaxially arranged driven member, torsion bar means drivingly connecting said valve input member and said driven member, a first drive transmitting means for transmitting drive from said valve input member to said driven member arranged for limited lost motion between said valve input and driven members comprising a plurality of axially extending and projecting inter-engaging lug means alternately extending from said valve input and driven members, a valve sleeve member surrounding said valve input member, second drive transmitting means carried on a projecting portion of the lug means of said driven member arranged to provide a slack-free driving connection directly through the said portion of the lug means of said driven member between said valve sleeve member and said driven member.

4,194,532

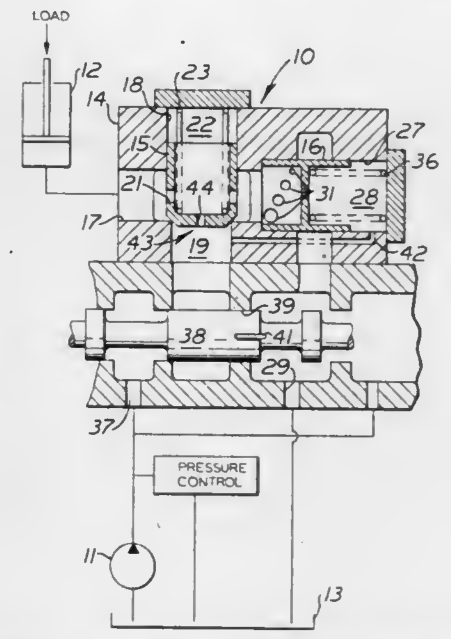
CONTROL VALVE WITH BYPASS MEANS

Lowell R. Hall, Elwood, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 10, 1978, Ser. No. 895,211

Int. Cl.^{2} F158 *13/042*

U.S. Cl. 137—596 **2 Claims**



1. In a control valve for controlling fluid directed to and exhausted from a fluid jack, said control valve having a motor port connectable to the hydraulic jack, a passage, a check valve positioned between the passage and the motor port and being movable between a first position at which fluid is free to flow from the passage to the motor port and a second position at which reverse fluid flow from the motor port to the passage is substantially blocked, a drain port, a bypass valve positioned between the motor port and the drain port and being movable between a first position at which fluid flow between the motor port and the drain port is blocked and a second position at which the motor port is in communication with the drain port independent of said passage, a fluid chamber positioned at one end of the bypass valve, and an inlet port; the improvement comprising:

passage means for connecting the fluid chamber to the passage;

orifice means for restricting communication between the motor port and the passage at the second position of the check valve and developing a pressure drop between the motor port and the passage, and hence between the motor port and the fluid chamber in response to the passage being communicated with the drain port; and

a single valve positioned between the passage and both the inlet and drain ports and being movable between a first position at which the inlet port is in communication with the passage and a second position at which the passage is in communication with the drain port and the pressure drop between the motor port and the passage is precisely controlled by controllably modulating from the passage only the fluid entering the passage through the orifice means.

4,194,533

CONTROL CIRCUIT FOR PNEUMATIC SHIFT REGISTER

Daniel Bouteille, Marnes la Coquette; Andre Thomasse, Pacy-sur-Eure, and Eric Petrimaux, Evreux, all of France, assignors to La Telemecanique Electrique, Pacy-sur-Eure, France

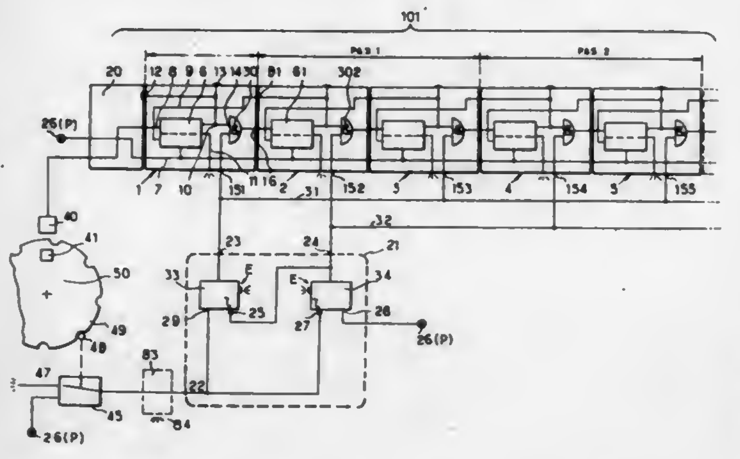
Filed Apr. 14, 1977, Ser. No. 787,662

Int. Cl.^{2} F16K *37/00*

U.S. Cl. 137—624.18 **4 Claims**

1. A pneumatic shift register comprising: a plurality of cascade-mounted alternately odd and even phase cells, each comprising a bistable pneumatic memory having a set input

adapted to set said memory to a logic state 1 when a predetermined pressure is applied thereon, a reset input, an exhaust, a supply pressure input and an output, each phase cell further comprising a pneumatic AND-gate having first and second inputs and an output, the first input of the AND-gate being connected to the output of the memory, the output of each memory being connected to the reset input of the memory of the preceeding phase cell, the output of each AND-gate being connected to the set input of the memory of the succeeding phase cell; a first shift control line connecting the second inputs of the AND-gates of the odd phase cells; a second shift control line, connecting the second inputs of the AND-gates of the even phase cells; and means for alternately supplying said first and second shift control lines with pneumatic pressure pulses, said pressure pulse supplying means comprising first and second pneumatic threshold relays having each a fluid supply input, a fluid control input and an output, the outputs of the first and second pneumatic threshold relays being respectively connected to the first and second shift control lines; a third pneumatic shift control line connected to the supply input of the first relay and to the control input of the second relay; shift pressure pulse generating means connected to the said third pneumatic shift control line, said pressure pulses having a first exhaust pressure level and a second supply pressure level which is higher than said predetermined pressure, the control input of the first relay being connected to the output of the second relay, a source of permanent pressure supply connected to the supply input of the second relay, said threshold relays being arranged for providing an output signal only when the pressure at the control input thereof is less than a threshold value which is substantially lower than said predetermined pressure.



4,194,534

PRESSURE AND TEMPERATURE COMPENSATING HYDRAULIC VALVE

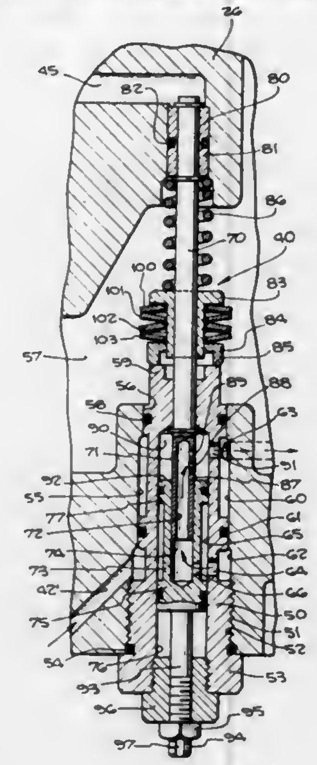
William A. P. Lawrence, Simi Valley, Calif., and Robert J. Welchel, Dunwoody, Ga., assignors to Elevator Equipment Co., Los Angeles, Calif.

Filed Apr. 17, 1978, Ser. No. 896,971

Int. Cl.² F16K *11/10*

U.S. Cl. 137—625.39 **11 Claims**

1. A compensating valve device mountable in a housing for modification of the flow of hydraulic fluid in a hydraulic circuit wherein a hydraulic fluid supply to the housing has a pressure in excess of ambient pressure, said valve device comprising a valve body having mounting means for positioning the valve device on said housing a valve chamber in said body, a valve stem reciprocatably mounted in said body, said stem having a piston at one end responsive to pressure of said hydraulic fluid, means forming a cavity in said stem adjacent the other end having an opening thereto, a valve seat member in said chamber, said valve seat member having a passage in communication with the cavity of said stem through said opening, a divider in said chamber forming respective inflow and outflow chamber sections, and port means serving as a valve element for engagement with said valve seat member and in communication between said passage and said outflow chamber section, said port means having a progressively variable capacity adjustment in response to movement of said piston due to changes in pressure of said hydraulic fluid supply whereby to vary fluid flow between said inflow and outflow chamber sections.



4,194,535

QUICK-CLOSING MULTI-WAY VALVES

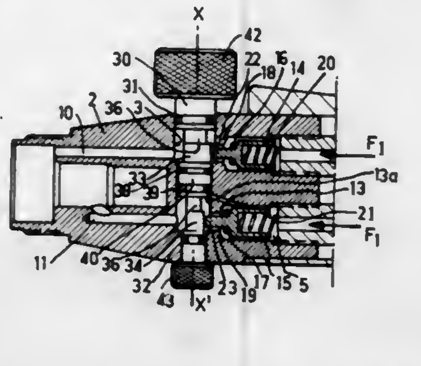
Denis Galland, Rueil Malmaison, and Jack Boursault, Genlis, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes, Paris, France

Filed Nov. 22, 1977, Ser. No. 853,856

Claims priority, application France, Nov. 22, 1976, 76 35067

Int. Cl.² F16K *11/14;* F23D *13/38*

U.S. Cl. 137—636.4 **13 Claims**



1. In a valve for controlling a fluid circuit, having a body provided with a bore into which open at least one fluid outlet duct and at least one fluid inlet duct which is provided with a closing valve-member which is subject to the effect of a return spring which tends to press it against a fixed seating, the invention which comprises a rotatably mounted stem which is movable in axial translation within said bore between two extreme positions of which one is an operating position and the other a shut off position, said stem defining, with said bore, an annular space which allows said inlet and outlet ducts to communicate with one another, and being provided with means for controlling said valve member which, in the operating position, cooperate with said valve member to lift it from its seating in opposition to said return spring and which, in the shut off position, permits the valve member to return to said seating, means carried by said stem and including a pair of spaced sealing members for forming a gap therebetween which is isolated with respect to the outlet duct, and means defining an auxiliary passage between said inlet duct and said bore to bypass said closing valve member, said auxiliary passage communicating with said outlet duct when said stem is in said operating position and communicating with said isolated gap when said stem is in said shut-off position.

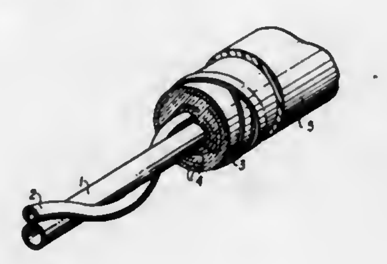
4,194,536

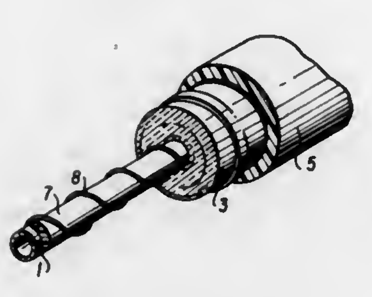
COMPOSITE TUBING PRODUCT

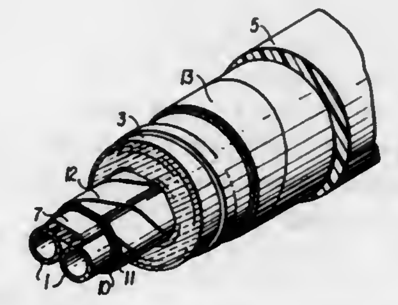
Clifford R. Stine, Solon, and Rudolph G. Wojtecki, Mantua, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio Continuation of Ser. No. 749,055, Dec. 9, 1976, abandoned. This application May 26, 1978, Ser. No. 909,786

Int. Cl.² F16L *11/12;* H05B *3/58*

U.S. Cl. 138—149 **34 Claims**







1. An elongate, deformable, composite tubing product having a central longitudinal axis therethrough and adapted for use in conveying a fluid from one point to another and providing means for maintaining or controlling the temperature of the conveyed fluid, said tubing product comprising; at least one tubular fluid conveyance line means, a plurality of sheet-like layers of flexible, flame resistant, low chlorine bearing, low bulk, fibrous glass elements contained in a resinous binder, each of said layers wound one about the other and around said line means to form a thermal insulating barrier member about said line means, each of said layers having a thickness of from 0.025 to 0.075 inch and a density of less than 20 lb./cu. ft., each of said layers having a chlorine content of less than about 500 parts by weight per million parts by weight of said layer, and each of said layers having at least one undulated surface whereby facing surfaces of the said layers have spaces therebetween which entrap air and contribute to the heat insulating properties of the thermal insulating barrier.

4,194,537

ARRANGEMENT FOR GUIDING A WEFT THREAD END UNDER TENSION TOWARD A FABRIC FELL IN TRAVELLING-WAVE LOOMS

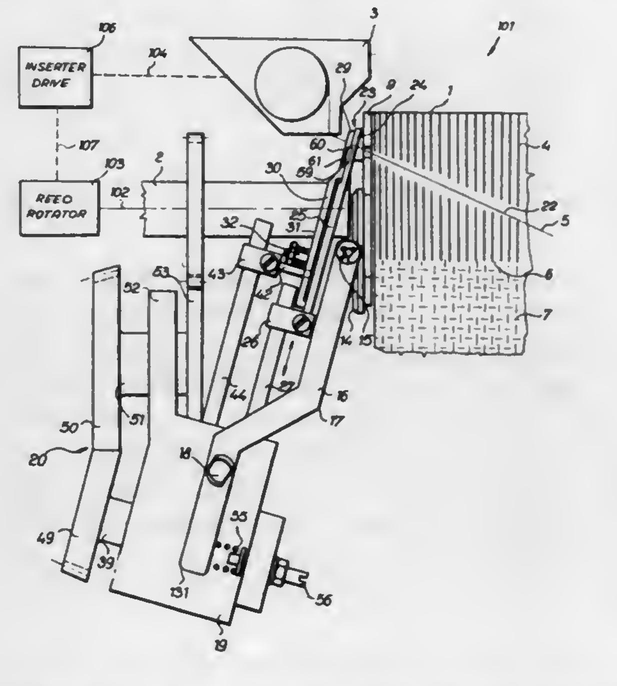
Miloslav Hodr; Josef Holub, both of Usti nad Orlici, and Jiri Stefek, Zamberk, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Oct. 4, 1976, Ser. No. 729,203

Int. Cl.² D03D *49/70*

U.S. Cl. 139—194 **6 Claims**

1. In a travelling-wave loom, a rotary reed having an inner, weft-entering, end and an outer, weft-leaving, end, the rotary reed having a helical groove therein for guiding and beating up a weft thread positioned in cooperative relation thereto as the reed is rotated, means for rotating the reed about a first axis, a weft-introducing disc fixedly supported coaxial with and on the outer end of the reed, the disc having a plurality of spaced teeth on its periphery, a thrust plate supported in contacting relation with the outer surface of the disc and urged thereagainst, the space between the disc and the thrust plate defining a weft-securing space to receive the end of a weft thread leaving the reed for applying tension to the weft thread when the thread is beat-up by the reed, weft insertion means carrying the weft thread and supported for movement in timed relation to the rotation of the reed along an endless path having a portion parallel to the first axis and extending past the reed, elongated weft-gripping means independent of the thrust plate and including a pair of cooperable jaws having confronting weft-gripping portions, the weft-gripping means being supported for reciprocation between a first front position in which the jaws are engageable with the weft thread after the insertion means has moved past the reed and a rear position rearward of the thrust plate whereby a movement of the gripping means from the front position to the rear position when a weft thread is gripped thereby will move the weft thread into the weft-securing space, means for reciprocating the weft-gripping means in timed relation to the movement of the weft-insertion means so that the gripping means reaches its front position substantially immediately after the insertion means has moved past the end of the reed, and jaw-operating means dynamically coupled to the reciprocating means for closing the jaws after the weft-gripping means has reached its front position and for reopening the jaws after the weft is in the weft-securing space.



4,194,538

WEFT THREAD GRIPPING MECHANISM FOR A LOOM WITH A TRAVELLING-WAVE SHED AND A DISK-TYPE BEAT-UP MOTION

Valerian A. Borodin, ulitsa Gubkina, 4, kv. 74; Lidia M. Sudakova, Dubninskaya ulitsa, 10, korpus 5, kv. 38, and Nikolai I. Kolobanov, Leninsky prospekt, 94a, kv. 54, all of Moscow, U.S.S.R.

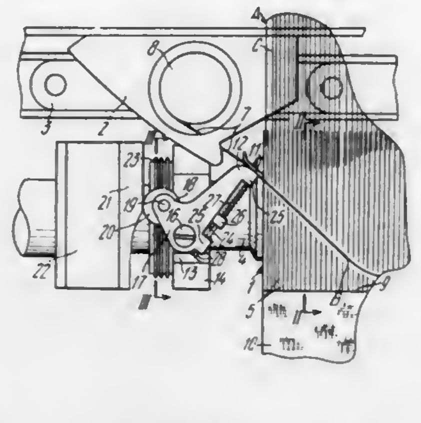
Filed Jan. 8, 1979, Ser. No. 2,014

Int. Cl.² D03D *47/26*

U.S. Cl. 139—194 **8 Claims**

1. A weft thread gripping mechanism for a loom with a travelling-wave shed, a disk-type beat-up motion provided with a shaft and forcing the weft thread to a fell of a cloth, and with weft thread carriers propelled through the travelling-wave shed, comprising: two gripping members elastically tightened together and installed at the side of exit of the weft thread carriers from the travelling-wave shed, one of said gripping members being stationary and the other one, movable

and installed so as to be displaceable relative to the stationary gripping member for forming a gap therebetween into which the weft thread from the carrier is received, said gripping members being mounted on the shaft of the disk-type beat-up motion so as to be rotatable therewith and displaceable, after gripping the weft thread, lengthwise the axis of the shaft of the disk-type beat-up motion in the direction from the travelling-wave shed; a means for said displacement of said gripping members lengthwise the axis of the shaft of the disk-type beat-up motion as a result of which the gripping members may be moved away from or brought as close as possible to the travelling-wave shed; a stationary stop secured on the shaft of the disk-type beat-up motion and cooperating with the movable gripping member at the moment of the closest approach of the gripping members to the travelling-wave shed, whereby the displacement of the movable gripping member relative to the stationary gripping member for said gap to be formed therebetween is achieved.



4,194,539

LOOM SHUTTLE

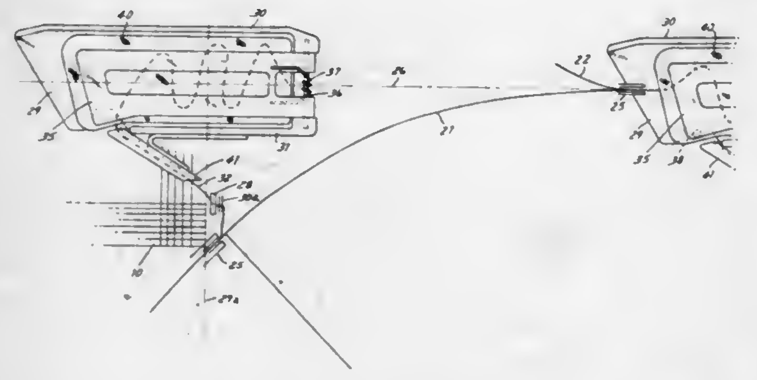
John D. Griffith, Cleadon, England, assignor to Bonas Machine Company Limited, Sunderland, England

Filed May 22, 1978, Ser. No. 907,957

Claims priority, application United Kingdom, May 25, 1977, 21991/77

Int. Cl.^{2} D03J ***5/06***

U.S. Cl. 139—196.3 **9 Claims**



1. A loom shuttle for use with a traveling wave shedding loom including a yarn chamber having an entry/exit opening for receiving randomly loaded yarn characterized in that the yarn chamber is provided with movable means resiliently loaded to restrain full opening which during loading of the yarn is adapted to open only slightly to effectively serve to increase the chamber size to enable yarn to be entered into the chamber through said opening substantially without restraint and with restraining means arranged, during usage of the yarn, to restrain it against free withdrawal through said opening thereby to prevent the formation of entanglements in the yarn.

4,194,540

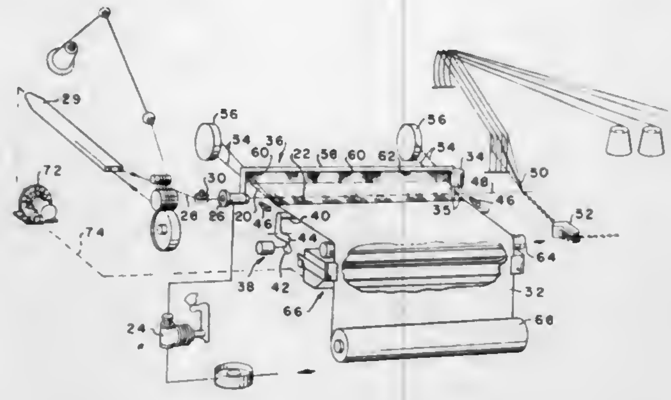
WATER JET LOOM

James R. Reynolds, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 18, 1978, Ser. No. 952,284

Int. Cl.^{2} D03D ***49/00***

U.S. Cl. 139—291 R **10 Claims**



1. A water jet loom having: a frame; warp forming means mounted on said frame for forming a warp having a plurality of substantially parallel warp yarns; shed forming means mounted on said frame for displacing selected ones of said warp yarns to form a shed; weft inserting means mounted on said frame for inserting weft yarns into said shed, said weft inserting means including a jet nozzle, and jet pump means operably connected to said jet nozzle for forcing pulses of water through said jet nozzle and forcing weft yarns across said warp through said shed; said weft inserting means including a suction tube to store weft yarn and means to apply suction pressure to said suction tube, means to take-up fabric woven by said water jet loom, drying means mounted on said frame between said shed forming means and said means to take-up fabric to dry the fabric woven by said water jet loom and means to supply a separate source of heat to said drying means from a source operably associated with said water jet loom and separate from said drying means.

4,194,541

WIRE STRAIGHTENING APPARATUS HAVING A HYDRAULICALLY DRIVEN WIRE FEED

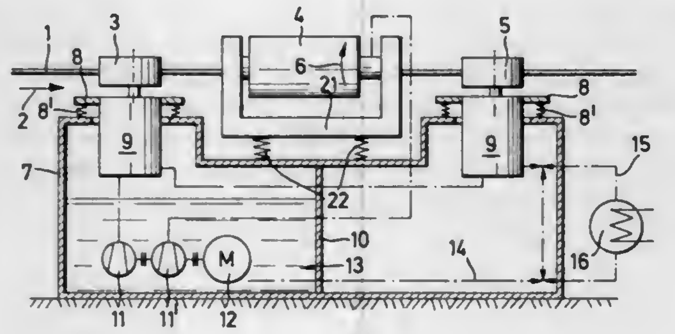
Günter Ditges, Cologne, Fed. Rep. of Germany, assignor to Myer, Roth & Pastor Machinenfabrik GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 916,835

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1977, 2732402

Int. Cl.^{2} B21E ***1/02***

U.S. Cl. 140—147 **10 Claims**



1. In a wire straightening apparatus including a machine stand; a wire straightening device; mounting means for securing the wire straightening device to the stand; an inlet roller pair and an outlet roller pair; mounting means for securing the inlet roller pair and the outlet roller pair to the stand adjacent opposite sides of the wire straightening device for feeding a wire therethrough; and drive means for rotating the roller pairs; the improvement wherein said drive means comprises a first constant-volume hydraulic motor connected to at least one of the rollers of said inlet roller pair; a second constant-volume hydraulic motor connected to at least one of the rollers of said outlet roller pair; and means supplying hydraulic medium under pressure to said motors; further wherein said mounting means for said inlet roller pair, said outlet roller pair and said wire straightening device comprises separate support blocks each connected to said stand by respective resilient means; the improvement further comprising a blocking mechanism operatively connected to said wire straightening device; said blocking mechanism having an actuated state in which it rigidly connects said wire straightening device with said stand.

4,194,542

DEVICE IN AN APPARATUS FOR PROCESSING TREES

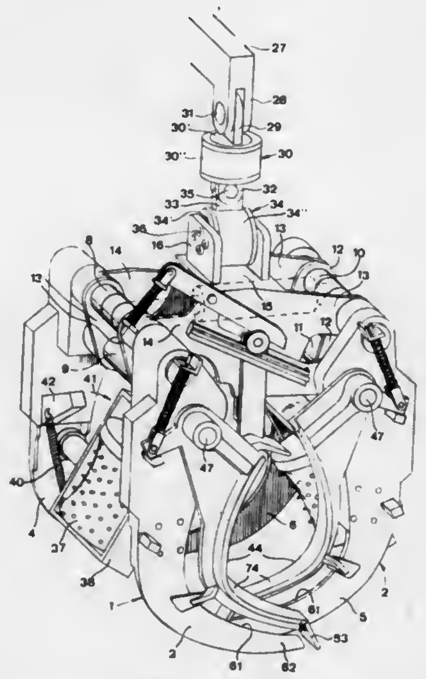
Jan. A. L. Eriksson, Pl. 345, 810 20 Österfärnebo, Sweden

Filed Mar. 16, 1978, Ser. No. 887,350

Claims priority, application Sweden, Mar. 18, 1977, 7703102; Sep. 1, 1977, 7802680

Int. Cl.^{2} A01G ***23/08;*** **B27L** ***1/00***

U.S. Cl. 144—2 Z **19 Claims**



1. An apparatus for processing trees comprising a grabbing device including at least two grabbing arms being movable towards and away from each other in order to grab a tree, at least one limbing member to limb the tree, and at least two rolls to feed the tree through the apparatus, said rolls being arranged on said grabbing arms in order to follow the grabbing arms in their movements towards and away from a tree movement path through the apparatus, said apparatus being connected to a crane arm through a first rotational connection allowing a pivotal movement of the apparatus relative to the crane arm in an essentially vertical plane, the apparatus being connected to the crane arm through a second rotational connection having an essentially vertical axis about which the apparatus is rotatable in a suspended state by means of a drive means with said grabbing arms depending downwardly from said second rotational connection, said rolls being pivotable relative to the grabbing arms about shafts extending essentially perpendicularly to the axes of rotation of said rolls and essentially normal to the plane of movement of the grabbing arms.

4,194,543

GROOVING INDEXER FOR ROUTING APPARATUS

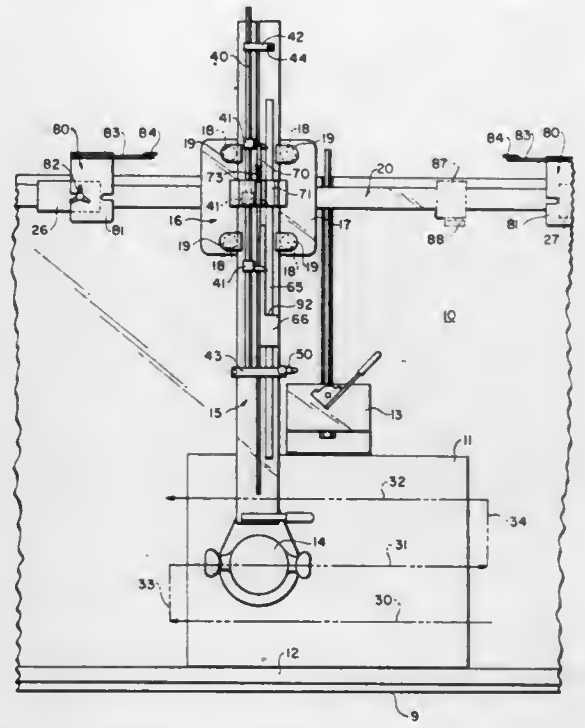
Lawrence M. Cotton, New Bern, N.C., assignor to The Stanley Works, New Britain, Conn.

Filed Sep. 13, 1978, Ser. No. 941,851

Int. Cl.^{2} B27C ***5/10***

U.S. Cl. 144—137 **15 Claims**

1. A grooving indexer attachment for routing apparatus of the type having a base, means for securing a panel to be routed in predetermined position on the base, a rail extending parallel to one edge of a panel secured in said predetermined position, a carriage mounted on the rail for movement along the rail, and a bar having means for mounting a router on the end thereof mounted on the carriage for longitudinal reciprocal movement and extending over the base at right angles to the rail, said attachment comprising a plurality of stops mounted on the bar in longitudinally spaced relationship, and a releasable latch mounted on the carriage for engagement sequentially with said stops, whereby the bar may be held in a series of predetermined longitudinal positions to permit the routing of a plurality of parallel grooves in sequence in a panel.



4,194,544

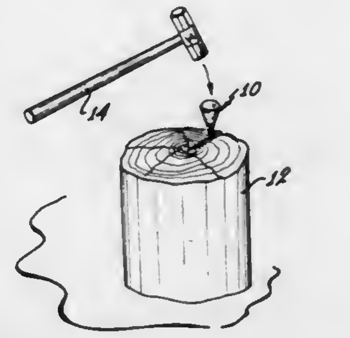
SPLITTING DEVICE

Lewis A. Scott, Lake Oswego, and Duane M. Gibson, Milwaukie, both of Oreg., assignors to Omark Industries, Inc., Portland, Oreg.

Filed Jul. 31, 1978, Ser. No. 929,860

Int. Cl.^{2} B27L ***7/00***

U.S. Cl. 144—193 D **7 Claims**



1. A splitting device adapted to be driven by a striking force from a maul for splitting logs comprising: an elongate conical like member produced from a material such as metal and converging to a point which is adapted for startup penetration into a log end, gripping means provided on said member adjacent the point to facilitate holding of the device in the log during startup penetration, said member being symmetrically flared from the point to a head portion, said head portion being dimensionally contained within the outer dimension of the flared member and adapted to receive a striking force from a maul independent of the splitting device for driving the point and following symmetrically flared portion of the member and including the head portion as necessary into the log thereby to produce multi-directed splitting forces to seek out the weakest splitting section line of the log and effect splitting of such log.

4,194,545
CUTTER BLOCK ARRANGEMENT FOR WOOD CHIPPING MACHINES

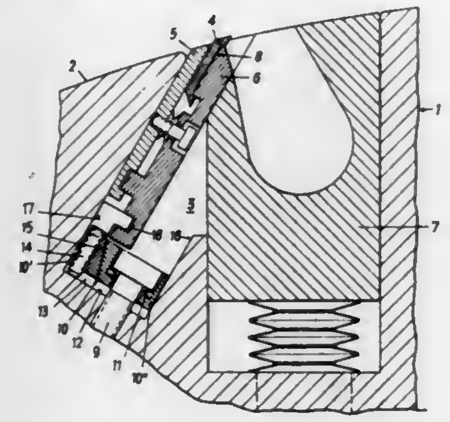
Karl H. Köstermeler, Wollstein, Fed. Rep. of Germany, assignor to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW), Vienna, Austria

Filed Jun. 29, 1978, Ser. No. 920,498

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730800

Int. Cl.^{2} B26D *1/12;* B27G *13/04*

U.S. Cl. 144—230 **9 Claims**



2. A cutter block arrangement for wood chipping machines comprising:
- a cutter block body having grooves with bases at their bottoms,
- holding ledges, each ledge being provided in a respective one of said grooves,
- fastening screws for fastening said holding ledges to said cutter block body in a fastening direction toward the base of the groove,
- spring elements provided between said holding ledges and said fastening screws,
- blade holders, each holder being fastened to a respective holding ledge by a tongue and groove connection,
- blades having cutting edges and being positively held in said blade holders, and
- adjusting screws for supporting said holding ledges at an adjustable distance relative to the bases of the respective grooves in said cutter block body, and in a direction opposite to the fastening direction of said fastening screws, for adjustment of a certain projection of said cutting edges.

4,194,546
GARMENT NAIL ALIGNMENT BLOCK

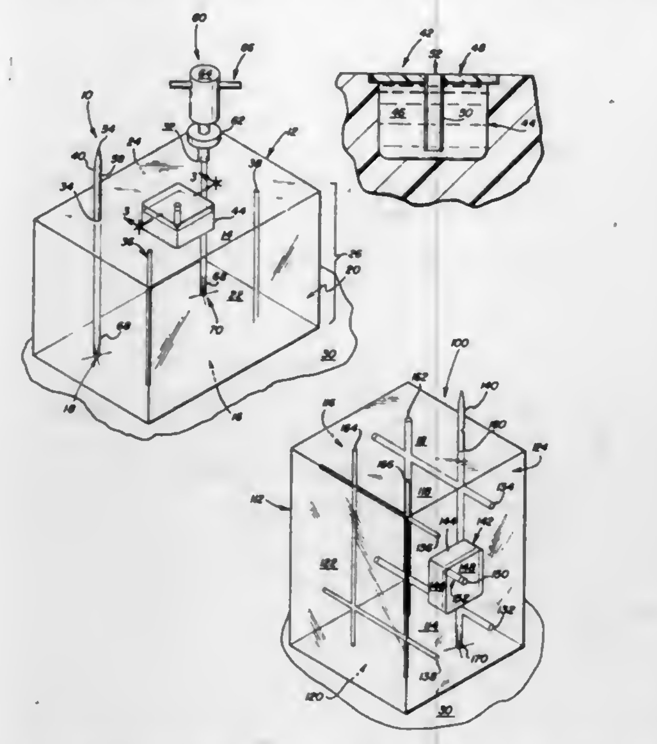
Donald W. Wooley, 1017-B Cascade St., Mesquite, Tex. 75149

Filed Mar. 20, 1978, Ser. No. 888,160

Int. Cl.^{2} B25C *3/00*

U.S. Cl. 145—46 **9 Claims**

1. A garment nail alignment device for aligning garment nails normal to a garment cutting table, comprising:
- a transparent block having at least one planar surface;
- means for marking a garment nail to indicate the length of the garment nail to be set into the garment cutting table; and
- at least one right circular cylindrical garment nail alignment hole dimensioned to closely engage the garment nail and formed completely through and normal to said planar surface of said block, such that a spot on the garment cutting table where a garment nail is to be set normal to the table is visible through said transparent block for aligning said hole over the spot and the garment nail marked by said marking means is visible through said block for determining the depth the nail is set into the garment cutting table.



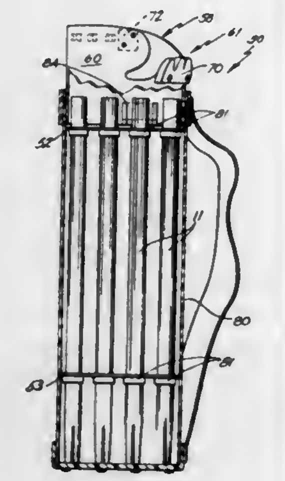
4,194,547
GOLF CLUB HOLDER

Edward J. Sidor, 1482 3 Mile Rd. NE., and William E. Sidor, 1816 4 Mile NE., both of Grand Rapids, Mich. 49505

Filed Aug. 17, 1978, Ser. No. 934,395

Int. Cl.^{2} A63B *55/00*

U.S. Cl. 150—1.5 R **32 Claims**



21. A golf club holder assembly comprising in combination:
- a plurality of elongate tubes of a resilient material;
- first and second ends oppositely and longitudinally disposed on each of said tubes;
- said first ends of said tubes being open and adapted for receiving a golf club handle and shaft;
- spring clip means disposed in each of said tubes and formed from each of said tubes for resiliently gripping a golf club handle and detachably retaining the same within each of said tubes;
- said spring clip means comprising at least one longitudinally extending fold disposed in each said tube for gradually reducing the cross-sectional area of said tube;
- first and second tube sheets for retaining said tubes in parallel array; and
- a rack disposed above said first ends of said tubes for separating a plurality of golf clubs retained in said tubes, whereby each of the clubs is completely isolated and retained within the assembly even when the assembly is held upside down.

4,194,548
TIRES

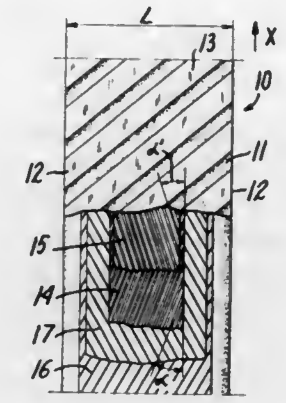
Jack Roger, Romagnat, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Apr. 20, 1978, Ser. No. 898,470

Claims priority, application France, Apr. 24, 1977, 77 13473

Int. Cl.^{2} B60C *9/20*

U.S. Cl. 152—361 R **8 Claims**



1. Tire having, on the one hand, a radial carcass reinforcement and a tread reinforcement formed of at least two plies of oblique wires or cables which are parallel in each ply and crossed from one ply to the other and, on the other hand, a tread having transverse grooves, the bottoms and the walls of which define elements in relief, and a nongrooved portion arranged between the bottoms of the transverse grooves and the tread reinforcement, characterized by the fact that the tread comprises, in said nongrooved portion, at least one ply of relatively inextensible oblique wires or cables forming an angle of at most 60° with the circumferential direction, the axial width of said ply being between $\frac{1}{4}$ and $\frac{1}{2}$ of the width of the tread.

4,194,549
UPWARDLY OPENABLE DOOR

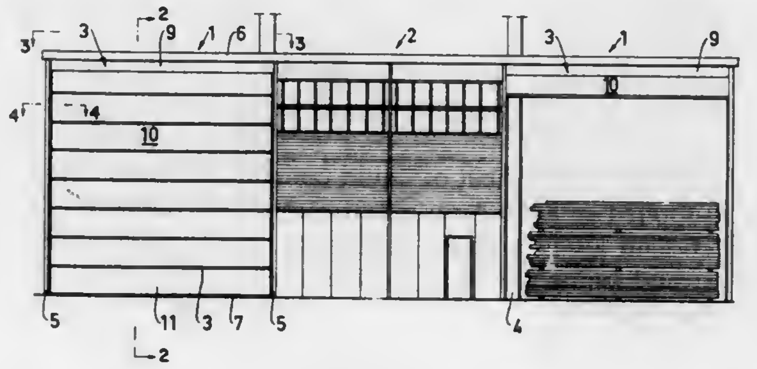
Anders Lövgren, Skellefteå, Sweden, assignor to Alfred Lovgrens Byggnads Ab, Skelleftea, Sweden

Continuation of Ser. No. 741,840, Nov. 15, 1976, abandoned, which is a continuation of Ser. No. 345,373, Mar. 6, 1973, abandoned. This application May 1, 1978, Ser. No. 901,946

Claims priority, application Sweden, Mar. 6, 1972, 2807/72

Int. Cl.^{2} A47H *5/00*

U.S. Cl. 160—84 R **4 Claims**



1. A collapsible door apparatus comprising:
- a door member having a plurality of generally horizontal rigid spaced members, and at least one sheet of flexible material fastened to said spaced members;
- a door frame including vertically disposed channel means for guiding the ends of said spaced members;
- said channel means comprising first and second parallel spaced members arranged parallel to the plane of the door and a third member which is perpendicular to said first and second members;
- first and second roller means at each end of said rigid members, one of said rollers being located between said first and second members and the other coacting with said third member;
- and door operating means for selectively moving upwardly the bottom-most of said spaced members to thereby in turn move all said spaced members as said bottom-most member upon being raised abuts the next said member and so on until all said members have been raised to open the door;
- said flexible material between each successive pair of said spaced members forming a loop of said material as the door is raised.

4,194,550
APPARATUS FOR INSULATING AGAINST CONDUCTIVE, CONVECTIVE AND RADIANT HEAT TRANSMISSION

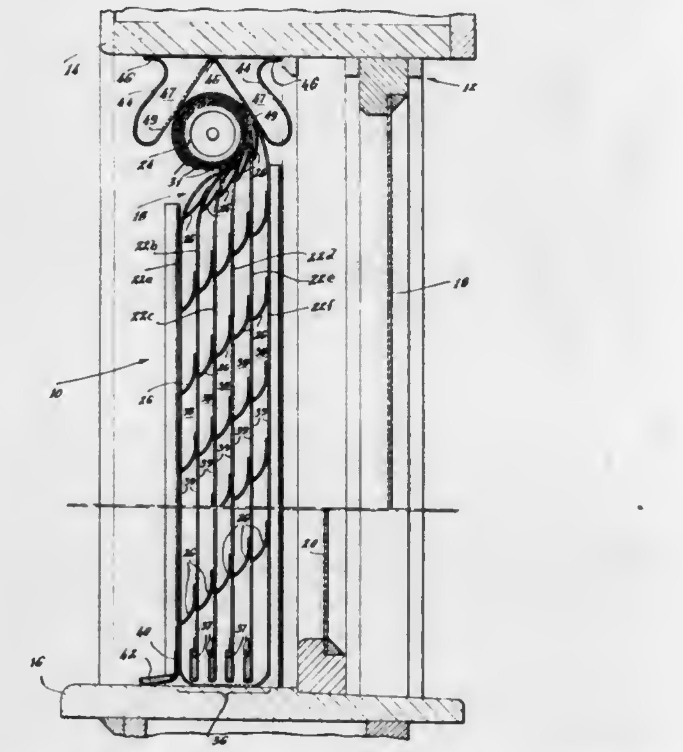
Thomas P. Hopper, Durham, Conn., assignor to Insulating Shade (Limited Partnership), Branford, Conn.

Continuation-in-part of Ser. No. 652,628, Jan. 26, 1976, Pat. No. 4,039,019. This application Jul. 19, 1977, Ser. No. 816,920

The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.

Int. Cl.^{2} E06B *9/08*

U.S. Cl. 160—121 R **91 Claims**



1. An apparatus for insulating an area such as a window, door, or wall against conductive, convective and radiant heat transmission comprising:
- A. a plurality of essentially non-transparent imperforate, shade sheets;
- B. retracting means including a single retracting roller to which all shade sheets are attached to be rolled thereon for mounting said sheets for selective movement between a drawn position covering the area and a retracted position not covering the area; and
- C. spacer means mounted to separate adjacent sheets to provide a dead space therebetween, said spacer means including one spacer roller for each pair of sheets, each said spacer roller being mounted for free sheet nonabrading rotation in fixed relation to said retracting roller to contact only one of each pair of sheets when in the drawn position.

4,194,551

END PIECE FOR THE BOTTOM RAIL OF A VENETIAN BLIND

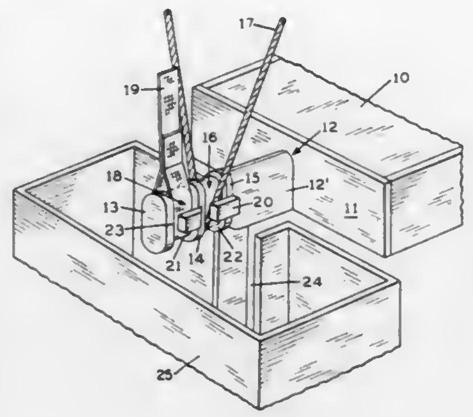
Petrus J. Hennequin, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

Filed Jun. 2, 1978, Ser. No. 911,826

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726516

Int. Cl.^{2} E06B *9/38*

U.S. Cl. 160—178 R **9 Claims**



1. In an end piece for the bottom rail of a venetian blind in which blind the slats are guided in a side housing of the blind and in which the blind is actuated by means of a flexible lifting member and a flexible tilting member both of which flexible members engage with the end piece of the bottom rail, the improvement in which the end piece of the bottom rail has a projection extending outwardly of the end of said bottom rail in generally the same direction as the length of said rail and into said side housing, said projection having two axially separated zones located within said side housing, said flexible lifting and tilting members also being located within said side housing, one of said zones being adapted to receive the end of the flexible lifting member, the other of said zones being adapted toreceive the flexible tilting member around at least the bottom portion thereof and in sliding engagement therewith, said sliding engagement being such as to permit movement of said flexible tilting member without tilting said bottom rail.

4,194,552

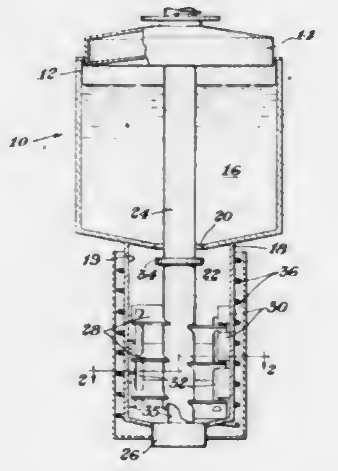
METHOD TO FORM METAL CONTAINING NONDENDRITIC PRIMARY SOLIDS

Foster C. Bennett, Columbus, Ohio, assignor to Rheocast Corporation, Mequon, Wis.

Division of Ser. No. 799,429, May 23, 1977, Pat. No. 4,116,423. This application Jul. 13, 1978, Ser. No. 924,114

Int. Cl.^{2} B22D *1/00, 27/08*

U.S. Cl. 164—71 **7 Claims**



1. A method comprising:

controlling the temperature of molten metal in a metal receiving means to between the liquidus and solidus temperatures of the metal;

agitating the metal sufficiently to minimize formation of interconnected dendrites;

continuously removing metal deposited on inner wall portions of the metal receiving means to minimize accumulation of solid metal deposited on the wall portions, such metal removal being carried out using a shearing means contacting the inner wall portion;

withdrawing a mixture of solid and liquid metal from the receiving means; and

solidifying the metal.

4,194,553

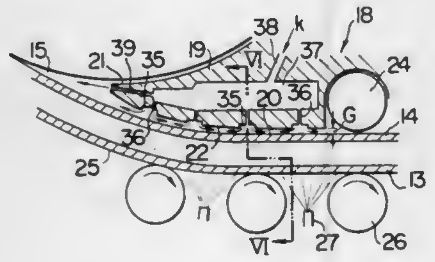
COOLING AND GUIDE METHOD AND APPARATUS IN A CONTINUOUS CASTING MACHINE

Tomoaki Kimura, and Tadashi Nishino, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1978, Ser. No. 912,337

Int. Cl.^{2} B22D *11/06*

U.S. Cl. 164—87 **15 Claims**



1. A method of cooling and guiding a strip of metal as it moves through a straightening section of a continuous casting machine of the wheel-belt caster type, comprising the steps of:

rotating a casting wheel having a peripheral groove simultaneously with moving an endless belt in contact with only a portion of the peripheral groove so as to form an arcuate casting mold with an inlet opening for receiving molten metal and an outlet opening for discharging a partially solidified strip of metal;

pouring molten metal into the inlet opening of the arcuate casting mold continuously, while continuously withdrawing the partially solidified strip of metal from the outlet opening of the arcuate casting mold so that the molten metal is partially solidified as it travels through the arcuate casting mold, and the strip of metal is bent from the arcuate shape of the casting mold to a linear shape within a straightening section defined between the outlet opening of the casting mold and the point at which the strip shape is linear; and

cooling and guiding the surface of the strip that was radially innermost in the arcuate casting mold throughout a major portion of the straightening section by contacting said surface with a sheet of liquid coolant that is confined and supplied so as to form a hydrostatic bearing of the liquid coolant along a major portion of said surface within the straightening section as the metal strip is gradually straightened.

4,194,554

PROCESS AND DEVICE FOR CENTRIFUGALLY CASTING SPHEROIDAL GRAPHITE CAST IRON PIPES

Michel Pierrel, Pont-a-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

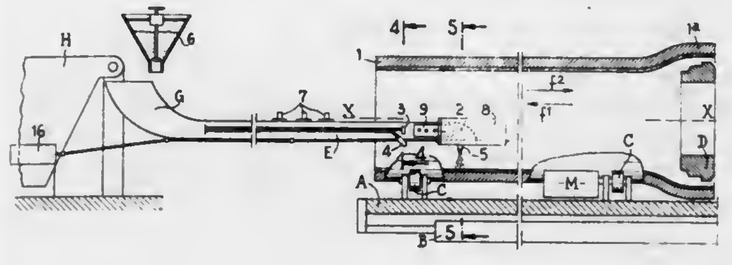
Continuation of Ser. No. 807,266, Jun. 16, 1977, abandoned, which is a division of Ser. No. 587,564, Jun. 17, 1975, Pat. No. 4,058,153. This application Feb. 5, 1979, Ser. No. 9,195

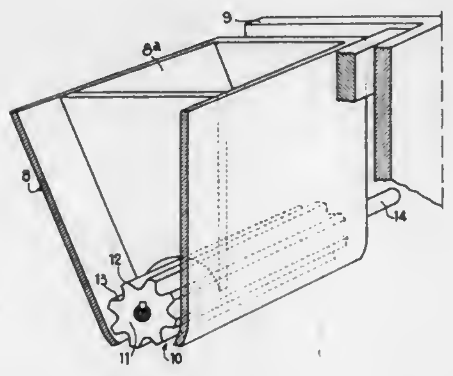
Claims priority, application France, Jul. 18, 1974, 74 24980

Int. Cl.^{2} B22D *13/10, 13/02, 27/20*

U.S. Cl. 164—301 **6 Claims**

1. A centrifugal casting machine comprising a rotary casting mould, an elongated pouring channel having a pouring mouth at an end thereof for pouring metal into the mould, means for moving the mould axially relative to the channel, means for dropping granular particles onto the molten metal which has been poured onto the mould surface by said channel and comprising a hopper-like box for receiving the granular particles and secured to a lateral side of the pouring channel adjacent the pouring mouth, the box having an open top side opening the interior of the box to atmosphere through which open top side the particles are intended to be placed in the box, the box having in a lower part of the box controllable aperture means through which metered amounts of said granular particles may be dropped substantially continuously, and mechanical means associated with said controllable aperture means for controlling said controllable aperture means, said aperture means extending longitudinally of the channel from a first end of the aperture means to a second end of the aperture means which is located beyond the pouring mouth whereby to ensure that the granular particles dropped through the aperture means drop onto the metal poured onto the mould surface, the box extending a minor fraction of the channel length and terminating substantially in the region of said first end of the aperture means.





4,194,555

TUNDISH FOR CONTINUOUS CASTING

Hans Schrewe, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,167

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740725

Int. Cl.^{2} B22D *11/10*

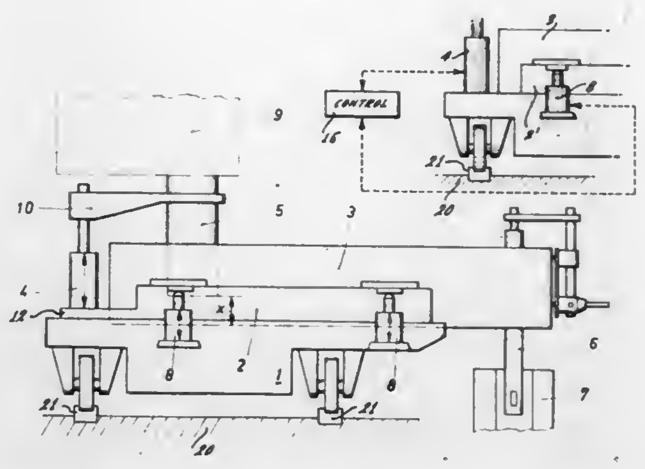
U.S. Cl. 164—438 **3 Claims**

1. In a machine, for continuous casting which includes a tundish, a discharging pipe for feeding molten metal from a ladle into the tundish, at least one mold for continuous casting and feed pipe on the tundish for feeding metal from the tundish into the mold, and a carriage for the tundish, the improvement comprising:

a lifting frame mounted on the carriage, the tundish being mounted on the frame;

first means on the carriage for lowering and lifting the frame with the tundish;

a lifting device on the carriage holding the discharging and second means operatively connected to the lifting device for obtaining a constant distance of the lower end of the casting pipe from the bottom of the tundish during lowering and lifting of the frame by operation of the first means for lowering and lifting.



4,194,556

COOLING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

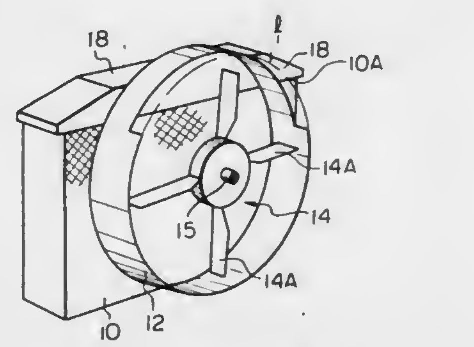
Makio Watanabe; Kaneyosi Aoyama, and Makoto Shinohara, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 14, 1978, Ser. No. 886,359

Claims priority, application Japan, Jan. 13, 1978, 53-1858

Int. Cl.^{2} F28D *21/00*

U.S. Cl. 165—51 **7 Claims**

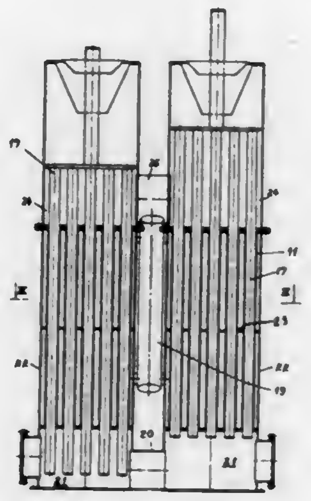


1. A reduced-noise cooling apparatus for an internal combustion engine, said apparatus including a radiator core, a coolant tank mounted on the upper end of the core, a multi-bladed fan assembly mounted adjacent to one side of the core for rotation such that the upper part of the path described by the tips of the fan blades is above the level of the upper end of the radiator core, and a tubular shroud extending from said one side of the radiator core and the coolant tank coaxially with and circumferentially surrounding the fan assembly, wherein the improvement comprises:

said shroud having an axial length which is less for the portion of the shroud which is above the level of the upper end of the radiator core than for the remainder of the shroud, whereby the amount of air passed through the shroud per unit area above the level of the upper end of the radiator core is less than the amount of air passed per unit area through the remainder of the shroud.

4,194,557
COOLER FOR MIXTURES OF CRYSTALS AND CRYSTALLIZING LIQUID IN THE PRODUCTION OF SUGAR AND RELATED PRODUCTS

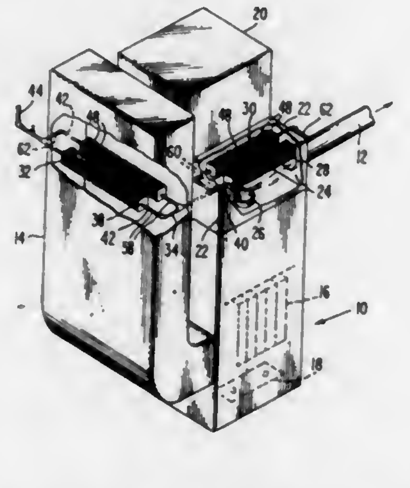
Rud F. Madsen, Nakskov, Denmark, assignor to Aktieselskabet de Danske Sukkerfabrikker, Copenhagen, Denmark
Filed Jan. 4, 1978, Ser. No. 866,903
Claims priority, application Denmark, Jan. 13, 1977, 129/77
Int. Cl.^{2} F28G *1/08, 1/14, 15/08;* **F28F** *19/00*
U.S. Cl. 165—94 **2 Claims**



1. A cooler for mixtures of crystals and crystallizing liquid in the manufacture of sugar and related products consisting of a pipe cooler having substantially vertical pipes, which open into chambers at their bottom and top ends, characterized by the provision in the pipes of plungers which in the whole or practically the whole pipe length have a cross-sectional area somewhat smaller than the cross-sectional area of the pipe wall so as to fill out a substantial part of the cross-section of each pipe and thereby to form an annular passage along the pipe wall, the plungers being coupled to means for constantly and continuously moving them up and down through the pipes, the plungers extending at any moment the whole way through the pipes, their ends moving up and down in the bottom and top chambers.

4,194,558
WASTE HEAT RECOVERY DEVICE

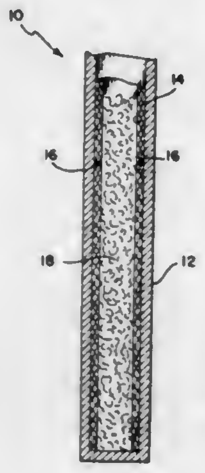
Richard Goosman, 44 Albermarle Rd., Hamilton Square, N.J. 08690
Filed May 11, 1978, Ser. No. 904,948
Int. Cl.^{2} F28D *15/00*
U.S. Cl. 165—105 **9 Claims**



1. A waste heat recovery device for heating the air traveling through a cold air return duct to a heater device comprising:
(a) an exhaust box defining a plenum chamber therein for gathering heated exhaust gases, said exhaust box defining an exhaust gas inlet and an exhaust gas outlet to admit and expel, respectively, the heated exhaust gases with respect to said exhaust gas chamber;
(b) an exhaust coil means positioned within said plenum chamber to withdraw heat therefrom, said exhaust coil means including a plurality of individual coil elements disposed at different vertical heights with respect to one another;
(c) a return coil means positioned within a cold air return of a heating device and adapted to radiate heat to raise the temperature of the air traveling through the cold air return;
(d) a conduit means and a thermal transfer fluid which is located within said conduit means, said conduit means extending through said return coil means and said exhaust coil means to cause thermal flow therebetween by condensing and boiling of said thermal transfer fluid, said conduit means including a condensing area defined as the portion of said conduit means within said return coil means, said conduit means including a boiler area defined as the portion of said conduit means within said exhaust coil means, said condensing area being located higher than said boiler area to assure the return of condensed thermal transfer fluid after cooling thereof from said condenser area to said boiler area to allow further boiling thereof; and
(e) a fluid level control means to maintain the level of thermal transfer fluid within said boiler area above a predetermined minimum level, said fluid level control means comprising a drain conduit in the conduit means extending upwardly from a lower level coil element to a higher level coil element with the upper edge thereof at the predetermined desired level of said thermal transfer fluid in the higher coil element to both maintain a minimum level of said thermal transfer fluid within the higher coil element and to provide a path for flow of said thermal transfer fluid to the lower coil element.

4,194,559
FREEZE ACCOMMODATING HEAT PIPE

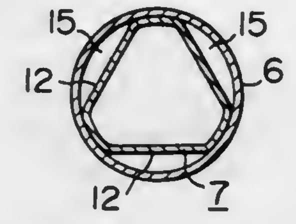
George Y. Eastman, Lancaster, Pa., assignor to Thermacore, Inc., Leola, Pa.
Filed Nov. 1, 1978, Ser. No. 956,680
Int. Cl.^{2} F28D *15/00*
U.S. Cl. 165—105 **4 Claims**



1. A heat pipe capable of operation without deterioration of its performance after repeated freezing and thawing cycles comprising:
a sealed outer casing;
a wick, positioned in intimate contact with the inside wall of the casing and located so as to reach any location of potential liquid puddling, said wick being sufficiently flexible so that, if distorted away from the casing wall, it will be repositioned against the wall of the casing by the surface tension of the liquid state of a fluid selected as the heat exchange fluid of the heat pipe; and
a heat exchange fluid, loaded into the casing before sealing, limited in quantity to that amount which, at the melting point, will be completely retained within the wick by the capillary lifting force of the wick.

4,194,560
OIL COOLER AND METHOD FOR FORMING IT

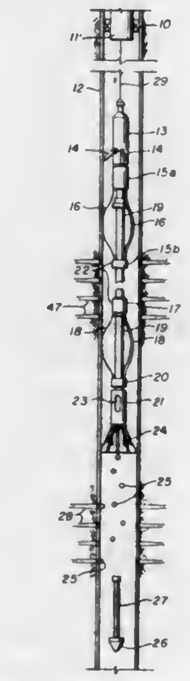
Yoshiaki Matsuzaki, Musashino, Japan, assignor to Nihon Radiator Co., Ltd., Nakano, Japan
Continuation-in-part of Ser. No. 771,495, Feb. 24, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 944,107
Claims priority, application Japan, Mar. 19, 1976, 51-32247
Int. Cl.^{2} F28D *7/10*
U.S. Cl. 165—141 **6 Claims**



1. An oil cooler built in a radiator comprising:
an outer tube; and
an inner tube formed with a plurality of a series of dent portions in the axial direction thereof, each series having an odd number of dents equally spaced about said inner tube with rounded apexes for contacting the inner surfaces of the outer tube, each said series forming a regular polygon having an odd number of sides on a plane perpendicular to the axis of said inner tube and each adjacent said series rotated about the axis of said inner tube so that the apexes of an adjacent series is at the mid-point of the dents of the preceding series;
said inner tube positioned inside said outer tube with said apexes of said inner tube contacting the inner surface of said outer tube for defining oil passages between said tubes at the non-contacting regions whereby oil flows in said oil spaces between said tubes in zigzag fashion along the length of said tubes.

4,194,561
PLACEMENT APPARATUS AND METHOD FOR LOW DENSITY BALL SEALERS

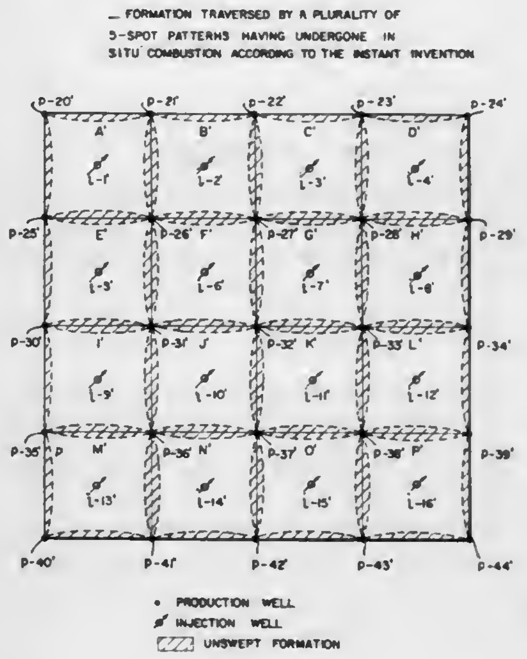
Charles O. Stokley, and Steven R. Erbstoesser, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.
Filed Nov. 16, 1977, Ser. No. 852,174
Int. Cl.^{2} E21B *33/124*
U.S. Cl. 166—162 **23 Claims**



1. An apparatus for selective placement of ball sealers for fluid treatment of a well, said ball sealers having a density less than the density of said fluid, comprising:
a first tubular member,
a second tubular member slidably mounted within said first tubular member,
a first expandable diaphragm having a first frusto-conical section attached at the small diameter of said frusto-conical section to said first tubular member at one end thereof, said expandable diaphragm extending beyond said first tubular member,
a plurality of pivotally mounted extendable arms mounted to said first tubular member toward the end of said first tubular member distal to said first expandable diaphragm, said arms each having a pinion thereon, each said pinion engaging a rack means within said first tubular member, said rack means abutting one end of said second tubular member and biased toward said second tubular member, said arms being retained in an unextended position by a first collar slidably mounted on said first tubular member over said arms,
a retaining cap having means thereon to engage and retain said first expandable diaphragm in an unexpanded position,
a push off member connected to said retaining cap and abutting the end of said second tubular member distal to said rack means and,
means releasably holding said push off member in position.

4,194,562
METHOD FOR PRECONDITIONING A SUBTERRANEAN OIL-BEARING FORMATION PRIOR TO IN-SITU COMBUSTION

Issam S. Bousaid; Donald L. Hoyt, both of Houston, and Ralph J. Korstad, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Dec. 21, 1978, Ser. No. 972,130
Int. Cl.^{2} E21B *43/24*
U.S. Cl. 166—245 **8 Claims**



1. In a method for the recovery of oil from a subterranean oil-bearing formation utilizing in-situ combustion, said formation being traversed by a plurality of wells in adjacent well pattern units, each of said well pattern units having a central well and n spaced offset wells, the improvement comprising, preconditioning of said formation by the injection of a gas thereinto, prior to the initiation of said in-situ combustion, said preconditioning comprising the steps of:
(a) selecting one of said well pattern units having a central well and n offset wells and injecting said gas into said central well while simultaneously restricting flow from said n offset wells and from said wells in said adjacent pattern units,
(b) continuing injection of said gas into said central well until the pressure in said formation traversed by said selected pattern unit is increased to a value less than the fracturing

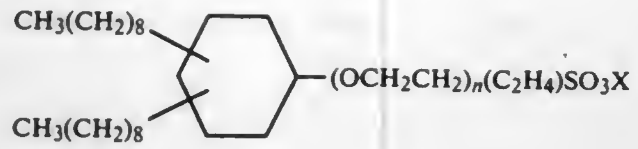
pressure of said formation and gas is produced from said n offset wells,
- (c) shutting-in said central well and said n offset wells,
- (d) selecting a second of said pattern units comprising a second central well and its related n offset wells and injecting gas into said second central well while simultaneously restricting flow from said related n offset wells and from said wells in said adjacent pattern units,
- (e) sequentially repeating steps (a) through (d) for the remaining well pattern units until all said pattern units of said formation have undergone said preconditioning by the injection of gas thereinto,
- (f) undertaking an in-situ combustion operation in said formation.

4,194,563
HIGH CONFORMANCE ENHANCED OIL RECOVERY PROCESS
Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Dec. 26, 1978, Ser. No. 973,420
Int. Cl.^{2} E21B *43/22*
U.S. Cl. 166—273 **25 Claims**

1. A method of recovering petroleum from a subterranean, petroleum-containing formation, said formation containing water having a salinity of from 5000 to 240,000 parts per million total dissolved solids, said formation containing at least two distinct petroleum-containing strata, the permeability of at least one stratum being at least 50 percent greater than the permeability of the other stratum, said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with substantially all of the strata of said formation, comprising
- (a) injecting a first aqueous surfactant-containing oil-displacing fluid into the formation via the injection well, said fluid passing through at least one of the more permeable strata of said formation and displacing oil therein toward the production well, from which it is recovered to the surface of the earth;
- (b) injecting an aqueous treating liquid whose viscosity is no more than twice the viscosity of water, said liquid containing at least one surfactant which is capable of producing a stable viscous oil-in-water emulsion with the petroleum present in the zone being treated at formation temperature and at a salinity about equal to the salinity of the formation water;
- (c) flushing the face of the formation exposed to the well into which the treating liquid of (b) was injected, with an emulsion breaking liquid comprising an alcohol; and
- (d) thereafter injecting a second surfactant-containing, oil-displacing fluid into the formation to pass through and displace petroleum from at least one strata of the formation not depleted in step (a), and recovering oil from the formation via the production well.

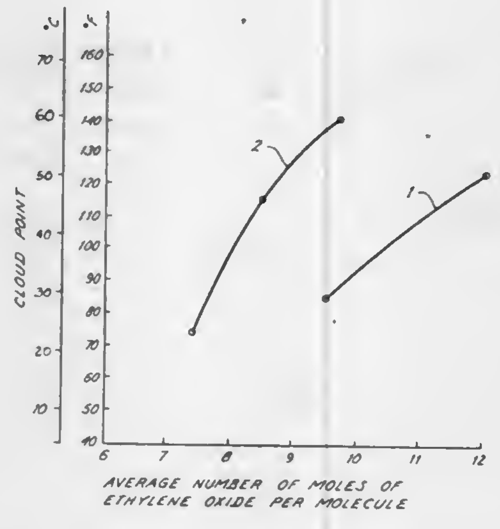
4,194,564
OIL RECOVERY METHOD
Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Oct. 10, 1978, Ser. No. 950,198
Int. Cl.^{2} E21B *43/22*
U.S. Cl. 166—274 **12 Claims**

1. A process for recovering petroleum from an underground reservoir wherein the reservoir is penetrated by at least one injection well and at least one production well, said wells being in fluid communication with each other, and wherein the reservoir contains a brine with from 50 to 220 kg/m^3 salinity comprising:
- (a) preparing a surfactant solution wherein the surfactant is an alkylaryl polyethoxy alkylene sulfonate of the formula:

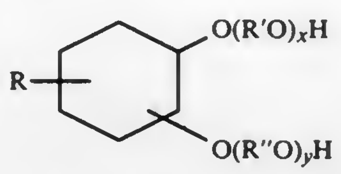


wherein n is a number from 2 to 8 and X is a cation, which exhibits phase stability when mixed with small amounts of crude oil or distilled fractions thereof and a brine, said surfactant solution comprising from about 0.05 to 10.0 percent by weight surfactant and a brine or diluted brine having a salinity slightly less than the salinity required to produce partitioning of about one half of the surfactant solution out of the aqueous phase and into oil and emulsion phases;
- (b) injecting the surfactant solution through the injection means into the underground reservoir;
- (c) injecting a driving agent; and
- (d) recovering petroleum from the production means.

4,194,565
SURFACTANT OIL RECOVERY METHOD FOR USE IN HIGH TEMPERATURE FORMATIONS CONTAINING WATER HAVING HIGH SALINITY AND HARDNESS
George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Continuation-in-part of Ser. No. 786,165, Apr. 11, 1977, Pat. No. 4,120,358, which is a continuation-in-part of Ser. No. 643,965, Dec. 24, 1975, Pat. No. 4,016,932. This application Mar. 27, 1978, Ser. No. 890,332
The portion of the term of this patent subsequent to Apr. 12, 1994, has been disclaimed.
Int. Cl.^{2} E21B *43/22*
U.S. Cl. 166—275 **5 Claims**

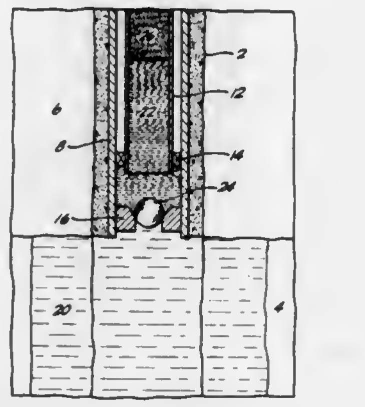


1. A method for recovering petroleum from a subterranean, permeable, petroleum-containing formation which formation also contains water having salinity from about 40,000 to about 140,000 parts per million total dissolved solids including from 2,000 to 12,000 parts per million divalent ions including calcium and magnesium, the temperature of said formation being from about 80° F. to about 180° F., said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with the petroleum formation, comprising:
- (a) injecting into the formation via the injection well, an aqueous, saline, surfactant-containing fluid to displace petroleum through the formation toward the production well, the salinity of the fluid being about equal to the salinity of the formation water, said surfactant containing fluid comprising:
  - (1) an organic sulfonate anionic surfactant selected from the group consisting of petroleum sulfonate, alkyl sulfonates having from 6 to 25 carbon atoms, alkylaryl sulfonates having from 5 to 20 carbon atoms in the alkyl chain, and mixtures thereof; and
  - (2) a dipolyalkoxylated alkyl catechol having the following formula:



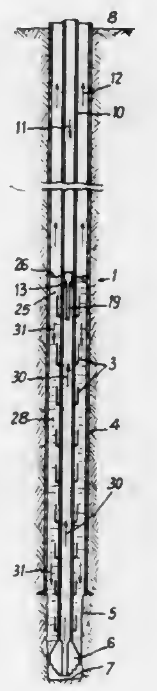
wherein R is an alkyl group, linear or branched, containing from 5 to 25 carbon atoms, R′ and R″ are each ethylene or a mixture of ethylene and higher alkylene with relatively more ethylene than higher alkylene, x and y are each 1 to 12 and the sum of x and y is from 2 to 24, wherein the total number of ethoxy groups per molecule of said dipolyethoxylated alkyl catechol is chosen so that the cloud point thereof is from 2° to 40° F. greater than the temperature of the formation; and
- (b) recovering petroleum displaced by a surfactant-containing fluid from the formation via the producing well.

4,194,566
METHOD OF INCREASING THE PERMEABILITY OF SUBTERRANEAN RESERVOIRS
George P. Maly, Newport Beach, Calif., assignor to Union Oil Company of California, Brea, Calif.
Filed Oct. 26, 1978, Ser. No. 954,993
Int. Cl.^{2} E21B *43/26, 43/27*
U.S. Cl. 166—307 **20 Claims**



1. A method for acidizing and/or fracturing a hydrocarbon-containing subterranean reservoir penetrated by a well comprising:
- (a) locating in a well conduit above a point of fluid entry into the reservoir a restriction means having therein a seat for a closure means;
- (b) injecting into the reservoir via the well conduit a slug of an acidizing or fracturing fluid;
- (c) injecting into the well conduit a slug of a displacement fluid containing a closure means adapted to fit into the seat of said restriction means;
- (d) injecting into the well conduit a slug of a weighted aqueous kill fluid;
- (e) continuing the injection of the slug of kill fluid until the closure means seats in the seat; and
- (f) preparing the well for further service.

4,194,567
METHOD AND APPARATUS FOR BALANCING PRESSURES IN AN OIL WELL
Lionel R. Marais, Paris, France, assignor to Compagnie Francaise des Petroles, Paris, France
Filed Oct. 26, 1978, Ser. No. 954,806
Claims priority, application France, Oct. 27, 1977, 77 32447
Int. Cl.^{2} E21B *21/00, 41/00*
U.S. Cl. 166—311 **18 Claims**



1. A method balancing the low pressures of fluids in subsurface strata communicating with a well comprising the steps of:
- (a) disposing at the bottom of said well a first fluid;
- (b) maintaining the surface of said first fluid at a level below the ground corresponding to a hydrostatic pressure exerted by the fluid on the adjacent subsurface strata, said pressure being slightly above the pressure of the fluids in the strata;
- (c) providing a set of rods within said well;
- (d) driving said first fluid by a second fluid having a density lower than the density of the first fluid to thereby circulate said first fluid exclusively below said corresponding level, said circulation comprising an upward flow of said first and second fluids within a common region of said well.

10. An apparatus for balancing the low pressures of fluids in subsurface strata communicating with a well comprising:
- (a) a well bore having tubing disposed at its interior surface;
- (b) means for containing a first fluid at the bottom of said well, and for maintaining the surface of said first fluid at a level below the ground corresponding to a hydrostatic pressure exerted by the fluid on the adjacent surface strata, said pressure being slightly above the pressure of the fluid in the strata;
- (c) a set of rod means disposed within said well providing a path for a second fluid having a density less than said first fluid;
- (d) means for driving said first fluid by said second fluid;
- (e) means for circulating said first fluid exclusively below said corresponding level under control of the second fluid;
- (f) wherein said circulating means further provide an upward flow of said first and second fluids within a common region of said well.

4,194,568

DISCONNECTABLE RISER COLUMNS FOR UNDER WATER OIL WELLS

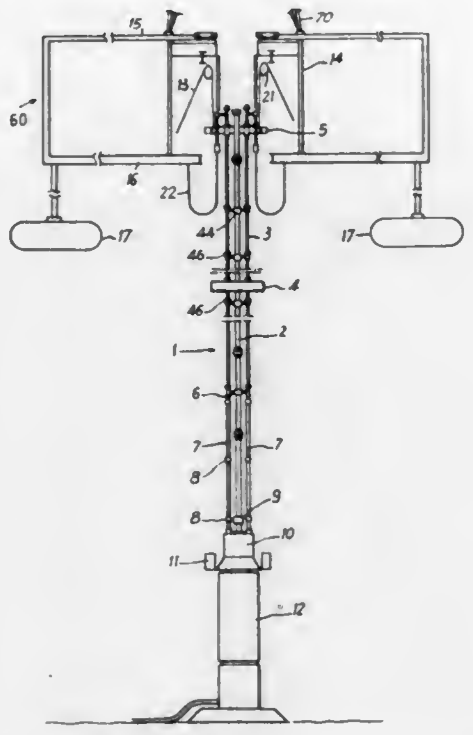
Georges Burèsi, Versailles; Olivier C. Roche, Marseille, and Michel B. Viallard, Paris, all of France, assignors to Compagnie Francaise des Petroles, S.A., Paris, France

Filed Jul. 3, 1978, Ser. No. 921,539

Claims priority, application France, Jul. 1, 1977, 77 20268

Int. Cl.^{2} E21B *7/12*

U.S. Cl. 166—340 **18 Claims**



1. A riser column for connection between a submerged installation and surface support means, said riser column comprising:
- a central tube;
- means permitting oscillation of said central tube when connected to the submerged installation;
- suspension means for association with the surface support means for suspension of said central tube;
- support means connected to said central tube at a level below that at which waves are effective;
- a plurality of satellite tubes arranged about said central tube, each said satellite tube comprising a bottom part extending between said support means and the submerged installation and a top part extending from said support means to said suspension means; and
- connecting means for releasably connecting said bottom parts to said satellite tubes to said top parts of said satellite tubes, said connecting means including means for retaining the bottom parts of said satellite tubes suspended underwater with respect to said submerged installation upon the disconnection of said top and bottom parts of said satellite tubes.

4,194,569

FIRE EXTINGUISHERS

Richard C. Heath, 3, Barham Close, Weybridge, Surrey, England, assignor to Richard Charles Heath, Weybridge, England

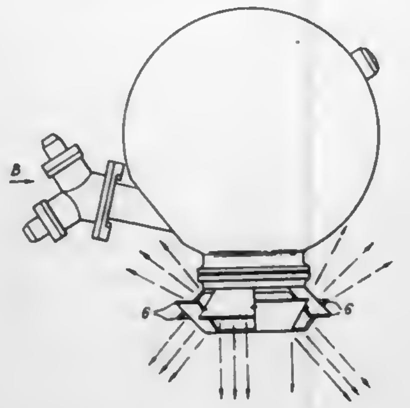
Filed Nov. 21, 1977, Ser. No. 853,657

Claims priority, application United Kingdom, Nov. 22, 1976, 48658/76

Int. Cl.^{2} A62C *35/02*

U.S. Cl. 169—26 **1 Claim**

1. A fire extinguisher comprising a container providing a source of extinguishant, a circular burstable diaphragm closing said container and permitting, upon bursting thereof, a high mass flow rate of extinguishant from the container, and venting means comprising a generally circular end cap overlying said diaphragm, said end cap comprising an even number of radial outlet ports through which extinguishant flowing from the container is discharged, said outlet ports being regularly angularly spaced about its periphery whereby each outlet port is balanced by a corresponding port diametrically opposed thereto and wherein said outlet ports are associated with deflector plates for deflecting said extinguishant axial with respect to said circular end cap, the said deflector plate of alternate ports being angled in opposite directions, whereby the axial reaction forces due to discharge of extinguishant from alternate ones of said outlet ports balanced by an opposite reacting axial force due to discharge of extinguishant from the remaining ports.



4,194,570

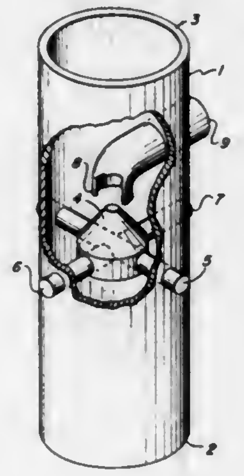
FLOW MOMENTUM REVERSING FIRE ABATEMENT SYSTEM

Jose P. Arencibia, Jr., Bethlehem, Pa., assignor to Air Products & Chemicals, Inc., Allentown, Pa.

Filed Dec. 4, 1978, Ser. No. 965,817

Int. Cl.^{2} A62C *3/04*

U.S. Cl. 169—46 **7 Claims**



1. A device for extinguishing combustible fluids exiting from a pipe which device comprises:
- (a) an extinguisher body having inlet and outlet ends and passageway therebetween adapted for coupling the extinguisher body in the pipe for passage of the entire flow of the combustible fluid through the extinguisher body;
- (b) a conical diffuser coaxially mounted in said extinguisher body with the apex of the conical diffuser oriented towards the outlet of the extinguisher body;
- (c) an extinguisher fluid nozzle coaxially mounted in the extinguisher body between the conical diffuser and outlet end proximate the apex of the conical diffuser for discharge of an extinguisher fluid towards the inlet end of the extinguisher body and against the apex and convex surface of the conical diffuser; and
- (d) means for supplying a high momentum source of extinguisher fluid to the nozzle from outside of the extinguisher body.

4,194,571

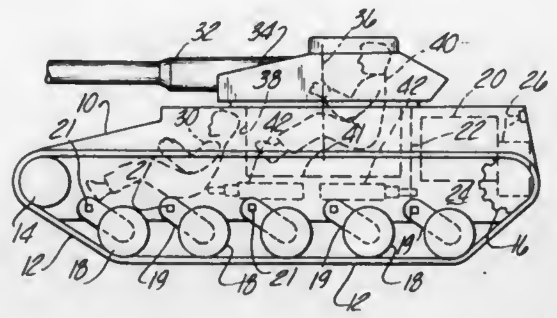
FIRE SUPPRESSION MECHANISM FOR MILITARY VEHICLES

Anthony J. Monte, 47660 Bluebird, Utica, Mich. 48087

Filed Feb. 23, 1979, Ser. No. 14,502

Int. Cl.^{2} A62C *35/12*

U.S. Cl. 169—61 **4 Claims**



1. In a tracked military vehicle comprising a hull subdivided into a rear engine compartment and a forward driver compartment, a turret rotatably mounted on a central portion of the hull upper wall and having a basket depending therefrom into the hull interior space, the hull having a bottom wall spaced below the basket to define an intervening clearance space; the improvement comprising fire suppressant means disposed in the aforementioned clearance space, said fire suppressant means comprising first horizontally-oriented cylinder means underlying the rear portion of the basket and second horizontal cylinder means underlying the front portion of the basket, each said cylinder means comprising a cylindrical pressure vessel having end walls and an intermediate floating piston, a flashable vapor fire suppressant material changed into the space between one end wall and the piston, an inert pressurized gas charged into the space between the other end wall and said piston, an electrically-operated valve mounted on said one end wall of each pressure vessel to control the escape of pressurized suppressant from the vessel; the cylinder means being oriented so that the first cylinder means discharges suppressant to the engine compartment and the second cylinder means discharges suppressant to the driver compartment.

4,194,572

FIRE EXTINGUISHING APPARATUS FOR LARGE OIL STORAGE RESERVOIRS

Jean P. Thery, Le Chesnay; Claude M. Alban, Charenton, and Albert P. Jordi, La Caviere d'Azur, all of France, assignors to Compagnie Francaise des Petroles, S.A., Paris, France

Filed May 4, 1976, Ser. No. 682,932

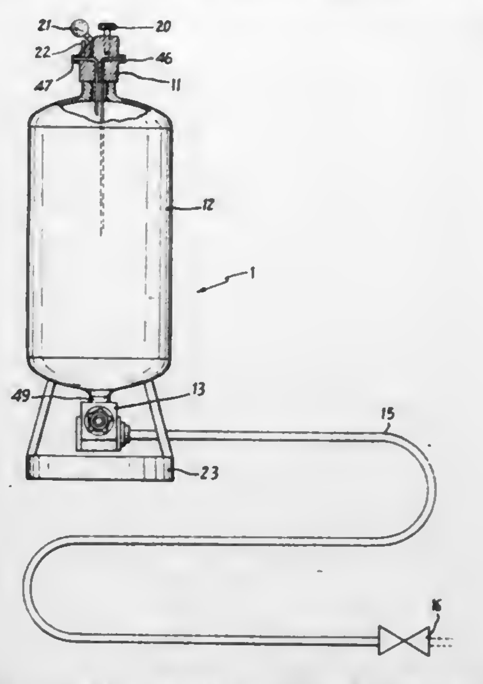
Claims priority, application France, May 6, 1975, 75 14078

Int. Cl.^{2} A62C *35/00*

U.S. Cl. 169—66 **11 Claims**

1. Fire extinguishing apparatus comprising:
- a plurality of reservoirs for storing a fire inhibitor product under pressure;
- a plurality of thin wall plastic tubes filled with a gas selected from the group comprising air and inert gases at a pressure in the range of 1.2 to 4 bars, and tubes adapted to burst when exposed to a predetermined temperature and having a wall thickness selected to withstand the pressure of the inhibitor product only during flow therethrough;

a plurality of differential valve means individually connecting said plastic tubes to said reservoirs and which are normally closed, each differential valve means adapted to open automatically to allow inhibitor product to pass from a reservoir to an associated plastic tube when a sudden drop in gas pressure in said tube occurs upon bursting, and a plurality of capillary tubes individually connecting said thin wall plastic tubes to a single device for compensating for leaks from the tubes.



4,194,573

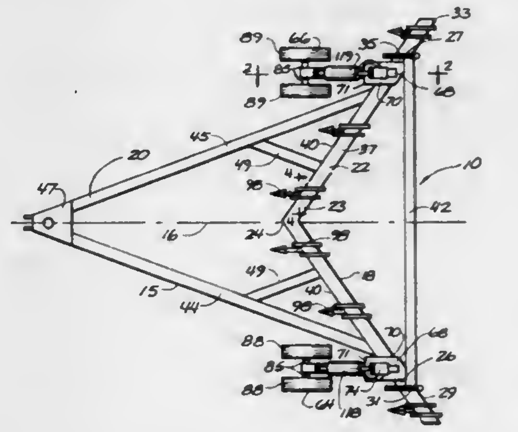
AGRICULTURAL SUBSOIL IMPLEMENT INCLUDING FLOW DIVIDER FOR WHEEL ASSEMBLIES

Gale F. Rettkowski, Wilbur, Wash., assignor to R & R Agri-Products, Inc., Wilbur, Wash.

Filed May 22, 1978, Ser. No. 908,137

Int. Cl.^{2} A01B *63/22, 13/08*

U.S. Cl. 172—400 **5 Claims**



1. An agricultural draft drawn subsoil implement, comprising:
- a draft frame assembly for attaching to and being drawn by a tractor in which the frame assembly includes a rigid A-shaped tool bar frame aligned along a center line of the implement with (1) a V-shaped tool bar that extends from an apex rearward and outward on opposite sides of the center line, and (2) a cross frame element interconnecting the V-shaped tool bar spaced from the apex;
- a plurality of subsoiler tools adjustably mounted at laterally spaced locations along the V-shaped tool bar for engaging the soil;
- each of said subsoiler tools having a shank with a parabolic shaped leading edge that extends downward and forward from the tool bar for engaging and breaking the subsoil at an angle sufficient to bias the subsoiler tools downward as the implement is pulled by the tractor;
- wherein the subsoiler tools have adjustable tool mounting brackets that permit the subsoiler shanks to be repositioned laterally on the tool bar;
- two independent wheel assemblies mounted to the V-shaped tool bar on opposite sides of the center line of the implement;
- each of the wheel assemblies having (1) a wheel assembly

mounting bracket adjustably mounted to the tool bar in alignment with a corresponding subsoiler shank to enable the wheel assembly to be repositioned when the corresponding subsoiler shank is repositioned, in which the mounting bracket has a standard extending upward and forward of the tool bar; (2) a strut arm with one end pivotally connected to the wheel assembly mounting bracket for pivotal movement about a transverse axis and an opposite end extending forward and downward with respect to the tool bar and overlying the corresponding subsoiler shank; (3) axles affixed to the opposite end of the strut arm and extending laterally outward from opposite sides of the strut arm; and (4) pneumatic wheels mounted to the axles on opposite sides of the strut arm;

two double acting hydraulic actuating means each affixed to a corresponding wheel assembly standard and operatively connected to a corresponding strut arm for pivoting the respective strut arm about its respective pivot axis to independently pivot the pneumatic wheels downward with the wheels straddling the corresponding shank to pull all the shanks completely out of the soil to enable the implement to be transported and to independently pivot the pneumatic wheels upward to drive the shanks into the subsoil for working the subsoil; and

a hydraulic system operatively connected to the two double acting hydraulic actuating means and having flow divider means for uniformly applying equal amounts of fluid to each actuating means independently of pressure exerted by each actuating means to uniformly pull all of the shanks out of the soil and uniformly drive the shanks into the subsoil.

4,194,574

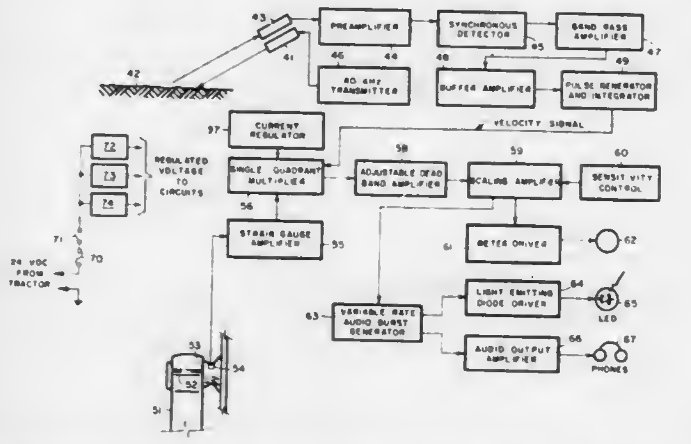
DRAFT POWER SENSOR AND METHOD FOR IMPROVING PERFORMANCE IN EARTHMOVING EQUIPMENT

Harvey S. Benson, Medina County, and Charles D. Wood, III, Bexar County, both of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Sep. 13, 1977, Ser. No. 832,724

Int. Cl.^{2} E02F *3/76;* A01B *63/112*

U.S. Cl. 172—430 **11 Claims**



1. Apparatus for determining the draft power of earth-moving equipment, said apparatus comprising:

(a) a detecting means to measure the true ground speed of said earthmoving equipment;

(b) detecting means to measure the draft force applied to the soil by said earthmoving equipment;

(c) means for processing information obtained from said detecting means to measure true ground speed and information obtained from said detecting means to measure draft force, to derive a product which is draft power.

7. A method for determining the draft power of earthmoving equipment comprising the steps of

(a) measuring the true ground speed of said earthmoving equipment;

(b) measuring the draft force applied by said earthmoving equipment

(c) processing the measured value of said true ground speed and the value of said draft force to obtain draft power.

4,194,575

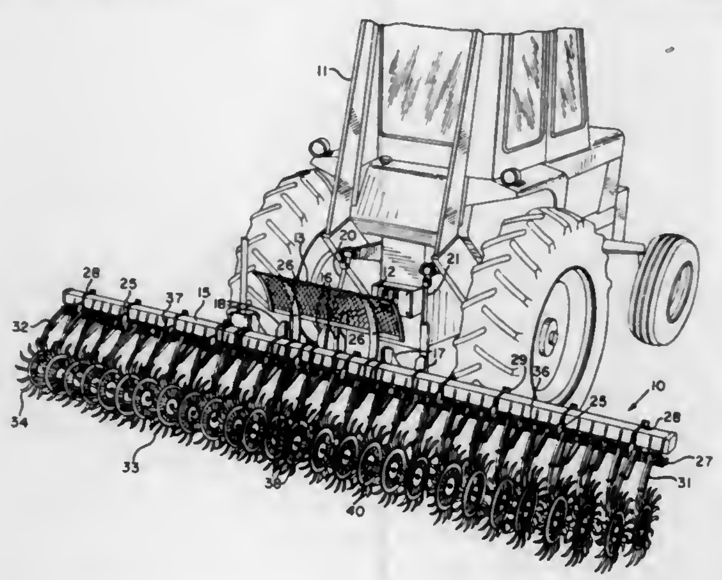
MULTIPLE ROTARY HOE AND SUPPORT ARMS

Bernard F. Whalen, Colchester, Ill., assignor to Yetter Manufacturing Company, Colchester, Ill.

Continuation of Ser. No. 859,003, Dec. 9, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,437

Int. Cl.^{2} A01B *39/08*

U.S. Cl. 172—551 **11 Claims**



11. A rotary hoe arrangement including a row of hoe wheels with means mounting each hoe wheel independently for individual operative ground contact independently of all other hoe wheels, said means comprising a series of independent operating arms respectively supporting the hoe wheels of said row, each of said hoe wheels being mounted on and supported by an operating arm individual thereto, all of said operating arms being pivotally mounted on pivot shaft means, means mounting said shaft means on said frame member comprising a plurality of laterally spaced pivot bearings secured to said member, spring means individual to each of said operating arms on said pivot shaft means and operating arm to exert pressure on said operating arm individually and which yields to upward movement of the arms whereby each hoe wheel is individually urged into contact with the ground, and stop means on each operating arm which engages said frame member to dispose all of said hoe wheels in the same operative position, said arms and stop means being formed and disposed to locate said hoe wheels in said row and whereby said hoe wheels are adapted to function independently in traversing ground being worked so that each wheel may be deflected about said pivot shaft means without translating this movement to any other wheel.

4,194,576

SHANK AND COULTER MOUNTING CLAMP

Harold J. Graber, Rte. 4, Hutchinson, Kans. 67501

Filed Dec. 12, 1977, Ser. No. 859,312

Int. Cl.^{2} A01B *35/20, 39/22*

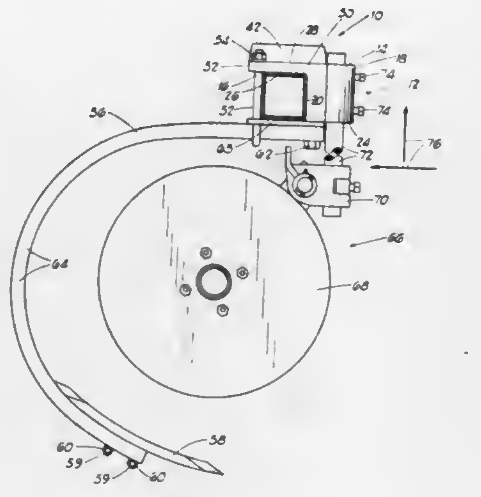
U.S. Cl. 172—763 **4 Claims**

1. A shank and coulter mounting clamp for attaching to an angular shaped plow frame tube and securing a rolling coulter and a rigid shank to the plow frame with the rolling coulter disposed in front of and adjacent the throat of the shank, the clamp comprising;

an inverted "L" shaped bracket, said bracket including

a vertical arm having a front portion, a back portion, a top portion, and a bottom portion, the vertical arm having a vertical coulter shaft aperture therethrough for receiving a coulter shaft of the rolling coulter, the vertical arm further including a vertical shank bolt aperture adjacent the back portion of the vertical arm for receiving a shank bolt attached to the rigid shank; and

a horizontal arm integrally attached to the top portion of the vertical arm, the horizontal arm having a top portion, a bottom portion, a front portion, and a back portion, the horizontal arm having "U" bolt apertures therethrough for receiving the ends of a "U" bolt; and



a "V" shaped strengthening web integrally formed in the top portion of the vertical arm and the horizontal arm for providing added strength in the structure of the clamp.

4,194,577

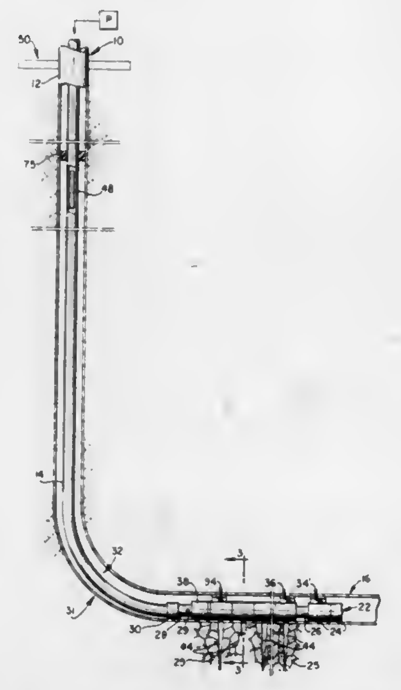
METHOD AND APPARATUS FOR COMPLETING A SLANTED WELLBORE

Roy R. Vann, Artesia, N. Mex., assignor to Peabody Vann, Houston, Tex.

Filed Oct. 17, 1977, Ser. No. 842,565

Int. Cl.^{2} E21B *43/118*

U.S. Cl. 175—4.51 **7 Claims**



1. Method of completing a cased borehole which has a ubstantially vertical upper marginal end portion and a substantially horizontal lower marginal end portion, comprising he steps of:

(1) arranging shaped charges within a perforating gun such that said charges, when detonated, are directed in a downward direction radially away from the lower half of the gun;

(2) placing an upwardly extending guide means on said gun in opposition to said shaped charges and extending said guide means away from the gun and into close proximity of the inside peripheral wall of the casing, thereby causing the gun to gravitate towards the bottom of the casing;

(3) using a tubing string to run the gun downhole, making the gun freely axially rotatable respective to the tubing by the provision of a swivel means which is interposed between the gun and the lower end portion of the tubing string;

(4) running the gun downhole into the horizontal lower marginal end portion thereof until the gun is at a location adjacent to a hydrocarbon bearing formation to be completed, and firing the gun, thereby forming perforations which extend only generally downward through the casing wall and downward out into the formation.

4,194,578

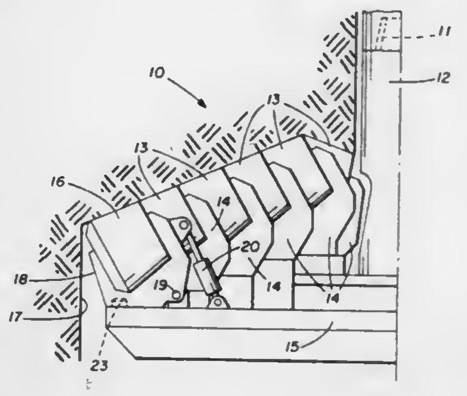
RAISE BORING HEAD WITH RETRACTABLE GAGE CUTTERS

Howard E. Mitchell, Duncanville, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 30, 1978, Ser. No. 910,724

Int. Cl.^{2} E21C *23/00*

U.S. Cl. 175—53 **6 Claims**



1. A raise bit for enlarging a pilot hole into a larger diameter raise hole by being attached to a rotary drill string and rotated and drawn upward by said rotary drill string thereby disintegrating portions of the earth formations surrounding the pilot hole to form a larger diameter raise hole and allowing the portions of the formations to fall freely down the large diameter raise hole, comprising:

a bit body defining a bit axis of rotation, said bit body including a plate positioned perpendicular to said bit axis of rotation, said plate forming the lowermost portion of said bit body;

a drive stem projecting perpendicularly upward from said bit body along said bit axis of rotation, said drive stem including threads to allow said raise bit to be connected to said rotary drill string;

primary cutter means on said bit body located above said plate, said primary cutter means positioned at a first radial distance from said bit axis of rotation for disintegrating the earth formations out to said first radial distance from said bit axis of rotation;

gage cutter means positioned on a moveable support means, said moveable support means located above said plate;

means for allowing said gage cutter means and said moveable support means to be moved relative to said bit body thereby selectively positioning said gage cutter means at a gage cutting position wherein said gage cutter means disintegrates the earth formations out to a radial distance from said bit axis of rotation that is greater than said first radial distance and selectively positioning said gage cutter means within said first radial distance; and

force means for selectively moving said gage cutter means and moveable support means to said gage cutting position wherein gage cutter means disintegrates the earth formations out to a radial distance from said bit axis of rotation that is greater than said first radial distance and selectively positioning said gage cutter means within said first radial distance to allow said raise bit to be lowered back through said larger diameter hole.

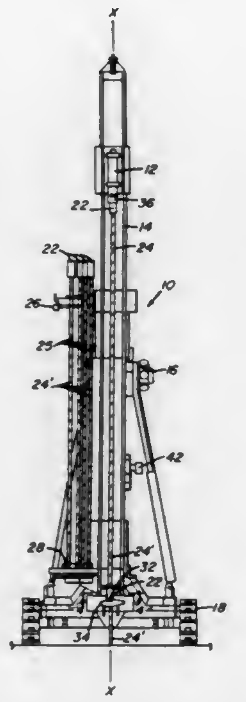
4,194,579
DRILLING APPARATUS AND METHOD

Edward A. Bailey, Newport, and James F. Ordway, West Lebanon, both of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Division of Ser. No. 712,622, Aug. 9, 1976, Pat. No. 4,102,414. This application May 8, 1978, Ser. No. 904,075

Int. Cl.² E21B *17/042, 19/16*

U.S. Cl. 175—57 22 Claims



1. In a drilling apparatus including a housing which carries an elongated drive means for powered movement within such housing and which drive means is adapted to receive into engagement therewith a drill rod coupling portion of an elongated drill string for imparting a drilling impetus to such drill string, the improvement comprising:

a lock means adapted to be carried by such drilling apparatus for rotatively restraining such a drill rod coupling portion; said lock means including a body member; said body member being stationary with respect to such housing so as to extend adjacent such drive means; restraining means carried by said body member; and said restraining means being selectively operable to secure such coupling portion engaging such drive means against axial rotation with respect to such housing in one rotary direction only.

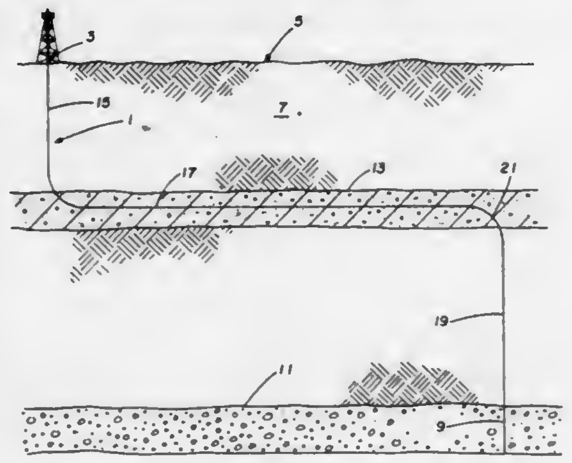
4,194,580
DRILLING TECHNIQUE

Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,794

Int. Cl.² E21B *7/04*

U.S. Cl. 175—61 2 Claims



1. A method of providing a wellbore that extends into the earth's crust intermediate a surface location and a subsurface location spaced laterally therefrom in a mineral bearing formation, comprising:

(a) forming a first portion of said wellbore to extend essentially vertically from said surface location into said earth's crust and into a formation thereof having good drilling characteristics located intermediate said surface location and said mineral bearing formation;

(b) forming a second portion of said wellbore to extend from the lower end of said first portion into said formation having good drilling characteristics which second portion extends therein essentially parallel to the bedding plane thereof for a great lateral distance; and

(c) forming a third portion of said wellbore to extend essentially vertically from the farthest extension of said second portion to said subsurface location in said mineral bearing formation.

4,194,581
DEEP DRILL HAMMER

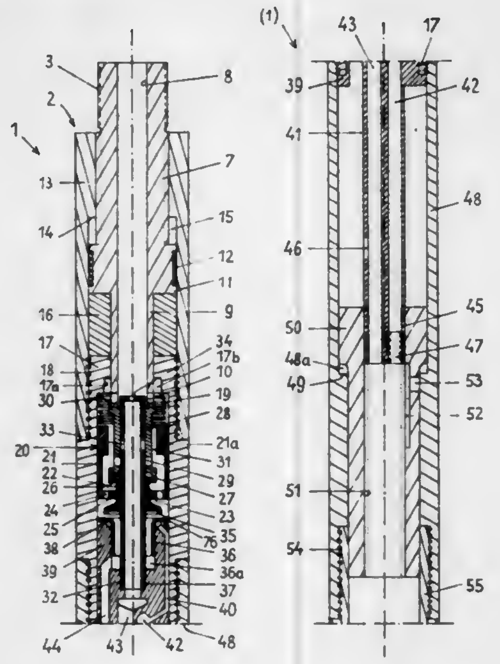
Hans P. Walter, Neissestrasse 1, D-3570 Stadt Allendorf 1/BRD, Fed. Rep. of Germany

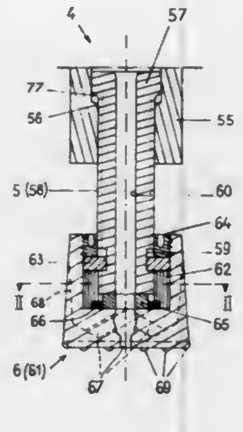
Continuation of Ser. No. 669,120, Mar. 22, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 845,099

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1975, 2512785

Int. Cl.² E21B *5/00*

U.S. Cl. 175—92 9 Claims





9. A down hole percussion drill assembly adapted for connection to a drill string comprising in combination:

(a) an outer tube,

(b) an inner tube located within said outer tube,

(c) a ram positioned between the cylindrical inner wall of said outer tube and the exterior surface of said inner tube, said ram containing a through-hole and being mounted for longitudinal reciprocating movement,

(d) a steel drill member comprising an upper end, a lower end with a bit, and an intermediate shaft portion,

(e) retainer means for connecting the upper end of said steel drill member to the lower end of said outer tube,

said retainer means, steel drill member and bit being provided with matching disharmonic polygonal profiles, the edges of which are rounded at the curvature of an outer radius, the areas therebetween being curved surfaces of flat cycloid section such that the curvature changes at the corners.

the bottom end of said steel drill shaft positively engaging in the inner front face of said bit and wherein said bit is adapted for sliding movement relative to said steel drill shaft and is provided with flexible cushion means,

said bit being provided with polygonal insert means, the outer part of which is recessed on its circumference and by means of resilent packing is cushioned in a peripheral direction.

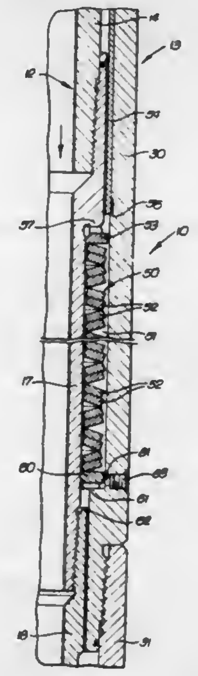
4,194,582
DOUBLE ACTING SHOCK ABSORBERS FOR DRILL STRINGS

Alfred Ostertag, Celle, Fed. Rep. of Germany, assignor to Christensen, Inc., Salt Lake City, Utah

Filed Jun. 28, 1978, Ser. No. 919,790

Int. Cl.² E21B *17/04*

U.S. Cl. 175—321 14 Claims



1. A shock absorber for bore hole drilling strings, comprising a telescopic structure including an outer tubular member, an inner tubular member within said outer member, said members having means for connecting said structure in a drilling string, whereby drilling fluid can be conducted through the drilling string and said inner and outer tubular members, rotary drive means for transmitting torque between said members while said members are moving axially with respect to each other, a single spring means between said outer and inner members, said outer member having longitudinally spaced upper and lower shoulders at opposite ends of said spring means, said inner member having longitudinally spaced upper and lower shoulders at opposite ends of said spring means, the upper shoulder of one member and the lower shoulder of the other member simultaneously engaging and stressing said spring means upon longitudinal contraction of said members with respect to each other, the upper shoulder of the other member and the lower shoulder of said one member simultaneously engaging and stressing said spring means upon extension of said members with respect to each other, said inner and outer members having transverse surfaces responsive to the pressure of the fluid flowing through said members which tends to extend said members relative to each other.

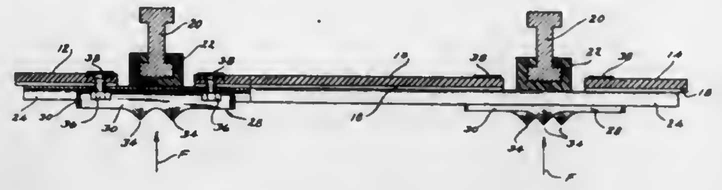
4,194,583
SNOWMOBILE TRACTION LUG AND MOUNTING THEREFOR

Olav Aaen, 1266 N. Sheridan Rd., Kenosha, Wis. 53140

Continuation of Ser. No. 739,725, Nov. 8, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,459

Int. Cl.² B62D *55/24*

U.S. Cl. 180—190 4 Claims



1. A snowmobile comprising; a fixed longitudinally-extending track-supporting rail, a longitudinally-propelled track including laterally-spaced plural bands of flexible material defining a longitudinal gap therebetween, said rail being positioned in said gap, a bar extending transversely across said track and secured to said bands, a transversely-extending traction lug extending across said gap, said lug having a at least one spike portion directed downwardly and extending below said bar and said bands, and securing means securing said lug to said bar on opposite sides of said rail, said securing means disposed upwardly of said spike portion.

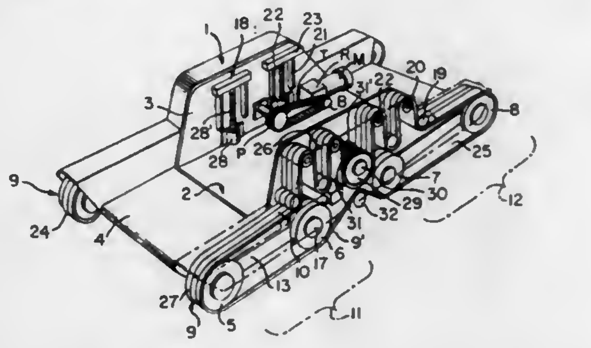
4,194,584
VARIABLE TERRAIN VEHICLE

George H. Kress, 10245 Arizona Cir., Bethesda, Md. 20034, and James F. Delany, 1815 Horseback Trail, Vienna, Va. 22180

Filed Jul. 17, 1978, Ser. No. 925,633

Int. Cl.² B62D *55/14, 55/24, 55/30*

U.S. Cl. 180—9.24 R 23 Claims



1. A vehicle having an undercarriage provided with a track laying assembly on both sides, each said track laying assembly including a front and rear support assembly, an endless belt tread encircling both said front and rear support assemblies of each said track laying assembly, each said support assembly including at least a pair of wheels within the confines of said tread, means connected to at least one said wheel of each said track laying assembly operable to displace said connected wheel toward and away from said wheels of the other said support assembly of the same track laying assembly in order to vary the effective ground engageable wheelbase of said vehicle, and tread take-up means engageable with said tread and operable during said variation of the wheelbase to take up and let out a portion of said endless treads.

4,194,585
INSTRUMENT MOUNTING SYSTEM

Edgar D. Prince, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

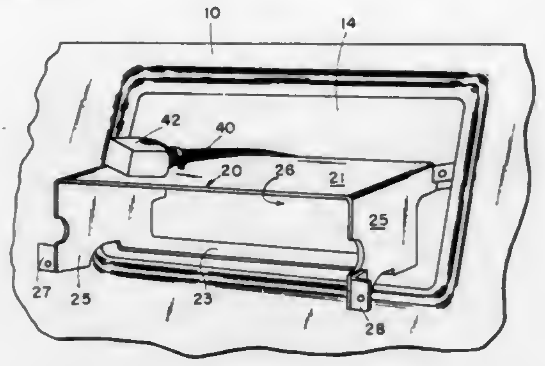
Filed Jul. 26, 1978, Ser. No. 928,241

Int. Cl.² B60K *37/04*

U.S. Cl. 180—90 19 Claims

1. A system for mounting an accessory to a vehicle comprising:

an adaptor housing having a first end shaped to fit over an opening in the vehicle formed by the removal of a vehicle's accessory, and a second end spaced from said first end and having an opening sufficiently large to accommodate the removed vehicle's accessory and an additional accessory to be mounted to the vehicle, said adaptor housing including a passageway extending between said first and second ends to provide access therebetween;



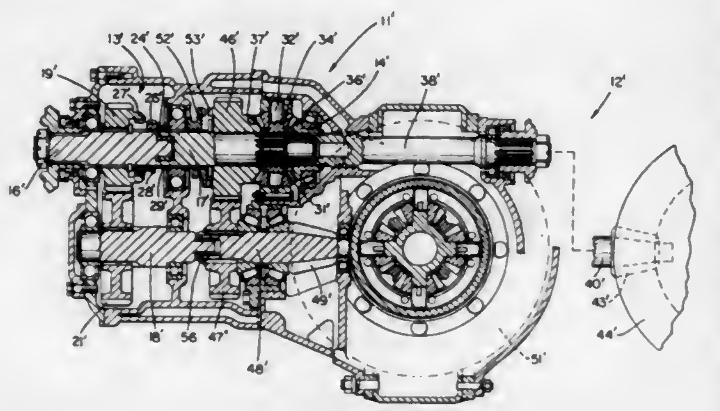
means for securing said housing to the vehicle with said first end in alignment with the opening; and

means for securing the vehicle's accessory and an additional accessory to said housing to be accessible from said second end.

4,194,586
GEARED TORQUE SELECTOR

Bradford W. Hicks, Mentor, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed May 17, 1978, Ser. No. 906,979
Int. Cl.² F16H *37/08;* B16K *17/16*
U.S. Cl. 180—24.09 **11 Claims**



1. In a geared drive system for transmitting driving torque to a pair of drive axles, said system including:

a power divider drivingly connected to said pair of drive axles for driving same, said power divider including driving shaft means, first and second output shafts disposed substantially parallel to said driving shaft means and each drivingly connected to a respective one of said drive axles, an axle gear set drivingly connected between said driving shaft means and said first output shaft, and means drivingly connecting said driving shaft means and said second output shaft;

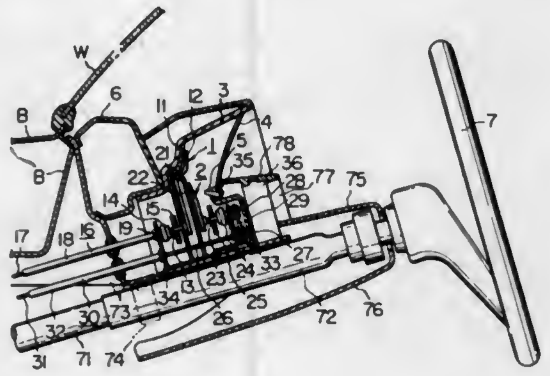
auxiliary transmission means connected to the input end of said power divider for driving same at a different speed ratio, said auxiliary transmission means including an input shaft and a substantially parallel countershaft, said input shaft being coaxially aligned with said driving shaft means, and said countershaft being coaxially aligned with said first output shaft;

comprising the improvement wherein said auxiliary transmission means includes a single transmission gear set drivingly connectable between said input shaft and said countershaft, and clutch means having a first position of engagement for directly drivingly connecting said input shaft to said driving shaft means for permitting direct driving of said power divider, said clutch means having a second position of engagement which disconnects said input shaft from said driving shaft means and directly drivingly connects said countershaft to said first output shaft for driving said power divider at said different speed ratio.

4,194,587
INDICATOR METERS FOR AUTOMOBILES AND ILLUMINATION THEREFOR

Makoto Shino, Wako; Sadao Makiguchi, Tokyo; Hajime Matsumoto, Kawasaki; Katsusuke Komuro, Chofu; Kazuhiro Iwai, Hidaka, and Yoshikazu Tsuchiya, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1978, Ser. No. 930,556
Claims priority, application Japan, Aug. 5, 1977, 52-105639
Int. Cl.² B60K *20/08*
U.S. Cl. 180—90 **6 Claims**

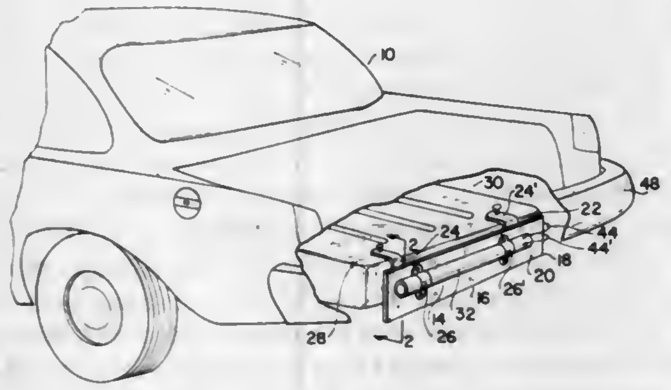


1. A meter arrangement for a motor vehicle, which comprises a plurality of meters arranged in the lengthwise direction of the vehicle, said meters having pointers each rotatable about an axis, said pointer axes being closely positioned to be simultaneously readable, spaced drive shafts connected mediately to drive said meters respectively, power transmission means having a driving rotating part directly connected to the drive shaft connected mediately to the one of said meters closest to a driver of the motor vehicle and a rotating driven part laterally offset from said driving rotating part and operatively connected to be driven by said driving part, and a pointer rotating mechanism between said driven part and said pointer and operatively connected to said driven part and to said pointer, to rotate said pointer.

4,194,588
MOTOR VEHICLE FIRE PREVENTION DEVICE

John F. Wygal; Geraldine Schandoney, and Dorothy L. Straus, all of 5893 Los Molinos, Buena Park, Calif. 90620

Filed Sep. 15, 1978, Ser. No. 942,538
Int. Cl.² B60R *21/00*
U.S. Cl. 180—279 **8 Claims**

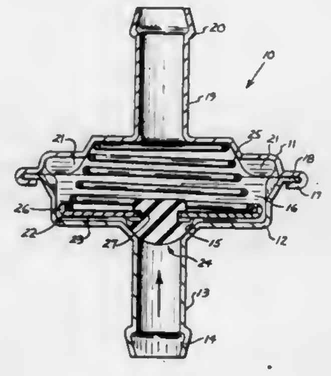


1. A fire prevention device for motor vehicles having an ignition system, a fuel tank, said ignition system including an electrical ground and conductors carrying potential other than ground potential, comprising a hollow cylinder, means for affixing said cylinder adjacent a fuel tank of said motor vehicle, a pair of coil-like conductors, a sheet of shatterable material, said sheet of shatterable material carried within said cylinder, said pair of coil-like conductors carried within said cylinder having said sheet of shatterable material disposed there inbetween, means to electrically connect one of said coil-like conductors to said electrical ground and the other of said coil-like materials to said conductor of said ignition system having a potential other than at said electrical ground whereby said sheet of shatterable material when broken upon impact to said motor vehicle permits said pair of coil-like conductors to electrically engage one another shorting out said ignition system disabling said motor vehicle from further operation.

4,194,589
VALVE

Erwin W. Parr, 3001 McKinley, Des Moines, Iowa 50315

Filed Jun. 12, 1978, Ser. No. 914,542
Int. Cl.² B60R *27/00*
U.S. Cl. 180—271 **6 Claims**



1. In combination with an automotive vehicle having a fuel tank and an engine, fuel supply conduit means connected to said tank, a fuel pump driven by said engine and located in said conduit means for pumping fuel from said tank for use by said engine and valve means connected in said fuel line between said fuel pump and said fuel tank dependent upon operation of said pump to open said fuel conduit means, said valve means comprising:

a housing having a sealed chamber therein;

inlet port means connected to said housing and to the fuel tank side of said conduit means;

a circular valve seat disposed in said chamber surrounding said inlet port means;

outlet port means connected to said housing and to the fuel pump side of said conduit means;

a valve assembly disposed within said chamber, said valve assembly comprising:

a plate extending substantially across said chamber, one side of said plate facing said inlet port means and the other side of said plate forming said outlet port means;

an opening having an axis disposed in said plate and resilient means disposed through said opening, said resilient means comprising a first portion extending on the inlet side of said plate, said first portion having a partially spherical surface thereon;

said first portion being larger than said opening;

a second portion, larger than said opening but capable of being resiliently forced through said opening; and

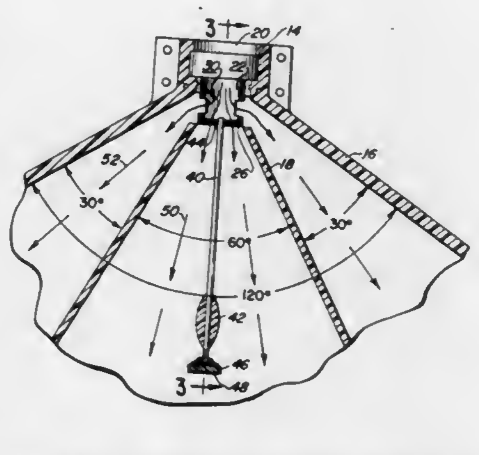
a third portion smaller than said opening connecting the first portion to the second portion for allowing said resilient means to laterally shift its position with respect to the central axis of said opening and thereby facilitate positive sealing of said resilient means against said valve seat when said fuel pump is not in operation; and

means for biasing said valve member against said valve seat.

4,194,590
LOUDSPEAKER HORN WITH ADJUSTABLE ANGLE OF DISPERSION

C. Roger Anderson, Wilmette, and Robert B. Schulein, Evanston, both of Ill., assignors to Shure Brothers, Incorporated, Evanston, Ill.

Filed Apr. 13, 1979, Ser. No. 29,612
Int. Cl.² G10K *11/00*
U.S. Cl. 181—186 **3 Claims**



1. Loudspeaker horn means, including means for adjusting the angles of sound dispersion therefrom, said loudspeaker horn means including a center segment and two outer segments disposed at each side of the center segment, a plurality of walls forming said segments with the wall of the center segment forming one of the walls of the two side segments and independent walls forming the outer sides of the two side segments, said horn including a throat through which sound is directed, said walls forming outer sides said side segments extending to and joining with said throat with the walls of the center segment spaced from the throat, said adjusting means comprising

a valve including an open-ended tube with a pair of openings formed in the sides thereof and connecting the walls of the center segment with said throat,

said valve including means for rotatably supporting the tube and for blocking said openings therein from communication between the throat and the two side segments of the horn when in one position and at the same time providing communication between the throat and the center segment thereof; and providing communication between said throat and all of the segments of the horn when in another position, and

means for rotating the valve to the desired position comprising a rod extending outwardly through the center segment of the horn and connected at its inner end to said tube and to an adjusting knob at its outer end.

4,194,591
MOBILE SCAFFOLD WITH FIXED-USE-POSITION OUTRIGGERS

Robert E. Fisher, Berkeley, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Jul. 17, 1978, Ser. No. 925,174
Int. Cl.² E04G *1/34, 1/30, 1/24*
U.S. Cl. 182—17 **19 Claims**

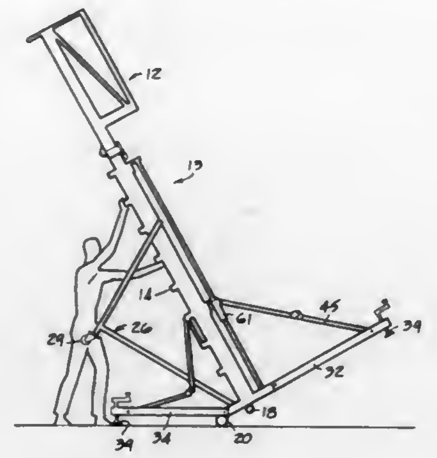
1. A pedestal scaffold comprising:

(a) a base,

(b) first and second caster means mounted on said base, each caster means including at least one ground-engageable caster, there being at least three casters in all, said casters defining therebetween a support area when all of said casters engage the ground,

(c) an elongated ladder unit having a climbing side, said ladder unit being mounted at one end thereof on said base and extending generally vertically upwardly from said base with the center of gravity of said scaffold being vertically within said support area when all of said casters are in engagement with level ground,

(d) at least three elongated outrigger members, each connected at one end therefore to said base and having a ground-engageable element at the other end thereof for engagement with the ground outwardly from said base,

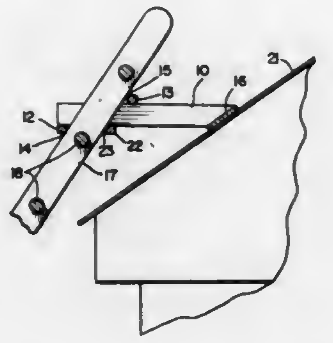


(e) a lockable brace means for each of said outrigger members for positioning said outrigger members relative to said base, when all of said outrigger elements engage the ground and all of said brace means are locked, such that the climbing side of the ladder is vertical and all of said casters are above ground.

4,194,592
LADDER STAND-OFF

Lewis L. Evans, 1408 Durant Ave., North Charleston, S.C. 29406

Filed Feb. 23, 1978, Ser. No. 880,560
Int. Cl.^{2} E06C *7/48*
U.S. Cl. 182—214 **2 Claims**



1. A stand-off for a ladder having a pair of stiles connected together by a plurality of rungs which comprises a pair of arms transversely connected by three braces each having a bearing surface substantially parallel to the others, said arms and braces forming an opening therebetween through which the ladder is positioned; two of braces being so arranged that when the ladder is in an upright position and supported at its upper end by the stand-off with the arms in contact with a supporting surface the bearing surfaces of these two braces will bear against opposite sides of the stiles and with the third brace so arranged as to restrict the movement of the stand-off when the ladder is unsupported by the stand-off.

4,194,593
CYCLIC LUBRICANT DISTRIBUTOR VALVE

John P. Snow, Sagamore Hills, and James J. Callahan, Mentor, both of Ohio, assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Sep. 11, 1978, Ser. No. 941,557
Int. Cl.^{2} F16N *25/02*
U.S. Cl. 184—7 D **8 Claims**

1. A cyclic lubricant distributor valve comprising

an inlet block unit having a lubricant inlet,

an end block unit,

a plurality of intermediate block units between said inlet and end block units,

each of said intermediate block units comprising a base member and a spool member,

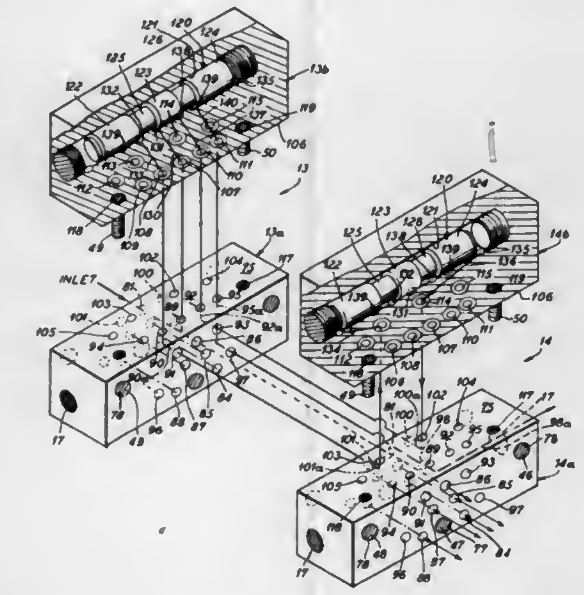
said spool member having a bore and a spool movable in said bore, and said base member having at least one outlet,

said spool member and said base member having cooperating faying faces abutting one another,

means forming hydraulic circuitry in said inlet block unit, said end block unit and said intermediate block units for interconnecting said inlet, said spools and said outlets to provide for cyclic operation of said valve,

said hydraulic circuitry interconnecting said spool members with their corresponding base members only through said cooperating faying faces,

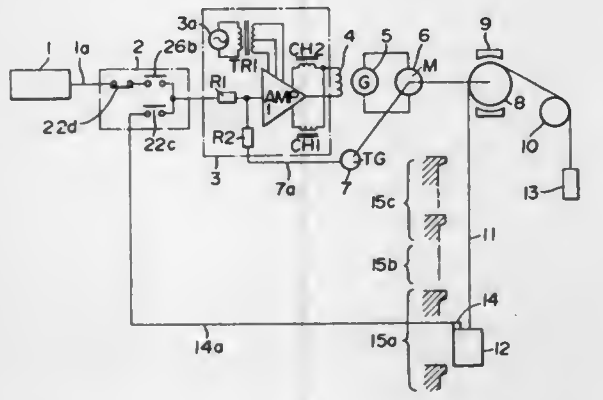
first fastening means for fastening said inlet block unit, said end block unit and said base members in fixed assembly, and second fastening means for fastening each spool member in fixed assembly only to its corresponding base member.



4,194,594
ELEVATOR LANDING CONTROL APPARATUS

Toshiaki Ishii, and Eiki Watanabe, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1978, Ser. No. 889,113
Claims priority, application Japan, Mar. 31, 1977, 52-36499
Int. Cl.^{2} B66B *1/40*
U.S. Cl. 187—29 R **2 Claims**



1. In an elevator system for a building having upper and lower floors, said system including a cage connected to one end of a main rope and a counter-weight connected to the other end of the main rope in a suspended condition for vertical travel in a hoistway, a winding motor which drives a driving sheave on which the main rope is wound so as to produce vertical travel of the cage and the counter-weight, a brake for holding the cage by holding the motor during stopping of the cage, and a landing device which controls the motor to generate an output for forming the torque required for holding the cage by the motor when the cage is at a stopping floor, an improved elevator landing control apparatus comprising:

a lower floor detecting circuit which detects the presence of the cage at a lower floor and is actuated thereby;

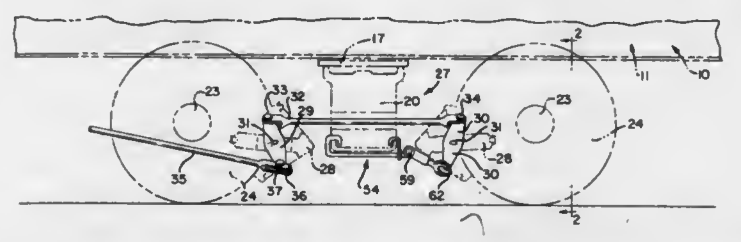
a door open detecting circuit which detects the opening of the door of the cage and is actuated thereby; and

a control circuit which actuates the landing device without the holding of the motor by the brake only when the lower floor detecting circuit and the door open detecting circuit are in the actuated condition.

4,194,595
DEAD LEVER ANCHORING MEANS FOR RAILWAY CAR BRAKE RIGGING

Donald B. Yates, Hueytown, Ala., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jul. 20, 1978, Ser. No. 926,188
Int. Cl.^{2} B61H *13/38*
U.S. Cl. 188—52 **7 Claims**



1. In a railway car having a wheeled truck including a truck bolster,

a pair of axles journalled for rotation on longitudinally opposite sides of said truck bolster, and

a pair of wheels for each axle for supporting the same,

a brake rigging arrangement including brake beams positioned on longitudinally opposite sides of said bolster including brake shoe means adapted to engage each of said wheels in braking engagement, first and second brake levers connected to said brake beams, and said brake levers having first, upper ends and second, lower ends,

a connecting rod pivotally connected at its opposite ends to said first end of said first and second brake levers, respectively, and brake actuating means pivotally connected to the second end of said first brake lever, the improvement of an anchoring arrangement for said second brake lever comprising:

bracket means connected to said bolster and positioned generally beneath said connecting rod, and

linkage means pivotally connected to said bracket means and to the second end of said second lever,

said bolster having opening means extending longitudinally of said car therethrough,

said connecting rod extending through said openings means,

said bracket means including longitudinally spaced first and second hanger members secured within said opening means, and

a connecting member extending beneath said bolster and being connected to said hanger members,

said linkage means including a link pivotally connected to said connecting member for relative hinging movement about an axis generally transverse to said car,

said connecting member comprising a rod with a first end and a second end and said first hanger member supporting one end thereof,

said rod having a first clevis at its other end,

said link including a second clevis,

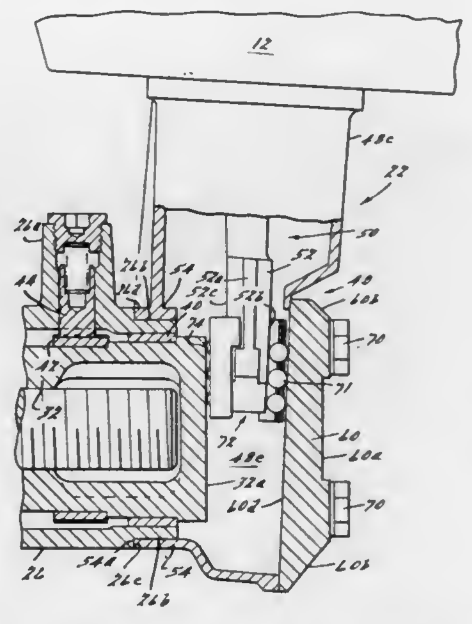
said second hanger member having a connecting and support portion at one end thereof for interconnecting the second hanger member with the rod, and

said connecting and support portion having a pivot means hingedly connecting said first and second clevises to provide said relative hinging movement.

4,194,596
DISC BRAKE HOUSING ASSEMBLY

Wayne H. Garrett, Troy, and Richard F. Neuman, Farmington, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 29, 1978, Ser. No. 974,391
Int. Cl.^{2} F16D *55/224*
U.S. Cl. 188—72.7 **13 Claims**



1. A housing assembly for use with a vehicular disc brake of the type including a wedge actuator mounted for brake apply and release movement along a line of action generally normal to the wheel axis of the associated vehicle and adapted to be secured at its radially outer end to the piston rod of an associated air motor and defining a wedge portion at its radially inner end presenting inboard and outboard wedge faces, and a push rod assembly slideably mounted for brake apply and release movement along a line of action generally parallel to said axis; said housing assembly including:

A. a first member including a caliper portion adapted to embrace the outer periphery of a disc secured to a wheel of the associated vehicle and including an inboard web portion generally normal to the wheel axis and having an opening extending axially therethrough adapted to receive the outboard end of the push rod assembly;

B. means defining a reaction portion formed of a relatively high weight and high strength material and presenting an annular inboard face generally centered on the line of action of the push rod assembly;

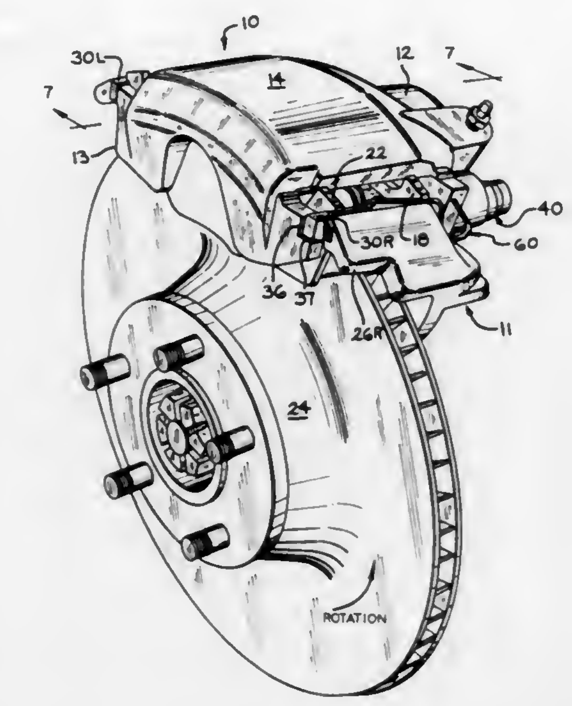
C. a second member formed of a relatively low strength and relatively low weight material secured to said annular inboard face and including a tubular radially extending portion spaced inboard from said inner web portion and adapted to house the wedge actuator with a bearing member in rolling contact with the outboard face of the wedge portion of the actuator and the inboard end face of the push rod assembly;

D. means defining an opening in the inboard face of said radially extending portion opposite the inboard face of the wedge portion of the wedge actuator;

E. an end plate of relatively high strength and relatively high weight material closing said inboard opening and having an outboard face adapted to rotatably engage a bearing member in rolling contact with the inboard face of the wedge portion of the actuator; and

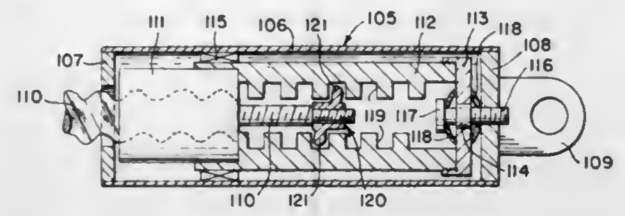
F. a plurality of axially extending elongated fastener members secured at their outboard ends to said reaction portion and at their inboard ends to said end plate and clamping said second housing member between said annular inboard face and the outboard face of said end plate, whereby, upon brake apply movement of the wedge actuator, the push rod assembly is moved axially to effect actuation of brake pads carried by said caliper portion and the braking force generated at the wedge interface between the wedge portion and the push rod assembly is absorbed by tensioning of said fastener members.

4,194,597
DISC BRAKE ANTI-RATTLE MEANS
Anthony C. Evans, Westland, and Karl Goering, Northville, both of Mich., assignors to Kelsey Hayes Co., Romulus, Mich.
Filed Aug. 1, 1978, Ser. No. 928,476
Int. Cl.^{2} F16D *65/00*
U.S. Cl. 188—73.5 **4 Claims**



1. A disc brake comprising:
- a rotatable disc having an inboard and outboard frictional surface, an inboard and outboard brake shoe assembly each having a friction pad secured to a rigid backing plate, a rigid stationary member having two circumferentially spaced support arms axially extending above and across the periphery of said rotatable disc forming an opening therebetween, said support arms each having an axially extending guide rail for supporting said inboard and outboard backing plate therebetween, said backing plates having coacting anchoring and abutment surfaces slidably engaging said support arm guide rails for restraining said backing plates against both circumferential and radial displacement;
- a movable caliper having an inboard leg and an outboard leg straddling said rotatable disc and the respective inboard and outboard brake shoe assemblies, said inboard leg containing therein means for applying an axial force upon said inboard backing plate thereby urging the inboard friction pad into frictional engagement with the rotatable disc and causing axial movement of said caliper whereby said outboard leg engages the outboard backing plate urging said outboard friction pad into frictional engagement with the outboard friction surface of said rotatable disc, said caliper legs joined by an axially extending bridge portion circumferentially disposed between said support arms, anti-rattle means interposed between said backing plates and the support arm guide rails for limiting vibrational freedom of said brake shoe assemblies, said anti-rattle means comprising a wire clip having hook means engaging the under side of said caliper bridge portion, an inboard and outboard axially continuing length from said hook and juxtaposed said support arm guide rail, said inboard and outboard length interposed between the guide rail and said inboard and outboard backing plate respectfully, said hook means spring loading said inboard and outboard lengths by virtue of its engagement of the caliper bridge thereby causing said inboard and outboard lengths to bear against said backing plates urging said backing plates into anti-rattle abutment with said guide rails.

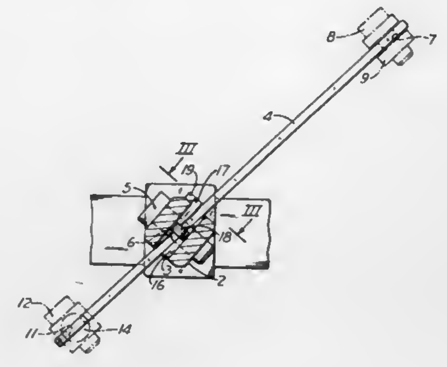
4,194,598
MECHANICAL SHOCK AND SWAY ARRESTOR
Leonard S. Suozzo, 366 Maple Hill Dr., Hackensack, N.J. 07601
Filed Dec. 11, 1978, Ser. No. 967,968
Int. Cl.^{2} B60T *7/12*
U.S. Cl. 188—134 **5 Claims**



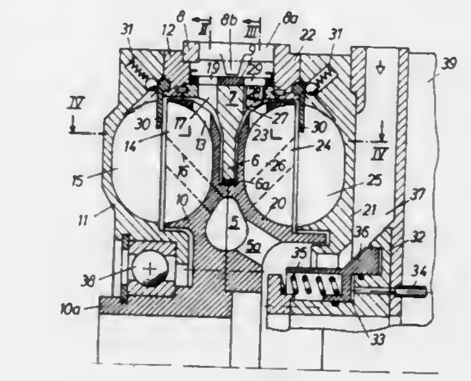
1. A mechanical shock and sway arrestor adapted to be interposed between piping and a stationary support for said piping and including; a tubular housing having first and second end closures each having inner and outer faces, said first end closure being provided with a central aperture for reception of a ball screw, said second end closure being provided with an outwardly projecting longitudinally extending connection lug; a ball screw of predetermined pitch inserted through the said central aperture of said first end closure and having its outer end projecting beyond the outer face of said first end closure whereby to serve as a connector and having its inner end terminating within said tubular housing; a ball nut threadably engaged over said ball screw within said tubular housing and having one end normally disposed in spaced juxtaposition to the inner face of said first end closure; an axially disposed tubular extension having one end affixed to that end of said ball nut that is away from said first end closure and having its other end terminating in proximity to said second end closure, a cap closing the said other end of said tubular extension and having a central aperture for the reception of a post axle, the inner wall of said tubular extension being provided with female threads of square cross-section and having a pitch the same as that of said ball screw; said cap having inner and outer faces, the outer face being normally disposed in spaced juxtaposition to the inner face of said second end closure; a headed post axle engaged through the said central aperture of said cap and threadably engaged with said second end closure for longitudinal adjustment relative thereto; a pair of disk springs mounted coaxially with respect to said post axle and disposed on opposite faces of said cap, said disk spring being normally effective to maintain the assembly comprising said ball nut, said tubular extension and said cap centered between the inner faces of said first and second end closures; and a centering and supporting element affixed to the said inner end of said ball screw and provided with a thread engaging the internal threads of said tubular extension, the engaging portions of the thread of said centering and supporting element being of convex configuration whereby to provide only line contact with the associated walls of said internal threads.

4,194,599
RAILWAY CAR BRAKE BEAM LEVER MOUNTING
Roland E. Cale, Cortland, Ohio, assignor to Schaefer Equipment Incorporated, Warren, Ohio
Filed Jun. 27, 1978, Ser. No. 919,661
Int. Cl.^{2} B61H *13/36*
U.S. Cl. 188—231 **1 Claim**

1. The combination with a railway car brake beam provided with a strut having a slot therethrough with parallel side walls inclined a predetermined number of degrees from vertical, of a brake lever extending through said slot and inclined from vertical more than the slot, whereby wedge shape spaces are formed between the lever and the side walls of the slot, a wedge shape member having ends extending in the direction of the lever's length substantially filling each of said spaces, a pivot pin extending through said strut and wedge members and lever for connecting the lever to the strut, and a cross piece at each end of said wedge members extending across the lever in spaced relation therewith and rigidly connecting the wedge members to each other, the cross pieces being located along a minor length of the ends midway between the upper and lower edges of said side walls and spaced therefrom, one of said wedge members being provided with means overlapping the top of the adjoining side of the strut in engagement therewith to avoid turning of the wedge members by the lever, and each end of the lever having an opening therethrough for a clevis pin.

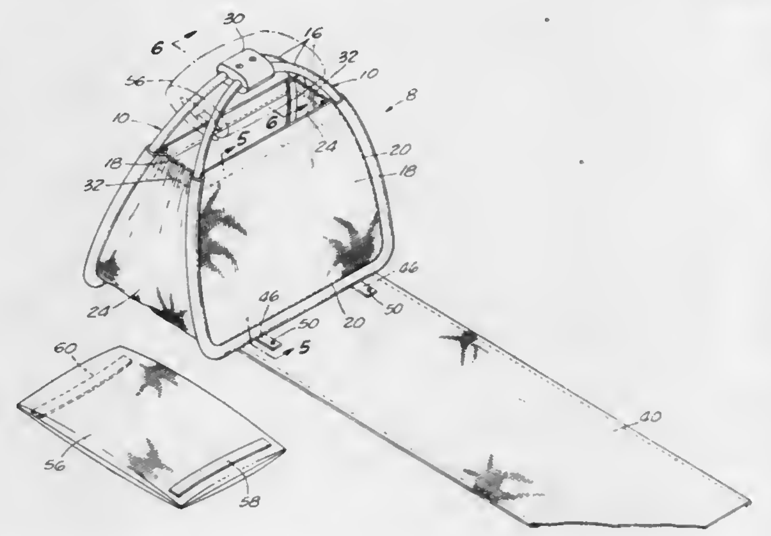


4,194,600
HYDRODYNAMIC DOUBLE BRAKE
Waldemar Armasow, and Hans Lindenthal, both of Heidenheim, Fed. Rep. of Germany, assignors to Voith Getriebe KG, Heidenheim, Fed. Rep. of Germany
Filed Dec. 18, 1978, Ser. No. 970,343
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757240
Int. Cl.^{2} F16D *57/02*
U.S. Cl. 188—296 **29 Claims**



1. A hydrodynamic double brake, comprising:
- a pair of rotor bucket wheels, which are rotatable together in one direction and in the opposite direction;
- a pair of stator bucket wheels, with each said stator bucket wheel being associated with a respective said rotor bucket wheel to define two toroidal working chambers, which can be filled with a working fluid;
- all said bucket wheels including and supporting respective buckets that extend from the said wheel into the respective said working chambers; said buckets, viewed in cylindrical section through said working chambers, all being set at an angle in the same direction relative to the axis of rotation of said bucket wheels, and in said one rotary direction, the first said working chamber is predominantly active, and in said opposite rotary direction, the second said working chamber is predominantly active;
- a common inlet line communicating to both said working chambers;
- respective outlet ducts leading out from both said working chambers;
- a stationary shell which is stationary with respect to said stator bucket wheels and positioned around said bucket wheels and over said outlet ducts; said shell supporting an outlet valve arrangement for said outlet ducts; said outlet valve arrangement having at least one moving valve element placed and operative to be actuated by the pressure head of the flow of fluid prevailing in its vicinity in said working chambers, such that said outlet ducts from each said working chamber are open when the rotary direction of said brake is such that the respective said working chamber is active and the same said outlet ducts are closed when the rotary direction of said brake is such that the respective said working chamber is largely inactive.

4,194,601
COMBINATION BODY REST AND TOTEBAG
Kathleen F. Yellin, 3627 Serra Rd., Malibu, Calif. 90265
Filed Mar. 20, 1978, Ser. No. 887,944
Int. Cl.^{2} A45C *9/00*
U.S. Cl. 190—2 **5 Claims**



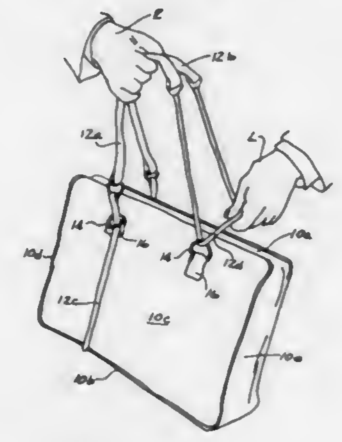
1. A combination body rest-totebag unit, comprising:
- a pair of substantially continuous peripheral frame members, each defining an open area therewithin;
- each of said frame members comprising a bottom section, a pair of upstanding side sections extending upwardly from said bottom section and having upper portions, and a top section extending between and connecting the upper portions of said side sections;
- a cover panel having a peripheral edge portion secured to said bottom section and parts of said side sections of each of said frame members beneath said upper portions thereof so as to cover a substantial portion of said open area;
- a connecting panel extending between and connected to said peripheral edge portions of said cover panels;
- said cover panels and said connecting panel defining an open-top container having a compartment for retaining items to be stored and/or carried; said connecting panel including end edge portions which form portions of the upper peripheral edge defining the opening in the top of the container;
- hinge means pivotably connecting said top sections of said frame members to one another in a manner to permit movement of said bottom and side sections of said frame members toward and away from one another;
- the said connecting panel having a width limiting the distance said bottom sections of said frame members may be moved away from one another;
- cooperating tab members connected to said bottom sections of said frame members and provided with detachable fastening elements for detachably connecting said tabs to one another so as to limit the maximum distance the bottom sections of said frame members can be moved away from one another and for providing added support for items in said container compartment when said unit is used as a totebag;
- a seat panel having a portion secured to one of said cover panels adjacent said bottom section of its respective frame member; said seat panel being adapted to be retained in a rolled-up condition by said tab members when said tab

members are fastened to one another, and to be unrolled to serve as a ground cover when the unit is used as a body support;

elastic band means connected to said upper ends of said connecting panel to permit expansion of the container opening while minimizing the chance that items in the container will fall out; and

a head cushion member adapted to be wrapped around said hinge member to cushion the user's head when the unit is employed as a body rest; said head cushion having detachable fastening elements for securing said head cushion being adapted to be carried in said container compartment when the unit is employed as a totebag.

4,194,602
CONVERTIBLE BAG ASSEMBLY
Herbert Allen, 3207 Groveland La., Houston, Tex. 77019
Filed May 8, 1978, Ser. No. 903,728
Int. Cl.² A45C *13/26*
U.S. Cl. 190—57 **5 Claims**



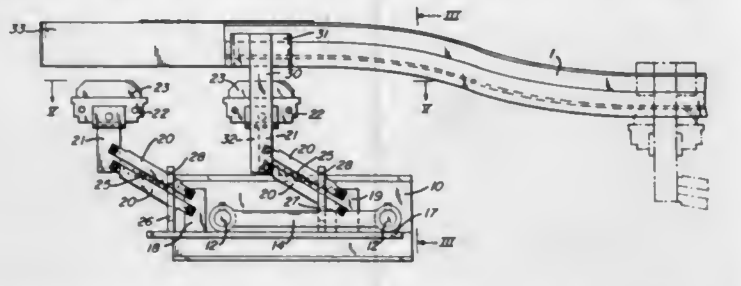
1. A convertible bag assembly comprising:

a bag body including a top, a bottom, a pair of opposite sides, and a pair of opposite ends, and having retainer means on each of said sides; and

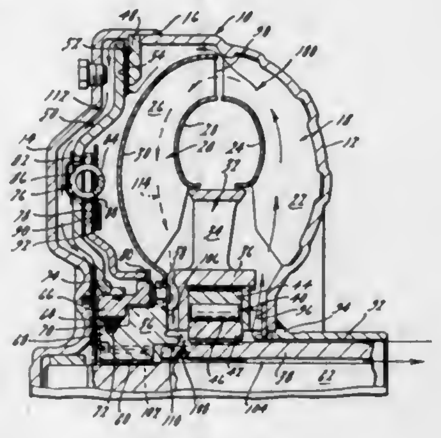
a carrier member comprising a pair of handle segments and a pair of flexible support segments adjoined in alternating end-to-end relation to form a closed loop, said carrier member being freely slidably carried by said bag body by slidable receipt of said support segments in said retainer means for movement of the carrier member between a first position in which said support segments extend from the retainer means on one side of said bag body to the retainer means on the other side of said bag body under the bottom of said bag body to retain said handle means in relatively close proximity to the top of said bag body and a second position in which said support segments extend from the retainer means on one side of said bag body to the retainer means on the other side of said bag body over the top of said bag body whereby said handle means by extended upwardly from said first position, said support segments being movable between said first and second positions by passing respective ones of said support segments over respective ones of said ends of said bag body.

4,194,603
TROLLEY RAIL AND FLYING PICKUP
Donald R. Ross, Jr., 2301 Morton Rd., Pittsburgh, Pa. 15241
Filed Sep. 13, 1978, Ser. No. 941,781
Int. Cl.² B60M *1/34*
U.S. Cl. 191—23 A **7 Claims**

1. In combination, a substantially horizontal trolley rail housing provided with a plurality of parallel open bottom slots extending lengthwise of the housing, an electric conductor mounted up in each slot and having a downwardly facing collector-receiving surface, an end portion of said housing being offset upwardly and connected by a downwardly inclined portion to the rest of the housing, and an electrical pickup unit adapted to be carried by a vehicle away from said housing and to be returned to it at said offset end, said unit comprising supporting means, a plurality of collectors mounted on said means for vertical and lateral movement relative thereto, spring means urging the collectors upwardly for engaging said conductors when said unit is beneath said housing, and a pair of laterally spaced guide members extending above the level of said collectors and movable laterally therewith, said guide members being adapted to engage the opposite sides of the housing when said unit, separated from the housing, is moved toward said offset end, and the relative positions of said guide members and collectors being such that when the guide members are in engagement with the sides of the housing each collector will be directly below a different one of said slots, whereby when the guide members are moved inwardly along the housing the collectors will enter the portions of said slots in said inclined portion of the housing and engage the conductors.

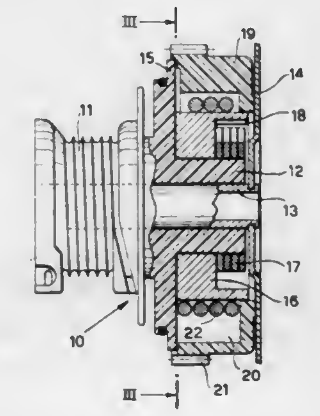


4,194,604
HYDRODYNAMIC TORQUE CONVERTOR WITH DOUBLE CIRCUIT TORUS FLOW AND LOCK-UP CLUTCH
Robert W. Nichols, Canton, and Stanley L. Pierce, Jr., Walled Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Nov. 14, 1977, Ser. No. 850,997
Int. Cl.² F16H *45/02*
U.S. Cl. 192—3.3 **2 Claims**



1. A hydrokinetic torque converter mechanism comprising a bladed impeller, a bladed turbine and a bladed stator situated in toroidal fluid flow relationship in a torus circuit, said impeller having an impeller housing enclosing said impeller, said turbine and said stator, a stator sleeve shaft held in a relatively fixed position, an impeller hub sleeve surrounding said stator sleeve shaft and defining therebetween an annular flow passage, a turbine hub joined to said turbine, a turbine shaft secured to said turbine hub and extending through said stator sleeve shaft and defining therewith a second annular flow passage, a lock-up clutch disc located between said turbine and one side of said housing, said housing and said clutch disc each carrying thereon a friction surface, said friction surfaces being arranged in adjacent juxtaposed relationship, a torus circuit fluid flow passage defined in part by said first annular passage and by said second annular passage, said flow circuit including two portions, one portion being defined by the annular space between said friction surfaces and by the space between said clutch disc and said housing and the other portion being defined by a fluid flow bypass passage between the flow exit section of said turbine and said second annular passage, said bypass passage being defined in part by a one-way flow valve, which permits fluid flow from said torus circuit to said second annular passage but prevents fluid flow in the opposite direction, a first of said friction surfaces being located on the periphery of said housing and a second of said friction surfaces being carried by said clutch disc at a location between the first friction surface and a wall of said housing, an increase in the pressure in the space between said one housing side and said clutch disc creating a pressure force on said clutch disc which engages the same to produce a direct driving connection between said turbine and said impeller, said clutch hub being provided with axial flow passages that establish communication between said second annular passage and the space between said clutch disc and said one housing side.

4,194,605
MOTOR VEHICLE WINDOW REGULATOR
Terenzio Sessa, Via Albani 5, Varese, Italy
Filed Nov. 23, 1977, Ser. No. 854,141
Claims priority, application Italy, Jan. 20, 1977, 19493 A/77
Int. Cl.² F16D *7/02, 13/12, 67/02*
U.S. Cl. 192—12 R **4 Claims**



1. A motor vehicle window regulator of the type in which a motor transmits motion to the window via a torque limiting mechanism, said mechanism comprising

a pair of members mounted for coaxial rotation relative to each other, and at least one of said members having thereon a cylindrical surface,

a spiral spring interposed between said members and having preloaded turns frictionally engaged with said cylindrical surface normally to transmit rotation from said one to the other member, and vice versa, and

a ledge on said other member engageable by one of the ends of said spring to deform the spring in opposition to its preloading, so as to withdraw it resiliently from frictional engagement with the cylindrical surface when the torque between said members exceeds a predetermined amount,

said cylindrical surface being the outer surface of a socket rigid with the hub of a winding pulley for the cable of a cable window regulator, and said socket containing a stack of discs for halting the rotation of said pulley in a limiting position in which the window is lowered, and said ledge is rigid with a gear driven by the motor.

4,194,606
LOW INERTIA CLUTCH AND BRAKE SYSTEM HAVING SAFETY OPERATION FEATURES
Jene A. Beneke, McKinney, Tex., assignor to Verson Allsteel Press Company, Dallas, Tex.
Filed Sep. 12, 1977, Ser. No. 832,198
Int. Cl.² F16D *67/04, 66/00*
U.S. Cl. 192—18 A **32 Claims**

1. A clutch and brake system comprising:

a rotatable shaft,

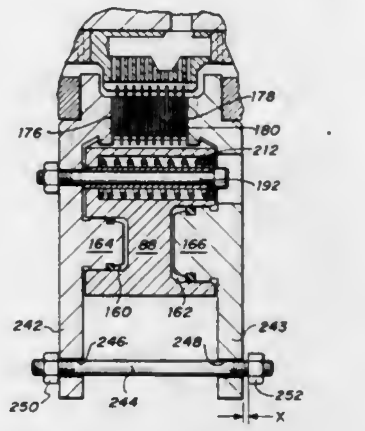
a low speed clutch assembly mounted about said shaft,

a high speed clutch assembly mounted about said shaft and spaced from said low speed clutch assembly,

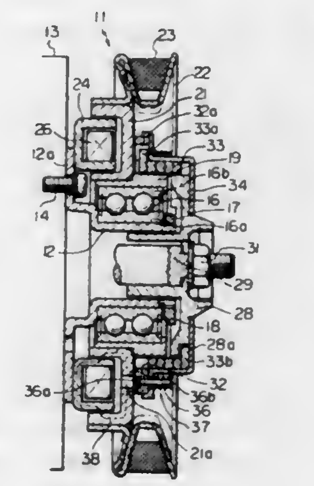
a brake assembly disposed between said low and high speed clutch assemblies and including means for normally preventing rotation of said shaft,

first and second means for selectively actuating either of said low and high speed clutch assemblies, respectively, while disengaging said actuated means from said brake assembly in order to rotate said shaft, and

means associated with said brake assembly for permitting said first and second means to simultaneously engage said brake assembly and for preventing simultaneous engagement of both said clutch assemblies.



4,194,607
ELECTRO-MAGNETIC SPRING-WOUND CLUTCH
Toshio Yamaguchi, Matsuyama, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan
Filed Jan. 3, 1978, Ser. No. 866,645
Claims priority, application Japan, Jan. 14, 1977, 52-2553[U]; Mar. 1, 1977, 52-23302[U]
Int. Cl.² F16D *13/08, 27/10*
U.S. Cl. 192—84 T **10 Claims**



1. An electromagnetic spring-wound clutch comprising:

a rotary input member;

a rotary output member coaxial with the input member;

a rotary clutch disc coaxial with the input member and frictionally engageable therewith;

a coil-wound spring wound around the input member and being connected at its ends to the clutch disc and output member respectively;

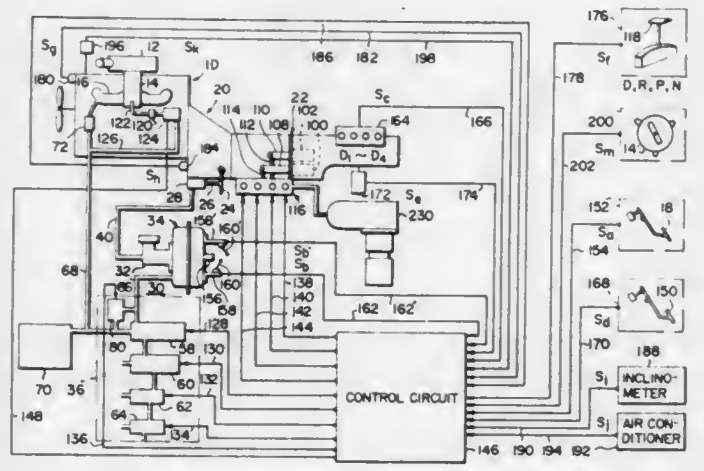
spring means urging the clutch disc to disengage from the input member; and

an electromagnetic coil which, when energized, attracts the clutch disc into frictional engagement with the input member against a force of the spring means.

4,194,608
CONTROLS FOR CLUTCH, MOTOR AND TRANSMISSION

Keizaburo Usui; Isao Hayama, both of Yokohama; Hideo Hamada, Yokosuka, and Sigeaki Yamamuro, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 18, 1977, Ser. No. 788,549
Claims priority, application Japan, Apr. 19, 1976, 51-44866
Int. Cl.² B60K *21/00, 29/00*
U.S. Cl. 192—0.092 **3 Claims**

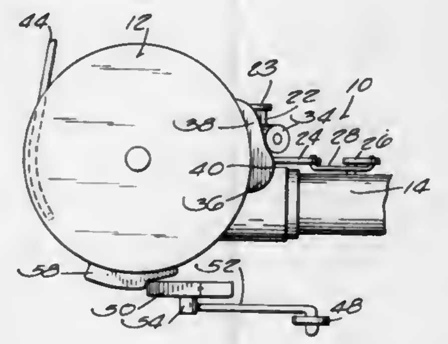


1. In an automatic countershaft power transmission for an automotive vehicle comprising an internal combustion engine including a mixture supply system having a throttle valve to be operated by an accelerator pedal of the vehicle; a countershaft transmission gear assembly including a transmission input shaft, a transmission mainshaft substantially in line with the input shaft, a transmission counershaft substantially parallel with the mainshaft and a plurality of gears on the transmission input shaft, mainshaft and countershaft and arranged to be capable of producing a neutral gear condition, a plurality of forward-drive gear conditions and at least one reverse-drive gear condition; a clutch assembly disposed between the output shaft of the engine and said transmission input shaft and having a fully coupled condition between the engine output shaft and the transmission input shaft and an uncoupled condition disconnecting the transmission input shaft from the engine output shaft; electrically operated hydraulic control system operatively connected to said transmission gear assembly; gearshift control means operative to actuate said hydraulic control system for selectively producing said neutral, forward-drive and reverse-drive gear conditions depending upon predetermined operational parameters of the vehicle; electrically operated throttle-valve actuating means operative to actuate said throttle valve into an idling position independently of the accelerator pedal of the vehicle; and electric throttle valve control means operative to actuate said throttle-valve actuating means to move the throttle valve into an idling position independently of the accelerator pedal, the improvement comprising fluid-operated clutch actuating means operatively connected to said clutch assembly and having a variable volume control chamber for producing the coupled and uncoupled condition in the clutch assembly when the control chamber is expanded and contracted, respectively, electrically operated clutch control valve means connected to said clutch actuating means, and electric valve control means responsive to preselected operational parameters of the vehicle for controlling the clutch control valve means to continuously vary the volume of said control chamber depending upon said preselected operational parameters, said valve control means, said gearshift control means and said throttle-valve control means being cooperative with each other for actuating said clutch control valve means to contract said control chamber in response to a shift being made between any of said gear conditions, moving said throttle valve into the idling position thereof independently of the accelerator pedal when said clutch control valve means is in a condition establishing the uncoupled condition in said clutch assembly, and producing an upshift between said forward-drive gear conditions when said throttle-valve control means is in a condition having said throttle-valve actuating means actuated and said valve control means is in a condition having the clutch control valve means actuated to produce the uncoupled condition in the clutch assembly under conditions in which the vehicle speed is higher than a predetermined level, said clutch control valve means including a vacuum port communicating with a source of vacuum and communicable with said control chamber for causing the control chamber to contract when communication is provided between the control chamber and said vacuum source through said vacuum port, and a plurality of air ports each communicating with the atmosphere and communicable with said control chamber, the individual air ports having different cross sectional areas and being arranged in series with said control chamber, said valve control means being operative to have said air ports selectively and successively brought into communication with said control chamber for allowing atmospheric air into the control chamber at stepwise variable rates and thereby causing the control chamber to expand at stepwise variable rates so that said clutch assembly is operated from the uncoupled condition to the fully coupled condition at stepwise variable rates.

4,194,609
SPEED AND CLUTCH CONTROL FOR ENGINES INCLUDING SHIFT INTERLOCK

Edmund H. DuBois, Zion, Ill., and John D. Sheldon, Charlotte, N.C., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 7, 1977, Ser. No. 849,012
Int. Cl.² G05G *9/08*
U.S. Cl. 192—0.096 **4 Claims**

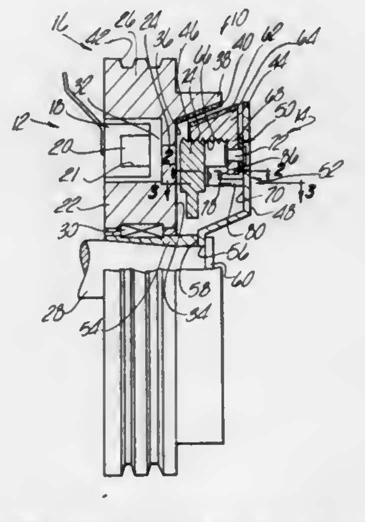


1. A control for the throttle valve and clutch of an engine, said control comprising a timer plate mounted for movement to adjust engine spark and operatively connected to said throttle valve whereby said throttle valve is moved between low speed and high speed settings in response to movement of said timer plate, a shift lever mounted for movement between a neutral position and forward and reverse positions and adapted to actuate the clutch in response to movement of said shift lever, a movable shift interlock connected to said shift lever for movement in response to movement of said shift lever, interengaging means on said timer plate and on said shift interlock for selectively controlling the setting of said throttle valve in accordance to the position of said shift lever and for selectively controlling the position of said shift lever in accordance with the setting of said throttle valve, and detent means independent of said shift lever and including an integral part on said shift interlock for selectively and releasably retaining said shift lever in the neutral, forward and reverse positions.

4,194,610
WEAR COMPENSATED ELECTROMAGNETIC CLUTCH DEVICE

Donald L. Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Oct. 26, 1977, Ser. No. 845,698
Int. Cl.² F16D *13/85, 27/10*
U.S. Cl. 192—111 A **10 Claims**



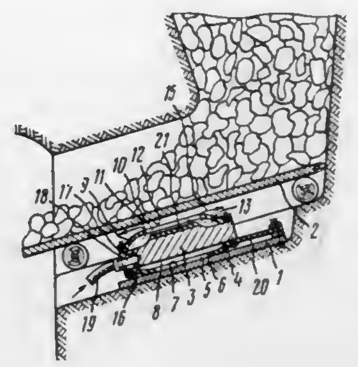
1. An electromagnetic friction device for torque transmission comprising:
- torque output means;
- torque input means coaxially disposed with said output means, said input means comprising:
  - a rotatably and axially adjustable friction ring member movable toward and away from said output means for selective engagement with and disengagement from said output means;
  - an annular armature rotatably connected to said friction ring member so as to be axially moveable relative thereto;
  - first means for biasing said friction ring member away from said output means;
  - unidirectional retarder means for allowing rotational motion of said armature relative to said friction ring member in one direction while preventing rotational motion in the opposite direction; and
  - second means for biasing said friction ring member toward said output means, at least partially counteracting the force of said first means for biasing said friction ring member away from said output means; and
- electromagnetic means for selectively producing a magnetic force which moves said friction ring member toward and into engagement with said output means against the force of said first means for biasing said friction ring member away from said output means.

4,194,611
VIBRATOR FOR IMPORTING VIBRATION TO A WORKING PLATFORM

Zhores G. Mukhin; Vladimir N. Vlasov, both of Novosibirsk, and Alexei P. Mikhailov, Karasuk, all of U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo Otdelenia Nauk SSSR, Novosibirsk, U.S.S.R.

Filed Nov. 6, 1978, Ser. No. 958,147
Int. Cl.² B65G *11/00*
U.S. Cl. 193—2 B **18 Claims**

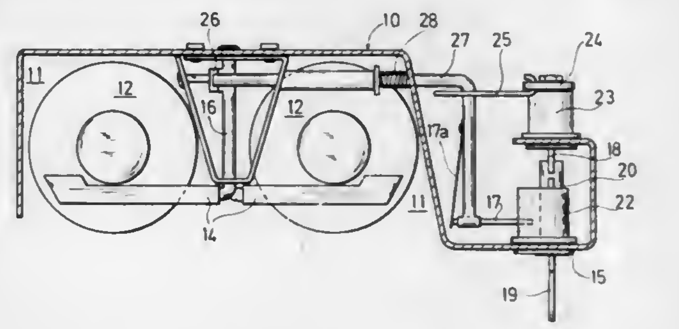
1. A vibrator operated by a fluid medium under pressure for the purpose of imparting vibration to a working platform carrying the material being handled, comprising: a base; a forward stroke chamber formed by a continuous seal situated on the side of said vibrator base facing the working platform; a striker mounted on said forward stroke chamber seal and adapted to interact with said working platform under the action of the fluid medium for the purpose of imparting vibration to said working platform; a reverse stroke chamber formed by an additional continuous seal situated on the side of said striker facing said working platform and connected to the source of the fluid medium wherein one of said chambers is alternately sealed off from the surrounding medium and is connected with the other chamber by means of a passage provided in the striker.



4,194,612
CONTROL MECHANISM FOR A VENDING MACHINE

Allan Ahlström, Mahults Herrgärd, Simlångsdalen, Sweden (31039)

Filed May 25, 1978, Ser. No. 909,570
Claims priority, application Sweden, May 26, 1977, 7706160
Int. Cl.² G07F *7/08*
U.S. Cl. 194—4 R **7 Claims**



1. In a vending machine having a number of separate components,
- a blocking member at each compartment which is rotatable between a blocking position for blocking goods placed therein and an open position wherein the goods can be removed,
- linkage means connected to said blocking member for transferring the rotating movement of said blocking member into an axial movement,
- an axially moveable pin stamp at the end of each linkage at its end remote from the associated blocking member,
- means for mounting pin stamps operable from a number of blocking members in close relationship,
- means for locking said linkages,
- an opening in said machine, adjacent to said pin stamp mounting means, and formed to permit the introduction therein of a release element for operating said linkage locking means,
- a control portion at said release element having transverse bores, in number and position mating with the pin stamps in said pin stamp mounting means, and
- an axially displaceable stud in each of said bores, and means for retaining each of said studs in either of two axial positions,
- whereby when said blocking means is rotated to said open position, said pin stamp moves axially into its associated bore, thereby axially displacing said stud to provide a visual indication of the purchase of goods.

4,194,613

APPARATUS FOR INTERMITTENTLY TRANSFERRING CONTAINERS

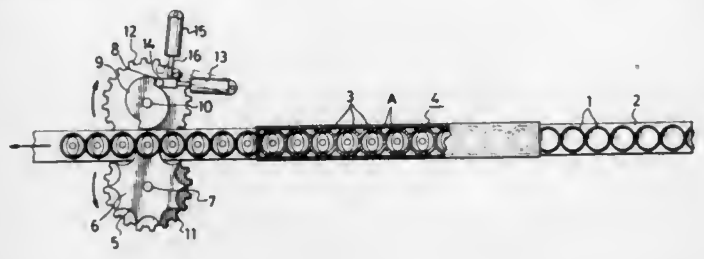
Motoharu Takano, Machida, Japan, assignor to Q.P. Corporation, Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,137

Claims priority, application Japan, Sep. 22, 1977, 52-128122[U]

Int. Cl.^{2} B65G *47/26*

U.S. Cl. 198—425 **2 Claims**



1. An apparatus for intermittently transferring cylindrical plastic containers using a conveyor, which comprises a vessel stopping and transferring wheel which is rotatably disposed on one side of said conveyor, on which cylindrical vessels are placed, and which has in the peripheral portion thereof arc-shaped recesses which are engageable with the side surfaces of said cylindrical vessels; a cam having flat surfaces and operatively connected to said vessel stopping and transferring wheel via toothed wheels; a buffer means having at a free end portion thereof a roller slidingly engageable with the flat surfaces of said cam; and a control means for disengaging said roller from the flat surfaces of said cam.

4,194,614

CONVEYOR-BELT SYSTEM

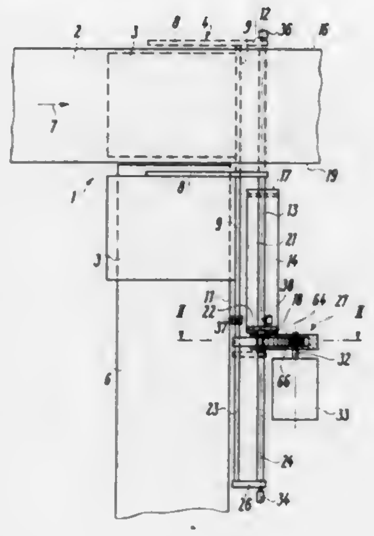
John G. Hrivnak, Ringwood, N.J., assignor to Sandvik Conveyor GmbH, Fellbach, Fed. Rep. of Germany

Filed Jun. 7, 1977, Ser. No. 804,256

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625755

Int. Cl.^{2} B65G *47/46*

U.S. Cl. 198—487 **1 Claim**



1. In a conveyor system for carrying individual items from a receiving station to a selected destination, the combination of, main conveyor means for carrying items along a straight path from said receiving station downstream through an unloading zone, a discharge conveyor extending from one side of said unloading zone along said main conveyor toward said destination and which is adapted to receive items from said main conveyor, and an item-discharge mechanism comprising a pusher arm, mounting means and operating means, said pusher arm being mounted at one of its ends on said mounting means, said mounting means being mounted for rotational and sliding movement to move said pusher arm between first and second positions on opposite sides of said main conveyor, said mounting means comprising an elongated member extending parallel to said discharge conveyor and having a forward end upon which said pusher arm is mounted, said operating means comprising means for rotating said elongated member to swing said pusher arm through 90° between a horizontal position and a vertical position and also for moving said elongated member longitudinally between an extended position wherein said forward end thereof is at the side of said main conveyor opposite the discharge conveyor wherein the pusher arm is in said first position to a retracted position wherein the forward end thereof is at the side of said main conveyor adjacent the discharge conveyor wherein the pusher arm is in said second position, said elongated member extending, in said extended position, in the path of items on said main conveyor and being remote from said main conveyor in its retracted position whereby the path of travel of items on the main conveyor is unimpeded, said operating means turning said pusher arm to said vertical position and holding it in said vertical position while it is moved to said opposite side of said main conveyor while moving said elongated member to said extended position to place said elongated member in the path of movement of items on said main conveyor to prevent items from moving downstream from said unloading zone until said pusher arm has been returned to its second position on said one side of said main conveyor, and then rotating said pusher arm downwardly to said horizontal position and retracting said elongated member from said opposite side of said main conveyor to said one side of the conveyor to return the pusher arm to its second position and move an item from said main conveyor to said discharge conveyor.

4,194,615

APPARATUS FOR UNLOADING LOOSE PARTICULATE SOLID MATERIAL

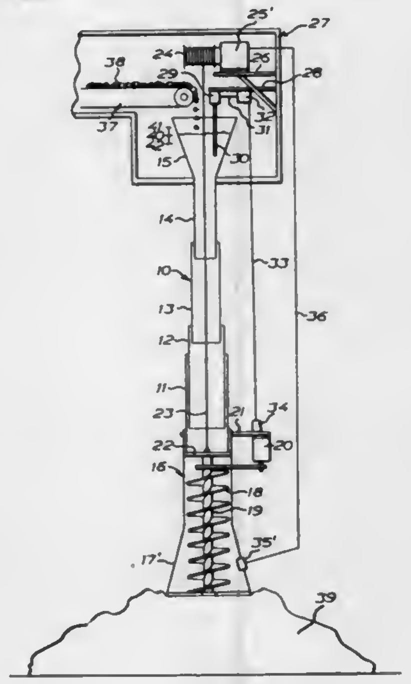
Karl G. Tell, Helsingborg; Arne E. Wall, Landskrona, and Olle L. Siwersson, Helsingborg, all of Sweden, assignors to AB Scaniainventor, Helsingborg, Sweden

Continuation-in-part of Ser. No. 749,991, Dec. 13, 1976, abandoned. This application Aug. 25, 1978, Ser. No. 936,953

Claims priority, application Sweden, Dec. 17, 1975, 7514248

Int. Cl.^{2} B65G *43/08, 47/19*

U.S. Cl. 198—502 **10 Claims**



1. An apparatus for unloading loose particulate solid material by positive discharge into a pile in a manner to diminish dust formation problems comprising

- a substantially vertically directed discharge pipe having an outlet end,
- a positioning means for varying the position of said outlet according to pressure in said discharge pipe in the vertical or lateral senses, including a drive motor for raising, lowering or laterally displacing said outlet end,

- a positive discharge means arranged at said outlet end of said discharge pipe for forcing the discharge of the material through said outlet end under pressure into the pile and having a motor connected for driving said positive discharge means,
- and a pressure sensing means to sense the pressure of the material at said outlet end and to regulate said drive motor of said positioning means in dependence on said pressure.

4,194,616

HELICAL CONVEYORS

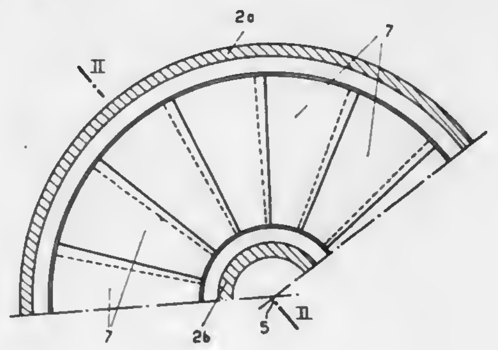
Louis Barthelemy, Residence Longchamp, Villier le Mehieu, 78770 Thoiry, and Roger S. Barbedienne, Rue de Neuville, 95610 Eragny-sur-Oise, both of France

Filed Mar. 10, 1978, Ser. No. 885,185

Claims priority, application France, Mar. 11, 1977, 77 08095

Int. Cl.^{2} B65G *17/12, 21/18*

U.S. Cl. 198—778 **3 Claims**



1. A conveyor-elevator system comprising:

- an upright structure having a pair of walls;
- a helical track disposed in said structure and formed with a pair of rails fixed to said walls;
- an endless conveyor rolling on said track, said conveyor comprising:
  - a succession of closely juxtaposed platforms of trapezoidal configuration having converging edges lying along radii of a helix formed by said track,
  - a pair of rollers journaled to said platform and engaging one of said tracks along a broad side of each platform, and a further roller journaled on each platform and engaging the other track along the narrow side of each platform, and
  - a flexible belt yieldably interconnecting said platforms centrally and extending over the length of the conveyor, said belt being toothed along its side turned away from said platforms, said belt being disposed along the undersides of said platforms; and
- a plurality of drive units in said structure spaced along said conveyor and each including:
  - a cog wheel engaging the teeth of said belt, and
  - motor means connected to said cog wheel for driving same, each of said motor means including a speed reducer.

4,194,617

NAIL POLISH KIT

Ira Bandell, Cranford, N.J., assignor to Cosmetic Arts, Inc., Clark, N.J.

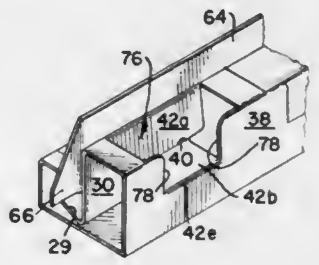
Filed May 8, 1975, Ser. No. 575,986

Int. Cl.^{2} B65D *5/50, 5/48*

U.S. Cl. 206—45 **4 Claims**

1. A unitary, integrally formed tray for a nail polish kit comprising:

- (a) a front panel, a parallel rear panel, and a bottom panel joining same,
- (b) a central wall disposed between said front and rear panels and parallel thereto,
- (c) a first horizontally extending panel joining said front panel to said central wall,
- (d) a second horizontally extending panel joining said rear panel to said central wall,
- (e) a plurality of flaps defined in said first horizontally extending panel and temporarily covering a plurality of wells defined therebelow between said bottom panel, and first horizontally extending panel, and said central wall and said front panel.
- (f) a plurality of integrally formed actuators defined in said second horizontally extending panel and said rear panel,
- (g) each of said actuators including a strut that is freed along its lateral edges from the second horizontally extending panel and a seat that is freed along its lateral edges from said rear panel,
- (h) each actuator, when depressed in the vicinity of the corner defined between said second horizontally extending panel and said rear panel, flexing inwardly in a toggle-like fashion so that said strut reinforces said central wall and said seat is positioned in a horizontal plane spaced above, and parallel to, the bottom panel of the tray, and
- (i) the seats defined in said rear panel being larger than the wells defined beneath said first panel, each seat being adapted to receive a large bottle of nail dress while each well is adapted to receive a small bottle of nail polish, and
- (j) the elevation of each seat above said bottom panel of the tray being equal to the difference in the respective heights of the nail polish and nail dress bottles whereby the upper ends of all of the bottles reside in the same horizontal plane spaced above the upper edge of the erected central wall after insertion into the respective wells and seats of the tray.



4,194,618

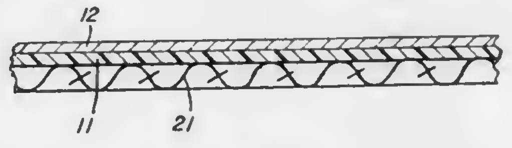
POLYURETHANE ADHESIVE COMPOSITION AND USE THEREOF

John F. Malloy, Albany, N.Y., assignor to Norton Company, Worcester, Mass.

Division of Ser. No. 755,959, Jan. 3, 1977, Pat. No. 4,144,219, which is a division of Ser. No. 695,381, Jun. 14, 1976, Pat. No. 4,027,435, which is a continuation-in-part of Ser. No. 630,653, Nov. 10, 1975, abandoned, which is a continuation of Ser. No. 369,482, Jun. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 253,570, May 15, 1972, Pat. No. 3,872,629, which is a continuation-in-part of Ser. No. 34,105, May 4, 1970, abandoned, and a continuation-in-part of Ser. No. 233,572, Mar. 10, 1972, Pat. No. 3,763,604, which is a continuation-in-part of Ser. No. 103,148, Dec. 31, 1970, abandoned, and a continuation-in-part of Ser. No. 822,934, May 8, 1969, abandoned. This application Oct. 5, 1978, Ser. No. 948,975

Int. Cl.^{2} B65D *81/24;* **B24D** *11/06;* **B32B** *27/12;* **C08K** *5/02*

U.S. Cl. 206—205 **4 Claims**



1. An assembly for laminating various lamina together comprising an adhesive film and laminated thereto a woven rein-

forcing fabric wherein said adhesive film comprises the reaction product of:

(a) a hydroxy terminated polyurethane-polyester having a hydroxyl number of from about 2 to about 15;

(b) an active hydrogen component containing at least difunctional active hydrogen and having an active hydrogen equivalent weight in the range of from 27 to less than about 500;

(c) a component having available free isocyanate groups; and

(d) a component selected from the group consisting of chlorinated aliphatic hydrocarbon, chlorinated aromatic hydrocarbon, alkylated polystyrene, and mixtures thereof, said component being miscible with components (a), (b) and (c).

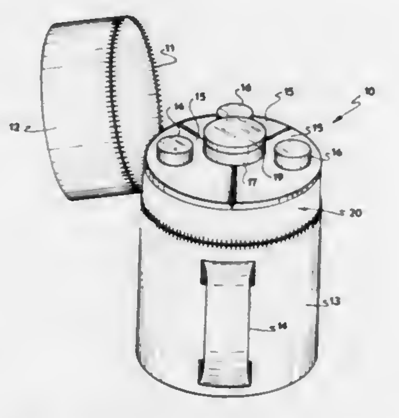
2. An assembly as set forth in claim 1 wherein said reinforcing fabric is impregnated with a compatible adhesive material.

4. As assembly as set forth in claim 2 wherein said assembly is in roll form and is contained within a plastic bag containing a desiccant.

4,194,619
MULTIPLE FLUID STORAGE CONTAINER

Kenneth E. Schley, 2481 Northland St., Cuyahoga Falls, Ohio 44221

Filed Oct. 2, 1978, Ser. No. 947,485
Int. Cl.^{2} B65D *77/04, 85/62*
U.S. Cl. 206—217 7 Claims

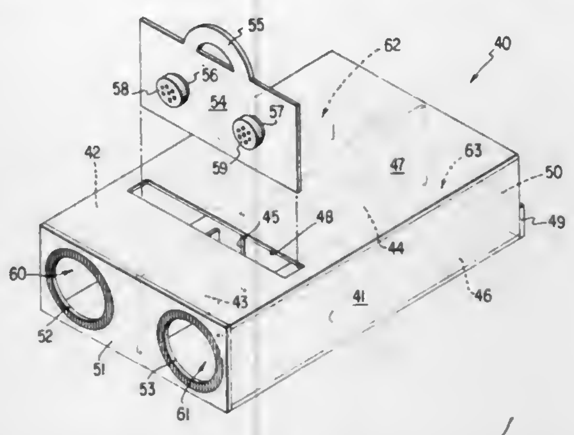


1. A multiple flask apparatus for fluid storage comprising:
at least three storage decanters, a multiplicity of measuring jiggers, and an enclosing protective cover;
each said decanter having a length having upper and lower fractions, an interior junction, and interior surfaces, said interior surfaces of the several said decanters assembled contiguously, said interior junctions of the several said decanters assembled contiguously at said lower fraction of said length, and said decanters contained within restrained by said protective cover during storage;
each said interior surface having an indented area in said upper fraction of said length, said contiguous containment and restraint of said interior surfaces forming a recessed area in said indented area wherein said multiplicity of jiggers may reside during storage;
each said jigger having a protective cap and means for vertical, releasable storage of each said jigger from other said jiggers;
each said decanter having a fluid dispensing orifice apparatus; and
said protective cover having latching means and a handle apparatus.

4,194,620
TROPICAL FISH TRAINING KIT

Natalie Soloway, 15200 Rayneta Dr., Sherman Oaks, Calif. 91403

Filed Dec. 29, 1977, Ser. No. 865,575
Int. Cl.^{2} B65D *85/50;* **A01K** *63/00*
U.S. Cl. 206—223 3 Claims

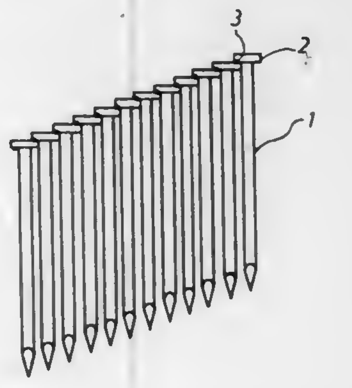


1. A kit for training and observing fish or the like, the kit including an elongated notched rod and a plurality of rings adapted to be adjustably positioned therealong, a plurality of tubs adapted to be interconnected to form a maze, a housing including means defining two paths of travel having opposite entrance and exit openings and a movable gate carrying fish or like food holding means and being adapted for movement between open and closed positions, and a sheet having means setting off a plurality of individual areas with fish or like food holding means within each area.

4,194,621
STRIP OF JOINED FASTENING ELEMENTS AND METHOD FOR ITS MANUFACTURE

Wilfried Lange, Brockhold, Fed. Rep. of Germany, assignor to Fa. Dieter Haubold Industrielle Nagelgerate, Hemmingen-Westerfeld, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,451
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748952
Int. Cl.^{2} B65D *85/24*
U.S. Cl. 206—343 6 Claims

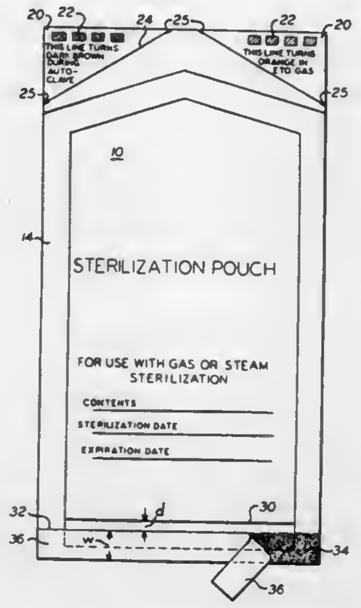


1. A strip of joined fastening elements for use in a fastener-driving machine comprising:
a multiplicity of interconnected fastening elements, each of which has a head at one end thereof, and a shank at the opposite end thereof, said shanks being substantially parallel to one another and said heads each having at least one protuberance formed thereon which is resistance welded to the head of an adjacent fastening element to form a spot weld connection and so as to achieve a stepped, overlapping relationship of said strip of fastening elements for permitting loading in a fastener-driving machine.

4,194,622
STERILIZABLE PACKAGE AND A METHOD OF PACKAGING FOR STERILIZATION

Robert P. Lewis, Oceanport, N.J., assignor to Faser Industries, Saddle Brook, N.J.

Filed Jul. 3, 1978, Ser. No. 921,534
Int. Cl.^{2} B65D *33/20*
U.S. Cl. 206—363 13 Claims

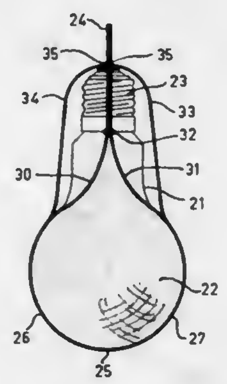

20
22
24
25
22
20
THIS LINE TURNS DARK BROWN DURING AUTO-CLAVE
THIS LINE TURNS ORANGE IN ETO GAS
25
25
10
14
STERILIZATION POUCH
FOR USE WITH GAS OR STEAM STERILIZATION
CONTENTS
STERILIZATION DATE
EXPIRATION DATE
32
d
30
36
w
34
36

1. A sterilizable package comprising a plastic member and a paper member marginally heat-sealed around all sides thereof; means defining a slit in the paper member extending between two side seals and adjacent to and spaced apart from another side seal for receiving the package contents; and means disposed on said paper member between the slit and the edge of said another side seal for closing the slit in response to a single fold of the package around a bending line between the slit and the edge of said another side seal of the package, said means being positioned such that upon making the single fold, said means is aligned over said slit.

4,194,623
PACKAGED ELECTRIC LAMP

Franciscus M. Klomp, and Marinus Overmars, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,989
Claims priority, application Netherlands, Sep. 7, 1977, 7709817
Int. Cl.^{2} B65D *85/42*
U.S. Cl. 206—418 2 Claims

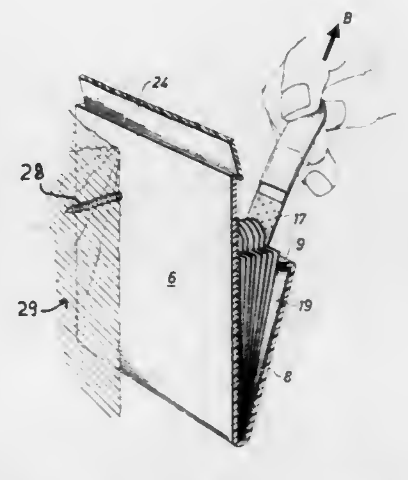


1. An electric lamp package, which comprises a lamp envelope having a neck adjoining at one end a convex portion and connected at the other end to a lamp cap; an elongate packaging strip extending at one end from beyond the lamp cap and bent around the convex portion of the lamp envelope and extending at its other end back beyond the lamp cap to form two oppositely disposed long sides, said two extending ends engaging each other substantially flatly; a pair of lengthwise incisions in each long side to provide a packaging strip central portion in contact with the abutting convex portion of the lamp envelope and two packaging strip edge portions extending along said central portion and being in opposite lateral edge-wise contact with the lamp envelope, the central portion of each long side extending from the bottom of the lamp cap to an area on the lamp envelope convex portion between the lamp envelope neck and the greatest cross section of said convex portion; and means to secure together the corresponding edge portions of the two oppositely disposed long sides.

4,194,624
LOCKABLE HOLDER FOR A MULTIPLE PLASTER PACK

Hans Spiegelberg, Taby, Sweden, assignor to Salve S.A., Geneva, Switzerland

Filed Oct. 20, 1978, Ser. No. 952,830
Claims priority, application Sweden, Apr. 10, 1978, 7803977
Int. Cl.^{2} A61F *13/02;* **A61L** *15/06*
U.S. Cl. 206—441 16 Claims



1. A storage receptable for a separable pack having at least a front wall behind which multiple adhesive bandages are located comprising: front and rear walls joined together at the lower regions thereof and defining a trough-shaped compartment therebetween; a flange element extending inwardly from said front wall a sufficient distance so as to overlie at least the front wall of the adhesive bandage-containing pack stored in said compartment so as to prevent removal of the pack from the compartment but permit removal of individual bandages; and a plurality of apertures extending through the front wall of said compartment below said flange element whereby a key member can be inserted through said apertures for engagement with the front wall of a pack in the compartment to shift such front wall from beneath the flange element to permit removal of the pack.

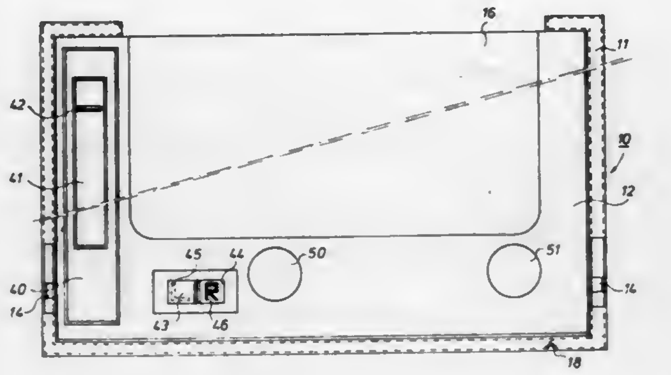
4,194,625
RADIOGRAPHIC FILM CASSETTE

Emile F. Stievenart, Hoboken; Hendrik S. Plessers, Boechout, and Georges J. Neujens, Merksem, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Continuation of Ser. No. 808,174, Jun. 20, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,399
Claims priority, application United Kingdom, Jun. 22, 1976, 25949/76
Int. Cl.^{2} B65D *81/30;* **H05G** *1/28;* **G03B** *41/16*
U.S. Cl. 206—455 18 Claims

1. A radiographic film cassette comprising a bottom, a cover frame which is U-shape in plan, having three side members with the remaining side being devoide of a side member between the free ends of the two opposite side members, and defines an open area therewithin, hinge means hingedly connecting the free ends of said two opposite frame side members to said bottom, fastening means for securing said cover frame in closed position to said bottom, said U-shaped cover frame making with said bottom when in closed position a light-tight seal around its three side members, and a light-opaque radia-

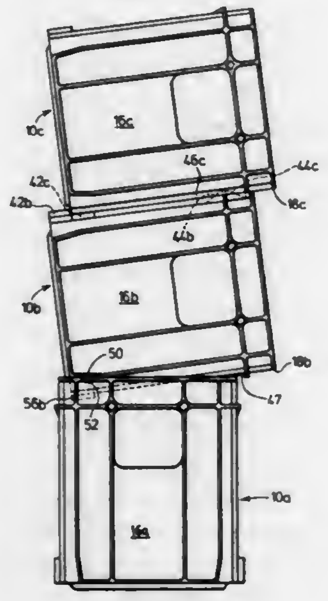
tion-penetrable flexible foil arranged in said cover frame at least coextensive with the open area thereof and having margins along three sides secured between said bottom and said cover frame side members when the latter are in closed position, said flexible foil on its remaining side projecting outside said open space beyond the limits of the free ends of said cover frame side members and extending continuously onto said bottom so as to form when said cover frame and bottom are in closed position a re-entrant fold stretching between the free ends of said two opposite side members of said cover proximate to the adjacent side of said bottom and closing the remaining side of the cassette against entry by light, whereby a radiographic film sheet can be disposed within said cassette with an edge proximate to said re-entrant fold in said foil and exposed without obstruction to the limits of said folded foil.



4,194,626

CONTAINER ADAPTED TO BE STACKED VERTICALLY AND ON ITS SIDE

Peter K. Boller, Willowdale, Canada, assignor to Consumers Glass Company Limited, Toronto, Canada
Filed Jun. 6, 1977, Ser. No. 804,014
Int. Cl.^{2} B65D *21/02*
U.S. Cl. 206—509 **29 Claims**

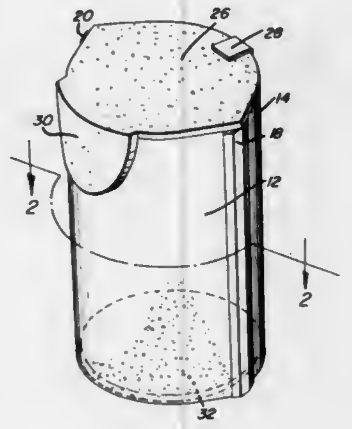


1. A container adapted to be stacked in a stepped manner with its side resting on a side of a like underlying container where said container is inclined relative to horizontal when stacked, said container comprising opposing side walls and interconnected opposing end walls, an interconnected bottom and an open top defined by a top rim of said container, the height of said container being at least equal to the width of the container end wall, each of the container side walls having side stacking engagement means for engaging a like underlying container to prevent said container from sliding down relative to such inclined underlying container, said side stacking engagement means comprising a lug projecting from each container side wall and so positioned to ensure side stacking of such containers in a stepped manner where the lugs of opposing side stacked container side walls abut to provide overlap of container sides of greater than 60%.

4,194,627

COLLAPSIBLE AND REUSABLE CONTAINER INSULATOR

Robert F. Christensen, Miles City, Mont., assignor to Shirley I. Gibson, Miles City, Mont., a part interest
Filed Sep. 5, 1978, Ser. No. 939,118
Int. Cl.^{2} B65D *81/36, 7/00*
U.S. Cl. 206—545 **7 Claims**

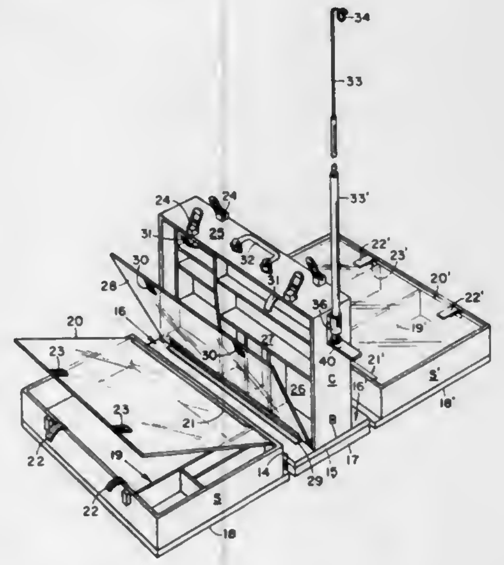


1. An insulator for a cylindrical can adapted for holding liquid contents, the insulator comprising thermal insulating means removably enclosingly surrounding the cylindrical can, said insulating means having opening means for exteriorly gaining access to the cylindrical can, the thermal insulating means comprising a pair of joined collapsible side walls formable into a cylindrical sleeve, an insulating bottom, and a removable insulating top lid which comprises said opening means, the insulating bottom being fittingly receivable into the cylindrical sleeve and the insulating top lid being attachable to the opposite end of the cylindrical sleeve, whereby said liquid contents are maintainable at a temperature above or below ambient temperatures, and whereby damage to a surface on which the container rests is preventable.

4,194,628

MEDICAL CASE

Juan M. Campos, 804 S. Main St., McAllen, Tex. 78501
Filed Sep. 18, 1978, Ser. No. 943,321
Int. Cl.^{2} A45C *11/00;* **A61B** *19/00*
U.S. Cl. 206—570 **1 Claim**

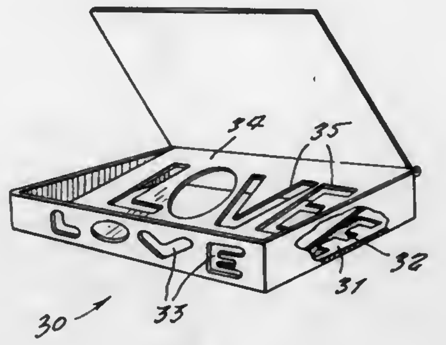


1. A medical case for storage of medical supplies and for administering medical treatment to a patient, comprising:
a central section having a vertically extending storage portion;
said central section having a base support portion extending past each side of the central section to provide an enlarged support to stabilize the central section;
side sections having storage portions secured to each side of the base support portion by hinge means to provide a substantially rectangular case in their upright closed position and with the outer portions of the side sections forming a continuous support portion with the base support portion in the open, substantially horizontal, positions;
the side sections including extensions hingedly connected to the base support portion;
the central section and side sections having transparent covers over the storage portions to retain articles therein;
the storage portions of the side sections are positioned above the base support portion in the closed position;
a suport rod extending generally vertically above the case during use for administering medicine to a patient by hanging medical means on the support rod;
the support rod having telescoping sections and pivotally mounted horizontally inside said central section for storing the support rod in the case; and
the medical case having a channel open at one side of said central section for receiving the support rod for storage inside the case and a pivotal door closing said channel opening and providing a base for said rod when in use.

4,194,629

LOVE BOX

Dale A. Ledman, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Mar. 17, 1978, Ser. No. 887,860
Int. Cl.^{2} B65D *73/00*
U.S. Cl. 206—573 **1 Claim**



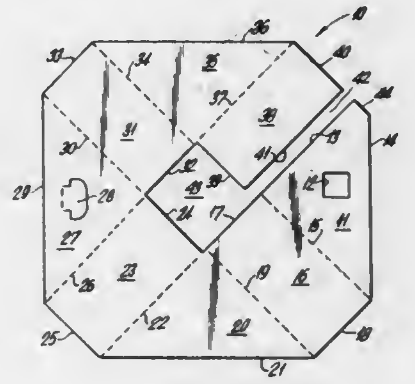
1. A box for displaying a love message when closed or open, comprising a case having a bottom with an encompassing wall in combination with a cover pivoted at one end to said wall whereby said cover may be moved from a closed position abutting said wall to an open position providing access to said case, in combination with a love message and associated means for displaying said message in both closed and open positions, wherein said means comprise a flourescent substance deposited on the case bottom and including a card mounted in said case spaced from said material, said card having cut-out portions in the form of said message for display when the box is open and further cut-outs through said wall in the form of said message.

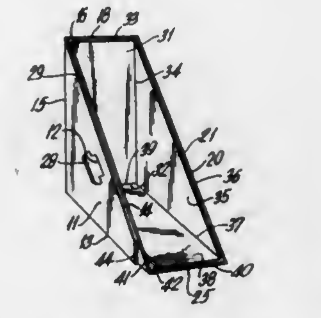
4,194,630

PAPERBOARD CORNER PROTECTIVE DEVICE

Thomas J. Kaiser, St. Cloud, Minn., assignor to Champion International Corporation, Stamford, Conn.
Filed Dec. 26, 1978, Ser. No. 972,654
Int. Cl.^{2} B65D *81/14, 85/48*
U.S. Cl. 206—586 **14 Claims**

1. A blank which may be erected and removably fastened to form a paperboard device to fit upon and protect the corners of packaged articles, said blank comprising, as panels of a unitary one-piece blank;
(a) first, second, third and fourth triangular panels (11, 20, 27, 35) each having an outside free edge (14, 21, 29, 36) and said first triangular panel having a second free edge (13);
(b) first, second, third and fourth rectangular panels (**16, 23, 31, 38**) each having an inside free edge (**17, 24, 32, 39**) and an outside free edge (**18, 25, 33, 40**), said inside free edges forming a central opening of said blank;
(c) said first rectangular panel (**16**) being joined by respective fold lines (**15, 19**) to said first and second triangular panels (**11, 20**), said second rectangular panel (**23**) being joined by respective fold lines (**22, 26**) to said second and third triangular panels (**20,27**), said third rectangular panel (**31**) being joined by respective fold lines (**30, 34**) to said third and fourth triangular panels (**27, 35**); said fourth rectangular panel (**38**) being joined to said fourth triangular panel (**35**) by a fold line (**34**); said fourth rectangular panel (**38**) having a free edge (**41**) which forms a gap (**42**) with said second free edge (**13**) of said first triangular panel (**11**).

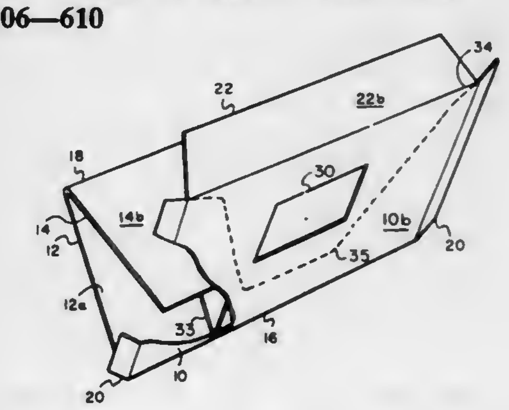




4,194,631

MACHINE SORTABLE MAILING ENVELOPE

Karur S. Rangan, 36 Aberfeldy Crescent, Thornhill, Ontario, Canada
Filed Oct. 6, 1978, Ser. No. 949,073
Int. Cl.^{2} B65D *27/06, 27/34*
U.S. Cl. 206—610 **7 Claims**



1. A machine sortable mailing envelope of the type adapted to be used twice, once on an outward trip, and once on a return trip and adapted for easy machine handling and sorting on both trips, said envelope comprising;
a front panel having an address area for carrying an address;
a back panel;
means joining said front and back panels along their bottom and side edges;
an outward trip closure panel joined to the upper edge of said front panel and adapted to be folded over the upper edge of said back panel and having bonding means;

a return trip closure panel joined to the upper edge of said back panel and folded within the envelope between the back and front panels and having bonding means;

a perforation line extending down either side of said front panel in a generally D-shaped pattern around the address area, defining an upper detachable portion which is removable from the remainder of said front panel, said perforation line being spaced inwardly from the side edges of said front panel to leave marginal strips of said front panel therealong along the bottom and both side edges, said outward trip closure panel being attached to said upper removable portion whereby upon tearing along said perforation line the whole of said outward trip closure panel and said upper central removable portion including said address area may be discarded, said return trip closure panel then being adapted to be withdrawn from the interior of the envelope, and folded over said marginal strips of said front panel and being bonded thereto for the return trip;

interior panel means attached to the interior of said upper central portion, and,

an extension flap on said interior panel means folded upwardly between said return trip closure panel and said back panel.

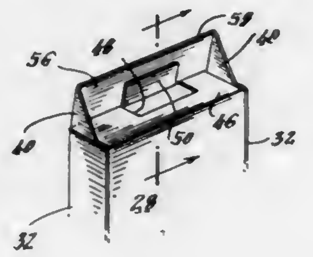
4,194,632
CANDY AND PILL DISPENSER CARTON

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed May 4, 1978, Ser. No. 902,802

Int. Cl.² B65D *5/72, 17/24*

U.S. Cl. 206—626 **3 Claims**



1. A dispensing carton comprising:

a front wall, a back wall, and side walls connecting opposite edges of said front and back walls;

a bottom wall between said front and back walls and said side walls; and

a top closure including,

a substantially U-shaped panel defining a dispensing opening along the bight portion thereof,

a top closure panel for sealing said dispensing opening, the top closure panel including a panel hingedly connected to the top of one of said front and back walls adapted to overlie the dispensing opening in said U-shaped panel, said U-shaped panel being connected to the top of the other one of said front and back walls,

a pair of side flaps which are hingedly connected to and perpendicular to the opposite side edges of said top closure panel, said pair of side flaps extending into the interior of said carton, with each side flap having an edge of a dimension to abut one of said front and back walls upon rotation of said top closure panel to limit rotational movement of said top closure panel, and

a tab adhesively connected to said top closure panel, said tab being connected by a cut and perforated line to the bight portion of said U-shaped panel within and coplanar to said dispensing opening whereby initial rotation of said top closure panel will break the perforated portion to said cut and perforated line to unseal said dispensing opening, with the side flaps forming with said top closure panel a bin to catch articles dispensed through said dispensing opening, and whereby, upon rotation of said top closure panel to the closed position, said tab is inserted within the interior of said carton through said dispensing opening in order to lock said top closure panel in sealing engagement with the U-shaped panel.

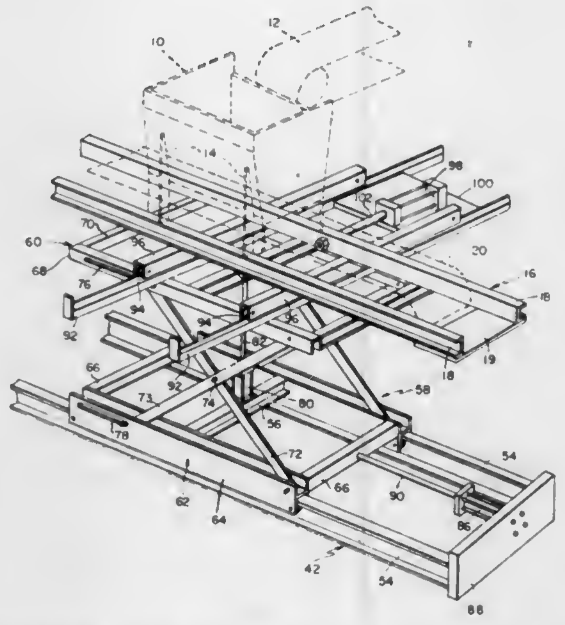
4,194,633
ADJUSTABLE CONVEYOR

Malcolm M. Paterson, Lee, N.H.; William J. Paxson, and Charles W. Christensen, both of Cedar Rapids, Iowa, assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 832,719, Sep. 12, 1977, abandoned. This application Aug. 24, 1978, Ser. No. 936,412

Int. Cl.² B07B *4/06*

U.S. Cl. 209—152 **12 Claims**



1. Adjustable conveyor-supporting apparatus comprising a conveyor operably extending parallel with a known axis, means for adjusting said conveyor with respect to said known axis, comprising the combination of a base comprised of a pair of spaced parallel base members located parallal with said axis, a first support comprising a base frame mounted on the base members and movable longitudinally thereon in a direction parallel to said axis, a second support comprising a pair of spaced parallel lateral rails mounted on said base frame and extending laterally in a direction perpendicular to said axis, said lateral rails being movable vertically with respect to said axis independent of said first support, and conveyor support means mounted on said lateral rails and movable thereon in a direction transverse to said axis, said conveyor being mounted on said conveyor support means and movable therewith and extending in a direction parallel to said axis.

7. In a rotary drum classifier system, adjustable conveyor-supporting apparatus comprising a conveyor operably extending parallel with a known longitudinally axis of a rotary drum, means for adjusting said conveyor with respect to said axis comprising the combination of a base comprised of a pair of spaced parallel base members extending in a direction parallel to said axis, a first support comprising a base frame mounted on the base members and movable longitudinally thereon in a direction parallel to said axis, a second support comprising a pair of spaced parallel lateral rails mounted on said base frame and extending laterally in a direction perpendicular to said axis, said lateral rails being movable vertically with respect to said axis independent of said first support, and conveyor support means mounted on said lateral rails and movable thereon in a direction transverse to said axis, said conveyor being mounted on said support means and extending in a direction parallel to said axis and movable with said support means toward and away from one end of said drum.

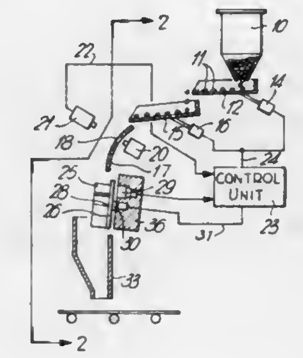
4,194,634
METHOD AND APPARATUS FOR SORTING RADIOACTIVE MATERIAL

Leonard Kelly, 3 Oakwood Rd., Peterborough, Ontario, Canada (K9J 1N2)

Filed Dec. 9, 1977, Ser. No. 859,195

Int. Cl.² B07C *5/346*

U.S. Cl. 209—589 **15 Claims**



1. A method of sorting particles of radioactive material comprising the steps of

moving a particle to be sorted into a predetermined position adjacent a radiation detector,

temporarily retaining said particle in said position,

comparing a first signal representing rate of radiation provided by said readiation detector with values representing a cut-off rate of radiation and providing a second signal when said first signal exceeds said values by a first predetermined amount and a third signal when said first signal is less than said values by a second predetermined amount, the step of comparing lasting only until one of said second or third signals is provided, and

moving said particle in one of a first and a second path responsive to a respective one of said second and third signals.

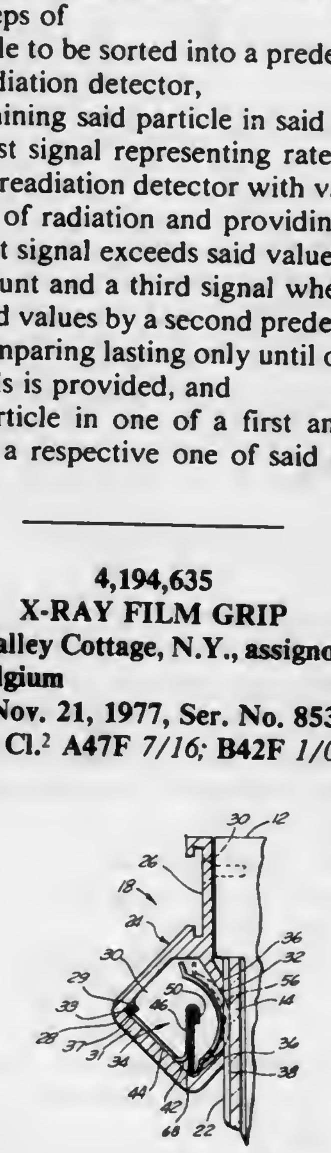
4,194,635
X-RAY FILM GRIP

Peter T. Ferrara, Valley Cottage, N.Y., assignor to AGFA-Gevaert, Antwerp, Belgium

Filed Nov. 21, 1977, Ser. No. 853,311

Int. Cl.² A47F *7/16;* **B42F** *1/00*

U.S. Cl. 211—45 **14 Claims**



1. A sheet support member adapted to cooperate with a sheet support surface, comprising an elongated hollow frame element having a longitudinally extending slot formed therein facing said sheet support surface; an elongated spring element mounted in said frame having a plurality of separate spring fingers thereon, said spring fingers having bent central portions thereof positioned adjacent to and normally projecting from said slot towards said sheet support surface, said spring element having an elongated backing strip and said fingers being integrally formed therewith, said fingers being generally arcuately curved and extending transversely of said backing strip, said fingers each having one end integral with said backing strip and an opposite free end with said central bent portion therebetween; and means slidably positioned within the frame for mounting said spring element on said frame whereby a sheet positioned between said frame and said support surface will be engaged by said bent portions of the spring fingers and held against said support surface.

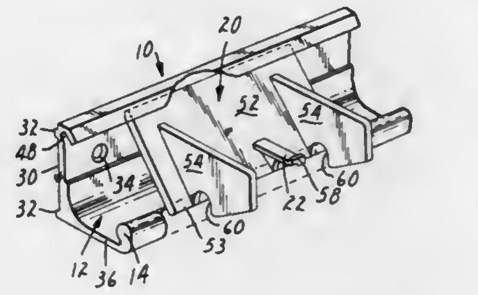
4,194,636
BRACKET ASSEMBLY

David C. Byram, River Falls, Wis., and John V. Nowicki, Jr., St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 14, 1978, Ser. No. 896,581

Int. Cl.² A47F *5/08*

U.S. Cl. 211—71 **6 Claims**



1. A bracket assembly adapted to serve as a hanger for a plurality of storage and shipping boxes for video cassettes each having a hook portion projecting over a recess in its walls, and a plurality of video cassettes each having an opening along one edge wall at a predetermined position between its side walls, said bracket assembly comprising

an elongate channel including:

a back portion having a contact surface; and

a hanger portion projecting from said back portion away from said contact surface and having a distal lip projecting in a generally parallel with said contact surface, said hanger portion and lip being sized so that with said back portion attached to a vertical surface, said channel horizontal, said contact surface adjacent said vertical surface and said lip projecting upwardly the hook portion on a said box may be engaged over the lip to hang the box with the hanger portion extending through the recess in the box;

a cassette adapter comprising:

a projecting finger portion having a ledge at its distal end, and being shaped to enter the opening in a said cassette and engage said ledge behind the edge wall of the cassette; and

guide means adapted to engage a side wall of a said cassette being hung on said projecting finger portion to position the cassette in the proper transverse alignment for engagement of said finger portion in the opening in the cassette; and

means adapted for releasably engaging said cassette adapter with said channel to position said finger portion along said hanger portion and projecting generally away from said contact surface so that with said channel horizontal and attached to a vertical surface as described above, said finger portion can be engaged through the opening in a cassette to hang it from the bracket assembly.

4,194,637
MOLDED PEG STRIP

Sydney Edson, New York, N.Y., assignor to Textron Inc., Providence, R.I.

Filed May 12, 1978, Ser. No. 907,512

Int. Cl.² A47F *5/00*

U.S. Cl. 211—96 **2 Claims**

1. A display support comprising:

a plurality of hooks formed from round stock each having an elongate shank and a downturned foot; and

a flexible molded plastic peg strip to hold said hooks, including an elongate laterally flexible base adapted to be attached flush to a flat or curved surface and

a plurality of independent equally spaced pockets formed integrally along the length of said base and projecting therefrom, each pocket having

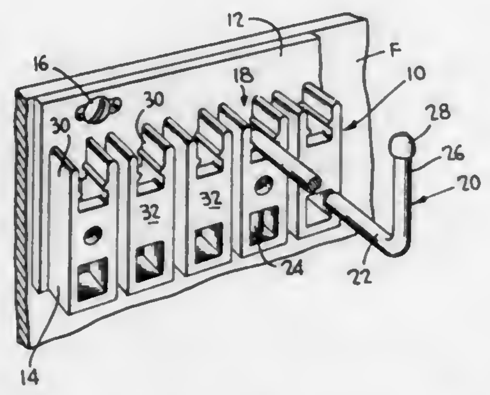
two parallel side walls of a height greater than the length of said hook foot, said walls being spaced apart a distance approximately equal to the diameter of said hook foot and extending a like distance from said base,

a front wall connecting said side walls below the top edges thereof to form a cavity with a square cross section,

a slot defined by the area between the side walls above the front wall to receive the shank of a hook and to prevent horizontal swinging thereof,

a bottom surface interconnecting the lower edges of said side walls and said base to provide a stop for said hook foot, and

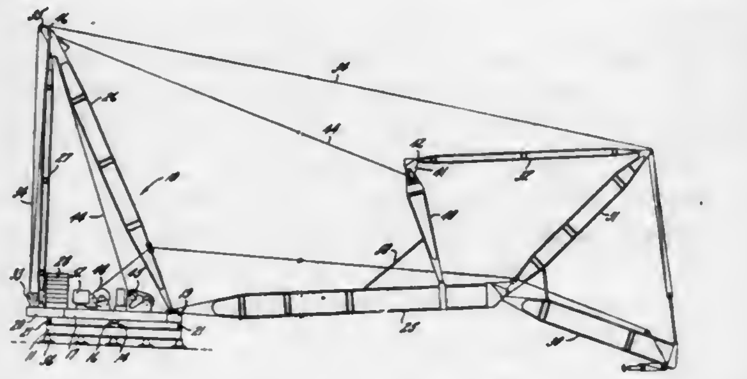
an aperture in said base extending substantially the full width of said cavity from above said bottom surface to below the top edges of said side walls, a portion of said base remaining adjacent said bottom surface to provide lateral support for said hook foot, said aperature facilitating insertion of a hook foot into said cavity by providing rear clearance for said foot to permit the foot to be inserted into the cavity while in substantial angular misalignment therewith.



4,194,638
RING SUPPORTED TOWER CRANE

James G. Morrow, Sr.; Michael C. Anderson, both of Manitowoc, and Richard L. Siehr, Two Rivers, all of Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Jun. 7, 1978, Ser. No. 913,502
Int. Cl.² B66C *23/26*
U.S. Cl. 212—46 R **8 Claims**

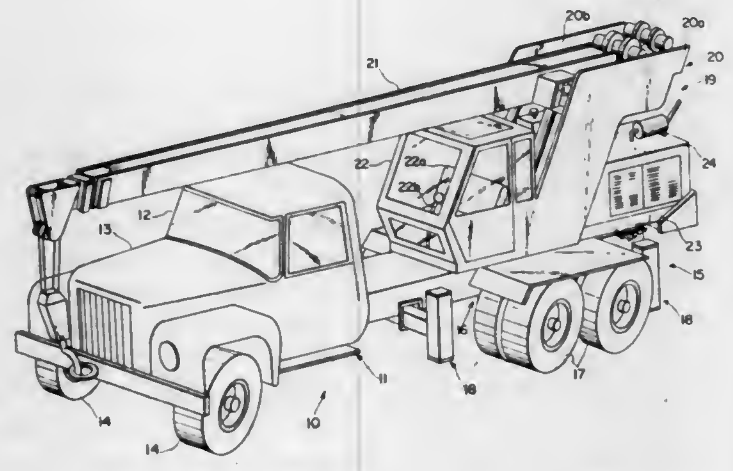


1. A crane assembly comprising, in combination, a ring defining an annular track, platform means fitted for rotation on said track, said platform having tower carrier means at one end in riding contact with said track and a counterweight support means at the other end also in riding contact with said track, a tower pivotally mounted on said carrier means above said track, an upwardly and rearwardly inclined mast also mounted on said carrier, means interconnecting said counterweight support means and the top of said mast, a boom pivotally mounted on the top of said tower, an upwardly and rearwardly inclined boom strut also mounted on the top of said tower, means including a backstay strut releasably connected to the top of said mast and the top of said boom strut, a tower backstay releasably connected to the top of said mast and said tower and means including a powered hoist drum mounted on said platform and wire rope wound on said drum and reeved over a sheave adjacent the top of said mast for raising and lowering said tower, boom, boom strut, backstay strut and tower backstay as a unit when said backstay strut and tower backstay are unconnected from the top of said mast.

4,194,639
TRUCK MOUNTED CRANE AND METHOD OF CONSTRUCTING SAME

John L. Grove, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.

Filed May 12, 1977, Ser. No. 796,437
Int. Cl.² B66C *23/06*
U.S. Cl. 212—59 R **4 Claims**



1. A truck mounted crane comprising:

a truck front end including a source of energy, front braked steering wheels, a truck cab including a steering wheel, energy source controls and brake controls, and spaced longitudinal frame members extending rearwardly of said truck cab,

a rear end comprising a heavy load bearing frame including spaced longitudinal frame members, means joining said last mentioned frame members to said front longitudinal frame members at approximately the same level thereof, rear drive wheels, outrigger means carried by said load bearing frame, an upper works mounting structure supported by said load bearing frame, and

an upper works rotatably supported on said upper works mounting structure and comprising:

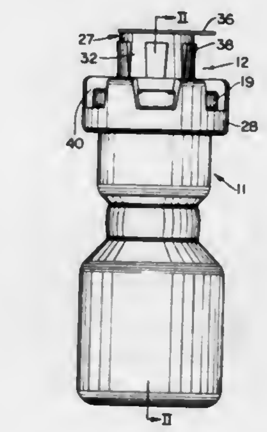
- a platform,
- a crane cab located forwardly on said platform, said crane cab comprising crane controls and having front and side windows,
- boom support means of inverted "L" shape rigidly on said platform rearwardly of said crane cab, and comprising upwardly and rearwardly extending parts, the top of said rearwardly extending part of said boom support means being above the top of said crane cab, a boom pivoted on the rearwardly extending part of said boom support means and extending forwardly over said crane cab, and having a horizontal position in which the bottom is in closely spaced relation above the top of the crane cab, and the top of the truck cab,
- said rearwardly extending part of said boom support means being substantially the highest part of said crane when said boom is horizontal,
- said crane cab, boom support means and boom being laterally centered on said upper works,
- crane upper works elements other than said boom and platform being rearwardly of said crane cab,

whereby to provide unobstructed vision for an operator in said crane cab forwardly and to both sides, and whereby said truck mounted crane has low vertical height for travelling.

4,194,640
VIAL AND CLOSURE

Gary K. Crankshaw, Kalamazoo, and George W. Braymer, Ross Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 794,348, May 6, 1977, Pat. No. 4,089,432. This application May 8, 1978, Ser. No. 903,662
The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.
Int. Cl.² B65D *81/32*
U.S. Cl. 215—6 **10 Claims**



1. In a two-compartment container having a constriction between the two compartments capable of receiving a removable plug which provides a liquid-tight barrier between the two compartments, said container having a neck communicating with one of said compartments and said neck having an annular rim adjacent the free end thereof, and a closure structure for said neck, said closure structure comprising:

a resiliently flexible, substantially cylindrical stopper having a first portion with an outside diameter slightly larger than the inside diameter of said neck and snugly receivable into said neck and a second portion of reduced diameter projecting beyond the free end of said neck;

resiliently flexible cap means of substantially circular cross section having a fastening portion telescopically receivable onto the free end of said neck, said fastening portion having means for gripping said rim, said fastening portion including annular means overlying the upper edge of the stopper first portion so as to oppose its removal from the vial, and said cap means having a sleeve portion of reduced diameter snugly but slidably receivable onto the second portion of said stopper, said sleeve portion being attached to said fastening portion by manually fracturable means, said sleeve portion being slidably receivable with the second portion of said stopper through said annular means and into said neck by the application of force urging said sleeve portion toward said container;

cooperable lock means on said sleeve portion and said annular means for positively opposing movement of said sleeve portion out of said vial after said sleeve portion has been moved a preselected distance through said annular means; and

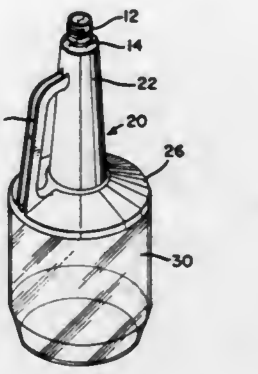
means attached to said outer end of said sleeve portion of said cap means for closing the outer end thereof.

4,194,641
TWO-PIECE BLOW MOLDED CONTAINER WITH HANDLE

William R. Gaiser, Dayton, Ohio, assignor to The Broadway Companies, Inc., Dayton, Ohio

Filed Sep. 18, 1978, Ser. No. 942,891
Int. Cl.² B65D *23/10*
U.S. Cl. 215—100 A **6 Claims**

1. In a container blow molded from a preform having a neck and a tubular body which is expanded from the preform in the blow molding operation, the improvement comprising:



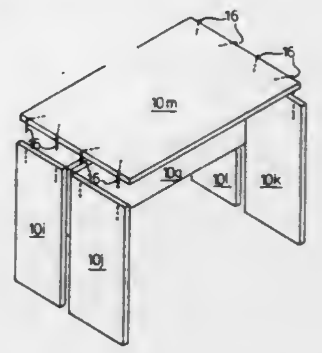
an attachment ring surrounding the upper portion of said body adjacent said neck, including means for locking said ring to said body when said preform is expanded, and

a handle formed as an integral part of said ring.

4,194,642
FURNITURE COMPONENT SYSTEMS

Ljiljana Glavan, 2029 Beaconwood Dr., Ottawa, Ontario, Canada

Filed Feb. 21, 1978, Ser. No. 879,715
Claims priority, application Canada, Mar. 3, 1977, 273084
Int. Cl.² B65D *9/12, 9/34, 7/00*
U.S. Cl. 217—12 R **31 Claims**



1. A furniture component system, comprising:

a plurality of plate-shaped members; and

a plurality of connecting members for connecting said plate-shaped members together;

each of said connecting members having a pair of mutually angularly divergent limbs;

each of said plate-shaped members having at least one edge formed with at least two holes extending inwardly of the respective plate-shaped member from the respective edge;

each of said holes being dimensioned to receive therein one of said connecting member limbs, and said holes being mutually parallel in selected ones of said plate-shaped members and being mutually angled in the remaining ones of said plate-shaped members, whereby each of said plate-shaped members is connectible together with an adjacent one of said plate-shaped members in mutually angularly disposed relationship allowing relative movement apart of the connected, adjacent plate-shaped members in only one direction.

4,194,643

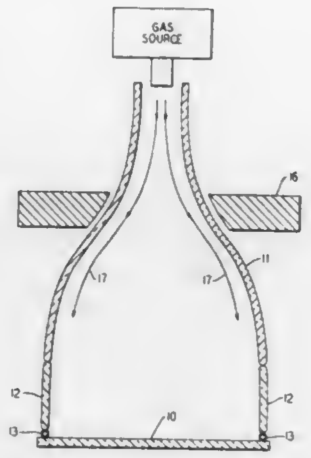
METHOD AND APPARATUS FOR FRIT-SEALING HIGH TEMPERATURE CRT FACEPLATE TO CONVENTIONAL CRT ENVELOPE

Adolph G. Hager, Pt. Pleasant, and Philip F. Krzyzkowski, Middletown Township, Monmouth County, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 19, 1978, Ser. No. 970,904

Int. Cl.^{2} C03B *23/20;* **C03C** *27/06;* **H01J** *29/87*

U.S. Cl. 220—2.1 A **12 Claims**



1. A method of joining a first glass member having a first thermal coefficient of expansion to a second glass member having a second thermal coefficient of expansion, said method comprising the steps of:

joining one end of a third glass member having a third thermal coefficient of expansion to said first member and also joining the other end of said third member to said second member, said third member extending lengthwise between said first and second members and acting as an intermediate stress-absorber and having a thermal coefficient of expansion which is less than both said first and said second coefficients of expansion, and applying a glass frit seal between said other end and said second member to join said third and second members.

10. A cathode-ray tube which comprises:

an envelope of a first glass having a first thermal coefficient of expansion;

a faceplate of a second glass having a second thermal coefficient of expansion;

an intermediate longitudinally extending cylindrical stress absorbing member of a third glass joining said envelope and faceplate, said intermediate member having one end sealed to said envelope and having a third thermal coefficient of expansion which is less than either said first or said second coefficients of expansion, and

a glass frit seal between the other end of said intermediate member and said faceplate.

4,194,644

ELECTRICAL JUNCTION ACCESS DEVICE

Henry R. Narvaez, 8913 Las Cruces Cr., Houston, Tex. 77028

Filed Apr. 5, 1978, Ser. No. 893,278

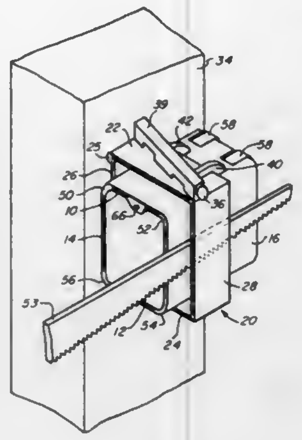
Int. Cl.^{2} B23Q *17/02, 17/18;* **H02G** *3/08*

U.S. Cl. 220—3.3 **11 Claims**

1. An electrical junction access device for positioning in a wall structure and having a main body including a back wall and a tubular wall extending forwardly therefrom to form an enclosed area for electrical apparatus and defining a forward opening into said enclosed area opposite the back wall, said tubular wall having inner surfaces facing into said enclosed area and outer surfaces facing away from said enclosed area;

a guide sleeve externally surrounding said tubular wall and defining guide surfaces generally opposed to said outer surfaces of the tubular wall above and below and on either side thereof;

and spacer means interconnecting said main body and said sleeve to support said sleeve on said main body and spacing said guide surfaces of said sleeve from said outer surfaces of said tubular wall by a distance great enough to permit a cutting instrument to be inserted between said outer surfaces and guide surfaces but small enough to restrain the instrument to a cutting path generally parallel to and adjacent to said outer surfaces, said spacer means being rearwardly offset from the forward extremity of said sleeve and extending inwardly from said guide surfaces toward said tubular wall.



4,194,645

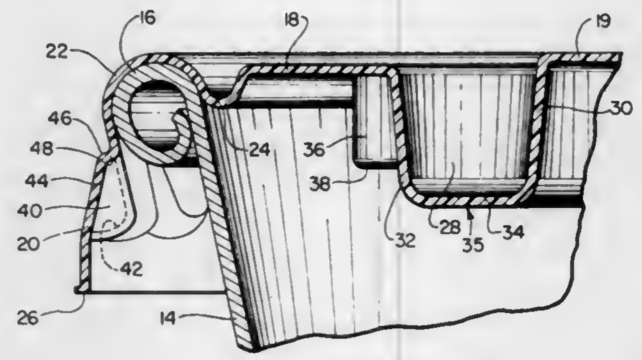
CONTAINER COVER CONSTRUCTION

Adolf Zabner, Warwick, and Norman I. Bellemore, Smithfield, both of R.I., assignors to Nyman Mfg. Co., East Providence, R.I.

Filed Oct. 10, 1978, Ser. No. 950,237

Int. Cl.^{2} B65D *41/16, 43/06, 55/00*

U.S. Cl. 220—306 **3 Claims**



1. A cover for containers having an external peripheral bead at an upper edge thereof, said cover being formed of an easily flexed material and comprising a top wall, a downwardly extending peripheral skirt, and an inverted peripheral channel connecting said skirt to said top wall and for receiving said peripheral bead of an associated container, said skirt including a plurality of peripherally spaced inwardly directed generally U-shaped detents and a plurality of peripherally spaced flutes disposed between and in part defined by adjacent portions of said detents, said flutes terminating in a relatively straight, upper horizontally extending portion cooperatively forming an interrupted peripheral base line positioned radially adjacent the outer lower extent of said container bead receiving channel and about which said skirt may outwardly flex when said container bead is positioned within said channel with upper inner surface portions of said detents in contact therewith, said upper horizontally extending portions radially outwardly offset from circumferentially adjacent portions of said detents, said detents being most deeply inwardly directed at the bottom portions thereof and gradually upwardly extending so as to merge with said lower extent of said container bead receiving channel along said peripheral base line such that the upper extent of both detents and said flutes coextensively terminate at said peripheral base line.

4,194,646

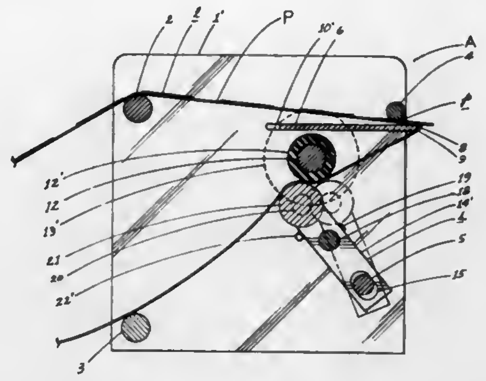
MANUALLY OPERATED LABEL DISPENSING MACHINE

Allen H. Oglander, 9 Sackston Woods, St. Louis, Mo. 63141, and Richard E. Shannon, 355 Albert, St. Louis, Mo. 63131

Filed Sep. 13, 1978, Ser. No. 941,953

Int. Cl.^{2} B65C *9/18*

U.S. Cl. 221—73 **18 Claims**



1. A machine for dispensing adhesive labels from a carrier sheet comprising a main frame having a pair of spaced-apart side plates, there being a work support plate mounted on said frame for direction of said carrier sheet thereover, said work support plate having a forwardly presented leading edge, a driven member journalled at its ends in said side plates for rotation about an axis perpendicular to the plane of said side plates and being disposed downwardly of said work support plate leading edge, a sub-frame swingably mounted upon said side plates, a drive roller rotatably carried upon said sub-frame for friction-producing engagement with said driven member in one limit of said sub-frame's movement of swing for cooperating with said driven member for gripping the carrier sheet therebetween to pull said sheet downwardly about said support plate leading edge for parting of labels therefrom, and means for imparting torque to said drive roller.

4,194,647

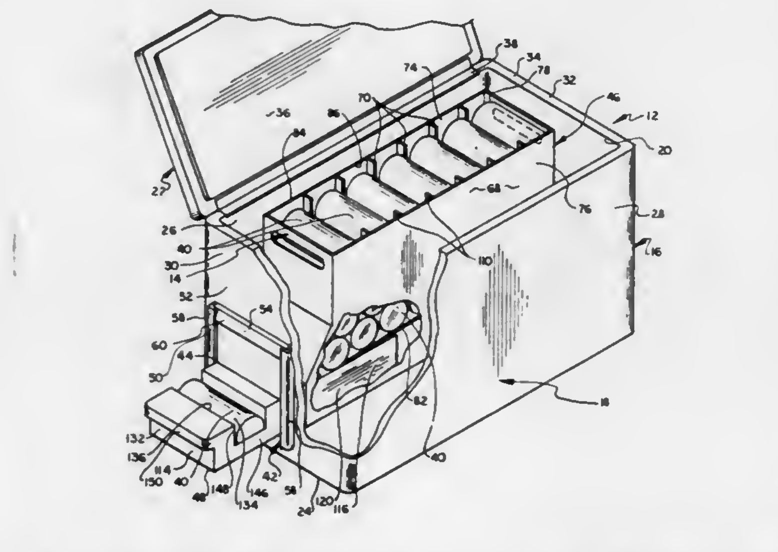
COOLER CHEST AND DISPENSER STRUCTURE

Harry A. Spurrier, 315 S. 8th St., Conway Springs, Kans. 67031

Filed Jan. 30, 1978, Ser. No. 873,555

Int. Cl.^{2} A47F *1/10;* **B65G** *59/06*

U.S. Cl. 221—97 **4 Claims**



1. A cooler chest and dispenser structure operable to individually dispense objects therefrom such as can members, comprising:

(a) a cooler chest assembly having a can dispenser assembly operably connected thereto;

(b) said cooler chest assembly includes a main container body to receive the objects therein and a lid member connected to said main container body to open and close an access opening thereto;

(c) said can dispenser assembly includes an access door assembly connected to said main container body; a dispenser container structure releasably mounted in said main container body; and a dispenser drawer structure mounted in said dispenser container structure and positioned adjacent said access door assembly;

(d) said access door assembly having a door member movable vertically from opened to closed positions about an opening in said main container body;

(e) said dispenser drawer structure includes a dispenser end section to receive an object therein and integral with a block end section;

(f) said dispenser drawer structure is movable to a position outwardly of said door member to present an object for removal from said dispenser end section while, simultaneously, said block end section holds the other objects in the same position;

(g) said dispenser drawer structure is movable to a start position within said dispenser container structure and another object automatically moves into said dispenser end section for subsequent dispensing;

(h) said access door assembly having a door frame member secured to an outer surface of said main container body about said opening therein; and

(i) said door frame member having a pair of spaced vertically extended support members to receive said door member therein for the vertical movement from opened to closed positions.

4,194,648

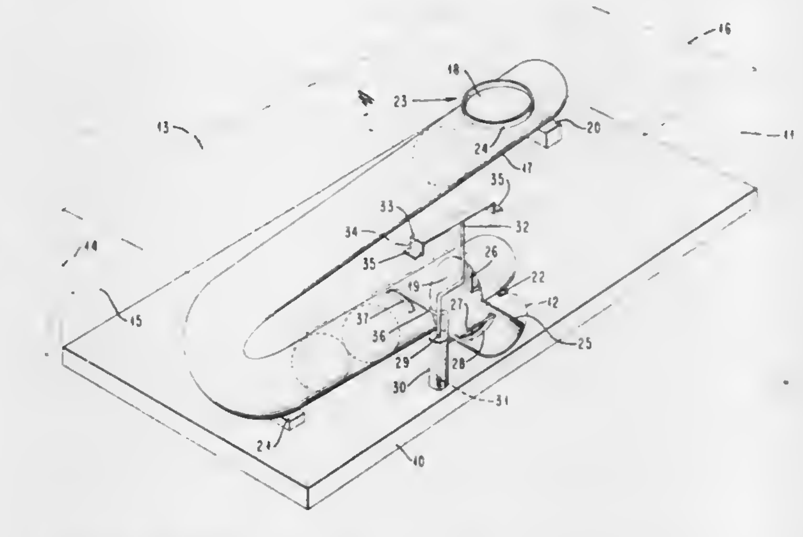
GOLF PUTTING TRAINING DEVICE

Robert Stanton, Rte. 44, Millbrook, N.Y. 12545

Filed May 12, 1978, Ser. No. 905,155

Int. Cl.^{2} A63B *57/00*

U.S. Cl. 221—299 **4 Claims**



1. A putting guide comprising:

a base and integral top and end walls, and front and back vertical walls, forming an enclosure for placement on a putting surface, said vertical front wall providing an elongated reference surface to guide a putter in a straight line and having a length coextensive with a putting stroke;

storage means within said enclosure for a plurality of golf balls, said vertical front wall including an opening of a diameter sufficient to allow a golf ball to pass therethrough from said storage means to the putting surface, said enclosure having another opening cooperating with said storage means for placing golf balls in said storage means, and movable means for closing said another opening in said enclosure;

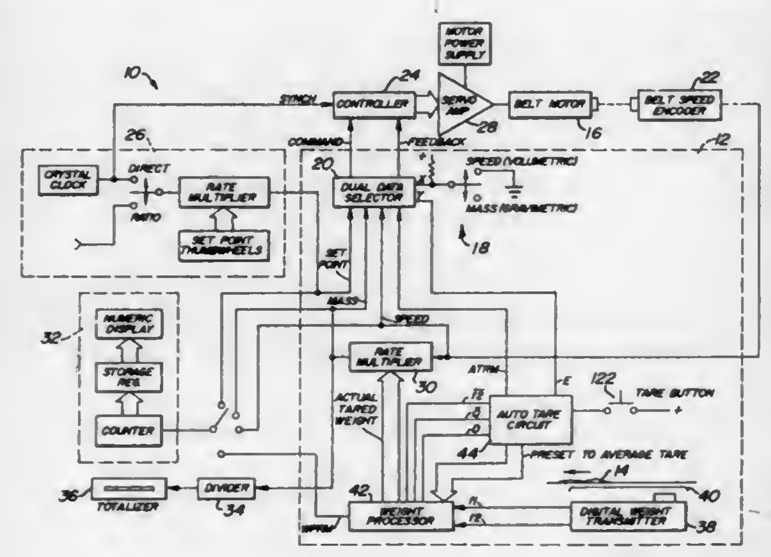
a guide, between said storage means and said opening in said vertical front wall having an upper surface for guiding a ball through said opening;

actuator means including retaining means, normally projecting above said upper surface of said guide to prevent passage of a ball to said opening in said vertical front wall, means extending through and above said top wall for depressing said retaining means to lower said retaining means to allow passage of a ball through said opening in said vertical front wall, and bias means for returning said retaining means to its normal position.

4,194,649
WEIGH FEEDER

Kenneth W. Bullivant, and Ron Van Ostenbridge, both of Glassboro, N.J., assignors to K-Tron International, Inc., Scottsdale, Ariz.

Filed Jun. 6, 1977, Ser. No. 803,905
Int. Cl.² G01G *13/14, 23/14*
U.S. Cl. 222—55 **9 Claims**



1. In a digital weigh feeder including a conveyor belt for transporting material thereon, the conveyor belt having an average tare weight associated therewith, the combination comprising:

a digital weight transmitter operatively associated with a conveyor belt for providing at least first and second outputs having first and second frequencies respectively, the ratio of said first and second frequencies being indicative of the weight of the belt and any material transported thereon,

means for providing an average tare weight signal representative of the average tare weight of said conveyor belt, and

means for digitally computing the ratio of said first and second frequencies including first means operatively associated with said first digital weight transmitter output for automatically providing a first digital signal representative of said first frequency over a first time interval based on said average tare weight signal and second means operatively associated with said second digital weight transmitter output for automatically providing a second digital signal representative of said first frequency over a second time interval based on said second frequency.

4,194,650
LIQUID MIXING AND AERATING SYSTEM

James E. Nottke, Seminole, and Jack K. Ruebel, Clearwater, both of Fla., assignors to Lykes Pasco Packing Co. Dispenser Manufacturing Div., Clearwater, Fla.

Division of Ser. No. 768,612, Feb. 14, 1977. This application Mar. 2, 1978, Ser. No. 882,658
Int. Cl.² B67D *1/10*
U.S. Cl. 222—57 **7 Claims**

1. A system for mixing a first liquid diluent and a second liquid concentrate in a fluid passage comprising in combination:

regulating means for regulating the flow of the first liquid;

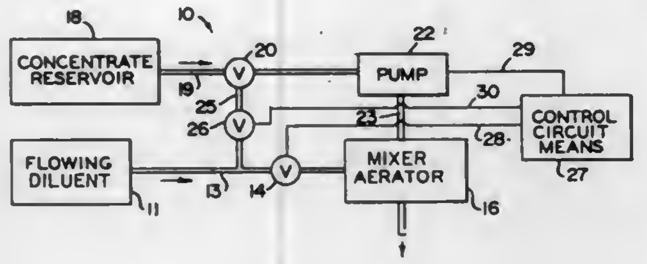
pumping means for pumping the second liquid;

control means for controlling said pumping means and varying the pumping rate thereof in accordance with the flow of the first liquid to maintain a given volumetric relationship between the first liquid and the second liquid;

mixing means for mixing said given volumetric relationship of said first and second liquids enabling the mixture to flow from the fluid passage;

said regulating means including valve means disposed in a conduit connecting the first liquid to said mixing means;

means connecting said control means to said valve means for simultaneously energizing and deactivating said valve means and said pumping means in response to an electrical signal from the control means for controlling the flow rate of the first liquid and the pumping of the second liquid;



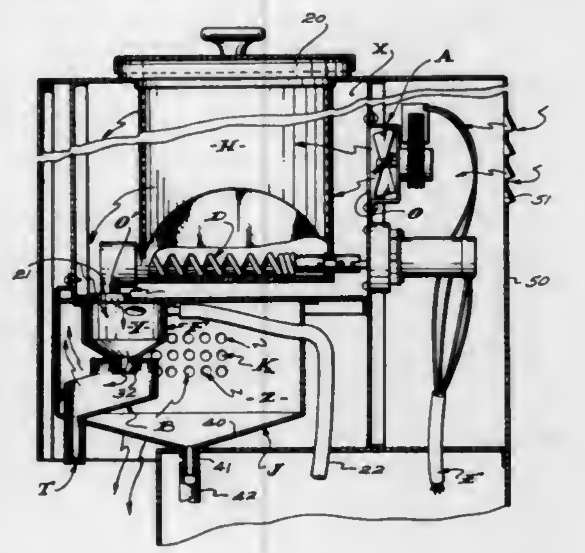
said mixing means comprising intersecting conduits extending from said pumping means and said valve means to mix the first and second liquids therein; and

one way valve means interposed in said conduit between said intersection of said conduits and said valve means for prohibiting the second liquid concentrate from entering said value means and the source of said first liquid diluent.

4,194,651
DISPENSING AND MIXING MEANS FOR WATER AND DEHYDRATED COFFEE

Ernest N. Martin, Escondido, and Michael L. Keirns, Alta Loma, both of Calif., assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Oct. 31, 1977, Ser. No. 846,904
Int. Cl.² B67D *1/16*
U.S. Cl. 222—108 **5 Claims**

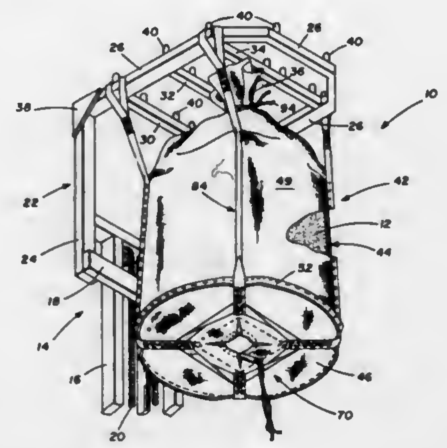


1. A beverage dispensing machine comprising a hopper holding a supply of particulate dehydrated beverage concentrate, a concentrate dispensing means connected with the hopper; said dispensing means has a dispensing duct with an outlet end and is intermittently operable to transport a predetermined volume of concentrate from the hopper outwardly through a dispensing duct, a funnel defining a mixing chamber receiving concentrate from the dispensing means, water supply and delivery means delivering a predetermined volume of water into the mixing chamber each time concentrate is received thereby and establishing reconstituted beverage in the mixing chamber, an outlet tube extending from the funnel to exhaust moisture-laden air and to drain beverage from the mixing chamber, a case about the hopper and dispensing means and defining a compression chamber, an air inlet opening in the case opening to the ambient atmosphere, air pump means at said air inlet opening delivering air at greater than atmospheric pressure into the compression chamber to cool said hopper and dispensing means and the concentrate therein, an air outlet opening in the case communicating with the mixing chamber, the outlet end of the dispensing duct is positioned at said air outlet opening whereby air flowing through the outlet opening about the dispensing duct and into the mixing chamber establishes a minus pressure at the outlet end of the dispensing duct to draw air outward through and prevent the flow of moisture-ladened air inward through that duct; air moving into the mixing chamber moves out of said chamber through said outlet tube transporting beverage and moisture-ladened air out of the mixing chamber, a second case defining a condensing chamber into which the outlet tube projects, a blending trough within the condensing chamber and receiving beverage and moisture-ladened air flowing through and from the outlet tube, said trough is open whereby moisture-ladened air flows therefrom into the condensing chamber, said second case has air outlet means to exhaust air from within the condensing chamber, said second case has a lower portion defining a condensate catch basin, said trough includes a dispensing tube depending through and from the second case to drain the trough and dispense beverage from the machine.

4,194,652
COLLAPSIBLE RECEPTACLE FOR FLOWABLE MATERIALS

Robert R. Williamson, Dallas County, and Norwin C. Derby, Grayson County, both of Tex., assignors to Super Sack Manufacturing Corporation, Dallas, Tex.

Continuation of Ser. No. 813,634, Jul. 7, 1977, Pat. No. 4,143,796. This application Oct. 30, 1978, Ser. No. 955,529
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.² B65D *29/02*
U.S. Cl. 222—185 **31 Claims**



1. A collapsible receptacle for handling flowable materials, comprising:

a substantially flexible container having upper and lower ends and defining a generally cylindrical collapsible chamber for the flowable materials;

said container including an upstanding sidewall comprised of one substantially rectangular panel having a top edge, a bottom edge, and two side edges with the sides of the panel secured together inwardly of the side edges to form one outwardly facing and longitudinally extending container sidewall seam;

the upper end of said container comprising a selectively closeable fill opening;

means for selectively closing the fill opening; and

a flexible and substantially inextensible sling assembly for supporting the container, said sling assembly having a plurality of lift straps extending upwardly in circumferentially spaced relationship with the top ends of the straps terminating a predetermined distance beyond the upper end of the container;

one of said lift straps being provided for the container sidewall seam and folded along its length so that longitudinal strap portions overlay the outwardly facing edges of the sidewall seam, with at least one of the other of said lift straps being folded along its length over a longitudinally folded portion of the sidewall panel, and with each of said folded lift straps being continuously secured therethrough over a major portion of the height of the container so that said folded straps are interconnected with at least two thicknesses of container material.

20. A method of manufacturing a collapsible receptacle for flowable materials, comprising the steps of:

(a) providing a plurality of rectangular panels comprised of flexible material;

(b) circularly arranging the panels in edge to edge relationship;

(c) connecting adjacent panels inwardly of the adjacent edges to form a container sidewall having a plurality of outwardly facing sidewall seams;

(d) providing a circular bottom wall comprised of flexible material;

(e) connecting the bottom wall across the lower end of the container sidewall;

(f) providing a plurality of lift straps comprised of flexible but substantially inextensible material;

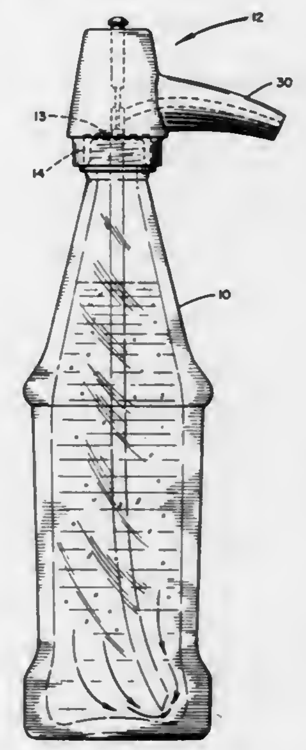
(g) positioning each lift strap over a container sidewall seam and folding each of said lift straps along its length over the corresponding sidewall seam such that at least two layers of container sidewall material are enclosed between longitudinal portions of each of said straps; and

(h) interconnecting each of the thus folded lift straps and the enclosed layers of sidewall material over a portion of the height of the container.

4,194,653
FLUID DISPENSING APPARATUS

Joe L. Brown, P.O. Box 624, Mesilla, N. Mex. 88046

Continuation-in-part of Ser. No. 752,202, Dec. 20, 1976, abandoned. This application Jan. 6, 1978, Ser. No. 867,538
Int. Cl.² B65D *83/14*
U.S. Cl. 222—402.25 **8 Claims**



1. An apparatus for dispensing fluids comprising, in combination, a fluid container having a discharge opening and a dispensing valve mechanism detachably coupled with said discharge opening of said container; said dispensing valve mechanism comprising a main valve body having an upper wall portion and a lower integral annular flange portion;

adapter means for detachably coupling said valve mechanism to said fluid container; said adapter means positioned within said lower annular flange portion of said main valve body; said dispensing valve mechanism further comprising a valve stem movably mounted within a central cavity formed in said main valve body; a fluid discharging spout secured to said main valve body and in operable communication with said cavity formed in said main valve body; an elongated tube projecting into said fluid container and being in sealing engagement with said adapter means; the ratio of the internal diameter of said elongated tube and said discharge spout being at least about 1.2 to 1; means for maintaining said valve stem in a normally closed position; means secured to said valve stem which, upon the application of a force thereto, causes said valve stem to move into an open position whereby the fluid in said container is caused to be forced through said fluid discharging spout by the vapor pressure of said fluid itself.

4,194,654

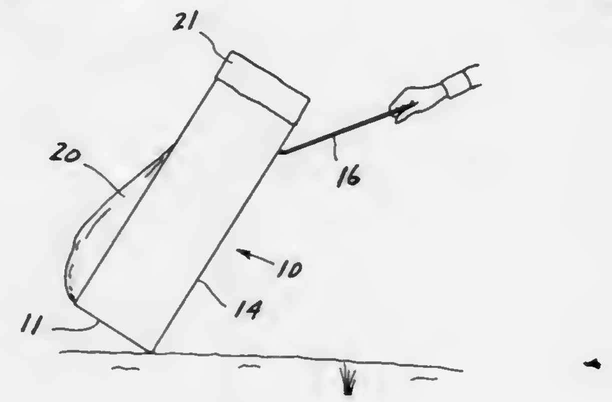
BAG CARRIER

David H. Badger, 5883 N. Crestview Ave., Indianapolis, Ind. 46220

Filed Jun. 12, 1978, Ser. No. 914,730

Int. Cl.^{2} B65D *71/00*

U.S. Cl. 224—45 H **16 Claims**



1. A carrier for a trash bag, comprising; a one-piece structure formed from elastic material and with a generally hollow three sided shape without front and top surfaces to permit insertion of the trash bag and with sufficient material forming a base and side walls with a top edge to engage the opening of the trash bag by deformation of the structure and to hold the trash bag open by elastic recovery and to support the trash bag and its contents with the trash bag opening unobstructed, the side wall opposite the open front of the structure including a flap cut therein and remaining attached to the side wall at its upper portion, said flap having an opening adjacent its free end to be grasped as a handle with the length of the flap between the opening and the unattached portion being sufficient that the carrier can be pulled by the flap generally without stooping.

4,194,655

SWIMMER'S WALLET

Richard Tillotson, Suite 1777, Pioneer Plz., 900 Fort St. Mall, Honolulu, Hi. 96813

Filed Sep. 7, 1978, Ser. No. 940,231

Int. Cl.^{2} A45C *1/04*

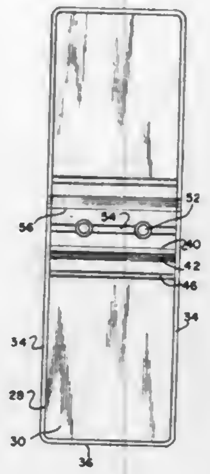
U.S. Cl. 224—191 **30 Claims**

1. A watertight wallet of plastic material adapted to be attached to a swimmer's garment comprising

an elongated foldable plastic member with a longitudinal axis and a medial fold line transverse to said longitudinal axis,

an article receiving pocket permanently fused on three edges to the foldable member with a fourth edge comprising a watertight sealing means which cooperates with complementary sealing means on the foldable member, wherein the watertight sealing means and the complementary sealing means are located near and parallel to the fold line,

attachment means on the fold line of the foldable member to facilitate securing the watertight wallet to the swimmer's garment, wherein a swimmer may couple the wallet to the garment by folding the wallet about a top edge of the garment.



4,194,656

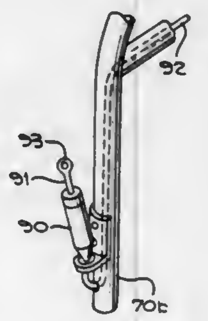
BACKPACK AND FRAME APPARATUS

Anthony C. Zufich, P.O. Box 898, Lake Isabella, Calif. 93240

Division of Ser. No. 690,068, May 26, 1976, Pat. No. 4,099,657. This application Apr. 10, 1978, Ser. No. 894,871

Int. Cl.^{2} A45F *3/10*

U.S. Cl. 224—211 **2 Claims**



1. A backpack and frame apparatus comprising:

(a) a frame including a pair of side bar members and upper and lower lateral cross members connecting said side bar members;

(b) an upper support tube coupled intermediate a pair of upper cross members intermediate said side bar members;

(c) a pair of shoulder straps, the upper ends thereof attached to said support tube;

(d) hip belt means for encircling the waist of a user, said hip belt means including downwardly extending panels adapted to lie along the hips of the user, each of said panels including grommets for attachment thereto, said grommets being diametrically opposed to one another;

(e) means for attaching the lower ends of said shoulder straps to respective ones of said side bar members substantially adjacent the waist of the user;

(f) a pair of frame extenders each integral with one of said pair of side bar members, said frame extenders being deflected forwardly and downwardly from said side members, the termini of said frame extenders being adjacent said hip belt means;

(g) a hydraulic fluid conduit, the ends thereof disposed intermediate the termini of said frame extenders; and

(h) a hydraulic cylinder assembly comprising a hydraulic cylinder and piston secured at the terminus of each of said frame extenders, said hydraulic cylinders being coupled to opposite ends of said hydraulic conduit, said pistons being secured to respective ones of said grommets whereby reciprocating motion of said hip belt means will be transferred to said pistons maintaining said frame substantially stationary independent of movement of said hip belt means.

4,194,657

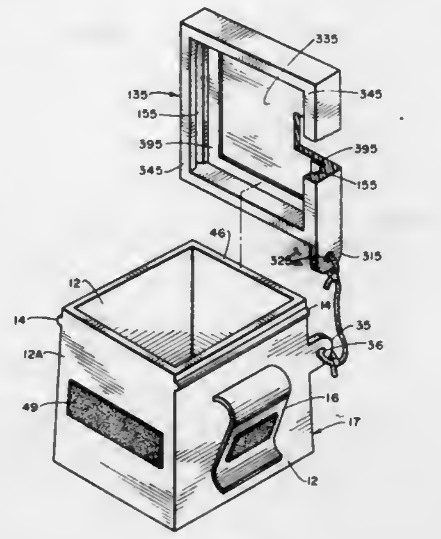
SHOTGUN AMMUNITION CONTAINER

Gary Thor, 708 Ohio St., Vallejo, Calif. 94590

Continuation-in-part of Ser. No. 820,708, Aug. 1, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,308

Int. Cl.^{2} A41F *9/00;* A42B *37/00, 39/00*

U.S. Cl. 224—252 **9 Claims**



1. A two-piece ammunition shell container comprising a box and a self-locking detachable lid, and sealing means for said container;

said lid having a top and four downwardly depending side walls, each of said walls having a groove extending inwardly from its interior surface;

the box having a base and four upstanding rigid vertical side walls each of which has an outwardly disposed ridge on the top portion of the exterior surface thereof adapted to engage the groove of said lid's corresponding side wall, wherein said grooves are sized to engage said ridges, the length and width of said lid being slightly larger than the length and width of said box such that upon engagement of said ridges with said grooves when the lid is applied, a water resistant sealing means to prevent moisture entry is formed;

means to interconnect said lid to said box to prevent separation of said lid from said box when said lid is detached; and

a belt clip attached to one side of said box.

4,194,658

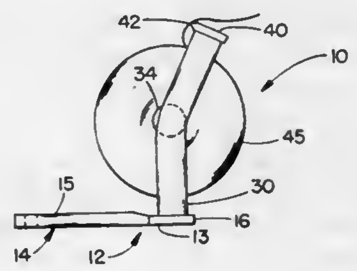
PAPER TOWEL DISPENSER

Arlow H. Tschudin, 10875-64th Ave., Allendale, Mich. 49401

Filed Jul. 20, 1978, Ser. No. 926,417

Int. Cl.^{2} B26F *3/02*

U.S. Cl. 225—65 **11 Claims**



1. A dispenser for roll sheet material comprising:

a base including a handle, said base having a flat bottom surface and an upper surface, said bottom surface permitting free standing of the dispenser on a generally horizontal surface;

a pair of support arms extending from said base in spaced relationship for receiving a roll of sheet material therebetween, each support arm extending in a plane perpendicular to a plane defined by the flat bottom surface of said base; and

a cross bar coupled to the ends of said support arms remote from said base for preventing the unraveling of rolled sheet material and for providing a tear strip against which segments of the sheet material can be removed from the roll.

4,194,659

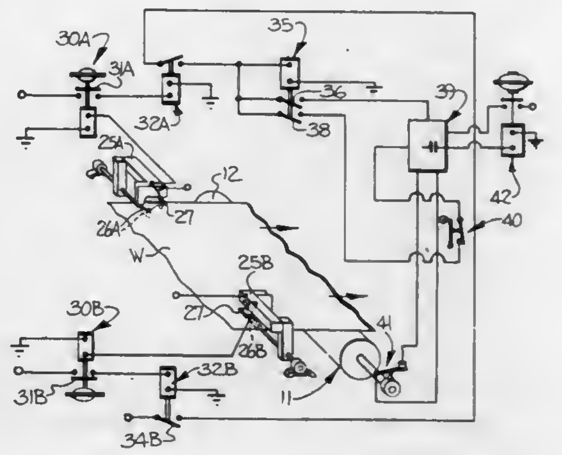
SEAM RESPONSIVE ROLLS AND METHOD

Steven W. Birch, Monroe, N.C., assignor to Birch Brothers Southern, Incorporated, Waxhaw, N.C.

Continuation-in-part of Ser. No. 809,427, Jun. 23, 1977, Pat. No. 4,128,212. This application May 19, 1978, Ser. No. 907,566

Int. Cl.^{2} B65H *23/16*

U.S. Cl. 226—35 **12 Claims**



1. In a web material handling apparatus having means for guiding lengths of web material joined by widthwise seams along a path of travel, and nip roll means for engaging web material at a predetermined position along the path of travel, an improvement which controls operation of the nip roll means for of seam detector means mounted adjacent said path of travel, upstream of said nip roll means position, each for sensing widthwise seams in web material guided along said path of travel toward said nip roll means position, and control means operatively connected to said detector means and to said nip roll means for separating said nip roll means relative to web material in response to and in predetermined relation with seam sensing by all of said detector means.

4,194,660

SHEET FEED TRACTOR

Alan F. Seitz, Harwinton, Conn., assignor to Data Motion, Inc., Torrington, Conn.

Filed Nov. 6, 1978, Ser. No. 957,683

Int. Cl.^{2} B63H *17/38*

U.S. Cl. 226—74 **7 Claims**

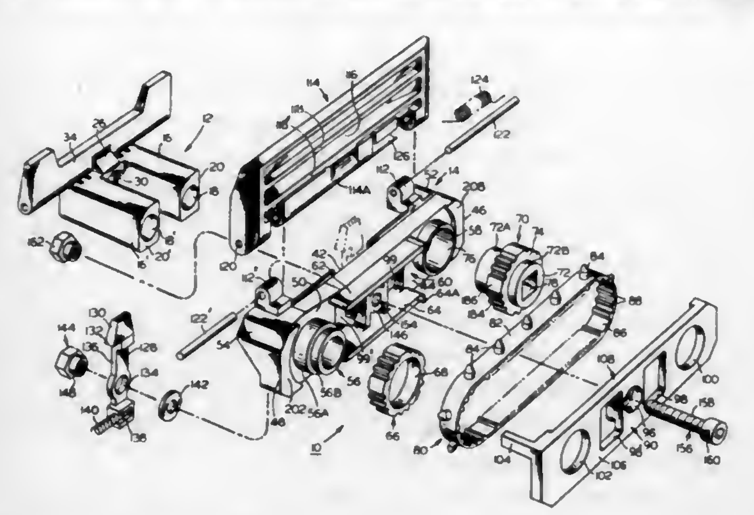
1. In a drive tractor for web material, the combination comprising:

a. a chassis;

b. a flexible endless belt mounted on said chassis, said belt having an inner driven surface and an outer driving surface and defining a closed path of travel; and

c. belt driving means mounted on said chassis and including a rotatable member adapted to be rotated by a drive member, said rotatable member drivingly engaging said inner driven surface of said belt when said belts is in said path of travel;

said chassis having wall means thereon adjacent said rotatable member and extending transversely of said belt and disposed outwardly of and closely adjacent said path of travel to limit the amount of deflection of said belt from said path and thereby



prevent disengagement of said belt from said rotatable member.

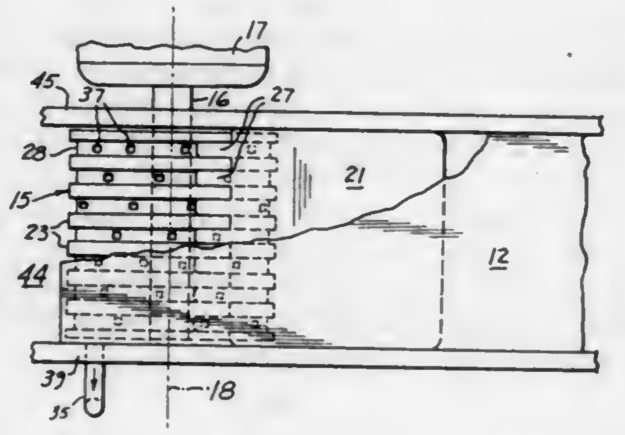
4,194,661
TAPE ADVANCING METHODS AND APPARATUS

Frederic F. Grant, Bellflower, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,330

Int. Cl.^{2} B65H *17/28*

U.S. Cl. 226—95 **28 Claims**



12. Apparatus for advancing a tape, comprising in combination:

a tape capstan having circumferential grooves distributed across the capstan;

means coupled to the tape capstan for providing a force in each groove attracting the tape to the capstan;

means for guiding the tape to a first peripheral capstan region extending across the capstan;

means connected to said capstan for rotating said capstan to advance the tape through an arc to a second peripheral capstan region extending across the capstan, while the tape is attached to the capstan by the force in each groove;

means for releasing the tape from the capstan at said second peripheral capstan region and for guiding the released tape away from the capstan; and

means for shielding the tape externally of said capstan against the force in each groove during said guiding to the first peripheral capstan region and during said guiding away from the capstan.

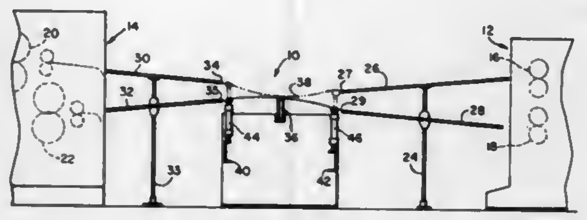
4,194,662
WEB DIRECTOR

Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Aug. 28, 1978, Ser. No. 937,397

Int. Cl.^{2} B65H *17/42*

U.S. Cl. 226—110 **6 Claims**



1. A web director comprising:

(a) a frame having a fulcrum means, said fulcrum means being transverse to an intended web path,

(b) a plurality of flexible panel means disposed side by side and extending in a direction generally perpendicular to said fulcrum means, each panel means having two free ends, means coupling an intermediate portion of each panel means to said fulcrum means,

(c) a discrete power means coupled to each free end of each panel means for selectively and independently raising and lowering said free ends while flexing the associated panel means so that a web may be fed to the upstream end of said panel means and supported thereby at either of two elevations and may be discharged therefrom to either of two elevations on the downstream end of said panel means.

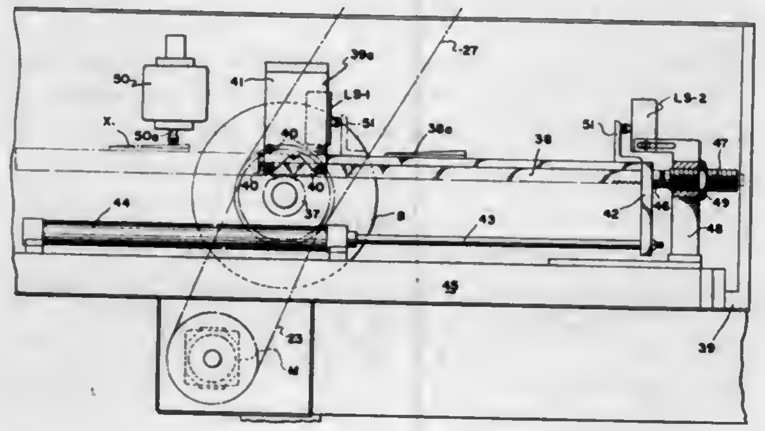
4,194,663
HYDROMECHANICAL PLASTIC WEB INDEXING SYSTEM FOR SYNTHETIC PLASTICS THERMOFORMING MACHINERY

George A. West, Clare; Albert W. Arends, Gladwin, and George L. Pickard, Beaverton, all of Mich., assignors to Leesona Corporation, Beaverton, Mich.

Filed Jul. 24, 1978, Ser. No. 927,359

Int. Cl.^{2} B65H *17/26*

U.S. Cl. 226—139 **9 Claims**



1. In an indexing system for synthetic plastics molding machines including plastic web gripping drive elements movable in a planar path of travel and employed to feed a plastic web to the molds of said machine in indexing movements separated by periods of dwell; a motor system incorporating a motor and a drive transmission mechanism connected between the motor and drive elements for moving said drive elements; a braking device incorporated in the motor system for instantaneously braking the mechanism and drive elements to locate the latter in precise position; means for disabling the motor system to cease transmission of drive force to said drive elements; and a drive decelerating device connected with the motor system for slowing the drive imparted to said drive elements; the improvement comprising: a movable indexing stroke measuring device driven by the drive transmission mechanism in a path of movement corresponding with the indexing movement of said web gripping drive elements; and first and second control parts positioned to be engaged thereby, the movable stroke measuring device having first engagement near the end of the indexing movement with a part enabling the decelerating device and second engagement with a part connected to enable said braking device and said means for disabling the motor system.

4,194,664
FIRING SAFETY FOR A PNEUMATIC NAILER

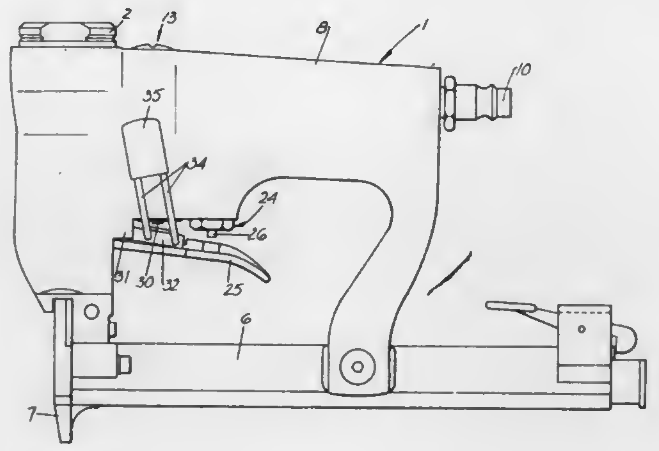
Carl Siegmann, Bremen, Fed. Rep. of Germany, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Feb. 26, 1979, Ser. No. 15,419

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811339

Int. Cl.^{2} B25C *1/04*

U.S. Cl. 227—8 **5 Claims**



1. A firing safety for a pneumatic nailer having a housing, a handle, and a pneumatically controlled inlet valve for pressurized air, and having a piston, and a trigger valve communicating with said inlet valve through a passageway whereby to actuate said piston to open said inlet valve upon actuation of said trigger valves; characterized by an opening from said passageway to atmosphere, and a manually operable safety valve for closing said opening, to permit actuation of said inlet valve.

4,194,665
PNEUMATIC STAPLER

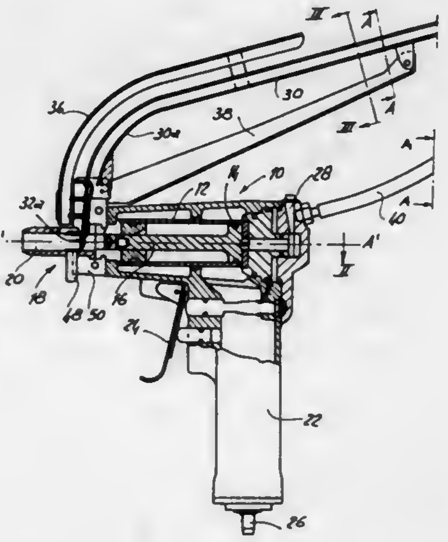
Giordano B. Maestri, 26, Via Foppa, Milano, Italy

Filed Jan. 31, 1978, Ser. No. 873,928

Claims priority, application Italy, Feb. 10, 1977, 20146 A/77

Int. Cl.^{2} B25C *5/06*

U.S. Cl. 227—112 **9 Claims**



1. A pneumatic stapler, comprising a housing having an elongated guiding passage for guiding a staple to be struck along said passage; a pneumatically operated stapling hammer for striking the staple located in said guiding passage; and elongated hollow staple magazine for unconnected separate staples, having a first end open into said guiding passage and a second end spaced from said first end along the elongation of said magazine; pneumatically operated means for displacing the staples towards said first end of said magazine, including a pneumatic nozzle connection located on said magazine between said first and second ends thereof and a hose for applying air pressure to the pneumatic nozzle connection when the stapling hammer is operated, at least some of said separate staples which are located in said magazine upstream of said nozzle connection tending to move towards said second end of said magazine under the force of gravity when said magazine is inclined so that said first end of the magazine is higher than said second end thereof; and a spring pawl in said magazine located upstream of said nozzle connection, for preventing movement of said some staples towards said second end of said magazine.

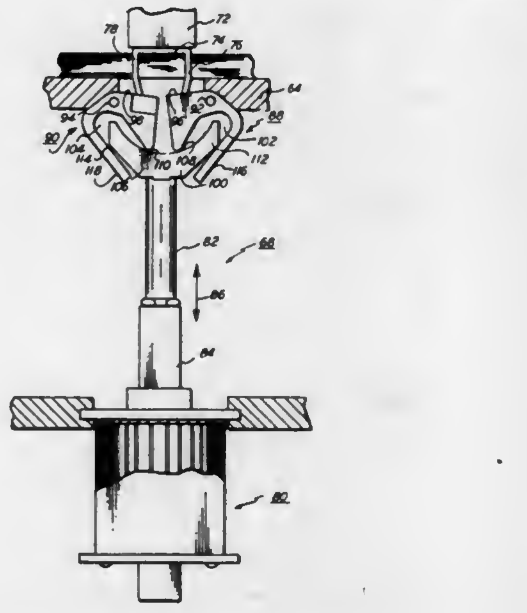
4,194,666
STAPLE CLINCHING MECHANISM

Charles W. Spehrley, Jr., Hanover, and Brian F. Walsh, Etna, both of N.H., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 26, 1978, Ser. No. 919,538

Int. Cl.^{2} B25C *5/02*

U.S. Cl. 227—155 **12 Claims**



1. An apparatus for stapling articles, including:

means for driving a staple through the articles so that a portion of the staple legs extends therethrough; and

means for bending the portions of the staple legs protruding through the articles into substantial contact therewith so as to clinch the staple, said bending means comprising a pair of pivotably mounted clinching ears, each of said clinching ears having a surface with a groove therein for guiding each of the staple legs during the bending thereof with the central region of each of the grooves having a greater cross sectional area than the end regions thereof and the central regions of each of the grooves being located to receive each of the staple legs at the initiation of the clinching operation, and each of said clinching ears includes a a recessed portion opposed from the groove of the other of said clinching ears so as to provide for the portion of each of the staple legs extending beyond the groove therein.

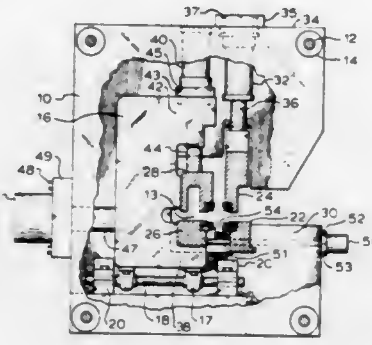
4,194,667
APPARATUS FOR PRESSURE WELDING METAL WORKPIECES

Lloyd A. Cook, Parkersburg, W. Va.; Kim A. Reynolds, Shelburne, and Werner J. Mark, Orangeville, both of Canada, assignors to Alforge Metals Corporation, Limited, Orangeville, Canada

Division of Ser. No. 711,037, Aug. 2, 1976, Pat. No. 4,094,453. This application Apr. 4, 1978, Ser. No. 893,220

Int. Cl.² B23K *19/00, 5/02*

U.S. Cl. 228—4.1 **2 Claims**



1. A forging press for joining two metal workpieces together by pressure welding comprising:

(a) at least one pair of stationary C-shaped metal plate frames arranged in a parallel side-by-side spaced-apart relationship,

(b) a laterally movable C-shaped metal frame mounted between each pair of stationary C-shaped metal plate frames,

(c) a first pair of die holders associated with each pair of stationary C-shaped metal plate frames adapted to grip a workpiece therebetween, at least one of said die holders being mounted for reciprocal movement in a direction towards and away from the other,

(d) a second pair of die holders associated with said laterally movable C-shaped metal frame adapted to grip a workpiece therebetween, at least one of said die holders being mounted for reciprocal movement in a direction towards and away from the other,

(e) means for moving said laterally movable C-shaped metal frame between said stationary C-shaped metal plate frames comprising a double-acting forging cylinder rigidly secured to the stationary C-shaped metal plate frames and operatively connected to said movable C-shaped metal frame and a detent cylinder rigidly secured to said stationary C-shaped metal plate frames and operatively connected to said movable C-shaped metal frame in opposition to the forging cylinder whereby die holders associated with said laterally movable C-shaped metal frame can be moved towards and away from the die holders associated with said stationary C-shaped metal plate frames such that workpieces gripped therebetween can be spaced a predetermined distance apart in alignment with each other prior to abutment of said workpieces for pressure welding and can be abutted together at a pressure above the yield strength of the parent material at working temperatures sufficient to permit metal flow, and

(f) means for rapidly heating the opposed edges of said workpieces to a uniform temperature within the range of from about 200° to about 900° F. while said workpieces are spaced a fixed distance apart immediately prior to abutment for pressure welding including a heat source uniformly disposed along the spaced edges of the opposed workpieces comprising a manifold assembly disposed adjacent one of said dies having a plurality of outlets disposed at equal intervals along the length of the said die adapted to introduce a flow of a combustible mixture of gases to achieve said uniform heating of the opposed edges of the workpieces.

4,194,668
APPARATUS FOR ALIGNING AND SOLDERING MULTIPLE ELECTRODE PEDESTALS TO THE SOLDERABLE OHMIC CONTACTS OF SEMICONDUCTOR COMPONENTS

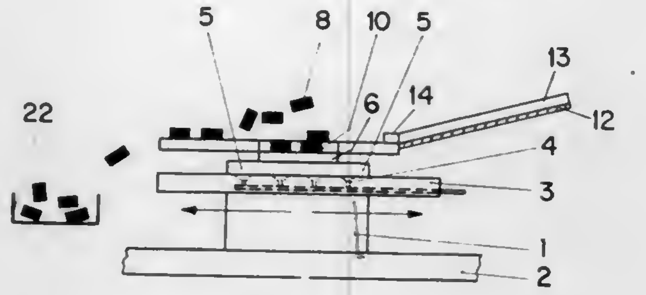
Altan Akyürek, Heppenheim, Fed. Rep. of Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 7, 1977, Ser. No. 858,340

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2656019

Int. Cl.² B23K *1/12*

U.S. Cl. 228—6 A **9 Claims**



1. An apparatus for aligning and soldering pedestals to the solderable ohmic contacts of individual semiconductor components formed by an individual silicon wafer, comprising:

an electromagnetically driven shaker table having a gently sloped pedestal feed surface having pedestal sorting chutes and a pedestal selector comb, said comb adapted to be disposed adjacent said wafer so that pedestals located on said feed surface can be distributed to said ohmic contacts of said wafer;

mask means for aligning said pedestals over said ohmic contacts;

means for maintaining said mask means in a fixed position respective to said silicon wafer adjacent said comb;

a removable mounting and soldering base plate removably mounted on said shaker table and adapted to support on said shaker table said wafer with said mask means placed over said wafer for distribution of the pedestals onto the ohmic contacts; and

soldering assembly means for receiving said base plate with said undivided wafer having said pedestals distributed thereon, said soldering assembly means comprising a removable upper retention part adapted to be coupled to said base plate after distribution of said pedestals with said wafer retained between said base plate and said retention part, and a removable top part supported on said retention part, and means for coupling said base plate, said retention part, and said top part for retaining said pedestals in alignment on said silicon wafer during removal of said base plate from said shaker table and during soldering of said pedestals to said ohmic contacts.

4,194,669
METHOD OF MAKING LEADED DECORATIVE PANELS

John R. Bromberg, 15 San Roberto Way, Downsview, Ontario, Canada (M3L 2J4), assignor to John Robert Bromberg and Robert Allan Levine, both of Toronto, Canada

Filed Jan. 22, 1979, Ser. No. 5,141

Int. Cl.² B23K *1/12, 1/20*

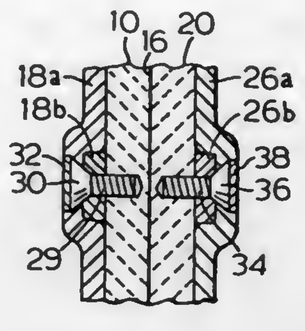
U.S. Cl. 228—120 **10 Claims**

1. A process of making leaded transparent or translucent panels such as windows, which comprises:

applying a strip of metallic lead to a major surface of a sheet of transparent or translucent thermoplastic material;

forming a hole through the lead strip and at least part way into the thermoplastic sheet underlying the lead strip;

securing the lead strip to the thermoplastic sheet by applying solderable metallic securing means through the hole in said lead strip and into the hole in the thermoplastic sheet underlying the lead strip;



soldering the securing means to the lead strip by applying heat and a molten lead containing soldering compound to the exterior surface of the lead strip and securing means.

4,194,670
METHOD OF MAKING A BIPOLAR ELECTRODE

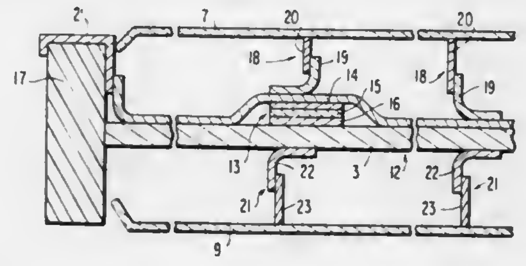
Teruo Ichisaka, and Tadao Ikegami, both of Tamano, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Division of Ser. No. 886,862, Mar. 15, 1978, Pat. No. 4,141,815. This application Oct. 10, 1978, Ser. No. 950,114

Claims priority, application Japan, Aug. 24, 1977, 52-100633

Int. Cl.² C25B *11/00;* **B23K** *31/02*

U.S. Cl. 228—179 **1 Claim**



1. A method for producing a bipolar electrode of the type having an electrode frame, a partition wall having a composite structure of an anode-side sheet and a cathode-side sheet, an anode plate disposed on the anode-side of said partition wall, a cathode plate disposed on the cathode-side of said partition wall, and a plurality of electrically conductive spacers, said method comprising the steps of:

(a) welding a first electrically conductive spacer element to a predetermined part of said cathode-side sheet, and welding a second electrically conductive spacer to a predetermined part of said anode-side sheet of said partition wall;

(b) welding a peripheral part of said cathode-side sheet to an intermediate part of said electrode frame;

(c) lining said anode-side sheet on said cathode-side sheet and fixing a peripheral part of said anode-side sheet to a periphery of said electrode frame;

(d) superimposing a third electrically conductive spacer element on said first electrically conductive spacer element and adjusting same so that an end surface of said third electrically conductive spacer element is horizontal, and welding a superimposed surface;

(e) superimposing a fourth electrically conductive spacer element on said second electrically conductive spacer element and adjusting same so that an end surface of said fourth electrically conductive spacer element is horizontal, and welding a superimposed surface; and

(f) welding said cathode plate to said end surface of said third electrically conductive spacer element, and welding said anode plate to said end surface of said fourth electrically conductive spacer element.

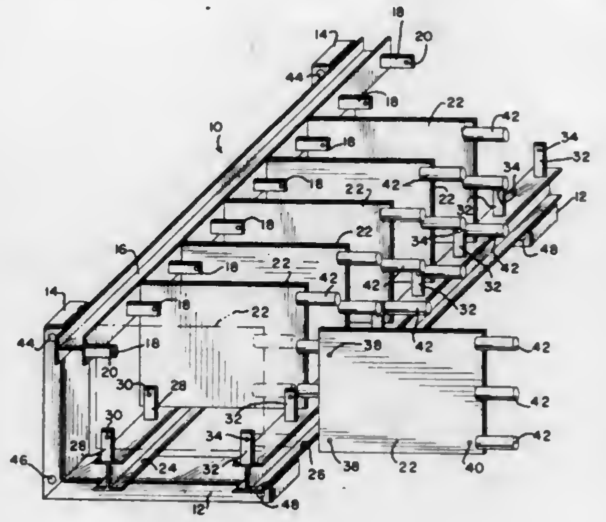
4,194,671
METHOD FOR CONSTRUCTING A STEAM CONDENSER

George J. Williams, Chalfont, and Robert C. Boyer, Bethlehem, both of Pa., assignors to Ecolaire Incorporated, Malvern, Pa.

Division of Ser. No. 789,921, Apr. 22, 1977, Pat. No. 4,131,270. This application Jun. 6, 1978, Ser. No. 913,140

Int. Cl.² B23P *15/26;* **B23K** *31/02*

U.S. Cl. 228—183 **5 Claims**



1. A method of assembling a condenser comprising the steps of

(a) providing an elongated rigid L-shaped member having sets of aligned locating members at spaced locations therealong with each leg of the L-shaped member having at least one locating member of each set thereon,

(b) attaching a discrete perforated tube support plate to each set of locating members so that corresponding tube holes in the support plates are aligned,

(c) attaching a side plate to each of said tube support plates while the support plates are above the side plate and supported by said L-shaped member,

(d) supporting said condenser section by said L-shaped member from above with the side plate vertically disposed while joining said side plate to a mating side plate of another condenser section, and

(e) disconnecting said L-shaped member from said support plates after said condenser sections have been joined together.

4,194,672
PROCESS FOR THE DIFFUSION WELDING OF COPPER AND STAINLESS STEEL

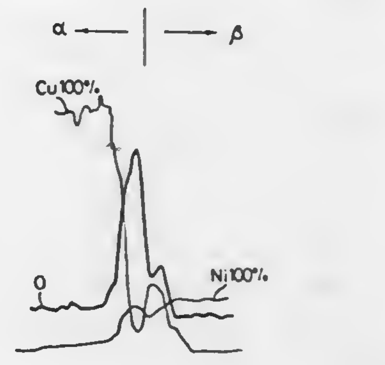
Yoshimitsu Uto; Takashi Omae; Yasuhiro Fukaya, and Yasuyuki Yoshida, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1978, Ser. No. 939,119

Claims priority, application Japan, Sep. 5, 1977, 52-105925

Int. Cl.² B23K *19/00*

U.S. Cl. 228—194 **14 Claims**



1. A process for the diffusion welding of copper and stainless

steel, which comprises the step of smoothening the surfaces of copper and stainless steel to be bonded together, cleaning the both surfaces until chemically active surfaces are exposed, and bringing either active surface into close contact with the mating stainless steel or copper surface smoothened and cleaned in advance, through a layer of insert metal which is at least one metal selected from the group consisting of Ni, Ni-base alloys, and Cr, said layer of insert metal containing not more than 140 ppm O_2 and ranging in thickness more than 5μ; and the step of bonding said copper, insert metal layer, and stainless steel altogether by diffusion welding in a vacuum or other non-oxidizing atmosphere at a temperature from 850° to 950° C.

4,194,673

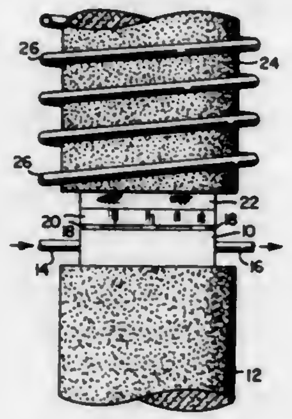
STRESS RELIEVING OF METAL/CERAMIC ABRADABLE SEALS

Raymond J. Elbert, Middleburg Heights, and Raymond V. Sara, North Olmsted, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 9, 1977, Ser. No. 849,897

Int. Cl.² B23K *1/04*

U.S. Cl. 228—219 **18 Claims**



1. Process for bonding a multi-layer ceramic/metal abradable composite having a ceramic-rich surface, a metal-rich surface and at least one intermediate layer to a metallic substrate which comprises placing said abradable composite with its metal-rich surface in contact with said substrate, heating said composite and substrate to a sintering temperature sufficient to bond said composite to said substrate, thereafter cooling the thus formed structure in such a manner that before the onset of elastic stresses in said structures due to said cooling a temperature differential is established across the structure, with a temperature of said substrate being maintained consistently lower than the temperature of the ceramic-rich surface of said composite during the remainder of the cooling to ambient temperatures.

4,194,674

CONTAINER WITH BUILT IN STRAW

Kenneth Pearson, RD 3, Box 241-A, Tyrone, Pa. 16686

Filed Sep. 11, 1978, Ser. No. 941,492

Int. Cl.² B65D *77/28*

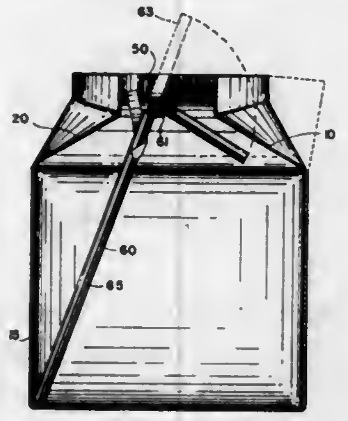
U.S. Cl. 229—7 S **3 Claims**

1. A straw adaptable for being fastened inside a closed beverage container where said container is fitted with openable means to seal said container;

said straw formed of a substantially hollow tubular shape and formed with an intermediate flexible section;

a flat strip of flexible material in the form of a tab fixed at a first end of the tab to the straw adjacent said intermediate flexible section such that the second end of the said tab may be fastened to the said openable means to seal said container so as to suspend the straw inside the container and folded about the said intermediate section, in which the said intermediate flexible section is of corrugated construction, and in which the tab is fastened to the straw so as to extend at an acute angle towards the intermediate section, in which

the beverage container is of folded paper construction and in which the openable means to seal the container are in the form of flaps, and in which the said straw is folded about said corrugated section inside the container with relation to said flaps, and freely suspended by said tab such that opening of the flaps of the openable means of the container causes a first end section of the straw to freely pop out of the opened opening of the container.



4,194,675

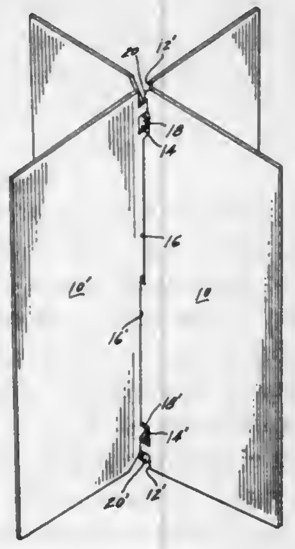
PARTITION INTERLOCK CONSTRUCTION

Charles L. Peters, Jr., Norco, Calif., assignor to Box Innards, Inc., Orange, Calif.

Continuation of Ser. No. 688,049, May 19, 1976, abandoned. This application Dec. 28, 1978, Ser. No. 973,906

Int. Cl.² B65D *5/48, 85/00*

U.S. Cl. 229—15 **3 Claims**



1. In an open partition assembly having first and second sets of strips, the strips in each set being parallel and the strips in one set being oriented at right angles to the strips in the other set, a strip and interlock construction comprising:

an elongated element for each strip having a number of spaced slots in one longitudinal edge thereof,

the slots dividing the strip into a number of segments;

respective lock tab projections adjacent said one edge extending from all but one end segment and facing said one end segment, each such projection extending through a slot;

respective lock tab projections extending from all but the other end segment and facing said other end segment and extending through a slot,

said last-mentioned projections being spaced from said one edge of the strip, whereby each slot has a pair of lock tab projections extending in opposite directions from opposite sides thereof;

and said strip having lock tab projection receiving opening means spaced along the opposite longitudinal edge thereof and aligned with said slots,

each opening means of one set of strips receiving both lock tab projections of a respective pair, whereby all segments of each strip in each set of strips of the assembly are supported by engagement of lock tab projections extending therefrom into opening means of the other set of strips.

4,194,676

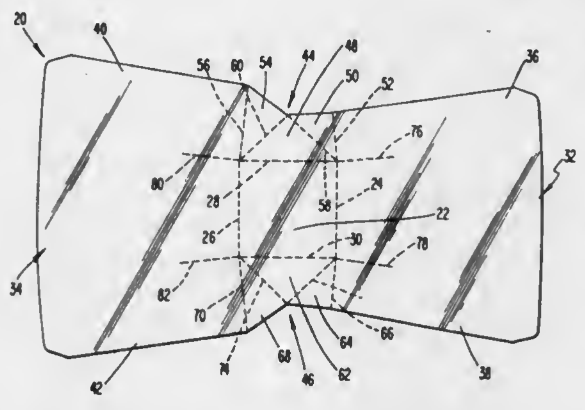
LEAKPROOF CONTAINER

Richard L. Humphries, Sunnyvale, Calif., assignor to Kliklok Corporation, Greenwich, Conn.

Filed Dec. 4, 1978, Ser. No. 966,376

Int. Cl.² B65D *5/08, 3/04*

U.S. Cl. 229—16 A **3 Claims**



1. A leakproof container formed from a cut and scored blank of paperboard, comprising:

a side wall formed from a pair of side wall panels having side edges thereof secured in an overlapping relationship;

a bottom wall foldably secured at front and rear edges thereof to bottom edges of said side wall panels along a first pair of fold lines;

a pair of gusset sections foldably secured at opposite side edges of said bottom wall along a second pair of fold lines extended substantially normal to said first pair of fold lines, said gusset sections being foldably secured to said side wall panels along extensions of said first fold lines projecting outwardly beyond said side edges of said bottom wall;

each gusset section comprising a first triangular panel foldably secured to said bottom wall along one of said second fold lines at the respective side edge thereof, a second triangular panel foldably secured to one of said side wall panels along the extension of the first fold line therebetween, and a third triangular panel foldably secured to the other side wall panel along the extension of the first fold line therebetween, said second and third triangular panels also being foldably secured to said first triangular panel along convergent fold lines; and

said third triangular panel having an edge extending along the extension of said first fold line located adjacent to its respective side wall panel greater in length than the corresponding edge of said second triangular panel and overlapping said second triangular panel to prevent leakage therebetween, whereby two adjacent gusset structures including said first gusset panel as a common panel are overlapped and raw edges are in nonaligned orientation with said third triangular panel and its respective side wall panel inserted between said second triangular panel and its respective side wall panel and said overlapping gussets disposed within the interior of said container along said side wall panels to provide a leakproof seal and a relatively smooth and flat exterior for said bottom wall.

4,194,677

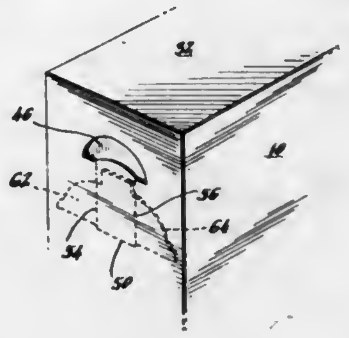
CARTON WITH POUR SPOUT MADE FROM THE CARTON MATERIAL

Lawrence Wysocki, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 23, 1978, Ser. No. 918,488

Int. Cl.² B65D *5/72*

U.S. Cl. 229—17 R **15 Claims**



1. A carton having closeable pour spout formed in one wall, comprising:

an outer panel having an opening therethrough and an outer tab having a first end hingedly connected to the remainder of the outer panel, a second opposite end defining a portion of the perimeter of the opening and side edges connecting the first and second ends of said outer tab; and

an inner panel superimposed upon and bonded to said outer panel over a part of their facing surfaces, said inner panel including an inner tab forming a spout floor, said inner tab being bonded to said outer tab, said inner tab being hingedly connected along a bottom edge thereof to said inner panel in registry with said outer tab, and first and second integral wing members hingedly connected to opposite side edges of said inner tab, the surfaces of said first and second integral wing members which abut the outer panel being coated with a glue retarding coating to prevent bonding of said outer panel thereto, said inner panel further including first and second cut-outs, with a portion of the perimeter of each said cut-out being respectively defined by the bottom edge of said first and second wing members, said wing members being deformed inwardly to thereby form spaced side walls for the spout when said inner and outer tabs are pulled outwardly.

4,194,678

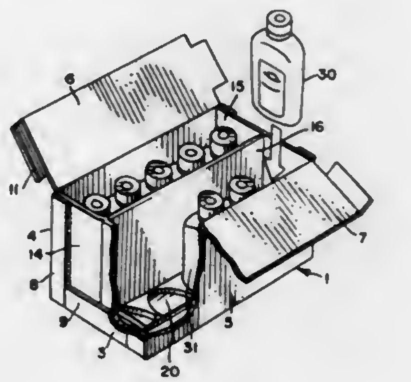
SHIPPING CONTAINER AND BLANK FOR FORMING SAME

Mark F. Jasper, Laguna Hills, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 10, 1978, Ser. No. 922,956

Int. Cl.² B65D *5/32, 5/48*

U.S. Cl. 229—23 R **3 Claims**



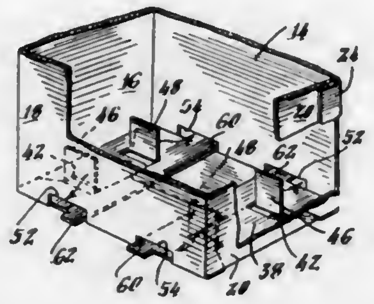
1. A container, comprising a base member with a floor joined to two sides forming a generally U-shaped panel open at its front and rear, and a reinforcing member joined to the base member and having front and rear panel and a verticle support panel, said reinforcing member joined to the base member to

close its front and rear, and a pocketed insert secured between the base and the reinforcing member.

4,194,679
SELF-LOCKING CONTAINER

Mervin Lohrbach, Anaheim, and Richard Peeples, Placentia, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 6, 1978, Ser. No. 958,186
Int. Cl.² B65D *5/10, 5/66*
U.S. Cl. 229—39 R **7 Claims**



1. A self-locking container comprising:

a plurality of side walls hingedly connected to each other,

an inner bottom panel hingedly connected to a bottom edge of an opposed pair of said side walls, each of said inner bottom panels extending towards the other and including

a pair of spaced slots and being T—shaped in plan defining a laterally extending tab along each side edge thereof,

an outer bottom panel hingedly connected to a bottom edge of each of another opposed pair of said side walls overlying a portion of each of said inner bottom panels, each of said outer bottom panels extending towards each other and including

a pair of spaced elongated tabs,

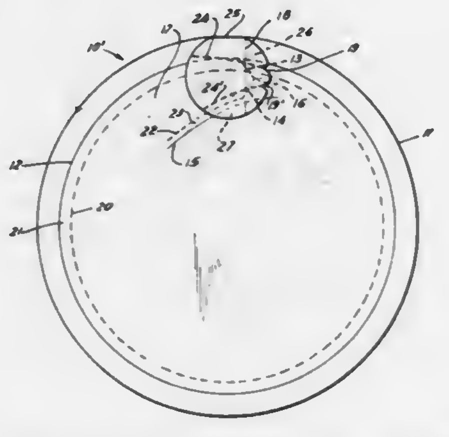
each of said elongated tabs being bendable 180° relative to its outer bottom panel and inserted through one of said slots in each of said portions of said inner bottom panels to lock said outer bottom panels to said inner bottom panels, and

a pair of spaced slots in each of said other opposed pair of side walls, each slot receiving one of said bent elongated tabs on an outer bottom panel and one of said laterally extending tabs on an inner bottom panel therethrough to lock said bottom panels to each other and said side walls.

4,194,680
OPENABLE CONTAINER COVER

Raymond G. Scott, Oak Brook, and Lawrence S. Wysocki, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Dec. 21, 1978, Ser. No. 972,039
Int. Cl.² B65D *5/54, 5/64*
U.S. Cl. 229—43 **2 Claims**

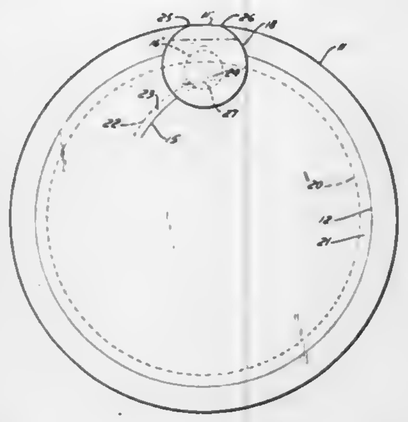


1. An openable cover adapted to span and be marginally secured to a container comprising in combination: a substantially flat paperboard sheet having a first cut score on the upper surface thereof; a second cut score on the lower surface thereof; said cut scores extending therearound and being substantially uniformly spaced from each other and from the edge of the sheet, a third cut score spaced inwardly from the first cut score on the upper surface of the sheet, a fourth cut score spaced inwardly from the second cut score on the lower surface of said sheet, the combined depths of said first and second cut scores and of said third and fourth cut scores being approximately the thickness of the sheet; an angular cut extending between and terminating in said first and third cut scores to define a pull tongue normally lying in the plane of the sheet; and a pull tab normally disposed on the upper surface over the area of said angular cut, a part of said pull tab being affixed to said pull tongue and the other part of the pull tab overlapping said angular cut to define an easy lift portion of the tab, said pull tab being a paperboard piece lying on the upper surface of the cover over and around the area of said angular cut, a part of said paperboard piece being glued to the lift tongue and a part thereof overlapping the angular cut, being without adhesives to serve as an easy lift portion, said paperboard piece having a circular shape and being provided with two series of perforations extending substantially along said first and third scores, to define a tear strip therebetween.

4,194,681
OPENABLE CONTAINER COVER

Raymond G. Scott, Oak Brook, and Lawrence S. Wysocki, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Dec. 21, 1978, Ser. No. 972,040
Int. Cl.² B65D *5/54;* **865D** *17/24*
U.S. Cl. 229—43 **4 Claims**

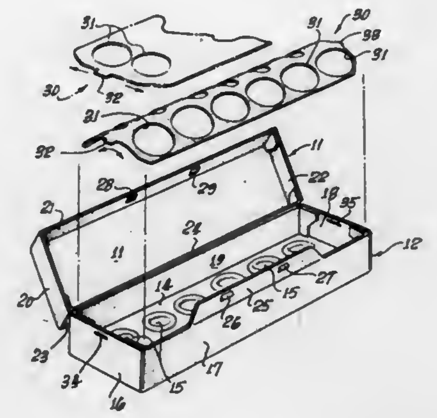


1. An openable cover adapted to span and be marginally secured to a container comprising, in combination, a substantially flat paperboard sheet having a first cut score on the upper surface thereof, a second cut score on the lower surface thereof, said cut scores extending therearound and being substantially uniformly spaced from each other and from the edge of the sheet, a third cut score on the upper surface of the sheet spaced inwardly and diverging from said first cut score to define a starting tongue therewith, a fourth cut score spaced inwardly from the second cut score on the lower surface of said sheet, a cutout area communicating with said third and first cut scores, said cutout area having a substantially circular shape and crossing said first and third cut scores, a protective tab lying on the upper surface of said cover above said cutout area and being partially glued to said upper surface, and a paperboard scrap disposed in said cutout area in the plane of said cover and connected thereto by a plurality of small nicks, said protective tab being glued directly to said scrap.

4,194,682
EGG CARTON

Wayne L. Congleton, 20780 Divonne Dr., Walnut, Calif. 91789, and Pat E. Placey, 11033 Massachusetts Ave., Los Angeles, Calif. 90025

Filed Jan. 19, 1979, Ser. No. 4,745
Int. Cl.² B65D *5/66, 5/50*
U.S. Cl. 229—45 EC **10 Claims**



1. An egg carton useful for various sizes and shapes of eggs, said carton comprising:

a rectangular, horizontal bottom member;

four generally flat side walls affixed to the bottom member and positioned vertically with respect to the bottom member, said side walls and bottom member forming a lower carton portion;

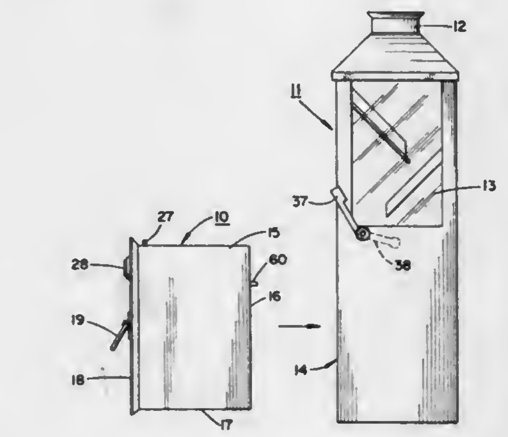
an egg-supporting insert sheet having two opposing parallel sides, said insert sheet being greater in width than the bottom member, said insert sheet being fabricated from a stiff piece of flexible material so that the sheet may be arched for insertion into the lower carton portion, the amount of the flexure being such that the uppermost portion of the insert sheet is between 45% and 65% of the total height of the egg carton, said insert sheet having a plurality of holes formed therein for insertion of eggs; and

an upper carton portion, said upper carton portion having a rectangular, horizontal top member and four generally flat side walls positioned to be co-planar with the corresponding side walls of the lower carton portion when the upper carton portion is in a closed configuration.

4,194,683
COIN VAULT

Theodore R. Finke, Euclid, and Edward M. Mavko, Madison, both of Ohio, assignors to The Euclid Products Co., Inc., Willoughby, Ohio

Continuation of Ser. No. 885,352, Mar. 13, 1978. This application Dec. 27, 1978, Ser. No. 973,577
Int. Cl.² G07B *15/00*
U.S. Cl. 232—15 **14 Claims**



1. A vault for coins, tokens, and the like, adapted to be locked in a receiving apparatus and removed therefrom with coins, tokens, and the like, locked therein comprising

means defining a vault chamber with an opening at the top thereof for receiving coins, and the like, from said receiving apparatus,

a hinged door in said vault chamber movable between a closed position and an inwardly extending open position for permitting transfer of coins, and the like, from said receiving apparatus to said vault chamber,

catch means on said door,

a locking lever having an operating arm and a latch-carrying arm with a latch that extends into said vault chamber and is cooperable with said catch, said locking lever being movable between a latching position to lock said door in its closed position, a primary unlatching position and an intermediate unlatching position,

resilient means urging said lever to said latching position,

first detent means movable between a detaining position for holding said lever in its primary unlatching position and a retracted position,

resilient means urging said first detent means to said detaining position,

second detent means movable between a depressed detaining position for holding said lever in its intermediate unlatching position and for simultaneously moving said first detent means to its retracted position, and an extended position,

resilient means urging said second detent means to its extended position,

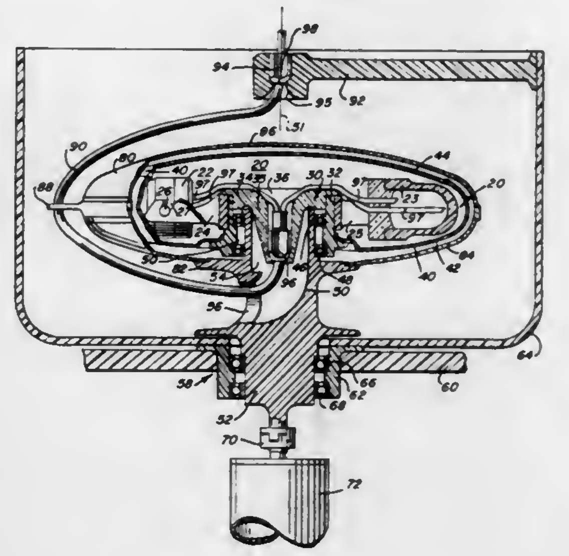
said second detent means being depressed when said vault is placed in said receiving apparatus to detain said lever in said intermediate unlatching position, and

unlocking means for moving said lever from its latching position to its primary unlatched position when said coin vault is removed from said coin-receiving apparatus.

4,194,684
CENTIFUGAL APPARATUS USING POLYESTER ELASTOMER TUBING

Daniel R. Boggs, Vernon Hills, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 13, 1977, Ser. No. 805,951
Int. Cl.² B04B *5/02*
U.S. Cl. 233—26 **7 Claims**



1. Centrifugal processing apparatus, which comprises:

a stationary base;

a processing chamber rotatably mounted with respect to said base for rotation about a predetermined axis;

a flexible umbilical cable segment comprising a polyester elastomer for estabilishing fluid communication with said processing chamber, one end of said cable segment being fixed with respect to said base substantially along said axis at one side of said processing chamber, the other end of said cable segment being attached substantially on said axis in rotationally locked engagement to said processing chamber;

means for rotating said fluid processing chamber and said

cable segment in the same direction with a speed ratio of 2:1, respectively;
an outer enclosure positioned about said processing chamber and being symmetrically dimensioned about said axis;
means rotatably coupling said outer enclosure to said processing chamber, permitting said outer enclosure to rotate at one-half the speed of said processing chamber; and
said outer enclosure being positioned intermediate said processing chamber and said cable segment.

4,194,685

VERIFYING INSERTION SYSTEM APPARATUS AND METHOD OF OPERATION

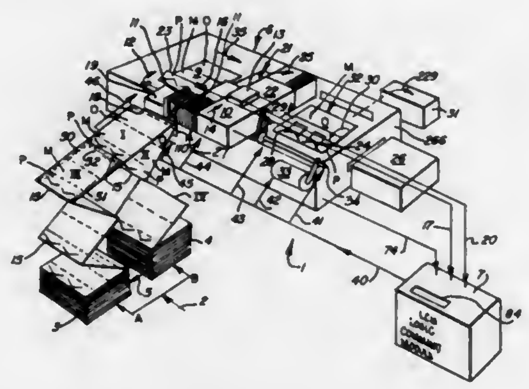
James E. Hill, Prospect Heights; Baesley I. Dahlstrom, Des Plaines, and Robert D. Fisher, Melrose Park, all of Ill., assignors to Dynetics Engineering Corp., Wheeling, Ill.

Continuation-in-part of Ser. No. 768,446, Feb. 14, 1977, abandoned, which is a division of Ser. No. 615,112, Sep. 19, 1975, Pat. No. 4,034,210. This application Sep. 9, 1977, Ser. No. 832,001

Claims priority, application Canada, Sep. 17, 1976, 261445; United Kingdom, Sep. 20, 1976, 38812/76

Int. Cl.² G06F *15/20;* **B65B** *1/00;* **B41F** *13/56*

U.S. Cl. 235—375 **58 Claims**



1. Method of automatic verification and insertion of credit cards in carriers therefor comprising the steps of:
(a) providing carriers to a first station, said carriers having disposed thereon machine readable information relating to an individual cardholder account, said information being selected from information on the number of credit cards authorized for said account, and information uniquely identifying said cardholder or account,
(b) machine reading at least a portion of said information on said carriers in said frist station,
(c) providing credit cards to a second station, said cards having thereon machine readable information relating to an individual cardholder or account,
(d) machine reading said information on said cards in said second station,
(e) sequentially comparing said card information with said carrier information until a condition of matched information is produced,
(f) inserting the correct number of properly matched cards into the appropriate carrier in response to said matched information condition.

4,194,686

METHOD OF MONITORING AND CONTROLLING THE TRAVEL AND OPERATION OF THE TRAVELLING ACCESSORY MACHINES IN A COKING INSTALLATION

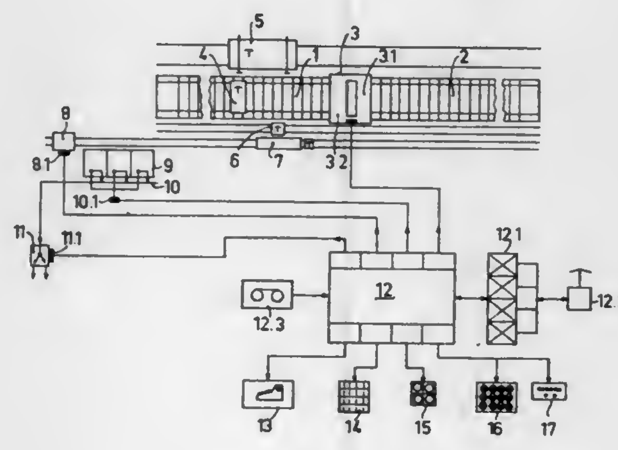
Jürgen Richter, Mülheim; Alois Purrer, Erlangen, and Werner Eisenhut, Essen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH and Bergwerksverband, both of Essen, Fed. Rep. of Germany

Filed Oct. 20, 1977, Ser. No. 843,794

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648049

Int. Cl.² G06F *15/46;* **G06K** *7/08*

U.S. Cl. 235—376 **9 Claims**



1. In a method of controlling the individual operations performed by the travelling accessory machines which travel along the ovens of the coke-oven battery of a coking installation, in combination, the steps of locating coded structures along the length of the travel paths of the travelling accessory machines at the individual ovens of the coke-oven battery, each coded structure at an individual coke oven containing coded information indicative of the oven-number of the respective oven of the battery; providing the travelling accessory machines with code readers operative when the respective accessory machine is moved to an individual coke oven for reading the coded information on the coded structure at the oven and generating and transmitting an oven-number feedback signal indicative of the oven-number of the oven; providing the travelling accessory machines with means operative for generating and transmitting operation-completed feedback signals when individual operations performed by the travelling accessory machines are completed; providing the accessory machines and their motive drive means with receivers for reception of operation-command signals commanding that individual operations performed by the travelling accessory machines be performed and travel-command signals commanding that the travelling accessory machines be moved to individual ovens identified by the travel-command signals; transmitting the operation-command and travel-command signals to the receivers using transmitting means located at a remote control station; utilizing receiving means at the control station for receiving the oven-number and operation-completed feedback signals transmitted from the individual accessory machines; and utilizing a programmable and programmed control system at the control station to cause the travel-command and operation-command signals to be generated and transmitted to the accessory machines in a preprogrammed sequence, the preprogrammed sequence including interlocks which prevent the generation and transmission of at least some of the command signals until after predetermined ones of the feedback signals transmitted from the accessory machines have been received.

4,194,687

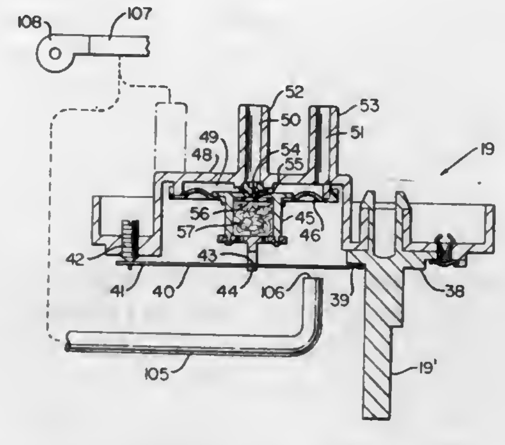
PNEUMATIC CONTROL SYSTEM AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

Douglas R. Scott, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 27, 1977, Ser. No. 864,455

Int. Cl.² G05D *23/08*

U.S. Cl. 236—87 **14 Claims**



1. In a pneumatic control system for controlling a pneumatically operated device in relation to the operation of a pneumatic signal sending themostat and a pneumatic signal sending set point adjuster that has setting means for selecting the value of the pneumatic signal thereof, said set point adjuster having a temperature sensor for changing said setting means in relation to sensed temperature thereof, said setting means including an adjustable spring member, the improvement wherein said spring member also comprises said temperature sensor.

4,194,688

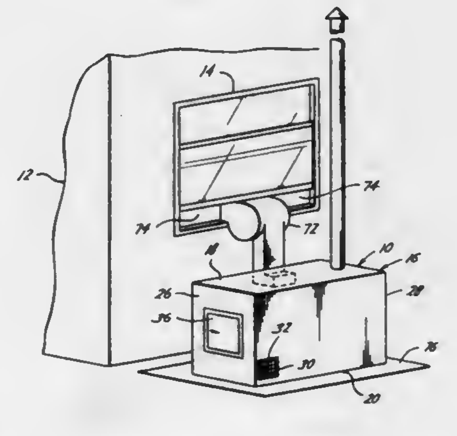
METHOD OF AND APPARATUS FOR PROVIDING SUPPLEMENTAL HEAT TO BUILDINGS

Charles R. Cobos, 4500 Elaine St., Bryan, Tex. 77801

Filed Mar. 10, 1978, Ser. No. 885,315

Int. Cl.² F24D *5/00;* **F24H** *3/02*

U.S. Cl. 237—53 **1 Claim**



1. A heating system comprising a building to which heat is to be supplied:
a box-like metal shelter postioned on top of the ground adjacent to but entirely outside said building;
a furnace postioned within said shelter and spaced from the interior walls of said shelter thereof to provide an open space between the shelter and furnace for air to flow to be heated by contact with the heated exterior walls of the furnace;
said shelter having a cold air inlet in its lower portion through which air from outside said building can flow into said space to be heated;
an air duct connected to an air outlet at an upper portion of said shelter and to the building through a window therein to conduct heated air from said space into said building;
said furnace having an air inlet thereto through which combustion air can flow into the furnace and an exhaust stack communicating with said furnace and extending to the exterior of the shelter to discharge combustion gases to the atomsphere;
an access door in a side wall of said furnace which when open permits solid fuel to be added to the furnace from the exterior of the shelter and ashes to be removed from the furnace to the exterior of the shelter, all without carrying said fuel and ashes through the building;
said air inlet is provided in a side wall of the shelter near the bottom thereof and wherein said duct is connected to an opposite side wall near the top thereof;
a reflective linging provided on the inside of the top, bottom and side walls of said shelter for reflecting radiant energy emitted from said furnace; and wherein said shelter is constructed from an insulating material to aid in preventing heat loss through said shelter;
a damper connected to said furnace covering an opening beneath a grate for controlling the flow of combustion air through the opening; and a thermostat operably connected to said damper provided within said shelter at substantially the same height as the outlet for regulating the draft to the solid fuel in response to the temperature of the heated air passing out of said shelter.

4,194,689

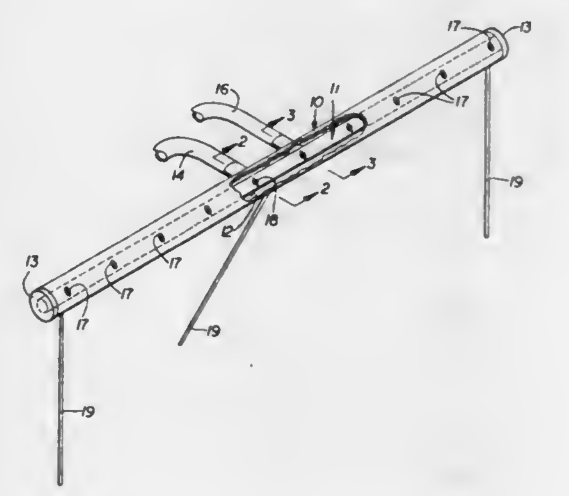
METHOD AND APPARATUS FOR MAKING SNOW

Robert M. Ash, P.O. Box 277, Banner Elk, N.C. 28604

Filed Sep. 19, 1978, Ser. No. 943,808

Int. Cl.² A01G *15/00;* **E01H** *13/00*

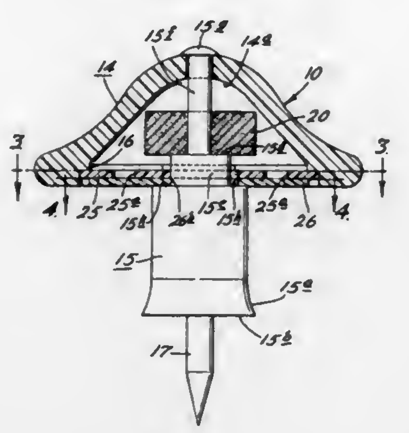
U.S. Cl. 239—2 S **11 Claims**



11. A method for making snow comprising:
(a) introducing water under pressure into a closed inner tubular housing mounted within and spaced from a closed outer tubular housing having longitudinally spaced discharge orifices in a side thereof,
(b) concomitantly with the introduction of said water introducing air under pressure between said inner tubular housing and said outer tubular housing with said air flowing outwardly in generally parallel columns through said discharge orifices, and
(c) discharging said water from said inner tubular housing into the axial center of each column of air flowing outwardly through each said discharge orifice whereby the water and air passing through and discharged from said orifices travel in the same direction and the flow of air through said orifices is retarded to reduce the volume of air per volume of water passing therethrough.

4,194,690
BUG-BOPPER

Carole A. Stever, and Robert L. Stever, both of Nine Ledum Run, West Grove, Pa. 19390
Filed Apr. 25, 1978, Ser. No. 899,816
Int. Cl.^{2} A61L *9/04*
U.S. Cl. 239—57 **5 Claims**



1. A device for use in controlling pests on a growing plant, comprising:

a cap having an interior chamber with an open bottom,

a torroid of pesticide disposed in said chamber,

first and second apertured closure members disposed across the bottom of said cap with said first closure member superimposed on said second and each having apertures adapted to register with one another upon relative rotation,

a stem for supporting said cap on a surface adjacent said plant with said open bottom spaced from said surface,

said stem having an upper shoulder in said chamber supporting said toroid and a pin projecting upwardly through said toroid and being upset downwardly toward said cap for rotatably mounting said cap to said stem,

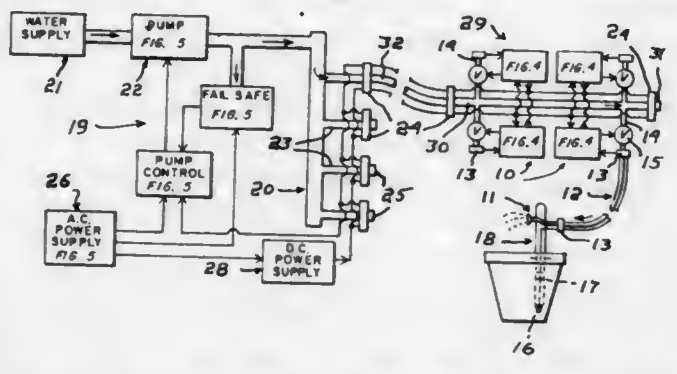
said stem also having a lower shoulder engaging the underside of said second closure member,

means securing said first closure member to said cap for rotation therewith, and

means securing said second closure member to said stem so that rotation of said cap relative to said stem causes the apertures in said closure members to register, thereby affording access of ambient air to said chamber for contacting said pesticide subsequently to distribute it about the plant.

4,194,691
AUTOMATIC CONTROL OF THE MOISTURE CONTENT OF THE SOIL

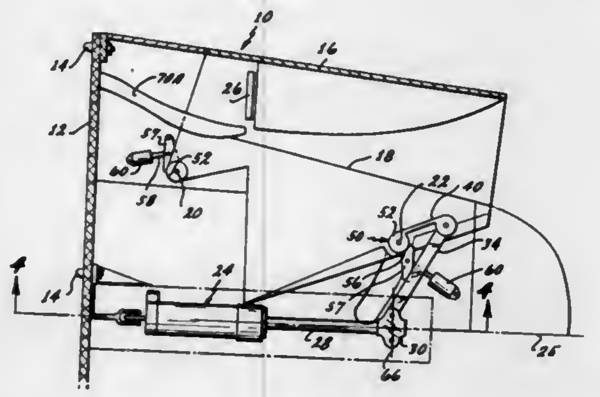
Lawrence H. Birnbach, 7 Jones St., New York, N.Y. 10014, and Curtis A. Birnbach, 254 Seaman Ave., New York, N.Y. 10034
Continuation-in-part of Ser. No. 740,886, Nov. 11, 1976, abandoned. This application Nov. 29, 1978, Ser. No. 964,706
Int. Cl.^{2} B05B *12/04*
U.S. Cl. 239—63 **19 Claims**



1. A moisture sensing control for a valve in a conduit by which the soil in an area is watered, said control including a pair of contacts to be inserted in the soil, first and second circuits, and input leads, one lead including a voltage divider, said voltage divider comprising a resistor string and a capacitor, leads of substantial length connecting said contacts to said one input lead across the capacitor, said string including first and second adjustable resistors, the first establishing a dry threshold and providing an input for the first circuit and the second establishing a wet threshold and an input for the second circuit, each circuit including a Schmitt trigger and means operable in response to the threshold that circuit monitors to deliver shaped pulses to the associated trigger, and a third circuit including means operable to effect the opening and closing of said valve and means connected to each trigger to respond to the output thereof, that of the first circuit trigger to effect valve opening and that of the second circuit trigger to effect valve closing.

4,194,692
FLIGHT THRUST REVERSER AND VERTICAL THRUST CONTROL DIVERGENT NOZZLE SYSTEMS

Robert A. Dickenson, Chula Vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Filed Aug. 5, 1977, Ser. No. 822,388
Int. Cl.^{2} B64C *15/06;* **B64D** *33/04*
U.S. Cl. 239—265.39 **8 Claims**



1. An integrated divergent and thrust reversing nozzle for controlling the exhaust exit gases from a thrust producing jet aircraft engine carried by an aircraft comprising:

a plurality of reverser doors, each of said doors having forward and rearwardly positioned pivot pins;

socket means carried by said nozzle for selectively engaging said pivot pins, at least one of said pivot pins of each of said plurality of doors being continuously engaged; and

actuation means for pivoting said doors when each of said plurality of reverser doors have a single pivoted connection to said nozzle.

4,194,693
LAWN SPRINKLER

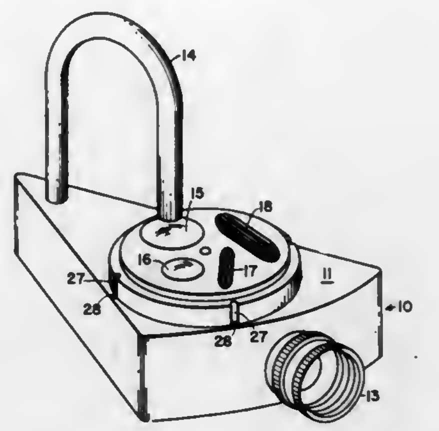
Thomas L. Mikulesky, 6914 W. Palo Verde Dr., Glendale, Ariz. 85303, assignor to Penny R. Mikulesky, Glendale, Ariz.
Filed Mar. 27, 1978, Ser. No. 890,034
Int. Cl.^{2} B05B *1/26*
U.S. Cl. 239—390 **7 Claims**

1. A lawn sprinkler comprising:

a base having a water conducting channel extending longitudinally therein, said channel having water inlet means and water outlet means, a water hose coupling engaged with the water inlet means, said base having a top and bottom with the bottom adapted to rest on a lawn surface;

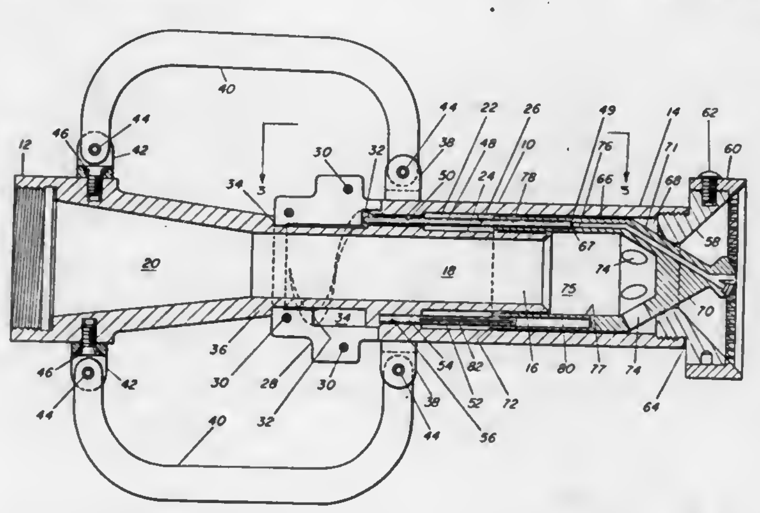
a water distribution plate mounted on the top of said base and having a plurality of water distribution concavities in the upper surface thereof with each of said concavities being of a different vertical and horizontal cross-section, said water distribution plate mounted to said base by a shaft pin which extends through the plate and engages in the base; and

a water conduit having a first end engaged with said water outlet means and a second end opening directly over one of the water distribution concavities whereby when water connection is made to the hose coupling, water will flow through the channel and conduit, out the open end of the conduit and impinge on the one distribution concavity to be distributed on a lawn in accordance with the cross-sectional shape thereof.



4,194,694
FLUID CONTROL VALVE

Frederick R. Hickerson, R.D. 6, Box 602, Newton, Sussex County, N.J. 07860
Continuation-in-part of Ser. No. 773,987, Mar. 3, 1977, abandoned. This application Apr. 18, 1978, Ser. No. 897,304
Int. Cl.^{2} B05B *1/30*
U.S. Cl. 239—533.1 **4 Claims**



1. An adjustable fluid control valve comprises:

a tubularly shaped nozzle body member having a venturi shaped internally threaded aft end, a cylindrically shaped internally threaded fore end, a flow chamber section axially disposed intermediate said aft end and said fore end of said body member, said flow chamber section having a flow cavity therein axially aligned and communicating with a venturi shaped chamber in said aft end, a cantilever flow chamber section being separated from the interior wall of said nozzle body member by an annularly shaped piston groove, a longitudinally disposed control pin bore operatively positioned in said nozzle body member having one end communicating with said annularly shaped piston groove, a stepped cam annular groove circumferentially disposed on said nozzle body member intermediate said aft end and said fore end, an alignment pin counterbore longitudinally disposed in said nozzle body member, said alignment pin counterbore communicating with said annularly shaped piston groove, and a nozzle forward chamber located in said nozzle body member fore end;

valve means slidably positioned in said cylindrically shaped fore end of said nozzle body member for controlling the rate of fluid flow through said nozzle body member, said valve means providing fluid pressure relief to balance the forces exerted on a front and rear end of said valve means at a selected fluid flow rate which includes;

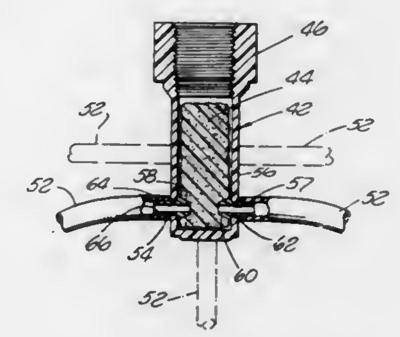
a piston shaped valve member having a conically shaped front end and an open rear end, said rear end loosely fitting into said annularly shaped piston groove, said front end having a plurality of vent orifices therein which communicates with said nozzle forward chamber of said nozzle body member and a pressure relief passage having a front end passing through and exiting from said piston valve member front end, a control pin piston bore longitudinally disposed in the open rear end having a control pin seat end which communicates with the other end of said pressure relief passage, and an alignment pin piston counterbore longitudinally disposed in said open rear end diametrically located opposite to said control pin piston bore;

cam means rotably positioned on said nozzle body member for adjustably regulating the position of said piston shaped valve member to infinitely control fluid flow through said nozzle body member from a full on position to a full closed position; and

spray deflector means threadedly attached to said threaded fore end of said nozzle body member for providing a nozzle seat for said piston shaped valve member, and for generating a variable fluid spray pattern therefrom.

4,194,695
IRRIGATION EMITTER SYSTEM

Edgar Schopp, 2210 Gratton St., Riverside, Calif. 92504
Filed May 15, 1978, Ser. No. 905,594
Int. Cl.^{2} B05B *15/00*
U.S. Cl. 239—542 **5 Claims**



1. An irrigation emitter system comprising:

a tubular adapter member formed of non-rigid plastic material;

means for securing a self-sealing coupling plug through the wall surfaces of said adapter member, said coupling plug comprising a truncated front end having a rearwardly facing shoulder which abuts the interior surface of said tubular adapter member;

pressure reducing sponge means formed in said adapter member, said coupling plug front end being forced into said pressure reducing sponge means, said sponge means exerting a sealing force on said coupling plug when liquid enters said adapter member; and

means for coupling plastic hose to water flowing through said adapter plug.

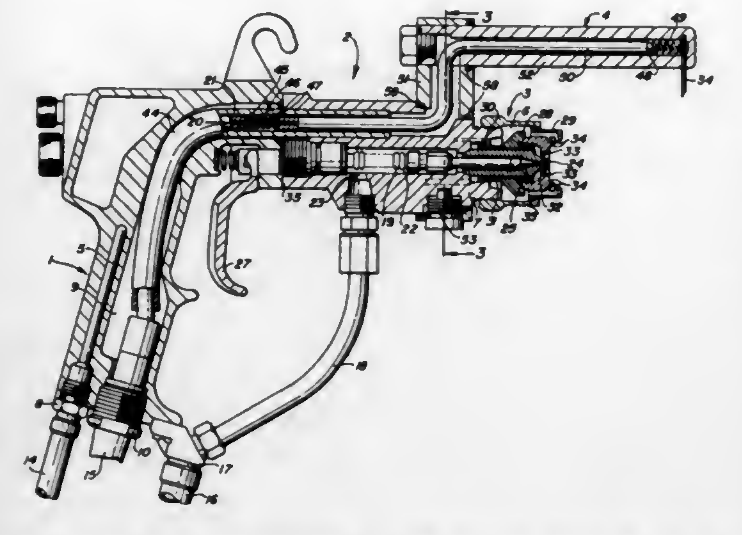
4,194,696
ELECTROSTATIC SPRAY COATING GUN

Martin J. Harjar, Vermilion, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Division of Ser. No. 705,338, Jul. 14, 1976, Pat. No. 4,079,894. This application Nov. 3, 1977, Ser. No. 848,042
Int. Cl.^{2} B05B *5/00*
U.S. Cl. 239—707 **5 Claims**

1. An electrostatic spray coating gun comprising:

means to form and discharge a stream of coating material which breaks up into droplets;

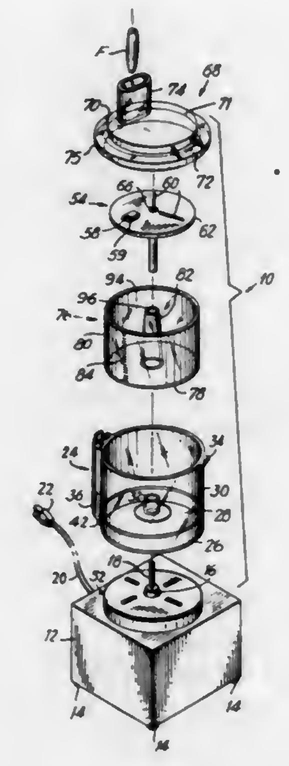
means to apply an electrical charge to the coating material prior to deposition on a substrate, wherein the means to apply the charge to the coating material comprises an electrode located externally of the paint gun and which is resiliently flexible for substantially its whole length; and



a short needle-like electrically conductive portion of the electrode at an exterior end thereof.

4,194,697
FOOD PROCESSOR AND AUXILIARY MIXING BOWL THEREFOR

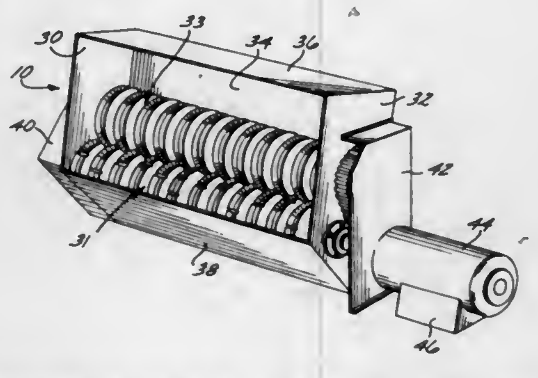
William Lembeck, 54 Continental Ave., Forest Hills, N.Y. 11375
Filed Jan. 22, 1979, Ser. No. 5,333
Int. Cl.² B02C *18/16*
U.S. Cl. 241—92 17 Claims



1. A food processor comprising, in combination:
- an electric motor having a drive shaft,
- cutting tool means including a food processing blade portion having an integrally formed driven shaft,
- said driven shaft being coupled to said drive shaft for rotation therewith,
- an outer bowl having a basewall including an opening through which said drive shaft extends and a side wall extending upwardly from said basewall,
- an inner bowl removably nested within said outer bowl for receiving therein the food to be processed by said blade portion,
- said inner bowl including a sidewall and a basewall having a tubular post,
- at least a portion of said tubular post being positioned in close proximity about said driven shaft of said cutting tool means and terminating adjacent the underside of said cutting tool means to thereby minimize the passage of processed food through said opening in said basewall of said outer bowl, whereby said motor is not contaminated by said processed food, and
- cover means removably coupled to said outer bowl.

4,194,698
SHREDDER

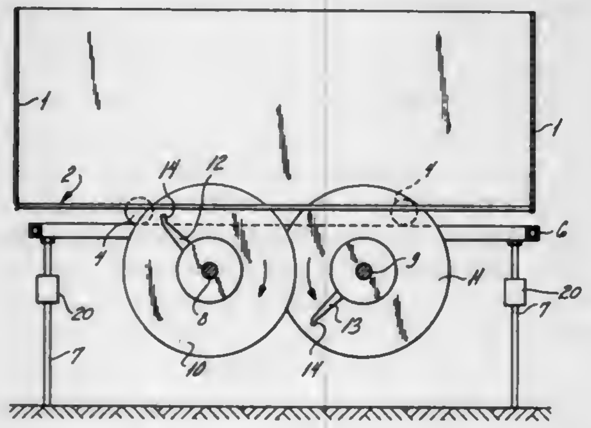
Wojciech Kosmowski, Fountain Valley, Calif., assignor to American Delphi, Inc., Westminster, Calif.
Filed Jul. 21, 1978, Ser. No. 926,798
Int. Cl.² B02C *18/00, 18/06*
U.S. Cl. 241—236 8 Claims



1. In a shredding apparatus employing a pair of counterrotating shafts each having a plurality of disks mounted thereon at spaced intervals in interleaved arrangement each disk having opposing transverse faces with an encircling rim the improvement wherein the rim of each said disks is configured in a V-shaped cross section, thereby forming arcuate blade edges of acute angles at the perimeter of each of said transverse faces, and four equally spaced notches of U-shaped configuration of uniform cross section throughout deeper than the V-shaped rim configuration are defined through the blade edges of each of the disks mounted on a single one of said shafts, which is geared to rotate at a greater speed than the other of said shafts.

4,194,699
APPARATUS FOR CUTTING UP AND CONVEYING MATERIAL

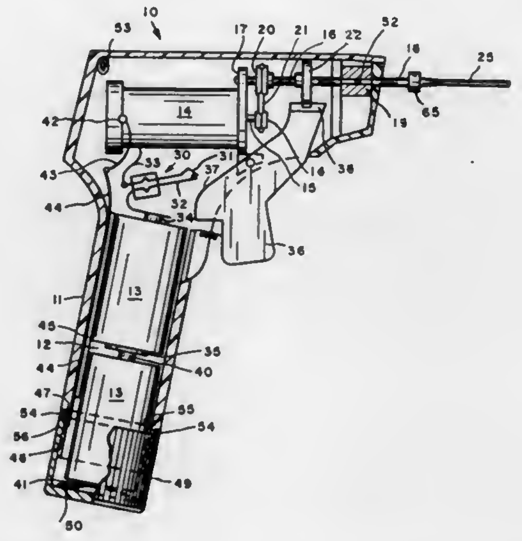
Mogens Berthelsen, Rislykke, Vejleby, 4970 Rodby, Denmark
Filed Feb. 23, 1978, Ser. No. 880,544
Claims priority, application Denmark, Feb. 24, 1977, 804/77
Int. Cl.² B02C *7/04*
U.S. Cl. 241—236 20 Claims



1. Apparatus for processing material comprising a container for material to be processed, an opening to the interior of the casing through which material to be processed is delivered, a discharge opening from the container from which processed material exits the container, cutting means disposed to cut parallel grooves in material contained in the container adjacent the discharge opening thereof, conveying means movable to engage cut material between said grooves and convey said cut material to said discharge opening and means for causing said container and cutting means to be reciprocated relative to each other to cause said grooves to be cut.

4,194,700
BATTERY-POWERED WIRE WRAPPING TOOL AND WRAPPING BIT

Marvin Kober, Spring Valley, N.Y., assignor to O.K. Machine and Tool Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 679,519, Apr. 23, 1976, Pat. No. 4,064,581. This application Jan. 24, 1977, Ser. No. 761,768
Int. Cl.² B21F *15/04*
U.S. Cl. 242—7.17 4 Claims

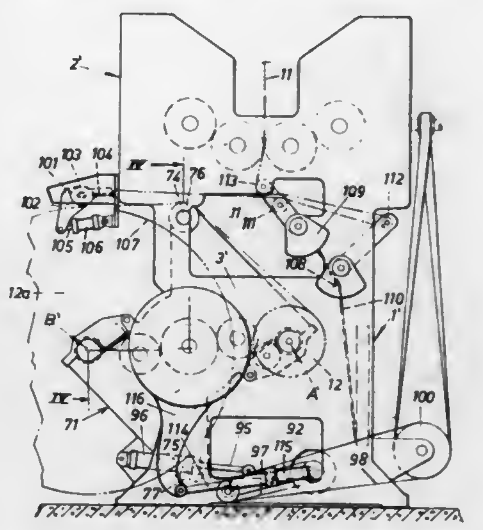


1. A battery-powered portable wire wrapping tool comprising a housing formed substantially in two halves, an electrical motor mounted within the housing and having a motor shaft, a bit driver mounted for rotation within the housing, means drivingly coupling the motor shaft to the bit driver, said housing comprising a compartment constituted mainly of electrically insulating material for receiving a battery for powering the motor, first contact means for electrically connecting a first battery terminal to the motor, second contact means for electrically connecting a second battery terminal to the motor and extending mainly along the interior of the battery compartment, and means for effecting electrical connection between the second battery terminal and the second contact, said electrical connection effecting means comprising an external cap removably mounted on the housing adjacent the battery compartment and having an electrically conductive surface for establishing contact with the second battery terminal, the second contact means comprising an elongated conductive strip whose end remote from the motor extends through a wall portion of the battery compartment adjacent the cap to the housing exterior, and a removable retaining ring provided at the battery compartment and encircling the housing halves to secure them together, said retaining ring being conductive and engaging and electrically contacting the remote end of the conductive strip while in its retaining position, said cap being configured such that when secured to the housing it engages and electrically contacts the conductive retaining ring with its conductive surface.

4,194,701
ROLL STAND WITH MEANS FOR JOINING A WEB TO ANOTHER WHEN UNWOUND FROM ROLLS

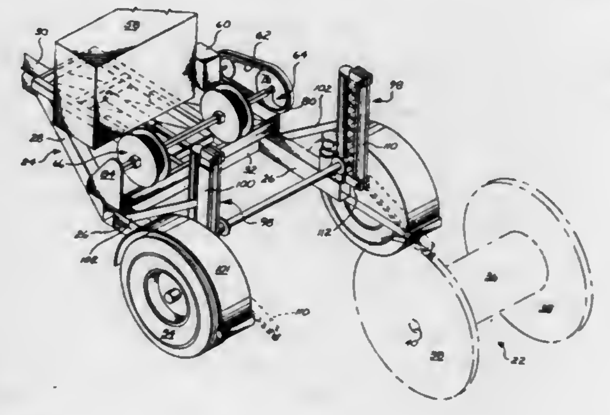
Bengt A. Andreåsson, Åmål, Sweden, assignor to AB Amals Mekaniska Verkstad, Sweden
Filed Oct. 11, 1978, Ser. No. 950,449
Int. Cl.² B65H *19/14*
U.S. Cl. 242—58.3 6 Claims

1. An improved roller stand comprising a frame, two unwinding stations, a first roll of a web of material, a first rotating spindle supporting said first roll, a second roll of a web of material, a second rotating spindle supporting said second roll, means for joining the web of material being unwound from said first roll to the leading end of the web of material of said second roll, means arranged to transversely cut said first web of material, and a braking mechanism supported by the frame of the roller stand to exert a braking force an said roll support spindles, the improvement comprising a roll-holding device, said two unwinding stations positioned on said roll-holding device, and means to transfer the rotational movement of the associated roll-support spindle to said braking mechanism, said means comprising two free-wheel members, one for each roll support spindle, said members arranged to connect to said braking mechanism that one of said two roll support spindles that at the moment has the highest rotational speed.



4,194,702
POWER REEL RETRIEVER

Andy M. Ploeg, 1825 Cook Rd., Burlington, Wash. 98233
Filed Aug. 24, 1978, Ser. No. 936,228
Int. Cl.² B65H *75/40*
U.S. Cl. 242—86.5 R 25 Claims



9. An apparatus to carry a reel, said reel having a drum portion having a relatively small diameter and retaining flange members having a relatively larger diameter affixed to either end of said drum portion, said apparatus adapted to retrieve and pay out cable from said reel, said apparatus comprising:
- a. a base frame having a forward end and a rear end, and longitudinal and transverse axes,
- b. a second reel supporting frame mounted to said base frame
- c. a reel lifting and carrying device mounted to said second frame, said device being adapted to vertically lift said reel from a first lower position to a second upper operative position,
- d. a movable third frame operatively connected to said base frame and adapted for movement from a forward disengaged position to a rearward engaged position along said longitudinal axis of said base frame,
- e. a reel drive mechanism, comprising transversely spaced drive elements having rotating friction drive surfaces adapted and positioned to frictionally engage said reel to cause said reel to rotate, said drive elements being mounted to said third frame,
- f. actuating means adapted to move said third frame from said disengaged position to said engaged position where said drive surfaces engage said reel,
- g. said reel lifting and carrying device being mounted to said

second frame, such that movement of said lifting and carrying device is vertical relative to both said second and third frames, whereby, upon actuation of said actuating means, said third frame is moved rearwardly, such that said drive elements engage said reel, and said reel can be moved independently of movement of said third frame, with said drive elements being adapted to provide effective driving engagement with said reel under loaded or unloaded reel conditions.

4,194,703

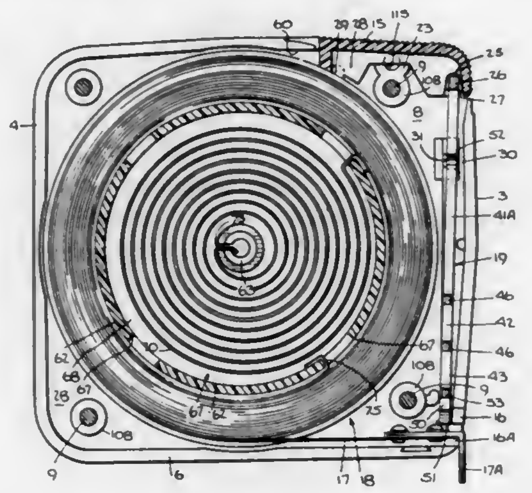
TAPE MEASURE

Justus G. Roe, Sayville, N.Y., assignor to Great Neck Saw Manufacturers, Inc., Mineola, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,317

Int. Cl.^{2} B65H ***75/48***

U.S. Cl. 242—107.2 **9 Claims**



1. A tape measure comprising a housing having a top wall and a front wall, a tape spool within the housing, a tape wound around said tape spool, an opening in the casing to permit the tape to protrude therefrom, a tape lock mechanism adjacent the tape spool to lock said tape in said protruded position, spring pressed means in the spool to permit the spool to rotate to automatically wind-up the tape from said protruded position and withdraw it into the housing, manually operable brake means spaced from said tape lock mechanism for braking said spool to retard the winding of the tape, said brake means comprises a movable button, said button having a brake pad associated therewith to overlie the rim of the spool whereby movement of said button in one direction will cause the brake pad to strike said rim and said button connected to the tape lock mechanism so that movement in one direction will lock the tape in place and movement in the other direction will release the tape.

4,194,704

AUTO SHUT-OFF APPARATUS FOR CASSETTE TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1978, Ser. No. 895,703

Claims priority, application Japan, Apr. 27, 1977, 52-53867

Int. Cl.^{2} G11B ***15/24***

U.S. Cl. 242—191 **13 Claims**

1. Auto shut-off apparatus for a cassette tape recorder comprising:

a base plate;

a capstan supported for rotational movement upon said base plate;

a pinion being rotatably mounted upon said base plate in coaxial alignment with said capstan and being rotated in unison with said capstan;

an operating member;

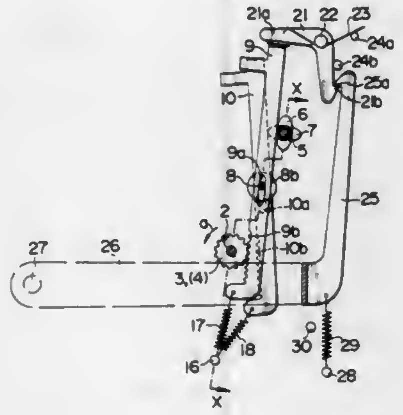
first and second rack levers both normally occupying a first position displaced from said operating member and having a rack portion adapted to meshingly engage said pinion to be linearly moved towards said operating member;

common pivot means for movably mounting said first and second rack levers upon said stationary base plate;

said first and second rack levers each including a slot cooperating with said pivot means for enabling its associated rack lever to experience swingable and linear movement about said pivot means;

said recorder having at least one shaft adapted to support a tape hub upon which a tape is wound and for rotating said tape hub;

resetting means coaxial with and responsive to rotation of said tape hub to periodically alternately displace said first and second rack levers from meshing engagement with said pinion to thereby return each rack lever to its said first position;



means responsive to a tape end being reached to terminate rotation of said tape hub and hence disable said resetting means, enabling at least one of said rack levers to be linearly moved by said pinion towards said operating member without interruption;

said recorder operating member having a first position for maintaining the recorder in operation and responsive to engagement by one of said rack levers for terminating operation of said recorder when said operating member is displaced from said first position by said one of said rack levers.

4,194,705

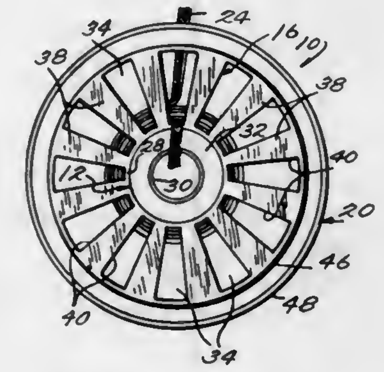
DESOLDERING WICK PACKAGE AND IMPROVED BOBBIN UTILIZED THEREIN

Ernst Spirig, Movenstrasse 37, CH-8640 Rapperswil, Switzerland

Filed Sep. 29, 1978, Ser. No. 947,841

Int. Cl.^{2} B65H ***49/18***

U.S. Cl. 242—137 **9 Claims**



1. A device for containing a length of strand material in a coil formation having a cross-sectional configuration with a dimension measured in the axial direction which is substantially greater than the smallest transverse dimension of the strand material and for controllably dispensing successive free end portions thereof comprising

a unitary annular body molded of plastic material defining an annular chamber of a size to receive therein the coil of strand material and a continuous annular slot communicating with the outer periphery of said annular chamber of a size to permit the free end portion of the strand material to extend therethrough in controllably engaged fashion,

said body including a central hub, first and second sides extending generally radially outwardly from said hub in axially spaced relation with respect to one another, and

first and second continuous rims at the radially outward ends of said first and second sides respectively defining said continuous slot,

said first side having a plurality of first annularly spaced portions extending between said hub and said first rim, said first annularly spaced portions defining a plurality of first axially extending openings in said first side communicating with said annular chamber so as to provide for the free exterior communication of the exposed surfaces of a coil of strand material contained therein,

said second side having a plurality of second annularly spaced portions extending between said hub and said second rim, said second plurality of annularly spaced portions defining a plurality of second axially extending openings in said second side communicating with said annular chamber so as to provide for the free exterior communication of the exposed surfaces of a coil of strand material contained therein,

said first annularly spaced portions having first interior surfaces defining closed portions of the first side of said annular chamber all of which are axially accessible through said second openings,

said second annularly spaced portions having second interior surfaces defining closed portions of the second side of said annular chamber all of which are axially accessible through said first openings.

4,194,706

DEVICE FOR IMPARTING A MOVEMENT OF ROTATION TO A CRAFT WHEN IT IS LAUNCHED

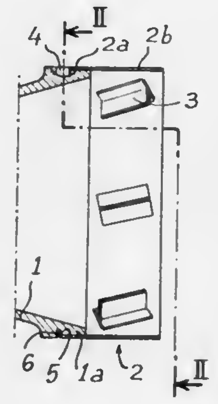
Bernard Detalle, L'Hay-les-Roses, France, assignor to Societe Europeene de Propulsion, Puteaux, France

Filed Apr. 13, 1978, Ser. No. 896,010

Claims priority, application France, Apr. 21, 1977, 77 12070

Int. Cl.^{2} F42B ***13/22***

U.S. Cl. 244—3.23 **5 Claims**



1. A device for imparting a movement of rotation to a craft with nozzle propulsion system during launching thereof by means of a launching member, said device comprising: a wheel with vanes or fins formed by a section of tube located in the rear extension of the nozzle, the tube section having an outer surface at least partly in permanent contact with the launching member during its path inside said latter, and bearing, on the inside, vanes or fins constituting surfaces deflecting the jet produced by the nozzle, the wheel being divided into distinct annular sectors juxtaposed to form said tube section, each sector extending over an angle at the most equal to 180°, and bearing at least one vane or fin; and connecting means comprising at least one locking element associated with each annular sector to render this latter fast with the nozzle in the direction of rotation about the axis of the nozzle and parallel to this axis, said connection means cooperating with the launching member to maintain, upon launching, the wheel in fixed position with respect to the nozzle, and to allow the separation of said device and the craft, on leaving the launching member.

4,194,707

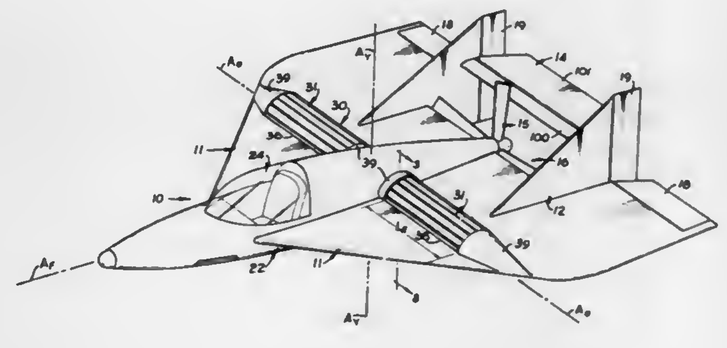
LIFT AUGMENTING DEVICE FOR AIRCRAFT

Thomas H. Sharpe, 502 Dorr Ave., Belvedere, S.C. 29841

Filed Dec. 16, 1977, Ser. No. 861,269

Int. Cl.^{2} B64C ***29/00, 39/00***

U.S. Cl. 244—9 **9 Claims**



2. A lift augmenting device for an aircraft having a longitudinal flight axis along which the aircraft flies and a pilot cockpit; defining a pair of air intake ducts therein on opposite sides of the aircraft flight axis having forwardly facing air intakes thereto and a rear end; and including forward propulsion means operatively associated with the rear ends of the air intake ducts for generating forward thrust to propel the aircraft forwardly along the aircraft flight axis; said lift augmenting device comprising:

a pair of rotor assemblies positioned on opposite sides of the aircraft flight axis and rotatable about generally horizontal rotor axes, one of said rotor assemblies communicating with each of said air intake ducts between the air intake thereto and the rear end thereof and with the air below the aircraft so that each rotor assembly can selectively pump air from within the duct to below the aircraft;

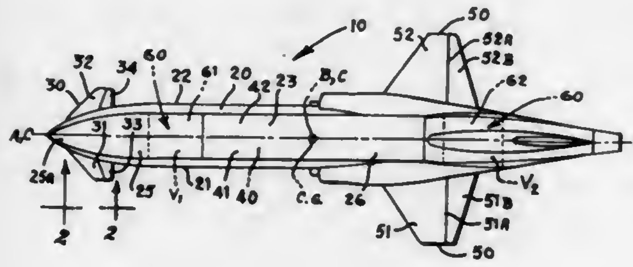
closure means for selectively closing the air intakes to the air intake ducts; and

louver means for selectively connecting each of the air intake ducts between the air intake thereto and the rear end thereof to the air above the aircraft so that, when said closure means closes the air intakes and said louver means connects the air intake ducts to the air above the aircraft, said rotor assemblies can pump air from above the aircraft through the air intake ducts to below the aircraft to generate lift on the aircraft.

4,194,708
REMOTELY PILOTED VEHICLE

Daniel J. Tracy, Maple Valley; John P. Palmer, Seattle, and Daniel J. O'Brien, Kirkland, all of Wash., assignors to The United States of America as represented by the Secretray of the Air Force, Washington, D.C.

Filed Sep. 21, 1978, Ser. No. 944,441
Int. Cl.² B64C *15/02;* **B64D** *1/06*
U.S. Cl. 244—15 **4 Claims**



1. A remotely piloted vehicle, having a center of gravity and a longitudinal axis, comprising:

a. a fuselage having a longitudinal axis coincident with said longitudinal axis of said remotely piloted vehicle, a port side, a starboard side, an upper portion, a lower portion, a fore section with a nose, and an aft section, with said fuselage also having a transverse cross section that is essentially constant in shape;

b. a canard comprising a first section and a symmetrical second section, with each said canard section located essentially at, and connected to, said nose of said fore section of said fuselage, and with said first canard section connected to said port side of said fuselage, and with said second canard section connected to said starboard side of said fuselage and oppositely disposed with relation to said first canard section, wherein said canard includes a first elevator section pivotally connected to said first canard section, and a symmetrical second elevator section pivotally connected to said second canard section; and wherein said first canard section and said second canard section are each simultaneously movable from zero degrees to 5 degrees upwardly in relation to said coincident longitudinal axes of said fuselage and of said remotely piloted vehicle, and wherein said first elevator section and second elevator section of said canard are each simultaneously pivotable downwardly from zero degrees to 40 degrees in relation to said coincident longitudinal axes of said fuselage and of said remotely piloted vehicle;

c. a weapons bay located at said center of gravity of said remotely piloted vehicle and internal of, and having a closeable opening in, said upper portion of said fuselage, whereby a store releasably held within said weapons bay can be delivered by, and can be selectively released from, said remotely piloted vehicle when said vehicle is in flight in an inverted position, wherein said weapons bay includes two identical, simultaneously openable, and simultaneously closeable doors, wherein said doors are sized to completely close said opening of said weapons bay, whereby said closeable opening of said weapons bay is selectively, and remotely, closeable by an inward movement of said doors, and is openable by an outward movement of said doors; and wherein said weapons bay has a geometric center, and said center of gravity of said remotely piloted vehicle is located at said geometric center of said weapons bay;

d. a wing comprising a first section and a symmetrical second section, with each said wing section having a trailing edge with an elevon thereat, and with each said wing section simultaneously located at and connected to said aft section and said lower portion of said fuselage, and also with said first wing section simultaneously connected to said port side of said fuselage, and also with said second wing section simultaneously connected to said starboard side of said fuselage;

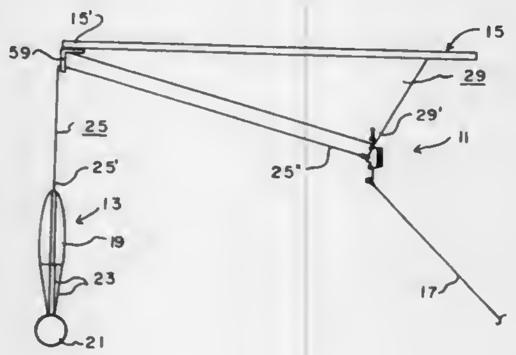
e. fuel tankage disposed within said fuselage, with said tankage also simultaneously disposed such that an equal volume of said tankage is positioned both fore, and aft, of said center of gravity of said remotely piloted vehicle, wherein said fuel tankage includes a first and a second main fuel tank, and wherein said first main fuel tank is disposed forward of said weapons bay, and also therein second main fuel tank is disposed aft of said weapons bay, and further wherein said fuel tankage further includes a fuel bay disposed under said weapons bay, and interconnecting, said first and said second main fuel tanks;

f. and, a first inflatable landing skid and a symmetrical second inflatable landing skid disposed at, and connected to, said lower portion of said fuselage, in equal spaced-apart relationship.

4,194,709
MECHANISM FOR RELEASABLY ATTACHING AN OBJECT TO A KITE

James M. Segerson, 6871 Meadowbrook, Olive Branch, Miss. 38654, and Bert G. Clawson, 983 McClure, Memphis, Tenn. 38116

Filed Oct. 16, 1978, Ser. No. 951,781
Int. Cl.² B64C *31/06*
U.S. Cl. 244—155 R **7 Claims**



1. A mechanism for releasably attaching an object to a kite to be carried aloft by the kite and to be released while the kite is in flight when the flight string of the kite is given slack, said mechanism comprising:

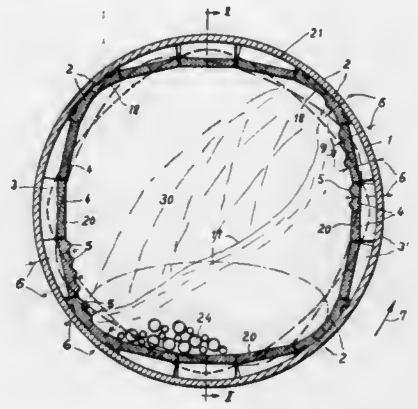
(a) a first member for being fixedly attached to the kite; and

(b) a second ember for being pivotally attached to said first member and for being fixedly attached to the end of the flight string, said second member including a keeper portion for selectively retaining the object to be carried aloft by the kite, said second member having a first position in which said keeper portion will retain said object and having a second position in which said keeper portion will release said object, said second member beingheld in said first position when the kite is aloft and the flight string is held substantially taut, said second member moving to said second position when the kite is aloft and the flight string is given slack.

4,194,710
TUMBLING MILL

Josef E. Ebner, Palffygasse 18/10, A-1170 Vienna, Austria

Filed Jun. 20, 1978, Ser. No. 917,301
Int. Cl.² B02C *17/22*
U.S. Cl. 241—182 **10 Claims**

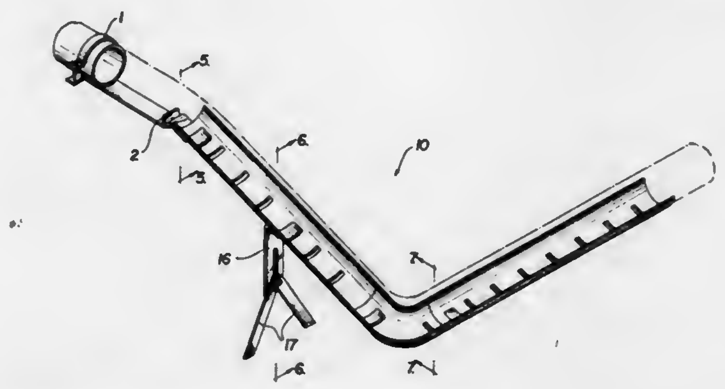


1. A tumbling mill comprising a cylindrical shell having an inlet and an outlet, said shell being provided on the inside with a lining system defining a grinding chamber which is generally polygonal in cross-section, the grinding chamber having rounded corner portions and side faces which approximate surface portions of an elliptic cylinder, said lining system comprising a plurality of peripheral liner rings, which are disposed on the inside of the shell and juxtaposed in the longitudinal direction of the shell, each of said liner rings having a plurality of peripherally spaced liner plates, which are secured to said shell, and spacers disposed between said liner plates and said shell at least at portions other than said corner portions.

4,194,711
FLEXIBLE SEWER LINE SUPPORT

Leroy Winton, P.O. Box 889, Placerville, Calif. 95667

Filed Jan. 9, 1978, Ser. No. 867,890
Int. Cl.² F16L *3/00*
U.S. Cl. 248—49 **4 Claims**

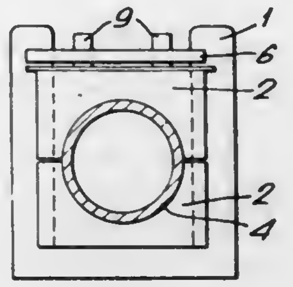


1. A flexible sewer conduit support comprising, in combination: a plurality of interconnected substantially semi-cylindrical troughs disposed in abutting relationship, said troughs having plural slots disposed on their bottom cylindrical faces, said troughs interconnected by means of tongue members disposed on said bottom face of said trough at each terminal portion of the longitudinal extent of said troughs, whereby said tongues of each trough extends into the slots of abutting troughs thereby defining a continuous, underlying interleaved support and means to support said trough and incline the trough above ground level in which said means to support said trough above the ground include a bracket member having a generally S-shaped upper portion to engage a slot in said trough, said portion terminates in a vertically downwardly extending lower portion said lower portion having a slot disposed therein, and said slot being provided with a bolt which serves to fasten a plurality of legs thereon.

4,194,712
CLAMPING STRUCTURE

Eilif Elvegaard, Karstensens vei 30, N-1660 Lisleby, Norway

Filed Sep. 14, 1978, Ser. No. 942,355
Int. Cl.² F16L *3/22;* **B65D** *63/00*
U.S. Cl. 248—68 R **10 Claims**



1. A clamping structure for clamping of tubes or similar elements, comprising:

at least one clamping shoe for partly enclosing and retaining the element or elements to be clamped;

at least one clamping shoe receiving frame for attachment to a substructure and defining a space for receiving said at least one clamping shoe;

said frame having a pair of opposite parallel side portions defining guiding means in slidable engagement with mating guiding means provided on opposite side portions of said at least one clamping shoe; and

a fastening plate for fixing of said clamping shoe and said element to be clamped in said frame;

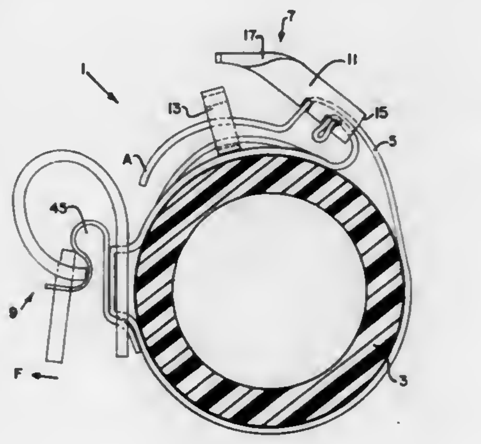
said fastening plate being provided with means for exerting a clamping pressure force directed towards the clamping shoe; and

said frame being provided with holding portions projecting beyond said clamping shoe and being arranged to retain said fastening plate in a fixed position in said frame.

4,194,713
TOOL HOLDER AND COMPONENTS THEREOF

Thomas L. Johnson, 520 Thalia Rd., Virginia Beach, Va. 23452

Filed Dec. 30, 1977, Ser. No. 866,106
Int. Cl.² A47B *96/06;* **E04G** *3/00*
U.S. Cl. 248—231 **25 Claims**



1. A device for holding a tool comprising a strap means for wrapping about a support, a means for tightening said strap when wrapped about the support and a means for holding a tool, the tightening means and tool holding means being retained on said strap,

said tightening means comprising a lever member having a fulcrum end and a retaining end, and a retaining member for releasably securing the retaining end of the lever member in place, said lever member and retaining member being retained on said strap in such a way that when the retaining end of the lever member is secured in said retaining member the strap is tightened by force applied at the fulcrum end of the lever member and when the retaining end of the lever member is released from the retaining member, the strap is loosened by relieving the force applied at the fulcrum end of the lever member, and wherein:

said retaining means comprises a generally U-shaped member whose base is secured to said strap and whose legs are flexible and include means for releasably retaining the retaining end of said lever member between said legs, and

said lever member comprises a longitudinally extending plate means, said retaining end comprising a lateral flange wider than the distance between the flexible legs of the U-shaped retaining member and having, longitudinally anterior to said flange, a portion of a width slightly greater than the normally unbiased distance between the flexible legs of the U-shaped retaining member; and

said tool holding means comprising a tool holder and a means for opening and closing said tool holder, said opening and closing means comprising a resilient spring plate member bent at a point intermediate its ends such that one side of said plate is normally biased toward the other, said tool holder being attached to respective sides of said plate such that the normal bias of said resilient spring plate member closes said tool holder and the application of force to separate the sides of said flexible spring plate member against the normal bias of said plate member opens said tool holder and such that upon release of said force the bias of said plate member automatically returns the tool holder to its closed position.

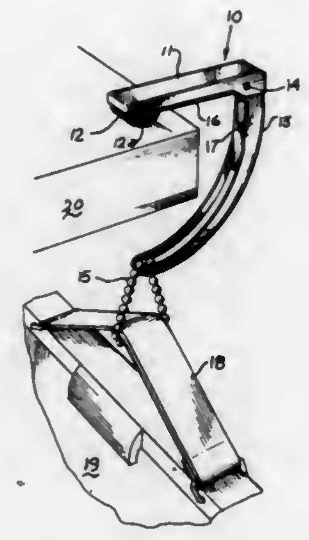
4,194,714
FOLDABLE PURSE HANGER AND WHISTLE

Wilderich C. Schultz, Chula Vista, Calif., assignor to Prima International, El Cajon, Calif.

Continuation-in-part of Ser. No. 666,649, Mar. 15, 1976, abandoned. This application Sep. 19, 1977, Ser. No. 834,641

Int. Cl.^{2} A45C *13/00*

U.S. Cl. 248—308 **4 Claims**



1. A hanger for a purse, or the like comprising: a first elongated arm; a second elongated arm; hinge means intercoupling the first and second arms at one of the ends thereof to permit the arms to be turned from a folded position to a position in which the arms are disposed at essentially 90° to one another; first means at the distal end of the first arm for supporting the hanger on a supporting surface; second means at the distal end of the second arm for suspending a purse, or the like from the hanger; and whistle elements formed in at least one of the arms adjacent said hinge means for enabling the hanger to be used as a whistle when the first and second arms are turned to the aforesaid folded position.

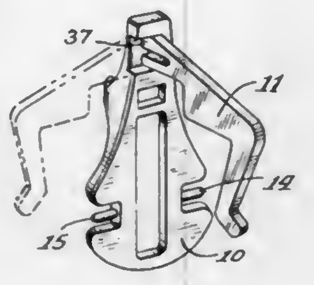
4,194,715
CONTAINER SUPPORT MEANS

Hugh M. Forman, Waukesha, and Richard A. Rauschenberger, Brookfield, both of Wis., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Dec. 27, 1977, Ser. No. 864,179

Int. Cl.^{2} A47K *1/08*

U.S. Cl. 248—311.1 R **8 Claims**



1. A support for a container comprising:

a generally planar body having first and second opposed ends and a semi-resilient wall at its second end;

means on said body adjacent said first end for attaching a container to said body;

a support arm mounted on said body at said second end, said support arm being movable from a first position substantially in the plane of said body to a second position substantially perpendicular to the plane of said body; and

means on said support arm for engaging said semi-resilient wall at positions intermediate said first position and said second position, whereby movement of said support arm relative to said body is resisted at said intermediate positions.

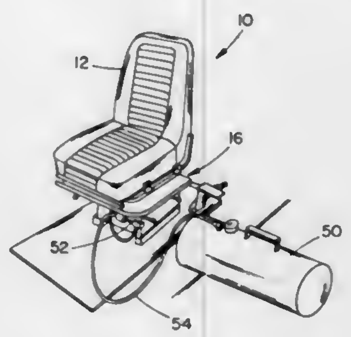
4,194,716
AIR SUSPENSION DRIVER'S SEAT

Chester J. Barecki, Grand Rapids, and Larry A. Wilkerson, Wyoming, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Filed Feb. 27, 1978, Ser. No. 881,905

Int. Cl.^{2} A45D *19/04;* F16M *13/00*

U.S. Cl. 248—575 **20 Claims**



1. In a transportation seat primarily adopted for use as a driver's seat, of the type including a base adapted to be secured to a floor structure and a seat frame supported on said base, the improvement comprising:

side saddle adjustment means supported by said base and operatively engaging said seat frame for transversely adjusting the position of said seat frame relative to said base, said side saddle adjustment means comprising:

a transverse guide track carried by said base;

at least one roller having an axle secured to said seat frame, said roller riding on said guide track; and

latch means carried by said base and operatively engaging said seat frame for latching said seat frame in a plurality of transverse positions relative to said base, said seat frame including a pair of transversely spaced side members and wherein said side saddle adjustment means further includes a slide rod extending between said seat frame side members and a guide bracket carried by said base and at least partially surrounding said slide rod so that said slide rod may shift transversely relative to said guide bracket and said base.

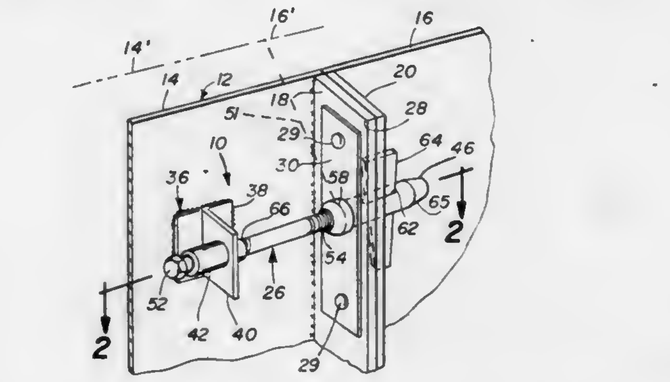
4,194,717
WEDGE AND BOLT ASSEMBLY FOR PANEL UNITS

John T. Easton, 15073 Marl Dr., and Harry J. Harden, 15063 Marl Dr., both of Linden, Mich. 48451

Filed Oct. 18, 1978, Ser. No. 952,392

Int. Cl.^{2} E04G *17/04*

U.S. Cl. 249—192 **3 Claims**



1. A bolt and wedge assembly of the type having a bolt passing through abutting frame edges of a prefabricated panel so as to secure the panels to one another, the frame edges having aligned apertures, said bolt and wedge assembly comprising:

a bolt having a slotted projecting end and an intermediate abutment land; bushing plates carried by the inside surface of it at least one of said frame edges adjacent its aperture; means slidingly mounting said bolt within the confines of one of said panels for movement of said projecting end through said aligned apertures such that said abutment land engages the bushing plate while said slotted projected end of said bolt extends beyond the inside surface of said other frame edge within the confines of said other panel; and wedge means received in said slotted projecting end and wedgingly engaging the inside surface of said other frame edge to draw said panels toward one another, said bolt member having a groove formed in its peripheral edge, said wedge being received between said groove and the inside surface of said panel when said bolt assembly is in a retracted position so as to secure said bolt in said retracted position and to ensure that the wedge is available for the further use.

4,194,718
CHOKE

Gerald S. Baker, and Guerry L. Hahn, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 14, 1978, Ser. No. 915,539

Int. Cl.^{2} F16K *31/122, 31/44*

U.S. Cl. 251—14 **2 Claims**

1. A choke comprising

a body having an inlet, an outlet, a passage communicating from said inlet to said outlet and a seat ring surrounding said passage,

a valve member,

pressure responsive means connected to said valve member for moving said valve member toward and away from said seat ring to control flow through said passage,

a shaft connected to said valve member,

the outer portion of said shaft being tubular and having a plurality of ports and at least one J-slot,

a thrust collar surrounding said shaft being slidable axially thereon, having means preventing relative rotation therebetween and having a plurality of detents on its interior surface,

a plurality of locking balls, one of said locking balls positioned in each of said ports,

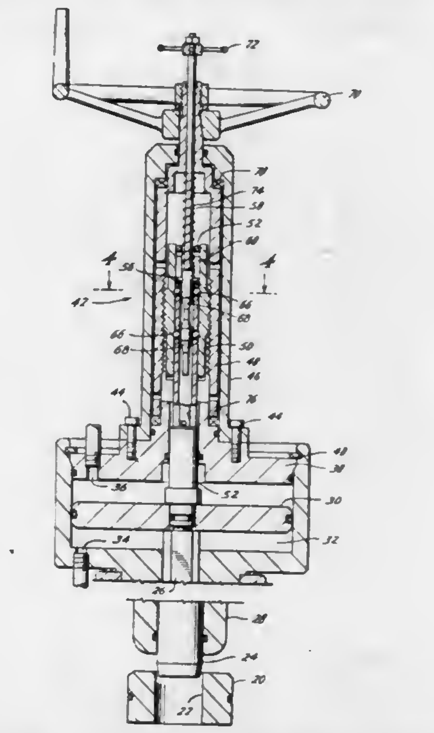
an operating stem in threaded engagement with said thrust collar,

means for retaining said operating stem against axial movement toward and away from said body,

a locking shaft extending into the interior of said tubular portion of said shaft and having tapered surfaces,

means for retaining said locking shaft in inactive position, manipulation of said locking shaft releasing said retaining means so that said locking shaft can move to active position with said tapered surfaces urging said locking balls into said detents, and

means for rotating said operating stem to move the thrust collar axially and with said locking balls in said detents to move said shaft and said valve member toward said seat ring.



4,194,719
HYDRAULIC CONTROL VALVE

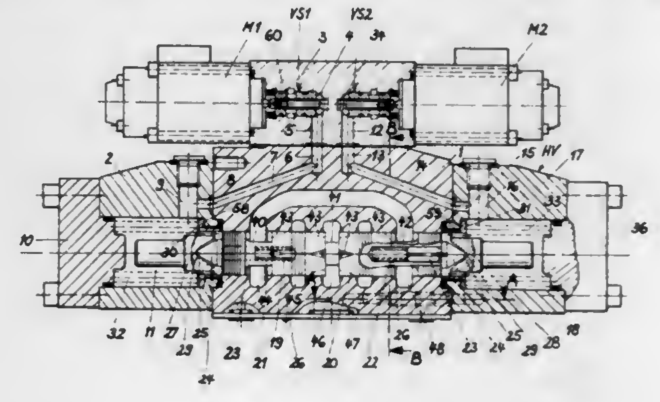
Roland Ewald, and Herbert Lembke, both of Lohr, Fed. Rep. of Germany, assignors to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 896,765

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717384

Int. Cl.^{2} F15B *13/043;* F16K *31/124*

U.S. Cl. 251—30 **3 Claims**



1. A multi-position flow control valve comprising: a housing having an elongated boring and a plurality of control spaces opening into said boring, a control piston movable in two opposite directions in said boring and cooperating at each end thereof with spring means and pressure fluid inlet means, the surface of said piston being formed with a plurality of recesses selectively communicating with said control spaces, said

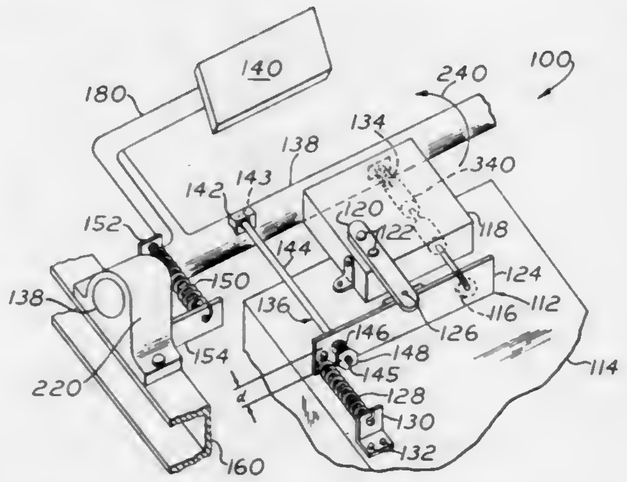
spring means including a first pressure spring supported between said housing and a spring collar, said collar abutting upon the housing and being movable against the associated first spring, each end of said control piston having an axial blind end bore, a supporting rod axially movable in said bore, a second spring located in said bore and urging said rod into engagement with a matching recess in said spring collar, said pressure fluid inlet means being selectively actuated to apply pressure against one end of said piston and displace the same against the first pressure spring in the opposite spring means whereby the second springs in said blind recesses maintain the supporting rods of said piston in engagement with the associated spring collars.

4,194,720
TRANSMISSION CONTROL

William I. Callaghan, Mentor; Dennis E. Dawson, Highland Heights; William D. Gubser, Mentor, and Joseph A. Vero, Shaker Heights, all of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jun. 27, 1977, Ser. No. 810,346
Int. Cl.^{2} F16K *31/62*

U.S. Cl. 251—77 **7 Claims**



1. A transmission control for a motor vehicle, comprising:
a control valve on the vehicle;
a spool mounted in the valve;
a support member attached to the valve;
a spool actuator member pivotally connected to the support member;
first resilient means for urging the spool into contact with the spool actuator member;
second resilient means for urging the actuator member into contact with the spool in opposition to the first resilient means;
an operator control movably mounted on the vehicle;
spool control means for movement in response to movement of the operator control a predetermined distance, free of forced engagement with the spool actuator means and subsequently for forcibly engaging and moving the spool actuator means for permitting movement of the spool, said spool control means is positioned between said operator control and said spool actuator member; and
means for adjusting the predetermined distance.

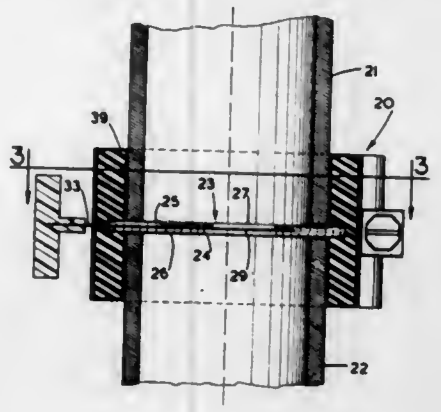
4,194,721
PLUMBING TEST FITTING

Carsten Nachtigahl, Delta, Canada, assignor to Nako Enterprises Ltd., Surrey, Canada

Filed Jul. 10, 1978, Ser. No. 922,817
Int. Cl.^{2} F16K *3/312*

U.S. Cl. 251—148 **5 Claims**

1. A test fitting for installation between a pair of spaced apart aligned pipe sections of a sectionalized waste-pipe comprising:
(a) a disc-like closure plate having a diameter at least as great as the outside diameter of the waste-pipe sections adapted to be slidably inserted and removed from between said sections, the plate having a passage for providing communication between the pipe sections,
(b) a valve element mounted on the closure plate operable for closing or opening the passage to passage of fluid between the pipe sections,
(c) a radially extending operating handle connected to the valve element and extending beyond the periphery of the plate for enabling manual operation of the valve element between open and closed positions,
(d) a split compressable sealing gasket adapted to be wrapped circumferencially around the periphery of the plate and having a width sufficient so as to overlap the adjacent end portions of the waste-pipe sections, the gasket having an opening for enabling the passage of the operating handle there through,
(e) a split separable clamp adapted to be extended circumferencially around the gasket and having an opening aligned with the opening of the gasket for enabling the passage of the operating handle there through for compressing the sealing gasket into fluid tight engagement with the periphery of the closure plate, the lapped adjacent end portions of the waste-pipe sections and the operating handle for preventing the escape of water from between the pipe sections and for enabling manual operation of the operating handle to move the valve element from its closed to its open position when the test fitting is applied to the pipe sections.

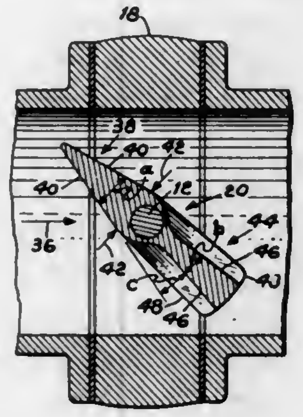


4,194,722
BUTTERFLY VALVE HAVING HIGH PERFORMANCE DISC

Charles L. Okerblom, Warwick, R.I., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 11, 1977, Ser. No. 840,867
Int. Cl.^{2} F16K *1/22*

U.S. Cl. 251—305 **18 Claims**



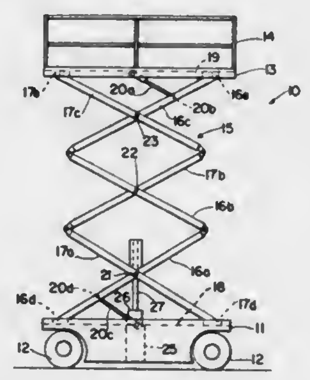
1. A disc for a butterfly valve, comprising:
a generally circular peripheral edge;
a shaft bore extending through the disc and having an axis extending through opposed portions of the peripheral edge;
a leading half adapted to face upstream when the disc is inserted in a valve, said leading half including two surfaces diverging from the most leading portion of the peripheral edge towards the bore, thereby forming a wedge facing upstream; and
a trailing half adapted to face downstream when the disc is installed in a valve, said trailing half including two diverging surfaces extending from along portions of the disc adjacent the bore towards the most trailing portion of the peripheral edge, thereby forming a wedge shape also facing upstream, wherein said disc has a maximum thickness located in the leading half forward of and adjacent to the axis of the shaft bore.

4,194,723
SCISSORS LINKAGE WORKMAN'S PLATFORM

John L. Grove, Greencastle, and Gregg A. Wagner, Chambersburg, both of Pa., assignors to JLG Industries, Inc., McConnellsburg, Pa.

Filed Apr. 14, 1978, Ser. No. 896,619
Int. Cl.^{2} B66F *3/22*

U.S. Cl. 254—9 C9 **9 Claims**



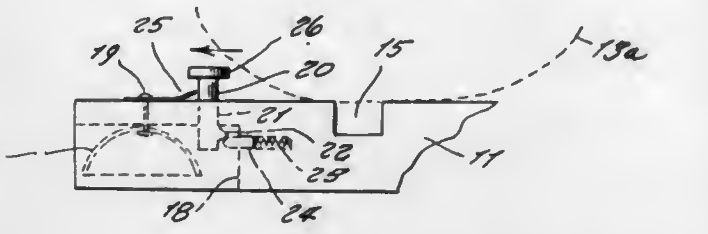
1. A workman's platform comprising:
a wheeled base for movement over a surface,
a deck above the base,
scissors linkages for elevating the deck each comprising plural sets of pin-connected lever arms,
the ends of the lever arms connected to another lever arm being off-set and pin-connected, so that the axis of each lever arm is spaced from the pin-connection between adjacent lever arms,
said arms in the retracted position of each said scissors linkage being horizontal, parallel and spaced apart,
means for mounting the upper end of both of the upper lever arms of each set on said deck for movement towards and away from each other and for permitting said upper lever arms to be in horizontal position when said upper ends of said upper lever arms are most remote from each other in the retracted position of said scissors linkages,
centering link means pivotally connected to said deck and to an upper lever arm of each set, and being horizontal in the retracted position of said scissors linkages,
means for mounting the lower ends of both of the lower lever arms of each set on said base for movement towards and away from each other and for permitting said lower lever arms to be in horizontal position when said lower ends of said lower lever arms are most remote from each other in the retracted position of said scissors linkages,
centering link means pivotally connected to said base and to a lower lever arm of each set and being horizontal in the retracted position of said scissors linkages,
actuating means for said scissors linkages mounted on the base having a linearly vertically movable driven element, and
means connecting said driven element to the pivot pins connecting the lever arms of the lowest sets of lever arms.

4,194,724
CHAINMATE

Gregory Masegian, 209 El Camino Del Mar, Aptos, Calif. 95003

Filed Mar. 19, 1979, Ser. No. 21,356
Int. Cl.^{2} E02C *3/00;* G08B *7/00*

U.S. Cl. 254—88 **1 Claim**



1. A chainmate device, for use in conjunction with a tire chain installation, comprising, in combination, a rectangular wooden block, one end of said block having an angularly inclined surface forming a ramp for a wheel of an automotive vehicle to climb thereupon, a horizontal top wall upon a remainder of said block, and a plurality of transverse, spaced-apart grooves across said horizontal top wall for receiving cross chains of said tire chain; a vertically slideable pin being near an opposite end of said block, a bell being aligned below said pin for being struck thereby when said wheel rides thereupon; a sideward protruding lug along said pin overriding a spring biased detent of said block for quickly thrusting said pin downwardly against said bell, and a leaf spring normally urging said pin upwardly immediately thereafter so that said pin clears said bell and does not stop resonating sound therefrom.

4,194,725
VEHICLE JACK

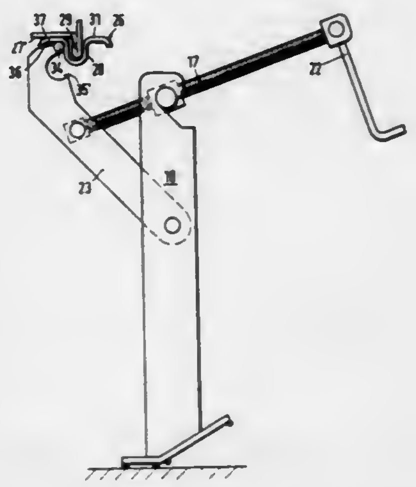
Willi Erschens, Schillingen, Fed. Rep. of Germany, assignor to Firma August Bilstein, Ennepetal, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,541

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1978, 2801735

Int. Cl.^{2} B66F *3/12*

U.S. Cl. 254—126 **13 Claims**



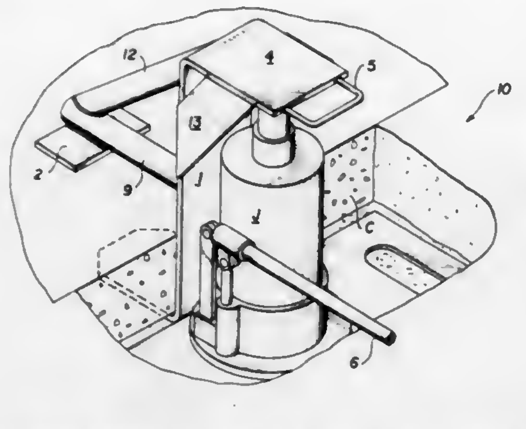
1. A vehicle jack having a support leg and a support arm pivotably supported on said support leg for movement about a pivot axis by a handle-operated thread spindle running in a spindle nut and a spindle bearing pivotably mounted one in each of the upper end of the support leg and the support arm, the support arm having a support plate at its distal end for use in setting, against a vehicle floor at a load carrying point thereof and is supported on the support arm about an axis of rotation parallel to the said pivot axis, said axis of rotation lying immediately adjacent the underside of the support plate with respect to the vehicle floor; said support plate having a depression for receiving a protrusion of such vehicle floor; said de-

pression being located beside said axis of rotation when said support plate engages such vehicle floor.

4,194,726

CONCRETE LIFTER

Sammy M. Hance, 3939 D St., Sacramento, Calif. 95819
Filed Mar. 22, 1978, Ser. No. 888,911
Int. Cl.^{2} B66F *11/00*
U.S. Cl. 254—133 R 6 Claims

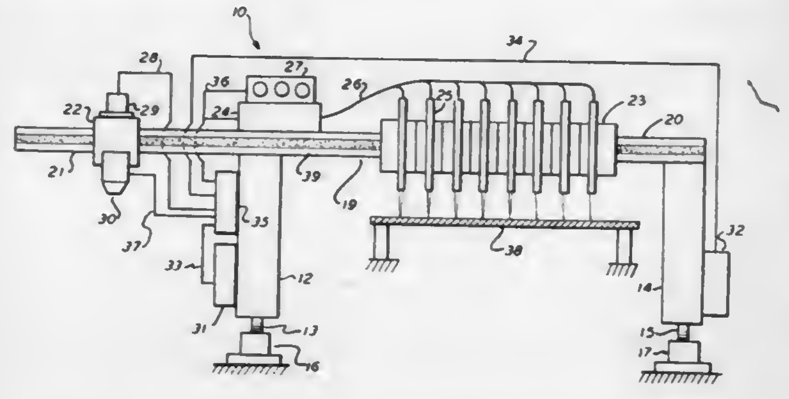


1. A concrete removing device comprising bracket means suitably formed to engage a portion of concrete, and hydraulic jack means adapted to engage said bracket whereby when said jack is energized, said bracket moves a portion of the concrete relative to a remaining portion of concrete to thereby break off said portion of concrete, wherein said bracket means comprises a substantially inverted F-shaped element having two parallel legs extending in the same direction connected each to a vertical leg, and a fourth leg parallel to said first two legs but extending in a direction opposite from said first two legs.

4,194,727

SHAPE CUTTING APPARATUS

Lawrence M. Layden, Stanton, N.J., and James R. Thomson, Bolivar, N.Y., assignors to Airco, Inc., Montvale, N.J.
Continuation of Ser. No. 844,776, Oct. 25, 1977, abandoned. This application Feb. 7, 1979, Ser. No. 10,100
Int. Cl.^{2} B23K *7/02, 7/10*
U.S. Cl. 266—58 10 Claims



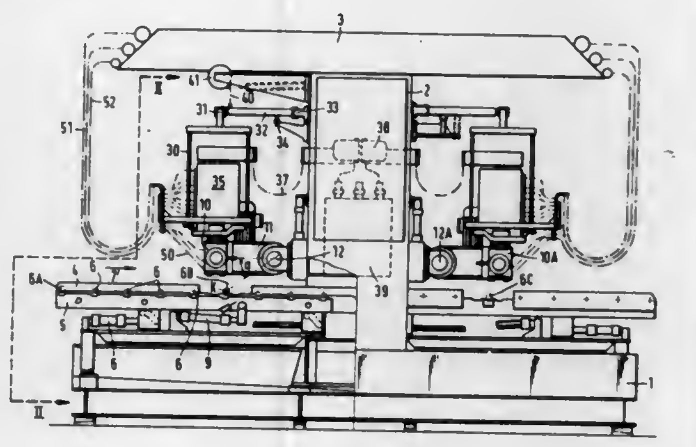
1. Shape cutting apparatus including torch holder assembly means mounted on a transverse beam and adapted to be driven along said beam, control means for selectively driving said torch holder assembly along said beam which is rigidly mounted on first and second carriages, the improvement comprising:

first and second electric servomotor means coupled to said control means and connected electrically in parallel with one another and means for mounting said first and second servomotor means on said first and second carriages, respectively, such that upon energization of both said servomotor means, said carriages are driven at substantially the same speed along a pair of spaced, parallel longitudinal rails and said transverse beam is maintained in an essentially orthogonal relationship with respect to said rails.

4,194,728

APPARATUS FOR THE INDUCTIVE HARDENING BY QUENCHING OF BEARING SURFACES OF A CRANKSHAFT

Edgar Stengel, Remscheid, and Friedhelm Emde, Huckeswagen, both of Fed. Rep. of Germany, assignors to Aeg-Elotherm G.m.b.H., Fed. Rep. of Germany
Filed Mar. 15, 1978, Ser. No. 887,416
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712455
Int. Cl.^{2} C21D *1/66*
U.S. Cl. 266—125 6 Claims



1. An apparatus for the inductive hardening by quenching of the running surface of bearings of a crankshaft having a longitudinal axis comprising:

a machine frame;

clamping means mounted in said frame for movement around a horizontally disposed rotational axis including a clamp for gripping a crankshaft at a clamping position, such that said crankshaft is gripped with its longitudinal axis along said rotational axis and a lever arm connecting said clamp to said frame for swinging said crankshaft between said clamping position and a heating position;

means for rotating said crankshaft about its longitudinal axis while said clamp is gripping said crankshaft;

inductive heating means disposed above said clamping means and crankshaft in said heating position including at least one inductor mounted in a plane perpendicular to said horizontally disposed rotational axis for movement in all directions in said plane, said inductor resting on the surface of said bearings when said crankshaft is swung into said heating position, and means for feeding an AC current to said inductor for heating the running surface of the bearings;

means for feeding a liquid coolant for quenching the heated running surface; and

means for transporting said crankshaft to said clamping position.

4,194,729

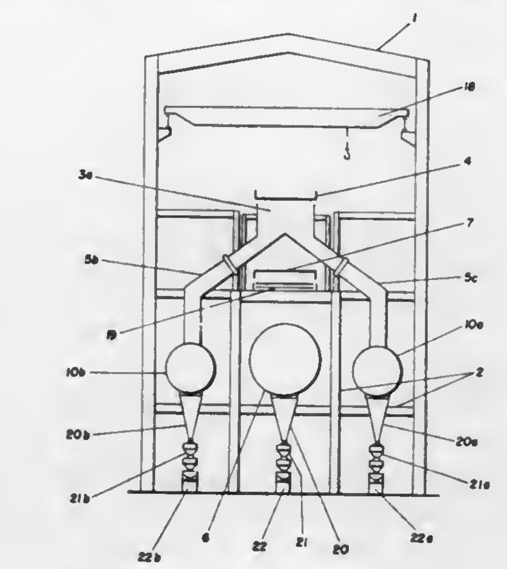
SINTERING WITH EXHAUST GAS PIPES

Karl Wacker, Hanau am Main, and Fritz Feigk, Langen, both of Fed. Rep. of Germany, assignors to Dravo Corporation, Pittsburgh, Pa.
Filed Oct. 30, 1978, Ser. No. 956,058
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756082
Int. Cl.^{2} C22B *1/20, 1/26;* F27B *9/04*
U.S. Cl. 266—144 7 Claims

1. In a sintering plant for the sintering of fine grained iron ores and the like having a supporting frame; a straight sinter belt with an upper and a lower strand, said upper strand being divided into an initial sintering section and a succeeding cooling section; a plurality of wind boxes situated beneath the cooling section which remove cooling gas from the cooling section and a plurality of wind boxes situated beneath the sintering section which remove sinter exhaust gas from the sintering section; and a flue for the exhausting of cooling gas and sinter exhaust gas, the improvement comprising:

(a) a cooling gas gas-collecting main being centrally disposed beneath the lower strand and connected to each of the wind boxes underlying the cooling section by at least two cooling gas connecting pipes, said cooling gas connecting pipes attaching at opposite sides of the wind boxes underlying the cooling section, and connected through a plurality of gas evacuating fans and flue connecting pipes to the flue, and

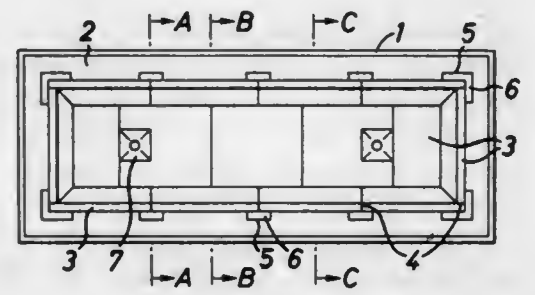
(b) two sinter exhaust gas gas-collecting mains being disposed on opposite sides of the cooling gas gas-collecting main and connected to each of the wind boxes underlying the sintering section by a plurality of sinter exhaust gas connecting pipes and connected through a plurality of gas evacuating fans and flue connecting pipes to said flue.



4,194,730

MOLTEN METAL HANDLING VESSELS

Chiaki Matsumoto, Akashi; Hirokatsu Imai, Amagasaki, and Masaru Okawa, Ashiyashi, all of Japan, assignors to Foseco Trading AG, Chur, Switzerland
Filed Dec. 27, 1977, Ser. No. 858,476
Int. Cl.^{2} C21C *7/00*
U.S. Cl. 266—275 24 Claims



1. In a vessel for containing molten metal comprising an outer metal casing, a relatively permanent lining of refractory material adjacent the casing and adjacent the relatively permanent lining an inner expendable lining made up of a plurality of slabs of refractory heat insulating material, the improvement comprising, behind at least some of the joints between adjacent slabs of refractory heat insulating material, channels filled with a cast refractory composition.

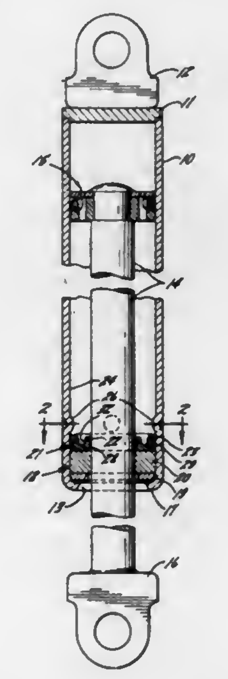
8. In a vessel for containing molten metal comprising an outer metal casing, a relatively permanent lining of refractory material adjacent the casing and adjacent the relatively permanent lining an inner expendable lining made up of a plurality of slabs of refractory heat insulating material, the improvement comprising, behind at least some of the joints between adjacent slabs of refractory heat insulating materials, channels filled with a rammed refractory composition.

15. In a vessel for containing molten metal comprising an outer metal casing, a relatively permanent lining of refractory material adjacent the casing and adjacent the relatively permanent lining an inner expendable lining made up of a plurality of slabs of refractory heat insulating material, the improvement comprising, behind at least some of the joints between adjacent slabs of refractory heat insulating material, channels filled with preformed shapes of bonded refractory material.

4,194,731

GAS SPRING AND METHOD OF FILLING THE SAME

Thomas O. Marx, Rockton, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.
Filed Dec. 20, 1978, Ser. No. 971,424
Int. Cl.^{2} F16F *5/00;* B65B *3/04*
U.S. Cl. 267—65 R 6 Claims



1. A gas spring comprising, an elongated hollow cylinder having a closed end and an open end, a piston disposed within said cylinder, an elongated rod coaxial with said cylinder with a portion projecting into the cylinder through said open end and connected to said piston, at least one protuberance formed on the inner wall of said cylinder and spaced from said open end, an annular sealing member made of a flexible material and encircling said rod, said member normally being disposed between said protuberance and said open end, a first annular surface formed on said member and engaging said rod around its complete circumference thereby to form a seal between the member and the rod, and a second annular surface formed on said member and normally engaging the inner wall of said cylinder around the entire circumference thereof thereby to form a seal between the member and said wall, said member being operable when said open end communicates with a source of gas under pressure to move axially into engagement with said protuberance and forming openings between said second surface and said inner wall adjacent said protuberance whereby gas may flow through said openings and into the interior of said cylinder, the gas within said cylinder being operable when said source is removed from said open end to move said member toward the open end and out of engagement with said protuberance whereby said member seals the interior of said cylinder from said open end.

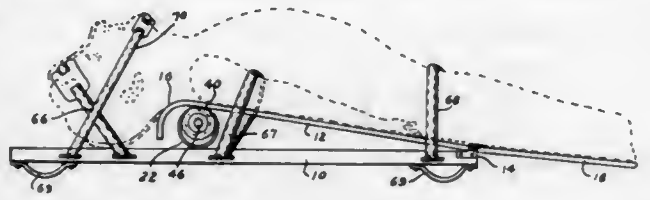
4,194,732

CARDIAC PATIENT SUPPORT

Arno J. Liebman, 1819 Shore Dr., Apt. 218, South Pasadena, Fla. 33707
Filed Jul. 5, 1978, Ser. No. 921,894
Int. Cl.^{2} A61H *31/00*
U.S. Cl. 269—323 1 Claim

1. In a cardiac patient support for adjusting the position of a patient's head relatively to its torso; the combination comprising a flat, rigid, horizontal base; a substantially flat, rigid, torso

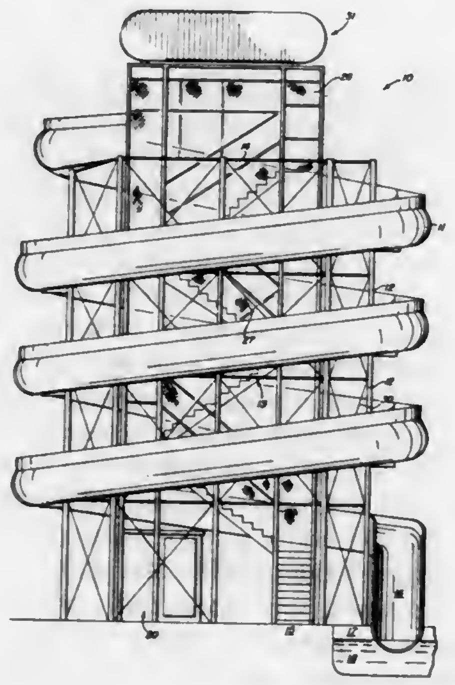
support of a length corresponding substantially to the length of an average human torso and of a width adjacent to its upper end corresponding substantially to the average shoulder width of a human torso, said torso support thereby being capable of directly supporting a patient's torso with the patient's head extending clear of the upper end of said support; a transversely extending hinge connecting the lower end of the torso support to said base toward the latter's lower end; and elevating means for raising and lowering the upper end of said torso support relatively to an underlying portion of said base; said elevating means comprising an eccentric roller extending substantially completely from side to side of said torso support, underneath and in supporting engagement with said torso support adjacent to the latter's upper end, bearings mounted on the base in supporting relation to opposite ends of said roller, and actuating means coacting with said bearings and roller to turn and hold the latter in various adjusted positions.



4,194,733

WATER SLIDE SYSTEM

Ben Whitehouse, Jr., P.O. Box 2684, Titusville, Fla. 32780
Filed Jul. 5, 1978, Ser. No. 922,056
Int. Cl.² A63G *21/18*
U.S. Cl. 272—56.5 R **10 Claims**

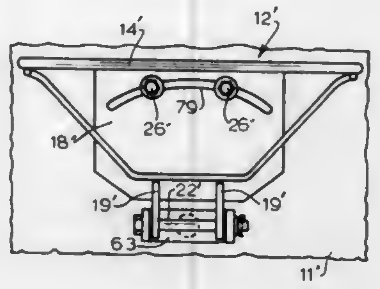


1. A water slide system comprising in combination:
a water slide surface extending from an elevated platform to a pool of water;
a first starting position located adjacent said elevated platform and connected to said water slide surface for directing a slider onto said water slide surface, said first starting position having a water line opening thereonto;
a second starting position located adjacent said elevated platform and connected to said water slide surface for directing a slider onto said water slide surface, said second starting position having a water line opening thereonto; and
means for directing water from one starting position water line opening to the other starting position water line opening whereby one slider can be launched in one starting position while another slider is getting into position in the other starting position.

4,194,734

ENERGY ABSORBING BASKETBALL GOAL/BACKBOARD UNIT

Frederick C. Tyner, 2124 Hillock Dr., Raleigh, N.C. 27612
Division of Ser. No. 706,836, Jul. 19, 1976, Pat. No. 4,111,420.
This application Jun. 22, 1978, Ser. No. 917,979
Int. Cl.² A63B *63/04*
U.S. Cl. 273—1.5 R **1 Claim**

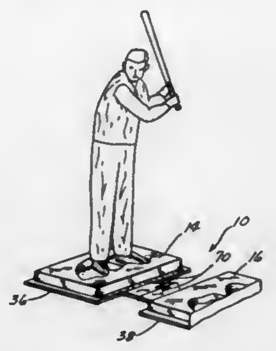


1. A basketball goal-backboard unit comprising, in combination:
(a) a rigidly-supported backboard having a flat vertical front surface for mounting of a goal structure thereon and having aperture means for receiving a linkage passing through said backboard and connected to said goal structure;
(b) a goal structure having an annular ring with a normal horizontal position and a mounting plate rigidly secured to and supporting said ring and having an integral depending plate portion extending downwardly and perpendicular to the plane of said ring;
(c) lower support means mounted on said backboard front surface and having a pivotal connection to said depending plate portion enabling said mounting plate and said annular ring to pivot as an integral structure about a first axis passing through said connection parallel to the plane of said ring and parallel to and proximate said backboard front surface and enabling said ring to swing between said normal horizontal position and a downwardly tilted position;
(d) upper resiliently-loaded support means including:
  (i) linkage means connected to said mounting plate above said pivotal connection and extending through said aperture means formed in said backboard; and
  (ii) energy absorbing means mounted on the back surface of said backboard opposite said mounting plate and connected to said linkage means and being preloaded to retain said ring in said normal horizontal position until an abnormal downwardly directed force in excess of some predetermined value is applied thereto and in the event of such force to allow said ring to move out of said normal horizontal position and tilt downwardly and to be automatically returned to said normal horizontal position once said force is removed therefrom and during the return of said ring to said normal position to dissipate the energy stored in said energy absorbing means;
(e) auxiliary support means associated with said lower and upper support means and said mounting plate and permitting right left side rotation of said depending mounting plate portion around a second axis perpendicular to said first axis and permitting said depending mounting plate portion to rotate in a plane parallel to the plane of said backboard thereby allowing said ring to tilt sidewise under a said force; and
(f) auxiliary energy absorbing means mounted behind the backboard for returning said depending mounting plate portion to its normal nonrotated position after such side rotation to restore said ring to its normal horizontal position and for dampening the movement of said goal structure during such return.

4,194,735

BATTING STANCE AND STRIDE PRACTICE APPARATUS

Richard A. Wilson, 517 W. Maple, Centerville, Iowa 52544
Filed Mar. 8, 1978, Ser. No. 884,683
Int. Cl.² A63B *69/00*
U.S. Cl. 273—26 R **15 Claims**

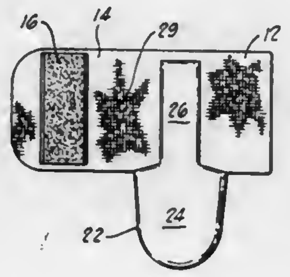


11. A foot placement training device for a baseball batting stance, comprising,
a placement guide means having inner and outer edges, said inner edge adapted for placement adjacent home plate and having a pivot foot position, a first stride foot position generally parallel to said pivot foot position and perpendicular to said inner edge, and a second stride foot position,
said first stride foot position being connected to said second stride foot position to allow unobstructed passage of the stride foot of a batter from said first stride foot position to said second stride foot position during a swinging motion.
said pivot foot position, said first stride foot position, and said second stride foot position being located in an elongated continuous recess in said guide means, said recess having a predetermined depth to provide tactile guidance for the batter's foot placement with said foot placement guide means being yieldable to foot placement in misalignment with said pivot foot position, said first stride foot position and said second stride foot position.

4,194,736

BOWLING AID DEVICE

James R. Loafman, 3420 Rolling La., Midwest City, Okla. 73110
Filed Nov. 7, 1977, Ser. No. 848,949
Int. Cl.² A63B *69/00*
U.S. Cl. 273—54 B **10 Claims**

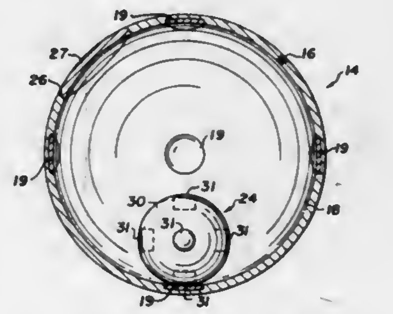


1. A device for aiding bowlers comprising:
a flexible finger sleeve including a pair of opposed, spaced wings and sized for encircling the little finger of the bowling hand with the wings overlapped;
means on said wings for adjustably engaging said wings in overlapped relation to each other; and
an elastomeric bracing element secured to one side of said finger sleeve between said wings and including:
  an elongated rib having a length of from one and one-fourth inches to two and one-fourth inches to extend across the two outer joints of the little finger of the bowling hand; and
  a palm contacting portion projecting from said elongated rib at one end thereof by a distance which is from about one-half to about three-fourths the length of said elongated rib.

4,194,737

ERRATICALLY ROLLABLE GAME DEVICE

William R. Farmer, 215 Campbell St., New Westminster, British Columbia, Canada (V3M 5K8)
Filed Jun. 29, 1978, Ser. No. 920,388
Int. Cl.² A63B *43/04*
U.S. Cl. 273—58 BA **8 Claims**

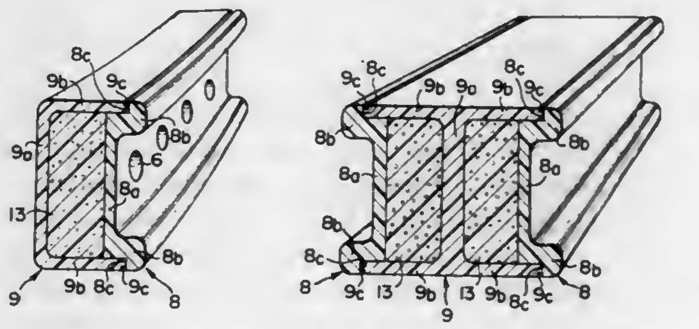


4. A rollable plaything adapted to be propelled over a playfield in a team game and comprising a hollow body having outer and inner surfaces; said outer surface having a smooth, uninterrupted, circular circumference allowing unimpeded rolling movement; a weighted ball enclosed within the hollow body and having a spherical and smooth peripheral surface, said inner surface providing a multitude of depression-free paths of travel around which the weighted ball normally rolls in response to rolling movement of the hollow body, a plurality of magnetic elements mounted on the weighted ball substantially flush with the peripheral surface and spaced apart thereon, a plurality of magnetic members set into and substantially flush with the inner surface adapted to be attracted to the magnetic elements as the weighted ball rolls around the inner surface when the hollow body is propelled whereby the speed and direction of both the weighted ball and the hollow body are influenced by magnetic attraction.

4,194,738

FRAME OF A GAME RACKET

Mitsuhiro Inoue, Oyama, and Yo Maeda, Yuki, both of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan
Filed Jun. 26, 1978, Ser. No. 919,220
Claims priority, application Japan, Jun. 30, 1977, 52-78668
Int. Cl.² A63B *49/10*
U.S. Cl. 273—73 C **10 Claims**



1. A frame of a game racket including a looped head portion for supporting strings, a handle portion, and a bridge piece which forms one side of a triangular throat portion which connects said head portion and said handle portion comprising:
a continuous first frame member extending along a first side of said handle portion around the looped head portion and returning along a second side of said handle portion;
a second frame member extending around the inside portion of said looped head portion and being closed by said bridge piece, said bridge piece being solid and formed integrally with said second frame member;

two leg members being formed integrally with said second frame member and coextending with said first frame member to form said handle;

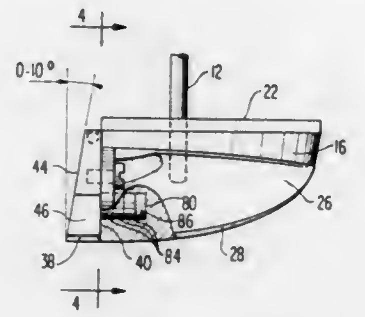
said second frame member being channel shaped and including a bottom wall and an open end, said open end thereof facing outwardly around said looped head portion;

said leg members being channel shaped, and including a bottom wall and an open end with said open end facing outwardly and extending from said looped head portion from adjacent each side of said bridge piece thereby forming said triangular throat portion therebetween, said bottom wall of each of said leg members being joined together into a I-shaped adjacent said triangular throat portion and extending downwardly to form an interior support of said handle portion;

said continuous first frame member extending around the outside peripheral portions to close said open end of the channel of said second frame member and said leg members and forming an internal space therebetween.

4,194,739
ADJUSTABLE GOLF PUTTER

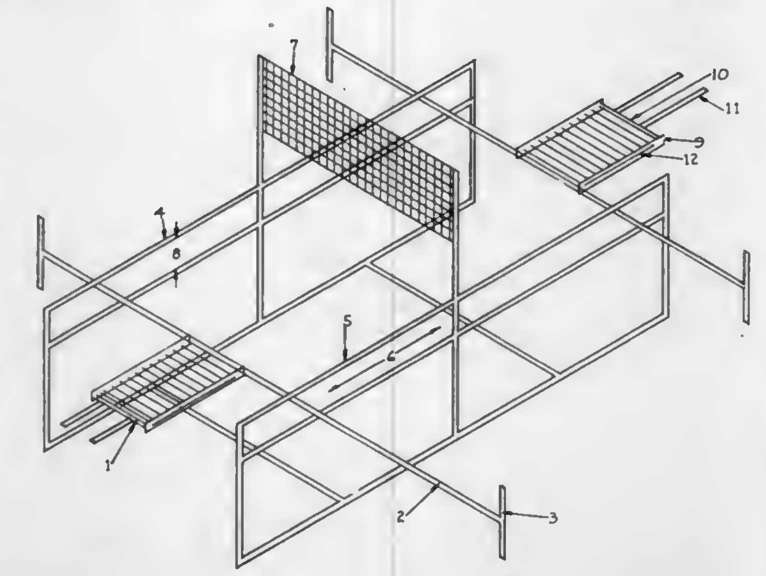
Woodrow F. Thompson, 440 Pine Villa Dr., Atlantis, Fla. 33462
Continuation-in-part of Ser. No. 852,644, Nov. 18, 1977, abandoned. This application Aug. 8, 1978, Ser. No. 932,081
Int. Cl.^{2} A63B *53/06*
U.S. Cl. 273—79 **6 Claims**



1. A golf putter comprising a head having a flat elongated front face and rearwardly tapering sides and bottom surfaces, a shaft secured to said head at an angle greater than 90° relative to the length of said elongated face on said head and disposed parallel to the plane of said face on said head, a putter face member rotatably mounted on said head for rotating about an axis perpendicular to said face of said head and means for securing said putter face to said head in a plurality of positions relative to said head, said putter face member being provided with a flat rear face engageable with the flat front face of said head and a front ball engaging face inclined relative to the rear face of the face member, said putter head being provided with a vertical plane of symmetry in a putting direction with a bore located in a flat front surface on said line of symmetry and said face member being provided with a pin on the rear surface thereof extending into said bore for rotatably mounting said face member on said head, at least one curved slot extending through the front face of said head with said bore as the center of curvature for said slot and screw means extending through said slot into threaded engagement with a bore in the rear face of said face member for securing said face member in adjusted angular position relative to said head, and level indicating means located on the upper surface of said face member and extending parallel to the line of intersection of the planes of the front and rear faces of the face member.

4,194,740
TWO MAN VOLLEYBALL

Michael G. Pase, 11902 Mulberry Ave., Cumberland, Md. 21502
Filed Apr. 25, 1977, Ser. No. 790,260
Int. Cl.^{2} A63B *71/00*
U.S. Cl. 273—411 **2 Claims**



1. A game apparatus comprising:

a frame having first and second longitudinal sides and first and second lateral ends;

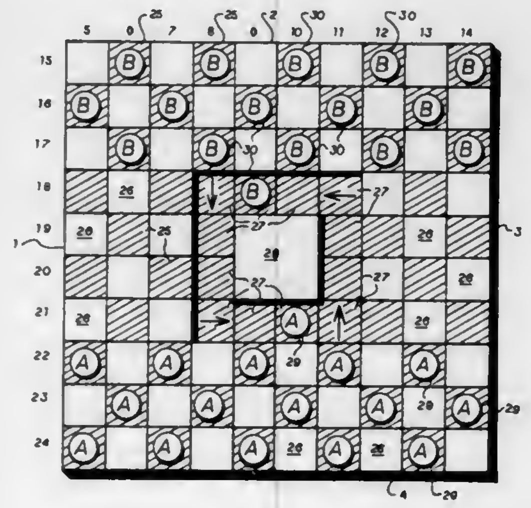
a net mounted on said frame midway between said lateral ends and extending between said longitudinal sides;

first support means slidably mounted on said frame between said net and one of said ends for movement longitudinally, laterally and vertically with respect to said frame; and

first racket means mounted on said first support means and adapted to be rotated between horizontal and vertical planes by a first player in attempting to hit a ball over said net to the other end of said frame.

4,194,741
BOARD GAME APPARATUS

David M. Rea, 12106 Lerner Pl., Bowie, Md. 20715
Filed Jun. 30, 1978, Ser. No. 920,990
Int. Cl.^{2} A63F *3/00, 3/02*
U.S. Cl. 273—243 **11 Claims**



1. Game apparatus, comprising:

a game board having a top surface divided by indicia into playing positions and non-playing positions being arranged in a grid formed by a plurality of rows extending between two opposite sides of the game board and columns extending between two opposite ends of the game board, with an orientation of the game board such that two players will respectively assume positions adjacent the opposite ends of the game board; said playing and non-playing positions being divided into three areas; the first area comprising playing spaces having first playing indicia alternating with non-playing spaces having second non-playing indicia different from said first indicia around the entire outer periphery of the game board as defined by the outermost columns and rows; a second playing area within the first area being defined by a plurality of playing spaces having playing indicia different from said second indicia connected in a continuous four-sided ring; a third non-playing area within the ring having non-playing indicia different from the first indicia; and directional indicia on said second area indicating distinct forward and backward directions of annular playing movement around said ring;

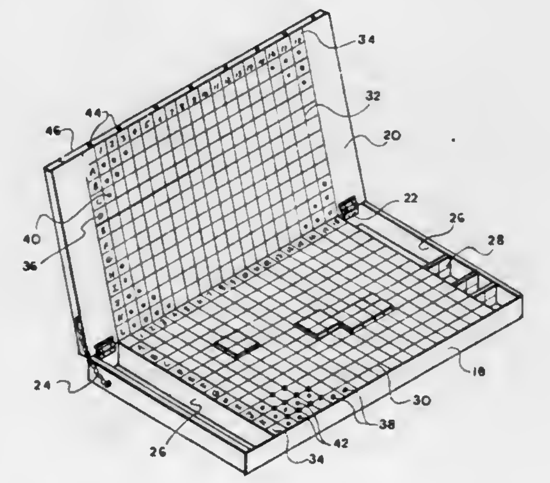
a chance controlled member having a plurality of faces; one of said faces being provided with directional indicia correlated to said first-mentioned directional indicia on said second playing area representing game piece move instructions of only said forward playing direction of movement around the ring;

another of said faces being provided with directional indicia different from the directional indicia of said one face and correlated to said first-mentioned directional indicia on said second playing area representing game piece move instructions of only said backward playing direction of movement around the ring; and

a first set of game pieces substantially identical to each other and adapted to be placed only on the playing spaces, and a second set of substantially identical game pieces having indicia distinguishing them from the first set of game pieces, so that each player may have their own set of game pieces.

4,194,742
LAND AND SEA WAR GAME APPARATUS

Ezra J. Adams, 15818 Davis Cup La., Ramona, Calif. 92065
Filed Jul. 31, 1978, Ser. No. 929,572
Int. Cl.^{2} A63F *3/00*
U.S. Cl. 273—265 **8 Claims**



1. Land and sea war game apparatus of the type whereby opposing players in turn launch hypothetical missiles to attempt hits upon targets on an opponent's playboard, said apparatus comprising:

(a) a pair of identical assemblies each including a playboard, horizontal in use, with a visual shield board connected to the playboard and disposable in upstanding position between the players, said playboard and shield board having intersecting grid lines with equally spaced co-ordinately identified center sockets at the centers of the squares defined by the grid lines;

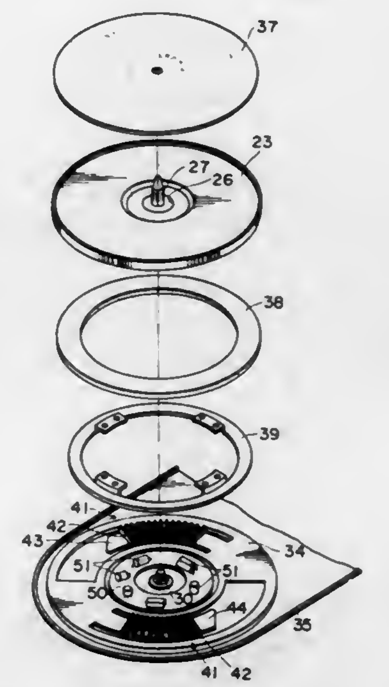
(b) said playboard having additional intersection sockets at the intersections of said grid lines;

(c) playing piece targets having portions removably insertable in said center sockets; and

(d) multiple targets-supporting platforms each having a portion insertable selectively in said intersection sockets, said platforms having means for arbitrarily mounting a plurality of targets over a plurality of said squares so that the targets on said platforms may be co-ordinately identified and distinguished from targets not on said platforms, whereby the board has bi-element, land and sea character with said platforms representing land masses on a sea represented by areas of the playboard not covered by said platforms, in the playing of sea and land war games and the like.

4,194,743
RECORD PLAYER

Mitsuo Ohsawa, Chigasaki, and Hiroshi Kawagoe, Nakazawa both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 19, 1978, Ser. No. 943,748
Claims priority, application Japan, Sep. 22, 1977, 52-127763[U]
Int. Cl.^{2} G11B *3/60;* H02K *1/22, 21/12*
U.S. Cl. 274—1 E **19 Claims**



1. A phonograph record player comprising:

a base;

a turntable rotatably mounted on said base;

rotor motor mounted on said turntable for providing a magnetic field, said rotor means including an annular magnet arranged coaxially on said turntable on the side of the latter facing said base; and

stator means fixed relative to said base so as to confront the magnetic field of said rotor means for exerting a torque on the rotor means, thereby causing said turntable to rotate, said stator means including coil means arranged upon respective tongue means formed integrally with said base, each said tongue means constituting a magnetic core for the respective coil means.

4,194,744
PHONOGRAPH PICK-UP TRANSDUCER USING A ONE-PIECE BEARING AND INERTIAL DAMPER FABRICATED FROM DIFFERENT MATERIALS

Allen R. Groh, Buffalo Grove; Frank J. Karlov, Park Ridge, and Lawrence R. Happ, Mundelein, all of Ill., assignors to Shure Brothers, Incorporated, Evanston, Ill.
Filed Feb. 1, 1978, Ser. No. 874,054
Int. Cl.^{2} G11B *3/02*
U.S. Cl. 274—37 **6 Claims**

1. In a phonograph pick-up, an improved arrangement for resiliently supporting a stylus armature for vibratory motion with respect to a relatively fixed structure while suppressing unwanted vibrations in said stylus armature which comprises, in combination:

a receiving socket in said structure and a one-piece elastomeric member comprising an annular bearing section fabricated from butyl rubber mixed with 20 to 50 percent natural rubber and a cantilevered inertial damping section two leg members being formed integrally with said second frame member and coextending with said first frame member to form said handle;

said second frame member being channel shaped and including a bottom wall and an open end, said open end thereof facing outwardly around said looped head portion;

said leg members being channel shaped, and including a bottom wall and an open end with said open end facing outwardly and extending from said looped head portion from adjacent each side of said bridge piece thereby forming said triangular throat portion therebetween, said bottom wall of each of said leg members being joined together into a I-shaped adjacent said triangular throat portion and extending downwardly to form an interior support of said handle portion;

said continuous first frame member extending around the outside peripheral portions to close said open end of the channel of said second frame member and said leg members and forming an internal space therebetween.

4,194,739

ADJUSTABLE GOLF PUTTER

Woodrow F. Thompson, 440 Pine Villa Dr., Atlanta, Fla. 33462
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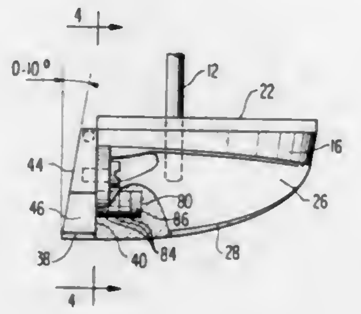
Int. Cl.^{2} A63B *53/06*
U.S. Cl. 273—79 **6 Claims**

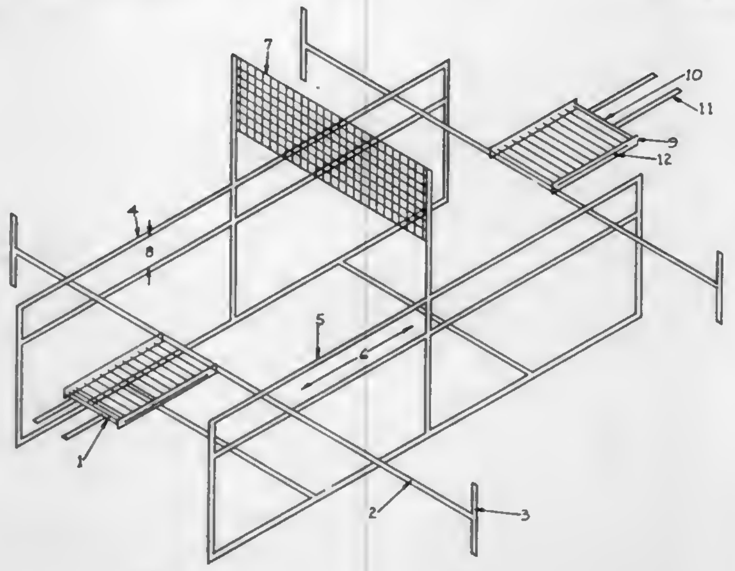


1. A golf putter comprising a head having a flat elongated front face and rearwardly tapering sides and bottom surfaces, a shaft secured to said head at an angle greater than 90° relative to the length of said elongated face on said head and disposed parallel to the plane of said face on said head, a putter face member rotatably mounted on said head for rotating about an axis perpendicular to said face of said head and means for securing said putter face to said head in a plurality of positions relative to said head, said putter face member being provided with a flat rear face engageable with the flat front face of said head and a front ball engaging face inclined relative to the rear face of the face member, said putter head being provided with a vertical plane of symmetry in a putting direction with a bore located in a flat front surface on said line of symmetry and said face member being provided with a pin on the rear surface thereof extending into said bore for rotatably mounting said face member on said head, at least one curved slot extending through the front face of said head with said bore as the center of curvature for said slot and screw means extending through said slot into threaded engagement with a bore in the rear face of said face member for securing said face member in adjusted angular position relative to said head, and level indicating means located on the upper surface of said face member and extending parallel to the line of intersection of the planes of the front and rear faces of the face member.

4,194,740

TWO MAN VOLLEYBALL

Michael G. Pase, 11902 Mulberry Ave., Cumberland, Md. 21502
Filed Apr. 25, 1977, Ser. No. 790,260
Int. Cl.^{2} A63B *71/00*
U.S. Cl. 273—411 **2 Claims**



1. A game apparatus comprising:

a frame having first and second longitudinal sides and first and second lateral ends;

a net mounted on said frame midway between said lateral ends and extending between said longitudinal sides;

first support means slidably mounted on said frame between said net and one of said ends for movement longitudinally, laterally and vertically with respect to said frame; and

first racket means mounted on said first support means and adapted to be rotated between horizontal and vertical planes by a first player in attempting to hit a ball over said net to the other end of said frame.

4,194,741

BOARD GAME APPARATUS

David M. Rea, 12106 Lerner Pl., Bowie, Md. 20715
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Int. Cl.^{2} A63F *3/00, 3/02*
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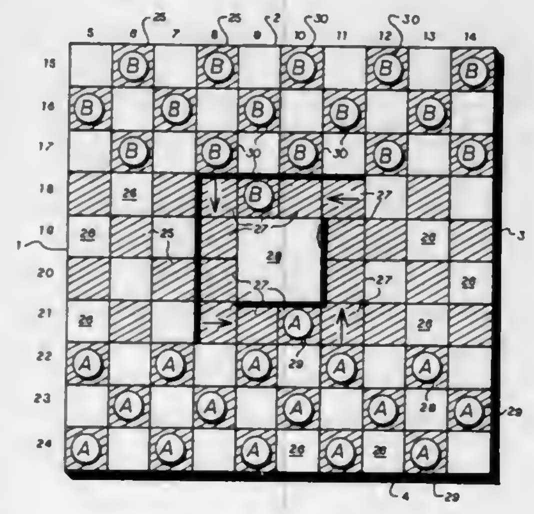

1. Game apparatus, comprising:

a game board having a top surface divided by indicia into playing positions and non-playing positions being arranged in a grid formed by a plurality of rows extending between two opposite sides of the game board and columns extending between two opposite ends of the game board, with an orientation of the game board such that two players will respectively assume positions adjacent the opposite ends of the game board; said playing and non-playing positions being divided into three areas; the first area comprising playing spaces having first playing indicia alternating with non-playing spaces having second non-playing indicia different from said first indicia around the entire outer periphery of the game board as defined by the outermost columns and rows; a second playing area within the first area being defined by a plurality of playing spaces having playing indicia different from said second indicia connected in a continuous four-sided ring; a third non-playing area within the ring having non-playing indicia different from the first indicia; and directional indicia on said second area indicating distinct forward and backward directions of annular playing movement around said ring;

a chance controlled member having a plurality of faces; one of said faces being provided with directional indicia correlated to said first-mentioned directional indicia on said second playing area representing game piece move instructions of only said forward playing direction of movement around the ring;

another of said faces being provided with directional indicia different from the directional indicia of said one face and correlated to said first-mentioned directional indicia on said second playing area representing game piece move instructions of only said backward playing direction of movement around the ring; and

a first set of game pieces substantially identical to each other and adapted to be placed only on the playing spaces, and a second set of substantially identical game pieces having indicia distinguishing them from the first set of game pieces, so that each player may have their own set of game pieces.

4,194,742

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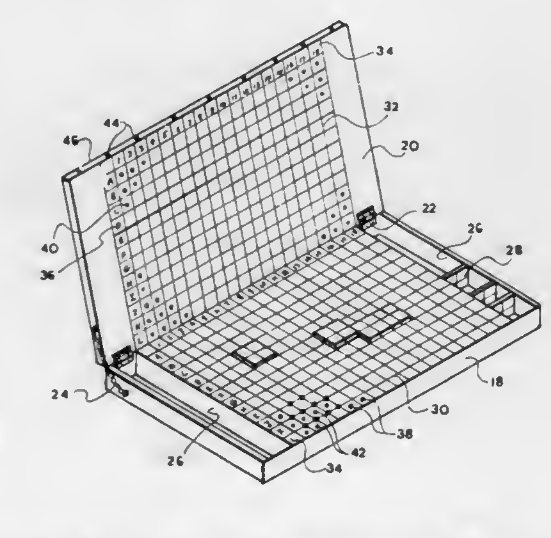
Filed Jul. 31, 1978, Ser. No. 929,572
Int. Cl.^{2} A63F *3/00*
U.S. Cl. 273—265 **8 Claims**



1. Land and sea war game apparatus of the type whereby opposing players in turn launch hypothetical missiles to attempt hits upon targets on an opponent's playboard, said apparatus comprising:

(a) a pair of identical assemblies each including a playboard, horizontal in use, with a visual shield board connected to the playboard and disposable in upstanding position between the players, said playboard and shield board having intersecting grid lines with equally spaced co-ordinately identified center sockets at the centers of the squares defined by the grid lines;

(b) said playboard having additional intersection sockets at the intersections of said grid lines;

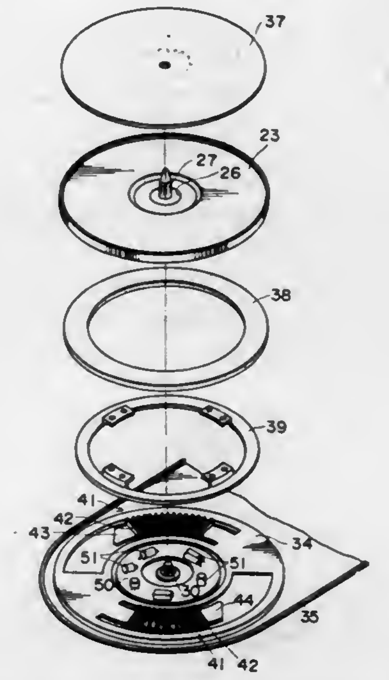
(c) playing piece targets having portions removably insertable in said center sockets; and

(d) multiple targets-supporting platforms each having a portion insertable selectively in said intersection sockets, said platforms having means for arbitrarily mounting a plurality of targets over a plurality of said squares so that the targets on said platforms may be co-ordinately identified and distinguished from targets not on said platforms, whereby the board has bi-element, land and sea character with said platforms representing land masses on a sea represented by areas of the playboard not covered by said platforms, in the playing of sea and land war games and the like.

4,194,743

RECORD PLAYER

Mitsuo Ohsawa, Chigasaki, and Hiroshi Kawagoe, Nakazawa both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 19, 1978, Ser. No. 943,748
Claims priority, application Japan, Sep. 22, 1977, 52-127763[U]
Int. Cl.^{2} G11B *3/60;* **H02K** *1/22, 21/12*
U.S. Cl. 274—1 E **19 Claims**



1. A phonograph record player comprising:

a base;

a turntable rotatably mounted on said base;

rotor motor mounted on said turntable for providing a magnetic field, said rotor means including an annular magnet arranged coaxially on said turntable on the side of the latter facing said base; and

stator means fixed relative to said base so as to confront the magnetic field of said rotor means for exerting a torque on the rotor means, thereby causing said turntable to rotate, said stator means including coil means arranged upon respective tongue means formed integrally with said base, each said tongue means constituting a magnetic core for the respective coil means.

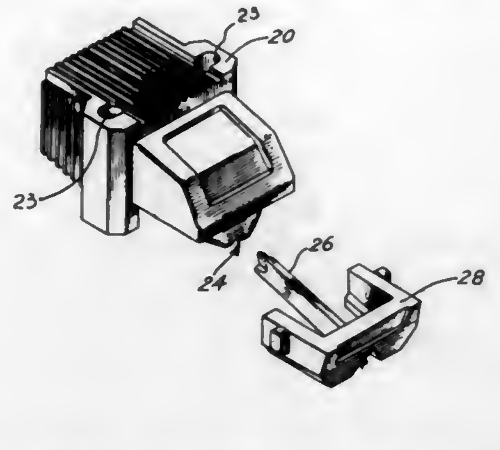
4,194,744

PHONOGRAPH PICK-UP TRANSDUCER USING A ONE-PIECE BEARING AND INERTIAL DAMPER FABRICATED FROM DIFFERENT MATERIALS

Allen R. Groh, Buffalo Grove; Frank J. Karlov, Park Ridge, and Lawrence R. Happ, Mundelein, all of Ill., assignors to Shure Brothers, Incorporated, Evanston, Ill.
Filed Feb. 1, 1978, Ser. No. 874,054
Int. Cl.^{2} G11B *3/02*
U.S. Cl. 274—37 **6 Claims**

1. In a phonograph pick-up, an improved arrangement for resiliently supporting a stylus armature for vibratory motion with respect to a relatively fixed structure while suppressing unwanted vibrations in said stylus armature which comprises, in combination:

a receiving socket in said structure and a one-piece elastomeric member comprising an annular bearing section fabricated from butyl rubber mixed with 20 to 50 percent natural rubber and a cantilevered inertial damping section fabricated from substantially all butyl rubber said annular bearing section surrounding said stylus armature and



being inserted under compression into said socket, and said damping section being stretched over said armature and held in contact therewith.

4,194,745

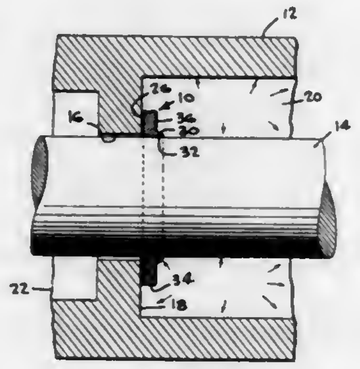
CONTROLLED CLEARANCE SEAL

Thomas L. McDougal, Rte. 4 (U.S. Rte. 250 S), Grafton, W. Va. 26354

Filed May 2, 1979, Ser. No. 35,305

Int. Cl.² F16J *15/34, 15/40*

U.S. Cl. 277—27 **6 Claims**



1. A controlled clearance seal for use on a shaft rotatably supported in a housing to seal high pressure hydraulic fluid in a housing having a sealing face adjacent the shaft and symmetrical with respect to the center line of the shaft, said seal comprising a generally annular body formed of a high strength material having a coefficient of expansion slightly greater than the coefficient of expansion of said shaft, said body having a sealing face engageable with said sealing face on said housing, said body having a flange portion projecting axially away from said sealing face on said body with said flange portion having an inner circumferential surface engageable with said shaft with said inner surface having an inside diameter slightly larger than the diameter of said shaft thereby permitting said body to rotate with said shaft until high pressure hydraulic fluid presses said sealing face on said body against said sealing face on the housing to frictionally retain the seal body in a fixed position relative to said housing and causing said flange to be compressed radially to decrease clearance between said body and said shaft causing said body to rub said shaft with resulting friction generating heat which causes expansion of said body and said shaft, whereupon said body expands at a greater rate than said shaft permitting the clearance between said body and said shaft to increase until rubbing of said shaft by said body ceases, thus stopping the heat generation whereupon said body instantly contracts due to cooling and pressure, until said body and said shaft again come into rubbing contact, with such cycle as just described involving rubbing, heating, expansion, cooling, contraction, and rubbing, being repeated several times per second resulting in a dynamic balance of said forces thereby establishing a virtually constant controlled clearance between said body and said shaft resulting in an extremely low leakage rate over a wide range of temperatures and pressures with such operational efficiency of said seal being a direct result of the combination of cross-section design and high strength material selection.

4,194,746

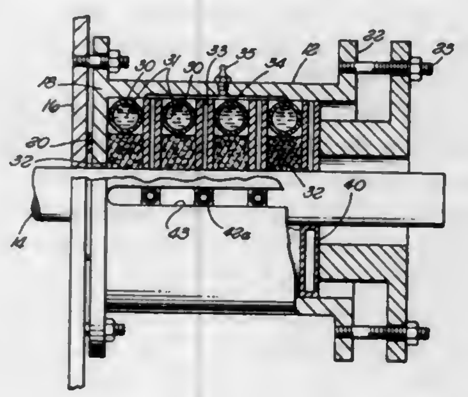
RADIALLY COMPRESSED ROTARY SHAFT SEALING DEVICE

James N. Stevens, 1016 W.Montana, Chicago, Ill. 60614

Filed Jun. 16, 1978, Ser. No. 916,081

Int. Cl.² F16J *15/46*

U.S. Cl. 277—34.3 **5 Claims**



1. A shaft sealing assembly for attachment about a rotatable shaft for preventing leaking along the shaft comprising:

an elongated housing defining a chamber therein, the housing positioned about the shaft, the shaft extending through the chamber;

end plate means having an opening therethrough, the end plate means enclosing one end of the chamber with the shaft passing through the opening therethrough;

at least one packing means positioned in the chamber and encircling the shaft, the packing means positioned adjacent one another along the shaft, each packing means comprising:

a compressible packing encircling the shaft;

a fluid filled elastomeric compression ring encircling the compressible packing, the compression ring having an enclosed, hollow toroidal region therein for retaining the fluid; and

spacer means positioned around the shaft, and axially adjacent to the compressible packing and the elastomeric compression ring, each spacer means being axially movable relative to the shaft; and

gland follower means positioned for exerting a force against the packing means for axially compressing each packing means in the housing chamber between the end plate means and the gland follower means, each compression ring thereupon exerting a radial compression force against the radially adjacent packing ring for pressing the packing ring uniformly against the shaft about its circumference.

4,194,747

THREE-PIECE OIL CONTROL RING

Kenneth J. Nisper, Muskegon, Mich., assignor to Muskegon Piston Ring Company, Muskegon, Mich.

Filed Dec. 5, 1978, Ser. No. 966,647

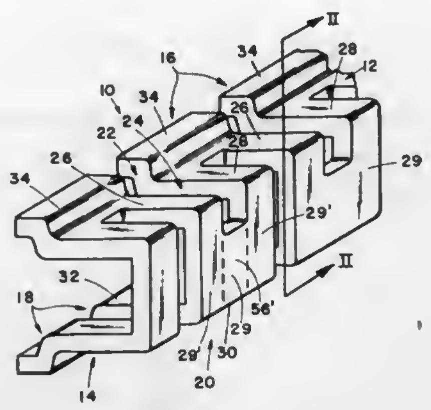
Int. Cl.² F16J *9/20*

U.S. Cl. 277—140 **20 Claims**

1. A circumferential spacer-expander for an oil control ring, comprising:

a plurality of interconnected spring elements; and

means for interconnecting said spring elements and for defining a top rail stop; said spring elements each including a generally U-shaped member in axial section having a top leg, a bottom leg and a base interconnecting said top and bottom legs, said top leg having a radial slot formed therein extending from an inner radial edge along the entire radial length of said top leg, and said bottom leg being slotless whereby the centroid of each spring element



is located axially above the circumferential center line of said spacer-expander.

4,194,748

RADIAL SHAFT SEALING RING

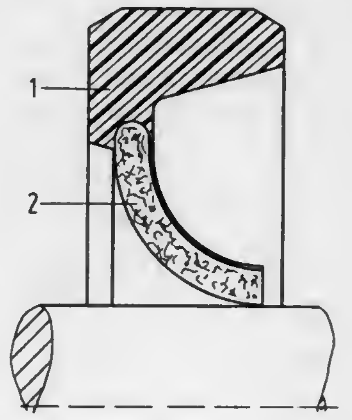
Hans Forch, Birkenau, and Helmut Niklas, Weinheim an der Bergstrasse, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Continuation of Ser. No. 760,217, Jan. 17, 1977, abandoned. This application Mar. 9, 1978, Ser. No. 885,055

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1976, 7602075[U]

Int. Cl.² F16J *15/32*

U.S. Cl. 277—152 **16 Claims**



1. In a sealed radial shaft assembly comprising a radial shaft and a flat flexible annular sealing ring, the inner portion of said ring encircling said shaft, said sealing ring having fiber ends projecting therefrom and contacting said shaft so as to enhance said seal, the improvement which comprises an integral casing molded on the outside of said ring with the outer portion of the ring embedded in the casing to maintain the inner portion of the ring in contact with the shaft in an axially deflected position whereby the flexibility of the ring permits flexible sealing of the shaft independent of mounting tolerances.

4,194,749

SEALING RING

Maurice J. Bonafous, Oloron, France, assignor to Applications Mecaniques et Robinetterie Industrielle, Paris, France

Filed Jul. 26, 1978, Ser. No. 927,996

Claims priority, application France, Jul. 26, 1977, 77 22976

Int. Cl.² F16J *15/32*

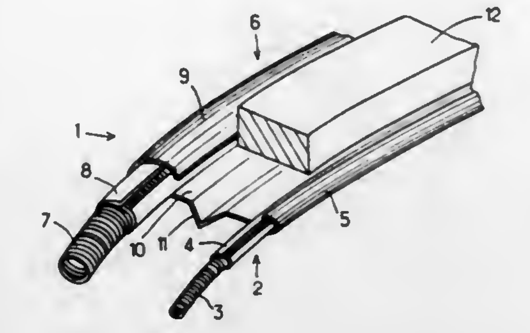
U.S. Cl. 277—163 **12 Claims**

1. A double toric sealing ring for sealing against a sealing surface and being self centering with respect thereto, and also functioning to obtain a static seal with respect to the base of a housing, comprising:

a. a first toric sealing ring structure for obtaining a static seal with respect to said base of the housing;

b. a second toric sealing ring structure for sealing against the sealing surface;

c. a sealed and elastically deformable structure mounting said first toric sealing ring on one side against said base



housing and resiliently mounting said second toric sealing ring on a second side, with said first and second sealing rings being mounted substantially coaxially, such that the resilient mounting of said second toric sealing ring enables it to be self-centering with respect to the sealing surface.

4,194,750

SEALING DEVICE WITH EXTERNAL DEFORMABLE FLANGES

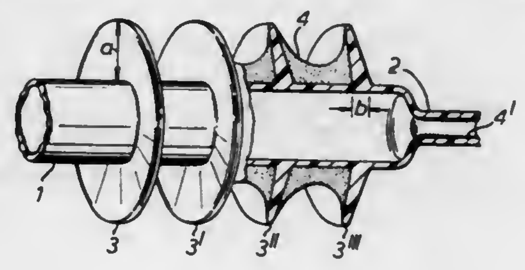
Richard C. Sovish, Waterloo, and Marc F. L. Moisson, Strombeek-Bever, both of Belgium, assignors to N.V. Raychem S.A., Kessel-lo, Belgium

Filed Nov. 2, 1977, Ser. No. 847,823

Claims priority, application United Kingdom, Nov. 3, 1976, 45725/76

Int. Cl.² F16J *15/32*

U.S. Cl. 277—208 **34 Claims**



1. A sealing device suitable for use as a duct seal comprising a hollow body member made of a polymeric material and provided on its outer surface with a plurality of spaced apart flanges, such flanges having a peripheral region remote from the surface that is substantially rigid at the maximum temperature likely to be encountered in use of the device and deformable only at elevated temperatures greater than said maximum temperature, wherein at least part of the outer surface of the hollow body body member has sealant thereon.

4,194,751

ROLLING TYPE ATHLETIC APPARATUS

Tomisaku Shinmura, No. 1343-3, Kobitomi-cho, Hamamatsu-shi, Shizuoka-ken, Japan

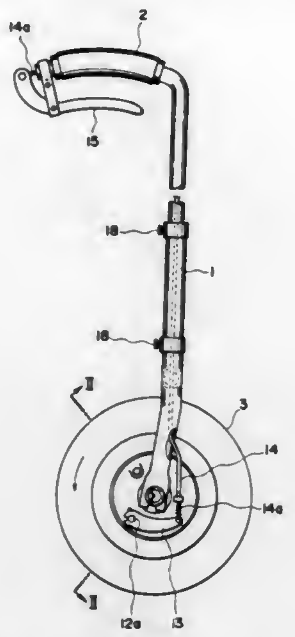
Filed Jul. 18, 1978, Ser. No. 925,841

Int. Cl.² A63C *17/14*

U.S. Cl. 280—11.2 **3 Claims**

1. Rolling type athletic apparatus comprising support rod means, a handle at one end of said support rod means, an axle at the other end of said support rod means, a wheel rotatably mounted on said axle, a foot support associated with said support rod means adjacent said wheel, said wheel defining an annular recess surrounding said axle, said recess having an inner periphery and an outer periphery, a side plate means fixed relative to said support rod means, said side plate means having a portion adjacent said recess, brake shoe means located in said recess, said brake shoe means being carried by said side plate means, said outer periphery of said recess forming a brake

drum for said brake shoe means, actuating means associated with said side plate means for moving said brake shoe means into and out of engagement with said outer periphery of said recess, operating means for said actuating means at said one end of said support rod means, linkage means connected between said operating means and said actuating means and one-way clutch means disposed within said recess between said brake shoe means and said inner periphery of said recess for permitting relative rotation between said wheel and said side plate means in one direction only.



4,194,752
SKATEBOARD

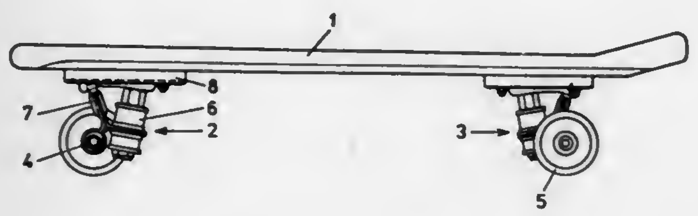
Gerhard Tilch; Wolfgang Friedrich, both of Schweinfurt; Herbert Dobhan, Bergrheinfeld; Hermann Hetterich, Heidenfeld; Peter Horling, Mainberg, and Sigismund Finzel, Dittelbrunn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,519

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 7802146

Int. Cl.² A63C *17/02*

U.S. Cl. 280—11.28 **1 Claim**



1. A skateboard comprising an elongated board, a pair of trucks mounted to said board adjacent opposite ends thereof, each truck having a pair of rotatable wheels, said truck comprising a tensile elastic suspension assembly and a pivot support member, said pivot support member consisting of a universally moveble ball and socket joint, said truck formed by a pair of complementary truck sections formed of sheet metal, one of said truck sections being of Y-shaped cross section and including an axle support portion formed by the stem of the Y and angularly disposed leg sections, a second complementary truck section of V-shaped cross section and of a predetermined configuration to fit and lie between the legs of said first truck section, said truck sections being connected by welding and being provided with stiffening ribs, means defining a groove-type recess in said axle within which the legs of the second truck section engage thereby to center the axle in the axle support portion, said pivot support comprising a ball head having a depending cylindrical pin which seats in a pocket formed by the arcuately shaped projections in one leg of the first and second truck sections, said ball head engaging a spherical cup formed in a complementary shaped portion of the base plate.

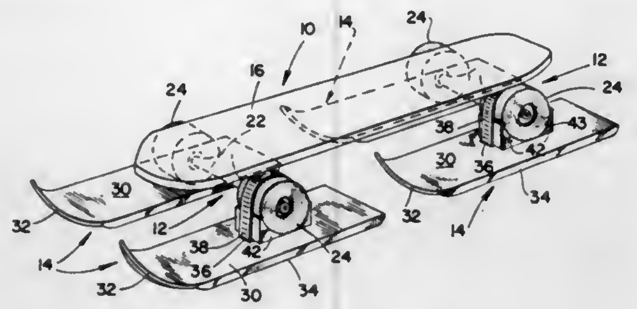
4,194,753
SKI-SHOE-ATTACHMENT APPARATUS FOR SKATEBOARDS

Delbert Schrishuhn, Jr., 18808 E. Petunia, Azusa, Calif. 91702

Filed Jul. 10, 1978, Ser. No. 922,977

Int. Cl.² B62B *19/02, 13/06;* **A63C** *17/18*

U.S. Cl. 280—13 **4 Claims**



1. A ski-shoe apparatus that is arranged to be removably mounted to each wheel of a conventional skateboard having a wheel-and-truck assembly, wherein said ski-shoe apparatus comprises:

a first pair of ski shoes removably mounted to the respective wheels of the forward wheel-and-truck assembly; and

a second pair of ski shoes removably mounted to the respective wheels of the rear wheel-and-truck assembly; wherein each ski shoe thereof comprises:

a substantially flat carriage platform having an upturned forward end member formed thereon;

a pair of depending flanged runners, located longitudinally along each side of said carriage platform; and

means of removably securing said ski shoe to said respective wheels thereof; wherein said securing means comprises:

a pair of longitudinally aligned slots disposed in said carriage;

a flexible strap member received in said aligned slots to clamp about said wheels;

means for holding said wheels in a fixed position relative to said carriage and strap member; and

means for adjusting said straps about said wheels and said holding means, whereby each ski shoe thereof is mounted to each respective wheel so as to allow individual movement of each ski shoe with the movement of said wheel attached thereto.

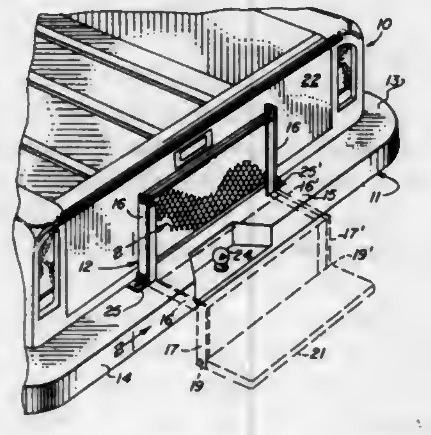
4,194,754
FOLDING STEP FOR PICKUP TRUCKS

Roger W. Hightower, 1224 Northside Dr., Prescott, Ariz. 86301

Filed Jul. 21, 1978, Ser. No. 926,826

Int. Cl.² B60R *3/02*

U.S. Cl. 280—166 **1 Claim**



1. A foldable step assembly for use on a pickup truck equipped with a vertically positioned tailgate and a rear bumper arranged outwardly of said tailgate and having a flat top surface comprising:

a substantially flat top step formed of aluminum,

a first pair of right angle members having a common side of each member secured to the underside of said top step,

means for pivotally mounting common ends of said first pair of right angle members to the top surface of the rear bumper of a pickup truck at spaced points juxtapositioned to its tailgate so that said common side of each of said first pair of right angle members lies across substantially the width of the top surface of said bumper,

a pair of right angle support brackets each pivotally mounted at common ends one to each of the other ends of said first pair of right angle members,

said other ends of said first pair of right angle members being provided with a first pair of edges perpendicularly arranged to the pivotal movement of said support brackets and forming a first stop for limiting the pivotal movement of said support brackets in a direction toward said top step,

a substantially flat bottom step formed of aluminum,

a second pair of right angle members having a common side of each member secured to the top surface of said bottom step,

means for pivotally connecting common ends of said second pair of right angle members one to each of the free ends of support brackets,

a common surface of said support brackets forming a second stop for limiting the pivotal movement of said second pair of right angle members about the free ends of said support brackets when said bottom step reaches substantially a horizontal position,

the underside of said top step being notched to receive the top of a ball hitch mounted on the bumper.

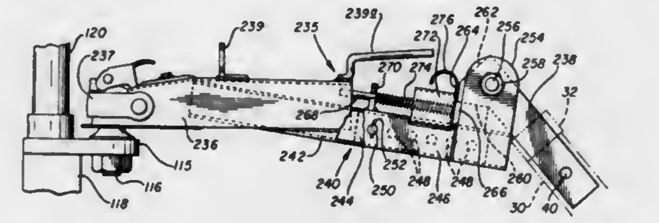
4,194,755
TOW BAR FOR VEHICLES

John W. Youngblood, 3201 Franklin Ave., Waco, Tex. 76710

Continuation-in-part of Ser. No. 894,783, Apr. 10, 1978. This application Jul. 20, 1978, Ser. No. 926,508

Int. Cl.² B60P *3/06;* **B62D** *53/04*

U.S. Cl. 280—402 **5 Claims**



1. Apparatus for detachably securing a vehicle to be towed to a hitch on a towing vehicle comprising: a generally inclined vertically extending member, said vertically extending member having an upper end with a dog formed thereon to form a first lower surface and a second inclined upper surface; means securing said inclined vertically extending member to the chassis of said towed vehicle; connector means pivotally secured to the upper end of said inclined vertically extending member adjacent the dog formed thereon; hitch coupling means secured to the outer end of said connector means to engage the hitch on the towing vehicle; and a block slideably disposed along said connector means adapted to slide between the lower surface formed on said dog of said inclined vertically extending member and the upper surface of said connector means when the connector means is secured in a generally horizontal position for connecting to a hitch, said block being adapted to be withdrawn from between said first lower surface of the dog and the connector means to enable said connector means to be pivoted to a generally vertical position with the block then being slideably disposed between the second inclined upper surface of said dog and the upper surface of said connector means to limit pivotal movement downwardly.

4,194,756
LIFTING DEVICE AND ASSOCIATED STRUCTURE

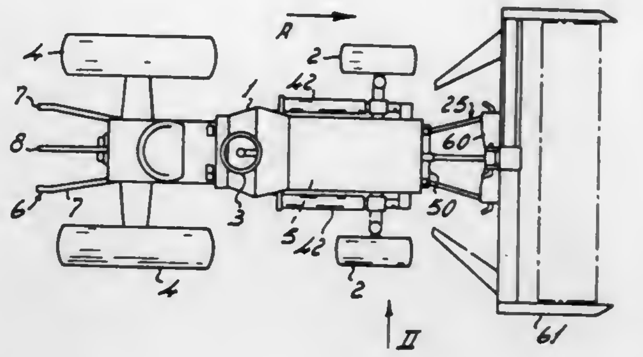
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Apr. 19, 1977, Ser. No. 788,915

Claims priority, application Netherlands, Apr. 23, 1976, 7604307

Int. Cl.² A01B *59/06*

U.S. Cl. 280—461 A **5 Claims**



1. A hydraulic lifting device in combination with a tractor including a tractor frame which is supported by ground engaging wheels, the device comprising three-point lifting means, said three-point lifting means being provided with means coupling said lifting device to the tractor so as to be pivotable as a single unit with respect to the tractor about a substantially horizontal axis that is parallel to the normal forward direction of travel by the tractor.

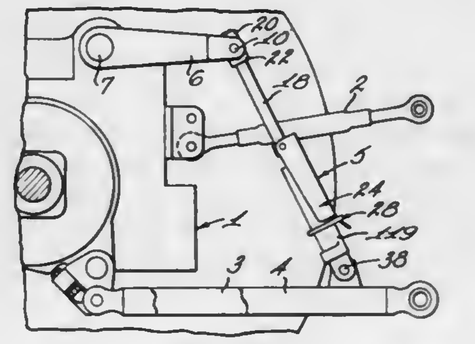
4,194,757
ADJUSTABLE LIFT LINK FOR A THREE-POINT HITCH

James H. Lucas, and David A. Berg, both of Milwaukee, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 16, 1978, Ser. No. 951,392

Int. Cl.² B60D *1/14*

U.S. Cl. 280—461 A **10 Claims**



1. A three-point hitch having an adjustable link comprising, a coupling adapted for mounting on a rock arm defining a spherical bearing, a lift link including a spherical bushing received in said bearing permitting universal pivotal movement of said link relative to said coupling, a screw member defining a cylindrical shank extending downwardly from said spherical bearing and bushing and defining a threaded end, a sleeve member having a square external surface and defining a threaded inner periphery receiving said threaded end of said screw member, a handle pivotally mounted for pivotal movement from a radial to an axial position on said screw member, said handle defining a square internal configuration for being received on said square sleeve member for locking said link axially, a keeper spring for retaining said handle in the locked position on said sleeve member.

4,194,758
BRAKE MECHANISM WHICH CAN BE MOUNTED ON A SKI

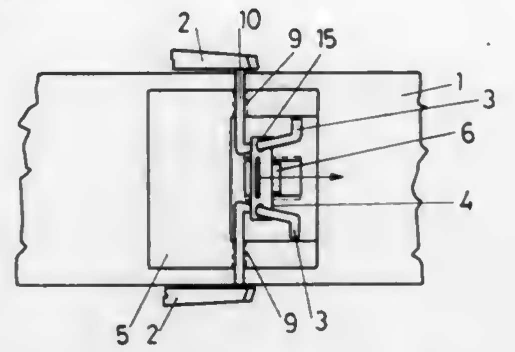
Josef Svoboda, Schwechat; Erwin Weigl, Brunn; Erwin Krob, Vienna; Karl Stritzl, Vienna, and Jaroslav Knotek, Vienna, all of Austria, assignors to TMC Corporation, Barr, Switzerland

Filed Apr. 26, 1978, Ser. No. 900,296

Claims priority, application Austria, Apr. 27, 1977, 2937/77

Int. Cl.^{2} A63C *7/10*

U.S. Cl. 280—605 **9 Claims**



1. A brake mechanism for use on skis, comprising:
- a base plate mounted on a top surface of said ski;
- a pair of laterally spaced brake members and bearing means supporting said brake members on said base plate for pivotal movement about a pivot axis and for movement toward and away from each other along said pivot axis, said brake members each having a braking arm and a holding arm, said brake members each being pivotal between an operative position wherein said braking arms project beneath a bottom surface of said ski and said holding arms project upwardly away from said top surface of said ski and an inoperative position wherein said braking arms are located above said top surface of said ski and said holding arms extend generally parallel to said top surface of said ski, said holding arms extend at an acute angle to each other when in said operative position;
- a slide piece having a pair of laterally spaced openings therein each receiving one of said holding arms therethrough, the spacing between said openings corresponding to the lateral spacing between said holding arms at the ends thereof closest the apex of said acute angle and when said holding arms are in said operative position; and
- means for effecting a sliding of said slide piece along the length of said holding arms in response to a movement of said brake members between said operative and inoperative positions thereof, said slide piece effecting a movement of said brake members toward and away from each other simultaneously with said movement thereof along the length of said holding arms and, particularly, a movement of said braking arms toward each other to said location above said top surface of said ski when said brake members are in said inoperative position.

4,194,759
BRAKE MECHANISM FOR A SKI

Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland

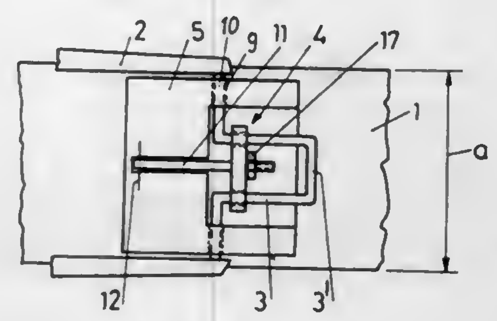
Filed Apr. 26, 1978, Ser. No. 900,303

Claims priority, application Austria, Apr. 27, 1977, 2938/77

Int. Cl.^{2} A63C *7/10*

U.S. Cl. 280—605 **8 Claims**

1. A brake mechanism for use on skis, comprising:
- a base plate mounted on a top surface of said ski;
- a pair of laterally spaced brake members and bearing means supporting said brake members on said base plate for pivotal movement about a pivot axis and for movement toward and away from each other along said pivot axis, said brake members each having a braking arm and a holding arm, said brake members each being pivotal between an operative position wherein said braking arms project beneath a bottom surface of said ski and said holding arms project upwardly away from said top surface of said ski and an inoperative position wherein said braking arms are located above said top surface of said ski and said holding arms extend generally parallel to said top surface of said ski, said holding arms extend at an acute angle to each other when in said operative position;
- a slide piece having a pair of laterally spaced openings therein each receiving one of said holding arms therethrough, the spacing between said openings corresponding to the lateral spacing between said holding arms at the ends thereof closest the apex of said acute angle and when said holding arms are in said operative position; and



- adjustment means operatively connected to said slide piece for effecting a sliding of said slide piece along the length of said holding arms and an adjustment of the lateral spacing of said brake members in response to said adjustment movement of said slide piece to accommodate varying widths of skis.

4,194,760
WHEEL CAMBER ADJUSTING MEANS FOR VEHICLES

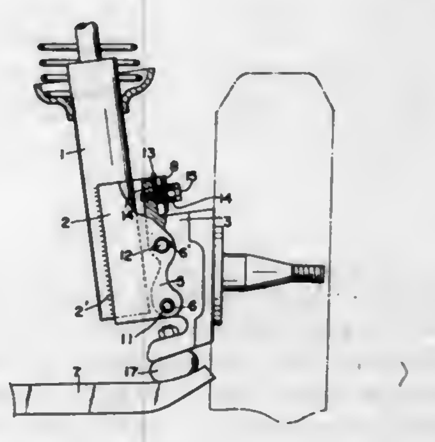
Masanao Shiomi; Yuuji Yokoya, and Motowo Harata, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 29, 1977, Ser. No. 837,682

Claims priority, application Japan, Apr. 18, 1977, 52-47742[U]

Int. Cl.^{2} B62D *17/00*

U.S. Cl. 280—661 **7 Claims**



1. A vehicular wheel camber adjusting mean for use with a Mc Pherson-type strut suspension which includes a shock absorbing strut having an outer cylinder, the strut being resiliently secured proximate the upper end thereof to a structural part of the vehicle, a coil spring surrounding the strut, the coil spring being located and acting between the upper end of the strut and the upper end of the outer cylinder, a lower arm having one end thereof connected to a structural part of the vehicle, the other end of the lower arm including a ball joint and a knuckle arm having one end thereof connected to the ball joint, said adjustment means comprising a bracket coupled to the outer cylinder proximate the lower end thereof, said bracket having a pair of arms integral therewith and first and second connecting holes through each said arm, said first connecting hole in each said arm being slotted, a portion of the knuckle arm being positioned between said pair of arms of said bracket and secured thereto by means of first and second connecting bolts each having a longitudinal axis extending through said first and second connecting holes, respectively, in the longitudinal direction of the vehicle, there being further included an adjusting bolt and at least one shim vertically spaced from said connecting bolts for coupling said bracket to the knuckle arm portion, the longitudinal axis of said adjusting bolt being substantially at a right angle to the longitudinal direction of the vehicle said adjusting bolt extending loosely through said bracket and being threaded into the knuckle arm whereby when said adjusting bolt is axially displaced the knuckle arm portion will pivot about the longitudinal axis of said second connecting bolt and said first connecting bolt will move within said slotted first connecting hole.

4,194,761
SUSPENSION SYSTEM FOR TRACKED VEHICLES

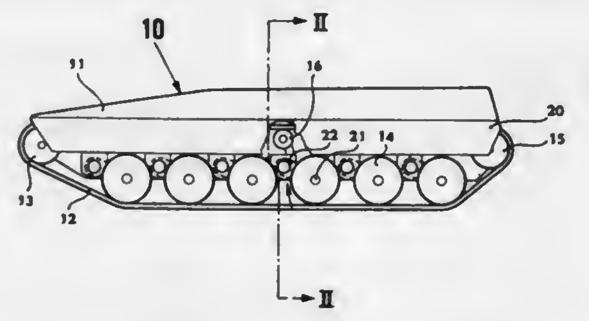
Alfons B. Falk, Bonassund; Antero E. Stenman, Ornskoldsvik, and Svante Wikland, Sjalevad, all of Sweden, assignors to Aktiebolaget Hagglund & Soner, Ornskoldsvik, Sweden

Filed May 16, 1978, Ser. No. 906,682

Claims priority, application Sweden, May 18, 1977, 7705890

Int. Cl.^{2} B62D *55/02*

U.S. Cl. 280—705 **23 Claims**



1. A suspension system for a tracked vehicle having a hull provided with crawler tracks positioned on either side of the hull, each crawler track running round a track drive wheel, track roller assemblies and a take-up idler; a torsion unit assembly for each roller assembly, each torsion unit assembly including a plurality of torsion units mechanically connected in series and a mounting lever sleeve surrounding the torsion units and connected to one end of the series of torsion units; means connecting the other end of the series to the hull; an inner bearing housing anchored to the hull and journalling one end of the sleeve; an outer bearing housing anchored to the hull by means of a supporting panel which lies laterally outward of the crawler track and which is integrated with the hull, said outer bearing housing journalling the other end of the sleeve; and a mounting lever fixed to the sleeve and supporting the respective roller assembly.

4,194,762
KNEE PROTECTING DEVICE FOR OCCUPANT OF VEHICLE

Yoichi Sudo, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

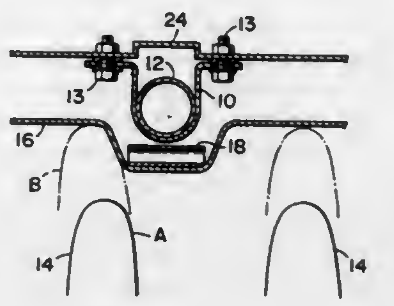
Filed Aug. 8, 1978, Ser. No. 931,931

Claims priority, application Japan, Aug. 8, 1977, 52/105928[U]

Int. Cl.^{2} B60R *21/08*

U.S. Cl. 280—751 **13 Claims**

1. In a vehicle having a passenger compartment with a rigid part protruding therein toward a passenger, the improvement comprising a knee protecting device for the passenger, said device comprising:
- a knee pad extending transversely across and adjacent the part between it and the knee of the passenger, said knee pad comprising a region intermediate the transverse ends thereof generally U-shaped in transverse cross-section, spaced a short distance from and partly surrounding the part; and
- an elongated transversely extending impact energy absorbing member between the knee pad and the part, said member being in abutment with and substantially transversely coextensive with the bight of the U-shaped region of the knee pad and being deformable upon impact by the knees in a collision.



4,194,763
HOLLOW BEARER FOR VEHICLES

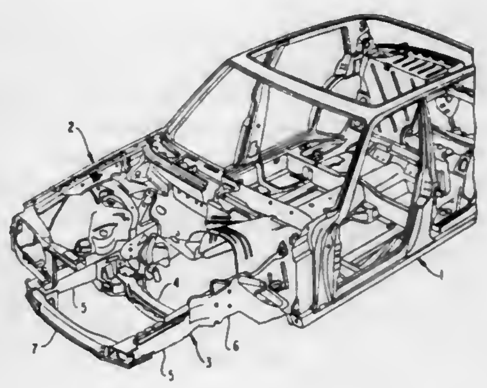
Willi Reidelbach, Sindelfingen; Hermann Renner, Magstadt, and Wolfgang Klie, Korntal, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 22, 1977, Ser. No. 818,268

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636655

Int. Cl.^{2} B62D *21/02*

U.S. Cl. 280—784 **12 Claims**



1. A motor vehicle body construction having a longitudinal bearer which comprises a deformable section dissipating impact energy whose wall means possess area-wise strength characteristics which are different by reason of a treatment of areas changing the strength of the wall material thereof compared to non-treated areas, characterized in that a higher strength exists in the treated wall areas than in the untreated areas.

4,194,764
LOCK COUPLING FOR SAFETY BELTS IN MOTOR VEHICLES

Werner Grimm, Rottweil, Fed. Rep. of Germany, assignor to Jan Jakob Huizinga, Netherlands

Filed Jan. 18, 1978, Ser. No. 870,570

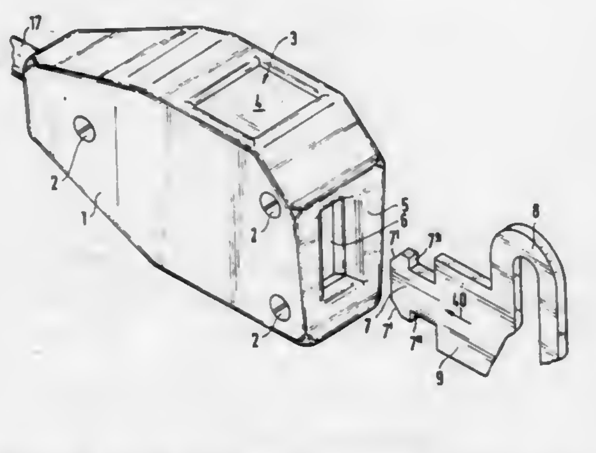
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701978

Int. Cl.^{2} B60R *21/10*

U.S. Cl. 280—801 **11 Claims**

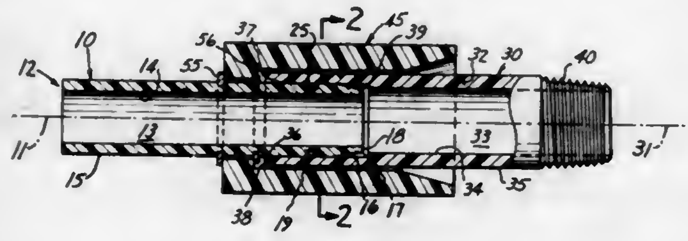
1. In a lock coupling for safety belts, in motor vehicles, including a coupling pocket accommodated within a housing and secured, by one of its ends, to a holder fixed to the vehicle, and provided on its opposite end, with a plug slot, a locking bar in the pocket, spring biased to its locking position, movable transversely to the plugging direction and actuable by means

of a button, for detachably locking a bar-shaped or latch-shaped coupling part secured to the safety belt and provided with a locking shoulder extending transversely of the plugging direction and engageable into the plug slot, and with said locking bar and an ejector spring acting on the plugged coupling part; the improvement comprising, in combination, said locking bar being mounted in said coupling pocket for movement in a pull-load direction against the bias of a spring force corresponding to a definite minimum pull load, said locking bar being moved in the pull-load direction by said plugged coupling part when said plugged coupling part is pulled by at least the definite minimum pull load; a minimum pull load spring in said coupling pocket engageable with said locking bar to provide the bias of said spring force; a spring-biased mechanism operable to effect automatic disengagement of said coupling part from said locking bar; said mechanism including a crank member operatively associated with said ejector spring and locking bar to release said coupling part, a locking member operatively associated with said crank member and locking bar and having a locking position preventing such automatic disengagement and being releasable for such automatic disengagement; first means operatively associated with said locking member to release the same for such automatic disengagement, said first means comprising an electromagnet and an electronic time switch switched on upon the occurrence of a definite minimum pull load, said electromagnet being operable responsive to such switching on of said electronic time switch; and second means operatively associated with said locking member for releasing the same for such automatic disengagement, said second means comprising a locking part operatively associated with said locking bar and displaceble by movement of said locking bar by said button.



4,194,765
TELESCOPING SLIP-TOGETHER TUBING JOINT

Robert R. Reddy, 1195 Michillinda Ave., Pasadena, Calif. 91107
Filed Mar. 13, 1978, Ser. No. 885,807
Int. Cl.² F16L *47/00*
U.S. Cl. 285—27 **20 Claims**

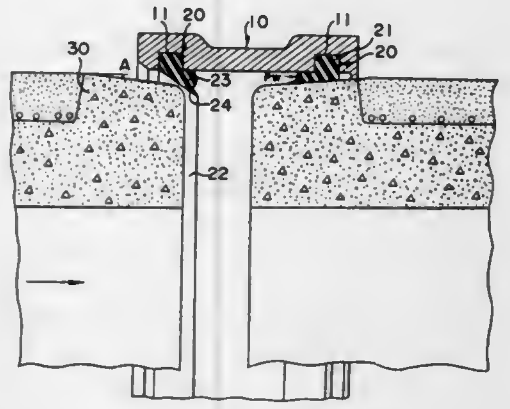


1. A telescoping slip-together tubing joinder comprising:

a first tube and a second tube each having an axis, each tube comprising an annular wall defined by a respective inside and outside circularly-sectioned concentric surface, each said tube terminating at a joinder end; the diameters of the outside surface of the first tube and the inside surface of the second tube being such that at least a portion of said tubes adjacent to said joinder ends can telescopically overlap one another; flexible seal means carried by and extending laterally beyond one of said two last named surfaces by a distance sufficient to make a peripheral seal between them when the said surfaces are sufficiently axially overlapped and being sufficiently deformable as to enable said sufficient axial overlap to occur; a guide sleeve having an inside cavity defined by a continuous, fully peripheral and unitary guide wall; and a removable retainer means engageable between said guide sleeve and said first tube to hold said guide sleeve to first tube with said guide wall projecting beyond said joinder end of said first tube, and preventing substantial axial movement of said guide sleeve when engaging the said guide sleeve to said first tube, the lateral dimensions of said guide wall, and of said outside surfaces of said first tube and said inside surface of said second tube at their joinder ends being so proportioned that, with the outside surface of second tube bearing against said guide wall, the interference circle of the first tube lies inside the interference circle of the second tube, whereby an axially telescoping thrust on the two tubes will result in the joinder end of the second tube passing axially over the joinder end of the first tube regardless of any permissible lateral offset of the axes of the tubes.

4,194,766
SELF-ALIGNING RING JOINT FOR JOINING CONCRETE PIPES HAVING ENDS ADAPTED FOR USE THEREWITH

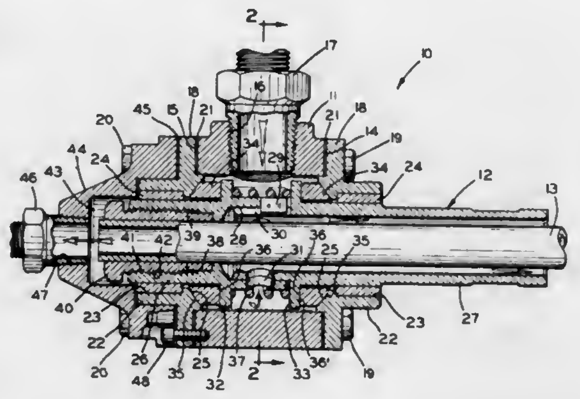
Mitchell M. C. Hsu, 1-1, Alley 17, Lane 96, Ho Ping East Rd., Sec. 2, Taipei, Taiwan
Filed Jan. 16, 1978, Ser. No. 869,772
Int. Cl.² F16L *17/02*
U.S. Cl. 285—110 **4 Claims**



1. A self-aligning ring joint of the type used for joining concrete pipes, said ring joint including an outer rigid ring member adapted to bridge adjacent pipe ends and having suitable grooves provided internally at opposite ends thereof, each groove being adapted for securing a sealing ring, two sealing rings made of a suitably elastic material, each sealing ring comprising a main body portion tightly fitted into one of said grooves and a depending mouth portion having an internal tapered annular surface, said mouth portion being provided integrally along the outer circumference thereof with an annular protuberant flange which in conjunction with inserted pipes having similarly tapered ends is deformed between said pipe ends and said ring member when said pipes have been joined by said ring joint whereby compression stress is stored in said flanges, said flange being deformed into tight surface engagement with said ring member and said tapered surface of the ring mouth being pressed into tight surface engagement with the adjacent tapered end of the inserted pipe; said ring joint being characterized in that due to the compression stress stored in said flanges under deformation between the outer circumferential surfaces of said tapered pipe ends and the surrounding corresponding tapered inner circumferential surfaces of said depending mouth portions, two flanges of each ring joint will, whenever there is external force, from time to time tend to return the stored compression stress between said outer ring member and the outer circumferential surface of said tapered pipe ends to simultaneously clamp and push back the penetrating pipes until the resulting pressure and compression stress at both ends of the ring joint is finally equal, in the case of which said ring joint finally finds its central position between the pipe ends.

4,194,767
ROTARY JOINT

Donald G. McCracken, Horton, Mich., assignor to Aeroquip Corporation, Jackson, Mich.
Filed May 8, 1978, Ser. No. 903,652
Int. Cl.² F16L *39/04*
U.S. Cl. 285—134 **5 Claims**



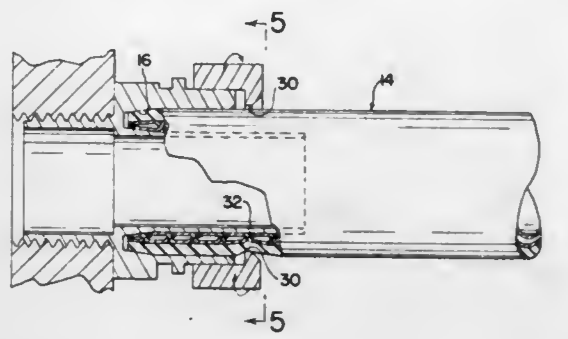
1. In a rotary joint for transmitting fluids therethrough, the combination comprising:

- a. a stationary tubular housing having opposed open ends;
- b. an end cap affixed to each opposed open end of said housing, each said end cap having a spherical sealing surface on its inner face and a bearing receiving portion extending outwardly thereof;
- c. a rotatable sleeve concentrically journalled within said end caps, said sleeve comprising a pair of axially aligned sections connected together for unitary rotation and axial movement relative to each other within said housing, each said sleeve section extending beyond said spherical sealing surface of said end caps;
- d. a bearing disposed within the bearing receiving portion of each said end cap for journalling the end of each of said sleeve section extending beyond said spherical sealing surfaces;
- e. a sealing ring mounted for axial movement on each said sleeve section, each said sealing ring having a spherical sealing surface for intimately engaging the adjacent spherical sealing surface on said end caps; and
- f. means biasing said sleeve sections and said sealing rings axially apart for urging said sealing rings into sealing engagement with said spherical sealing surfaces on said end caps, wherein said sealing rings are "rigidly" supported by said sleeve sections and the sealing surfaces of said end caps and sealing rings and the forces urging said sealing rings into sealing engagement with said end caps tend to circumferentially compress said sealing rings.

4,194,768
LIQUID-TIGHT CONNECTOR

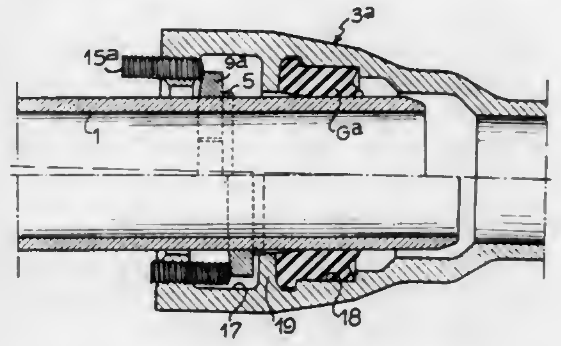
Thomas J. Gretz, Stow, Ohio, assignor to The Scott & Fetzer Company, Bedford Heights, Ohio
Filed Dec. 30, 1977, Ser. No. 865,934
Int. Cl.² F16L *55/00*
U.S. Cl. 285—178 **11 Claims**

1. A liquid-tight connector for flexible liquid-tight electrical conduit, comprising a body member and a compression member, the body member having in its interior an annular seat for sealingly receiving the end of the conduit in liquid-tight relationship, said annular seat being in the form of an axially presented smooth-sided groove having axially extending sides including a radially inner side and a radially outer side for engaging respectively the radially inner and outer sides of said conduit end, the body member including means for engaging in liquid-tight relationship with an associated fixture, the body member and compression member together comprising both (1) the entire means for eccentrically asymmetrically gripping the conduit while the conduit end is positioned at the annular seat and (2) the entire means for axially compressing the conduit to wedge the eccentrically asymetrically gripped conduit end into liquid-tight engagement against the annular seat with the inner and outer sides of the conduit end being engaged respectively by the inner and outer sides of said axially presented smooth-sided groove, said means for radially gripping and said means for axially compressing being simultaneously responsive to relative rotation between the compression member and the body member.



4,194,769
DEVICE FOR THE TENSILE LOCKING OF PIPE ELEMENTS

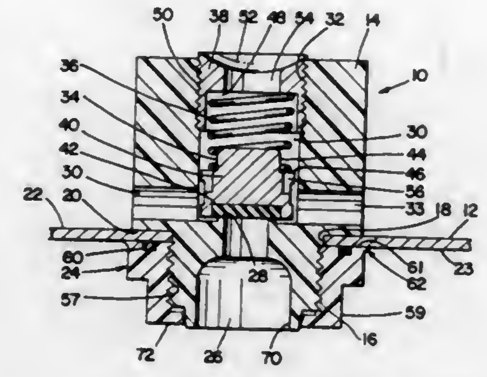
Georges E. Bram, Pont-a-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France
Filed Jul. 13, 1977, Ser. No. 815,404
Claims priority, application France, Jul. 13, 1976, 76 21442
Int. Cl.² F16L *17/00, 21/08, 23/02. 27/00*
U.S. Cl. 285—184 **7 Claims**



1. A device for effecting a tensile locking of a coupling between a pipe element having a male end and a pipe element having a socket which defines an annular space around the male end, which coupling comprises an annular sealing element which is disposed in said space, radially between said socket and male end, and is operative by a radial compression of the sealing element by the socket and the male end, said elements being capable of having an angular deviation therebetween, said device comprising a circumferentially extending flange extending radially inwardly from an entrance end of the socket and substantially closing said annular space while allowing said angular deviation in an assembled state of the coupling, means defining a shoulder integral with the male end and disposed, in said assembled state of the coupling, between the flange and the sealing element, a split ring surrounding the male end between the flange and the shoulder, and spacing means interposed between the flange and the ring and applying the ring against the shoulder and comprising means defining axial tapped passages arranged circumferentially around and carried by the flange and screws which are screwthreadedly engaged in said passages and are in bearing relation to the ring in said annular space on a side of the ring remote from the shoulder.

4,194,770
COMPRESSION FITTING

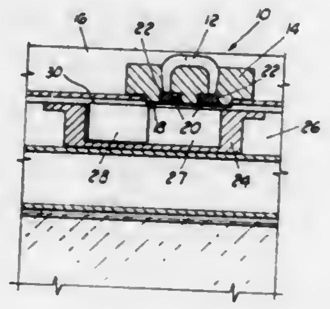
Donald L. Richards, Durham, N.C., assignor to Eaton Corporation, Cleveland, Ohio
Filed Mar. 1, 1978, Ser. No. 882,542
Int. Cl.^{2} F16L *5/02*
U.S. Cl. 285—206 **14 Claims**



1. A fluid fitting for compression attachment to a liquid container, comprising a body; a cylindrical projection extending from said body and adapted to be exposed to said liquid, said projection including an externally threaded portion, and a non-threaded portion; and a nut interfitting with said projection, said nut including an internally threaded portion engageable with the threaded portion of said projection, a face adapted to engage an interior surface of said container, an outer side surface formed generally perpendicular to said face, first pressure sealing means on said face, a lip extending upwardly from said face and outwardly from said outer side surface to define first liquid sealing means, and combined second pressure sealing means and second liquid sealing means engageable with the non-threaded portion of said projection.

4,194,771
MAGNETIC DOOR STAY RETAINER

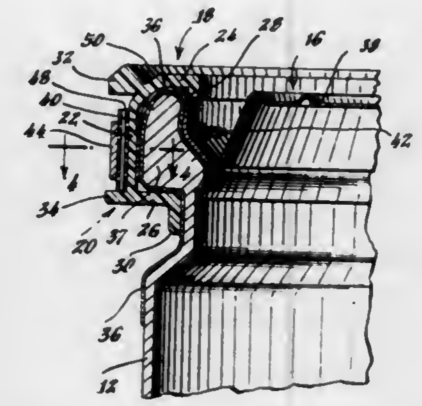
Ronald L. Biggs, 874 Lexington, Wichita, Kans. 67218
Filed May 15, 1978, Ser. No. 906,086
Int. Cl.^{2} E05C *17/56*
U.S. Cl. 292—251.5 **9 Claims**



1. In a magnetic door retainer assembly of the type that includes a magnetic unit and an armature unit, such units being adapted for mounting in a door frame and in a door in an orientation relative to each other, when in coacting registry, that is normal to the direction of their relative movement from registry on door opening movement, the improvement comprising said magnetic unit including a magnet and having a recess therein that opens toward the armature unit when the units are in registry, said armature unit including an armature mounted for movement therein between retracted and partially extended positions, with said armature being magentically urged toward the magnet and partially received in the recess when the units are in registry, said magnet and said armature constituting elements of a magnetic circuit when the armature is partially received in the recess, and means carried by the magnetic unit for adjustably predetermining the minimum value of the reluctance of said magnetic circuit.

4,194,772
PLASTIC LOCKING RING AND METHOD OF MAKING

Donald J. Hurd, 658 Ridgefield Rd., Wilton, Conn. 06897, and Gerard J. Morgan, III, Anchorage 350 Grovers Ave., Suite 3A, Bridgeport, Conn. 06605
Filed Nov. 15, 1977, Ser. No. 851,672
Int. Cl.^{2} E05C *19/00*
U.S. Cl. 292—256.65 **16 Claims**



1. A locking ring for securing a lid to a drum, the drum being of the type having an open end and a radially and outwardly extending circumferential lip about the open end, and the lid being of the type including a first portion extending across the end opening of the drum and a second portion extending generally normal to said first portion about said lip, said locking ring comprising:

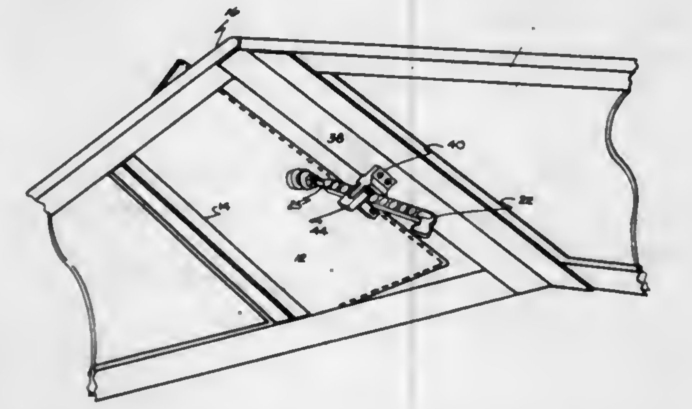
an elongated strap of a plastic polymeric material, said strap including a unitary longitudinal rib, first and second longitudinal flanges extending from one face of said rib generally normal to said face of said rib, and third and fourth longitudinal flanges extending from said rib away from said first and second flanges such that said elongated strip has a generally H-shaped cross section,

a first fastener element extending from said rib at one end of said strap, and a second fastener element on the other end of said strap for securing said first fastener element to said other end of said strap,

whereby said strap may be formed into a circular shape with the first and second flanges directed radially inwardly, and may be secured to itself about the second portion of the lid and about the drum to secure the lid to the drum.

4,194,773
LATCHING DEVICE

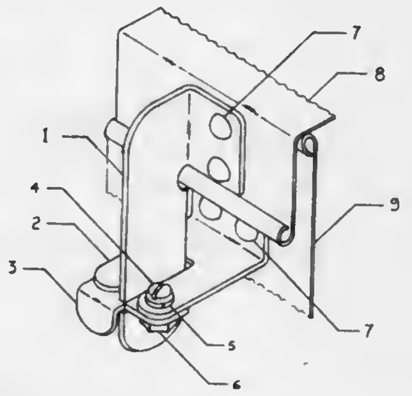
Philip W. Jaros, R.D. #1, Gloversville, N.Y. 12078
Filed Jan. 24, 1978, Ser. No. 871,945
Int. Cl.^{2} E05C *17/18*
U.S. Cl. 292—267 **3 Claims**



1. A latching device for releasably securing a vent member in a plurality of positions, said latching device comprising a connecting member secured to a vent member, said vent member being carried on a frame means, a latch bar pivotally attached to said connecting member, a guiding and locking assembly attached to said frame means, said guiding and locking assembly having an aperture formed therein for slidably receiving said latch bar and lock means pivotally mounted on said guiding and locking assembly for securing said latching member, said latch bar constructed and arranged for movement in directions axially and non-axially relative to one axis of said aperture.

4,194,774
GARBAGE CAN LOCK

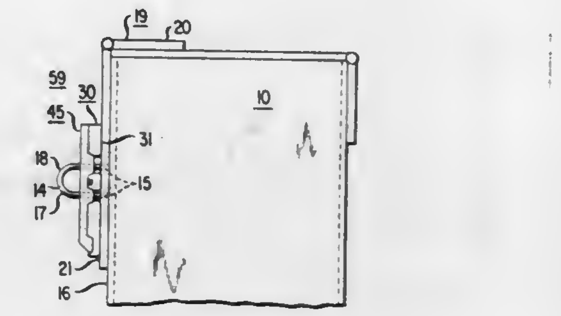
Dorothy E. Kempka, 28305 SE. 61st St., Issaquah, Wash. 98027
Continuation of Ser. No. 817,794, Jul. 21, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,144
Int. Cl.^{2} E05C *13/02*
U.S. Cl. 292—304 **1 Claim**



1. A lock for securing a closure member having a peripheral lip to an open ended container on which the closure member is positionable in a closure position in overlying relation with the container end opening with its lip telescopically overlapping a portion of the container adjacent the end opening thereof, the lock comprising: two members mounted on the closure member and container, respectively; and a locking element; one of said two members including two finger portions projecting outwardly and defining an open ended elongated receiving slot therebetween into which a portion of the other of said two members is insertable to restrain movement of the closure member with respect to the container in a direction transverse to the longitudinal axis of the container when the closure member is positioned in its closure position; the other of said two members including an elongated plate portion adapted to extend toward said two finger portions and through said receiving slot when said closure member is positioned in said closure position, said plate portion having an open ended transverse locking slot extending from its outer edge at an elevation immediately adjacent the sides of said two finger portions opposite the mounting for said other member; and said locking element including an elongated flat section mounted to said opposite side of one of said finger portions adjacent said receiving slot for movement into a locking position at which a portion of said flat section extends through the locking slot of said plate portion and into engagement with said opposite side of the other of said finger portions to secure said closure member to said container and to resist forces tending to separate said closure member from said container by bearing against said opposite sides of said finger portions, said locking element further including an outwardly exposed finger catch for movement of said flat section into and out of locking engagement with said plate portion, and said locking element including means mounting said flat section to said one finger portion in springloaded engagement such that said flat section bears against said finger portions and requires positive manual force to be applied to said finger catch to open said locking element.

4,194,775
FASTENER FOR A PAY TELEPHONE STATION COIN BOX

Frank J. Shea, 258 E. Shore Trail, Sparta, N.J. 07871
Filed Feb. 4, 1977, Ser. No. 765,532
Int. Cl.^{2} B65D *33/34*
U.S. Cl. 292—307 R **27 Claims**



1. In combination with a security box containing articles of monetary value and provided with a staple including hasp having a first two spaced adjacent ends secured to one face of said box and a second two spaced adjacent opposite ends terminated in an integral curvilinear segment; said first and second two staple ends, said segment and said one box face determining a hollow space interiorly of said staple; said hasp also embodying a member having one end attached to a cover of said box at an area adjacent to said first two staple ends and an opposite end movable pivotally at said member one end; said member opposite end formed with a slit for receiving therethrough said segment and disposing said last-mentioned end adjacent to said staple first two ends and said box face to assemble said hasp on said box;

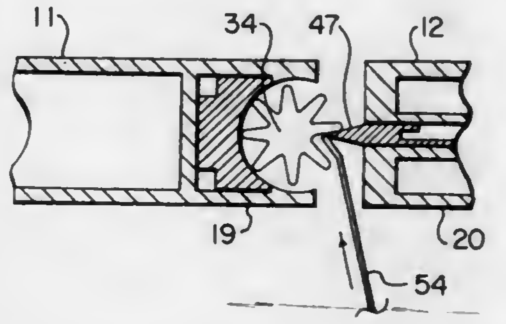
a fastener for locking said assembled hasp on said box to prevent unauthorized entry thereinto, comprising:

first means including an elongated rectilinear projection positioned in said staple hollow space to extend beyond opposite sides thereof adjacent to said member opposite end; and

second means formed with an aperture for receiving said segment therethrough to extend beyond said second means to dispose said second means externally of said staple in juxtaposition with said first means to overlie said projection on said staple space opposite sides between said member opposite end and said last-mentioned sigment to form said fastener in a multimeans structure.

4,194,776
SECURITY ASTRAGAL FOR DOUBLE DOOR ASSEMBLY

Lawrence F. Biebuyck, Dallas, Tex., assignor to Howmet Corporation, New York, N.Y.
Filed Dec. 16, 1977, Ser. No. 861,353
Int. Cl.^{2} E05C *19/02*
U.S. Cl. 292—346 **11 Claims**



1. An astragal for a double door assembly comprising:
a first meeting stile for one of said doors;
a second meeting stile for the other of said doors;

said first stile having a channel formed in the edge thereof, said channel being open toward said second stile;

said second stile having a step formed in the edge thereof oriented toward said first stile and toward the indoor side of said other door;

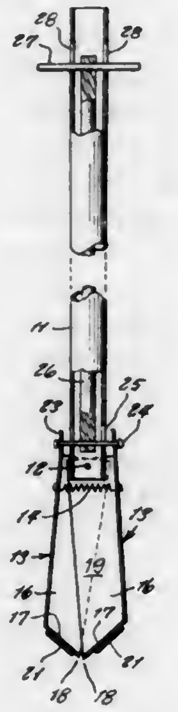
a rod having a gear-toothed cross sectional profile rotatably mounted in said channel with teeth thereof projecting past the open edge of said channel; and

a blade secured to said step having a nose projecting toward said rod sufficiently far to engage the gear teeth thereof when said stiles are brought into alignment upon closure.

4,194,777

DOG WASTE SCOOP

Arthur Carns, 120-47 - 217th St., Cambria Heights, N.Y. 11411
Filed Oct. 30, 1978, Ser. No. 956,207
Int. Cl.^{2} A01K *29/00*
U.S. Cl. 294—1 BA **3 Claims**



1. A dog waste scoop, comprising in combination, an elongated tubular handle, a pair of scoop-shaped jaws pivotally attached at one end of said handle, a tension coil spring normally urging said jaws in a pivotally closed position, and a pull rod slidable in the center of said handle having a hand-operated cross-peg near an upper end of said handle for convenient pulling so as to pivot said jaws apart; a lower end of said pull rod having a transverse rivet connected to upward tongues on an upper edge of each said jaw; each said jaw including an inclined lip at its lower end so that a lower edge of said lips abut each other when said jaws are closed, an adhesive pad mounted on an outer side of each said lip, so that a disposable cellophane sheet maybe temporarily adhered at its opposite ends to said pads while a center of said sheet bridges across an entry to a mouth formed between said jaws, said sheet center extending inwardly inside said mouth.

4,194,778

WOOD SCOOP

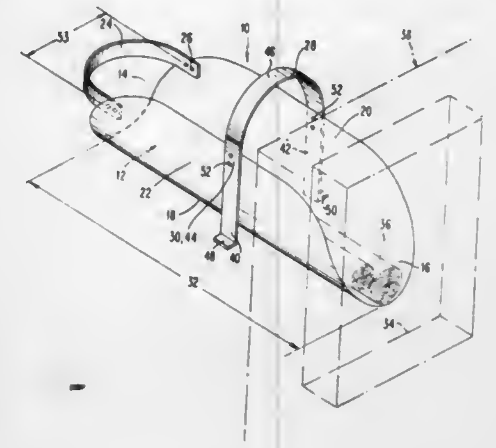
C. Leroy Hodnett, 2100 Wren Rd., East Ridge, Tenn. 37412
Filed Jan. 22, 1979, Ser. No. 5,193
Int. Cl.^{2} A47F *13/08*
U.S. Cl. 294—9 **10 Claims**

1. A wood scoop comprising:

(a) a bottom portion having an open rear end an open front end, a bottom section which is a segment of a section of a cylinder and parallel side walls extending upwardly from the bottom section;

(b) a rear handle fixedly attached to the side walls across the open rear end;

(c) a center handle fixedly attached to the side walls across the top of the body portion at a first point which is located at least about one-half the length of the body from the front end; and

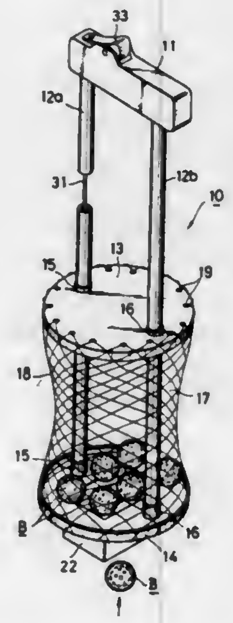


(d) two legs each fixedly attached to a side wall at a second point which is located about one-half the length of the body from the front end, the legs extending to about level with the bottom section.

4,194,779

GOLF BALL RETRIEVER

Isamu Ouhashi, No. 11-27, Takanawa 4-chome, Minato-ku, Tokyo, Japan
Filed Oct. 11, 1978, Ser. No. 950,292
Int. Cl.^{2} A63B *47/02*
U.S. Cl. 294—19 A **5 Claims**

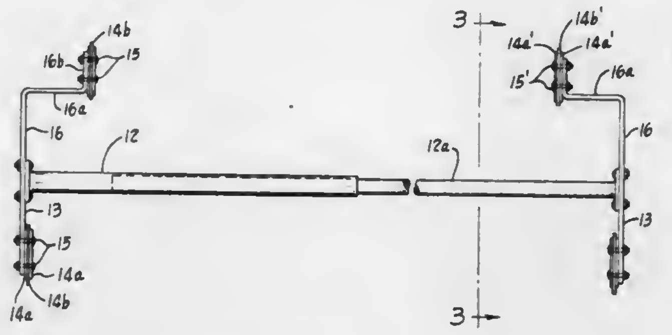


1. A golf ball retriever comprising: a handle; parallel support posts connected to opposite ends of said handle; an upper plate member and a lower plate member secured to said posts in spaced-apart relationship and defining therebetween a ball storing chamber; a net structure enclosing said chamber, at least one of said posts being hollow or slitted throughout its length; a rectangular frame member formed integrally with said lower plate member and defining a rectangular opening communicating with said chamber; a ball capturing frame member coextensive with and hingedly connected to said rectangular frame member and having inwardly projecting longitudinal parallel lugs defining therebetween a longitudinal gap wide enough to admit the golf ball; a valve means extending longitudinally on said parallel lugs for resiliently gripping and passing the ball into said chamber; and a ball removing means for emptying the retriever comprising a spring-biased hook pivotally connected to said lower plate member for releasably engaging said capturing frame member with said rectangular frame member and an actuator connected between said handle and said hook through said one hollow or slitted post for actuating said hook to release said capturing frame member from said rectangular frame member.

4,194,780

GUTTER CLEANER TOOL

Charles A. Dilley, 1624 Franklin Ave., Cleveland Heights, Ohio 46808
Filed Sep. 5, 1978, Ser. No. 939,430
Int. Cl.^{2} A47F *13/06*
U.S. Cl. 294—19 R **3 Claims**

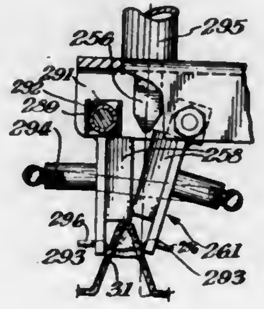


1. A gutter cleaning tool comprising a rigid handle extending longitudinally, a first arm fixed to one end of said handle and extending at right angles thereto, a first straight paddle fixed at the outer of said arm at right angles to said handle, said paddle generally conforming to the interior shape of a roof gutter, a second arm fixed to the same end of said handle and extending at right angles thereto and then bending at right angles to extend parallel to said handle for a short distance toward the operator's end of said handle and there supporting a second offset paddle at right angles to said handle, said arms being fixed at an angle of orientation, one to the other, such that one arm may enter its paddle into a gutter without interruption with said other paddle or with a roof supporting said gutter, whereby an operator may hold said handle generally parallel to a gutter with said straight paddle entered into said gutter and may pull said paddle in one direction longitudinally until a cross-strut in said gutter is engaged on one side, whereupon the operator may rotate said handle to lift said straight paddle out of said gutter and to cause said offset paddle to enter into said gutter on the same side of said cross-strut and pull the leaves under the cross-strut to the opposite side, after which the operator may rotate the handle to insert said straight paddle on said opposite side back of the leaves and so move along said gutter.

4,194,781

AUTOMATIC PACKING

Louie R. Lowery, Madison, N.J., assignor to Keyes Fibre Company, Waterville, Me.
Division of Ser. No. 719,846, Sep. 2, 1976. This application Oct. 27, 1977, Ser. No. 846,194
Int. Cl.^{2} B65G *59/02*
U.S. Cl. 294—61 **4 Claims**

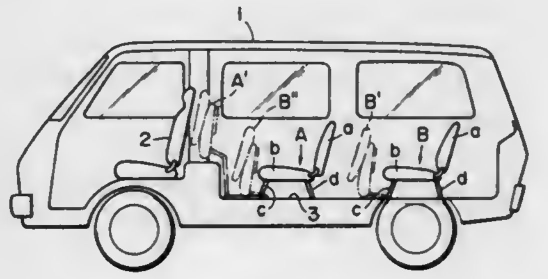


1. In a transfer carrier for gripping a molded fiber packing sheet having a raised rib structure, a set of jaws shaped to engage the rib structure, the jaws having gripping teeth that dig into the molded fiber of the rib structure when that structure is engaged by the jaws, opening structure connected to open the jaws when a gripped sheet is to be released, the jaws carrying release-assisting projections extending in the general direction in which the jaws open, to engage adjacent portions of the sheet when the jaws open and assure a positioning of the sheet that causes all the teeth to be pulled out of the molded fiber when the jaws are opened.

4,194,782

FOLDABLE SEAT STRUCTURES FOR AUTOMOBILES

Takahisa Itoh, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Dec. 12, 1978, Ser. No. 968,853
Claims priority, application Japan, Dec. 13, 1977, 52-167996[U]
Int. Cl.^{2} B60N *1/02*
U.S. Cl. 296—65 R **7 Claims**



1. Automobile comprising a body which has a floor, front and rear seat means provided on the floor, said rear seat means including a plurality of seat assemblies arranged in a plurality of rows including a first row and a second row which is behind the first row, the seat assembly in the first row comprising a front leg structure carrying seat mat means and a rear leg structure carrying seat back rest means, said front leg structure being pivotally attached at lower end to the floor of the body, said rear leg structure having rearwardly extending link means, the seat assembly in the second row comprising a front leg structure having lower end pivotably connected with said rearwardly extending link means whereby the seat assembly in the first row can be folded by pivotably moving its front leg structure only after the seat assembly in the second row has been folded by turning the front leg structure of the second row seat assembly over the rearwardly extending link means.

4,194,783

WALL PROXIMITY CHAIRS AND HARDWARE THEREFOR

Izchak Cycowicz, Brooklyn, and Alfred Frimmet, Larchmont, both of N.Y., assignors to Mohasco Corporation, Amsterdam, N.Y.
Filed Mar. 28, 1977, Ser. No. 781,544
Int. Cl.^{2} A47C *1/02;* F16M *13/00*
U.S. Cl. 297—88 **9 Claims**

1. In a wall-proximity reclining chair of the type having

(A) a stationary base for supporting the chair on a floor;

(B) body-supporting means including a seat located generally above the base, and a backrest located generally rearwardly of the seat; and

(C) a movable armrest assembly mounted for movement relative to the base along a front-to-back horizontal longitudinal direction, and concomitantly somewhat along a generally vertical direction, said armrest assembly including

  (1) a pair of armrests transversely spaced apart of each other along a lateral direction generally perpendicular to the front-to-back longitudinal direction, each armrest having an inner wall which faces towards the seat, and

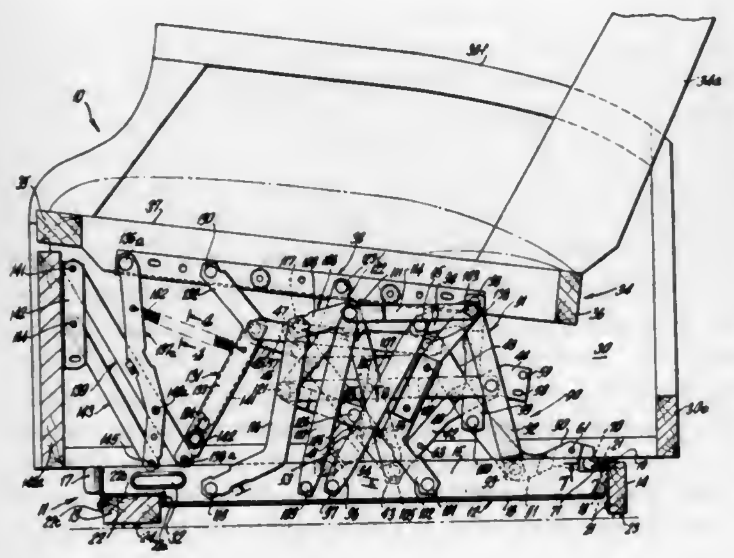
  (2) means for interconnecting the armrests for moving the latter jointly in response to manual urging on the armrests by a seated user;

the improvement comprising:

(a) a pair of base rails having base walls which extend both along the longitudinal and the vertical directions, said base walls being spaced apart of each other in lateral direction underneath the seat;

(b) linkage means interconnecting the armrests, the body-supporting means and the base rails, and operative for moving the body-supporting means along the longitudinal and vertical directions between
  (i) an end-limiting upright position in which the seat is oriented in a sitting orientation and is spaced a predetermined distance away from a room wall behind the chair, and
  (ii) an end-limiting fully-reclined position in which the seat is oriented in a different reclined orientation, and is spaced at a distance greater than said predetermined distance away from the room wall such that physical contact of the body-supporting means with the room wall is avoided,

said linkage means including a pair of linkage assemblies at opposite sides of the seat, each linkage assembly having a plurality of links, at least some of which extend upwardly from the base rails in vertical direction towards the seat, whereby said some links are prone to undesirable side-to-side play movement in lateral direction and to undesirable twisting movement about an axis in vertical direction;



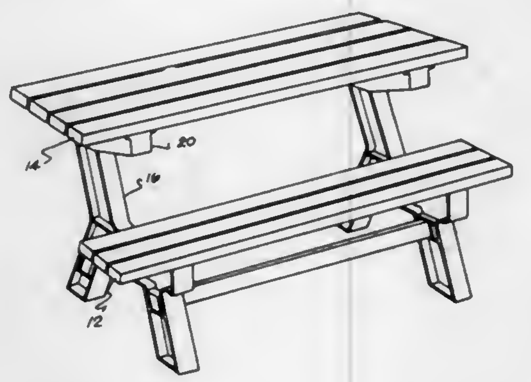
(c) means for counteracting and minimizing the undesirable lateral side play and the twisting movements, including
  (i) two pairs of sliding contact elements, each pair being mounted on a respective linkage assembly, said contact elements of each pair being spaced apart of each other in longitudinal direction,
  (ii) said sliding contact elements having contact faces juxtaposed with the vertical base walls of the base rails for slidably contacting the base walls during movement of the linkage means, to thereby substantially reduce lateral side play and twisting movements; and

(d) adjusting means for moving in lateral direction the position of the contact face of one of said sliding contact elements relative to its juxtaposed vertical base wall, said adjusting means including
  (i) a displaceable element operatively connected to said one sliding contact element, and
  (ii) means for displacing the displaceable element in lateral direction to move the contact face of said one contact element into sliding abutting relationship with its juxtaposed vertical base wall when the body-supporting means is in its upright position, whereby the seat in its sitting orientation is particularly resistant to instability.

4,194,784
BENCH BACK REST CONVERTIBLE TO LOCKED TABLE TOP

Gerald A. Dostal, Fonda, and Richard S. Havlick, Gloversville, both of N.Y., assignors to N. A. Taylor Co., Inc., Gloversville, N.Y.

Filed Jan. 23, 1978, Ser. No. 871,701
Int. Cl.^{2} A47B *85/04*
U.S. Cl. 297—126 **3 Claims**

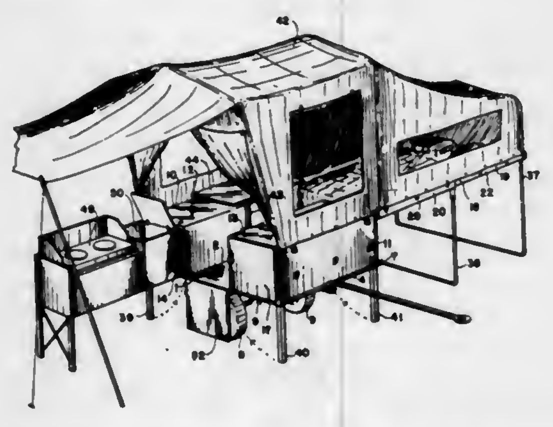


1. A locking device for use on an article of furniture, said article of furniture having frame means carrying a fixed seat member and a movable support member, said support member rotatably movable on said frame from a first non-locked backrest supporting position to a second locked table top position, said support member maintained in its first non-locked backrest supporting position by gravity, said support member maintained in its second locked table top position by said locking device, said locking device secured to said support member and comprising a box-shaped housing member rotatably movably carried on said frame means, wedging means loosely contained between said frame member and said housing member for rotational movement with said housing member, said wedging member rotatably and longitudinally movable from a first gravity maintained un-biased non-wedging position to a second wedging position to lock by wedging action said support member in its second position, said wedging action resulting from said wedging member being slidably moved longitudinally within said housing member to a position where it is wedged between said housing member and a planar portion of said frame member when said support member is in its second position.

4,194,785
CAMPER

Don Cox, and Gail Cox, both of Box 73, Sharon, Okla. 73857

Filed Aug. 1, 1978, Ser. No. 929,898
Int. Cl.^{2} B60P *3/34*
U.S. Cl. 296—169 **1 Claim**



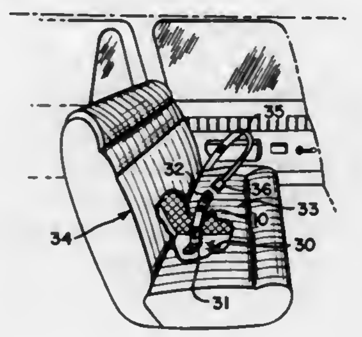
1. A camper adapted to be towed by a motorcycle, said camper comprising
- a base member of substantially planar rectangular configuration having an oversurface, an undersurface, a first pair of spaced parallel sides and a second pair of spaced parallel sides perpendicular to the first pair of sides;

- a pair of wheels rotatably mounted on the undersurface of the base member, said wheels being rotatable in planes parallel to the second pair of sides of said base member;
- a pair of rectangular parallelepiped boxes affixed to the oversurface of the base member each extending along a corresponding one of the first pair of sides and extending from one of the second pair of sides to the other and each having a top and an open end at one of the second pair of sides selectively coverable by a door;
- a bed support member covering the camper by resting on the tops of the boxes and extending therebetween when the camper is in transit and resting at one end of said bed support member on said tops at the other of said second pair of sides when the camper is assembled whereby in its assembled position said bed support member is substantially in the plane of the tops of said boxes and extends beyond said base member from said other of said second pair of sides;
- a plurality of support devices on the bed support member and on the tops of the boxes for supporting tubular brace members;
- a plurality of legs foldably mounted on the undersurface of the base member;
- a plurality of tubular brace members removably supported by some of the support devices of the bed support member for maintaining said bed support member level above the ground;
- a plurality of tubular generally arcuate tent support members removably supported by others of the support devices of the bed support member and by the support devices of the boxes for maintaining a tent above the base member and the bed support member; and
- a cooking unit, a food chest, a cooling chest and a table top removably stored in said boxes.

4,194,786
SAFETY BELT ANCHORAGE ASSEMBLY

William J. Gilmore, Manitou Beach, Mich., assignor to Acco Industries Inc., Bridgeport, Conn.

Filed Nov. 29, 1977, Ser. No. 855,568
Int. Cl.^{2} A62B *35/00;* **B60R** *21/10*
U.S. Cl. 297—468 **4 Claims**

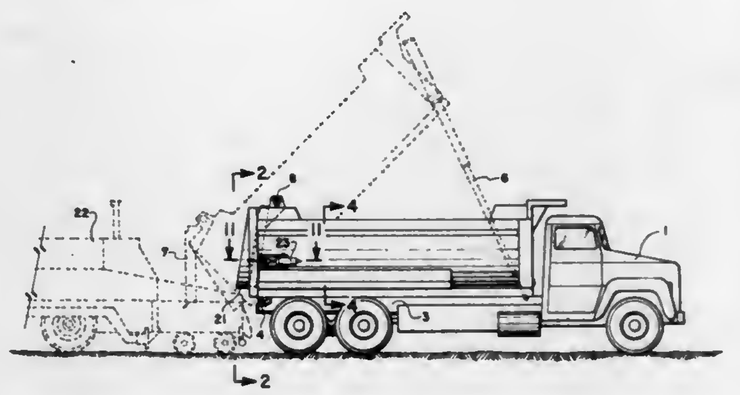


1. In a car belt assembly of the type comprising flexible strap means extending from an anchorage around a person to be restrained, an anchorage assembly attached to a second anchorage, and coupling means for interconnecting said flexible strap and said anchorage assembly, the improvement wherein:
- said anchorage assembly comprises an elongated composite member of a plurality of substantially planar and substantially parallel lengths of flexible metal cable substantially embedded in resilient plastic material, said assembly being oriented with the plane defined by said parallel cables in line with the front-to-back direction of the car and exhibiting sufficient flexibility in a direction perpendicular to said plane to permit ready deflection of said assembly in the perpendicular direction by the movemement of such person and, at the same time, exhibiting sufficient stiffness in the direction within said plane as to permit one-handed interconnection of said coupling means.

4,194,787
DUMP BODY WITH INSIDE GATE

Leland C. Williamsen, Salt Lake City, Utah, assignor to Williamsen Truck Equipment Corporation, Salt Lake City, Utah

Filed Jan. 13, 1978, Ser. No. 869,142
Int. Cl.^{2} B60P *1/16*
U.S. Cl. 298—23 M **1 Claim**

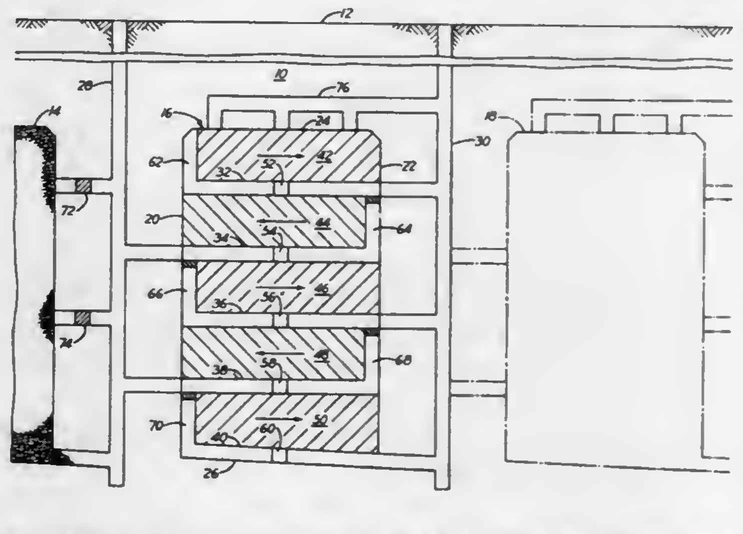


1. In a dump body of the type comprising an open top elongated body mounted on a frame with means for moving said body between a horizontal carry position and a tilted dump position, said body being defined by a bottom and upstanding sidewalls, said body having a front closed end and a rear open end, a gate adjacent said open end and hinge means for swinging said gate to open and close said open end, the improvement comprising said hinge means being located adjacent the top of said upstanding sidewalls and forward of said open end of said body, said gate being pivotally mounted to said hinge and shaped so that when in the closed position it is entirely contained between the sidewalls and bottom of said body with said open end of said body spaced rearwardly of said gate, the peripheral edge of said gate being substantially parallel to said bottom and sidewalls and said upstanding sidewalls diverge upwardly and outwardly relative to each other and there is provided lock means for selectively locking and releasing said gate, said lock means comprising openings in said opposite sidewalls at a location above the bottom and to the rear of said gate when the latter is in the closed position, a latch on the outside of each of said sidewalls adapted to move to and fro through said opening into and from the interior of said body respectively to hold and release said gate and means associated with each of said latches for selectively effecting movement thereof.

4,194,788
METHOD OF FORMING A RUBBLIZED IN-SITU RETORT

J. Blaine Miller, Englewood, Colo., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1978, Ser. No. 882,360
Int. Cl.^{2} E21C *41/10*
U.S. Cl. 299—2 **15 Claims**



1. A method of constructing a rubblized in-situ retort in a

subsurface deposit of a carbonaceous material for the in-situ retorting of the deposit to produce a fluid fuel comprising driving through the deposit a plurality of vertically spaced, substantially horizontal withdrawal drifts, said drifts extending the full horizontal length of the desired in-situ retort to divide the retort into a plurality of superposed layers of the deposit, excavating a first starting slot extending upwardly from the top drift into the top layer of the deposit at one end of the retort, rubblizing the deposit in the top layer by sublevel caving starting at the starting slot and retreating toward the opposite end of the retort, excavating a second starting slot extending upwardly from the second drift into the second layer of the deposit at the end of the retort opposite from the first starting slot, rubblizing the deposit in the second layer by sublevel caving starting at the second starting slot and retreating in the direction opposite the direction followed in rubblization of the first level, and repeating the excavating of starting slots and rubblization by sublevel caving in successively lower layers of the retort until the retort is rubblized for the desired height, the location of the starting slot and the direction of retreat during the sublevel caving in each layer being opposite the location of the starting slot and the direction of retreat in the layer immediately above.

4,194,789

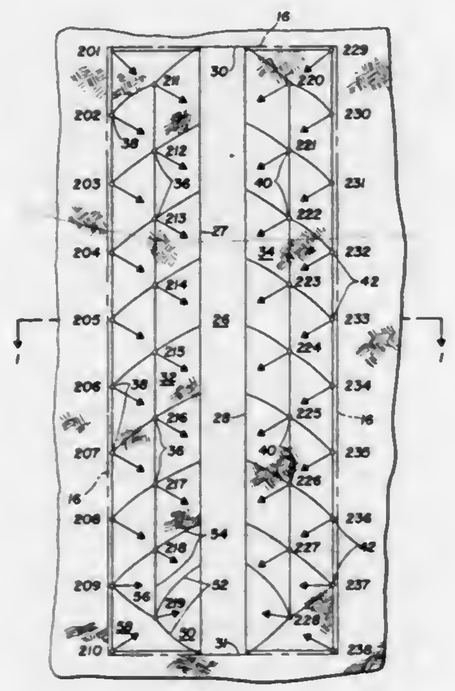
STAGGERED ARRAY OF EXPLOSIVES FOR FRAGMENTED OIL SHALE FORMATION TOWARD A VERTICAL FREE FACE

Irving G. Studebaker, and Ned M. Hutchins, both of Grand Junction, Colo., assignors to Occidental Oil Shale, Inc., Bakersfield, Calif.

Filed Jan. 18, 1979, Ser. No. 4,425

Int. Cl.^{2} E21C *41/10*

U.S. Cl. 299—2 **31 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in a retort site in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, comprising the steps of:

excavating at least one void in formation within the retort site, leaving a remaining portion of unfragmented formation within the retort site forming at least one vertical free face adjacent such a void, the volume of the excavated void being less than about 25% of the volume of the fragmented mass being formed;

placing explosive in at least two rows of blasting holes in such remaining portion of unfragmented formation adjacent such a vertical free face, said blasting holes in each row being mutually spaced apart along the length of the void and longitudinally off-set from blasting holes in the next adjacent row;

detonating explosive in said blasting holes in a time delay sequence progressing along the length of the row of blasting holes for explosively expanding formation in said remaining portion of unfragmented formation toward said vertical free face for forming at least a portion of a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort;

establishing a combustion zone in an upper portion of the fragmented mass and advancing the combustion zone through the fragmented mass for producing liquid and gaseous products of retorting; and

withdrawing liquid and gaseous products of retorting from a lower portion of the fragmented mass.

4,194,790

ROCK CUTTING TIP INSERTS

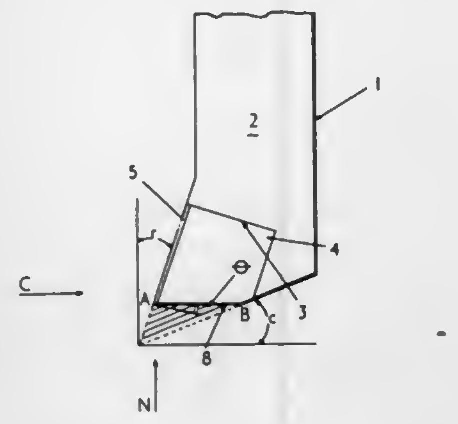
Peter Kenny, and Stanley N. Johnson, both of Lichfield, England, assignors to Coal Industry (Patents) Ltd., London, England

Filed Apr. 2, 1975, Ser. No. 564,640

Claims priority, application United Kingdom, Apr. 24, 1974, 17909/74; May 31, 1974, 24284/74

Int. Cl.^{2} E21C *35/18;* E21B *9/36*

U.S. Cl. 299—79 **11 Claims**



1. A rock cutting tip insert for placing in a recess of a rock cutting tool, the tip insert comprising two separate continuous layers of similar composite material having different hardness, a first layer being a cutting margin of one hardness level and the second layer being a backing portion of material similar to the first layer having a second hardness level, of at least one thousand units on the Vickers Hardness scale, said first hardness level being at least one hundred units on the Vickers Hardness scale greater than said second hardness level, the first layer cutting margin being secured to the second layer backing portion, and the second layer backing portion being secured to the tool.

4,194,791

GROOVED EARTHWORKING BIT AND METHOD OF ENHANCING THE LIFE THEREOF

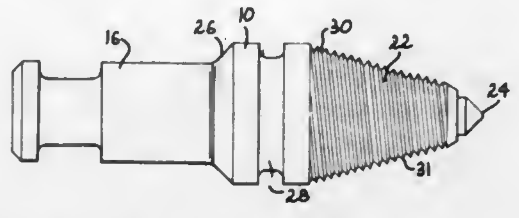
Robert H. Montgomery, Jr., Fishertown, and Seibert S. Oaks, Everett, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 779,077, Nov. 18, 1977, abandoned. This application Jun. 16, 1978, Ser. No. 915,908

Int. Cl.^{2} E21C *35/18*

U.S. Cl. 299—86 **8 Claims**

1. An earthworking tool comprised of a parent material and having a rearward shank portion for mounting in a support block, a working portion fixed to said shank portion and extending forwardly of said shank portion for engagement with earth material, and a hard wear resistant insert mounted in the parent material of said working portion, grooves formed in and extending around the longitudinal periphery of said working portion in proximity with said hard wear resistant insert, said grooves sized so that earth fines fill the groove and become packed therein substantially reducing erosion of said parent material around the insert.



4,194,792

DECELERATION SENSING TYPE PROPORTIONING VALVE

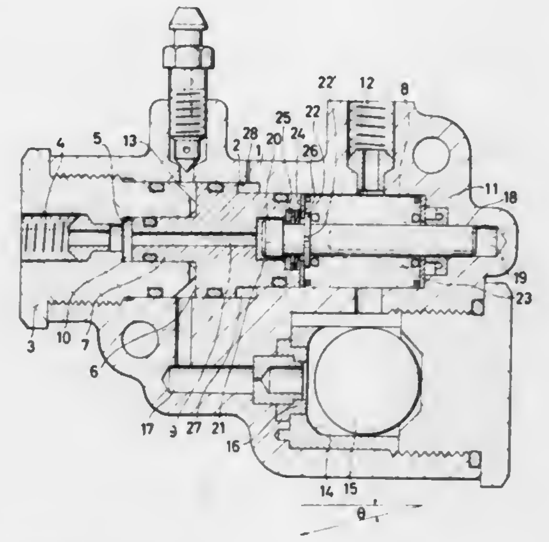
Toshifumi Maehara, Chichibu, Japan, assignor to Akebono Brake Industry Co. Ltd., Tokyo, Japan

Filed Oct. 26, 1978, Ser. No. 954,748

Claims priority, application Japan, Nov. 10, 1977, 52/135044; Jan. 23, 1978, 53/5991

Int. Cl.^{2} B60T *8/14*

U.S. Cl. 303—24 F **10 Claims**



1. A deceleration sensing type proportioning valve adapted to be disposed between a fluid pressure source and a brake device on a vehicle for controlling fluid pressure communicated to said brake device from said pressure source when said vehicle decelerates above a given rate and the fluid pressure of said source exceeds a desired value, said proportioning valve comprising:

a valve body including therein an input chamber for receiving fluid from an outside pressure source, an output chamber for communicating said fluid with an outside device, an adjustment chamber, and a first fluid passageway extending between said input and adjustment chambers, said body having first and second diameter cylinders formed therein, said first diameter cylinder being in fluid communication with said adjustment chamber and said second diameter cylinder being in fluid communication with said input chamber;

a stepped adjustment piston having a second fluid passageway extending axially therethrough, and large and small diameter ends for slidably engaging said first and second diameter cylinders in sealing relationship therewith, respectively, so that the large diameter end of said piston is subjected to fluid pressure developed in said adjustment chamber and the small diameter end of said piston is subjected to fluid pressure developed in said input chamber wherein said piston is subjected to the difference between said adjustment and said input chamber pressures;

a valve seat formed in said second fluid passageway in said piston;

a plunger mounted for axial sliding movement within said valve body, one portion of said plunger confronting said piston to engage and disengage with said valve seat in response to fluid pressure communicated thereto from said output chamber through said second passageway, and another portion of said plunger being in fluid communication with said input chamber wherein said plunger is subjected to the difference between said output and said input chamber pressures to urge said plunger to engage said valve seat to prevent fluid communication between said input and output chambers through said second passageway;

a first spring mechanism mounted in said body for exerting a first force on said adjustment piston in a direction to counter movement of said piston in response to the pressure on said piston;

a second spring mechanism mounted in said body for exerting a second force on said plunger in a direction to counter movement of said plunger in response to the pressure on said plunger, thereby urging said plunger to disengage said valve seat;

deceleration sensitive valve means provided in said first fluid passageway for preventing fluid communication between said input and adjustment chambers when deceleration of said vehicle attains a predetermined value;

means for connecting said adjustment piston and said plunger so that said plunger moves together with said piston in a direction opposite to forces provided on said piston and said plunger by said first and second spring mechanisms when the pressure on said piston attains a given value;

said piston being moved in response to the pressure thereon by an amount corresponding to a desired turning point pressure, wherein said plunger engages and disengages said valve seat to control fluid pressure communicated to said output chamber when the input chamber fluid pressure exceeds said turning point pressure.

4,194,793

TELESCOPING GUIDE RAIL CONSTRUCTION

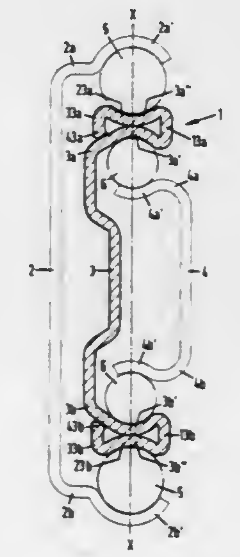
Hubert G. Offermans, Bunde, Netherlands, assignor to Thomas Regout N.V., Netherlands

Filed Sep. 1, 1977, Ser. No. 829,877

Claims priority, application Netherlands, Sep. 9, 1976, 7610020

Int. Cl.^{2} F16C *21/00*

U.S. Cl. 308—3.8 **4 Claims**

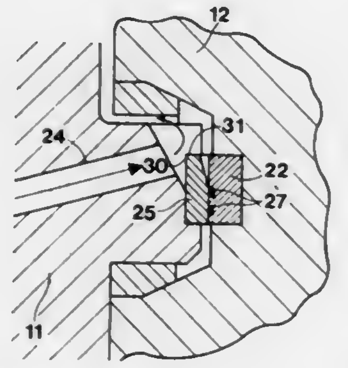


1. A telescoping guide rail construction comprising a plurality of telescoping rails, substantially U-shaped in cross-section, at least one of said telescoping rails having a leg, and balls between said rails running in integral moldings on said rails, which integral moldings are pairwise concave to each other, and at least one of which integral moldings is formed by a portion of a flange which is bent over to form a bent over portion at the end of said leg of said at least one of said telescoping rails and is curved back at least substantially into

contact with said bent over portion of said leg of said at least one of said telescoping rails to form a curved back portion, wherein, in section, said curved-back portion has a free end which is bent back to provide a terminal edge having an extremity which is seated on said bent over portion of said leg of said at least one of said telescoping rails to provide support for one of which integral moldings.

4,194,794
AXIAL BEARING FOR ROTARY DRILL BIT

Knut Å. Kling, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed May 24, 1978, Ser. No. 909,117
Claims priority, application Sweden, Jun. 3, 1977, 7706480
Int. Cl.^{2} F16C *19/00*
U.S. Cl. 308—3.8 **6 Claims**



1. In an unsealed rotary drill of the type comprising a bearing shaft, a roller rotatably mounted on the shaft, cutting inserts carried by the roller, bearing means for rotatably supporting the roller on the shaft, and a flushing channel terminating at an end surface of the bearing shaft for conducting cooling air to the bearing means; the improvement wherein said bearing means includes an axial bearing comprising an insert plate formed of a sintered hard metal alloy, and a supporting plate formed of a material which is less hard and less wear resistant than said metal alloy; said supporting plate containing a solid lubricant; said supporting plate and said insert plate presenting opposed bearing surfaces; said insert plate being mounted in said end surface of said bearing shaft such that an outer portion of a rear surface and a portion of a peripheral side edge surface of said insert plate are acted upon by cooling air from said flushing channel; said bearing surface of said insert plate including a recess terminating at said edge portion of said insert plate for permitting removal of wear products from the bearing surface and entrainment of such wear products into the cooling air.

4,194,795
SEAL PROTECTOR FOR A SEALED BEARING ROCK BIT

Dwight A. Rife, Mission Viejo, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Feb. 27, 1978, Ser. No. 881,618
Int. Cl.^{2} F16C *33/76*
U.S. Cl. 308—8.2 **13 Claims**

1. A rotary rock bit comprising:

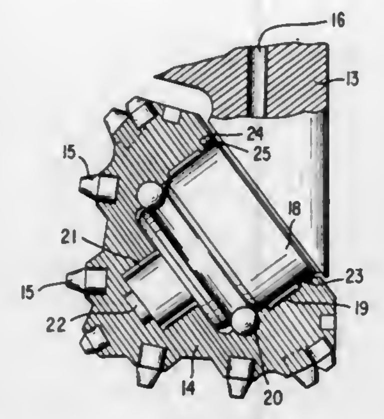
a main bit body having at least one leg extending downwardly therefrom, each leg having a journal projecting radially inward therefrom, each journal having an outwardly facing bearing surface;

a cutter rotatively mounted on each said leg journal, each cutter having an inwardly facing bearing surface engaging the bearing surface of said registering leg journal;

lubrication means for supplying lubricant to the bearing surfaces between each cutter and journal assembly;

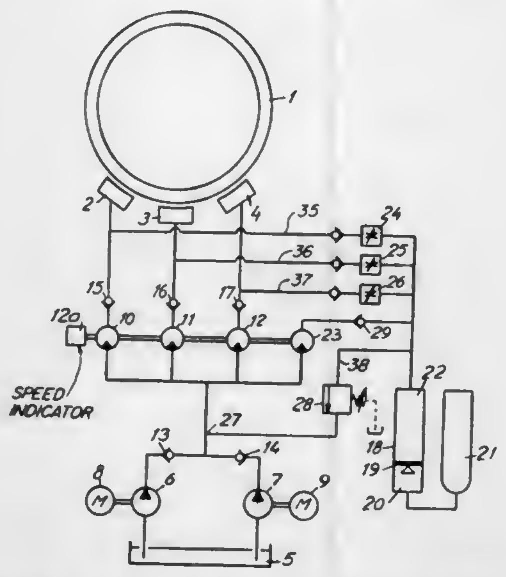
an annular seal positioned within a gland between each cutter and journal assembly for preventing lubricant from leaking to the exterior of the assembly, said seal having a side which faces the exterior of the assembly;

an annular ring positioned within each gland adjacent said side of the seal, each annular ring extending the full depth of the respective gland that the ring is located in, thereby preventing exterior matter from passing therethrough to attack the seal.



4,194,796
DEVICE FOR MAINTAINING A REQUIRED LIQUID PRESSURE IN A HYDROSTATIC BEARING

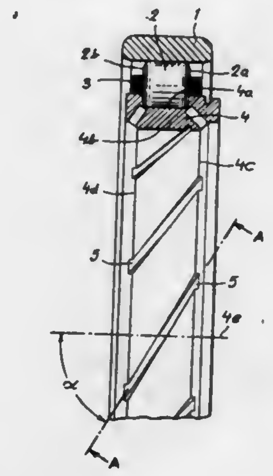
Bengt H. Svensson, Köpingebro; Lars G. Lindberg, Smedjebacken, and Karl G. A. Hallstedt, Floda, all of Sweden, assignors to Aktiebolaget SKF, Goteborg, Sweden
Filed Sep. 5, 1978, Ser. No. 939,707
Int. Cl.^{2} F16C *39/04;* F16N *29/04;* F01M *1/20*
U.S. Cl. 308—9 **4 Claims**



1. A device for maintaining a required liquid pressure in a hydrostatic bearing having a pump actuated liquid supply system during its slow-down time at pump failure, incorporating an accumulator (18, 22) connected in the liquid supply system of the bearing and having means (19, 20, 21) for maintaining a sufficient liquid pressure on the liquid contained in the accumulator, characterized thereby, that a portion of liquid in the system is led through a particular pressure generating member (23, 32, 33) in which it is given a pressure higher than the maximum liquid pressure in the bearing, that the accumulator (18, 22) is adapted to communicate with this portion of the pressure liquid whereby the liquid pressure inside the aummulator (18, 22) is, greater than the maximum liquid pressure in the bearing and that a part of said portion of the pressure liquid is led to the bearing via one or more constant flow valves (24, 25, 26) and the remainder to a lower pressure position (27) in the system via a return conduit provided with a one-way valve (28), adapted to open when the liquid pressure corresponds to said higher pressure.

4,194,797
BEARING-RACE RING WITH LUBRICANT AND COOLING CHANNELS

Karl Hörmann, Dittelbrunn, and Hans Weigand, Schweinfurt, both of Fed. Rep. of Germany, assignors to Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany
Division of Ser. No. 728,191, Sep. 30, 1976, Pat. No. 4,129,344. This application May 24, 1978, Ser. No. 909,269
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1975, 2555923
Int. Cl.^{2} F16C *1/24*
U.S. Cl. 308—187 **7 Claims**



1. A bearing ring comprising a circular body having a pair of axially-spaced ends, lying in planes perpendicular to the axis of said body, an inner surface and an outer surface opposite said inner surface, one of said surfaces having a configuration constituting a race for rolling elements of a bearing, the other of said surfaces being formed with a multiplicity of spaced-apart linearly extending grooves inclined to the axis of said ring and running substantially from one end to the other end thereof, each groove terminating at a level substantially identical to that at which a successive one begins.

4,194,798
SIDE CHANNEL COMPRESSOR WITH AT LEAST ONE BEARING ARRANGED AT THE HOUSING COVER OF THE SIDE CHANNEL COMPRESSOR

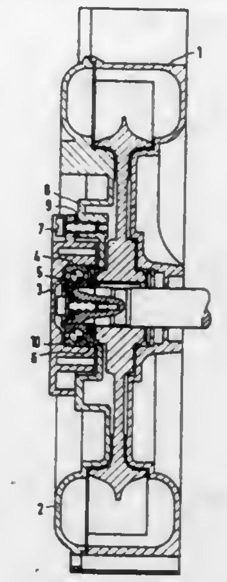
Siegfried Schönwald; Rudolf Schoning; Eberhard Breyer, all of Bad Neustadt, and Gert Hecht, Bremen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 21, 1978, Ser. No. 888,734
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1977, 2713091
Int. Cl.^{2} F04D *23/00*
U.S. Cl. 308—189 R **5 Claims**

1. In a side channel ring compressor having a housing cover and a ball bearing arranged at said housing cover, the improvement comprising:

(a) a separate bearing cap, said bearing cap having a bore therein, said bearing arranged wholly within said bore such that the radial periphery of said bearing contacts only said bore, said bearing cap attached to said cover at a plurality of circumferentially spaced fastening locations;

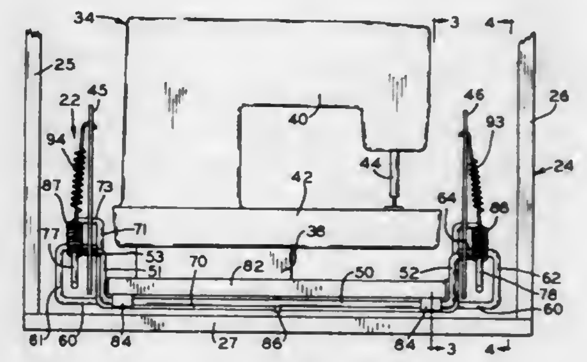
(b) a centering rim on said housing cover; and

(c) a layer of insulation inserted between said cover and said bearing cup at said fastening locations, said layer being formed of a material which is a poor heat conductor so as to inhibit heat transfer from said cover to said cap, whereby the transfer of heat from said cover to said bearing will be minimized thereby avoiding a substantial temperature rise which could have a detrimental effect on lubricant for said bearing.



4,194,799
MOUNTING UNIT FOR FREE ARM SEWING MACHINE

Eugene M. White, 1624 Franklin Ave., Fort Wayne, Ind. 46808
Filed Jul. 5, 1978, Ser. No. 921,955
Int. Cl.^{2} A47B *81/00, 29/00*
U.S. Cl. 312—21 **30 Claims**



1. A mounting mechanism for a free arm sewing machine comprising:

a frame,

a sewing machine support platform,

a first pivot arm connected to said frame about a first pivot for rotation about a first axis,

first means pivotally connecting said platform to said first pivot arm about a second pivot for rotation about a second axis parallel to said first axis,

a second pivot arm pivotally connected to said frame about a third pivot arm for rotation about a third axis parallel to said first and second axes,

second means pivotally connecting said platform to said second pivot arm about a fourth pivot for rotation about a fourth axis parallel to said first, second and third axes,

said platform being moveable relative to said frame selectively to an upper use position, a lower use position below said upper use position, and a storage position generally below said lower use position, and

latch means for latching said platform in one of its upper use and lower use positions and for unlatching said platform when three of said pivots are urged toward mutually coplanar positions.

4,194,800

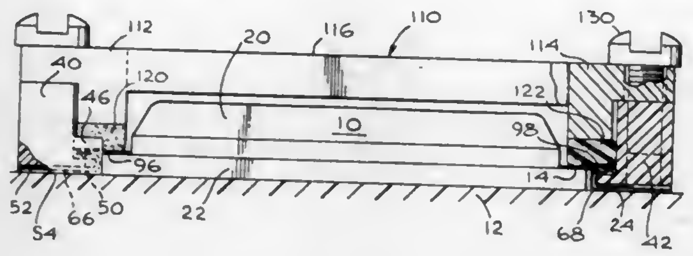
CONNECTOR ASSEMBLY FOR LEADLESS MICROCIRCUIT DEVICE

Weichien Chow, Park Forest, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 21, 1978, Ser. No. 879,905

Int. Cl.² H05K ***1/12***

U.S. Cl. 339—17 CF **14 Claims**



1. A connector assembly useful in combination with an integrated circuit device having a plurality of conductive pads arranged in a predetermined pattern on a substantially planar surface thereof for mounting and electrically connecting said device to a circuit board also having a plurality of conductive pads arranged in a predetermined pattern thereon, said connector assembly comprising:

- a first contact bank comprised of a plurality of electrical contacts electrically connected to said circuit board pads;
- a first elongated anchor plate secured to said circuit board physically engaging and supporting said first contact bank relative to said circuit board;
- a second elongated anchor plate secured to said circuit board and spaced from said first anchor plate by a distance sufficient to accommodate said circuit device therebetween;
- a second contact bank comprised of a plurality of elongated electrical contacts disposed so as to bridge the spacing between said first contact bank and said circuit device pads; and
- clamping means attachable to said first and second anchor plates for bearing against one of said contact banks to clamp said circuit device against said circuit board and to produce good electrical contact between said circuit board pads, said first contact bank, said second contact bank and said circuit device pads.

4,194,801

CROSS-CONNECTING COMB FOR ELECTRICAL TERMINALS

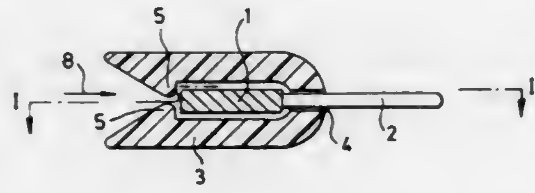
Arno Fitzler, Herford, and Hans-Herbert Kordt, Osterode, both of Fed. Rep. of Germany, assignors to C. A. Weidmuller KG, Detmold, Fed. Rep. of Germany

Filed Jul. 21, 1978, Ser. No. 926,983

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 7723993[U]

Int. Cl.² H01R ***13/48, 31/08***

U.S. Cl. 339—19 **3 Claims**



1. A comb for making electrical cross-connection between electrical terminals, said comb comprising

- (a) a multiplicity of metal teeth and a metal back interconnecting said teeth, and
- (b) a unitary sheath of resilient insulating plastic material enclosing the back of said comb, said sheath comprising
  - (i) an extruded strip having a cross section in the shape of a "U" and provided with apertures at one end of the cross section through which apertures said teeth project, and
  - (ii) an integral locking rib of ratchet-tooth cross section extending along the inner surface of at least one leg of the "U" adjacent to the free end of said leg, the legs of the "U" being deflectable for permitting insertion of said back, and said rib engaging behind said back due to the resilience of said sheath, for retaining said back within said sheath.

4,194,802

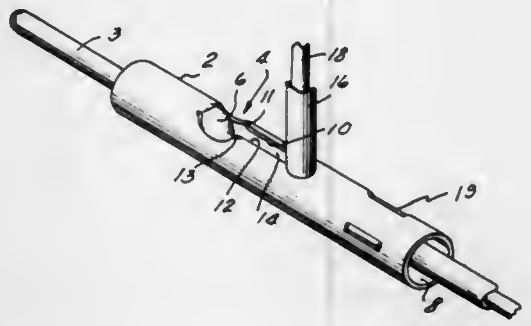
INSULATION PIERCING CONTACTS AND CONNECTORS

Tedford H. Spaulding, Norridge, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 723,158, Sep. 14, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,365

Int. Cl.² H01R ***13/38***

U.S. Cl. 339—97 P **15 Claims**



1. An electrical contact member for termination of an insulation covered electrical conductor, comprising:

- an axially extending peripherally closed metal tube including a wall portion, and insulation-opening means disposed axially within said wall portion and including a slot extending radially through said wall portion for exposing and providing electrical engagement between the conductor and said wall portion, said insulation-opening means including axially opposed closed ends and an entry opening adjacent said slot for passage of the conductor radially through said wall portion of said tube, said wall portion including axially extending edges partially forming said slot and continuously integral with said closed ends for reducing the tendency of said slot to open wider when the insulated conductor is introduced into engagement therewith, said wall portion including an inner section adjacent said slot and an entry ramp for angular deflection of the conductor for positioning the conductor in said section and through said wall portion.

4,194,803

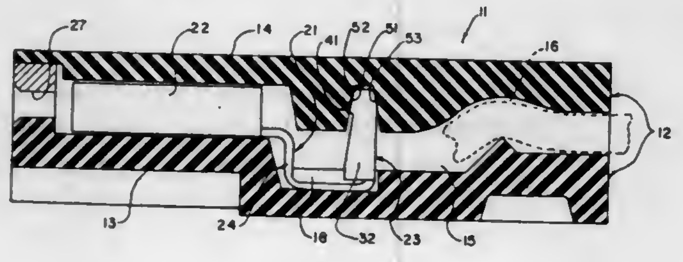
CONNECTOR FOR FLAT RIBBON CABLE

David A. Hatch, Sherborn, Mass., assignor to PINTEK, Inc., Newton Upper Falls, Mass.

Filed May 15, 1978, Ser. No. 906,055

Int. Cl.² H01R ***13/38***

U.S. Cl. 339—99 R **21 Claims**



15. A connector for terminating a plurality of insulated electrical conductors, said connector comprising:

- a housing means defining a slot for receiving the ends of the conductors, said housing comprising a base defining a row of contact receptacles and a cover defining catch means having catch portions aligned with said receptacles; and
- a plurality of contacts each retained by one of said receptacles and comprising spaced apart cutting edges that define a conductor slot for receiving a different one of the conductors, said cutting edges being adapted and arranged to penetrate the insulation surrounding the received conductor and to make electrical contact therewith, each of said contacts further comprising a latch means with engaging surface means for engaging said catch means so as to fasten said base to said cover, and wherein said catch means and engaging surface means are shaped and arranged such that the forces produced in response to engagement therebetween are oriented so as to have substantially no tendency to cause relative movement between said cutting edges.

4,194,804

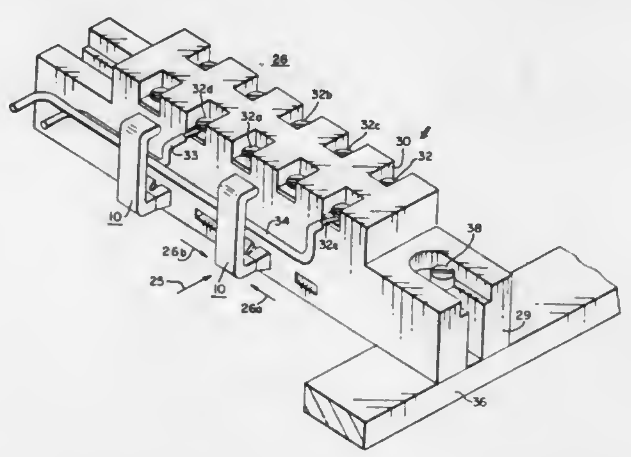
WIRE RETAINING FINGER

Angelo N. Vinch, Warren, and Anthony G. Schad, Troy, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 576,933, May 12, 1975, abandoned. This application Oct. 28, 1976, Ser. No. 736,293

Int. Cl.² H01R ***9/22, 13/58***

U.S. Cl. 339—103 M **4 Claims**



1. Electrical apparatus which is interconnectable with an electrical conductor, comprising:

- (a) an elongated terminal board having a flat side surface and a flat front surface which is angularly disposed from said side surface; and
- (b) a plurality of retaining fingers each of which is independently detachably attached to and spaced longitudinally along said side surface of said terminal board, said retaining fingers and adjacent portions of said side surface of said terminal board structurally cooperating to form partially enclosed regions which are perpendicular to the plane of said side surface and the plane of said front surface and through which said conductor is extendable for channeling said conductor, said terminal board having terminals along said front surface for connection with said conductor.

4,194,805

ELECTRICAL CONTACTING ELEMENT

George E. Ayer, Endicott, and Hurley J. Blakeney, Gilbertsville, both of N.Y., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

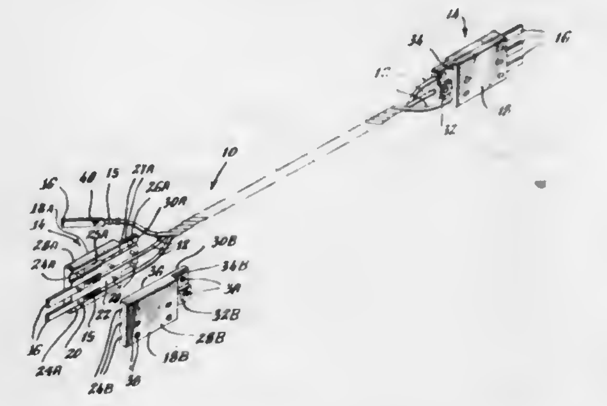
Continuation of Ser. No. 538,475, Jan. 6, 1975, abandoned, which is a continuation of Ser. No. 345,713, Mar. 28, 1973, abandoned. This application Feb. 6, 1976, Ser. No. 655,723

Int. Cl.² H01R ***13/40, 13/62***

U.S. Cl. 339—107 **2 Claims**

1. An electrical connecting element comprising

- a thin, generally flat insulating housing including longitudinally disposed forward and rear portions,
- at least two electrical contacts secured in said forward portion and extending forwardly therefrom for connection to a mating connector,
- the rear portion including a perimeter, a thinned, longitudinally-projecting portion within said perimeter including at least two longitudinal grooves laterally separated for receiving a pair of conductors and strain relief means disposed within each groove, and element removal means for removing said element from said mating connector and laterally disposed apart from said grooves, said removal means including at least one rearwardly-covered lateral opening accessible within said perimeter by lateral insertion of a tool into said opening without interference by said conductors, said housing including
- first and second housing members each formed on an insulating material, said members having mating sides which are fitted together to form the members into a housing for the element, said first member having a plurality of pins projecting from the mating side thereof, said second member having a hole therethrough for each of said pins, the length of said pins and the relative positions of said pins and holes being such that each pin passes through a corresponding hole and is exposed on the side of said second member opposite its mating side, the portion of each pin exposed beyond the second member being cold-flow expanded to hold the members together, at least one of said members having one or more grooves formed in its mating side,
- one of said electrical contacts being positioned and held in each of said grooves, at least one of said contacts having at least one hole formed therethrough.
- and at least one of said pins being positioned to pass through a hole of a contact, when the element is fully assembled, to hold the contact in the housing.



4,194,806

CONNECTOR

Herbert J. Macemon, Versailles, Ky., assignor to Kuhlman Corporation, Troy, Mich.

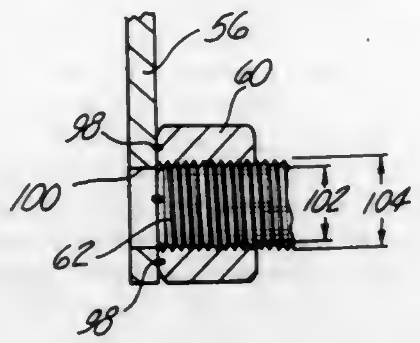
Filed Dec. 12, 1975, Ser. No. 640,011

Int. Cl.² H01R ***11/08***

U.S. Cl. 339—263 R **4 Claims**

1. A connector comprising a unit having a threaded male member of a preselected hardness and ductility and having a male thread on a portion thereof, said male thread having preselected root and major diameters, a female member having a first internally threaded portion with a female thread accepting and mating with said male thread, and means effective upon the threading of said threaded male member through and beyond said first portion for producing an axial force tending to force surfaces of said male thread into forceable engagement with surfaces of said female thread and for limitedly increasing the torque required to further threadedly advance said male member through said first portion to a value greater than a first preselected value but less than a second larger preselected value comprising a second portion of said female member

having a bore beyond and coaxial with said internally threaded portion and of a diameter at least as large as said preselected root diameter, and smaller than said major diameter, said second portion being of greater hardness and lesser ductility than said preselected hardness and ductility, said first internally threaded portion being a weld nut, said second portion being a support member for supporting said weld nut, said weld nut being welded to said support member.



4,194,807

OPTICAL FIBER WAVE-GUIDES FOR SIGNAL TRANSMISSION COMPRISING MULTIPLE COMPONENT GLASS WITH AN ADJUSTED EXPANSION CO-EFFICIENT BETWEEN THE CORE AND MANTLE

Georg Gliemeroth, 21 Zeisigweg 18, 6500 Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 783,626, Apr. 1, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,310

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615534

Int. Cl.² G02B ***5/14***

U.S. Cl. 350—96.31 **7 Claims**

1. Optical fiber wave-guide for signal transmission whose linear thermal expansion coefficient in all of the fiber elements lies above $15\times10^{-7}/°C.$ characterized in that the optical fiber wave-guide consists of an outer mantle which is composed of the following components:

Component	Weight %
SiO_2	51-92
$\Sigma\ Al_2O_3 + ZrO_2 + La_2O_3$ $+ TiO_2 + B_2O_3 + P_2O_5$	1-40
P_2O_5	0-5
B_2O_3	0-26
Al_2O_3	0-28
ZrO_2	0-5
Alkali Oxide Σ + Alkaline Earth Oxide	2-40
BaO	0-7
CaO	0-10
MgO	0-9
PbO	0-6
ZnO	0-8
La_2O_3	0-6
Na_2O	0-12
K_2O	0-8
Li_2O	0-4

which is silicate glass drawn from a melt, and has a linear thermal expansion coefficient which lies between 15 and $120\times10^{-7}/°C.$, and the optical fiber wave-guide has a second, inner SiO_2-free mantle which is composed of the following components:

Component	Weight %
GeO_2	50-100
P_2O_5	0-45
B_2O_3	0-20
Al_2O_3	0-12

and corresponds in its linear thermal expansion coefficient to that of the outer mantle with a tolerance of $\pm5\times10^{-7}/°C.$, and the optical fiber wave-guide has an inner, SiO_2-free core, which is composed of 50–99 weight percent of GeO_2 and at least two oxides selected from the group consisting of Sb_2O_3, Al_2O_3, B_2O_3, As_2O_3, BaO, PbO, alkali oxide, alkaline earth oxide, La_2O_3, SnO_2, TiO_2, WO_3, ZnO, ZrO_2, and Ga_2O_3, and characterized in that the inner mantle and the core are produced as an inner layering on the inside surface of a silicate glass tube by vapor deposition process from the gas phase, characterized in that the refractive index n_d in the total vapor deposited inner layer lies above 1.55 and increases from the outside to the inside of the inner layer, which inner layered tube is collapsed to a preform and the preform is drawn to a fiber and the core has a refractive index gradient which corresponds to the formula for a parabola with an exponent between 1.7 and 2.1.

4,194,808

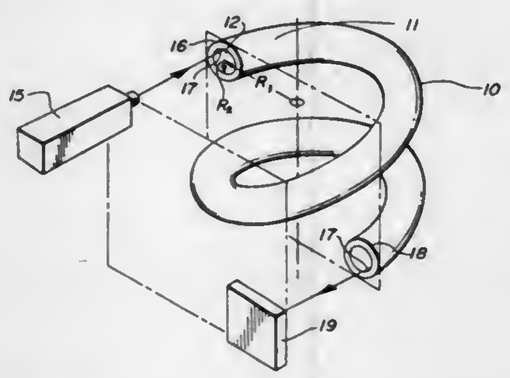
WAVE GUIDE FOR SURFACE WAVE TRANSMISSION OF LASER RADIATION

Michel E. Marhic, Evanston; Max Epstein, Highland Park, and Larry I. Kwan, Skokie, all of Ill., assignors to Northwestern University, Evanston, Ill.

Filed May 26, 1978, Ser. No. 909,633

Int. Cl.² G02B ***5/14***

U.S. Cl. 350—96.32 **14 Claims**



1. A wave guide for surface wave transmission of a beam of laser radiation having a wavelength of about 1 μm to about 2000 μm, comprising

an elongated generally concave channel having a radius of curvature R_1 and a wave reflective inner surface,

said channel having a generally semi oval transverse cross-section with an internal radius R_2, wherein R_2 is less than R_1 and R_1 is less than about 48 meters;

whereby spatial mode coherence is preserved during transmission of laser radiation through said wave guide.

4,194,809

MOTION REFLECTOR

James V. Campagna, Jr., North Olmsted, Ohio, assignor to Motion Reflector Industries, Inc., North Olmsted, Ohio

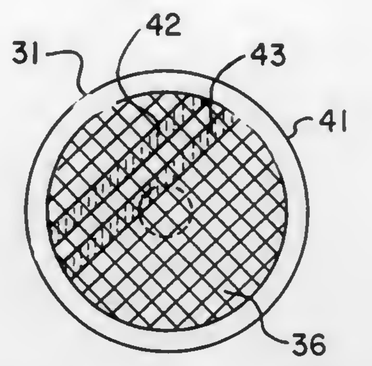
Filed Oct. 14, 1977, Ser. No. 842,281

Int. Cl.² G02B ***5/12***

U.S. Cl. 350—97 **2 Claims**

1. A motion reflector for improved safety which comprises:

(A) a reflecting device having disposed at the edge thereof at least one first non-reflective, dark-colored area and at least one first highly visible area of a fluorescent color, the reflecting device being made of a lenticular material, the first highly visible area of a fluorescent color being disposed to be viewed in one aspect, and a second highly visible area of a fluorescent color being disposed to be viewed in another aspect;



(B) flexible metal attachment means affixed to the reflecting device; and

(C) means for affixing the attachment means to an object.

4,194,810

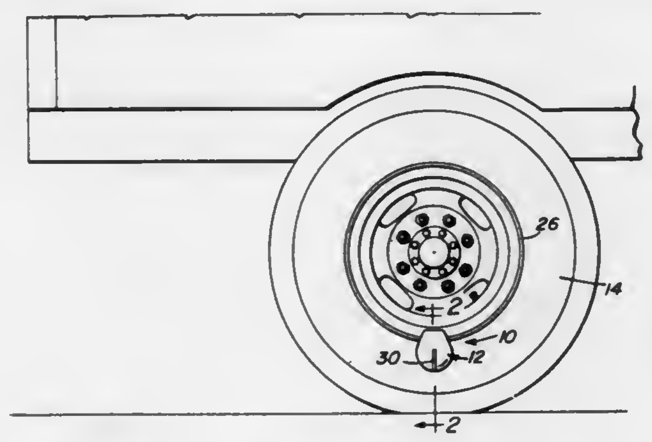
TRUCK TIRE SAFETY REFLECTOR

Dennis E. Eller, Algona, Iowa, assignor to Donald J. Hess, Clear Lake, Iowa, a part interest

Filed Oct. 23, 1978, Ser. No. 954,569

Int. Cl.² G02B ***17/02***

U.S. Cl. 350—99 **7 Claims**



1. A safety reflector device for attachment to the rim of a wheeled vehicle comprising: a main body portion having a reflective coating connected thereto; a clip means attached to the body portion for connection to the rim of a wheeled vehicle to hold the body portion against the tire of the wheeled vehicle, said clip means comprising a bulge connected to said body portion and a resilient curved member coaxial with said bulge for insertion behind said rim to hold said rim betweeen said resilient member and said bulge; and a substantially flat reflective member connected to the body portion and extending laterally from the body portion for providing reflections in a plane parallel with the longitudinal dimension of the wheeled vehicle.

4,194,811

REMOTELY CONTROLLED ELECTROMAGNETIC OPTICAL FOCUSING ASSEMBLY

James D. Barry, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 3, 1978, Ser. No. 902,523

Int. Cl.² G02B ***7/04***

U.S. Cl. 350—255 **2 Claims**

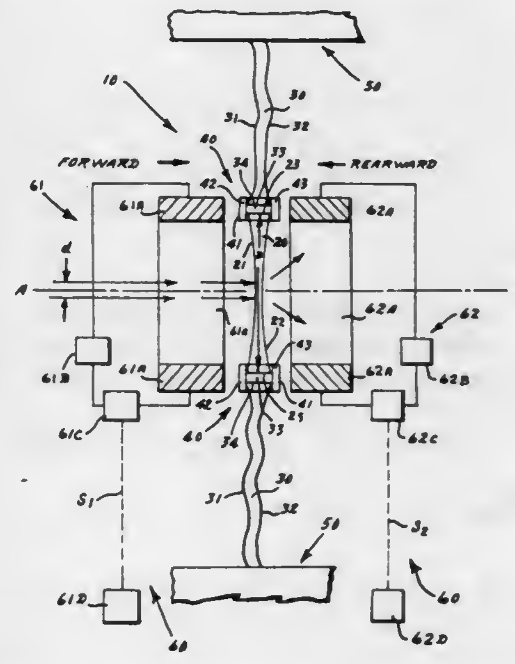
1. A remotely controlled electromagnetic optical focusing assembly, adapted for use with a collimated light beam having a preselected diameter, comprising:

a. a lens having a first side, a second side, a circumference, and a diameter in excess of three times larger than the diameter of said light beam, wherein said lens is disposed in optical and also in geometric alignment with said light beam;

b. a diaphragm made of opaque resilient material and having a first side, a second side, and a circular aperture with a circumference adjacent to and encircling said circumference of said lens;

c. magnetic means for interconnecting said diaphragm and said lens, wherein this means includes a ring-like component made of magnetic material interconnecting said diaphragm and said lens which further includes:

(1) a first metallic circular strip connected to a portion of said first side of said lens, and also connected to a portion of said first side of said diaphragm, thereby covering said circumference of said aperture of said diaphragm, and also covering said circumference of said lens;



(2) and, a second metallic circular strip connected to a portion of said second side of said lens, and also connected to a portion of said second side of said diaphragm, with said second metallic circular strip in registration with said first metallic circular strip;

d. means for supporting said diaphragm, said lens, and said interconnecting means;

e. and, means for remotely and selectively causing a translational movement of said lens in a predetermined direction.

4,194,812

ELECTROCHROMIC DEVICE

Toshitami Hara, Tokyo; Yoshioki Hajimoto, Chofu; Yoshiaki Shirato, and Massaki Matsushima, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha Toshitama Hara, Tokyo, Japan

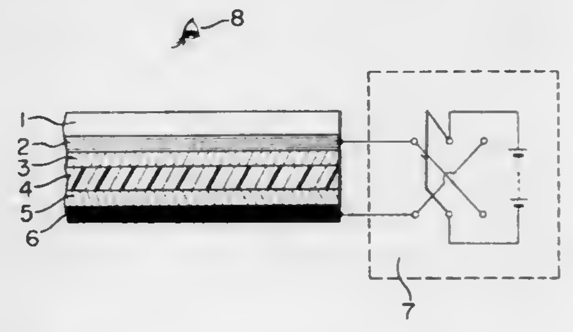
Filed Jul. 2, 1976, Ser. No. 701,987

Claims priority, application Japan, Jul. 3, 1975, 50-82272

The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.² G02F ***1/17***

U.S. Cl. 350—357 **19 Claims**



1. An electrochromic device which comprises an electrochromic layer comprising a transition metal compound sand-

wiched in between a first auxiliary electrochromic layer and a second auxiliary electrochromic layer, and each of the auxiliary electrochromic layers comprising at least one metal compound containing at least one metal different from the metal in the transition metal compound in the electrochromic layer, and the difference in electro-negativity between both metals being not more than 0.4 the thus sandwiched electrochromic layers being further sandwiched between opposed counter electrodes, at least one of said counter electrodes being light transmissive and each of said counter electrodes directly contacting the auxiliary electrochromic layer being a metallic electrode and electric current necessary for color forming of the electrochromic layer being capable of flowing through both auxiliary electrochromic layers.

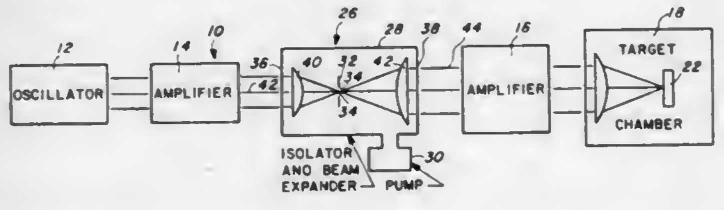
4,194,813
VACUUM APERTURE ISOLATOR FOR RETROREFLECTION FROM LASER-IRRADIATED TARGET

Robert F. Benjamin, and Kenneth B. Mitchell, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 13, 1978, Ser. No. 951,203

Int. Cl.^{2} G02F *1/00*

U.S. Cl. 350—363 **5 Claims**



1. A structure for inhibiting retroreflection in a laser system to eliminate retropulse damage to optical components of said system, said structure comprising:

a vacuum chamber having elements transparent to radiation of the frequency to be utilized disposed at either end of a laser beam path through said chamber;

an aperture containing disc disposed in said chamber with the aperture thereof being on said beam path;

means for converging light from a laser beam traveling said beam path onto said aperture, said aperture being just sufficiently small that the beam damages its edges, thereby creating a plasma for refracting any retroreflected radiation from a laser target away from the beam path; and

means for recollimating the portion of the beam passing through said aperture.

4,194,814
TRANSPARENT OPTHALMIC LENS HAVING ENGRAVED SURFACE INDICIA

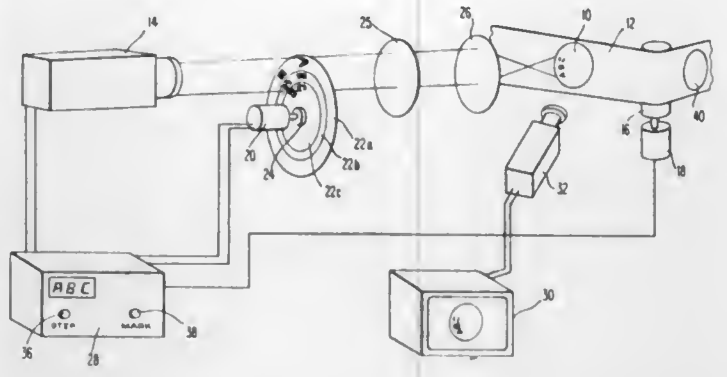
David J. Fischer, Sarasota; James A. McCandless, St. Petersburg, both of Fla., and James D. Hager, Santa Monica, Calif., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Nov. 10, 1977, Ser. No. 850,133

Int. Cl.^{2} G02C *7/04*

U.S. Cl. 351—160 R **10 Claims**

1. An ophthalmic lens adapted to be placed in direct contact with eye tissue formed of a transparent crosslinked polymer material, said lens being characterized by identifying indicia engraved in a surface thereof by subjecting said lens to a beam of radiation emerging from a laser having an intensity and wavelength at least sufficient to sublimate said polymer and form depressions in said lens surface to a depth less than the thickness of said lens, said lens having a smooth surface of unsublimated polymer material surrounding said depressions, and by varying in a predetermined manner the point at which said laser beam impinges upon said lens surfaces to engrave said identifying indicia in said lens surface.



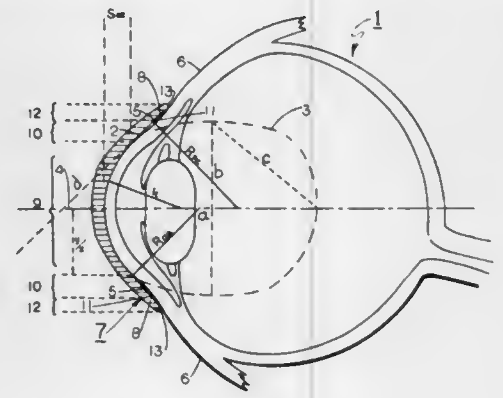
4,194,815
SEMI-SCLERAL CONTACT LENS

Wayne E. Trombley, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 28, 1978, Ser. No. 919,651

Int. Cl.^{2} G02C *7/04*

U.S. Cl. 351—160 R **12 Claims**



1. A semi-scleral contact lens having an interior surface shaped relative to the topography of an individual eyeball so that the lens exhibits central contact and edge contact with tearfilm clearance therebetween and tear exchange with blinking, the lens comprising:

(a) an optical zone which is the spherical equivalent of the radius of curvature (k) of the cornea at its optical centerline and the corneal dimensional diameter (y), the optical zone having a sagittal depth described by the formula

$$S_{0z} = a - \sqrt{a^2 - \frac{y^2}{Sf}}$$

where a is k/Sf, Sf is $1\text{-}E^2$, and E is the degree of eccentricity of the ellipse described by the cornea, and the optical zone having a radius of curvature described by the formula

$$R_{0z} = \frac{\frac{Y^2}{S_{0z}} + S_{0z}}{2};$$

(b) a conic section between the circumference of the optical zone and a selected point over the limbus, the conoid being tangent to the optical zone at its circumference; and

(c) a curved peripheral section between the selected point and the edge of the lens, the peripheral section having a radius of curvature which is perpendicular to the conoid section at the selected point and which extends from the selected point to the optical centerline of the cornea.

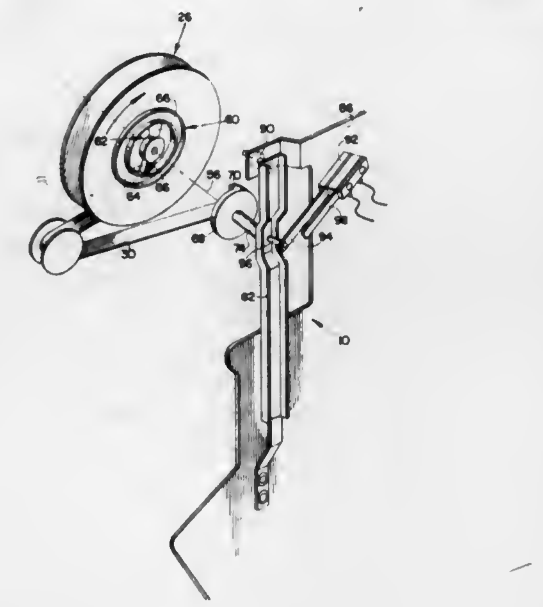
4,194,816
HIGH SPEED ROTATING DRIVE TERMINATION SYSTEM

Bernard W. Ruck, Milford; Joseph A. Stella, Peabody, and Edward K. Bullock, Marblehead, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 7, 1977, Ser. No. 848,815

Int. Cl.^{2} G03C *11/00*

U.S. Cl. 352—130 **17 Claims**



1. Apparatus comprising:

a cassette including:

a first rotatably mounted spool;

a second rotatably mounted spool, said second spool including means for engaging a shaft, said engaging means including a first abutment surface extending outwardly of one side of said second spool and a second abutment surface extending outwardly from said one side of said second spool and canted at an angle with respect to its axis of rotation so as to face said second spool's first abutment surface in spaced relationship around its said axis of rotation with respect thereto;

means for depositing a coating of fluid on said elongated strip of material during at least its first advancement from said second spool to said first spool; and

an elongated strip of material having its opposite ends respectively connected to the first and second spools with a major portion thereof coiled around one of said spools; and

a cassette operating device including:

means for receiving and mounting the cassette;

a rotatably mounted drive assembly engageable with said first spool;

a rotatably mounted shaft engageable with said second spool, said shaft including a first abutment surface extending outwardly thereof in a manner so as to be engageable with said first abutment surface of said second spool and caused to be rotated in a first direction when said drive assembly is actuated to effect the advancement of portions of said strip of material coiled around said second spool onto and around said first spool, said first abutment surface of said second spool and said first abutment surface of said shaft being configured so that the former does not exert force on the latter at such times tending to urge said shaft axially away from said second spool, and a second abutment surface extending outwardly from said shaft at an angle canted with respect to its axis of rotation so as to face said shaft's first abutment surface in radially spaced relationship around its said axis of rotation with respect thereto, said second abutment surface of said second spool thus serving to exert forces against said second abutment surface of said shaft tending to displace said shaft away from said second spool in a direction axially thereof when substantially all of said strip of material has been uncoiled from said second spool causing the termination of rotation of said second spool and inertial forces in said shaft continue to effect rotational movement of said shaft in said first direction displacing its said second abutment surface into engagement with said second abutment surface of said second spool;

means for mounting said shaft for axial displacement between a first position wherein said first abutment surface thereof and said first abutment surface of said second spool are operably disposed for purposes of effecting driving engagement therebetween and a second position wherein said shaft is axially disposed a further distance away from the other side of said second spool, and for yieldably restraining said shaft in its said first position, the forces acting between said second abutment surfaces of said second spool and said shaft when said second spool has ceased rotating and the inertia of said shaft causes said shaft to continue to rotate in said first direction being effective to displace said shaft from its said first position towards its said second position;

motor means energizable by a source of electrical energy for selectively imparting torque forces on said drive assembly to effect the rotation thereof about its axis of rotation in a direction advancing portions of said strip of material coiled around said second spool onto and around said first spool thereby imparting a rotation of said second spool about its said axis of rotation in said first direction thereby effecting deposition of said fluid upon said elongated strip; and

means responsive to the displacement of said shaft from its said first position into its said second position for terminating said torque forces thereby minimizing any tensioning forces on the elongated strip after such advancement has been completed, thereby also minimizing contact between adjacent convolutions of the strip wound upon said first spool following the deposition of the fluid thereon.

4,194,817
MARKING OF INTERSPERSED MOTION-PICTURE SCENES AND STILL SHOTS WITH INTERRUPT-TRANSPORT MARKINGS

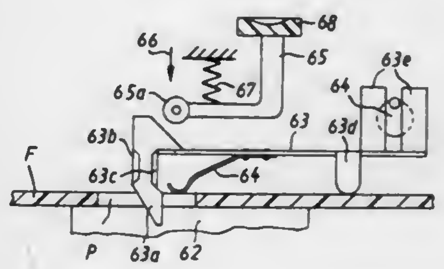
Frank Staudacher, Haan; Otto Stemme, Münich; Peter Lermann, Narring; Werner Went, Leverkusen; Volkmar Stenzenberger, Unterhaching; Eberhard Herzig, Cologne; Friedrich Stumpf, Münich; Thomas Scheller, Münich; Jürgen Sylla, Münich; Friedrich Winkler, and Johann Zanner, both of Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 950,127

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746036

Int. Cl.^{2} G03B *21/38*

U.S. Cl. 352—169 **3 Claims**



1. In an apparatus for recording motion pictures on a recording medium, in combination, means for recording successive image frames on successive portions of the recording medium; and marking means operable by the user for providing the recording medium with interrupt-transport markings correlated with predetermined image frames, whereby when the

recording medium is run through a reproducing apparatus provided with a marking detector the detection of the interrupt-transport markings can be used to interrupt recording medium transport and persistently reproduce the predetermined image frames as still images, the recording medium being photographic motion-picture film provided with film-frame perfomations running alongside one longitudinal edge of the film, the marking means comprising cutting means for making cuts in the film extending transversely to the direction of elongation of the film from such perforations to the nearer of the two longitudinal edges of the film, the apparatus including a film transport mechanism, the film transport mechanism including a film transport claw which enters into film perforations for intermittent transport of the film, the cutting means being provided on the film transport claw and normally not cutting the film, and furthermore including means for displacing the transport claw into a position in which the cutting means cuts the film and produces an interrupt-transport frame marking.

4,194,818

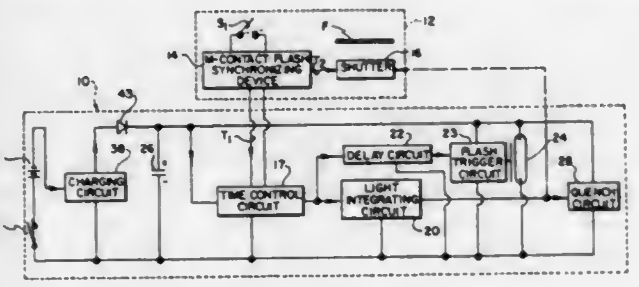
ELECTRONIC FLASH UNIT FOR FILL-FLASH PHOTOGRAPHY

Lawrence J. Matteson, and David J. Shonts, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,398

Int. Cl.² G03B *15/05*

U.S. Cl. 354—33 **4 Claims**



1. In electronic flash apparatus for use with a camera, the camera including (1) a movable shutter having a lead time defined by the interval required for the shutter to move from (i) a light-blocking position, to (ii) a fully-opened light-unblocking position, and (2) synchronizing means actuatable for producing artificial illumination in synchronization with actuation of the shutter, said electronic flash apparatus having (1) a flashtube for producing light to illuminate a scene, and (2) means operable, upon energization thereof, for triggering said flashtube to produce such light, the improvement comprising:

(a) integrating means having (1) a first condition in which it is non-responsive to light, and (2) a second condition in which it is responsive to light, said integrating means being exposable to light to produce a terminating signal when said integrating means responds to a predetermined amount of light representative of a desired exposure;

(b) control means, coupled to said integrating means, including bistable means having (1) a first state for maintaining said integrating means in its first condition, and (2) a second state for applying a fixed voltage to said integrating means for switching said integrating means into its second condition, said control means further including timing means, responsive to the actuation of the synchronizing means, for causing said bistable means to assume its second state for switching said integrating means from its first condition into its second condition substantially concurrently with movement of the shutter from its light-blocking position toward its fully-opened light-unblocking position, thereby causing said integrating means to commence to sense light substantially concurrently with impingement of scene light on film in the camera;

(c) time delay means, coupled to said bistable means and to said triggering means, for energizing said triggering means following the switching of said integrating means into its second condition, said time delay means providing a time delay which commences when said bistable means assumes its second state and which is at least as great as the lead time of the shutter such that said triggering means becomes energized only when the shutter is in its fully-opened light-unblocking position; and

(d) means, coupled to said integrating means, responsive to said terminating signal for preventing further discharge of said flashtube, whereby the light transmitted by said electronic flash apparatus is controlled in accordance with the total amount of light impinging on film in the camera.

4,194,819

DEVICE FOR CONFIRMING THE DEPTH OF FOCUS OF A CAMERA

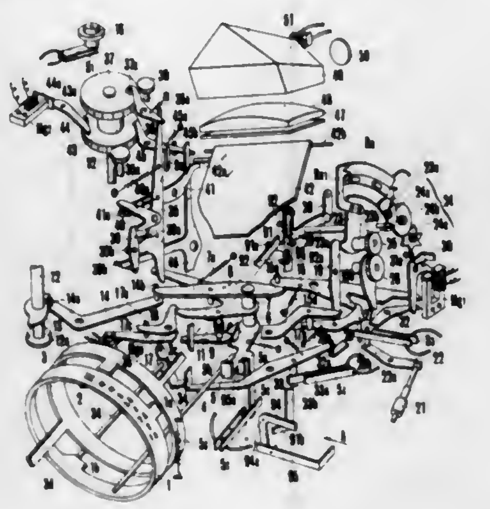
Fumio Ito, Yokohama; Masayuki Suzuki, Kawasaki; Hiroyashu Murakami, Tokyo; Nobuaki Date, Kawasaki; Tadashi Ito, Yokohama, and Akio Sunouchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 791,001, Apr. 26, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,167

Claims priority, application Japan, Apr. 28, 1976, 51-49108

Int. Cl.² G03B *7/08, 9/02*

U.S. Cl. 354—43 **6 Claims**



1. A camera having a device for confirming the depth of focus in combination with an interchangeable lens, said combination comprising:

(1) an interchangeable lens having a diaphragm device which is provided with aperture adjusting means including:

(a) an aperture ring which is rotatably mounted on an outer ring portion of the interchangeable lens and is provided with aperture value graduations for manual adjustment and an automatic exposure position mark; and

(b) aperture preset means which engages with the diaphragm device and the aperture ring for presetting the diaphragm device by the aid of a first urging member at a value corresponding to an aperture value graduation at which the aperture ring is set;

(2) a camera which permits mounting the interchangeable lens thereon including:

(a) automatic exposure control means provided with computing means for computing an aperture value by receiving information on the brightness of an object to be photographed and information on a setting made for photographing;

(b) automatic exposure aperture control means including an intermediate member which holds said aperture preset means at a predetermined position against an urging force of said first urging member, engaging means interlocked with an intermediate member through a second urging member, which serves to hold said intermediate member at a predetermined position, converting means which produces an electrical signal corresponding to the degree of movement of the engaging means, locking means for locking the engaging means at a predetermined position and stopping means for stopping the movement of the engaging means, said exposure aperture control means being arranged to move said aperture preset means to a position corresponding to the degree of movement of the engaging means;

(c) release means for releasing said locking means in response to a release action of the camera;

(d) electrical control means for producing a control signal on the basis of the signal produced by said computing means and the signal produced by the converting means;

(e) electromagnetic means which is electrically connected to said electrical control means and engages with said stop means for actuating the stop means in response to said control signal in such a manner as to stop the engaging means at a position corresponding to a computation output produced by said computing means; and

(f) automatic aperture means provided with actuating means which stops down the diaphragm device to a position where the aperture preset means which is interlocked with said engaging means is movable; and

(3) confirming means for combination with said camera and said interchangeable lens, the confirming means being provided with an operation member operable from outside of the camera, said operation member being arranged to move and cause said intermediate member against the urging force of said second urging member from said predetermined position to follow the movement of the aperture preset means and, at the same time, to operate said actuating means to stop a diaphragm device down to a setting value of aperture.

4,194,820

SPRING SERVO TYPE APERTURE CONTROL DEVICE IN A CAMERA

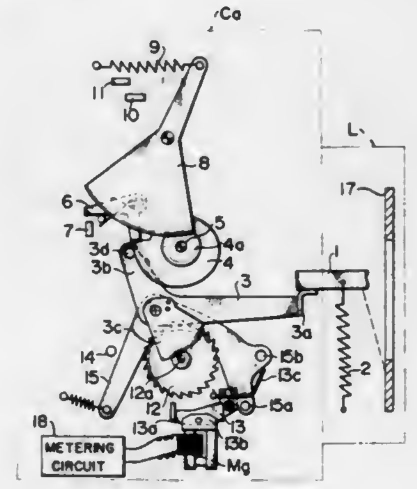
Yoshiyuki Nakano; Akihiko Sato, and Yoshitaka Araki, all of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,685

Claims priority, application Japan, Oct. 17, 1977, 52/123589

Int. Cl.² G03B *7/08, 9/02*

U.S. Cl. 354—43 **2 Claims**



1. An aperture control device in a camera having mounted thereon a lens having

(a) an aperture mechanism including an aperture blade and determining the aperture by varying the position of said aperture blade;

(b) an aperture lever connected to said aperture mechanism and displaceable between a first position for rendering said aperture blade to an open aperture and a second position for rendering said aperture blade to a minimum aperture; and

(c) a member for biasing said aperture lever toward said second position; said aperture control device comprising:

(d) a control member engaged with said aperture lever and movable between a third position and a fourth position corresponding to said first position and said second position, respectively;

(e) a spring member storing a drive force by shutter charge and giving forth the stored drive force by shutter release;

(f) a cam member disposed between said control member and said spring member and rotatable by the drive force of said spring member upon shutter release to drive said control member at a uniform velocity from said third position to said fourth position, said aperture lever stopping down the aperture in response to the movement of said control member from said third position to said fourth position;

(g) metering means including an electromagnetic means for blocking the movement of said control member when the quantity of light transmitted through the aperture being stopped down has reached a predetermined value; and

(h) a member adapted to return said control member to said third position after completion of exposure.

4,194,821

CAMERA WITH FILM-UNIT DRIVE

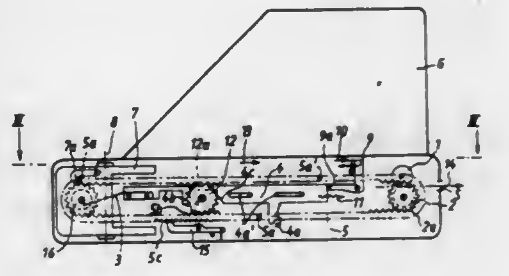
Otto Stemme, München; Peter Lermann, Narring, and Gunter Fauth, Unterhaching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,801

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753627

Int. Cl.² G03B *1/00, 17/50*

U.S. Cl. 354—86 **5 Claims**



1. In a camera, particularly in an instant picture camera, a combination comprising a pair of nip rollers; a film transporting member for moving film into the nip of said rollers; gear means, including at least one gear coupled with one of said rollers for joint rotation therewith; an internally toothed belt trained about said gear means in motiontransmitting relationship therewith; camera-mounted functioncontrolling elements; input means operatively connected with said belt for advancing the same in a predetermined direction and thereby turning said gear means; a slide mounted for movement in and opposite to said direction, said input means including a handle coupled to said slide and accessible to a user for effecting the movement of said slide; and operating means on said belt for operating at least some of said function controlling elements during advancement of the belt, including at least one projection engageable by said slide during movement thereof in said direction.

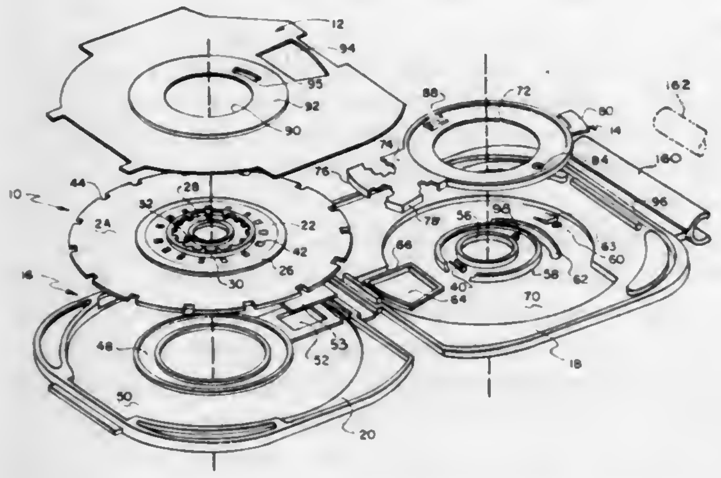
4,194,822
PHOTOGRAPHIC FILM CARTRIDGE ASSEMBLY AND CAMERA

Gurdip S. Sethi, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,053

Int. Cl.^{2} G03B *17/32, 19/10*

U.S. Cl. 354—121 **30 Claims**



1. In a photographic cartridge assembly of the type having (1) an opaque casing, a wall of which has an exposure window and (2) a film unit, with a photographic film disk having an exposure region, mounted in the casing for rotational movement relative to the casing such that different image areas on the exposure region are moved successively into alignment with the exposure window; the improvement comprising:

- a cover member including an opaque region, said cover member being mounted in the casing between the wall and the film disk for movement, independent of the film unit, between a closing position in which said opaque region is aligned with and closes the exposure window, and an opening position in which said opaque region is out of alignment with and opens the exposure window; and
- means operatively interconnecting said film unit and said cover member for imparting rotational movement to the film unit during and as a result of at least a portion of the movement of said cover member to bring successive image areas into alignment with the exposure window.

4,194,823
ARRANGEMENT OF A PHOTOGRAPHIC CAMERA HAVING TWO DEVIATING MIRRORS

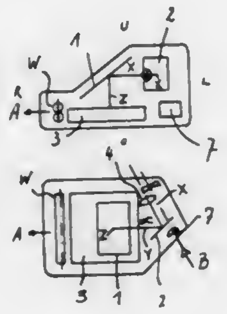
Günter Fauth, Unterhaching, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 885,073

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710439

Int. Cl.^{2} G03B *17/50, 15/00, 13/08*

U.S. Cl. 354—150 **1 Claim**



1. A photographic camera having a camera body; an objective in one wall of the camera body; and means for supporting a rectangular film strip disposed inside the camera body, comprising a first light deviating member arranged inside said camera body at an inclined position above the film strip, and a second light deviating member arranged at an inclined position behind said objective for reflecting light rays from said objective to said first deviating member, the mutual relative positions of said first and second deviating members and said objective being adjusted for directing at least one section of the optical axis of the polygonal path of travel of light rays in the camera at an oblique angle relative to the edges of said film strip; and the reflecting surfaces of said first and second deviating members extending parallel to each other.

4,194,824
CAMERA EQUIPPED WITH AUTOMATIC UNWINDING DEVICE

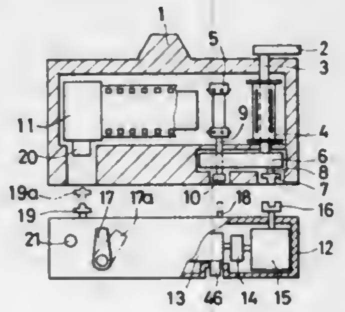
Akihiro Arai, Urawa, and Eiji Yamamori, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1978, Ser. No. 917,239

Claims priority, application Japan, Jun. 24, 1977, 52/83263

Int. Cl.^{2} G03B *1/18, 19/12*

U.S. Cl. 354—173 **3 Claims**



1. In a camera equipped with an automatic unwinding device and capable of multiple exposure operation, said camera having a film transport mechanism which is disabled by a means for disabling during both automatic unwinding and multiple exposure operations, the improvement characterized in that said disabling means comprises:

- independently operable multiple exposure operating means for disengaging said film transport mechanism during multiple exposure photography; and
- automatic unwinding operating means for both engaging said automatic unwinding device and operating said multiple exposure operating means to implement automatic unwinding.

4,194,825
PHOTOGRAPHIC CAMERA

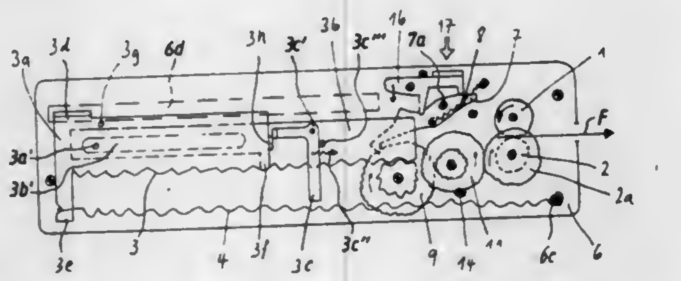
Günter Fauth, Unterhaching, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,577

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1976, 2653247

Int. Cl.^{2} G03B *1/00, 17/52*

U.S. Cl. 354—212 **8 Claims**



1. In a photographic camera, particularly in an instant-picture camera, a combination comprising a housing; transporting means, including a plurality of transporting elements for transporting a film; manually operable actuating means extending in part from said housing and mounted for movement relative to said housing from a starting position to an operating position to thereby operate said transporting means, and back to said starting position, said actuating means comprising an actuating portion which is engageable by the fingers of a user, a rack composed of at least two rack sections which are shiftable lengthwise of each other during said movement, and gear means driven by said rack and drivingly connected with said transporting means; and energy storing spring means connected to at least one of said rack sections and to a stationary part of the camera and operative for storing energy during said movement to the starting position, and to dissipate the stored energy during and thereby aid in the subsequent movement to the operating position.

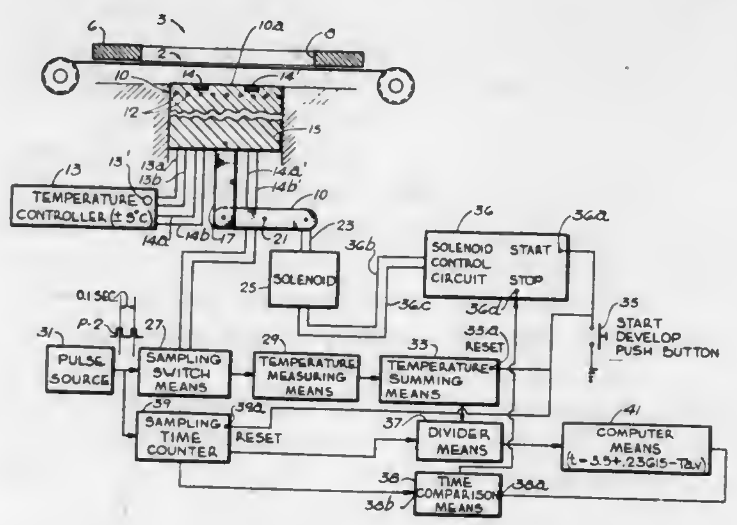
4,194,826
SYSTEM FOR DEVELOPING HEAT RESPONSIVE FILM

Gary D. Lewis, St. Clairs Shores, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 5, 1978, Ser. No. 939,367

Int. Cl.^{2} G03D *13/00*

U.S. Cl. 354—299 **4 Claims**



1. In a film developing system for developing a heat responsive film where the desired time of exposure of the film to a heat source is defined by a given formula which is a function of an assumed constant temperature applied to the film, said system including a source of heat to be applied to the film, and heat source applying means for applying said heat source to said film for a limited developing period, the improvement in control means for controlling the time said heat source is applied to said film, said control means comprising: sampling means for repeatedly sampling the temperature of said heat source when it is applied to said film beginning with the time the heat source is applied thereto, average temperature measuring means responsive to said sampling means for providing a measurement of the running average temperature of said heat source during the temperature sampling times over a progressively varying period beginning with the time said heat source is applied to the film, computing means for computing the theoretically desirable exposure time from said given formula where the temperature value used in the calculation is a function of the running average temperature measured by said average temperature measuring means, time measuring means for providing a measure of the time duration between the beginning of said period when said heat source is applied to said film and the particular instant of time involved, time comparison means responsive to the time measured by said time measuring means and the time computed from said given formula by said computing means, and means responsive to said time comparison means for removing said heat source from said film when said time measurement of said time measuring means and computing means reach a given degree of correspondence.

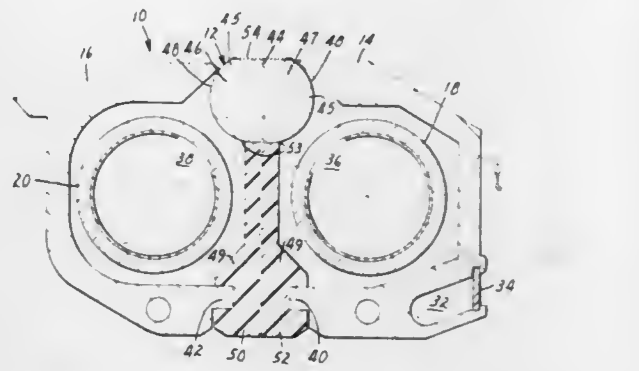
4,194,827
FIBER OPTICAL ELEMENT IMAGING AND ILLUMINATION ASSEMBLY

Lyle A. Bleeker, Saint Paul, and Richard Owen, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 28, 1978, Ser. No. 937,463

Int. Cl.^{2} G03B *27/00*

U.S. Cl. 355—1 **17 Claims**



1. A unitary optical element adapted for use in a photocopy machine for directing light onto a graphic original and for conveying light reflected therefrom onto a light sensitive receptor surface, said element comprising

- (a) a substantially linear array of mutually parallel coherent optical fibers,
- (b) a transparent light collection member having a first surface extending the length thereof for collecting light directed thereat, said member being positioned transversely to said fibers and integrally bonded in an optically coupled relationship thereto such that a first end of the fibers terminates coplanar with a top surface of said member, wherein said collected light is transmitted therethrough and thence through said fiber array to illuminate a narrow band adjacent the first end of said fibers, and
- (c) elongate support means within which said fiber array is integrally bonded and to which said collection member is integrally bonded, including a base section having a lower surface at which the other end of said fiber array terminates, whereby light thus directed illuminates successive lines of said original when caused to be traversed thereby and an image of said successive lines is formed on said receptor surface by reflected light conveyed through said fiber array when it is caused to be traversed thereby.

4,194,828
PROCESS AND APPARATUS FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE

Rudolf Hölz, Schlangenbad, and Helmuth Haberhauer, Taunusstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,814

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1976, 2655158

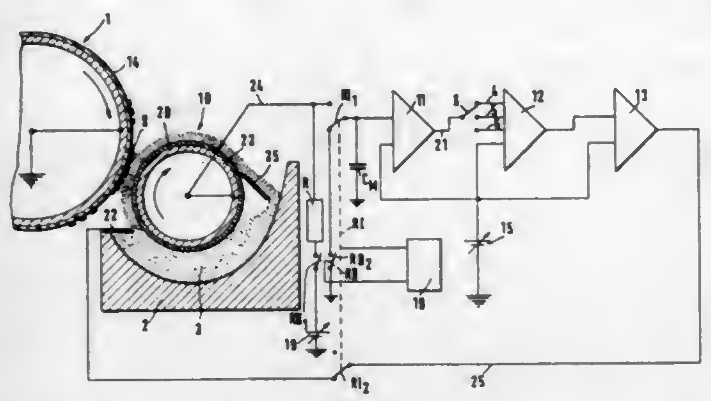
Int. Cl.^{2} G03G *15/00*

U.S. Cl. 355—3 DD **27 Claims**

13. An apparatus for developing an electrostatic latent charge image which comprises:

- (a) a developing electrode connected to a voltage source for applying a voltage to said electrode;
- (b) means for receiving a developer mixture;
- (c) an element supporting a recording material; and
- (d) a capacitive member connected to a fixed reference

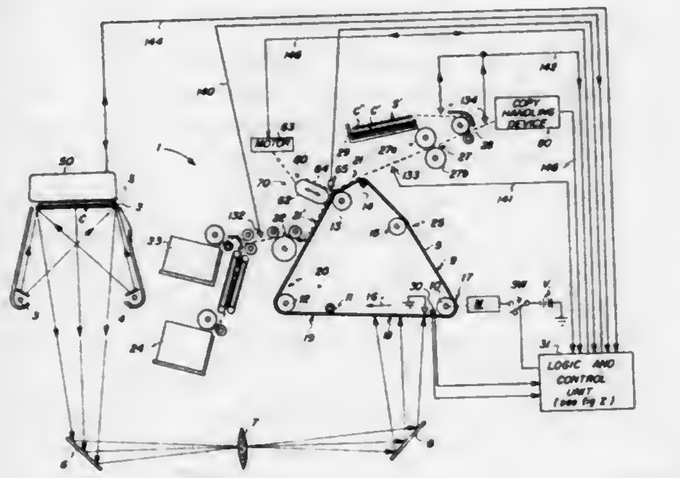
voltage source, said capacitive member being arranged so that it is alternatively connected to an amplifier circuit, for



amplifying voltages which develop on said capacitive member, and to said developing electrode.

4,194,829
APPARATUS FOR PRODUCING DUPLEX COPIES

William A. Cavagnaro, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 15, 1978, Ser. No. 942,566
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 TR 11 Claims



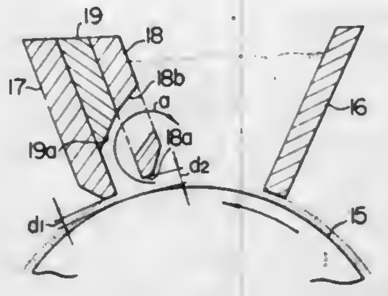
1. In apparatus for producing duplex copies, and including an image transfer member movable at a first velocity and having first and second unfixed transferable images and image transfer means for transferring the transferable images from the image transfer member to first and second sides respectively of a copy sheet, the improvement comprising:

copy sheet turnover means located adjacent to the image transfer member for turning over the copy sheet, said turnover means being movable in a first direction to separate from said transfer member a copy sheet to which said first transferable image has been transferred to a first side thereof and in a second direction after separation of the copy sheet from the image transfer member to turn over said copy sheet while said first image is unfixed and to register the second side of the copy sheet with the second transferable image on said image transfer member at the image transfer means; and

means for moving said turnover means at a velocity equal to said first velocity both in said first direction during separation of said copy sheet from said transfer member and in said second direction during registration of said copy sheet with said transfer member and at a velocity greater than said first velocity in either said first or second directions after said copy sheet is separated from but before it is brought back into registration with said transfer member.

4,194,830
DEVELOPMENT APPARATUS

Teruyuki Ohnuma, Yokohama; Kaoru Shimizu, Tokyo; Seiichi Miyakawa, Nagareyama, and Hajime Oyama, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Sep. 26, 1978, Ser. No. 946,384
Claims priority, application Japan, Sep. 30, 1977, 52-118174
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 DD 9 Claims

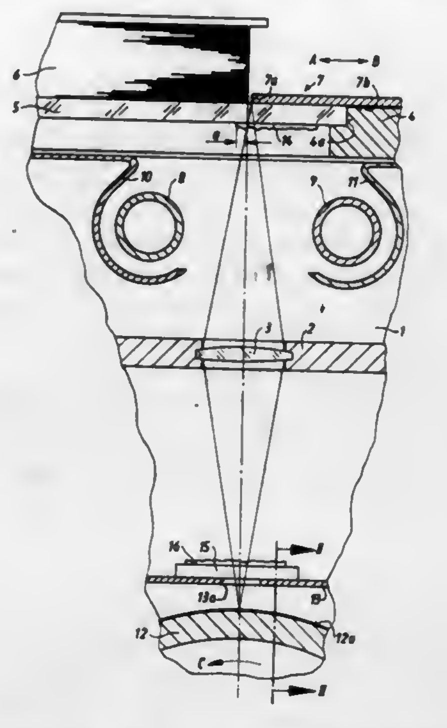


1. In a development apparatus for developing a latent electrostatic image comprising a developer supplying means for supplying a one-component type developer to a latent electrostatic image bearing photoconductor, said developer supplying means being rotatable and bearing said one-component type developer thereon, a developer replenishing means for replenishing said one-component type developer to said developer supplying means, and a charging means for electrically charging said one-component type developer on said developer supplying means, the improvement comprising a first charging member for charging said one-component type developer, disposed at an outlet of said developer replenishing means and adjacent said developer supplying means, and at least one second charging member, which is disposed on an inner side of said first charging member and in which a hole is formed, said first charging member, second charging member, and developer supplying means forming a circulation path for return of excess developer to said developer replenishing means.

4,194,831
OPTICAL COPIER

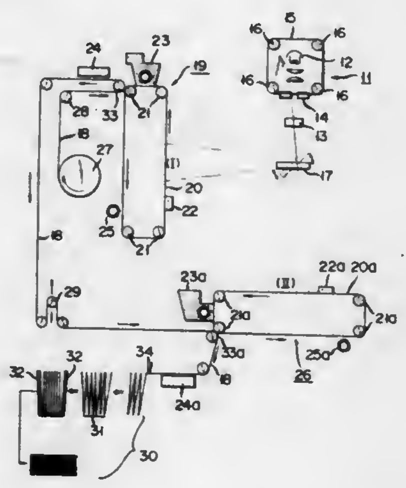
Karl Hartwig, Unterhaching, Fed. Rep. of Germany, and Gottfried Waibel, Rossleithen, Austria, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany
Filed Dec. 14, 1978, Ser. No. 969,480
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757850
Int. Cl.² G03G *15/00;* G03B *27/54*
U.S. Cl. 355—3 R 11 Claims

1. In an optical copier, a combination comprising a transparent support for an original to be copied; an abutment edge in part delimiting an image area and against which the original should be, but sometimes is not abutted; optical means for scanning the original on said support to produce an image of the original for copying purposes; and an at least semi-transparent light-diffusing strip portion outside the focal plane of said optical means and adjacent said abutment edge, for preventing the reproduction of a gap between said abutment edge and original as a dark area on a copy being made of the original.



4,194,832
CONSECUTIVE COPYING AND BOOKBINDING METHOD AND ITS APPARATUS

Seiichi Tabayashi, Tokyo, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1977, Ser. No. 865,784
Int. Cl.² G03G *15/00*
U.S. Cl. 355—11 13 Claims



1. A consecutive copying and book-binding method for manufacturing a book from a web and wherein individual pages of the complete book are imaged on individual frames of a microfilm, comprising the steps of:

(a) projecting an image of a frame of the microfilm on an endless electrophotographic plate, developing the latent image, transferring the image electrostatically to an obverse surface of the web at one location on the web, and fixing the image on the obverse surface of the web;

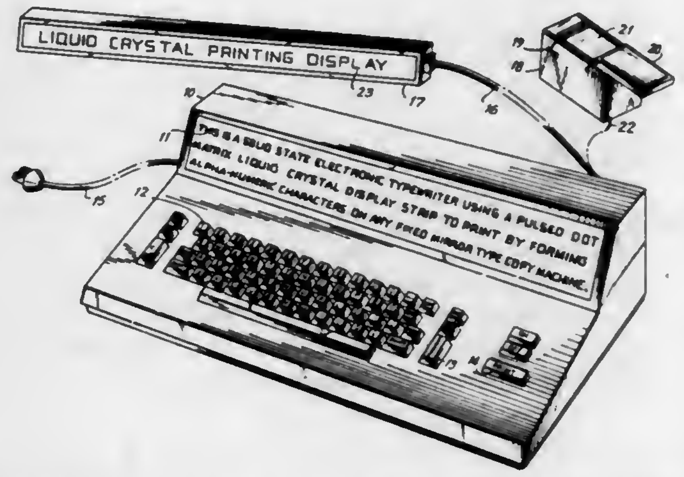
(b) projecting another image in the next frame of the microfilm on another endless electrophotographic plate, developing the latent image, transferring the other image electrostatically to a reverse surface of the web at a location displaced along the length of the web by a distance which is an integer multiple of the width of one page, and fixing the image on the reverse surface of the web;

(c) successively folding the web with the fixed images at intervals of one page after repeating steps (a) and (b) while advancing the web; and

(d) cutting the final page of the book and binding the folded web.

4,194,833
ELECTRONIC TYPEWRITER HAVING AN ELECTRONIC DISPLAY

Robert W. Lester, Manhasset, and Robert Hotto, New York, both of N.Y., assignors to Static Systems Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 765,339, Feb. 3, 1977, Pat. No. 4,110,794. This application May 9, 1977, Ser. No. 794,787
The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.
Int. Cl.² G03G *15/00*
U.S. Cl. 355—14 CU 3 Claims



1. A word processing system for displaying and reproducing alphanumeric characters on a photocopy machine capable of scanning an original document, comprising:

a housing including an electronic keyboard with keys representing individual alphanumeric characters, said housing including a display for viewing a portion of the information keyed;

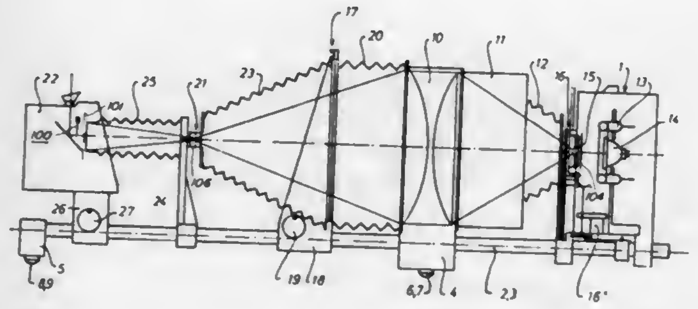
a memory circuit coupled to said keyboard for storing and spacing the alphanumeric indicia in memory;

a microprocessor circuit, having an algorythm circuit and coupled to said memory circuit for converting the stored alphanumeric indicia from the memory to a line of dots by comparison with the algorythm; and

at least one elongated, solid state reflective display strip, having a single line of reflective dots defining its display screen, and disposed transversely to the scanning direction of the photocopy machine, said strip being coupled to the microprocessor, said microprocessor addressing the proper column of dots in a row to produce the top portion of a complete line of alphanumeric characters on said screen, addressing the same column of dots in the next sequential row, so that the top portion of the characters are shifted one space up to display the adjacent lower portion of the character line on said screen, so that after a plurality of addressing cycles, the stored alphanumeric indicia are converted to a line of dots and reproduced on said screen, and are scrolled synchronously in the same direction and at the same speed as the scanning speed of the photocopy machine.

4,194,834
UNIT FOR REPRODUCING TRANSPARENT ORIGINALS, OR THE LIKE

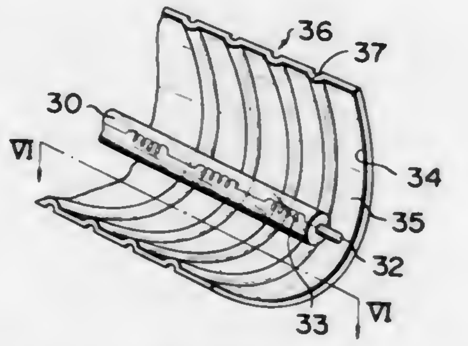
Emile A. H. Guillaume, Ballaigues, Switzerland, assignor to Zelacolor Systems Establishment, Vaduz, Liechtenstein
Division of Ser. No. 746,301, Dec. 1, 1976, Pat. No. 4,110,036. This application Jun. 29, 1978, Ser. No. 920,399
Claims priority, application Switzerland, Dec. 2, 1975, 15625/75
Int. Cl.² G03B *27/54*
U.S. Cl. 355—67 **10 Claims**



1. A unit for reproducing transparent originals, or the like, comprising:
- a light generator for producing a beam of light; said light generator comprising a light source;
- a camera having a film plane; a condenser for directing light to the film plane of said camera;
- a carrier for supporting an original in the beam of light from said light source;
- said light source being shaped in the annular form, with said annular source having an axis directed toward said camera objective and said light source directing light from said light generator toward the film plane in said camera;
- said light source being movably mounted in said unit for enabling shifting of said light source toward and away from said objective, for permitting compensating of the loss of luminosity at the edges of the image due to vignetting of the camera objective and for obtaining also uniform light intensity on the film plane in the camera.

4,194,835
EXPOSURE DEVICE

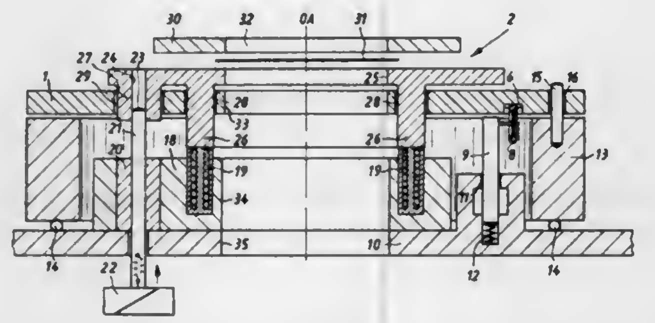
Tsuyoshi Shiode, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 21, 1978, Ser. No. 944,549
Claims priority, application Japan, Sep. 27, 1977, 52-129767[U]
Int. Cl.² G03G *15/00;* G03B *27/54*
U.S. Cl. 355—67 **9 Claims**



1. An exposure device for exposing an original to a belt-like flow of beams of light comprising:
- a mirror having a reflecting surface formed in an elliptical plane having a first line focus on a first line and a second line focus;
- a light source for exposing said original at said second line focus including a lamp having a number of light spot sources spaced along said longitudinal axis so as to direct light at said reflecting surface; and
- means for diffusedly reflecting said light from said reflecting surface in a direction defined by said first line, said means including rugged portions formed in said reflecting surface.

4,194,836
PHOTOGRAPHIC COPYING MACHINE WITH CARRIER STRUCTURE CARRYING FORMAT MASKS TO AND AWAY FROM THE COPYING STATION

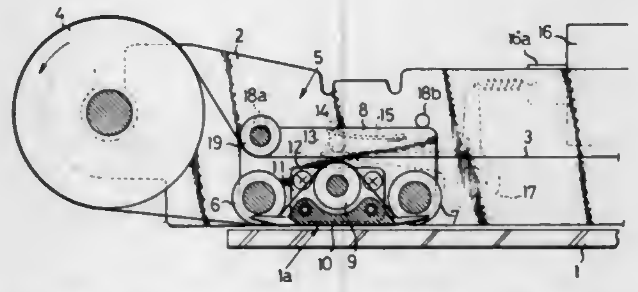
Heinz Rapp, Munich; Ernst Biedermann, Taufkirchen, and Siegfried Bartel, Gauting, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany
Filed Jul. 24, 1978, Ser. No. 927,520
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734324
Int. Cl.² G03B *27/62*
U.S. Cl. 355—75 **12 Claims**



1. In a photographic copying apparatus having a copying station, in combination, a format-mask carrier structure provided and normally in motion-transmitting engagement with a format mask; mounting means mounting the format-mask carrier structure for movement along a predetermined path for transporting the format mask to and then away from the copying station; decoupling means operative when the format mask has been carried to the copying station by the carrier structure for disestablishing the motion-transmitting engagement between the format mask and the format-mask carrier structure; and positioning means operative for causing the thusly disengaged format mask at the copying station to assume and retain a predetermined position relative to the copying station.

4,194,837
ORIGINAL FEED APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

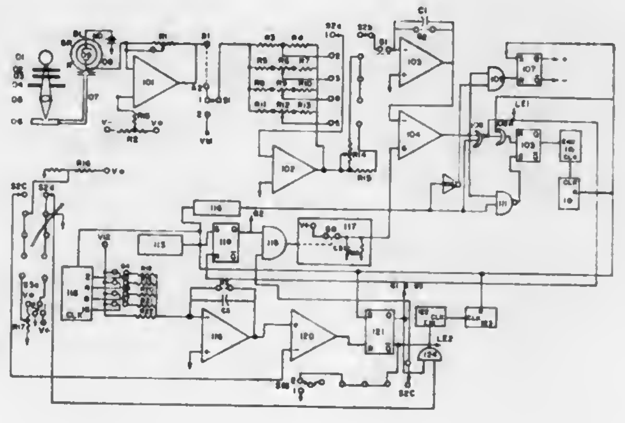
Tatsuo Tani; Sakae Ota, both of Tokyo, and Masao Kono, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Nov. 30, 1978, Ser. No. 964,876
Claims priority, application Japan, Dec. 2, 1977, 52-161984[U]
Int. Cl.² G03B *27/62;* B65H *5/22*
U.S. Cl. 355—75 **9 Claims**



1. A device for feeding an original past an irradiation position over a transparent member of an electrophotographic copying machine which is capable of operating with a sheet mode copying operation and with a book mode copying operation, comprising an endless belt conveyor having a reach movable over the transparent member, deflection means at the location of the irradiation position effective to move said belt away from said transparent member at the irradiation position and return it to said member at the end of the irradiation position, a guide plate overlying the transparent member at the irradiation position and engageable with the original at the irradiation position, and control means engageable with said belt and said guide plate and being movable to a sheet mode operation position in which said belt is pressed against the original at the irradiation position and being also movable to a book mode operation position in which said belt is not pressed against the original at the irradiation position.

4,194,838
DIGITAL COLOR DENSITOMETER AND EXPOSURE METER

Michael P. Bey, and Paul P. Bey, both of 4909 Abbott Dr., Temple Hills, Md. 20031
Filed Feb. 22, 1977, Ser. No. 764,894
Int. Cl.² G01J *3/50*
U.S. Cl. 356—404 **14 Claims**



1. A photometric device for determining by analog to digital means the optical densities of color compensating filters required to obtain a color balance of a color negative to be printed and the exposure time, including compensation for the reciprocity effect of a particular photographic paper by an associated density measurement of said color negative, said density representative of a particular print reflectivity comprising:
- a light source for generating light of a paticular intensity;
- means for supporting a color compensating filter pack;
- means for supporting a color negative, illuminated by light from said light source transmitted through said color compensating filter pack;
- optical means for providing an image of a selected area of said illuminated negative on the aperture of a probe;
- adjustable aperture means controlling the intensity of said image;
- optical coupling means to direct said light from said image through selectable primary color filters or a neutral density filter;
- photodetector means collecting light from said image directed through said selected filters providing a current proportional to the intensity of the selected spectral component of said collected light;
- a first linear amplifier means coupled to said detector means producing a voltage proportional to said detector current;
- variable feedback resistive means coupled to said first amplifier means, wherein the gain of said first amplifier means is adjustable by said variable feedback means;
- selector switch means wherein the output terminal of said first amplifier means is coupled to position **1** of a first selector switch and wherein said first selector switch is coupled to a voltage source in position **2**;
- memory standard means comprising a second linear amplifier means coupled to the pole of said first selector switch and wherein said second amplifier means is coupled to selective feedback resistive means which control the gain of said second amplifier means;
- a first ganged selector switch means mechanically coupled to said selected primary color and neutral density filters and wherein the red said primary color filter is selected in position **2** and the remaining primary color filters are selected in positions **3** and **4** and said neutral density filter is selected in position **5**;
- a selector switch means comprising the first section of said first ganged switch means wherein the pole of said first section is coupled to said second linear amplifier means and to said feedback resistive means of said second amplifier means and wherein position **2** of said first switch section is coupled to a fixed said feedback resistive means and coupled to independently variable said feedback resistive means in in positions **3**, **4**, and **5** of said first switch section;
- a selector switch means comprising the second section of said first ganged switch means wherein positions **2**, **3**, and **4** of said second switch section are coupled to one terminal of a variable resistive means and position **5** is coupled to one terminal of a fixed resistive means;
- coupling means wherein the output terminal of said second amplifier means is coupled to the remaining terminals of said fixed and variable resistive means;
- a gate-controlled switch means coupled to the pole of said second section of said first ganged switch means;
- a signal integrator means wherein the input terminal of said signal integrator is coupled to said gate-controlled switch means;
- a second gate-controlled switch means shunting the capacitor coupled to said signal integrator;
- selector switch means comprising the third switch section of said first ganged switch means, wherein the pole of said third switch section is coupled to a fixed voltage source in positions **2**, **3**, and **4** and to a variable exposure voltage source in position **5** of said third switch section;
- switching means comprising the fourth section of said first ganged switch means wherein the pole of said fourth switch section is coupled to ground in positions **2**, **3** and **4** and to the pole of a second ganged switch means in position **5** and wherein the pole of said first section of said second ganged switch means is coupled to a fixed voltage source in position **1** and to ground in position **2** of said first switch section of said second ganged switch means;
- a gate-controlled clock means provided with an enable input terminal;
- an AND gate means wherein the output terminal of said AND gate is coupled to the enable terminal of said clock;
- a first enabling means wherein the pole of said fourth switch section of said first ganged switch means is coupled to one input terminal of said AND gate;
- set-reset means comprising a reset pulse generator wherein said reset pulse generator produces a reset voltage pulse periodically;
- binary counter means wherein the reset means of said binary counter is coupled to said reset pulse generator and clock input means of said binary counter is coupled to said clock;
- parallel resistive means each in series with a gate-controlled switch coupled to a fixed voltage source;
- binary gating means coupled to said binary counter wherein the binary terminals of said binary counter are coupled to said gate-controlled switches in series with each of said parallel resistive means, opening said switches sequentially when said binary counter is clocked;
- a second integrator means coupled to said parallel resistive means;
- capacitor means coupled to said second integrator means wherein said capacitor is shunted by a gate-controlled switch;
- a first voltage comparator means wherein one input terminal of said voltage comparator is coupled to the output terminal of said second integrator and the remaining input

terminal of said voltage comparator is coupled to the pole of said third section of said first ganged switch means;

a gating means comprising a first set-reset flip-flop wherein the input reset terminal of said flip-flop is coupled to the output terminal of said first voltage comparator and wherein the set input terminal of said flip-flop is coupled to said reset pulse generator;

switching means comprising the second switch section of said second ganged switch means wherein position 1 of said second section is coupled to ground and position 2 is coupled to the reset output terminal of said first set-reset flip-flop;

switching means comprising the fifth switch section of said first ganged switch means wherein positions 2, 3 and 4 of said fifth switch section are coupled to the reset output terminal of said first set-reset flip-flop and position 5 of said fifth section is coupled to the pole of said second switch section of said second ganged switch means;

gating means comprising said first set-reset flip-flop wherein the set output terminal of said flip-flop is coupled to said switch coupled to the input terminal of said signal integrator, to said switch shunting said second integrator and to the remaining input terminal of said AND gate;

a decimal counter means wherein the clock input of said decimal counter is coupled to said clock and the reset terminal of said decimal counter is coupled to said reset pulse generator;

a latch means coupled to said decimal counter and enabled by the reset output voltage of said first set-reset flip-flop;

an exposure LED digital readout coupled to said latch means wherein the count of said decimal counter is transferred to said readout by said latch;

a gating means comprising a second set-reset flip-flop wherein the set input terminal of said second flip-flop is coupled to said reset pulse generator and the reset input terminal of said flip-flop is coupled to the output terminal of a NOR gate and wherein the set output terminal of said second flip-flop is coupled to said switch shunting said signal integrator capacitor and to one input of a second AND gate;

a second gate-controlled clock means provided with an enable input means;

a gating means wherein the remaining input terminal of said second AND gate is coupled to the pole of said fifth switch section of said first ganged switch and wherein the output terminal of said AND gate is coupled to a gate-controlled switch, which is coupled to a fixed voltage source and to a capacitor means shunted by a resistive means to ground;

a calibration means wherein the time constant for the discharge of said capacitor means through said resistive means is equal to 230 in units of said second clock period;

a voltage pulse generator means wherein said voltage pulse generator is gated on by said reset voltage pulse and generates a voltage pulse of duration equal to 100-Log$_{10}$(Vo/V2), wherein Vo is the voltage to which said capacitor means charges, V2 determines the range of measurement and said duration is expressed in units of the period of said second clock;

a second voltage comparator means, wherein the input terminals of said voltage comparator are coupled to said capacitor means and to the output terminal of said signal integrator;

a gating means comprising a NAND gate, the input terminals of which are coupled to said voltage pulse generator and to the output terminal of said second voltage comparator;

an inverter means wherein the input terminal of said inverter is coupled to said pulse generator means;

a gating means comprising a third AND gate, the input terminals of which are coupled to the output terminals of said inverter and said second voltage comparator;

a gating means comprising said NOR gate, the input terminals of which are coupled to the output terminals of said voltage pulse generator and said second voltage comparator;

gating means comprising a third set-reset flip-flop wherein the reset input terminal of said third flip-flop is coupled to the output terminal of said NOR gate, the set input terminal is coupled to the output terminal of said NAND gate and the set output terminal of said third flip-flop is coupled to the enable input of said second clock;

a second decimal counter means coupled to said reset pulse generator and to the output terminal of said second clock;

a latch means coupled to said second decimal counter, wherein the enable input terminal of said latch means is coupled to the output terminal of said NOR gate;

a density LED digital readout means coupled to said latch means;

a gating means comprising a fourth set-reset flip-flop wherein the set input terminal of said fourth flip-flop is coupled to said reset pulse generator and the reset input terminal is coupled to the output terminal of said third AND gate;

a set-reset latch means coupled to the set and reset output terminals of said fourth flip-flop;

an LED sign readout means coupled to said set-reset latch wherein a positive or negative sign is transferred by said latch for the set and reset states of said fourth flip-flop, respectively;

indication means wherein the sign displayed by the LED sign readout and the count displayed by the density LED digital readout indicate the optical densities of color compensating filters to add or subtract from a filter pack to obtain a color balance of a negative to be printed for positions 2, 3 and 4 of said first ganged selector switch and the density LED digital readout indicates the optical density of a negative representative of a particular print reflectivity for position 5 of said first ganged selector switch and position 2 of said second ganged selector switch and wherein the count displayed by the first LED digital readout indicates the exposure time, including reciprocity compensation, for said first ganged selector switch in position 5 and said second ganged selector switch in position 1 resulting in said print reflectivity.

4,194,839
CIRCUIT ARRANGEMENT FOR RECOGNIZING AND ADJUSTING COLOR COMPONENTS

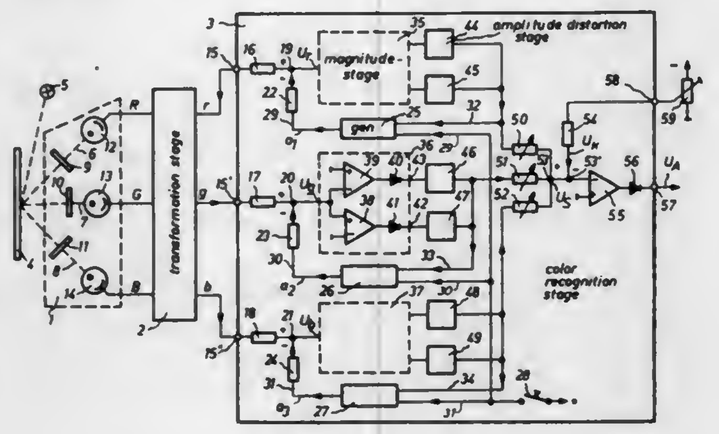
Hans G. Knop, Heikendorf, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Jun. 17, 1977, Ser. No. 807,507

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628053

Int. Cl.² G01J *3/50*

U.S. Cl. 356—407 **12 Claims**



1. A color selection circuit arrangement for recognizing colors, particularly a color pattern, with a device scanning the color pattern in order to produce a number of primary signals for each scanning location, including devices for producing a corresponding number of comparative signals adjustable in dependency of a color to be recognized, a corresponding

number of subtraction stages for producing differential signals from a plurality of primary color signals and the respectively corresponding comparative signals and respectively receiving inputs from said scanning device and said comparative signal devices, a linkage circuit for the differential signals for producing an output signal characterizing the deviation of the respectively scanned color from the color to be recognized, a compensation stage for subtracting the output signal of the linkage circuit from an adjustable inverted polarity voltage, and with a circuit for suppressing the output signal of the compensation stage when the output signal of the linkage circuit is larger than a counter voltage, comprising;

(a) at each subtraction stage (**19, 20, 21**) a respective magnitude stage (**35, 36, 37**) with a first output (**42**) indicating signals derived from positive output signals of the subtraction stages (**19, 20, 21**) and with a second output (**43**) indicating signals derived from negative output signals of the subtraction stages (**19, 20, 21**),

(b) the first and the secnd outputs (**42** or **43**) of each magnitude stage (**35, 36, 37**) is respectively connected with an adjustable amplitude distortion stage (**44** through **49**), and

(c) a plurality of variable resistors (**50** through **53**) are provided for the selectable weighting and combining of the output signals of the amplitude distortion stages (**44** through **49**) as the output signal.

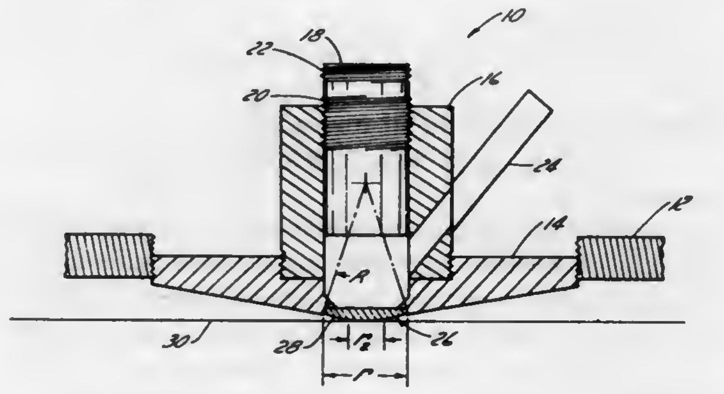
4,194,840
SENSOR CONTACT

John M. Lucas, 4816 Hutchison St., Montreal, and Serge Gracovetsky, 209 du Dauphine, St. Lambert, both of Quebec, Canada

Filed Feb. 27, 1978, Ser. No. 881,855

Int. Cl.² G01N *21/48, 21/18, 21/30*

U.S. Cl. 356—429 **6 Claims**



1. In a sensor means, a sensor element having a face adapted to contact the surface of the travelling paper web, said face being a convex surface that is substantially in the form of a single base segment of the sphere having a radius of between 10 and 35 mm, said face contacting said surface of said web over an instantaneous area of contact having its dimension in the direction of travel of the paper of between 2 mm and 8 mm.

4,194,841
METHOD AND APPARATUS FOR PROCESSING POLYMERIC MATERIALS

Zehev Tadmor, Dept. of Chemical Engineering, Stevens Institute of Technology, Hoboken, N.J. 07030

Division of Ser. No. 795,211, May 11, 1977, Pat. No. 4,142,805, which is a continuation-in-part of Ser. No. 654,040, Feb. 2, 1976, abandoned. This application Apr. 20, 1978, Ser. No. 898,178

Int. Cl.² B01F *5/12, 7/10*

U.S. Cl. 366—75 **18 Claims**

1. A machine for processing solid and viscous plastic and polymeric materials comprising:

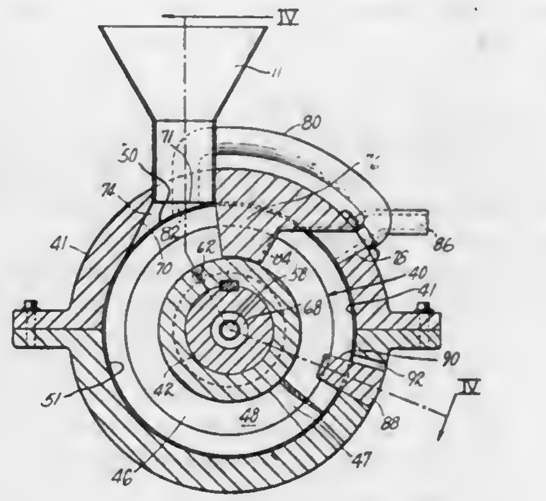
A. a rotatable element carrying an annular channel providing a polymer processing surface area which includes opposied side walls;

B. a stationary element providing a coaxial surface forming with said channel an enclosed annular processing passage;

C. means including an inlet opening to feed polymeric or plastic material to said passage to form a body of material substantially filling said passage;

D. means for causing relative rotation between said channel and said surface about their common axis to move said side walls in a circumferential direction from the inlet opening of said passage;

E. an outlet opening from said passage circumferentially disposed a major portion of a complete revolution from said inlet opening in the direction of rotation of said channel; and



F. a blocking member comprising a material collecting end wall and scraper portions disposed in said passage between said outlet opening and said inlet opening in the direction of rotation of said channel, said end wall being constructed to hold said body of material in said channel so that there is relative movement between said polymer processing surface area and said body of material in the channel whereby said polymer processing surface area drags forward material in contact with said polymer processing surface area to said material collecting end wall surface for processing and discharge.

4,194,842
METHOD FOR BINDING LIQUID-CONTAINING RADIOACTIVE WASTES AND KNEADING MACHINE THEREFOR

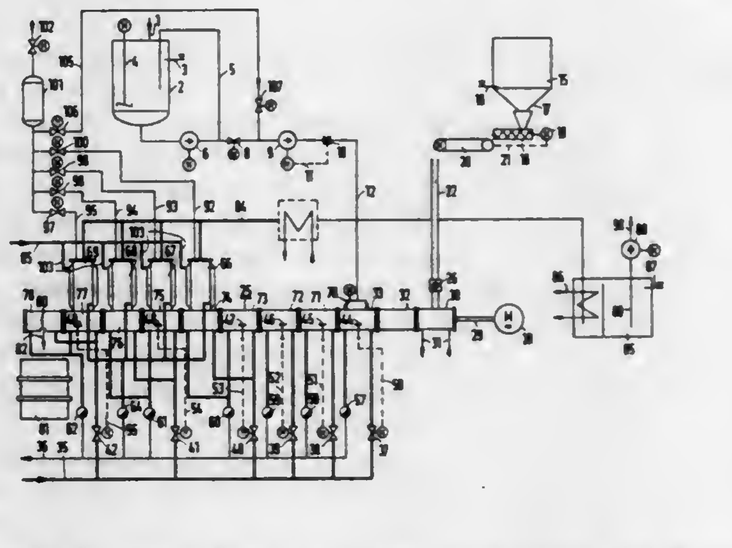
Anwer Puthawala, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulhiem, Fed. Rep. of Germany

Filed Jul. 7, 1977, Ser. No. 813,476

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1976, 2631326

Int. Cl.² B29H *9/00;* **B28C** *7/02, 7/06*

U.S. Cl. 366—76 **7 Claims**



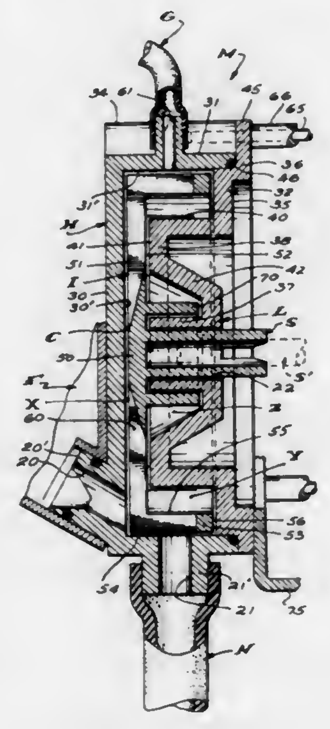
1. In a method for binding liquid-containing radioactive

wastes by kneading the wastes in admixture with a thermoplastic material in a kneading machine, the improvement which comprises

(a) introducing the thermoplastic material in particle form and at a temperature at which the particles will not stick together, into the kneading machine,
(b) heating the thermoplastic material in the kneading machine in the absence of said liquid-containing wastes to a temperature of at least 100° C. and below 200° C.,
(c) introducing all the liquid-containing wastes into the kneading machine at a point where the thus heated thermoplastic material is at a temperature below 200° C.,
(d) mixing the thermoplastic material and liquid-containing wastes in the kneading machine and concurrently increasing the temperature of the mixture to a temperature of at least 200° C. at which vaporization of the liquid will occur,
(e) maintaining the mixture of thermoplastic material and liquid-containing wastes at a vaporization temperature of at least 200° C. to effect drying of the mixture,
(f) releasing vapors evolved from the mixture by vaporization from the kneading machine, and
(g) discharging the dried mixture of liquid-containing wastes and thermoplastic material from the kneading machine.

4,194,843
MIXER

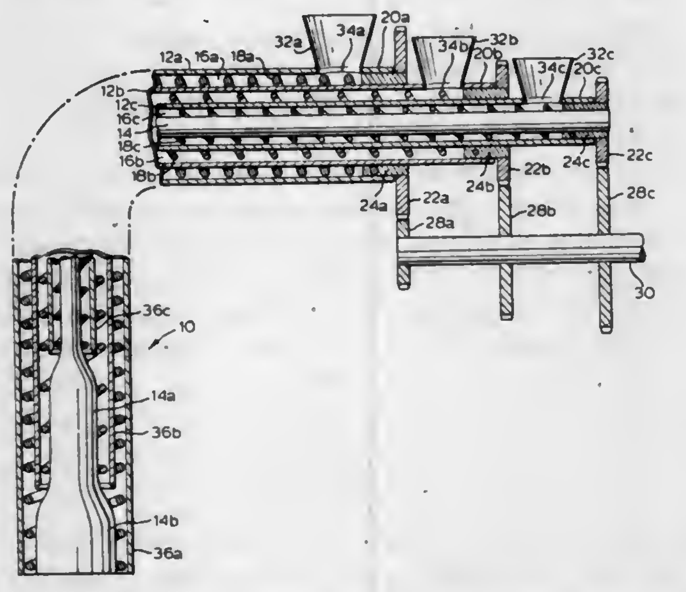
Ernest N. Martin, 26937 N. Broadway, Escondido, Calif. 92026
Filed Apr. 13, 1979, Ser. No. 29,730
Int. Cl.^{2} B01F *15/02, 7/12*
U.S. Cl. 366—138 **8 Claims**



1. A beverage mixer comprising a housing with a chamber having a straight, cylindrical radially inwardly disposed outer surface and an axially rearwardly disposed, radially extending front surface, an inlet opening communicating with the chamber at said front surface, material supply communicating with the inlet opening, an outlet opening communicating with the chamber at said outer surface, a central shaft extending axially in the chamber and from the housing, an impeller on the shaft within the chamber and having a straight cylindrical radially outwardly disposed outside surface and a radially extending axially forwardly disposed forward surface, said outside and forward surfaces of the impeller occurring in opposing free running spaced relationship with the outer and front surfaces of the chamber whereby turbulent surface effect is imparted into fluid mediums therebetween upon relative rotation thereof, said impeller has circumferentially spaced radial and axially opening and extending slots movable by the inlet opening when the impeller is rotated to receive fluid material introduced into the chamber through that opening, to transport and distribute said material circumferentially, to centrifugally cast said material radially outwardly between said outer and front opposing surfaces and to centrifugally cast material advanced radially and circumferentially in the chamber to and out through said outlet opening.

4,194,844
MULTIPLE POWDER CONVEYOR SYSTEM

Jorg-Hein Walling, St. Hubert, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Feb. 13, 1978, Ser. No. 876,874
Int. Cl.^{2} B01F *15/02, 15/04*
U.S. Cl. 366—157 **5 Claims**



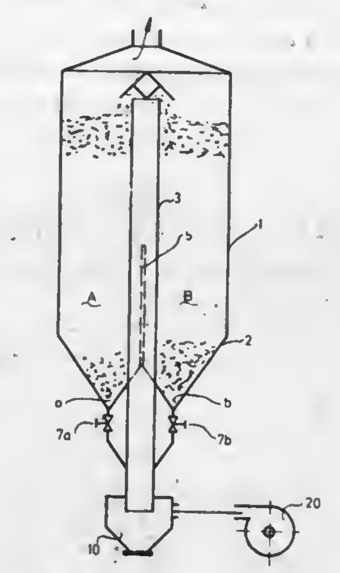
1. Apparatus for receiving and conveying a plurality of different powders simultaneously and delivering said powders continuously as a blended powder mix, comprising:

a plurality of concentric tubes spaced one from another to define annular bores therebetween, the innermost tube having an axial core to define an annular bore therein, each tube terminating in a receiving end and a delivery end;
a plurality of helical members located one in each of said annular bores, each helical member being of predetermined pitch;
each tube terminating at its delivery end short of the delivery end of the next outer tube and the core being expanded diametrically to extend the annular bore therebetween, the helical member of said annular bore being increased in pitch along said diametrically expanded portion of the core;
each tube having means adjacent the receiving end thereof to pass powder to the helical member in the annular bore therein; and
means to rotate each helical member axially.

4,194,845
METHOD AND APPARATUS FOR MIXING LOOSE MATERIAL

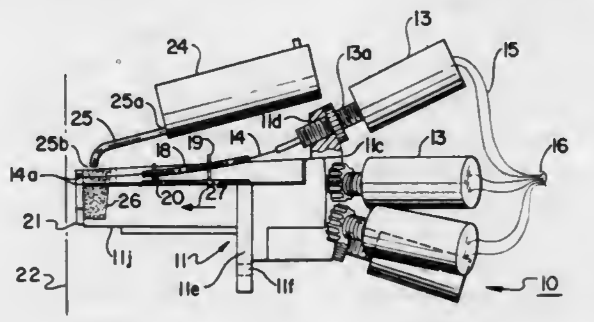
Wolfgang Krambrock, Vogt, and Paul Lübbehusen, Ravensburg, both of Fed. Rep. of Germany, assignors to Waeschle Maschinenfabrik GmbH, Ravensburg, Fed. Rep. of Germany
Filed Sep. 22, 1978, Ser. No. 944,712
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742904
Int. Cl.^{2} B01F *15/02, 13/02, 5/12*
U.S. Cl. 366—159 **19 Claims**

1. An apparatus for mixing loose material, comprising an elongated container adapted to be fed with material to be mixed and having an upper portion receiving the material and a lower portion, the material descending from said upper portion to said lower portion; outlet means on said lower portion of said container for withdrawing the material from the latter; means for returning the thusly withdrawn material back into the container for further mixing, and including a rise pipe mounted in said container and having a lower open end receiving the material from said outlet means and an upper open end discharging the material into the interior of the container; and means for tilting said riser pipe relative to the vertical for varying the rate of descent of the material in said container.



4,194,846
DOT MATRIX PRINTING DEVICE EMPLOYING A NOVEL IMAGE TRANSFER TECHNIQUE TO PRINT ON SINGLE OR MULTIPLE PLY PRINT RECEIVING MATERIALS

Samuel D. Zerillo, Nashua, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.
Filed Apr. 28, 1978, Ser. No. 901,182
Int. Cl.^{2} B41J *3/12, 27/04*
U.S. Cl. 400—124 **18 Claims**

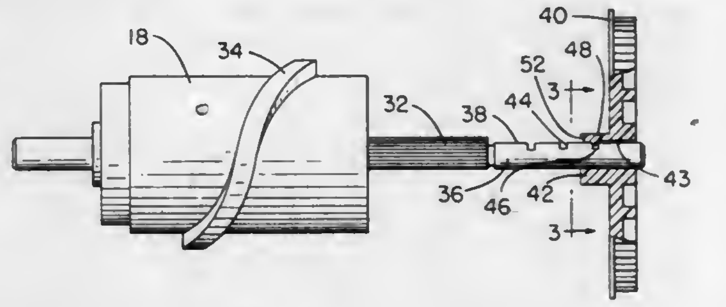


1. Printing means for forming a pattern upon an ink receiving medium comprising:

a housing having a hollow interior, said housing having forward and rearward ends;
a reciprocally mounted elongated printing member positioned within said housing and having a forward end with a printing tip;
driving means mounted along said rearward end for normally maintaining said printing member in a first position with said printing tip displaced from said ink receiving medium and for urging said printing tip toward said ink receiving medium when activated;
guiding means provided in the forward end of said housing for guiding the forward end of said elongated printing member to freely enable said reciprocating action, said guiding means having a bore, said bore having a contour conforming to the cross-sectional configuration of the printing member which passes through said bore;
ink supply means; and
means comprising a wicking material communicating with said ink supply means and wipingly engaging the peripheral surface of said printing member for delivering ink from said ink supply means to said printing member whereby ink is transferred to a portion of the peripheral surface of the printing member slidably movable into said bore and is delivered to said printing tip for transfer to the print receiving medium when said driving means is actuated.

4,194,847
LOCATING AND MAINTAINING A HUB MEMBER ON A SHAFT

Michael O. Grey, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio
Filed May 1, 1978, Ser. No. 901,921
Int. Cl.^{2} B41J *23/02;* **F16B** *21/07;* **F16D** *1/08*
U.S. Cl. 400—320 **7 Claims**

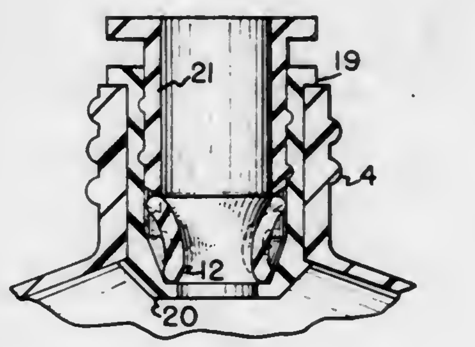


1. In a business machine having a drive shaft, a driving element and a driven element on said shaft, means for radially orienting and selectively positioning said driving element along said shaft comprising a

shaft portion having a reduced radius surface on an arc of said shaft to provide a shaped portion, a
hub member integral with said driving element and extending along said shaft portion in like shaped form, a
hub member portion separated from said hub member along the length of the hub member portion on either side thereof for a distance along said shaft portion and normally biased for engagement with said shaft portion, a
plurality of transverse slots in the surface of said shaft portion, and a
lip portion on said hub member portion for automatic engagement with a selected one of said slots when aligned therewith.

4,194,848
ADJUSTABLE COSMETIC WIPER

Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
Filed Dec. 5, 1977, Ser. No. 857,074
Int. Cl.^{2} A46B *11/04*
U.S. Cl. 401—5 **31 Claims**



1. A cosmetic package comprising:

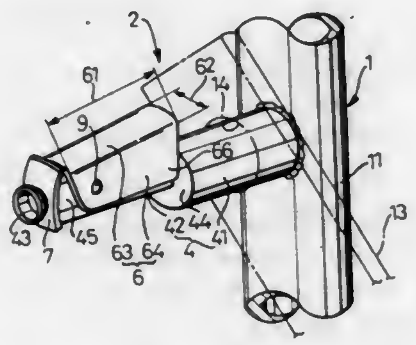
a. a container having a cosmetic composition therein;
b. a container closure;
c. a wiper having an orifice means adapted to wipe excess cosmetic from the applicator;
d. a cosmetic applicator attached to said closure by a shaft and adapted to be passed through said wiper orifice and immersed in said cosmetic composition when said closure is attached to said container;

e. adjusting means to vary the cross sectional area of said orifice;
f. indicating means comprising a plurality of indicia, each indicia corresponding to a different orifice cross-sectional area; and
g. means to position said indicia to correspond to the selected orifice cross-sectional area.

4,194,849
DEVICE FOR RETAINING SCAFFOLD MEMBER

Norio Matsuura, 10-16 Minoo 6-chome, Minoo City, Osaka 562, Japan

Filed Aug. 11, 1978, Ser. No. 932,797
Claims priority, application Japan, Apr. 6, 1978, 53/45701[U]
Int. Cl.^{2} E04G *7/00*
U.S. Cl. 403—49 **6 Claims**

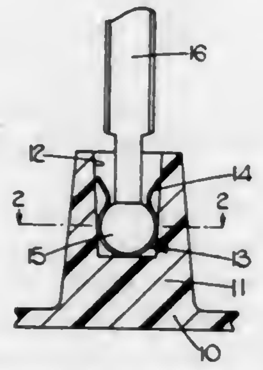


1. A device for retaining a scaffold member comprising:
a main body including a rod portion and a mounting pin extending from the forward end of the rod portion having a smaller diameter than the rod portion and having parallel flat walls on opposite sides of the mounting pin;
a retractable pivotable member fitting over and covering the mounting pin, the pivotable member including a semicircular curved portion having approximately the same length as the mounting pin, a pair of parallel side plates extending from the opposite sides of the curved portion with the pin interposed between the side plates, and a forward portion of said pivotable member being secured to the mounting pin loosely and pivotably;
a resilient member being interposed between said pivotable member and the mounting pin to bias the free end of the pivotable member away from the pin; and
an abutment provided at the forward end of the mounting pin for preventing the pivotable member from slipping off the pin.

4,194,850
PIVOTAL MOUNTING ARRANGEMENT

John W. Cranmore, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, United Kingdom

Filed Nov. 20, 1978, Ser. No. 961,873
Claims priority, application United Kingdom, Dec. 2, 1977, 50288/77
Int. Cl.^{2} F16C *11/00;* F16D *1/12*
U.S. Cl. 403—140 **9 Claims**

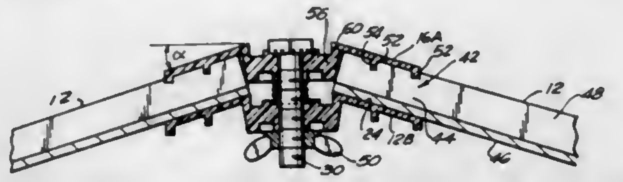


1. A pivotal mounting arrangement comprising a member having a recess therein, and a socket element mounted in said recess, said socket element being formed of a resilient material, being adapted to receive and, when mounted in the recess, to hold a ball therein and having at least one outwardly projecting portion which engages against the wall of said recess and opposes withdrawal of said socket element from said recess.

4,194,851
UNIVERSAL HUB FOR GEODESIC DOMES

Herrick B. Littlefield, Darien, Conn., assignor to Polyproducts Corp., Long Island City, N.Y.

Filed Nov. 10, 1977, Ser. No. 850,359
Int. Cl.^{2} F16D *1/00, 3/00;* F16G *11/00*
U.S. Cl. 403—218 **11 Claims**

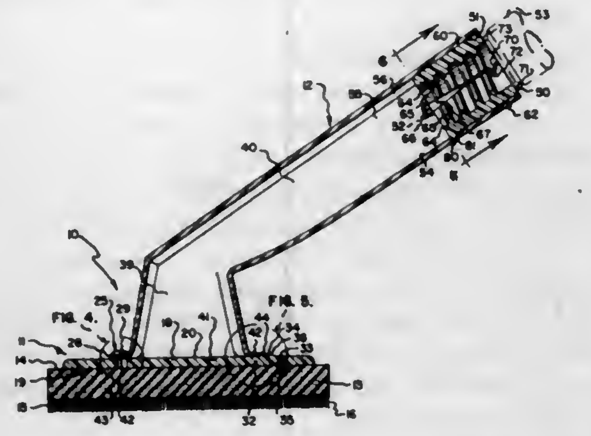


1. A joint hub for interconnecting the struts of a geodesic type structure comprising a pair of identical one piece generally frusto-conical hub members each having first and second opposite faces and a centrally located aperture formed therein, said hub members being adapted to be positioned in superimposed relation to each other with the first face of one hub member facing and extending parallel to the second face of the other hub member to define a frusto-conical slot therebetween for receiving the ends of said struts; means formed on at least one face of said hub member for cooperative interengagement with said end portions of said struts to permit circumferential movement of said struts within said hub members while precluding longitudinal movement; and connection means for extending through said apertures for securing said hub members together while clamping said end portions of said struts between and in engagement with respective first and second faces of the superimposed hub members to hold said struts in a relatively fixed position.

4,194,852
APPLICATOR WITH MULTI-POSITIONAL HANDLE

Charles D. Cupp, Lancaster; Bruce J. Matthies, Clarence Center, and Frederick J. Wood, Jr., Lancaster, all of N.Y., assignors to Shur-Line Manufacturing Co., Inc., Lancaster, N.Y.

Division of Ser. No. 847,763, Nov. 2, 1977, Pat. No. 4,127,911.
This application May 19, 1978, Ser. No. 907,814
Int. Cl.^{2} F16B *7/18*
U.S. Cl. 403—299 **3 Claims**



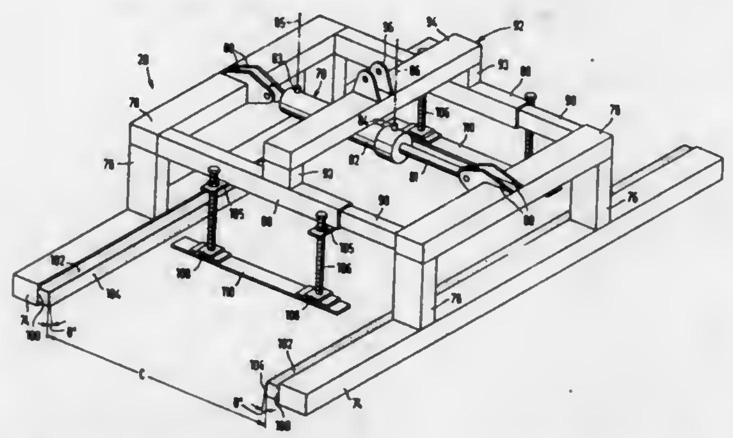
1. An adapter insertable into the open end of a tube to modify the same to matingly receive the externally-threaded portion of a member, said tube being provided with an opening therethrough, said adapter comprising:
a first section having an end surface;
a second section having an end surface;

each of said sections having a substantially semi-cylindrical inner surface provided with cooperative internally-threaded recess segments, having an outer surface simulating half of the cross-sectional shape of said tube, and having longitudinal surfaces joining said inner, outer and end surfaces;
at least one flexible web joining said section end surfaces;
said first section being arranged to be folded through an arc of approximately 180 degrees to overlie said second section through compliant flexure of said web such that said section longitudinal surfaces will be arranged to face one another to form an adapter having an internally-threaded recess and an external surface simulating the cross-sectional shape of said tube;
one of said sections being provided with a lug arranged to be received in said tube opening when said adapter is inserted into said tube to prevent unintended withdrawal of said adapter from said tube;
whereby said adapter may be inserted into said tube to modify the same to matingly receive the externally-threaded portion of a member.

4,194,853
METHOD AND APPARATUS FOR PRODUCING A GROUND COVERING FROM INDIVIDUAL PAVING STONES

Günter Barth, Am Schwalbenloch 7,, D-7500 Karlsruhe 41, Grotzingen; Fritz von Langsdorff, Blumenstrasse 12, D-7551 Forch:uber Rastatt, and Kurt Rossmann, D-7561 Hörden, all of Fed. Rep. of Germany

Filed Apr. 4, 1978, Ser. No. 893,520
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715476
Int. Cl.^{2} E01C *5/00*
U.S. Cl. 404—73 **12 Claims**

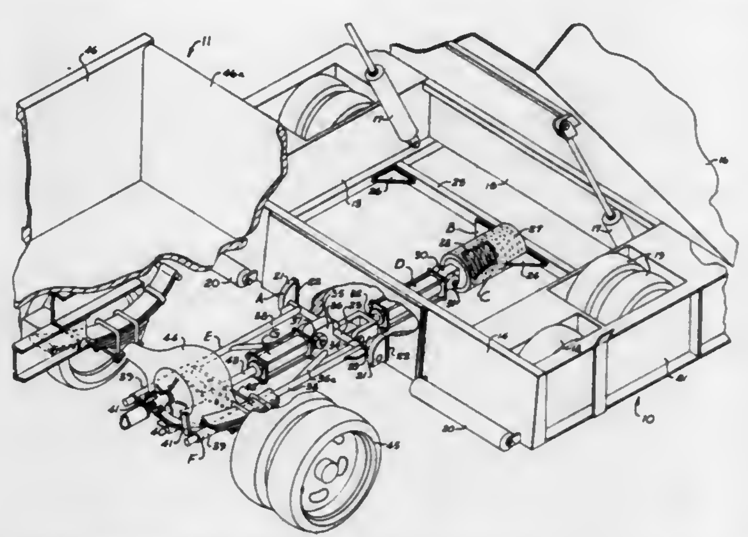


1. A method of producing a ground covering from individual paving stones, comprising arranging a group of individual paving stones in the form of a section of the ground covering to be produced, grasping the group by means of lateral compressive force applied from two opposed sides of the group, hoisting and moving the group thus grasped to the place of laying, and depositing the group there, wherein said step of grasping is carried out by applying such lateral compressive force over a vertically extending region of each opposed side of the group in a manner to produce a vertical distribution of compressive force which is greater in the lower height region of grasp than in the upper height region of grasp and to apply a maximum compressive force below the overall center of gravity of said group, at least in deposited condition of said group.

4,194,854
PAVER ATTACHMENT

Herbert N. Mauldin, Rte. 7 View Mont Dr., Greenville, S.C. 29609

Filed Jun. 5, 1978, Ser. No. 912,484
Int. Cl.^{2} E01C *19/18*
U.S. Cl. 404—110 **6 Claims**

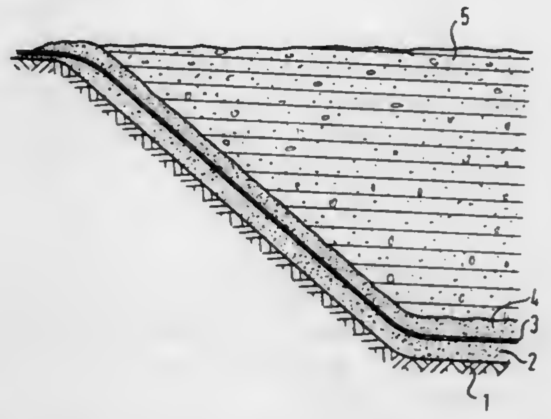


1. In a wheeled paver an attachment for securement to a pulling vehicle comprising:
a pair of longitudinally spaced mounting means for fixed connection at forward and rearward locations on said paver;
yieldable shock absorbing means fixed adjacent one end adjacent said rearward location;
a first fluid operated assembly connected adjacent one end thereof adjacent the other end of said shock absorbing means;
a longitudinal elongated arm assembly pivotally connected adjacent said forward location for raising and lowering responsive to said first fluid operated assembly;
securement means carried on said elongated arm assembly remote from said paver for longitudinal movement; and
a second fluid power operated assembly having connection to said securement means for imparting said longitudinal movement thereto.

4,194,855
METHOD FOR STORING WASTE MATERIALS AND THEIR COMBUSTION RESIDUES IN A MANNER HARMLESS TO UNDERGROUND WATER

Hanns Egger, Haus Nr. 44, 8110 Hagen bei Murnau, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,291
Int. Cl.^{2} E02D *3/00*
U.S. Cl. 405—128 **6 Claims**



1. A method for storing waste materials and their combustion residues in a manner harmless to underground water, comprising the steps of: digging a pit providing a bottom; laying a first pressure-equalising layer of finely ground loose material on the bottom of the pit such that the layer covers the

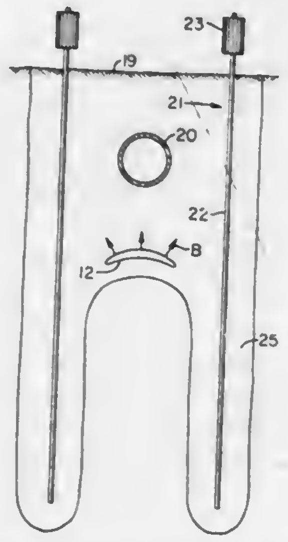
bottom of the pit, placing a humus-resistant, root-resistant and tear-resistant solution-weldable synthetic plastic sheet on said first layer, laying a second pressure-equalising layer of finely ground loose material on top of the synthetic plastic sheet, the layers being formed from refuse slag and/or industrial slag and having a thickness of between about 500 MM, the loose material having been ground dust-fine before being laid in said layers, and material to be stored is then filled into the pit onto said layers.

4,194,856

METHOD FOR REDUCING FROST HEAVE OF REFRIGERATED GAS PIPELINES

Hans O. Jahns, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Aug. 31, 1978, Ser. No. 938,662
Int. Cl.^{2} E02D *19/14;* F16L *57/00*
U.S. Cl. 405—130 **9 Claims**



1. A method of limiting frost heaving of a buried refrigerated gas pipeline traversing frost-susceptible soil, said frost heaving being due to the upward force of a horizontal ice lense forming below said pipeline, which comprises:

(a) forming a first plurality of holes in said soil on one side of said pipeline;
(b) forming a second plurality of holes in said soil on the other side of said pipeline substantially opposite said first holes;
(c) placing means for passively removing heat from said soil in said holes resulting in a plurality of substantially opposed pairs of heat removing means, each of said heat removing means being extended from a depth below that at which ice lenses would otherwise form to the atmosphere to transfer heat from the soil to the atmosphere; and
(d) passively cooling the soil adjacent to said pipeline by means of said heat removing means, said heat removing means operating in pairs to (i) lower the depth at which said horizontal ice lense can form, (ii) reduce the amount of water in soil available to form said horizontal ice lenses, and (iii) form vertical frost bulbs in said soil surrounding said heat removing means on both sides of said pipeline such that opposing lateral forces are created which tend to counteract said upward force.

4,194,857

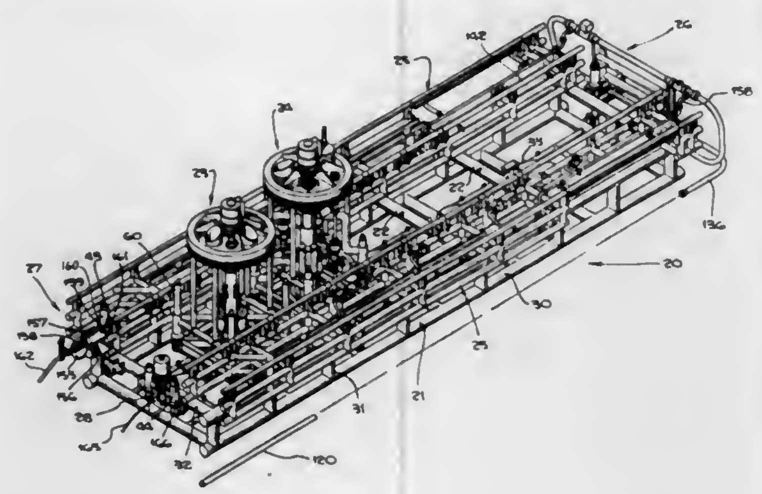
SUBSEA STATION

Georges M. Chateau, Pau, France, and Chester B. Falkner, Jr., Huntington Beach, Calif., assignors to Societe Nationale Elf Aquitaine (Production), France

Division of Ser. No. 743,586, Nov. 22, 1976, Pat. No. 4,120,362. This application Jun. 27, 1978, Ser. No. 919,570
Int. Cl.^{2} E02D *29/00*
U.S. Cl. 405—203 **7 Claims**

1. In a method of lowering, installing and operating a subsea installation comprising the steps of:

lowering and placing on a seabed a base frame means having a plurality of receptor openings and selectively arranged upstanding connector post means for equipment to be later lowered;
lowering a base guide unit having guide lines to the base frame means and releasably securing said unit thereto;
lowering a module assembly assembled at the surface onto said base frame means and releasably interconnecting said module assembly to said base unit;
lowering and releasably connecting to said base frame means at cooperable connector means thereon an elongated side structure extending along each side of the base frame means to provide side structures on opposite sides of said module assembly;
releasably interconnecting fluid conducting means on said side structures to said module assembly;
interconnecting adjacent ends of said elongated side structures at one end of said base frame means with end manifold means to cooperably connect said fluid conducting means;
and connecting external flow lines to said end manifold means.

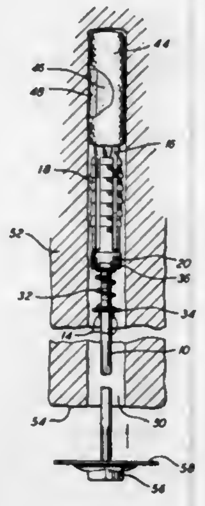


4,194,858

MINE ROOF BOLT ANCHOR INSTALLATION

Gordon C. Evans, Syracuse, N.Y., assignor to The Eastern Company, Naugatuck, Conn.

Filed Sep. 25, 1978, Ser. No. 945,225
Int. Cl.^{2} E21D *20/02*
U.S. Cl. 405—259 **10 Claims**



1. Mine roof bolt anchoring apparatus for use in conjunction with a conventional two-compartment resin grouting cartridge inserted into a blind drill hole in the mine roof ahead of said apparatus, the latter comprising:

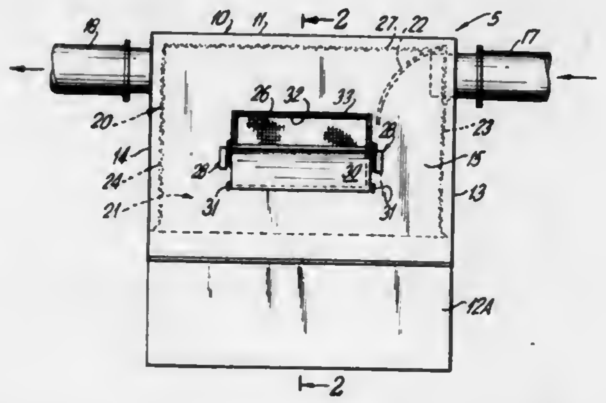
(a) an elongated bolt having a head at one end and threaded for a portion of its length from the other end;
(b) an expansion anchor including a tapered nut engaged with the threads of said bolt and a hollow expansion shell through which said bolt passes axially to engage said nut with the smaller end thereof extending into the upper end of said shell;
(c) an engagement surface fixedly associated with the lower end of said shell;
(d) an engagement element coupled to said bolt and having an upper end resiliently biased into contact with said shell engagement surface;
(e) first rotational stop means fixedly associated with said shell engagement surface; and
(f) second rotational stop means fixedly associated with said engagement element upper end, said first and second stop means being relatively arranged
(i) for positive rotational engagement in response to rotation of said bolt and thereby said rotationally coupled engagement element in the direction tending to withdraw said bolt from said threaded engagement with said tapered nut, whereby said bolt, engagement element and anchor are rotated as a unitary structure, and
(ii) for sliding contact of said engagement element upper end with said shell engagement surface in response to rotation of said bolt in the direction tending to advance said bolt into said tapered nut, whereby said anchor may be held rotationally stationary as said bolt and engagement element are rotated to effect expansion of said shell into engagement with the wall of said drill hole.

4,194,859

SELF CLEANING COLLECTOR SYSTEM

Bruce T. E. Boon, Wayne, and Armand P. Timmins, Sparta, both of N.J., assignors to Eastern Cyclone Industries, Inc., Fairfield, N.J.

Filed Sep. 8, 1978, Ser. No. 940,469
Int. Cl.^{2} B65G *53/60*
U.S. Cl. 406—172 **14 Claims**



1. An automatic, self-cleaning collector apparatus for use in separating material from a material-air conveying system comprising:

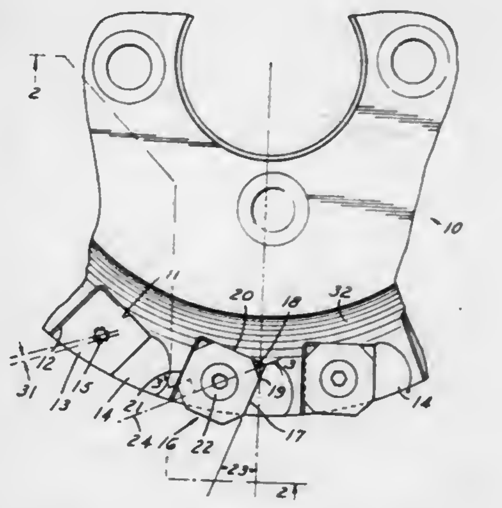
an outer housing member having an entry portion, an exit portion, a closed top portion, and a releasable base portion, said outer housing member being in communication with an inlet conduit for the admittance of said material and air, said outer housing further being in communication with an outlet conduit for the removal of said air therefrom, said outlet conduit being in communication with means for drawing the air through said collector apparatus;
a perforated inner housing member, disposed within said outer housing member, having an entry portion, an exit portion, and a top portion, the bottom portion of said inner housing member being open such that the releasable base portion of said outer housing and the entry, exit and top portions of said inner housing member define an interior compartment, said inner housing member being in communication with said inlet conduit such that conveying air will separate from said material and will flow through said perforations into passageways between the respective housing members and be removed through said outlet conduit; and
a freely pivotable panel member hingedly connected along its bottom portion to said outer housing member, said panel member normally being in the open position at a predetermined angle relative to the vertical, thus exposing an aperture in the outer housing whereby when said means for drawing air through the apparatus is activated at the start of a conveying cycle, the air initially being drawn therein is drawn through said outer housing aperture thus cleaning a portion of said inner housing member by blowing any particles thereon into said interior compartment, said air being drawn in through said outer housing aperture further acting to close said panel member against the inner housing until the conveyance cycle is completed whereupon the force of gravity causes said panel member to resume its normally open position.

4,194,860

FACE MILLING CUTTER

David A. Hopkins, Troy, Mich., assignor to The Valeron Corporation, Oak Park, Mich.

Filed Jun. 26, 1978, Ser. No. 919,229
Int. Cl.^{2} B62D *1/12*
U.S. Cl. 407—42 **20 Claims**



1. A face milling cutter comprising a rotatable annular body, means to provide a plurality of circumferentially spaced individual cutting edges projecting from the cutting face of said body, each cutting edge extending from a point of maximum cutting depth in a direction progressively outward from the axis of rotation, progressively backward relative to direction of rotation, and of progressively reduced cutting depth totalling a minor fraction of said outward extension, and supplemental cutting edges each relieved radially inwardly and backwardly from a radial plane passing through said point and the cutter axis.

7. A face milling cutter comprising a rotatable annular body, means to provide a plurality of circumferentially spaced individual cutting edges projecting from the cutting face of said body, each cutting edge extending from a point of maximum cutting depth in a direction progressively outward from the axis of rotation, progressively backward relative to direction of rotation, and of progressively reduced cutting depth totalling a minor fraction of said outward extension, said cutting edges including a wiping cutting edge extending from each cutting point inwardly relative to the axis of rotation and substantially in the cutting plane of rotation.

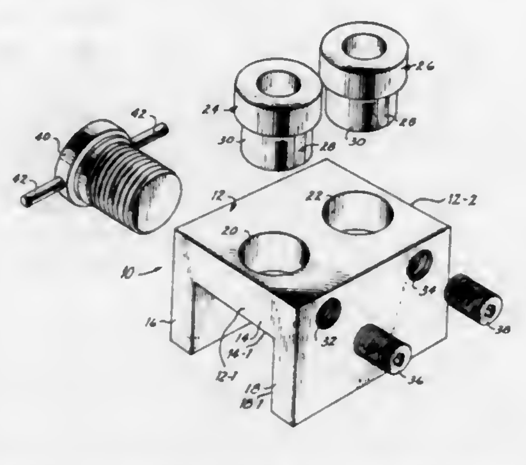
4,194,861
COMPACT DOWEL HOLE SPACING AND DRILLING DEVICE

Russell E. Keller, Frostproof, Fla., assignor to Keller Research & Development, Inc., Frostproof, Fla.

Continuation-in-part of Ser. No. 678,711, May 4, 1976, abandoned. This application Dec. 20, 1977, Ser. No. 862,644

Int. Cl.^{2} B23B *49/02*

U.S. Cl. 408—109 **5 Claims**



1. A compact portable dowel hole spacing and drilling device for drilling of parallel pairs of aligned dowel holes in workpieces to be joined to each other and having aligned means in the desired position of joining of the workpieces, the device comprising, a rigid U-shaped base for receiving therein the workpieces, one workpiece at a time, said base including a bight and first and second opposed legs extending in the same general direction therefrom, and said base further having unobstructed open ends for receipt of the workpiece with opposite portions of the workpiece extending outwardly from said ends when first and second faces of the workpiece are in facial engagement with flat perpendicular inner faces of a first of said legs and said bight, respectively, means for guiding a drill along parallel longitudinal axes of apertures extending through said bight and opening between said legs, said axes being equally spaced from the face of the first leg so that the dowel holes are drilled always spaced the same distance from said face of said first leg, said drill guiding means including drill guides positioned in said bight, one for each of said apertures, and means for releasably retaining said drill guides in operative position in the respective apertures for drilling the holes, said retaining means including set screws insertable into threaded bores formed in said first leg for clamping the associated drill guides in operative position in the associated apertures, the second leg having means for clamping the workpiece against said face of said first leg, and said ends having positioning edges coplanar with said face of said first leg and parallel to and equally spaced from adjacent ones of said axes, for alignment of one of said edges with the alignment means of one of the workpieces and the other of said edges for alignment with the alignment means of the other of said workpieces, so that the dowel holes in each workpiece are drilled in correct position for joining the workpieces in precise position as indicated by the aligned means on the workpieces.

4,194,862
INDEXABLE INSERT DRILL

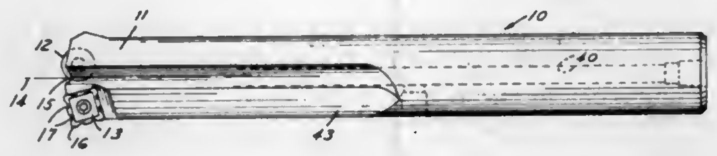
Raymond T. Zweekly, Royal Oak, Mich., assignor to The Valeron Corporation, Oak Park, Mich.

Filed Sep. 5, 1978, Ser. No. 939,443

Int. Cl.^{2} B23B *51/00*

U.S. Cl. 408—224 **22 Claims**

1. An indexable insert drill comprising a drill body a pair of insert pockets formed at one end of said body, one of said pockets having means for locating a first round insert having a circular arcuate cutting edge extending with its foremost point offset from the drill axis by a fractional portion of the insert radius, said cutting edge extending from said foremost point substantially through and past said axis.



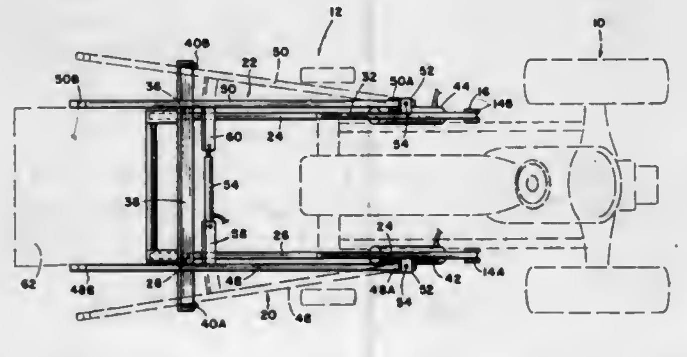
4,194,863
BIG BALE LOADER

Julius D. Vansickle, and Major J. Vansickle, both of Rte. 3, Boswell, Okla. 74727

Filed Jul. 25, 1978, Ser. No. 927,837

Int. Cl.^{2} A01D *87/12*

U.S. Cl. 414—24.5 **2 Claims**



1. Apparatus for use with a tractor having a frame for lifting and transporting large cylindrical hay bales, comprising:

a pair of lifting arms each having an inner end and an outer end, the inner end of each lifting arm being pivotally secured to a tractor frame, the arms being suppported on opposite sides of the tractor and generally parallel to each other;

an elongated lift plate affixed to the outer end of each lift arm, the plate being horizontally supported by the lift arms and forwardly of the tractor;

a hydraulic lifting cylinder-piston for each said lifting arm, one end of each cylinder-piston being pivotally attached to the tractor and the other end being pivotally attached to said lifting arm, whereby hydraulic pressure applied simultaneously to the cylinder-pistons causes the lifting arms to raise said lift plate;

a pair of side arms each having an inner end and an outer end, the inner end of each arm being pivotally secured to a said lifting arm, each side arm slidably resting on said lift plate and the outer end of each side arm being spaced forward of the lifting plate, the said arms being pivotal towards and away from each other, the outer ends of the side arms being adapted to engage a large hay bale therebetween;

a hydraulic grasping cylinder-piston pivotally connected at opposite ends to the side arms whereby the outer ends of the side arms may be spread apart from each other to receive a large hay bale therebetween and moved towards each other to grasp a large bale of hay therebetween and in which condition said lifting arms may be pivoted upwardly to lift the grasped hay bale for transportating it, each of the lifting arms being defined by:

a first portion having inner and outer ends, the inner end being pivotally secured to the tractor, one end of said lifting cylinder-pistons being pivotally secured to the first portion adjacent the outer end thereof;

a second portion having an inner end and an outer end, the inner end being secured to the first portion outer end, the second portion extending forwardly and downwardly of said first portion and in the same vertical plane thereof; and

a third portion having a lower end and an upper end, the lower end being affixed to the second portion outer end, said lift plate being horizontally secured to the third portion upper end, the lifting arm being dimensioned such that in its downwardly pivoted position the second portion outer end and third power lower end rest on the ground and the outer ends of said side arms are positioned above the ground approximately the radius of a large cylindrical hay bale whereby the side arms are properly positioned for grasping the opposed end of a cylindrical hay bale.

4,194,864
THREE-DIMENSIONAL AUTOMATIC WAREHOUSE EQUIPMENT

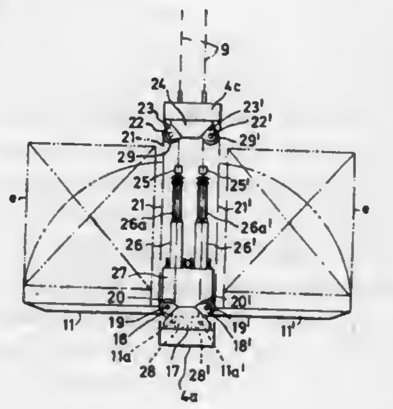
Noriyuki Yamauchi, Kobe; Yoshiaki Toko, Hyogo, and Takao Ehara, Takasago, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1977, Ser. No. 861,004

Claims priority, application Japan, Dec. 27, 1976, 51-156428; Jul. 21, 1977, 52-86618

Int. Cl.^{2} B66F *9/14;* **B65G** *1/06*

U.S. Cl. 414—283 **5 Claims**



1. A three dimensional automatic warehouse apparatus comprising:

at least two spaced opposed racks defining between them an aisle;

a stacker truck movable along said aisle and having a vertically movable loader thereon, elevator means for raising and lowering said loader to a desired level, and a transfer fork pivotally mounted on said loader for being displacable between an article support position in which said transfer fork projects horizontally from said loader in a direction substantially perpendicular to the plane of movement of said stacker truck along said aisle and a stowed position by rotation through 90° in a plane perpendicular to the plane of movement of said stacker along said aisle;

said racks having a plurality of pillars disposed along said aisle and a plurality of cantilever arms projecting from each pillar toward the aisle at a plurality of levels, the space between adjacent arms on the same level being larger than the width of said transfer fork, and the space between the ends of said cantilever arms pillars on opposite sides of said aisle being greater than the dimension of said stacker truck transversely of the direction of the aisle with the fork in the stowed position and less than the dimension of said stacker truck transversely of the direction of the aisle with the fork in the projected position.

4,194,865
INSERT LOADING APPARATUS IN TRANSFER ENCAPSULATION

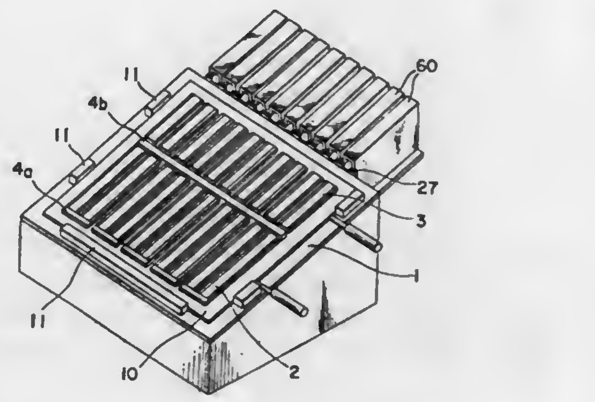
Kazuo Bandoh, Kyoto, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Japan

Filed May 11, 1978, Ser. No. 904,961

Claims priority, application Japan, May 12, 1977, 52-55120; Dec. 23, 1977, 52-155894

Int. Cl.^{2} B65G *1/08*

U.S. Cl. 414—403 **5 Claims**



1. An apparatus for loading inserts to be encapsulated from cartridges into a loading frame, comprising an inclined loading frame base provided with a plurality of guide members, means for stopping the inserts in position on the guide members, said stopping means being arranged on the loading frame base, means for lifting up a loading frame to load the inserts on the guide members into a loading frame, and an insert feeding mechanism elevatably mounted on the rear end of the loading frame base, by which inserts are periodically fed from the cartridges to the guide members, said insert feeding mechanism comprising a cartridge base on which cartridges are placed, means for pivoting said cartridge base between horizontal position and inclined position, and means for intermittently elevating the cartridge base.

4,194,866
SLIVER CAN TRANSPORTING DOLLY

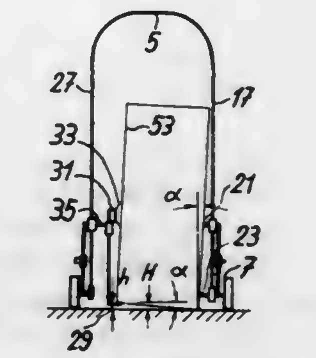
Bruno Fritschi, Uster; Ludek Malina, Kloten, both of Switzerland, and Max Oestreicher, Kussaburg, Fed. Rep. of Germany, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Apr. 6, 1978, Ser. No. 893,888

Claims priority, application Switzerland, Apr. 12, 1977, 4478/77

Int. Cl.^{2} B60P *1/30*

U.S. Cl. 414—459 **8 Claims**



1. A sliver can transporting dolly comprising:

a base frame;

said base frame embodying a pair of spaced substantially parallel, longitudinally extending support beams structured to receive cans therebetween;

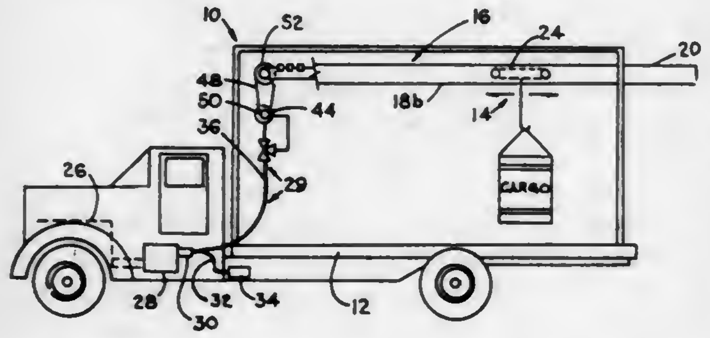
means for laterally tilting and engaging with the underside of the tilted cans and for lifting cans standing between said longitudinal support beams of said base frame;

said means for tilting, engaging and lifting the cans comprises:

- a first pair of back-holding rods;
- means for mounting said first pair of back-holding rods for substantially vertical movement;
- a second pair of rods, one of which rods defines a gripper rod for the cans and the other of which rods defines a tilting rod for the cans; and
- means for mounting said second pair of rods to be substantially horizontally and vertically movable.

4,194,867
AN APPARATUS WITH A TRANSVERSING HOIST LOADER ASSEMBLY

Charles G. Bragg, 158 Whiteley Dr., Corpus Christi, Tex. 78418
Filed May 28, 1975, Ser. No. 581,551
Int. Cl.² B60P *1/46*
U.S. Cl. 414—542 **6 Claims**



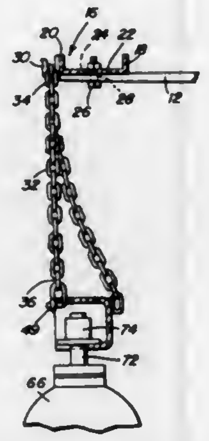
2. A traversing hoist assembly, in combination, comprising:

- a prime mover means for providing a source of power;
- a power take-off means drivingly connected to said prime mover means;
- a structural means defining a cargo storage space having a longitudinal axis;
- a traversing hoist assembly means disposed substantially within said cargo storage space, said hoist assembly means including a hoist carriage means for movement along the longitudinal axis of the cargo storage space, said hoist carriage means having grappling means for handling material;
- a fluid power drive transmission means drivingly connected to the power take-off means for moving the hoist carriage means in a fore and aft direction along the longitudinal axis of the cargo storage space, said transmission means includes at least two fixed displacement hydraulic motor means connected in a parallel relationship, a hydraulic pump means drivingly connected to the power take-off means, with said pump means having a discharge opening connected in series to both of said hydraulic motor means, a plurality of valve means for controlling said hydraulic motor means, conduit means connecting said plurality of valve means with each other, means for simultaneously actuating said plurality of valve means wherein said conduit means connect said hydraulic motor means in a fluid series relationship, whereby one hydraulic motor means drive said hoist carriage in either a fore or aft direction and the other hydraulic motor means effectively maintains the height of the grappling means relative to the cargo storage space; and

said fluid power drive transmission means further including means for selective actuation of only said other hydraulic motor means for raising or lowering the grappling means.

4,194,868
VALVE LIFTING ATTACHMENT FOR FORK LIFT

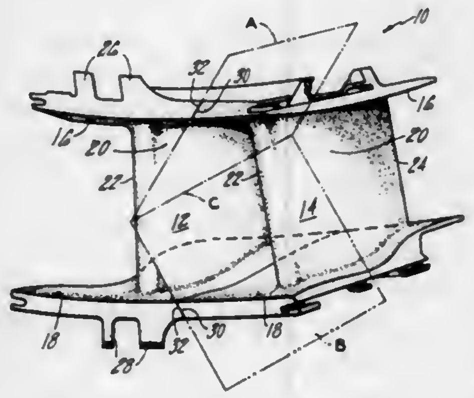
Leon P. Walker, 5420 Alvarado Pl., NE., Albuquerque, N. Mex. 87110, and Manuel Gabaldon, 1711 Standord Dr. SE., Albuquerque, N. Mex. 87106
Filed Jun. 26, 1978, Ser. No. 918,830
Int. Cl.² B66F *9/06*
U.S. Cl. 414—607 **5 Claims**



1. A lifting attachment for a fork lift of the type including laterally spaced elongated horizontal lifting forks, said attachment including an elongated horizontal support member for spanning and support from said forks, said support member including a plurality of longitudinally spaced anchor means, a plurality of elongated flexible tension members including one set of corresponding ends thereof engaged with and supported from said anchor means with said tension members swingably supported from said anchor means and depending downwardly therefrom, the other set of corresponding ends of said tension members having fixture means supported therefrom adapted to releasably engage and support articles to be suspended from the support member by means of said tension members, the lower ends of said tension members having anchors supported therefrom, said fixture means each including a hollow open sided housing including top, bottom and rear walls as well as opposite side walls extending and interconnected between corresponding side marginal edges of said top, bottom and rear walls, the front sides of said housing being open, the front marginal edge portion of said lower wall having a forwardly opening notch formed therein, the front marginal edge portion of said top wall having a vertical aperture formed therethrough, said anchors including portions thereof passed through said apertures.

4,194,869
STATOR VANE CLUSTER

Nicholas Corcokios, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Jun. 29, 1978, Ser. No. 920,583
Int. Cl.² F01D *1/04*
U.S. Cl. 415—216 **3 Claims**



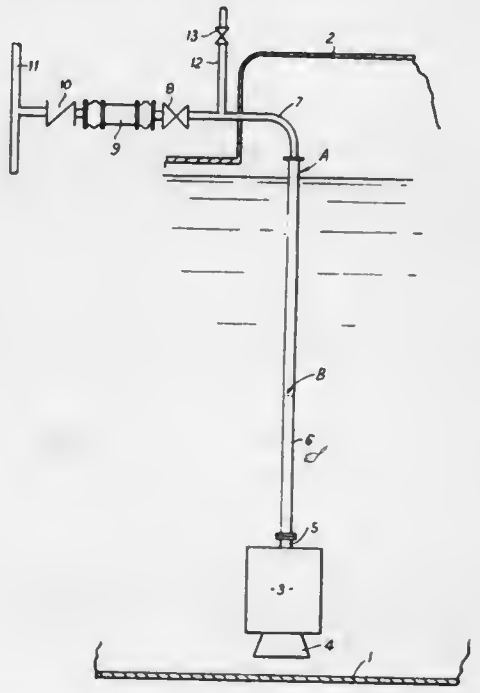
1. In a vane cluster formed of a first vane having an inner

platform and an outer platform, and a second vane having an inner platform and an outer platform, the improvement comprising:

first and second vanes joined at the inner platforms along a plane A and at the outer platforms along a plane B wherein the planes A and B intersect along a line of intersection which passes between the inner and outer platforms and are oriented so as to form inwardly facing, joining surfaces on one of said vanes and outwardly facing, joining surfaces on the other of said vanes.

4,194,870
SLAM PREVENTION IN LIQUID PUMPING

Edmund G. Tornay, New York, N.Y., assignor to Energy Transportation Group, Inc., New York, N.Y.
Filed Mar. 16, 1978, Ser. No. 887,084
Int. Cl.² F04B *15/08*
U.S. Cl. 417—53 **5 Claims**



1. The method of operating a pumping installation for a liquid which vaporises at NTP, said installation having:

- (a) a pump having an inlet and an outlet, said pump being immersed in a body of liquid;
- (b) a riser pipe having a lower end connected to the pump within the body of liquid and having an upper end at a point above the level of the body of liquid, and
- (c) a stop valve communicating with the upper end of the riser pipe,

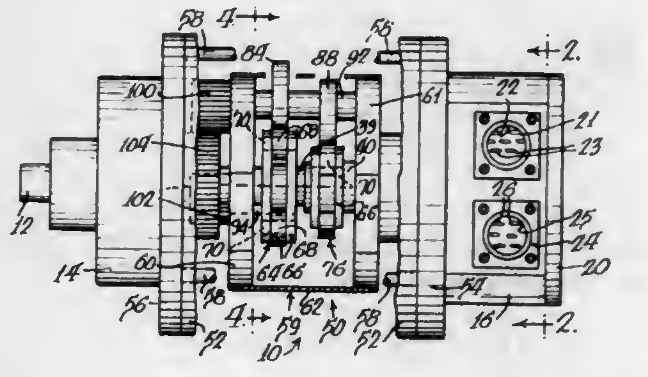
said method comprising the steps of:

- (i) with the stop valve closed, injecting non-liquefiable gas into the riser pipe to form a cushion of said gas in the riser pipe by forcing the liquid in the riser pipe down to a level below that of the remainder of the body of liquid,
- (ii) with the stop valve closed, operating the pump to force liquid up the riser pipe until any vapour in the riser pipe has been turned to liquid and the cushion of non-liquefiable gas has become further compressed,
- (iii) opening the stop valve and continuing the operation of the pump to pump liquid from the body of liquid through the stop valve to a delivery point.

4,194,871
ROTARY PISTON INTERNAL COMBUSTION ENGINE

Karl E. Studenroth, 1609 Euclid Ave., Chicago Heights, Ill. 60411
Filed Nov. 28, 1977, Ser. No. 855,369
Int. Cl.² F01C *1/00;* F02B *53/00*
U.S. Cl. 418—38 **17 Claims**

1. A rotary piston internal combustion engine comprising a block assembly providing a piston chamber, a first piston member rotatably mounted in said block assembly for non-uniform rotation in said piston chamber, a second piston member rotatably mounted in said block assembly for non-uniform rotation in said piston chamber and cooperating with said first piston member to form at least two variable volume combustion chambers in said piston chamber between said piston members, each of said piston members having at least one piston portion with a hollow chamber therein communicating with its adjacent combustion chamber, a driven member rotatably mounted in said block assembly and having a drive shaft adapted to be connected to drive another device, first means between said first piston member and driven member for regulating and transmitting the rotation of said first piston member, said first means including a first pusher cam, a first holding cam and a pair of first followers, said first pusher and holding cams being mounted on one of said driven member and first piston member, said first pair of followers being mounted on the other of said driven member and first piston member, second means between said second piston member and said driven member for regulating and transmitting the rotation of said second piston member, said second means including a second pusher cam, a second holding cam and a pair of second followers, said second pusher and holding cams being mounted on one of said driven member and second piston member, said second pair of followers being mounted on the other of said driven member and second piston member, said first and second pusher cams being located relatively rotatively behind said first and second pair of followers, respectively, said first and second holding cams being located relatively rotatively ahead of said first and second pair of followers, respectively, and third means in said block assembly for synchronizing the actions of said first and second means, said first, second and third means permitting one of said first and second piston members, then the other, to rotate alternatively ahead, and then behind, said driven member as said driven member is rotated by said piston members, whereby said piston members move relative one another so that at times first one piston member then the other stands still while the other piston member then the first piston member rotates, and said combustion chambers therebetween undergo changes in volume for the intake, compression, expansion and exhaust processes of the internal combustion engine while said driven member and output shaft rotate uniformly.



4,194,872
APPARATUS FOR THE COOLING, CALIBRATING AND STRAIGHTENING OF A PLATE-SHAPED CONTINUOUSLY EXTRUDED SYNTHETIC-RESIN STRAND

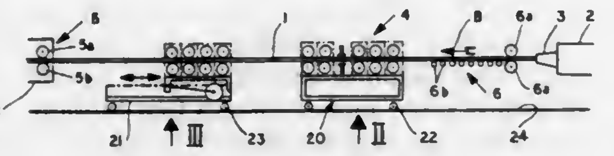
Wilhelm Hinterkeuser, St. Augustin-Menden; Norbert Herres, Hennef-Allner, and Paul Reitemeyer, Troisdorf-Bergheim, all of Fed. Rep. of Germany, assignors to Reifenhäuser KG, Troisdorf, Fed. Rep. of Germany
Filed Sep. 2, 1977, Ser. No. 830,334
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2639910
Int. Cl.² B29C *24/00;* B29D *7/10*
U.S. Cl. 425—72 R **10 Claims**

1. An apparatus for the continuous cooling, calibration and straightening of a plate-shaped synthetic-resin strand, compris-

ing, in combination with an extruder for continuously producing said strand, and means spaced from said extruder defining a path for the produced strand;

guide means along said path downstream of said extruder;

at least one roll stand reciprocatingly shiftable on said guide means downstream of said extruder, said roll stand being provided with a multiplicity of pressing rollers flanking said strand and in contact with opposite faces thereof, said multiplicity of rollers including rollers spaced apart along said strand on opposite sides thereof, said means defining said path including means downstream of said rollers for displacing said strand unidirectionally and continuously along said path through said roll stand; and



an oscillating drive for reciprocatingly shifting at least some of said rollers back and forth along said strand parallel to the direction of displacement thereof during the continuous unidirectional advance of said strand in said direction along said path.

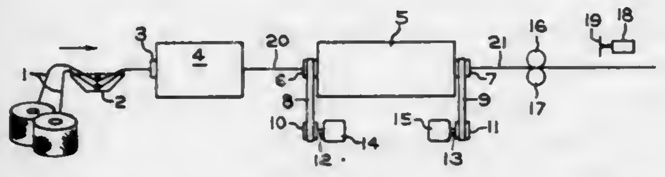
4,194,873
APPARATUS FOR MAKING PULTRUDED PRODUCT

Charles W. Killmeyer, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 9, 1978, Ser. No. 867,852

Int. Cl.^{2} B29G ***7/00***

U.S. Cl. 425—93 **10 Claims**



1. Apparatus for producing a fiber reinforced pultruded rod, comprising means for coating fibers with resin, first stationary shaping means for shaping the coated fibers into a rod with at least one groove or protrusion, means for partially curing said shaped rod, second shaping means generally shaped in the cross-section of said rod, means to rotate said second shaping means and said partially cured rod in order to form a rod with said fibers following the contour of said at least one groove or protrusion, and means to pull said rod through said first shaping means and said second shaping means.

4,194,874
VARIABLE FLAME SHAPE OIL BURNER

Temple S. Voorheis, Atherton, and Louis D. Siegert, Burlingame, both of Calif., assignors to Coen Company, Burlingame, Calif.

Filed Jan. 3, 1978, Ser. No. 866,746

Int. Cl.^{2} F23C ***5/00;*** **F23Q** ***9/00;*** **F23D** ***11/10***

U.S. Cl. 431—8 **9 Claims**

1. A liquid fuel fired burner assembly for producing a single variable shaped asymmetric flame, said assembly comprising:

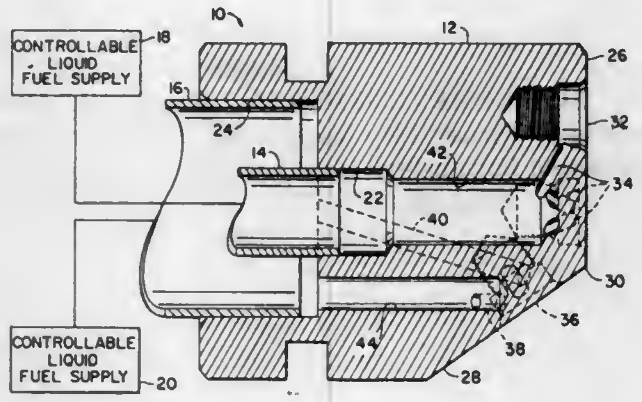
a tip head for receiving and carrying tip means in relatively fixed, spaced-apart relation, said tip head including means defining a hollow core for receiving a first fuel supply and means defining a hollow annulus about said hollow core for receiving a second fuel supply;

a first fuel supply means for controllably supplying liquid fuel to a first tip means through said core;

a second fuel supply means for controllably supplying liquid fuel to a second tip means through said annulus;

first liquid fuel spray tip means mounted to said tip head and disposed parallel to a central axis of said burner assembly for forming a first dispersed liquid fuel spray cone having its axis parallel to said central axis of said burner;

second liquid fuel spray tip means mountable to said tip head for forming a second dispersed liquid fuel spray cone, said second tip means being disposed divergent of said central axis on one side of a plane through said axis, and wherein the spray cone angle of said second tip means is substantially wider than the spray cone angle of said first tip means such that said second spray cone substantially intersects said first spray cone to form a single composite liquid fuel spray cone of asymmetric cross-section relative to said plane; and


CONTROLLABLE LIQUID FUEL SUPPLY
18
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CONTROLLABLE LIQUID FUEL SUPPLY
20

means for controlling the relative rates at which said first fuel supply means and said second fuel supply means provide liquid fuel to said core and to said annulus, respectively, such that the asymmetric shape of said single composite liquid fuel spray cone may be continuously varied.

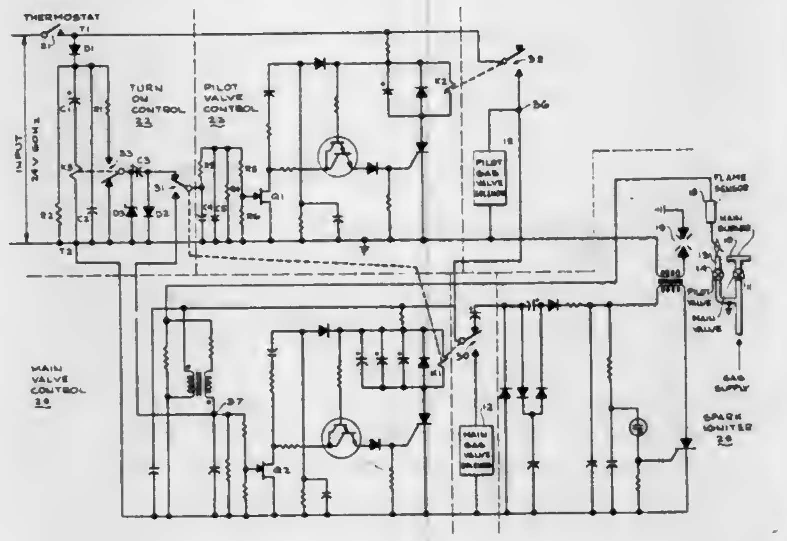
4,194,875
INTERMITTENT PILOT IGNITION SYSTEM

William L. Hewitt, Woodland Hills, Calif., assignor to Cam-Stat Incorporated, Los Angeles, Calif.

Filed Jan. 17, 1978, Ser. No. 870,245

Int. Cl.^{2} F23Q ***9/08***

U.S. Cl. 431—45 **9 Claims**



1. In a pilot ignition and valve control system for a gas burner having

a main burner, a main valve operated by a main solenoid for providing gas to said main burner, a pilot burner, and a pilot valve operated by a pilot solenoid for providing gas to said pilot burner,

a flame sensor and a flame sensor circuit for providing a flame signal when the pilot burner is ignited,

ignition electrodes adjacent said pilot burner and an ignition circuit for connection to said ignition electrodes,

a first switching circuit operable between a first condition turning said ignition circuit on to provide sparking at said electrodes, and a second condition turning said ignition circuit off and supplying gas to said main burner,

a main valve control circuit for said first switching circuit and having the flame signal of said flame sensor circuit as an input, whereby when a flame is sensed at said pilot burner said main valve control circuit actuates said first switching circuit from said first condition to said second condition, and

a pair of input terminals for connection to an AC power source through a thermostat switch,

the improvement including in combination:

a storage capacitor;

a charging circuit connected to said input terminals for charging said capacitor when the thermostat switch is closed, and including means for automatically disconnecting said capacitor from said charging circuit at a time after said thermostat switch is closed and connecting said capacitor to a reference point;

a second switching circuit operable between a first open condition and a second condition connecting said input terminals to said first switching circuit and to said pilot solenoid; and

a pilot valve control circuit for said second switching circuit and having first means for connecting said capacitor as an input, whereby when said capacitor is charged and connected to said reference point said pilot valve control circuit actuates said second switching circuit from said first condition to said second condition supplying gas to said pilot burner and power to said ignition electrodes.

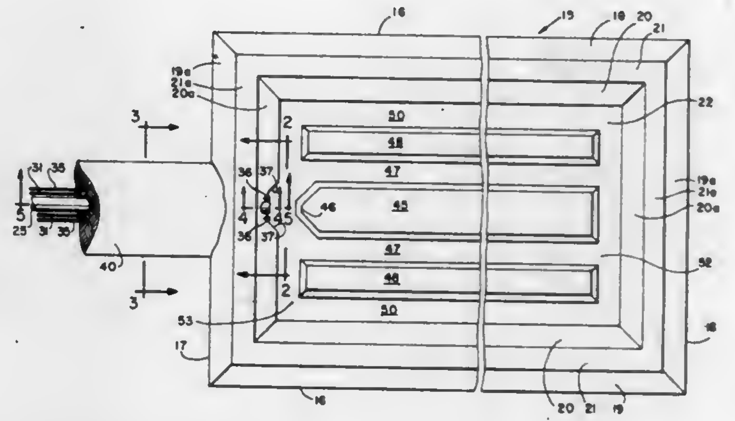
4,194,876
LIQUID BURNPITS

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Jenkintown, Pa.

Filed Sep. 29, 1977, Ser. No. 837,700

Int. Cl.^{2} F23D ***13/20***

U.S. Cl. 431—202 **5 Claims**



1. A burnpit comprising

an elongated combustion space open at the top and enclosed along the sides within opposite pairs of spaced side and end dikes and having a floor,

a supply pipe for supplying fluent hydrocarbons for combustion in said burnpit,

one of said end dikes having a burner head at an inner side face portion thereof and spaced above said floor to which said supply pipe is connected, and

means contiguous to said burner head for igniting fluent hydrocarbons discharged from said burner head,

said floor having a plurality of panels extending longitudinally therealong separated by a plurality of channels.

4,194,877
DYE-CONTAINING POLYMER COMPOSITION
John I. Peterson, Falls Church, Va., assignor to United States of America, Washington, D.C.

Filed Nov. 28, 1977, Ser. No. 855,397

Int. Cl.² D06P *3/00;* **C08K** *5/00*

U.S. Cl. 8—4 **5 Claims**

1. A method for the preparation of a pH indicating dye-containing polymer composition, which comprises: subjecting acrylamide monomer to polymerization conditions in the presence of a pH indicating color changing dye material selected from the group consisting of phenol red, brillant yellow and rosolic acid to produce a hydrophilic polymer composition of acrylamide and said dye.

4,194,878
PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS
Walter Birke; Hans-Ulrich von der Eltz, and Franz Schon, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

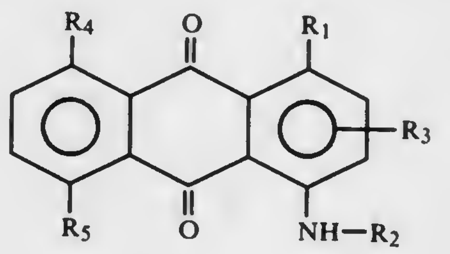
Filed May 4, 1978, Ser. No. 903,005

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720661

Int. Cl.² C09B *1/00*

U.S. Cl. 8—39 B **1 Claim**

1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, in which process the materials are padded or printed in common manner with aqueous baths or printing pastes of disperse dyestuffs, and the dyestuffs are subsequently fixed by the action of liquid or gaseous methylene chloride or both of the said phases of methylene chloride, the improvement that use is made of a dyestuff of the general formula (1)

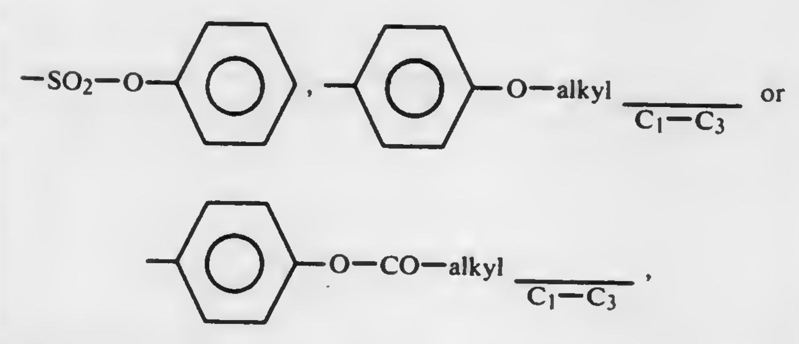


(1)

in which

R_1 represents $—NH_2$, $—NH—CH_2—CH_2—OH$,

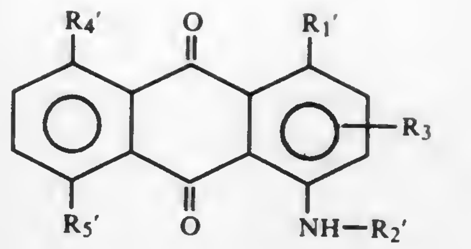
R_2 represents hydrogen, alkyl of from 1 to 3 carbon atoms or $—(CH_2)_n—OH$, in which n stands for an integer of from 1 to 3, or phenyl, R_3 represents hydrogen, —O—alkyl C_1-C_3,



R_4 stands for —OH, $—NH_2$ or —NH—alkyl C_1-C_3, and

R_5 represents —OH or $—NO_2$,

or of the general formula (2)



(2)

in which

R'_1 stands for —OH, or —NH—(n— or i—)alkyl C_1-C_4,

R'_2 for alkoxy C_1-C_3 phenyl, R_3 is defined as in formula (1) above,

R'_4 stands for —OH, $—NH_2$ or —NH-alkyl C_1-C_3, and

R'_5 for —OH or $—NO_2$.

4,194,879
PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS
Walter Birke; Hans-Ulrich von der Eltz, and Franz Schon, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

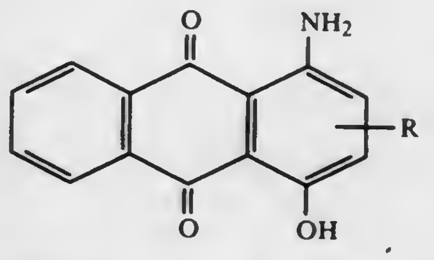
Filed May 4, 1978, Ser. No. 903,008

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720585

Int. Cl.² C09B *1/00;* **D06P** *1/20*

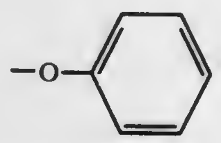
U.S. Cl. 8—39 B **1 Claim**

1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, in which process the materials are padded or printed in common manner with aqueous baths or printing pastes of disperse dyestuffs, and the dyestuffs are subsequently fixed by the action of liquid or gaseous methylene chloride or both of the said phases of methylene chloride, the improvement that dyestuffs of the general formula



(1)

in which R is an alkoxy group of from 1 to 3 carbon atoms, the group



or $—O(CH_2)_n$-alkoxy$_{C_1-C_3}$,

in which n stands for an integer of from 2 to 6, are used.

4,194,880
PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS
Walter Birke; Hans-Ulrich von der Eltz, and Franz Schon, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 903,004

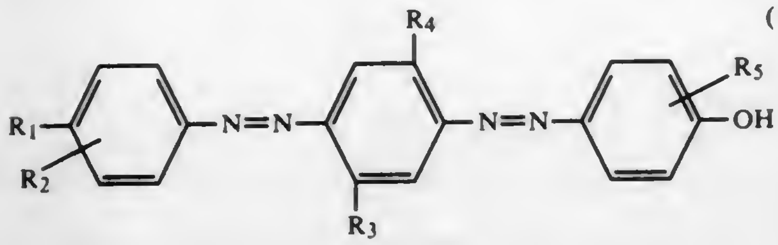
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720660

Int. Cl.² C09B *27/00;* **D06P** *1/02*

U.S. Cl. 8—41 B **2 Claims**

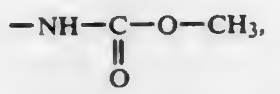
1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, in which process the materials are padded or printed

in common manner with aqueous baths or printing pastes of disperse dyestuffs, and the dyestuffs are subsequently fixed by the action of liquid or gaseous methylene chloride or both of the said phases of methylene chloride, the improvement that use is made of a dyestuff of the formula



(1).

in which R_1 stands for hydrogen, hydroxy, nitro or



$$-NH-\underset{\underset{O}{\|}}{C}-O-CH_3,$$

R_2 and R_3 each stand for hydrogen, chlorine or alkyl from 1 to 3 carbon atoms or an alkoxy group of from 1 to 3 carbon atoms, R_4 represents hydrogen, chlorine, alkyl from 1 to 3 carbon atoms, an alkoxy group from 1 to 3 carbon atoms or —CH═CH—CH═CH— forming the naphthalene ring, and R_5 stands for hydrogen, alkyl from 1 to 3 carbon atoms or alkoxy from 1 to 3 carbon atoms, which dyestuffs have a solubility in methylene chloride of at least 2 g/l.

4,194,881

PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schön, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

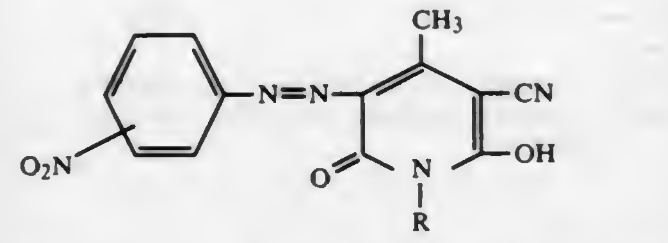
Filed May 4, 1978, Ser. No. 903,007

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720585

Int. Cl.² C09B *27/00;* **D06P** *1/02*

U.S. Cl. 8—41 B **1 Claim**

1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, whereat in known manner the said materials are padded or printed with an aqueous liquor or printing paste of disperse dyestuffs, and subsequently the dyestuffs are fixed by means of liquid or gaseous methylene chloride or of both of the said phases of methylene chloride, the improvement that a dyestuff of the formula



(1)

in which R represents hydrogen or an alkyl group of 1 to 4 carbon atoms, is applied.

4,194,882

PROCESS FOR THE DYEING OR PRINTING OF POLYESTER FIBERS

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schon, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

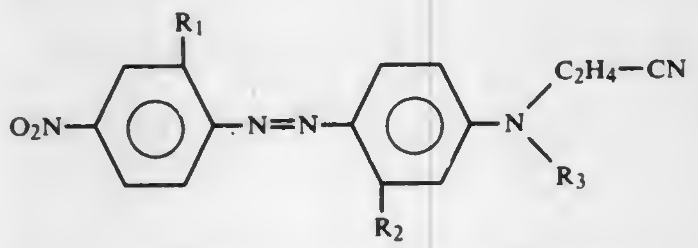
Filed May 4, 1978, Ser. No. 903,051

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720587

Int. Cl.² C09B *27/00;* **D06P** *1/02*

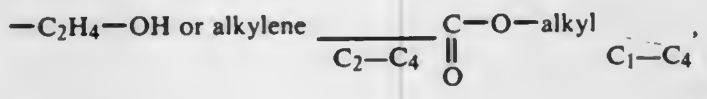
U.S. Cl. 8—41 B **1 Claim**

1. In the process for the pad-dyeing or printing of materials consisting of, or containing, polyester or polyamide fibers or filaments, whereat in known manner the said materials are padded or printed with an aqueous liquor or printing paste of disperse dyestuffs, and subsequently the dyestuffs are fixed by means of liquid or gaseous methylene chloride or of both of the said phases of methylenechloride, the improvement that a dyestuff of the formula



(1)

in which R_1 represents hydrogen, chlorine, bromine or cyano, R_2 represents hydrogen, chlorine or alkyl of 1 to 3 carbon atoms and R_3 stands for alkyl of 1 to 5 carbon atoms,



$$-C_2H_4-OH \text{ or } \underbrace{\text{alkylene}}_{C_2-C_4}-\underset{\underset{O}{\|}}{C}-O-\underbrace{\text{alkyl}}_{C_1-C_4},$$

is applied

4,194,883

WATER-SOLUBLE DISAZO DYESTUFFS AND PROCESS FOR COLORING SYNTHETIC POLYAMIDE FIBRES WITH THEM

Hermann Fuchs, Kelkheim, and Klaus Filzinger, Hofheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

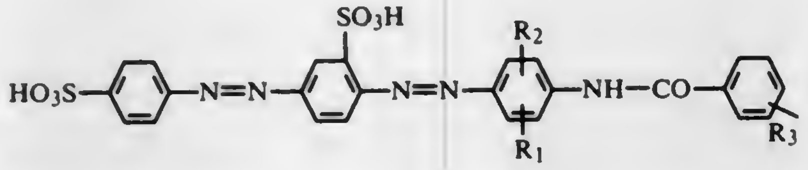
Continuation of Ser. No. 858,438, Dec. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 833,986, Sep. 16, 1977, abandoned, which is a continuation of Ser. No. 641,929, Dec. 18, 1975, abandoned. This application Aug. 23, 1978, Ser. No. 936,184

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1974, 2460466

Int. Cl.² C09B *27/00;* **D06P** *1/02*

U.S. Cl. 8—41 B **4 Claims**

1. In a process for colouring a synthetic polyamide fibre material wherein an acid dyestuff is applied on this material by dyeing or printing methods as usual in the art, and fixed on that fibre material by methods as usual in the art, the improvement consists of using as an acid dyestuff a water-soluble disazo dyestuff which, in the form of the free acid, corresponds to the formula



in which R_1 and R_2 are identical or different from each other and each is hydrogen, methyl, ethyl or methoxy, and R_3 is hydrogen, chlorine, nitro or alkyl of 1 to 4 carbon atoms.

4,194,884

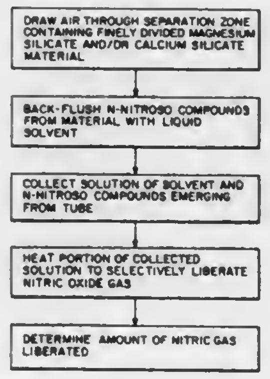
METHOD AND APPARATUS FOR AIR SAMPLING AND FILTRATION

David P. Rounbehler, Concord, and David H. Fine, Framingham, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Nov. 24, 1978, Ser. No. 963,626

Int. Cl.² G01N *31/06, 31/08, 31/12, 33/00*

U.S. Cl. 23—232 R **15 Claims**


DRAW AIR THROUGH SEPARATION ZONE CONTAINING FINELY DIVIDED MAGNESIUM SILICATE AND/OR CALCIUM SILICATE MATERIAL
BACK-FLUSH N-NITROSO COMPOUNDS FROM MATERIAL WITH LIQUID SOLVENT
COLLECT SOLUTION OF SOLVENT AND N-NITROSO COMPOUNDS EMERGING FROM TUBE
HEAT PORTION OF COLLECTED SOLUTION TO SELECTIVELY LIBERATE NITRIC OXIDE GAS
DETERMINE AMOUNT OF NITRIC GAS LIBERATED

15. A method of determining the content in air of N-nitroso dimethylamine, N-nitroso-diethylamine, N-nitroso-dipropylamine, N-nitroso-morpholine, N-nitroso-pyrolidine, N-nitroso-diethanolamine, N-nitroso-dihexylamine, N-nitroso-nornicotine, and N-nitroso-methylvinylamine, said method comprising in sequence the steps of:

directing a predetermined volume of air through a separation zone containing finely divided particles of a dry, solid, activated magnesium silicate material of 60–80 mesh size and said zone being pervious to the flow of air therethrough;

removing said N-nitroso compounds from said sorbent material by passing a liquid solvent consisting of 50 percent dichloromethane and 50 percent methanol by volume through said separation zone in the opposite direction from the flow of said volume of air;

collecting the solution formed by the leading portion of said liquid solvent and said N-nitroso compounds after emergence of said solution from said separation zone, said volume of solution collected being sufficiently small so as to not require concentration during subsequent steps to measure the content of said N-nitroso compounds contained therein;

chromatographically separating said N-nitroso compounds from nitrate and nitrite compounds, if any, present in said collected solution;

heating the portion of said solution having said N-nitroso compounds to a temperature in the range 300° C. to 500° C. to selectively liberate nitric oxide (NO) in the gaseous phase; and

measuring in the gaseous phase the amount of nitric oxide (NO) liberated.

4,194,885

IMINODIIMIDES OF BENZOPHENONETETRACARBOXYLIC DIANHYDRIDE AND COMPOSITIONS THEREOF

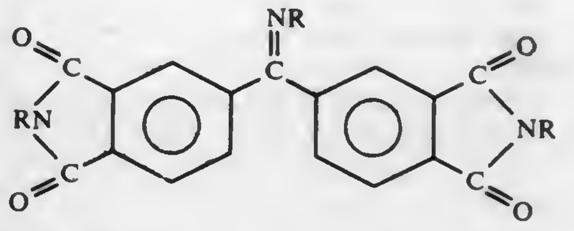
Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 828,379, Aug. 29, 1977, Pat. No. 4,131,610. This application Aug. 31, 1978, Ser. No. 938,598

Int. Cl.² C10M *1/32;* **C10L** *1/22*

U.S. Cl. 44—63 **7 Claims**

1. A composition comprising a major amount of an organic medium selected from the group consisting of lubricating oils and fuel oils and a minor amount effective to impart pour depressant properties and ultra-violet stabilization characteristics thereto of a compound having the following general structure:



where R is H, alkyl having from 1 to about 36 carbon atoms and aryl, aralkyl or alkaryl having from 6 to about 36 carbon atoms.

4,194,886

HALOALKYL HYDROXY-AROMATIC CONDENSATION PRODUCTS AS FUEL ADDITIVES

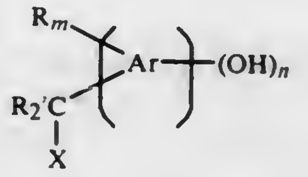
David E. Ripple, Kirtland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 901,174, Apr. 28, 1978, which is a division of Ser. No. 684,818, May 10, 1976, Pat. No. 4,108,783, which is a continuation-in-part of Ser. No. 459,424, Apr. 9, 1974, abandoned. This application Feb. 5, 1979, Ser. No. 9,715

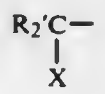
Int. Cl.² C10L *1/22, 1/88*

U.S. Cl. 44—70 **7 Claims**

1. A fuel composition comprising a major amount of a normally liquid fuel and a minor but carburetor cleaning or anti-screen clogging amount of a product made by the process comprising reacting at a temperature ranging from 100° C. to about 300° (A) at least one alpha haloalkyl aromatic compound of the general formula



wherein Ar is a hydrocarbyl aromatic nucleus of 6 to about 30 carbon atoms, or a substituted analog of such an aromatic nucleus substituted with one or more up to 3 each of lower alkoxy, lower alkylthio, chloro, or nitro substituents, each R is a nonfused hydrocarbyl group of about 25 to about 700 carbon atoms, X is a halogen atom, each R′ is independently a hydrogen atom, an alkyl group of 1 to 36 carbon atoms, or a halogen-substituted alkyl group of 1 to about 36 carbon atoms, n is 1 to 3 and m is 1 to 5 with the provisos that (i) the total number of carbon atoms in both the R′ groups does not exceed 36 and (ii) where m exceeds 1, one of the R groups can also be

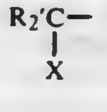


$$R_2'\underset{\underset{X}{|}}{C}-$$

group, with

(B) at least one alpha-beta olefinically unsaturated compound selected from the group consisting of C_{2-40} hydrocarbyl nitriles, C_{2-40} hydrocarbyl carboxylic acids and anhydrides, esters, amides and ammonium and metal salts of said C_{2-40} carboxylic acids; the ratio of (A) to (B) is between about 0.5:1 to about 2:1,

the reaction of (A) with (B) resulting in the formation of a carbon-to-carbon bond, said bond including the carbon of at least one



$$R_2'\underset{\underset{X}{|}}{C}-$$

group.

4,194,887

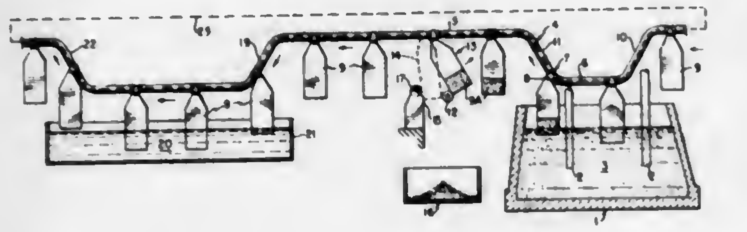
FUSED ALUMINA-ZIRCONIA ABRASIVE MATERIAL FORMED BY AN IMMERSION PROCESS

Herbert F. G. Ueltz, Youngstown; Melvin A. Dashineau, and James J. Pino, both of Niagara Falls, all of N.Y., assignors to U.S. Industries, Inc., New York, N.Y.

Division of Ser. No. 636,403, Dec. 1, 1975, Pat. No. 4,073,096. This application Dec. 9, 1977, Ser. No. 859,115

Int. Cl.² C09C *1/68*

U.S. Cl. 51—309 **8 Claims**



1. An abrasive product consisting essentially of a thin plate of abrasive material having an ultra-fine crystal size, orientation and structure, said material being highly uniform throughout the thickness of said plate and being prepared by

(a) melting an abrasive mix containing aluminum oxide and zirconium oxide in a stationary electric arc furnace,

(b) removably positioning a cool substrate material in the melted mix in the furnace for a predetermined time period to deposit a coating of solidified abrasive material on said substrate,

(c) withdrawing the entire substrate and the solidified coating from the melt, and

(d) removing the solidified abrasive material from the substrate.

4,194,888

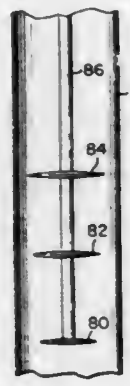
ELECTROSTATIC PRECIPITATOR

James J. Schwab, Seattle, Wash., and Jacob Cooper, North Hollywood, Calif., assignors to Air Pollution Systems, Inc., Kent, Wash.

Continuation-in-part of Ser. No. 726,244, Sep. 9, 1976, abandoned. This application Jan. 28, 1977, Ser. No. 763,524

Int. Cl.² B03C *3/74*

U.S. Cl. 55—2 **8 Claims**



6. A method of removing particles from a particle entrained gas comprising:

sequentially directing said particle entrained gas through a plurality of non-overlapping, radially and axially expanding, radially and circumferentially uniform electrostatic fields having an applied average intensity of greater than 10 kv per centimeter at standard atmospheric conditions, each of said field being generated by a disc shaped discharge electrode concentrically mounted with a tubular outer electrode, said discharge electrodes being spaced at least 1.2 discharge electrode gaps apart from each other and having a smoothly curved outer periphery with the edge radius of said periphery being at least 0.02 of the radius of said outer electrode; and

passing said charged particle entrained gas through an elongated, electric field downstream of each of said electrostatic fields such that said charged particles are deflected toward a collection electrode.

4,194,889

METHOD OF AND APPARATUS FOR PROCESSING SULFUR-CONTAINING EXHAUST GAS

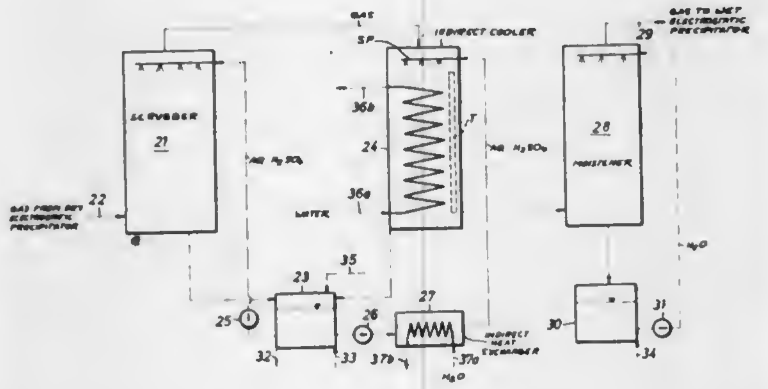
Dieter Wanner, Liederbach, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,803

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710627

Int. Cl.² B03C *3/01, 3/16;* B01D *47/00*

U.S. Cl. 55—7 **15 Claims**



1. A method of treating a sulfur-containing exhaust gas produced in a metallurgical roasting furnace for use in a contact-process plant for the production of sulfuric acid which comprises the steps of:

(a) abstracting heat from said exhaust gas by indirect heat exchange and thereafter removing particulates from the gas;

(b) scrubbing the gas from step (a) with an aqueous sulfuric acid solution;

(c) passing the scrubbed gas of step (b) into and through an indirect gas cooler to reduce the moisture of the gas to not more than about 60 g H_2O/m^3 at 40° C. (STP) and to reduce the temperature of the gas;

(c$_1$) spraying a sufficient amount of aqueous sulfuric acid into the gas while it is passing through the indirect gas cooler of step (c);

(d) subjecting the indirectly cooled gas from step (c) to wet electrostatic precipitation; and

(e) passing the gas subjected to the wet electrostatic precipitation of step (d) to a contact process plant for the production of sulfuric acid.

13. An apparatus for the treatment of a sulfuric-acid-containing gas produced in a roasting furnace for use in a contact-process production of sulfuric acid, said apparatus comprising:

(a) a waste-heat boiler connected to said furnace for abstracting heat from said gas;

(b) a dry-process electrostatic precipitator connected to said waste-heat boiler;

(c) a scrubbing tower connected to said dry-process electrostatic precipitator and provided with a reservoir containing aqueous sulfuric acid and means for recirculating said aqueous sulfuric acid between said scrubbing tower and said reservoir;

(d) an indirect cooler connected to said scrubbing tower for indirectly cooling the scrubbed gas therefrom, said indirect cooler comprising:

(d$_1$) an upright tower,

(d$_2$) vertically extending tubes in said tower and communicating with a gas space above said tubes,

(d$_3$) means for passing water into contact with external surfaces of said tubes, and

(d$_4$) means for spraying aqueous sulfuric acid into the space in (d$_2$) for improving the heat exchange between the gas and said tubes in (d$_2$) and for drying the gas;

(e) a wet-process electrostatic precipitator downstream of said indirect cooler and in flow communication therewith;

(f) means for collecting aqueous sulfuric acid from said indirect cooler and feeding the collected aqueous sulfuric acid to said reservoir; and

(g) means for feeding aqueous sulfuric acid from said reservoir to said spraying means (d$_4$).

4,194,890

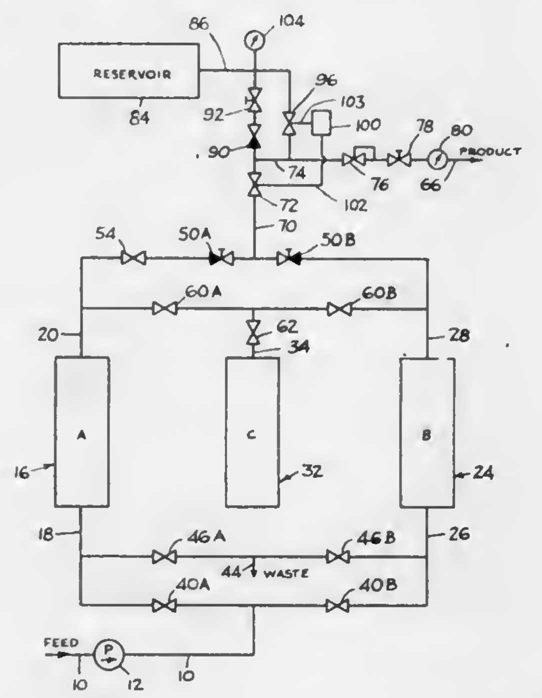
PRESSURE SWING ADSORPTION PROCESS AND SYSTEM FOR GAS SEPARATION

Norman R. McCombs, Tonawanda, and Edward E. Vrana, West Seneca, both of N.Y., assignors to Greene & Kellogg, Inc., Tonawanda, N.Y.

Continuation of Ser. No. 745,285, Nov. 26, 1976, abandoned. This application Feb. 1, 1978, Ser. No. 874,167

Int. Cl.² B01D *53/04*

U.S. Cl. 55—18 **26 Claims**



1. In a pressure swing process for fractionating at least one component from a gaseous mixture by selective adsorption in each of at least two adsorption zones by sequentially passing the gaseous mixture from a feed stream through a first adsorption zone until the first zone is about saturated while simultaneously purging and then pressurizing a second adsorption zone and then passing the gaseous mixture from the feed stream through the second adsorption zone until the second zone is about saturated while simultaneously purging and then pressurizing the first adsorption zone, the improvement comprising withdrawing gas from one of said adsorption zones at the end of the adsorption operation therein in a direction countercurrent to feed flow and directly introducing the withdrawn gas along with the gaseous mixture from the feed stream into the other of said adsorption zones in a direction cocurrent with feed flow and after pressurization thereof to equalize the pressures in said adsorption zones from the feed ends thereof.

24. In a system for fractionating at least one component from a gaseous mixture by pressure swing adsorption including a first adsorption bed having a gas inlet and a gas outlet, at least one additional adsorption bed having a gas inlet and a gas outlet, means for connecting said gas inlets of said adsorption beds to a feed gas stream, a product outlet and output conduit means for coupling said gas outlets of said adsorption beds to said product outlet, the improvement comprising:

(a) a reservoir;

(b) first reservoir conduit means connected to said output conduit means and to said reservoir, said first conduit means including flow control means allowing gas flow only in one direction from said output conduit means to said reservoir;

(c) second reservoir conduit means connected to said reservoir and to said output conduit means, said second conduit means including valve means for controlling flow of product gas from said reservoir to said output conduit; and

(d) valve means in said output conduit between said second reservoir conduit and said adsorption beds and control means operatively connected to said reservoir conduit valve means and to said output conduit valve means for opening said reservoir valve means in response to closure of said output valve means for supplying product gas from said reservoir to said product outlet.

4,194,891

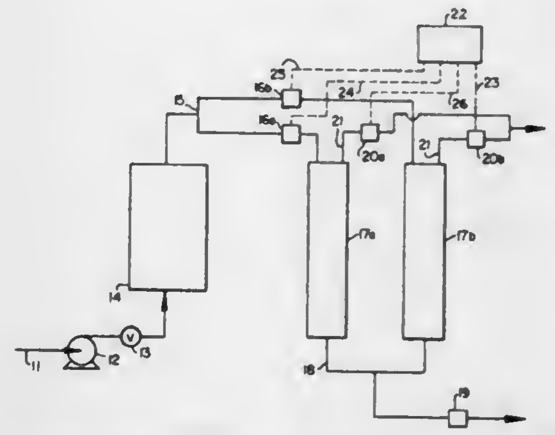
MULTIPLE BED RAPID PRESSURE SWING ADSORPTION FOR OXYGEN

David E. Earls, Suffern, and Gary N. Long, Putnam Valley, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1978, Ser. No. 973,551

Int. Cl.² B01D *53/04*

U.S. Cl. 55—26 **11 Claims**



1. In a rapid adiabatic pressure swing process for air separation to produce at least 35 mole percent oxygen product gas in which feed air at 10 to 50 psig. is introduced to the first end of an adsorbent bed having an end-to-end length of 1 to 3.5 feet and comprising crystalline zeolite molecular sieve of at least 5 Angstrom apparent pore size and 40 to 120 mesh particle size, with nitrogen being selectively adsorbed and said oxygen product gas being continuously discharged from the bed second end during a feed air introduction period, and a reverse outward flow period following said feed air introduction period during which oxygen purging-nitrogen desorbate gas is released from the bed first end, all in a repetitive two step cycle sequence: the improvement comprising at least two and not more than three adsorbent beds arranged in alternating flow sequence with a single product manifold joined to the second end of such beds, each bed having a feed air introduction period of 0.1 to 6 seconds, a reverse outward flow period with oxygen product gas flowing directly from another bed to said second end as purge gas such that the reverse outward flow period/feed air introduction period time ratio is at least 0.5 but less than 2 and the total cycle time is 0.2 to 18 seconds, and prior to the succeeding feed air introduction period, oxygen product gas discharged from a different bed flows directly to said second end without first end gas release as a product repressurization period not exceeding 1.5 times the feed air introduction period.

4,194,892

RAPID PRESSURE SWING ADSORPTION PROCESS WITH HIGH ENRICHMENT FACTOR

Russell L. Jones, Charleston; George E. Keller, II, South Charleston, and Rex C. Wells, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

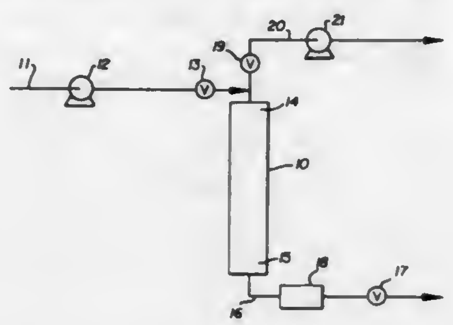
Filed Jun. 26, 1978, Ser. No. 919,066

Int. Cl.² B01D *53/04*

U.S. Cl. 55—58 **14 Claims**

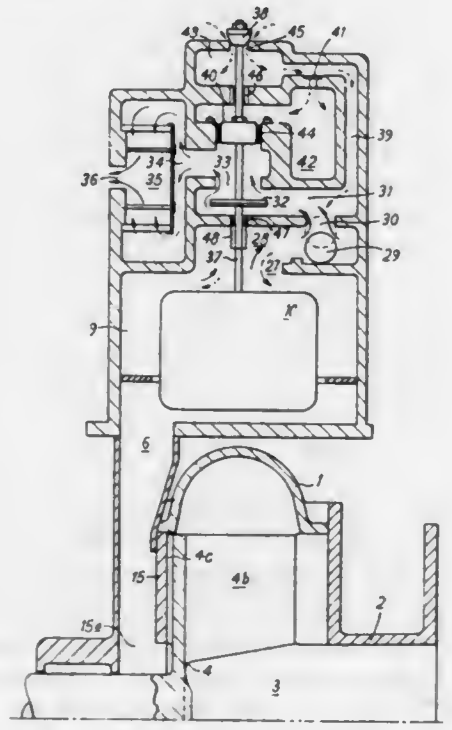
1. In a rapid adiabatic pressure swing process for the separation of a multi-component feed gas by selectively adsorbing at

least one component in a single adsorption bed of small particles by introducing feed gas to a first end and discharging at least one component depleted gas at the second end with a repetitive two-step cycle sequence at the first end of feed gas introduction and reverse outward flow of at least one component-depleted purging one component desorbate gas and a total cycle time of less than 30 seconds, the improvement comprising; providing said feed gas at pressure of at least 8 psig. at said first end of said adsorbent bed, said feed gas having a separation factor of at least 2 with said adsorbent for feed pressures only less than 30 psig. and said adsorbent bed comprising particles smaller than 20 mesh but larger than 120 mesh



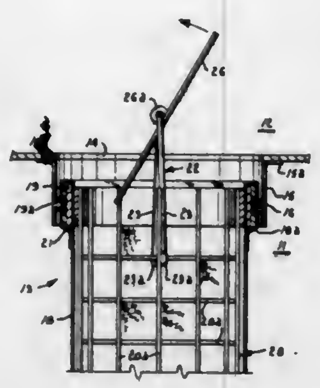
being packed in a first to second end length (in inches) not exceeding three times the difference between feed gas and reverse outward flow pressure (in psig.) and less than 96 inches as said adsorbent bed, providing a first end flow suspension step between said feed gas introduction and said reverse outward flow which is less than ten times said feed gas introduction period and also less than one-half a second period of reverse outward flow, and thereafter performing said reverse outward flow for said second period of at least twice the feed gas introduction first period, with the first and second period and gas flows such that the one component enrichment factor is at least 4.

4,194,893
PUMPING APPARATUS
Ronald Woodhouse, and Walter W. Russell, both of 403/433, Woolwich Rd., Charlton, London, SE7 7AP, England
Division of Ser. No. 614,085, Sep. 17, 1975, abandoned. This application Aug. 19, 1977, Ser. No. 826,116
Claims priority, application United Kingdom, Sep. 17, 1974, 40565/74
Int. Cl.^{2} B01D *19/00*
U.S. Cl. 55—168 **3 Claims**



1. A single entry centrifugal impeller pump comprising, a volute casing having axial end walls with an inlet orifice in one axial end wall, a peripheral outlet, and a gas exhaust passage in the other end wall; an impeller having an impeller disc mounted for rotation with its rear face adjacent said other axial end wall of the volute casing, and a plurality of impeller blades extending from the front face of the impeller to define an eye of the impeller in communication with said inlet orifice of the volute casing; a liquid reservoir chamber located above and in communication with said gas exhaust passage of the volute casing, said chamber having a first outlet for connection to a gas exhaust means and a second outlet communicating with atmosphere; a float valve mechanism located in said reservoir chamber and having first and second valve members arranged, upon raising of the float within said chamber, respectively to close said first outlet and to open said second outlet; means for discharging liquid from said reservoir chamber to the front side of said impeller when said reservoir chamber is at atmospheric pressure; and means for delaying movement of said float valve mechanism to open said first outlet and close said second outlet in response to a fall of liquid level in said reservoir chamber; said means for delaying movement of said float valve mechanism comprising an air reservoir having an air bleed orifice communicating with said float chamber, and a balancing member coupled to said float valve mechanism and exposed on the one hand to the fluid pressure prevailing upstream of said first outlet and on the other hand to the fluid pressure prevailing in said air reservoir.

4,194,894
FILTER BAG ASSEMBLY FOR BAGHOUSES
Richard D. Noland, 1900 W. 47th Pl., Ste. 308, Shawnee Mission, Kans. 66205
Filed Oct. 10, 1978, Ser. No. 949,891
Int. Cl.^{2} B01D *46/02*
U.S. Cl. 55—379 **6 Claims**



1. A filter bag assembly for a baghouse having a tube sheet which presents an opening therethrough, said assembly comprising:

a bag-like fabric filter having an upper rim positionable beneath said tube sheet;

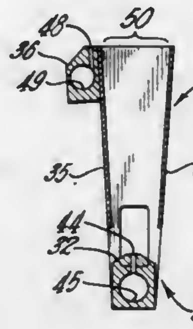
releasable band means for suspending said filter from the tube sheet in registration with the opening thereof, said releasable means permitting installation and removal of said filter from beneath said tube sheet;

a cage adapted to fit in said filter to provide skeletal support therefor;

a hanger coupled with said cage for suspending same in said filter; and

a support bar pivotally coupled to said hanger in a manner to support same in position to suspend said cage in the filter, said support bar having a first position horizontally spanning the upper rim of said filter to prevent passage of said support bar downwardly into said filter, and a second position wherein said support bar is oriented nonhorizontally to pass downwardly within said filter whereby the filter bag assembly may be installed and removed from beneath the tube sheet.

4,194,895
FLUID FLOW METHOD AND APPARATUS USED IN MANUFACTURE OF GLASS FIBERS
Thomas K. Thompson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Aug. 3, 1978, Ser. No. 930,464
Int. Cl.^{2} C03B *37/02*
U.S. Cl. 65—2 **12 Claims**



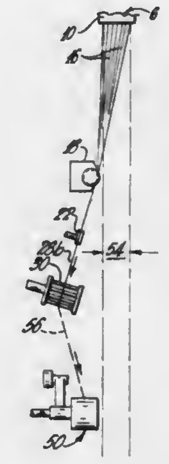
1. Apparatus in combination with a glass fiber forming bushing comprising:

(a) a first nozzle for discharge of a first gaseous fluid therefrom;

(b) duct means for receiving the first gaseous fluid discharged from the first nozzle and for discharging the first gaseous fluid therefrom through a discharge outlet; and

(c) a second nozzle for discharge of a second gaseous fluid therefrom through a discharge outlet for modifying the first gaseous fluid upon discharge from the duct means, the discharge outlet of the duct means being substantially larger than the discharge outlet of the second nozzle.

4,194,896
METHOD AND APPARATUS FOR FORMING GLASS FILAMENTS
Alex P. Symborski, Anderson; Ray M. Fulmer, Aiken, both of S.C., and David W. Thomas, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Aug. 28, 1978, Ser. No. 937,382
Int. Cl.^{2} C03B *37/02*
U.S. Cl. 65—3 R **18 Claims**



1. Apparatus for forming glass filaments comprising:

(a) a plurality of spaced apart forming sections wherein each section is comprised of;

(i) a feeder adapted to supply a plurality of streams of glass to be attenuated into continuous filaments, a zone being defined by the paths of the free falling streams;

(ii) applicator means laterally spaced from said zone adapted to apply a coating to the advancing filaments;

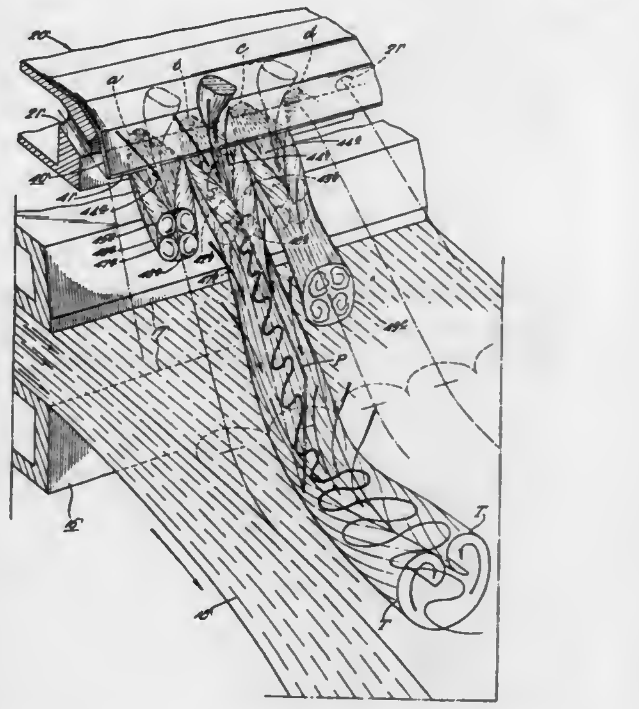
(iii) first guide means laterally spaced from said zone adapted to gather the filaments into a strand, the guide means and applicator means being positioned such that the coating is applied to the filaments external to said zone and intermediate the feeder and the first guide means along the path of advancement of the filaments; and

(iv) secondary attenuation means laterally spaced from the zone adapted to advance said filaments as waste;

(b) a primary attenuation means adapted to simultaneously attenuate the streams from each section into filaments; and

(c) second guide means positioned to advance the strands from each section external to said zones as the strands are advanced by the primary attenuation means; said feeders, applicator means, first guide means and second guide means being positioned such that said strands and waste are advanced along spaced apart paths external to all of said zones when advanced by the secondary attenation means.

4,194,897
METHOD FOR MAKING FIBERS FROM GLASS OR OTHER ATTENUABLE MATERIALS
Marcel A. Lévecque, Birchrunville, Pa.; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France
Continuation of Ser. No. 762,789, Jan. 25, 1977, Pat. No. 4,102,662, which is a continuation-in-part of Ser. No. 676,755, Apr. 14, 1976, Pat. No. 4,118,213, and Ser. No. 557,282, Mar. 11, 1975, Pat. No. 4,016,964, said Ser. No. 676,755, is a continuation-in-part of Ser. No. 557,282, , which is a continuation-in-part of Ser. No. 353,984, Apr. 24, 1973, Pat. No. 3,885,940. This application Jun. 21, 1978, Ser. No. 917,480
Int. Cl.^{2} C03B *37/04*
U.S. Cl. 65—5 **2 Claims**



1. A method for converting molten attenuable thermoplastic material into fibers comprising delivering in a first path a stream of molten material from a supply means, developing a gaseous jet in a second path, deflecting said jet from said second path into a third path intersecting said first path, the deflected gaseous jet having a zone of laminar flow characterized by high induction of ambient gas in the region of intersection of the path of the stream of molten material of the path of the deflected jet, and developing a gaseous blast in a fourth path intersecting said third path, the jet having a cross-sectional dimension smaller than the blast and having kinetic energy per unit of volume higher than that of the blast thereby penetrating the blast in the region of intersection of the paths of the deflected jet and blast.

4,194,898

METHOD AND APPARATUS FOR TREATMENT OF ARTICLES IN A FLUIDIZED BED

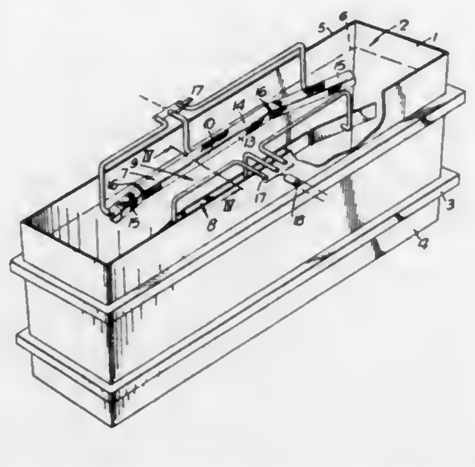
Donald C. Wright, Parbold; Brian Marsh, Orrell, and Willem Wiechers, Omskirk, all of England, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Sep. 21, 1978, Ser. No. 944,611

Claims priority, application United Kingdom, Sep. 29, 1977, 40564/77

Int. Cl.² C03B *25/04, 29/04*

U.S. Cl. 65—114 **14 Claims**



1. A method of treating an article in gas-fluidised particulate material, comprising advancing the article along a path leading into and through the gas-fluidised particulate material, and extracting gas from the particles of the particulate material at a localised region of the particulate material across said path at an extraction rate sufficient to defluidise the particulate material in that region to an extent which provides in the gas-fluidised bed a wall of packed particulate material which is effective to obturate the path and delimit a zone of the fluidised particulate material whilst permitting passage of an article through the packed particulate material constituting that wall.

9. Apparatus for treating an article in a gas-fluidised bed of particulate material, comprising a container for the gas-fluidised bed, which container is formed with an opening for passage of an article into and through the bed, and gas-extraction means mounted in the container adjacent the opening for extracting gas from the particles of the particulate material across said opening at a rate sufficient to produce a wall of packed particulate material which is effective to obturate the opening and prevent escape of particulate material while permitting an article to pass through the opening.

4,194,899

FLUOROALKOXYPHENYL-SUBSTITUTED NITROGEN HETEROCYCLES

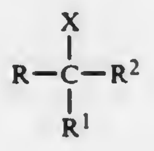
Robert L. Benefiel, Manilla, and Eriks V. Krumkalns, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 735,659, Oct. 26, 1976, Pat. No. 4,110,099, which is a division of Ser. No. 641,403, Dec. 17, 1975, Pat. No. 4,002,628, which is a division of Ser. No. 371,106, Jun. 18, 1973, Pat. No. 3,967,949. This application May 25, 1978, Ser. No. 909,609

Int. Cl.² A01N *43/60;* **C07D** *241/12*

U.S. Cl. 71—76 **12 Claims**

1. A compound of the formula



$$R-\underset{R^1}{\overset{X}{\underset{|}{\overset{|}{C}}}}-R^2$$

wherein

R is 2-pyrazinyl;

R^1 is C_1–C_{12} alkyl or C_3–C_8 cycloalkyl;

R^2 is trifluoromethoxyphenyl tetrafluoroethoxyphenyl or pentafluoroethoxyphenyl;

X is hydrogen, hydroxy, lower alkoxy, lower alkylthio, or lower alkanoyloxy;

and the nonphytotoxic acid addition salts thereof.

4,194,900

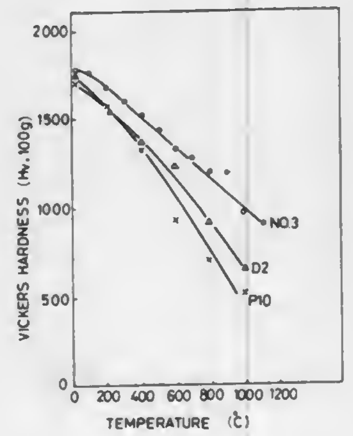
HARD ALLOYED POWDER AND METHOD OF MAKING THE SAME

Tsuneyuki Ide; Ken-ichi Takagi; Michio Watanabe; Seiichi Ohhira; Masahito Fukumori, and Yoshikazu Kondo, all of Kudamatsu, Japan, assignors to Toyo Kohan Co., Ltd., Japan

Filed Oct. 5, 1978, Ser. No. 949,424

Int. Cl.² B22D *23/08*

U.S. Cl. 75—0.5 C **4 Claims**



1. Hard alloy powder comprising:

B—from 3 to 20% by weight,

Al—less than 3% by weight,

Si—from 0.3 to 5% by weight,

O—less than 2.5% by weight,

at least one metal selected from the group consisting of Cr, Mo, W, Ti, V, Nb, Ta, Hf, Zr, Co and Ni, in the following amounts: Cr from 5 to 35% by weight, Mo from 1 to 35% by weight, W from 0.5 to 30% by weight and each of Ti, V, Nb, Ta, Hf, Zr, Co and Ni less than 15% by weight, and

the balance being at least 10% by weight of Fe.

4,194,901

PROCESS FOR PRODUCING GRAPHITE AGGLOMERATES, AND PRODUCTS OBTAINED BY IT

Mario Gambacorta, Ancona, Italy, assignor to S.I.A.P. Societa Industriale Agglomerati e Prodotti Petroliferi S.p.A., Venezia-Mestre, Italy

Continuation of Ser. No. 696,365, Jun. 15, 1976, abandoned. This application Mar. 7, 1978, Ser. No. 884,218

Claims priority, application Italy, Jun. 23, 1975, 615 A/75

Int. Cl.² C21C *7/00*

U.S. Cl. 75—48 **4 Claims**

1. A method of increasing the carbon content of steel and cast iron products during their production, by

collecting graphitic dusts resulting from production of graphite electrodes, electrode pastes or graphite anodes;

admixing said dusts with (1) a non-graphitic carbon material selected from the group consisting of pit-coal and coke and (2) a binder of coal tar pitch, to form an admixture;

heating said admixture to about the melting temperature of the binder so as to obtain an amalgamated mixture;

molding the amalgamated mixture to form graphite-containing agglomerates; and

adding said graphite-containing agglomerates to a metallurgical bath in which steel or iron is being produced,

wherein the non-graphitic carbon material is present in an amount sufficient to reduce the amount of binder required to form said graphite-containing agglomerates so that (a) the concentration of the binder in said agglomerate is low enough to allow dissolution of the agglomerate in said bath and (b) the concentration of the binder in said bath is the highest binder concentration which is acceptable in the ultimate steel or cast iron product.

4,194,902

DESULFURIZATION AGENT FOR FERROUS MELTS AND METHOD OF USING THE SAME

Werner Gmohling, Hufschlag, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,659

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741588

Int. Cl.² C21C *7/02*

U.S. Cl. 75—55 **5 Claims**

1. A desulfurizing agent for ferrous metal melts consisting essentially of a mixture of calcium carbide, calcium carbonate containing finely divided carbon dispersed therein and from about 1% to 12% by weight of said mixture of coal dust.

4,194,903

METHOD OF PRODUCING STEEL WITH THE LOWEST POSSIBLE SULFUR CONTENT BY DESULFURIZATION OF PIG IRON WITH MAGNESIUM COKE

Peter Hausen, and Klaus-Dieter Schülz, both of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Continuation of Ser. No. 841,460, Oct. 12, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,061

Int. Cl.² C21C *7/02*

U.S. Cl. 75—58 **4 Claims**

1. A process for production of steel with low sulfur content by desulfurization of a melt of pig iron, said method comprising in combination the steps of: introducing magnesium coke by an immersing bell into a melt of pig iron; after initial reaction of magnesium with melt, introducing inert rinsing gas to stir the melt until all magnesium has reacted; removing magnesium bell; continuing to introduce inert rinsing gas to separate magnesium sulfide particles from melt to collect in slag maintained on surface; tilting the melt to move slag to low side and introducing inert rinsing gas to form slag-free zone on the high side; and withdrawing slag containing magnesium sulfide by engagement behind slag on high side to scrape slag from melt.

4,194,904

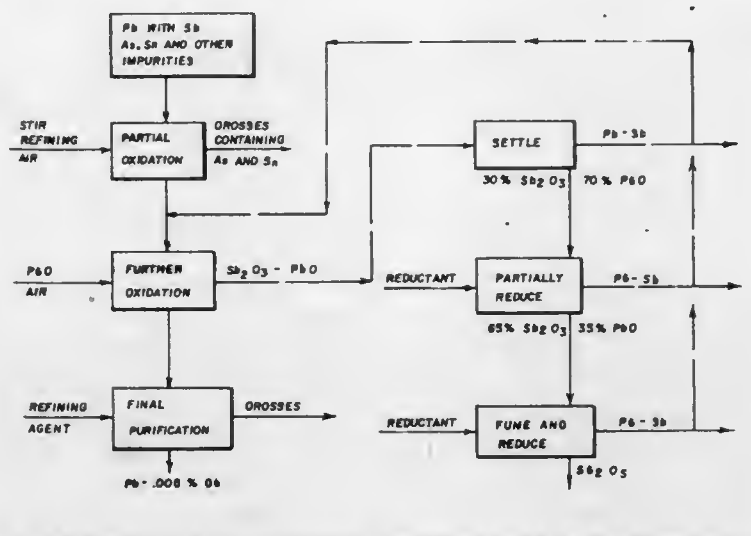
PRODUCTION OF PURIFIED LEAD AND ANTIMONY OXIDE

George S. Foerster, Hightstown, and Harold A. Stuhler, Brown Mills, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,284

Int. Cl.² C22B *13/06*

U.S. Cl. 75—78 **7 Claims**



1. A method for producing purified lead and antimony oxide, comprising:

a. oxidizing a molten lead alloy containing more than 0.1% antimony to the extent that purified molten lead containing a maximum of 0.1% antimony and a first slag consisting essentially of lead oxide and antimony oxide are formed;

b. separating said purified lead and said first slag;

c. adding a reducing agent to said first slag to reduce a sufficient quantity of lead oxide to lead to thereby create a second slag consisting essentially of about 40% to 80% antimony oxide, balance essentially lead oxide;

d. maintaining said second slag at a temperature above about 1250° F. to permit antimony oxide to fume from said second slag;

e. periodically adding a reducing agent to said second slag to reduce a sufficient quantity of lead oxide to lead thereby maintaining said second slag at a composition of about 40% to 80% antimony oxide, balance essentially lead oxide during antimony oxide fume formation; and

f. collecting said antimony oxide fume.

4,194,905

SOLVENT-EXTRACTION PROCESS FOR RECOVERY AND SEPARATION OF METAL VALUES

Lawrence V. Gallacher, East Norwalk, Conn., assignor to King Industries, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 671,346, Mar. 29, 1976, Pat. No. 4,018,865. This application Apr. 7, 1977, Ser. No. 785,669

The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.

Int. Cl.² C22B *23/04, 15/00, 19/22*

U.S. Cl. 75—101 BE **13 Claims**

1. In a process for recovering an extractable metal value from an aqueous medium comprising said metal value, said process comprising contacting said aqueous medium at a pH of below about 4 with a solvent-extractant comprising an alkylaromatic sulfonic acid and a water-immiscible solvent for said sulfonic acid and for complexes of said sulfonic acid with said metal value to provide an extract of said metal value in said solvent-extractant, separating the solution thus formed from the aqueous raffinate depleted in said metal value, and recovering said metal value from said extract, the improvement which comprises using didodecylnaphthalene sulfonic acid as said extractant.

4,194,906

WEAR RESISTANT LOW ALLOY WHITE CAST IRON

Tibor Krantz, Pierrefonds, and Jean C. Farge, Rosemere, both of Canada, assignors to Noranda Mines Limited, Ontario, Canada

Continuation of Ser. No. 747,105, Dec. 3, 1976, abandoned. This application May 16, 1978, Ser. No. 906,620

Claims priority, application Canada, Sep. 13, 1976, 261107

Int. Cl.² C22C *37/10*

U.S. Cl. 75—125 **6 Claims**

1. A wear resistant low alloy white cast iron consisting of from about 2 to 4% carbon, from about 0.3 to 1.2% silicon, from about 0.5 to 1.5% manganese, from about 0.5 to 1.5% copper and from about 0.25 to 1% molybdenum, the remainder being substantially all iron except for incidental impurities commonly found in cast iron, said alloy having a microstructure consisting essentially of carbide and martensite.

4,194,907

GOLD ALLOYS FOR FUSION TO PORCELAIN

Min H. Tsai, Van Nuys, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Oct. 20, 1978, Ser. No. 953,247

Int. Cl.² C22C *5/00*

U.S. Cl. 75—134 N **22 Claims**

1. A castable dental alloy suitable for bonding with dental porcelain comprising about 30–50% gold, 30–50% palladium, 5–30% silver, 0.01–1.0% ruthenium and a member selected

from the groups consisting of silicon, boron, germanium and mixtures thereof in an amount sufficient to prevent greening and discoloration of porcelains when fired thereon.

4. A castable dental alloy suitable for bonding with dental porcelain without a green color after porcelain is fired on the cast alloy, consisting essentially of:

gold: 30–50 percent;
palladium: 30–50 percent;
silver: 5–30 percent;
indium: 0–10 percent;
tin: 0–10 percent;
ruthenium: 0.01–1.0 percent;
other platinum family elements 0–3 percent, and;
silicon, boron, germanium or a mixture thereof 0.01–5 percent.

4,194,908
MAGNESIUM ALLOYS

William Unsworth, 47 Thorn Rd., Swinton, Manchester; John F. King, 19 Brookside Crescent, and Stephen L. Bradshaw, 89 Lords', Stile La., both of Lancaster, all of England

Continuation of Ser. No. 751,739, Dec. 17, 1976, abandoned. This application Mar. 28, 1978, Ser. No. 890,893

Claims priority, application United Kingdom, Dec. 17, 1975, 51612/75

Int. Cl.^{2} C22C *23/00*

U.S. Cl. 75—168 J **13 Claims**

1. A magnesium-based alloy consisting essentially of, by weight, other than iron and other impurities:

Mg	at least 88 %
Ag	1.6–3.5 %
Rare earth metals of which at least 60% is neodymium	0.1–2.3 %
Th	0–2.3 %
Y	0.1–2.5 %
Zn	0–0.5 %
Cd	0–1.0 %
Li	0–6.0 %
Ca	0–0.8 %
Ga	0–2.0 %
In	0–2.0 %
Tl	0–5.0 %
Pb	0–1.0 %
Bi	0–1.0 %
Cu	0–0.15 %
Zr	0–1.0 %
Mn	0–0.2 %

the amount of rare earth metals and Th together not exceeding 3.0% and when no more than 0.5% of Y is present the minimum amount of Th is defined by the equation

$$\text{weight \% Th} = \frac{0.5 - \text{weight \% Y}}{4},$$

the maximum contents of Zr and Mn together being limited by their mutual solubility.

4,194,909
FORGEABLE NICKEL-BASE SUPER ALLOY

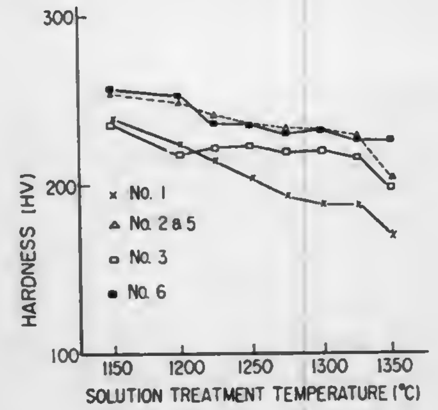
Taizo Ohmura, Ohmiya; Akihiko Sakonooka, Ageo; Kensyo Sahira, Urawa, and Noboru Yonezawa, Ohmiya, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 627,064, Oct. 30, 1975, abandoned. This application Apr. 28, 1977, Ser. No. 791,792

Claims priority, application Japan, Nov. 16, 1974, 49-131571; Nov. 30, 1974, 49-136634

Int. Cl.^{2} C22C *19/05*

U.S. Cl. 75—171 **6 Claims**



1. A forgeable nickel-base super alloy free of cobalt and titanium and consisting essentially of, in weight percent:

carbon—0.11 to 0.25
chromium—10.0 to 25.0
tungsten—10.0 to 25.0
aluminum—0.1 to 1.0
at least one element selected from the group consisting of calcium, magnesium and rare earth metal—0.001 to 0.05,

the minimum and maximum percentages of calcium (i), magnesium (ii) and rare earth metal (iii) being, respectively,

(i) 0.005 and 0.05,
(ii) 0.001 and 0.02,
(iii) 0.001 and 0.02,

and the balance nickel and incidental impurities.

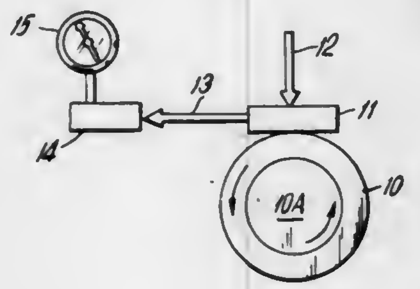
4,194,910
SINTERED P/M PRODUCTS CONTAINING PRE-ALLOYED TITANIUM CARBIDE ADDITIVES

M. Kumar Mal, Spring Valley, and Stuart E. Tarkan, Monsey, both of N.Y., assignors to Chromalloy American Corporation, West Nyack, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,357

Int. Cl.^{2} C22C *9/12, 19/08, 21/20, 38/00*

U.S. Cl. 75—236 **11 Claims**



1. As an article of manufacture, a sintered metal shape of a matrix metal selected from the group consisting of iron-base, nickel-base, copper-base and aluminum-base metals having dispersed therethrough about 5% to 20% by weight of pre-alloyed grains of a refractory metal carbide with the metal matrix making up essentially the balance, said pre-alloyed refractory carbide grains dispersed through said matrix being less than 100 mesh in size and consisting essentially of about 15% to 60% by weight of refractory metal carbide alloyed with a metal from the group consisting of iron-base and nickel-base metals making up essentially the balance of said grains, said sintered shape being characterized by enhanced resistance to wear and abrasion.

7. As an article of manufacture, a sintered metal shape of a matrix metal selected from the group consisting of iron-base, nickel-base, copper-base and aluminum-base metals having dispersed therethrough about 5% to 20% by weight of pre-alloyed rounded grains of titanium carbide with a steel matrix making up essentially the balance, said pre-alloyed grains having a particle size of less than 100 mesh, said steel matrix having a composition selected from the group consisting of:

(1) about 1% to 6% Cr, up to about 6% Mo, up to about 2% V, up to about 3% Co, up to about 2% Ni, about 0.3% to 0.8% C and the balance essentially iron;
(2) about 6% to 12% Cr, about 0.5% to 5% Mo, about 0.6% to 1.2% C, up to about 5% W, up to about 2% V, up to about 3% Ni, up to about 5% Co and the balance essentially iron; and
(3) about 3% to 7% Cr, about 2% to 6% Mo, about 0.1% to 1% Ni, about 0.3% to 0.7% C and the balance essentially iron;

said pre-alloyed rounded grains of titanium carbide consisting essentially of about 15% to 60% by weight of said titanium carbide of said pre-alloyed composition,

said sintered shape being characterized by enhanced resistance to wear and abrasion.

4,194,911
INHIBITOR REMOVING BATH FOR DIRECT POSITIVE COLOR PHOTOGRAPHIC DEVELOPMENT

William A. Huffman, Minneapolis; R. Dean Lowrey, White Bear Lake; Geoffrey C. Nicholson, Woodbury, and Bruce Wittnebel, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 429,667, Dec. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 325,455, Jan. 22, 1973, abandoned. This application Jul. 17, 1975, Ser. No. 596,651

Int. Cl.^{2} G03C *7/16, 5/50*

U.S. Cl. 430—357 **6 Claims**

1. An inhibitor removing bath for effecting color formation in an exposed color photographic element which has already undergone a color reversal which bath comprises:

(a) color accelerating agent selected from the group consisting of ethylene diamine and β-phenyl ethyl amine in a concentration of at least 0.05 moles/liter,
(b) contrast control agent selected from the group consisting of alkali metal salts of iodine and bromine, and citrazinic acid, and
(c) pH control agent providing a pH of 11 to 13 within the bath,

said bath further comprising less than 0.05 moles of phosphate and the absence of color developer.

4,194,912
WATER BASED PHOTORESIST

Edmund B. Davidson, Short Hills, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 410,392, Oct. 29, 1973, abandoned. This application Sep. 28, 1977, Ser. No. 837,166

Int. Cl.^{2} G03C *5/00, 1/495, 1/66*

U.S. Cl. 430—322 **3 Claims**

1. In a method of recording information whereby a photosensitive layer that becomes more soluble in a developer solvent after exposure to actinic radiation is coated on a substrate, exposed to a light pattern and developed with a developer solvent so as to remove the solubilized portion, the improvement which comprises employing as the photosensitive layer a composition comprising from about 1 to 20 percent by weight of polyethylene imine having a molecular weight high enough so that it dries to form a non-tacky film, about 5 to 15 percent by weight of a dichromate sensitizer, said percentages based on the total weight of said composition, and the balance water, and wherein the developer solvent is water.

4,194,913
ELECTROLESS TIN AND TIN-LEAD ALLOY PLATING BATHS

Thomas F. Davis, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 574,979, May 6, 1975, Pat. No. 4,093,466. This application Dec. 5, 1977, Ser. No. 857,069

The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.^{2} C23C *3/02*

U.S. Cl. 106—1.22 **13 Claims**

1. An aqueous bath suitable for immersion deposition of essentially tin and tin-lead alloys onto copper or copper alloy substrates, said bath comprising:

(a) a soluble plumbous salt in an amount from about 0.5 grams to about 25 grams per liter calculated on the basis of elemental lead including the maximum soluble in said bath;
(b) tin as a soluble stannous salt in an amount of from about 5 to 150 grams per liter;
(c) a thiourea as a sulfur containing complexing agent in an amount of from about 40 grams per liter to about 150 grams per liter; and
(d) sufficient hydrochloric acid or hydrobromic acid to provide a pH for the bath in the range of 0.6 to 1.0; wherein, in said deposition of essentially tin, said plumbous salt is present in sufficient amount to act as a rate of deposition enhancer, and wherein said bath will deposit said essentially tin and tin-lead alloys onto copper or copper alloy substrates by immersion deposition at a rate of at least 85 microinches in 5 minutes at a temperature of 170° F.

4,194,914
HEAT-RESISTING CERAMIC FIBERS AND METHOD FOR MANUFACTURE THEREOF

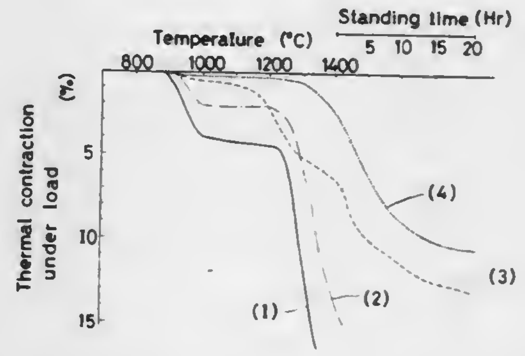
Yoshiro Moriya, Kawanishi; Kazuhito Ikai, Ohgaki, and Makoto Tanaka, Gifu, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo and Ibigawa Electric Industry Ltd., Gifu, both of, Japan

Filed Feb. 27, 1978, Ser. No. 881,743

Claims priority, application Japan, Mar. 1, 1977, 52/22508

Int. Cl.^{2} C09K *3/28*

U.S. Cl. 106—18.14 **20 Claims**



1. Highly heat-resistant fibers possessing a thermal contraction under load of not more than 10% at a temperature of 1400° C., comprising: ceramic fibers composed predominantly of silica and alumina each present in the fibers in an amount of at least 25% wt.% and a combined amount of at least 80 wt.% and containing very small precipitated crystals of cristobalite and/or mullite close to the surface of the individual fibers, said precipitated crystals formed by heat treatment of said fibers coated with a phosphorus compound such that from 0.5 to 10% by weight based on P_2O_5 of said phosphorus compound is

incorporated into said ceramic fibers, the size and distribution of said precipitated crystals to the fibers being controlled by the introduction of the indicated quantity of said phosphorus compound into said fibers.

13. A method for preparing highly heat-resistant fibers possessing a thermal contraction under load of not more than 10% at a temperature of 1400° C., comprising:

coating the surface of ceramic fibers containing silica and alumina each in an amount of at least 25 wt.% with a phosphorous-containing compound such that said fibers are coated with from 0.5 to 10% by weight of said phosphorous-containing compound;

drying said coated fibers; and

heat-treating said coated fibers to a temperature of at least 600° C.

4,194,915

FOUNDRY MOLD AND CORE WASH ADDITIVES

Roderick B. Perkins, West University, Tex., assignor to N L Industries, Inc., New York, N.Y.

Filed Jan. 3, 1978, Ser. No. 866,514

Int. Cl.² B28B *7/38*

U.S. Cl. 106—38.25 **29 Claims**

1. A foundry mold and core wash additive comprising from 66.75% to 80.05% of an organophilic clay selected from the group consisting of organophilic hectorite, organophilic montmorillonite, organophilic attapulgite, and mixtures thereof, and from 19.95% to 33.25% of a skin-forming agent, said agent being an alcohol soluble, hexane insoluble thermoplastic resin derived from pine wood.

4,194,916

REVERSIBLY PHOTOSENSITIVE GLASS

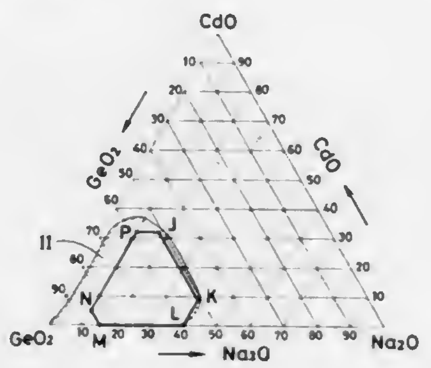
Ken Kumata, Musashi-Murayama, and Hiroshi Namikawa, Tokyo, both of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 9, 1979, Ser. No. 18,945

Claims priority, application Japan, May 16, 1978, 53-57183

Int. Cl.² C03C *3/26, 3/12*

U.S. Cl. 106—47 R **1 Claim**



1. A reversibly photosensitive glass, consisting of a composition having CdO, GeO_2 and Na_2O in the proportions falling within the area enclosed with straight lines connecting Point J (32 mol% of CdO, 51 mol% of GeO_2 and 17 mol% of Na_2O), Point K (9 mol% of CdO, 51 mol% of GeO_2 and 40 mol% of Na_2O), Point L (0 mol% of CdO, 60 mol% of GeO_2 and 40 mol% of Na_2O), Point M (0 mol% of CdO, 85 mol% of GeO_2 and 15 mol% of Na_2O), Point N (5 mol% of CdO, 85 mol% of GeO_2 and 10 mol% of Na_20) and Point P (32 mol% of CdO, 58 mol% of GeO_2 and 10 mol% of Na_20), plus 0.1 to 3 mol%, based on the combined amount of the abovementioned components, of Tl_2O.

4,194,917

FIRED CERAMIC HAVING DENSE AND LOW THERMAL EXPANSION CHARACTERISTICS

Hiroji Sakemi; Tomohiro Morishita; Hideji Numata, and Takuro Ono, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jun. 7, 1978, Ser. No. 913,367

Claims priority, application Japan, Jun. 14, 1977, 52-69475

Int. Cl.² C04B *35/18, 35/20, 35/50*

U.S. Cl. 106—62 **3 Claims**

1. A fired dense ceramic possessing low thermal expansion characteristics, consisting essentially of: from 0.3 to 8 wt. % of at least one rare earth oxide selected from the group consisting of Y_2O_3 and CeO_2 in cordierite, said fired ceramic having a thermal expansion coefficient less than 0.3% at 25° C. to 1000° C. and having a porosity less than 10%.

4,194,918

ALKALI METAL SILICATE BINDER COMPOSITIONS

Raymond D. George, and John Stevenson, both of Birmingham, England, assignors to Foseco International Limited, Birmingham, United Kingdom

Filed Nov. 11, 1977, Ser. No. 850,643

Claims priority, application United Kingdom, Nov. 11, 1976, 47651/76; Mar. 2, 1977, 8852/77

Int. Cl.² C08L *3/02*

U.S. Cl. 106—80 **13 Claims**

1. A binder composition consisting essentially of an aqueous solution prepared by mixing in the absence of heating:

an alkali metal silicate,

a substantially water soluble carbohydrate selected from the group consisting of (1) glycans, (2) monosaccharides, (3) disaccharides and (4) stabilised carbohydrates having a reducing power which has been removed by hydrogenation, etherification, esterification, oxidation or by reaction with urea or urea derivative,

an oxyanion which forms a water soluble complex with the carbohydrate selected from the group consisting of oxyanions of boron, tin, germanium, tellurium or arsenic, and water.

13. A method of making an article of bonded particulate material, which method comprises mixing together in the absence of heating, the particulate material, an alkali metal silicate, a substantially water soluble carbohydrate selected from the group consisting of (1) glycans, (2) monosaccharides, (3) disaccharides and (4) stabilised carbohydrates having a reducing power which has been removed by hydrogenation, etherification, esterification, oxidation or by reaction with urea or urea derivative, an oxyanion which forms a water soluble complex with the carbohydrate selected from the group consisting of oxyanions of boron, tin, germanium, tellurium or arsenic, and water, forming the mixture to the desired shape, and hardening the shaped mixture.

4,194,919

METHOD FOR INCREASING FLEXURAL STRENGTH OF CEMENT COMPOSITIONS

Kenichi Hattori, Musashino; Shinji Iwai, Tokyo; Toshio Okuyama, Yokohama; Yuji Nakagawa, Chigasaki; Takeo Maeda, Kashiwa, and Yasuyuki Kawakatsu, Sakai, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1978, Ser. No. 891,302

Int. Cl.² C04B *7/35*

U.S. Cl. 106—90 **8 Claims**

1. A method for preparing a product made of hydraulic cement composition which product possesses increased flexural strength, which comprises the steps of: blending in a cementitious composition comprising hydraulic cement and an amount of water effective to harden said hydraulic cement, (1) from 5 to 30% by weight, based on the weight of said hydraulic cement, of water-soluble epoxy resin which is a polyglycidyl ether of a polyhydric alcohol selected from the group

consisting of glycerin, diglycerin, polyglycerin, sorbitol, mannitol, trimethylol propane, pentaerythritol and polyethylene glycol, in which a part of the hydroxyl groups of said polyhydric alcohol is unreacted so that said polyglycidyl ether is water soluble, (2) from 1 to 1.5 moles, per epoxy equivalent of said water-soluble epoxy resin, of polyalkylene polyamine effective as a curing agent for said water-soluble epoxy resin, and (3) from 0.1 to 10% by weight, based on the weight of said hydraulic cement, of cement dispersant having a water reduction ratio of at least 20%; and then hardening the composition.

4,194,920

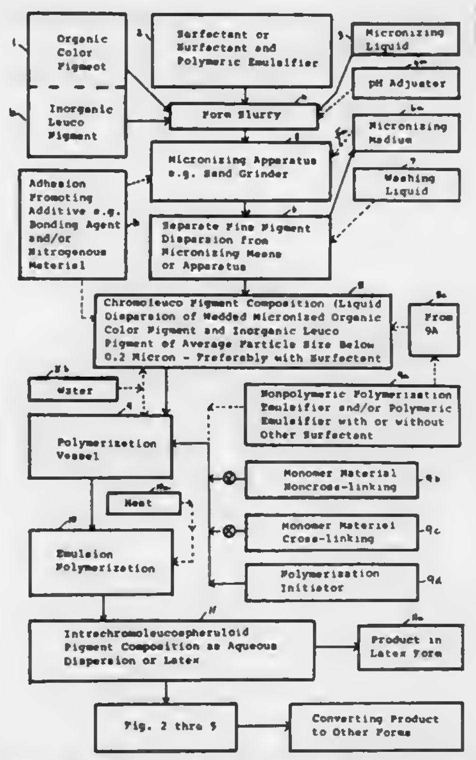
INTRACHROMOLEUCOSPHERULOID PIGMENT COMPOSITIONS AND PROCESSES FOR PRODUCING SAME

Oliver W. Burke, Jr., deceased, late of Fort Lauderdale, Fla. (by Norma Scala, administratrix), and Victor T. Humphreys, Pompano Beach, Fla., assignors to Marion Darrah and Joseph Y., co-trustees Houghton, both of Pompano Beach, Fla.

Division of Ser. No. 712,253, Aug. 6, 1976, Pat. No. 4,154,621. This application Feb. 15, 1979, Ser. No. 12,606

Int. Cl.² C08K *9/02, 9/04, 9/10*

U.S. Cl. 106—308 M **31 Claims**


Organic Color Pigment
Inorganic Leuco Pigment
Surfactant or Surfactant and Polymeric Emulsifier
Micronizing Liquid
pH Adjuster
Form Slurry
Micronizing Medium
Micronizing Apparatus e.g. Sand Grinder
Washing Liquid
Adhesion Promoting Additive e.g. Bonding Agent and/or Nitrogenous Material
Separate Fine Pigment Dispersion from Micronizing Means or Apparatus
Chromoleuco Pigment Composition (Liquid Dispersion of Wedded Micronized Organic Color Pigment and Inorganic Leuco Pigment of Average Particle Size Below 0.2 Micron - Preferably with Surfactant
From 9A
Water
Nonpolymeric Polymerization Emulsifier and/or Polymeric Emulsifier with or without Other Surfactant
Polymerization Vessel
Monomer Material Noncross-linking
Heat
Monomer Material Cross-linking
Emulsion Polymerization
Polymerization Initiator
9c
9d
Intrachromoleucospheruloid Pigment Composition as Aqueous Dispersion or Latex
Product in Latex Form
Fig. 2 thru 5
Converting Product to Other Forms

1. A process for producing intrachromoleucospheruloid pigment composition for combination with a designated vehicle, which process comprises, in combination:

(I)

(a) providing in liquid medium a composite chromoleuco pigment composition consisting essentially of particles of organic color pigment composition wedded to particles of inorganic leuco pigment composition, said composite pigment composition being dispersed in said medium with the aid of 0–100% by weight of the total of surface active agent material set forth in (c), said composite pigment composition being essentially insoluble in the liquid and having primary particles of an average size less than 0.2 micron in diameter,

(b) forming an aqueous emulsion polymerization system consisting essentially of (1) the composition of (a), (2) the balance, if any, of 100% of the total surface active agent material set forth in (c) and (3) monomer material selected in the ratio of said monomer material to said pigment composition lying in the range of 100:1 to 1:20 by weight, said monomer material consisting essentially of ethylenically unsaturated monomer material selected as set forth in step (II), said composite pigment composition containing, based on the inorganic pigment therein, from 0 to an equal weight of pigment bonding agent material and from 0 to an equal weight of nitrogenous material, and (4) emulsion polymerization initiator in an effective amount in the range of 0.2 to 10% by weight of the said monomer material,

(c) the ratio of the total of the surface active agent material present after (b) to said composite pigment composition and monomer material lying in the range of 2:1 to 1:40 by weight, and said total of surface active agent material being selected from the class of polymeric and nonpolymeric surface active agents and combinations thereof capable of effecting emulsion polymerization of the selected ethylenically unsaturated monomer material to yield polymer particles with the pigment provided in step (a) imbedded therein

(d) effecting emulsion polymerization of the combination formed in (b) under agitation and at sufficient temperatures in the range of 0°to 200° C. for sufficient time in the range of a few minutes to 24 hours to permit the polymerization to proceed far enough to effect from 50 to 100% conversion by weight of said monomer material to produce in aqueous dispersion an intrachromoleucospheruloid pigment composition consisting essentially of spheruloids of organic polymer material having primary particles of an average size not exceeding 4 microns in diameter, and having imbedded therein the still smaller size particles of said composite pigment composition; and

(e) recovering said intrachromoleucospheruloid pigment composition;

(II) the monomer material referred to in step (b) being selected, from the class consisting of (i) monomer material containing and polymerizable through a single ethylenically unsaturated group and (ii) monomer material containing and polymerizable through a plurality of ethylenically unsaturated groups, for forming polymer spheruloids of different refractive index from the pigment particles and of different refractive index from the designated vehicle; and

(III) said designated vehicle being a non-solvent for said recovered pigment composition and being selected from the class consisting of water-based and oil-based vehicles.

4,194,921

PIGMENT COMPOSITIONS AND PROCESS FOR DUST FREE PIGMENT BEADS

Ian R. Wheeler, Houston, and George H. Robertson, Paisley, both of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,169

Claims priority, application United Kingdom, Jun. 24, 1977, 26520/77

Int. Cl.² C09C *3/08, 3/10*

U.S. Cl. 106—309 **9 Claims**

1. A process for the manufacture of substantially dust free meterable and readily dispersible beads of a pigment composition which comprises contacting with agitation a suspension of a finely divided pigment or pigment composition in a mixture of water and an oxygenated aliphatic hydrocarbon solvent containing from 1 to 5 carbon atoms and having appreciable solubility in water, together with a solution of a carrier which is substantially water insoluble and soluble in the respective solvent at reflux temperature and then distilling off the solvent and recovering the resultant beads by filtration from the aqueous phase.

4,194,922

METHOD AND APPARATUS FOR ULTRASONIC CLEANING OF COMPONENT PARTS

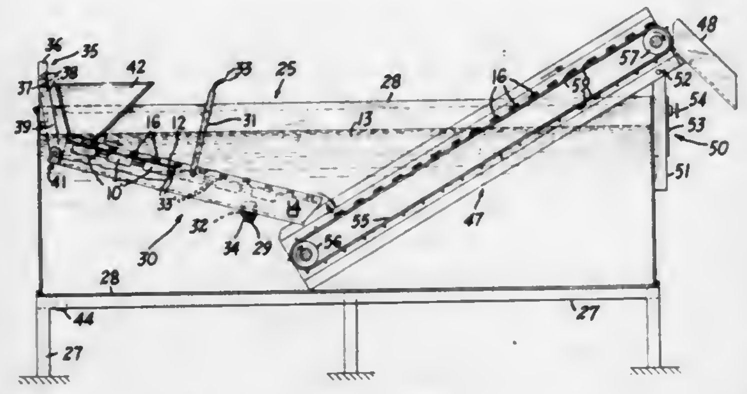
Åke Gransell; Sven A. Jansson, and Malte Sporrong, all of Nynashämn, Sweden, assignors to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed Apr. 17, 1978, Ser. No. 897,018

Claims priority, application Sweden, Apr. 18, 1977, 7704420

Int. Cl.² B08B *3/12*

U.S. Cl. 134—1 22 Claims



1. The method of cleaning articles including the steps of:

(a) placing the articles in mechanical contact with a flat plate member disposed in a liquid bath,

(b) applying ultrasonic vibratory energy to the articles from the member by energizing an ultrasonic transducer in direct mechanical contact with the plate, and

(c) conveying the articles in the bath during their mechanical contact with the member and during the application of the vibratory energy.

4,194,923

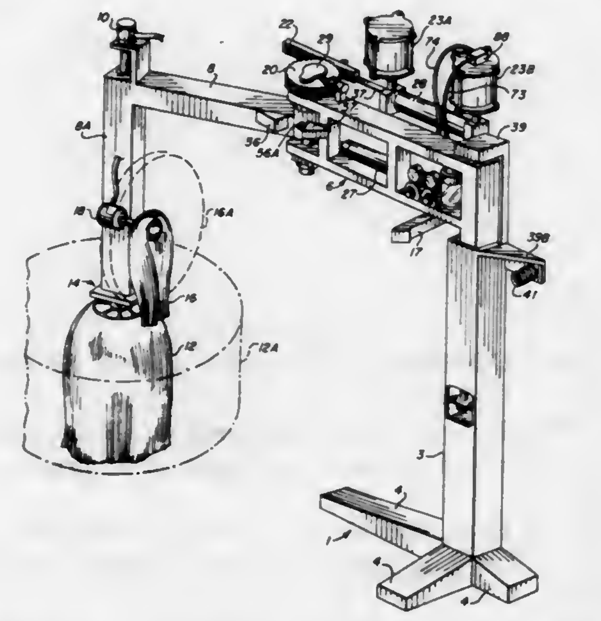
CAR WASHING METHOD AND APPARATUS

Archie L. Johnson, 3801 W. Orangewood, Phoenix, Ariz. 85021

Filed Jul. 14, 1978, Ser. No. 924,797

Int. Cl.² B08B *7/00*

U.S. Cl. 134—6 18 Claims



13. A method for scrubbing portions of the front, side, and rear surfaces of a vehicle as the vehicle advances in a forward direction through a car wash installation which includes

i. a primary arm pivotally mounted on a support for rotation between an initial forward position and a rearward position, said primary arm having a directional component in said forward direction when said primary arm is in said initial forward position, said primary arm being directed generally in the direction opposite to said forward direction when said primary arm is in said rearward position,

ii. a secondary arm pivotally mounted on the primary arm,

iii. a rotary brush mounted on the outer arm for scrubbing the surface of the vehicle, said method comprising the steps of:

(a) sequentially applying control forces to a plurality of distributed force transmission points which are engageable with respective ones of a plurality of distributed circumferential force receiving points of a torque element connected to the outer arm, thereby producing a controllable torque on the secondary arm and a corresponding crush pressure between the rotary brush and surfaces of the vehicle;

(b) rotating the primary arm from said initial forward position toward said rearward position as the rotary brush passes along the side surface of the vehicle; and

(c) rotating the primary arm from said rearward position toward said forward position as the rotary brush passes along the rear surface of the vehicle, thereby producing a crush pressure between the rotary brush and the rear surface of the vehicle.

4,194,924

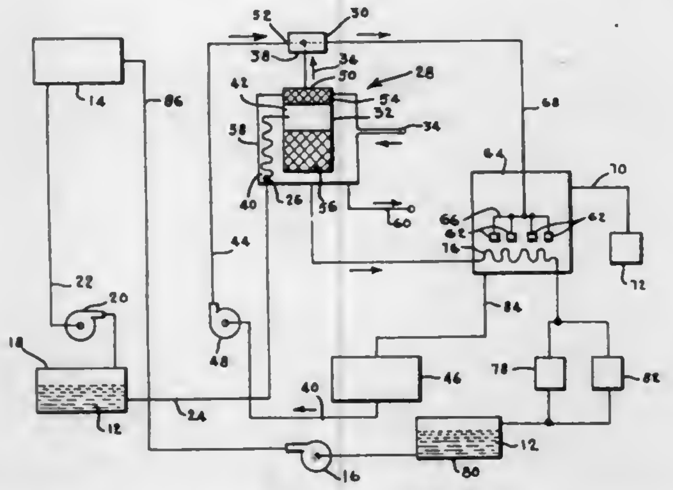
PROCESS FOR RECLAIMING AIRCRAFT FUEL TANK PURGING FLUIDS

John W. Safranko, Carmichael; Craig R. Burnett, Folsom, and James E. Kilburn, Roseville, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 13, 1978, Ser. No. 968,894

Int. Cl.² B08B *7/04, 9/08*

U.S. Cl. 134—12 3 Claims



1. A continuous method for reclaiming and regenerating the individual components of a fuel contaminated, composite, liquid purging mixture which comprises the steps of:

a. introducing a high flash point hydrocarbon purging liquid into an aircraft fuel tank containing residual amounts of a low flash point hydrocarbon jet fuel to form a fuel-contaminated purging fluid;

b. passing said contaminated purging fluid through a colled conduit in the heated jacket section of a flash distillation still while simultaneously pre-heating said fluid to partially vaporize a portion of the said fluid;

c. evacuating the inner shell portion of said distillation still by means of a water-powered aspirator to create a vacuum in said shell portion;

d. heating said contaminated purging fluid while passing through the coil within the jacket of the still and passing the vapor laden portions of said fluid upwardly into said evacuated shell portion;

e. maintaining controlled conditions of pressure and temperature within said shell portion sufficiently to flash vaporize the highly volatile, low flash point, hydrocarbon fuel component;

f. passing the flash vaporized component upwardly through a ceramic saddle packing to demist said flash vaporized component and remove any entrained non-volatile components;

g. drawing the demisted vapors upwardly into a water-powered aspirator to cool, condense and compress said vapors into a liquid phase that is suspended in water;

h. passing said liquid phase emulsified in water through a manifold of coalescing filters arranged within a water-oil separator to separate the low flash point liquid fuel component into a separate, distinct, oily layer floating on the top surface of a water layer;

i. discharging and passing said fuel component into a storage reservoir while simultaneously recycling and passing said water to said water-operated aspirator for re-use; and

j. passing the relatively, non-volatile, high flash point, hydrocarbon purging fluid remaining in the bottom portion of said distillation still through a ceramic saddle packing to fractionate off as vapor any dissolved volatile hydrocarbons and then to pass the hot reclaimed purging fluid through the bottom of the still and into a coiled conduit which passes through said oil-water separator for cooling said purging fluid before alternately passing separate portions of said purging fluid into vacuum operated receiving tanks for subsequent introduction into a common storage reservoir.

4,194,925

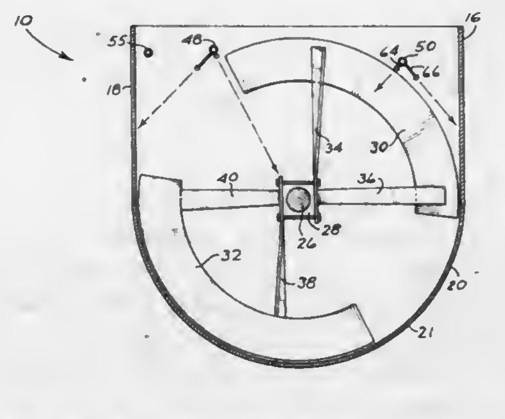
METHOD AND APPARATUS FOR WASHING MIXING CONTAINERS

Fred D. Holbrook, Statesville, and Perry Holbrook, Thomasville, both of N.C., assignors to Columbia Machine, Inc., Vancouver, Wash.

Filed Aug. 15, 1977, Ser. No. 824,700

Int. Cl.² B08B *9/00*

U.S. Cl. 134—24 8 Claims



1. Apparatus for washing a mixing container having side walls, an open top, a bottom portion provided with a dump gate and internal mixing components including a blade mounted on a power-driven rotatable shaft comprising:

fluid dispensing means including at least a pair of spaced-apart conduits mounted adjacent an upper portion of the container communicating with said pump means, said conduits including a plurality of spray outlets arranged at predetermined locations therealong, preselected ones of said outlets being provided with tubular means selectively positionable relative to an associated conduit for directing fluid in predetermined directions against the mixing components and interior wall faces of the container.

6. A method for supplying fluid to a material mixing container having side walls, an open top, a bottom portion provided with a dump gate and internal mixing components including a blade mounted on a power-driven rotatable shaft for purposes of washing and mixing comprising:

introducing a predetermined amount of fluid into the container for direction against the internal mixing components and interior wall faces of the container for purposes of washing;

retaining a predetermined amount of said introduced fluid within the container; and

adding a predetermined amount of additional fluid until a preselected total amount of fluid is contained within the container.

4,194,926

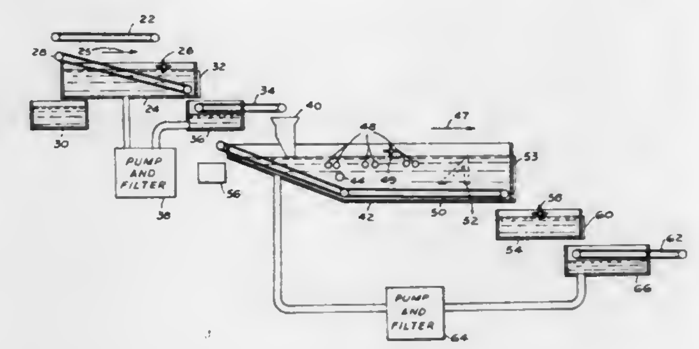
APPARATUS AND METHOD FOR SELECTIVELY RECLAIMING PARTS FROM FILM CARTRIDGES

Clive D. Barnsbee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 844,950, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 701,925, Jul. 2, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,509

Int. Cl.² B08B *3/10*

U.S. Cl. 134—29 10 Claims



1. In a method for separating materials of different specific gravities wherein the materials are added to a tank containing a fluid of predetermined specific gravity so that materials having specific gravities higher than or lower than said predetermined specific gravity sink or float respectively, the improvement wherein said fluid is boiled in a localized region within said tank to produce a turbulent region of fluid in which materials are physically separated even though they tend to cling together and in which air entrapped by said materials is removed, thereby enabling the materials to be separated on the basis of their specific gravities in a less turbulent region of said tank.

2. A method for separating materials having different specific gravities wherein at least some of said materials are of a geometry that causes them to tend to float, and wherein at least some of said materials are affixed together by an adhesive, said method comprising the steps of:

adding the materials to a tank containing a detergent fluid of predetermined specific gravity that is capable of dissolving said adhesive, said tank including a ramp member disposed within said tank so as to be submerged beneath said detergent fluid; and

boiling said detergent fluid in a localized region within said tank to produce a turbulent region of fluid in said tank separated by said ramp member from a relatively calm region of fluid,

whereby said turbulence facilitates sinking of those materials having a higher specific gravity than said detergent fluid but which are of a geometry that causes them to tend to float, said detergent fluid dissolves said adhesive permitting affixed materials to be separated, and said calm region of fluid further facilitates separation of said materials on the basis of specific gravity.

4,194,927

SELECTIVE THERMAL OXIDATION OF AS-CONTAINING COMPOUND SEMICONDUCTOR REGIONS

Hiromitsu Takagi, Muko; Gota Kano, Nagaokakyo, and Iwao Teramoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 11, 1978, Ser. No. 923,689

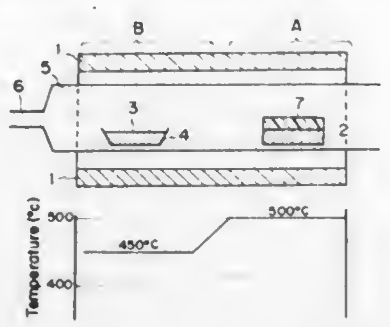
Claims priority, application Japan, Jul. 15, 1977, 52-85228; Jul. 18, 1977, 52-86383; Feb. 24, 1978, 53-21399

Int. Cl.² H01L *7/36, 7/44*

U.S. Cl. 148—1.5 25 Claims

1. A method of making a semiconductor device including at

least a compound of arsenic in a portion thereof, said method comprising heat treating said semiconductor device in a vapor containing arsenic oxide whereby an oxide film containing arsenic oxide is deposited thereon.



4,194,928

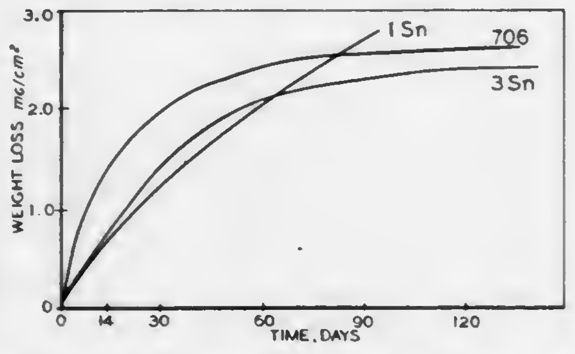
CORROSION RESISTANT COPPER BASE ALLOYS FOR HEAT EXCHANGER TUBE

James M. Popplewell, Guilford; Constance F. Acton, Wallingford, and Andrew J. Brock, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 879,135, Feb. 21, 1978, Pat. No. 4,169,729. This application Dec. 18, 1978, Ser. No. 970,289

Int. Cl.² C22C *9/06;* **C22F** *1/08*

U.S. Cl. 148—2 **10 Claims**



1. A process of producing a wrought copper base alloy which is particularly useful in applications requiring corrosion resistance, said process comprising the steps of:

(a) providing a cast alloy consisting essentially of 4.0 to 6.0% by weight nickel, 2.0 to 3.0% by weight aluminum, 1.0 to 3.0% by weight tin, 0.1 to 0.5% by weight manganese, balance copper;
(b) homogenizing said alloy at a minimum temperature of 500° C. for at least 15 minutes;
(c) hot working said alloy at a temperature of at least 400° C.;
(d) rapidly cooling the hot worked alloy to insure a solid solution microstructure within the alloy; and
(e) cold working said alloy at a temperature below 200° C.

3. A process of producing a wrought copper base alloy which is particularly useful in applications requiring corrosion resistance, said process comprising the steps of:

(a) providing a cast alloy consisting essentially of 3.0 to 7.5% by weight nickel, 0.5 to 4.0% by weight tin, up to 4.0% by weight aluminum, 0.001 to 1.0% by weight manganese, balance copper;
(b) homogenizing said alloy at a minimum temperature of 500° C. for at least 15 minutes;
(c) hot working said alloy with a finishing temperature of at least 400° C.;
(d) rapidly cooling the hot worked alloy from said finishing temperature to provide a single phase solid solution microstructure within the alloy; and
(e) cold working said alloy at a temperature below 200° C.

4,194,929

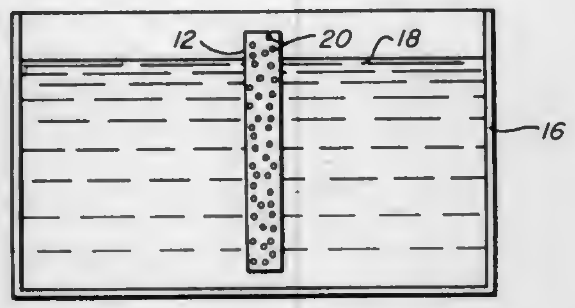
TECHNIQUE FOR PASSIVATING STAINLESS STEEL

Joseph T. Menke, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 8, 1978, Ser. No. 940,545

Int. Cl.² C23F *7/10*

U.S. Cl. 148—6.15 R **3 Claims**



1. A method of passivating stainless steel comprising the steps of:

a. Making the stainless steel cathodic by first embedding ferrous metal abrasive anode particles on the surface thereof, and
b. Subjecting said stainless steel to a phosphating conversion coating solution.

4,194,930

ION-NITRIDING PROCESS

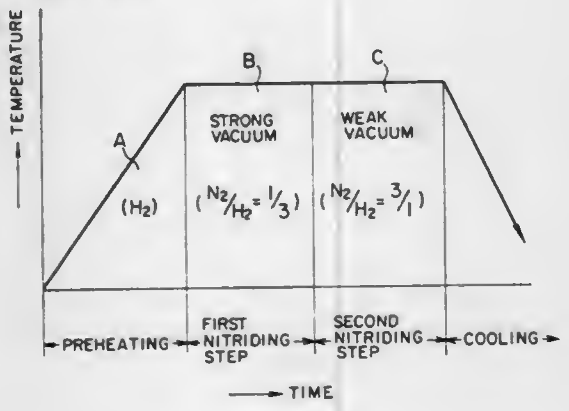
Akio Tanaka, Ono; Mizuo Edamura, Kobe; Satoshi Furuitsu, Kakogawa, and Satoru Kunise, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Oct. 20, 1978, Ser. No. 953,204

Claims priority, application Japan, Oct. 20, 1977, 52/126605

Int. Cl.² C23C *11/16*

U.S. Cl. 148—16.6 **13 Claims**



1. In an ion-nitriding process including the steps of subjecting a workpiece having at least one aperture to a DC voltage in an atmosphere of nitrogen-containing gas so as to produce a glow discharge on the workpiece, the improvement comprising a first nitriding step which is carried out under a vacuum which is strong enough to suppress arc discharge on the workpiece, and a second nitriding step which is carried out under a vacuum which is weak as compared with the vacuum in the first nitriding step, so that glow discharge is produced even in the aperture of the workpiece.

4,194,931

SOLDERING FLUX

Frank M. Zado, Lawrence Township, Mercer County, N.J., assignor to Western Electric Co., New York, N.Y.

Division of Ser. No. 846,464, Oct. 28, 1977, which is a continuation-in-part of Ser. No. 797,715, May 16, 1977, abandoned. This application Nov. 2, 1978, Ser. No. 956,945

Int. Cl.² B23K *35/34*

U.S. Cl. 148—25 **16 Claims**

1. A method of soldering a metal which comprises:

applying to a surface a soldering flux comprising a rosin mixture of (a) rosin; (b) an activator having at least one halogen atom and at least one destabilizing substituent; and (c) a surfactant selected from the group consisting of (a″) a polycarboxylic acid, (b″) a hydroxyl substituent of (a″), (c″) a keto acid and (d″) a mixture of any of the foregoing surfactants, to form a flux treated surface.

4,194,932

FE/CR/CO PERMANENT MAGNETIC ALLOYS AND METHOD OF PRODUCTION THEREOF

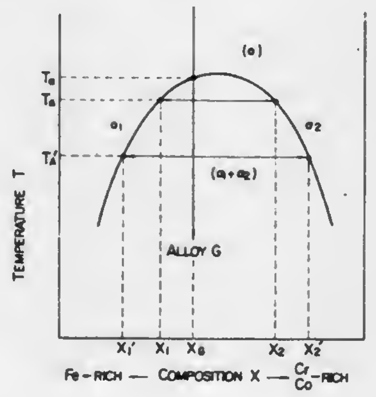
Masao Iwata, Chichibu, Japan, assignor to Hitachi Metals, Japan

Filed Feb. 7, 1978, Ser. No. 875,791

Claims priority, application Japan, Feb. 10, 1977, 52-12979

Int. Cl.² H01F *1/04*

U.S. Cl. 148—102 **14 Claims**



1. A method of producing a Fe/Cr/Co permanent magnet alloy consisting essentially of 17 to 45% by weight chromium, 3.0 to 14.9% by weight cobalt and the remainder being iron, by subjecting the alloy to a two-step aging treatment, whereby a two-phase structure of the alloy is precipitated, which two-step aging treatment comprises:

a step of primary aging treatment of heating the alloy to a temperature within the range of 590° to 670° C. and maintaining the alloy at said temperature in a controlled magnetic field, whereby said two-phase structure is formed, with the anisotropy in one of the two phases being oriented along the direction of the applied magnetic field;

cooling the alloy at a sufficiently rapid cooling rate, down to a temperature lower than that temperature predetermined for starting subsequent secondary aging treatment, such that further precipitation of two-phase structure of the alloy is substantially prevented from taking place; and

a secondary aging treatment of heating the alloy to a temperature predetermined for starting which is lower at least by 10° C. than the temperature in the primary aging treatment and then subjecting the alloy to a slow and continuous cooling at a rate of temperature decrement of 100° C. over 2 to 50 hours down to a temperature lower than 560° C., thereby to widen the composition difference between the previously separated two phases due to said primary aging treatment.

4,194,933

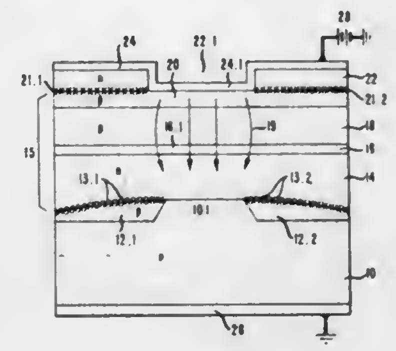
METHOD FOR FABRICATING JUNCTION LASERS HAVING LATERAL CURRENT CONFINEMENT

Ralph A. Logan, Morristown, and Won-Tien Tsang, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 794,466, May 6, 1977, Pat. No. 4,169,997. This application May 17, 1979, Ser. No. 39,862

Int. Cl.² H01L *21/208*

U.S. Cl. 148—171 **9 Claims**



1. A method of fabricating a stripe geometry junction laser comprising the steps of:

(a) forming a mesa on a major surface of a monocrystalline semiconductor body of one conductivity type,
(b) growing simultaneously a pair of laterally spaced epitaxial layers of the opposite conductivity type on said major surface and contiguous with the side walls of said mesa by means of a liquid phase epitaxial process in which growth nucleation on the top of said mesa is inhibited, and
(c) growing a laser structure on said spaced layers and the top of said mesa so that a first pair of laterally spaced blocking p-n junctions separated by said mesa are formed at the interface with said pair of layers.

4,194,934

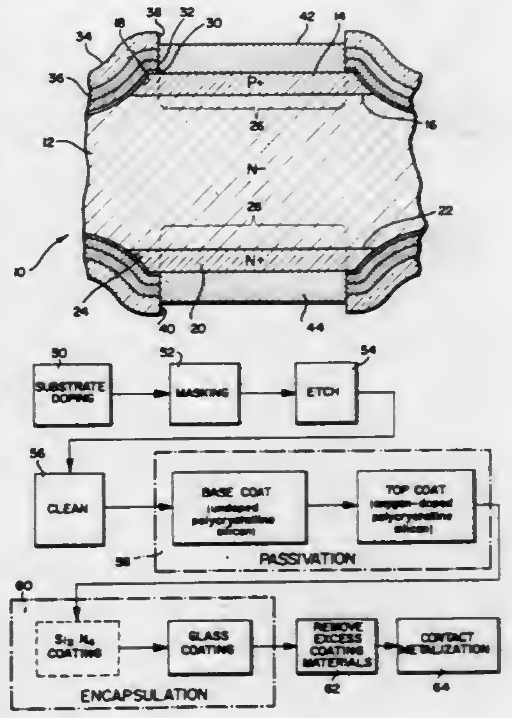
METHOD OF PASSIVATING A SEMICONDUCTOR DEVICE UTILIZING DUAL POLYCRYSTALLINE LAYERS

Theodore A. Blaske, Plano, and Ho Y. Yu, Richardson, both of Tex., assignors to Varo Semiconductor, Inc., Garland, Tex.

Division of Ser. No. 799,467, May 23, 1977, Pat. No. 4,161,744. This application Apr. 10, 1979, Ser. No. 28,836

Int. Cl.² H01L *21/205, 29/04*

U.S. Cl. 148—174 **3 Claims**



1. The method of making semiconductor devices which is characterized by the steps of: infusing a selected portion of the surface of a semiconductor body of monocrystalline substrate material with dopant material to form a diffusion layer having

a boundary region with the parent substrate material, which boundary region acts as a semiconductor junction; preparing the junction region of said body to receive a passivation coating; exposing said prepared semiconductor body to an atmosphere consisting essentially of an inert gas and a silane material at a selected, elevated temperature whereby to deposit a base layer of essentially undoped polycrystalline silicon over the region of said junction region; and thereafter introducing a gaseous oxygen donor into said atmosphere in continuation of the presence of inert gas and silane material whereby to deposit a top layer of oxygen-doped polycrystalline silicon over said base layer and form a dual-layer passivation coating, wherein said top layer contains less than about 30% by weight of oxygen.

4,194,935

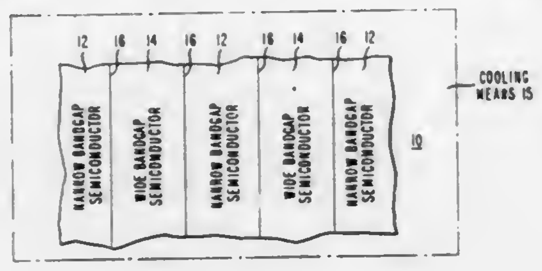
METHOD OF MAKING HIGH MOBILITY MULTILAYERED HETEROJUNCTION DEVICES EMPLOYING MODULATED DOPING

Raymond Dingle, Summit; Arthur C. Gossard, Warren, and Horst L. Störmer, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 899,402, Apr. 24, 1978, Pat. No. 4,163,237. This application Apr. 2, 1979, Ser. No. 26,090

Int. Cl.^{2} H01L *21/203, 29/06*

U.S. Cl. 148—175 **5 Claims**


12
16
14
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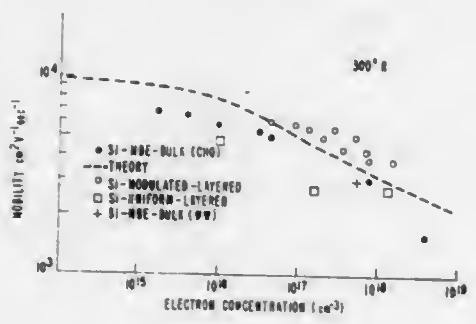
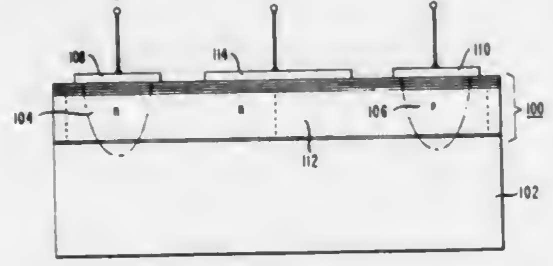
12
16
14
16
12
NARROW BANDGAP SEMICONDUCTOR
WIDE BANDGAP SEMICONDUCTOR
NARROW BANDGAP SEMICONDUCTOR
WIDE BANDGAP SEMICONDUCTOR
NARROW BANDGAP SEMICONDUCTOR
10
COOLING MEANS 15





1. A method of enhancing the mobility of a narrow bandgap semiconductor material comprising the steps of:

(a) forming said narrow bandgap material in a first plurality of spaced apart, narrow bandgap semiconductor layers,

(b) forming a second plurality of wide bandgap semiconductor layers interleaved with and contiguous with said first plurality, and

(c) forming said wide bandgap layers from a material which (i) is substantially lattice-matched to that of said narrow bandgap layers, (ii) forms a conductor or valence band step at the interfaces with said narrow bandgap layers of sufficient magnitude to confine carriers, and (iii) is doped such that the impurity-concentration-thickness product thereof exceeds that of said narrow bandgap layers.

4,194,936

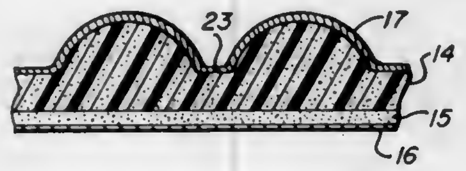
METHOD OF MAKING A FISHING LINE INDICATOR

Leon L. Martuch, Orlando, Fla., assignor to JFL Development Company, Orlando, Fla.

Filed Aug. 21, 1978, Ser. No. 935,254

Int. Cl.^{2} B32B *33/00, 27/32;* **C09K** *11/00*

U.S. Cl. 156—67 **8 Claims**



1. A method of making fishing line indicators capable of being used in artificial nymph fishing comprising the steps of:

forming a sheet of foamed polymer material with a plurality of predetermined shapes on one side thereof;

applying an adhesive to the other side of said foamed polymer material;

applying a protective covering over said adhesive on the other side of said foamed polymer material;

applying a fluorescent material to the one side of said foamed polymer material having predetermined shapes thereon; and

cutting said sheet of foam polymer material having said adhesive and coating thereon to form a plurality of predetermined shapes capable of use as fishing line indicators in artificial nymph fishing.

4,194,937

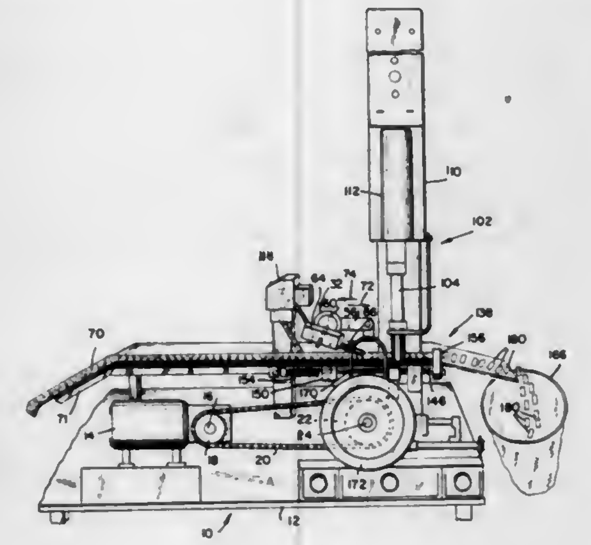
APPARATUS FOR PROCESSING HOOK AND EYE FASTENERS

Frank Hashmall, Far Rockaway, N.Y., assignor to L. M. Rabinowitz & Co., Inc., New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,986

Int. Cl.^{2} B29C *27/08;* **B32B** *31/00*

U.S. Cl. 156—73.1 **10 Claims**



9. A process for providing hook and eye fastener tapes comprising the steps of incrementally advancing a cloth tape having hook or eye fasteners attached thereon along a base to a sealing station and then to a cutting station, forming at said sealing station a spaced double row of heat sealed stitches on said tape between said hookes or eyes, with each row comprising a line of spaced heat sealed stitches, and cutting said cloth tapes between said double row of heat sealed stitches at said cutting station, thereby providing cloth tape sections having edges sealed by respective lines of spaced heat sealed stitches.

4,194,938

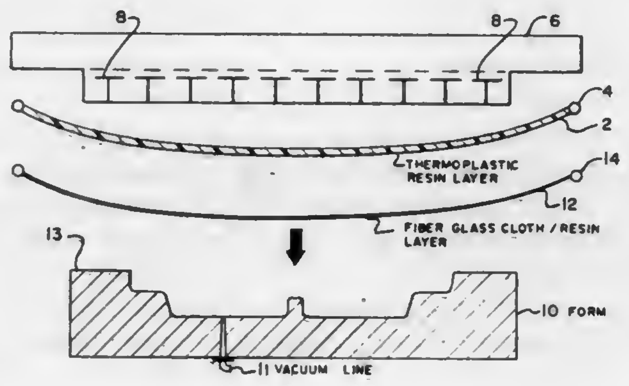
PRESTRESSED ARTICLE

Irving E. Figge, and Edward H. Dean, both of Newport News, Va., assignors to The United States of America as represented by the Secretary of the Army, Alexandria, Va.

Filed May 15, 1978, Ser. No. 906,186

Int. Cl.^{2} B29C *17/04;* **B32B** *1/02*

U.S. Cl. 156—212 **2 Claims**



1. A method for forming a prestressed plastic article by thermoforming, the process wherein a sheet of a thermoplastic resin is forced over a mold, said method including heating a thermoplastic sheet and a thermosetting resin-impregnated sheet of fiber-reinforced weft under conditions such that the thermoplastic layer would normally follow the mold, superimposing the soft thermoplastic sheet on the thermosetting resin layer, forcing the thermoplastic layer and thereby the thermosetting layer throughout the mold thus putting the thermosetting layer under tension, cooling the thermoplastic layer during the curing of the thermosetting layer thus also putting the thermoplastic layer under tension, and curing the thermosetting resin while both layers are under tension to form the prestressed plastic article.

4,194,939

METHOD OF MAKING LAYERED FABRICS

Glen D. Perry, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 667,002, Mar. 15, 1976, Pat. No. 4,142,016, which is a continuation-in-part of Ser. No. 555,006, Mar. 3, 1975, abandoned. This application Nov. 4, 1977, Ser. No. 848,552

Int. Cl.^{2} B32B *31/18;* **C09J** *5/06*

U.S. Cl. 156—254 **5 Claims**

1. A process which comprises disposing between two essentially parallel reinforcing layers of textile-length fibers a layer of bulk fibers essentially randomly oriented in the plane parallel to said reinforcing layers, said layer of bulk fibers having essentially no fiber lengths exceeding 10 mm, and said layer of bulk fibers comprising at least about 16 g/m^2 of said bulk fibers, distributing a settable bonding agent essentially throughout the resulting multi-layered structure, subjecting said structure to heating applied to the surfaces thereof and controlled so as to lower substantially the concentrations of said bonding agent in relation to the fibers in a two-dimensional continuum disposed in said layer of bulk fibers in a direction generally parallel to said reinforcing layers, setting the bonding agent in the heated structure to bind together said reinforcing layers and said layer of bulk fibers and then splitting said structure by drawing said reinforcing layers in divergent directions with sufficient force to split said layer of bulk fibers along said continuum.

4,194,940

METHOD OF BONDING EMPLOYING AN ADHESIVE COMPOSITION CONTAINING POLYISOCYANATE REACTION PRODUCTS HAVING AN AVAILABLE ISOCYANATE CONTENT OF NOT MORE THAN 0.5 PERCENT

Dennis J. Damico, and Brian Martin, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Continuation of Ser. No. 738,414, Nov. 3, 1976, abandoned. This application Aug. 4, 1978, Ser. No. 930,962

Int. Cl.^{2} B32B *31/00;* **C09J** *3/00;* **D02G** *3/00*

U.S. Cl. 156—331 **12 Claims**

1. A method of bonding a segmented copolyester thermoplastic elastomer composition consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head-to-tail through ester linkages and a flexible or nonflexible substrate which comprises applying to at least one of said segmented copolyester elastomer or said substrate an adhesive lacquer system comprising organic solvent-carried thermoplastic polyetherurethane, said polyetherurethane having substantially no free hydroxyl moieties and a residual free isocyanate content of no greater than 0.5 percent, said polyurethane being obtained by forming an isocyanate-functional intermediate by reacting an excess of at least one polyisocyanate having at least two isocyanate groups with at least one polyether polyol having at least two hydroxyl groups in an adhesive solvent system until at least about 90 percent of said hydroxy groups have reacted with said isocyanate groups, reacting said isocyanate-functional intermediate in said adhesive solvent system with not more than a stoichiometric amount of at least one difunctional chain extending reagent to a viscosity endpoint corresponding to a molecular weight in the range from about 20,000 to about 200,000 at a residual free isocyanate content not exceeding 0.5 percent by weight based on weight of said polyurethane, and terminating such reaction;

contacting said elastomer and said substrate; and

maintaining such contact at a temperature and pressure and for a time sufficient to effect curing of said thermoplastic polyurethane adhesive system.

4,194,941

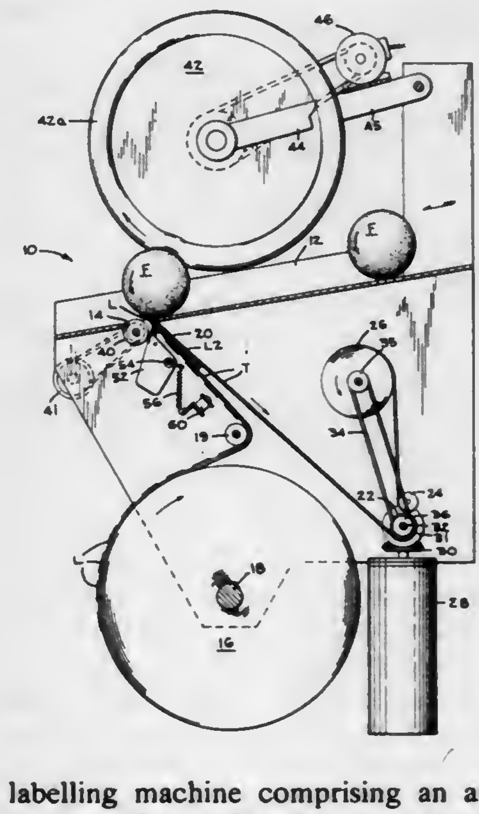
LABELLING MACHINE

Peter D. Briggs, San Jose, Calif., and Dennis R. Sharkey, Tabik, South Africa, assignors to FMC Corporation, San Jose, Calif.

Filed Jul. 22, 1974, Ser. No. 490,824

Int. Cl.^{2} B65C *9/04, 9/32, 9/42*

U.S. Cl. 156—361 **7 Claims**



5. A labelling machine comprising an article supporting runway having a flat surface for supporting generally round

articles for rotational movement thereover, said surface having an opening therein, a tape support member mounted within said machine so that an edge thereof extends below and directly adjacent to said opening, means for mounting a tape having uniformly spaced labels thereon for movement along a path within said machine, said path extending around said edge of said tape support member so that said edge serves to successively separate said labels from said tape by forcing said labels to follow a secondary path which diverges from said tape path and extends through said opening into the path of said rollable articles, drive means for moving said tape along its said path, means for sensing the presence of an article on said surface, and means connected to said sensing means for starting and stopping said drive means so that each article rolling on said surface will receive a label which has been projected through said opening and cause it to partially adhere thereto, a roller mounted below said surface adjacent said opening in spaced relation to said projected label and downstream thereof for engaging an article moving along said surface and the label partially adhering to said article, means resiliently engaging each article from above as the article passes over said opening to press said article against said roller, and means for rotating said roller at a speed so that the direction of rotation of the article on the surface is reversed in order to roll the label onto the article.

4,194,942

APPARATUS FOR MANUFACTURING SYNTHETIC RESIN HOSE HAVING A REINFORCING MEMBER EMBEDDED THEREIN

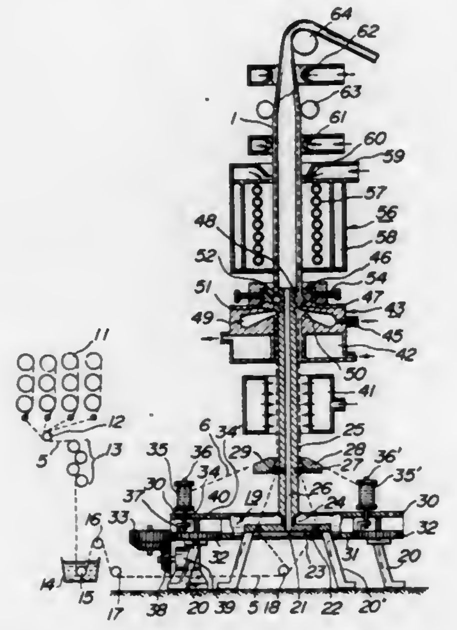
Kenichi Tanaka, Musashino, Japan, assignor to Kakuichi Co. Ltd., Nagano, Japan

Filed May 4, 1978, Ser. No. 902,825

Claims priority, application Japan, Oct. 15, 1977, 52-122967

Int. Cl.² B29D *23/05*

U.S. Cl. 156—433 **2 Claims**



1. An apparatus for manufacturing a synthetic resin hose having a tubular reinforcing member embedded therein, comprising:

a plurality of bobbin creels for guiding warp material;

warp treating means for applying a bonding agent to said warp materials by means of a guide roller in a bonding agent tub;

a hollow cylindrical member having diameter adjusting discs provided with yarn guide holes for guiding a plurality of bonding agent bearing warps to the outer peripheral surface of a hollow cylindrical member;

means for guiding warps through said yarn guide holes to the outer peripheral surface of a hollow cylindrical member for forming a tubular member of warps lying parallel to each other parallel to the axis of the tubular member;

a braiding machine surrounding said hollow cylindrical member for weaving braiding yarns into a braided member on the outer periphery of said tubular warp member formed by a plurality of warps guided to the outer peripheral surface of the hollow cylindrical member and mutually aligned in parallel relation to the tubular member;

means for weaving a plurality of braiding yarns into a braid member consecutively in overlying relation around the outer peripheral surface of said warp tubular member thereby preparing a tubular reinforcing member;

a first heating unit surrounding said hollow cylindrical member for bonding the tubular warp member to the braided member at the contacts therebetween for heat-setting a tubular reinforcing member consisting of the warp tubular member and the braided member;

a first cooling unit provided adjacent said first heating unit for solidifying said tubular reinforcing member;

a resin applying unit having a manifold and die for coating synthetic resin onto the inner and outer peripheral surfaces of said tubular reinforcing member;

a second cooling unit for air-cooling the composite tubular synthetic resin hose with embedded tubular reinforcing member; and

means for taking up said synthetic resin hose to a winding-up reel under a constant tension;

wherein said hollow cylindrical member has a tapered portion surrounded by the first heating unit for ensuring the smooth upward movement of said tubular reinforcing member along the outer peripheral surface of the hollow cylindrical member, the degree of taper being relating to the thermal shrinkage percentage of the braiding yarns used; and

said member, said machine, said means and said units are arranged in the order described successively from one end of the hollow cylindrical member to said winding-up reel.

4,194,943

MODIFIED WARP KNITTING MACHINE FOR THE PRODUCTION OF NETTING BY HEAT SEALED WEFT INSERTION

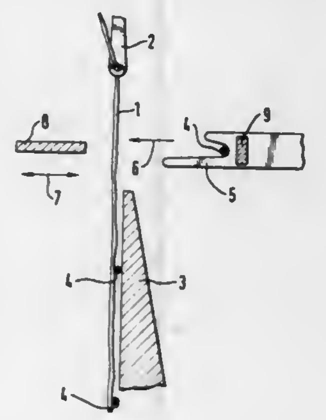
Karl Kohl, Obertschausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinen Fabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,386

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2706930

Int. Cl.² D04H *3/04, 3/14*

U.S. Cl. 156—441 **4 Claims**



1. In a warp knitting machine for the manufacture of netting from heat sealable fibers having at least one guide bar with a plurality of guides affixed thereon for guiding the warp threads, a weft inserter means, a plurality of inlay sinkers, each of said sinkers having a mouth portion for carrying weft threads, a needle bar, and power drive means, the improvement comprising:

(a) heat sealing means affixed on said needle bar, said needle bar being operatively coupled to said power source for reciprocal movement towards and away from said inlay sinkers;

(b) said inlay sinkers being operatively coupled to said power source for reciprocal movement towards and away from said heat sealing means for cooperating therewith, said sinker mouth portion cooperating with said weft inserter means by receiving said weft threads and carrying said threads towards said heat sealing means; and

(c) said guide bars being operatively coupled to said power source for guiding said warp threads, via said guides, into mutual contact with said weft threads, said threads being sealed to each other to form netting upon mutual contact with said heating means and said inlay sinker mouth portion.

4,194,944

FEEDING APPARATUS FOR A FILM IN A HOT PRESS STAMPING MACHINE

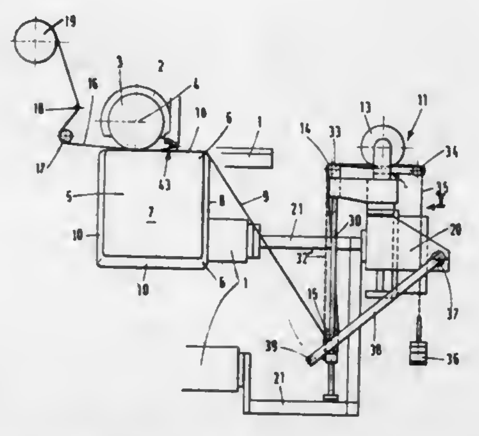
Wilfried Spätle, Oberasbach, Fed. Rep. of Germany, assignor to Messrs. Leonhard Kurz, Furth, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,252

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721980

Int. Cl.² B44C *1/00*

U.S. Cl. 156—540 **11 Claims**



1. A feeding apparatus for application of foil in a hot press stamping machine having a hot press stamping roller at a substantially fixed location and carrier means adapted to support an article to be decorated with said foil and which is displaceable with respect to said stamping roller, comprising a supply reel for feeding said foil mounted on a backing sheet, at least one direction changing roller between said supply reel and said stamping roller and over which said foil is passed, a take up reel for receiving and collecting the backing sheet after passing the stamping roller, said supply reel being axially displaceable substantially parallel to said stamping roller, and between said supply reel and stamping roller before application to a face of said article to be decorated, sand foil is led over a jockey roller which is moveable with said supply reel, is displaceable substantially parallel to itself to tension said foil, and is rotatably mounted about an axis extending transversely to its rotary axis in the direction of displacement.

4,194,945

FILTERING MATERIAL AND PROCESS FOR PRODUCING SAME

Oleg A. Malev, Institutsky prospekt, 9, kv. 55; Idel N. Khalandovsky, Vitebsky prospekt, 53, korpus 3, kv. 106; Moisei R. Kagan, ulitsa Kostjushko, 58, kv. 44; Evgeny Y. Pechko, Krasnoe Selo, Fabrichny Poselok, 4, kv. 7; Lev N. Laptev, Institutsky prospekt, 9, kv. 30, all of Leningrad; Semen S. Vaikhansky, Narodnava ulitsa, 4, Tsjurupinsk Khersonskoi oblasti; Anatoly I. Khorunzhy, Industrialnaya ulitsa, 2, Livny Orlovskoi oblasti, and Valery K. Afanasiev, Borodinskaya ulitsa, 1/88, kv. 13, Leningrad, all of U.S.S.R.

Filed Dec. 27, 1977, Ser. No. 864,436

Int. Cl.² D21F *11/14*

U.S. Cl. 162—135 **2 Claims**

1. A process for producing a porous filtering material formed of fibrous stock at least a portion of which comprises cellulose-based fibrous stock, comprising the steps of: preliminarily shredding the cellulose based fibrous stock; refining a portion of said preshredded cellulose based fibrous stock in an air medium, at a concentration of at least 80% BD, such that the average length of the cellulose-based fibrous stock is in the range of from 0.3 to 2.5 mm; dispersing the refined portion of the cellulose-based fibrous stock in an aqueous medium to obtain a uniform fibrous suspension with a concentration of 1.5 to 6%; refining the remaining portion of the fibrous stock in an aqueous medium at a concentration of 1.5 to 40.0% BD to 15° to 60° SR whereafter both portions are intermixed to form a suspension; introducing additional fiber stock additives and water-repellant agents into the resulting suspension to formulate a furnish from said suspension and said additives and agents; forming a sheet from said furnish; pressing said sheet and drying the same, whereby a filtering material is produced having pores, 60 to 85% by volume of which have diameters which are within 5 microns of each other and are in the range of from 5 to 40 microns.

4,194,946

PROCESS FOR CONTINUOUSLY PREPARING FIBER REINFORCED CEMENT

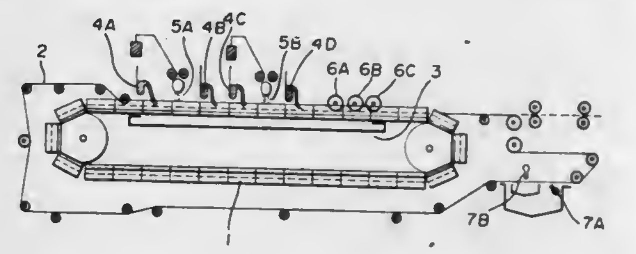
Toshihiro Ootani, Osaka; Mikio Kozuka; Ryuichiro Takeda, both of Yokohama, and Hideaki Kurihara, Kawasaki, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo and Nakashima Manufacturing Company, Ltd., Osaka, both of, Japan

Filed Sep. 27, 1977, Ser. No. 837,223

Claims priority, application Japan, Oct. 28, 1976, 51/128804

Int. Cl.² D21F *11/04*

U.S. Cl. 162—156 **9 Claims**



1. A process for continuously preparing a fiber reinforced cement, which comprises: forming a conveyer by connecting a plurality of suction boxes each having a perforated plate and each equipped with side wall members projecting above said perforated plate and continuously moving said conveyor; continuously moving a filter cloth at a synchronous speed with said conveyor into contact with said perforated plates immediately before a cementitious slurry is deposited on said filter cloth; sequentially and continuously feeding said cementitious slurry having a solids content of 5 to 60% at at least two positions onto said filter cloth and glass fiber at at least one position onto said filter cloth; uniformly mixing the deposited material by beating the material after it has been fed onto the filter cloth thereby forming a green, laminated sheet of cementitious material; confining the width of the deposited sheet by the side wall members of each suction box; removing excess water from said deposited sheet by applying suction to said suction boxes by a suction trough connected to a suction device; releasing the suction on the suction boxes so that the filter cloth can separate from the perforated plates as the filter cloth and conveyor continuously move and then separating the deposited sheet from the filter cloth; and continuously moving said conveyor so that said boxes are returned to the point at which said filter cloth comes into contact with said perforated plates of said suction boxes.

4,194,947

TRANSFERRING A WEB FROM A PICK-UP FABRIC TO A FLOW-THROUGH DRYING WIRE

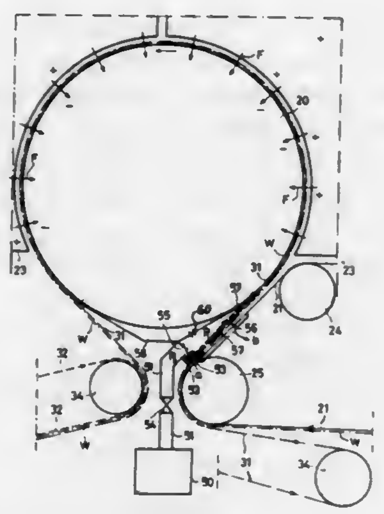
Markku Huostila, Nokia, and Timo Haapsaari, Keski-Palokka, both of Finland, assignors to Oy Nokia Ab & Valmet Oy, Helsinki, Finland

Filed Jul. 6, 1978, Ser. No. 922,274

Claims priority, application Finland, Jul. 8, 1977, 772149

Int. Cl.^{2} D21F ***5/18***

U.S. Cl. 162—207 **16 Claims**



1. A method in a paper making machine for transferring a web from a pick-up fabric to a flow-through drying wire and for transporting the web supported by said drying wire over a flow-through dryer cylinder,said drying wire engaging said drying cylinder, comprising the steps of:

passing a section of said flow-through drying wire over the web supported by the pick-up fabric defining a sandwich structure of the drying wire, the web and the pick-up fabric;

applying a first vacuum from a first vacuum member on said sandwich structure from the flow-through drying wire side thereof over a narrow first detaching zone;

deviating the direction of the pick-up fabric with respect to the flow-through wire;

applying a second vacuum from a second vacuum member over a second holding zone substantially immediately subsequent to said first detaching zone in the direction of web travel from the flow through drying wire side thereof,said first and second vacuums being supplied from the same source, and further including the step of providing means for fluidly communicating said first and second vacuum members and adjusting the relative magnitudes of the first and second vacuums by adjusting said fluid communication means.

7. Apparatus in a paper making machine for transferring a web from a pick-up fabric to a flow-through drying wire comprising:

a pick-up fabric for transporting a web;

a lead-in roller engaging said pick-up fabric;

a flow-through drying cylinder;

a flow-through drying wire having a draw defined between a section adapted to overlap the web supporting pick-up fabric on said lead-in roller and a section engaged on the flow-through drying cylinder;

means located adjacent said draw of said flow-through drying wire in the proximity of said lead-in roller for applying a first vacuum over a narrow first detaching zone of said flow-through wire draw; and

means located subsequent to said first vacuum applying means in the direction of web travel adjacent to said draw of said flow-through drying wire for applying a second vacuum over a second holding zone of said flow-through wire draw,said second vacuum applying means comprising a vacuum chamber having an air pervious guide surface located contiguous with said flow-through drying wire draw, said air pervious guide surface including a perforated stationary plate member.

4,194,948

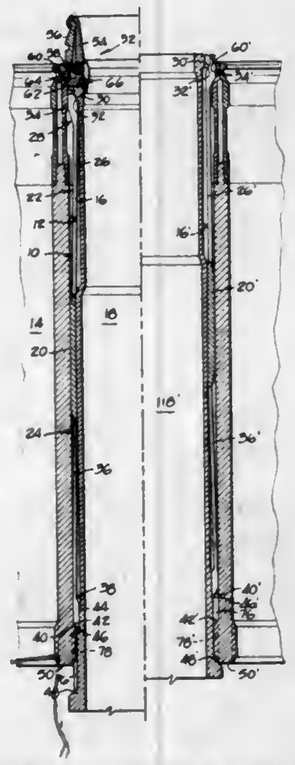
LOCKING SUPPORT FOR NUCLEAR FUEL ASSEMBLIES

Eric Ledin, San Diego, Calif., assignor to General Atomic, San Diego, Calif.

Filed Nov. 14, 1977, Ser. No. 851,470

Int. Cl.^{2} G21C ***13/04***

U.S. Cl. 176—87 **9 Claims**



1. A locking device for supporting and locking a nuclear fuel assembly in place upon a fuel core support plate, the fuel assembly having an elongated, generally tubular configuration and the support plate having a vertically arranged bore for receiving the fuel assembly, comprising

a suppport and locking sleeve having a continuous tubular portion disposed between the fuel assembly and the support plate bore, an upper portion of said sleeve having a plurality of upwardly extending fingers each forming at its upper end a contact surface facing radially inwardly and upwardly and a radially outwardly facing surface, a lower portion of said sleeve having a plurality of axially extending fingers each forming at its lower end a contact surface facing radially outwardly and downwardly and an opposed radially inwardly facing surface,

means on the fuel assembly forming an annularly tapered surface arranged for engagement with said contact surfaces on said upwardly fingers, and

means on the support plate bore forming an annularly tapered surface arranged for engagement with said contact surfaces on said downwardly extending fingers,

said upper and lower fingers being sized so that their opposed surfaces bear on the support plate bore and the fuel assembly surface respectively while their contact surfaces are in engagement with the tapered surfaces on the fuel assembly and support plate bore respectively.

4,194,949

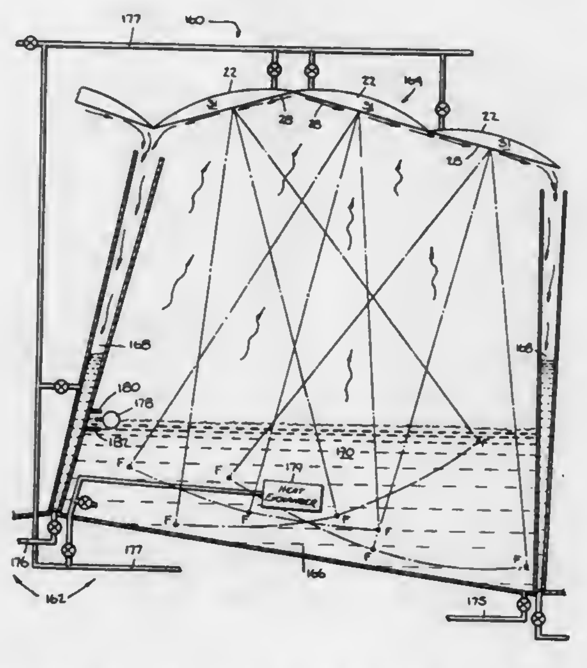
SOLAR DISTILLATION APPARATUS

Virgil Stark, 936 Fifth Ave., New York, N.Y. 10021

Continuation-in-part of Ser. No. 810,761, Jun. 30, 1977, Ser. No. 807,513, Jun. 20, 1977, and Ser. No. 806,291, Jun. 15, 1977, said Ser. No. 810,761, and Ser. No. 807,513, each is a continuation-in-part of Ser. No. 806,291, , said Ser. No. 810,761, is a continuation-in-part of Ser. No. 807,513,. This application Oct. 31, 1977, Ser. No. 845,862

Int. Cl.^{2} B01D ***3/00;*** **F24J** ***3/02***

U.S. Cl. 202—180 **18 Claims**



1. Apparatus for distillation of liquids using solar energy comprising:

first container means for containing a liquid to be distilled;

second container means for containing distilled liquid;

fluid lens means located above said first container means for concentrating the solar energy in at least one focus in said first container means to assist in the evaporation of said liquid therefrom, said fluid lens means defining an enclosure through which liquid to be distilled is passed and a planar lower surface extending at an angle with the horizontal and having a lower end disposed above said second container means, said planar surface being operative to condense evaporated liquid vapor thereon and transfer at least in part to said liquid being passed through said enclosure the heat of condensation released by condensing liquid vapor, whereby a substantial portion of the released heat of condensation is recovered, said planar surface being further operative to discharge condensed liquid vapor from said lower end into said second container means; and

means for passing the liquid to be distilled through said enclosure, said means for passing and said fluid lens means cooperating to discharge into said first container means said liquid to be distilled which has been passed through said enclosure at a rate which exceeds the rate at which said liquid is evaporated from said first container means such that the temperature of the liquid passed through said enclosure is maintained below the temperature of the evaporated liquid vapor.

4,194,950

LIQUID PURIFYING APPARATUS

Robert I. Zalles, Casilla Correo 966, La Paz, Bolivia

Filed Nov. 9, 1977, Ser. No. 849,931

Int. Cl.^{2} C02B ***1/04***

U.S. Cl. 202—185 R **12 Claims**

1. Liquid purifying apparatus comprising, in combination;

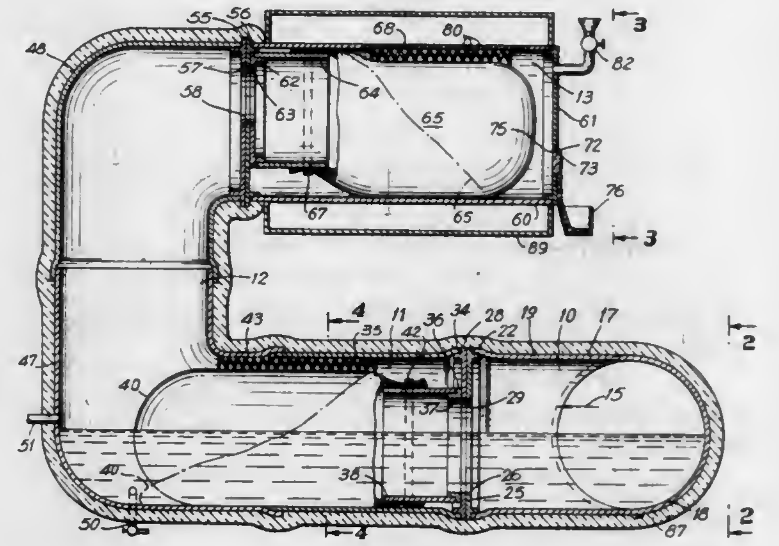
means defining an infeed chamber, an evaporator chamber and a condenser chamber arranged in that order along a flow path;

first bag means interposed across the flow path between the infeed chamber and the evaporator chamber, the first bag means being disposed substantially entirely in the evaporator chamber;

second bag means interposed across the flow path between the evaporator chamber and the condenser chamber, the second bag means being disposed substantially entirely in the condenser chamber;

each of the bag means comprising a flexible fibrous layer of a material which is highly absorbent with respect to the liquid to be purified;

means for introducing the liquid to be purified into said infeed chamber, the liquid flowing into the evaporator chamber to the interior of the first bag means and spreading over substantially all of the fibers in the first bag means to form thin liquid films around the individual fibers;



means for introducing gaseous fluid into the infeed chamber and through the first bag means into the evaporator chamber, the gaseous fluid passing over said individual fibers to vaporize the liquid films thereon;

the vapor in the evaporator chamber flowing through the second bag means into the condenser chamber and being condensed therein; and

means for recovering the condensate from the condenser chamber.

4,194,951

COKE OVEN QUENCHING CAR

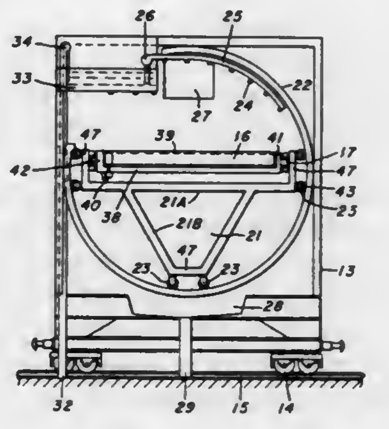
Erich Pries, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Mar. 14, 1978, Ser. No. 886,492

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712111

Int. Cl.^{2} C10B ***39/10, 39/14***

U.S. Cl. 202—227 **8 Claims**



1. A coke quenching apparatus including the combination of a coke quenching car movable along a battery of coke ovens and adapted to receive and quench a carbonized coke cake from said ovens, said car carrying a substantially gas-tight enclosure having door means at opposite ends thereof, a quenching tank

disposed within said enclosure, said quenching tank being generally rectangular and having interior dimensions corresponding substantially to those of a coke cake to be quenched, one side of the tank being solid and one side being formed from a water-permeable grid, at least one end of the tank comprising door means to permit passage of a coke cake therethrough, water spray means in the enclosure adapted to spray water uniformly over the tank, and means for rotatably mounting the tank in the enclosure for movement between a vertical position wherein the sides of the tank are vertically disposed for receiving or discharging coke and a horizontal position for quenching the coke in which said solid side is below said water-permeable grid, whereby said water passes into the tank through said grid and is retained in the tank to completely immerse the coke cake.

4,194,952

PROCESS FOR REGENERATING WASTE SULFURIC ACID

Kurt Bodenbenner, Wiesbaden, and Helmold von Plessen, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 8, 1977, Ser. No. 858,899

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656236

Int. Cl.^{2} C01B *17/90;* **B01B** *1/02;* **B01D** *19/02*

U.S. Cl. 203—12 **4 Claims**

1. In a process for the concentration of aqueous waste sulfuric acid by evaporating water therefrom during which the acid tends to foam, the improvement which comprises adding to, prior to or during said concentration by evaporation but subsequent to contamination of the waste acid, and maintaining in said acid an amount of defoamer consisting of an agent selected from the group consisting of alkylsulfonic acids and the salts thereof, monoalkylbenzene monosulfonic acids, the alkyl moiety of each said monosulfonic acid being of from 6 to 20 carbon atoms, and the salts thereof, monoalkylbenzene disulfonic acids, the alkyl moiety of each said disulfonic acid being of from 6 to 20 carbon atoms, and the salts thereof, and mixtures thereof, which is sufficient to effect suppression of the formation of foam.

4,194,953

PROCESS FOR PRODUCING CHLORATE AND CHLORATE CELL CONSTRUCTION

David G. Hatherly, Mississauga, Canada, assignor to Erco Industries Limited, Islington, Canada

Filed Feb. 16, 1979, Ser. No. 12,593

Int. Cl.^{2} C25B *1/26, 9/00*

U.S. Cl. 204—95 **19 Claims**

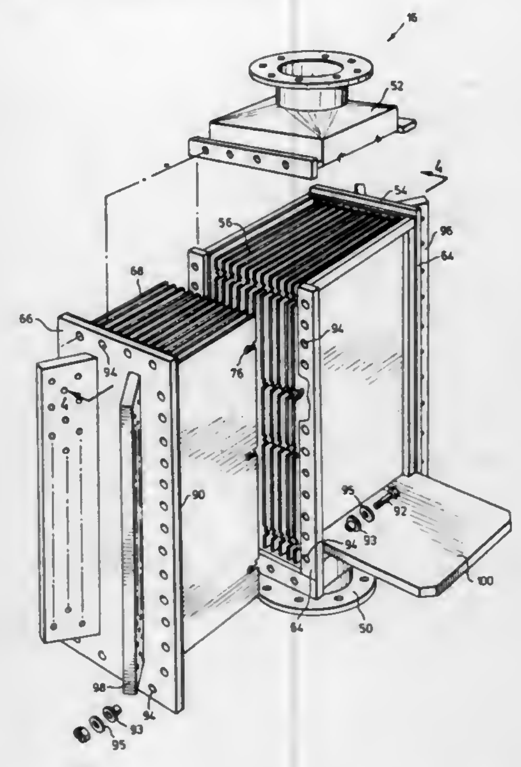
1. A method for the production of sodium chlorate, which comprises

feeding sodium chloride solution to be electrolyzed in parallel from a single make-up source to a plurality of sodium chlorate-producing zones,

removing sodium chlorate solution in parallel from said plurality of sodium chlorate-producing zones to form a single sodium chlorate stream,

each of said sodium chlorate-producing zones comprising a single reaction zone to which said sodium chloride solution to be electrolyzed is fed and from which said sodium chlorate solution is removed, and a plurality of diaphragmless electrolysis zones each connected to said single reaction zone for flow of liquor for electrolysis rich in sodium chloride from said reaction zone into the respective electrolysis zone and for flow of electrolyzed liquor lean in sodium chloride from the respective electrolysis zone into said reaction zone,

establishing said single make-up source of sodium chloride solution by adding fresh sodium chloride solution to part of said single sodium chlorate stream, adjusting the pH of the resulting mixed solution to a value required for electrolysis and subjecting the pH adjusted mixed solution to heat exchange to provide said single make-up source with the required temperature, and



recovering the remainder of said single sodium chlorate stream as the product of said method.

4,194,954

ELECTROLYTIC ETCH PREPARATION OF SEMICONDUCTOR SURFACES

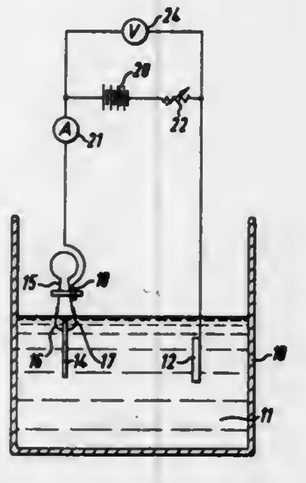
Marc M. Faktor, Hertfordshire, and John L. Stevenson, Suffolk, both of England, assignors to The Post Office, London, England

Filed Mar. 8, 1978, Ser. No. 884,388

Claims priority, application United Kingdom, Mar. 11, 1977, 10455/77

Int. Cl.^{2} C25F *3/12*

U.S. Cl. 204—129.3 **12 Claims**



1. A method of preparing a surface of a semiconductor by etching with a two-component electrolyte comprising:

immersing a semiconductor and a spaced electrode in a two component non-aqueous electrolyte and establishing a potential between said semiconductor and said electrode;

forming an oxide coating on the semiconductor with a first component of the electrolyte; and

dissolving said oxide coating with the second component of the electrolyte.

4,194,955

ULTRAVIOLET CURABLE SELF-PIGMENTED COATING COMPOSITION

Michael T. Nowak, Westfield, and Charles B. Rybny, Somerset, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,203

Int. Cl.^{2} C08F *8/00, 2/50;* **C08G** *2/02*

U.S. Cl. 204—159.15 **3 Claims**

1. A light-transmissive coating composition which is ultraviolet radiation curable to a white opaque film comprising (1) between about 5 and 20 weight percent of polyvinyl butyral, (2) between about 35 and 45 weight percent of vinyl acetate, (3) between about 35 and 45 weight percent of polymerizable monomer selected from trimethylolpropane triacrylate and pentaerythritol triacrylate, and (4) between about 1 and 10 weight percent of an ultraviolet-sensitive photoinitiator.

4,194,956

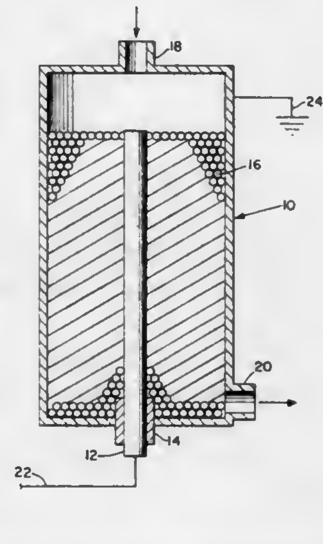
METHOD FOR DEWAXING HIGH-RESISTIVITY OILS

Edward S. Seguine, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 22, 1978, Ser. No. 972,643

Int. Cl.^{2} B03C *5/00;* **C25B** *7/00*

U.S. Cl. 204—186 **15 Claims**



1. A method of dewaxing a high-resistivity refined vegetable oil free of significant amounts of dispersed water to provide a dewaxed clear liquid vegetable oil having excellent refrigerator clarity, said method comprising the steps of:

(a) tempering said refined vegetable oil at a sufficiently cool temperature until said waxes nucleate and begin crystal growth, wherein said nucleation temperature is from about 25° C. to about 50° C., and wherein said oil is tempered for at least about 12 hours,

(b) growing said nucleated wax crystals at an appropriately cool temperature until said wax crystals are large enough to be electrostatically removed by dielectrophoretic filtration, wherein said growing temperature is from about 0° C. to about 28° C. for at least about 1 hour, and

(c) passing said cooled oil of step (b) through an electrofilter at an appropriate flow rate sufficient to trap said crystallized waxes in said electrofilter to provide said dewaxed vegetable oil having excellent refrigerator clarity, said electrofilter comprising an electrostatic field and a wax trapping filter means for dielectrophoretic filtration.

4,194,957

APPARATUS FOR THE ELECTROLYTIC TREATMENT OF METALLIC PARTS

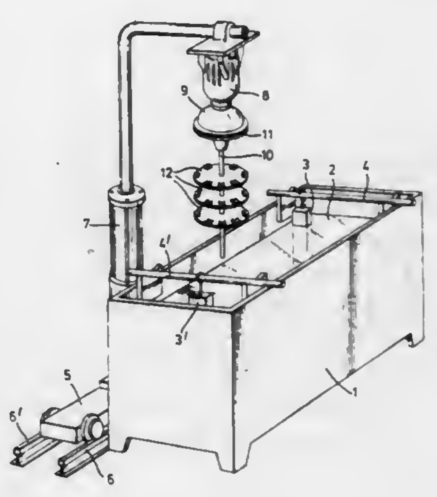
Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed Jul. 11, 1978, Ser. No. 923,529

Claims priority, application France, Jul. 20, 1977, 77 22333

Int. Cl.^{2} C25D *17/06, 17/22*

U.S. Cl. 204—199 **9 Claims**



1. Apparatus for the electrolytic treatment of metallic parts comprising:

(a) an electrolytic treatment tank,

(b) an electrode which is connected to one pole of an electrical sourse,

(c) an axially rotatable insulating plate to support the parts to be treated in the tank, the plate having elongated radial stud holes which are regularly spaced in the vicinity of its periphery and means at its periphery connected to the electrode,

(d) means for feeding in turn each part to a radial stud hole, and

(e) means for rotating the plate about its axis at a speed which is sufficient to produce by centrifugal force a radial displacement of the parts towards the periphery of the plate to contact the peripheral electrode connection means.

4,194,958

ARRANGEMENT FOR COMPENSATING FOR DETRIMENTAL MAGNETIC INFLUENCE BETWEEN TWO OR MORE ROWS OF TRANSVERSE ELECTROLYTIC POTS OR CELLS FOR PRODUCING ALUMINUM, BY ELECTROLYTIC REDUCTION

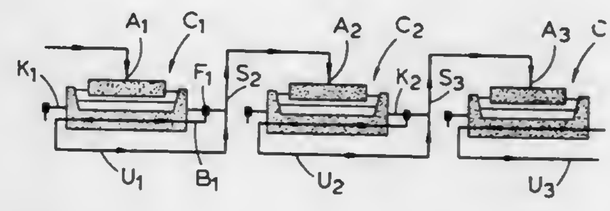
Hans G. T. Nebell, Snaroya, Norway, assignor to Ardal og Sunndal Verk a. s., Oslo, Norway

Filed Oct. 6, 1978, Ser. No. 949,381

Claims priority, application Norway, Oct. 19, 1977, 773589

Int. Cl.^{2} C25C *3/16, 3/06*

U.S. Cl. 204—243 M **2 Claims**



1. In an electrolytic pot line for producing aluminum by electrolytic reduction, said pot line being of the type having at least first and second parallel rows of pots, means for supplying electric current to said pot line for the operation of said pots, each of said pots extending transverse to the longitudinal direction of the respective said row and having upstream and downstream, taken in the direction of current flow, longer sides extending transverse to said longitudinal direction and first and

second shorter sides extending parallel to said longitudinal direction, each said pot having an anode and a cathode, said cathode of each said pot having on said upstream and downstream longer sides thereof a plurality of cathode taps, each said pot having upstream and downstream transverse bus bars extending transverse to said direction of the respective said row for collecting electric current from said cathode taps on said respective upstream and downstream longer sides, each said pot having at least two current conductors extending underneath said pot for carrying a first major portion of the electric current from the respective said upstream transverse bus bar to the next succeeding pot in the respective said row, whereby the current flowing through a first said row may be subjected to a detrimental magnetic influence by current flowing through a second of said rows positioned laterally on one side of said first row, the improvement of a conductor arrangement for compensating for said detrimental magnetic influence, said conductor arrangement comprising:

for each said pot in said first row, compensation conductor means for carrying a second minor portion of said electric current from said respective upstream transverse bus bar to said next succeeding pot in said first row, said compensation conductor means entirely extending along the respective said shorter side of said pot facing said second row.

4,194,959
ELECTROLYTIC REDUCTION CELLS

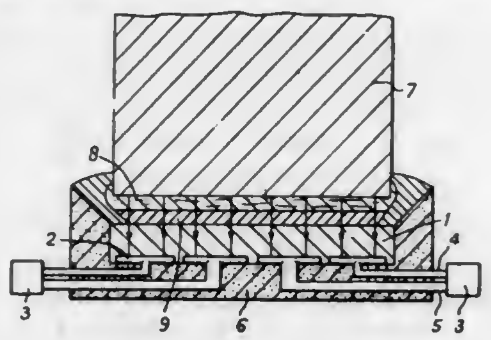
Thomas J. Hudson, Arvida; Jean-Paul R. Huni, Kingston; Vinko Potocnik, and Donald W. MacMillan, both of Arvida, all of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Nov. 16, 1978, Ser. No. 961,200

Claims priority, application United Kingdom, Nov. 23, 1977, 48800/77

Int. Cl.^{2} C25C *3/06, 3/16*

U.S. Cl. 204—243 R **5 Claims**



1. An electrolytic reduction cell for the production of aluminium, said cell having a carbonaceous floor which constitutes the cell cathode, means for supporting a body of molten electrolyte and a pad of molten metal over said floor and anode means arranged to contact such electrolyte, said cell being provided with longitudinally arranged line conductors extending along both longitudinal sides of said cell for connection to said floor cathode at longitudinally spaced positions therealong; wherein the improvement comprises: a plurality, greater than two, of separate metallic collector members at each of said positions, said carbonaceous floor being arranged in electrical connection with said collector members, said separate metallic collector members being spaced apart and extending laterally of said cell at each of said positions and arranged symmetrically with relation to the longitudinal centre line of the cell; and a plurality of connector members, one for each collector member, each of said collector members being electrically connected intermediate its ends to a connector member, leading to a line conductor and electrically insulated with regard to said floor, the resistance of the connection between each collector member and the associated line conductor being sized to provide a desired current distribution and reduced transverse current flow in the pad of molten metal in the region of such collector member.

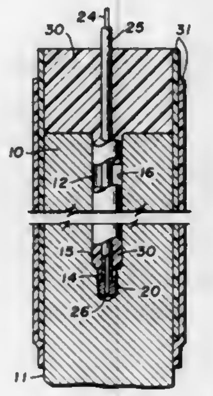
4,194,960
ELECTRICAL CONNECTION FOR ELECTRODES

Roy H. Bleikamp, Jr., Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 21, 1978, Ser. No. 926,674

Int. Cl.^{2} C25D *17/10*

U.S. Cl. 204—280 **4 Claims**



1. An electrical connection between an electrical cable and an electrode comprising:

- an electrode, said electrode having an end having a hole drilled axially;
- an electrical cable, said electrical cable having insulation, said insulation being stripped from a portion of said electrical cable to form said electrical connection;
- an annular slug of an electrically conductive material, said annular slug being disposed about said stripped portion of said electrical cable and said stripped portion of said electrical cable and said annular slug being disposed within said hole within said electrode, said annular slug being compressed within said hole;
- a first insulating material filling said hole within said electrode and extending therefrom; and
- at least one layer of a second insulating material placed about the portion of said electrode enclosing said electrical connection to protect said electrode about said electrical connection from chemical attack.

4,194,961
ELECTRODE SPACER ELEMENT

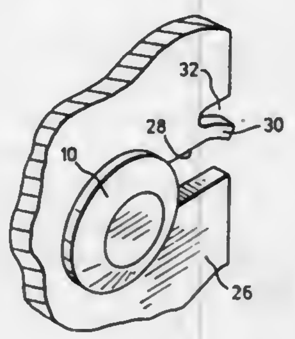
Roy E. Williams, Mississauga, Canada, assignor to Erco Industries Limited, Islington, Canada

Filed Feb. 16, 1979, Ser. No. 12,594

Claims priority, application United Kingdom, Sep. 29, 1978, 38671/78

Int. Cl.^{2} C25B *13/02*

U.S. Cl. 204—286 **10 Claims**



1. In an assembly of closely-spaced electrode plates in an electrolytic cell, a plurality of electrically-insulating one-piece spacer elements mounted on said plates and spacing the electrode plates apart from each other, each of said spacer elements comprising:

- an elongate shank portion of length slightly greater than the thickness of said electrode plate, and
- a head portion integrally formed at each end of said shank portion and having an inner substantially planar surface to engage the adjacent outer surface of said electrode plate when assembled therewith and an outer substantially planar surface substantially parallel to said inner surface to engage an electrode plate to be spaced from said first-mentioned electrode plate, each said head portion having a maximum transverse dimension greater than the maximum transverse dimension of said shank portion.

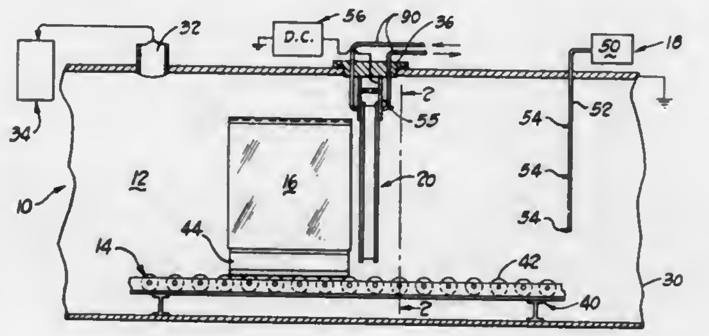
4,194,962
CATHODE FOR SPUTTERING

Douglas L. Chambers, and Chong T. Wan Wan, both of Nashville, Tenn., assignors to Advanced Coating Technology, Inc., Franklin, Tenn.

Filed Dec. 20, 1978, Ser. No. 971,196

Int. Cl.^{2} C23C *15/00*

U.S. Cl. 204—298 **16 Claims**



1. A sputtering cathode comprising:

(a) an elongated electrically conductive support structure;

(b) sputtering target means defining a band-like target face extending longitudinally of and circumferentially about said support; said target face comprising:

- (i) first and second target face portions extending along the length of said support structure, said face portions facing away from said support structure in different directions; and,
- (ii) first and second bridging face portions extending between adjacent respective ends of the target face portions;

(c) electrical connector structure for connecting said support structure to an electric power supply to enable emission of electrons from said cathode; and

(d) magnetic means for confining electrons emitted from the cathode to a belt-like region extending about the cathode adjacent but spaced from said target and bridging face portions, said magnetic means comprising members extending longitudinally along said support structure and along respective lateral sides of said target face portions, said members effective to direct magnetic fields across said target face portions so that said belt-like region extends substantially completely across the lateral extent of said face portions.

4,194,963
ELECTROPHORESIS APPARATUS

W. Donner Denckla, 405 Commonwealth Ave., Newton Ctr., Boston, Mass.

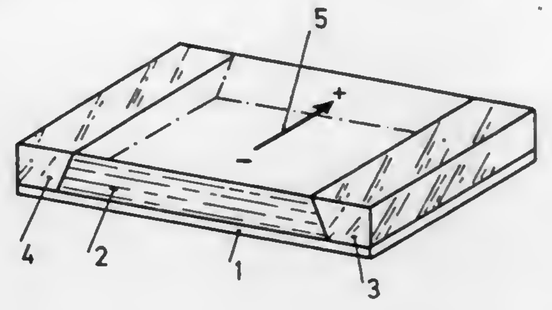
Filed Nov. 2, 1978, Ser. No. 957,222

Claims priority, application Sweden, Nov. 4, 1977, 7712499

Int. Cl.^{2} G01N *27/28*

U.S. Cl. 204—299 R **4 Claims**

1. Electrophoresis apparatus provided with two end walls each bearing an electrode device, two side walls and a cooled bottom wall, the walls and the bottom forming a chamber intended to contain a conductive medium, characterized in that said side walls are wedge shaped and made of an electric nonconductive material the minimum transverse width of the wall being adjacent to the cooled bottom wall and the maximum transverse width at the point remote from said bottom wall.



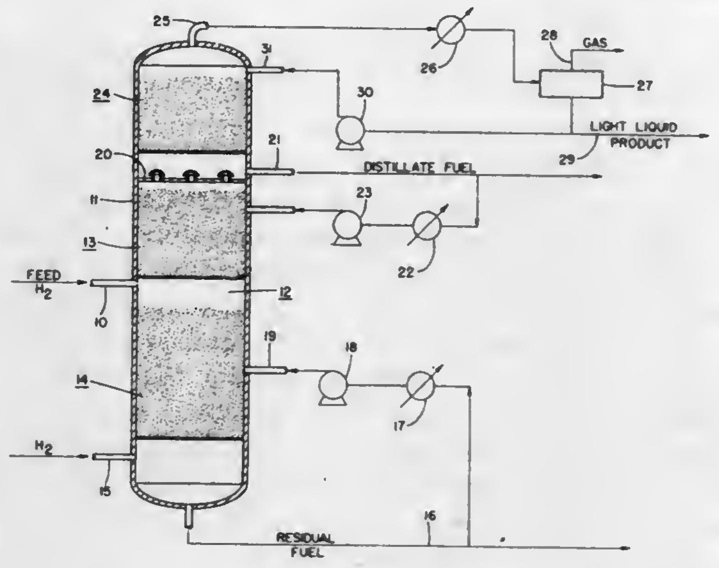
4,194,964
CATALYTIC CONVERSION OF HYDROCARBONS IN REACTOR FRACTIONATOR

Nai Y. Chen, Titusville, N.J., and Ikai Wang, Hsinchu, Taiwan, assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 10, 1978, Ser. No. 922,915

Int. Cl.^{2} C10G *13/02, 37/06, 23/02*

U.S. Cl. 208—108 **8 Claims**



1. A process for simultaneous distillation and hydrocracking of heavy hydrocarbon feeds stocks boiling predominantly above about 650° F. which comprises introducing said stocks to an intermediate point as the sole hydrocarbon feed in a vertical column of a hydrocracking catalyst on a porous solid support, introducing hydrogen to said column below said intermediate point for flow upwardly in said column at a rate sufficient to act as a stripping medium between about 500 and 25,000 standard cubic feet of hydrogen per barrel of said feedstock, maintaining a temperature gradient in said column from a maximum below said intermediate point by reason of exothermic heat of hydrocracking to a minimum thereabove whereby higher rolling constituents of said stocks are caused to flow downwardly as liquid counter-current to said hydrogen at hydrocracking conditions of 300 to 3000 psig, LHSV of 0.25 to 2 and temperature of 600°-1000° F. while lighter constituents and hydrocracking conversion products are caused to flow upwardly as vapor concurrent with said hydrogen resulting in fractional distillation of feed stocks and conversion products in said column, withdrawing liquid hydrocarbon products from the bottom of said column, withdrawing distillate hydrocarbon product vapor from the top of said column, condensing said product vapor and recycling such condensed liquid product as reflux to the top of said column for temperature control.

4,194,965

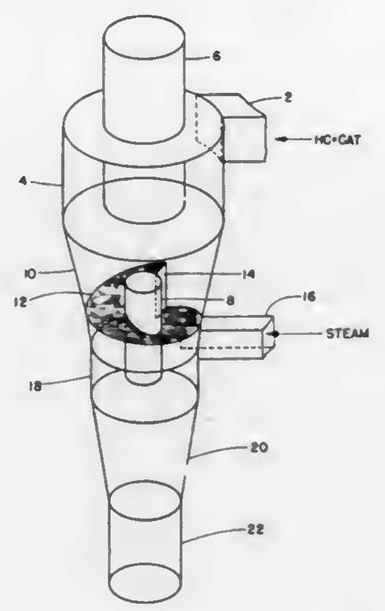
FLUID CATALYTIC CRACKING

Ronald P. Billings, Clementon, and Ellen M. Hysell, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,441

Int. Cl.^{2} C10G *11/04;* B01D *15/06;* B01J *23/64*

U.S. Cl. 208—113 **4 Claims**



1. In a process for catalytically converting hydrocarbons in the heat balanced FCC mode by suspending hot freshly regenerated catalyst in a stream of hydrocarbons to be converted, passing the suspension of hydrocarbons and catalyst upwardly through a riser conversion zone under elevated temperature conversion conditions, sensing the temperature at the top of said conversion zone, passing the suspension from the riser conversion zone directly into a cyclonic separation zone wherein a separation is made between catalyst particles and vaporous hydrocarbon products, passing the catalyst thus separated substantially immediately through an annular zone in contact with a stripping gas, passing stripping gas and stripped products separated from said catalyst in said annular zone upwardly through an open end restricted passageway in open communication with a passageway for removing separated hydrocarbon vapors from said cyclonic separation zone, subjecting catalyst so stripped to regeneration in a regeneration zone wherein the catalyst is contacted with air at elevated temperature to burn carbonaceous deposits therefrom whereby the catalytic activity is restored and the catalyst is heated by said burning, recycling the hot regenerated catalyst to said first stage for suspension in said stream of hydrocarbons, passing gaseous products of combustion from said regeneration to boiler means for recovery from said combustion products of heat values thereof, the capacity of said boiler means constituting a constraint on the volume of gaseous products of combustion which may be passed thereto from said regeneration and controlling the rate of recycling said hot regenerated catalyst responsive to the temperature sensed at the top of said conversion zone in a manner to maintain the temperature so sensed substantially constant:

the improvement which comprises conducting said regeneration under conditions to convert carbon monoxide in said regeneration zone including an amount of air adequate for so converting carbon monoxide and in contact with a sufficient amount of catalyst that a major portion of the heat generated by combustion of carbon monoxide is absorbed by said catalyst, said combustion of carbon monoxide being such that the gaseous products of combustion discharged from said regeneration zone has a ratio of carbon dioxide to carbon monoxide of at least 2 to 1.

4,194,966

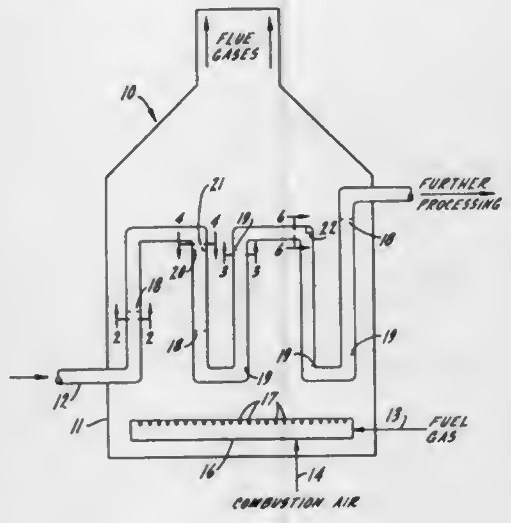
APPARATUS AND METHOD FOR IMPROVED FLUID DISTRIBUTION IN A TUBE OF A DIRECT FIRED HEATER

Robert R. Edison, Olympia Fields, and Thorpe Dresser, Markham, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 745,884, Nov. 29, 1976, which is a continuation of Ser. No. 599,271, Jul. 25, 1975, abandoned. This application Jul. 14, 1978, Ser. No. 925,001

Int. Cl.^{2} C10G *9/14, 9/20*

U.S. Cl. 208—132 **4 Claims**



1. In a process wherein at least one hydrocarbon product is recovered which includes the steps of transferring heat at least partially to a hydrocarbon liquid-vapor mixture flowing in at least one tube of said direct fired heater to vaporize at least a portion of said hydrocarbon liquid within said tube; and recovering at least one hydrocarbon product derived from said liquid-vapor mixture: the improvement which comprises causing said hydrocarbon liquid-vapor mixture to flow through at least one tube of a direct fired heater; abruptly reducing the inside cross-sectional area of said tube available to said flow, and causing said mixture to flow through substantially the same tube inside cross-sectional area both before and after said abrupt reduction, said reduction in cross-sectional area being sufficient to inhibit the formation of local areas of said tube which are at an elevated temperature relative to the temperature of said tube immediately surrounding said areas.

4,194,967

HYDROCARBON HYDROREFINING PROCESS UTILIZING A NON-STOICHIOMETRIC VANADIUM SULFIDE CATALYST

John G. Gatsis, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 9, 1979, Ser. No. 18,971

Int. Cl.^{2} C10G *23/02*

U.S. Cl. 208—215 **4 Claims**

1. A process for hydrorefining a hydrocarbon charge stock which comprises reacting an admixture of said charge stock with hydrogen and with non-stoichiometric vanadium sulfide catalyst which is prepared according to the following method:

(a) contacting vanadium oxide with ammonium sulfide at a temperature and pressure sufficient to form an ammonium salt of the vanadium sulfide;

(b) thermally decomposing the resulting ammonium salt of the vanadium sulfide derived from step (a) in a non-oxidative atmosphere; and

(c) recovering said vanadium sulfide catalyst from step (b).

4,194,968

METHOD AND APPARATUS FOR SEPARATING MAGNETIC PARTICLES FROM WASTE PAPER

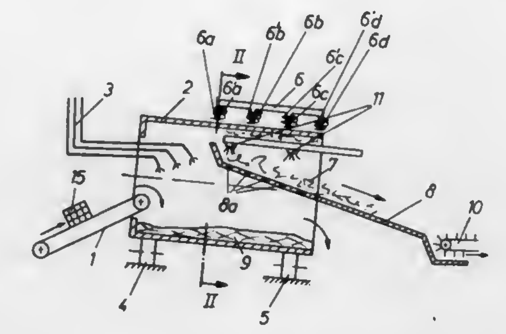
Lothar Pfalzer, and Siegbert Fischer, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,192

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1977, 2750191

Int. Cl.^{2} B03C *1/14*

U.S. Cl. 209—3 **9 Claims**



1. Apparatus for processing waste paper comprising an open ended drum supported for rotation about its axis arranged substantially horizontally, means for feeding waste paper into one end of said drum, said drum carrying means for lifting and dropping material during rotation thereof, means for magnetically adhering ferromagnetic particles, which may be mixed with said waste paper to only a first arcuate portion of the wall of said drum and releasing adhered particles for the remaining arcuate portion thereof, said arcuate portion extending downwardly from the upper portion of said drum and being on the side of the drum which is moving upwardly, and means for collecting such particles as they drop from the upper portion of said drum, thereby separating such particles from the waste paper, said collecting means including an inclined trough extending from an upper position adjacent said drum through the other end thereof to a lower position, whereby material collected from said drum gravitates down said trough to the exterior of said drum, means for introducing treating solutions into said drum, said trough having a multiplicity of perforations in the bottom thereof, and further means for applying a liquid medium into said trough for increasing the liquidity of the material in said trough.

4,194,969

ORE BENEFICIATION PROCESS

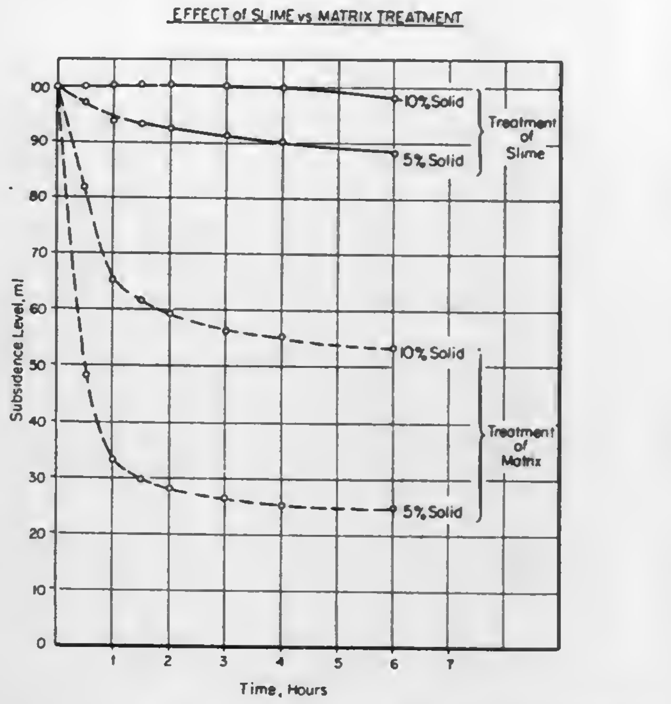
Harold S. Chung, Lawrenceville; George C. Johnson, Princeton, and Tracy J. Huang, Trenton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 5, 1977, Ser. No. 812,972

Int. Cl.^{2} B03D *3/06*

U.S. Cl. 209—5 **10 Claims**

1. A method of substantially modifying the formation of slimes during beneficiation of a Florida phosphate ore matrix, the method comprising adding to a matrix slurry, prior to washing or classification, an electrolyte solution comprising a water soluble metal salt, the metal cation of said salt being Al, Ca, Mg or Zr.



4,194,970

METHOD FOR SCREENING PARTICULATE MATERIALS

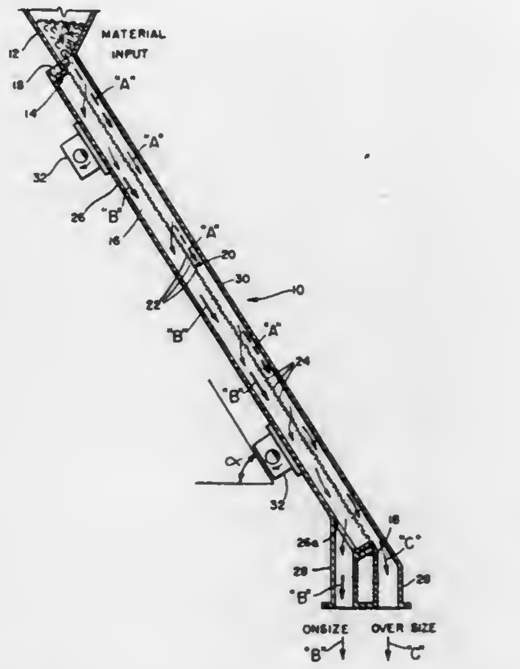
Arthur G. Clem, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Continuation-in-part of Ser. No. 768,157, Nov. 21, 1978, Pat. No. 4,126,543. This application Aug. 21, 1978, Ser. No. 935,144

The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.

Int. Cl.^{2} B07B *1/28*

U.S. Cl. 209—263 **8 Claims**



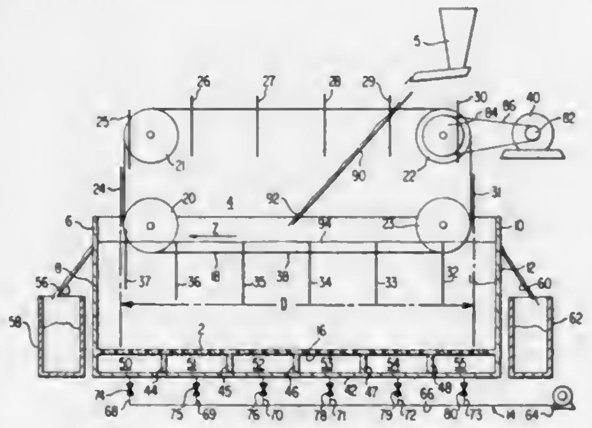
1. A method of screening materials including solid particles to separate on size and oversize particles comprising the steps of:

rapidly flowing said material including said solid particles downwardly along an upper surface of a screen mesh sloped at an angle in the range of 40°-60° with respect to horizontal and having openings larger than a predetermined maximum dimension desired for on size particles intended to pass through said mesh; and

repeatedly redirecting particles of said flowing material that are bouncing away from said screen mesh back toward said openings in said screen mesh by bouncing said particles off a substantially impervious rebound shield spaced above and substantially parallel to the upper surface of said screen mesh at a distance in the range of greater than one and not more than three times the diameter of the largest particle screened.

4,194,971
METHOD OF SORTING FLUIDIZED PARTICULATE MATERIAL AND APPARATUS THEREFOR

Jan M. Beeckmans, London, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada
Filed Sep. 5, 1978, Ser. No. 939,811
Claims priority, application United Kingdom, Sep. 13, 1977, 38112/77
Int. Cl.² B03B *4/00*
U.S. Cl. 209—467 **2 Claims**

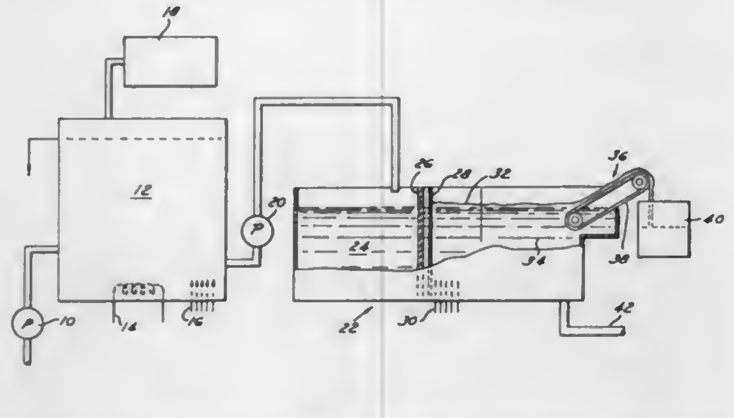


1. A method of sorting fluidized particulate material which comprises:
(a) feeding particulate material to an elongated, horizontally extending container having a gas permeable base and at least a major, intermediate lengthwise extending portion of the interior thereof for fluidized particulate material above the gas permeable base unobstructed by the container for the flow of fluidized particulate material therealong towards both a first end and a second end thereof,
(b) fluidizing a bed of the particulate material in the container,
(c) moving at least paddles attached to a lower side of a looped endless flexible member, along the container and only through the portion of the fluidized bed in the said at least major, intermediate lengthwise extending portion so that an upper portion of the fluidized bed is moved towards the first end while a lower portion of the fluidized bed is moved towards the second end thereby causing a progressive enrichment of the fluidized bed in lighter particles towards the first end with reflux of lighter particles therefrom, and a progressive enrichment of the fluidized bed in heavier particles towards the second end with reflux of heavier particles therefrom,
(d) removing particulate material from the first end, and
(e) removing particulate material from the second end.

4,194,972
METHOD FOR BREAKING AN OIL-IN-WATER EMULSION

Marvin H. Weintraub, Oak Park; Matthew A. Dziecinch, Dearborn Heights, both of Mich., and Roy L. Gealer, Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation-in-part of Ser. No. 754,790, Dec. 27, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 821,009
Int. Cl.² C02B *1/20;* **C02C** *5/04*
U.S. Cl. 210—43 **3 Claims**

1. A method of breaking an oil-in-water emulsion which comprises:
establishing a porous ferrous ion producing electrode;
locating a supply of oil-in-water emulsion on one side of said porous ferrous ion producing electrode, said supply of the oil-in-water emulsion being substantially free of ferrous ions;
flowing a fixed volume of said supply of the oil-in-water emulsion through said porous ferrous ion producing electrode per unit of time;
flowing less than a passivating current per unit area of electrode through said porous ferrous ion producing electrode per unit of time, thereby to dissolve into said fixed volume of the oil-in-water emulsion ferrous ions in sufficient quantity to break the oil-in-water emulsion whereby said fixed volume of the oil-in-water emulsion is substantially free of ferrous ions on one side of said electrode, but has a uniformly dispersed amount of ferrous ions therein on the other side of said electrode;
oxidizing said uniformly dispersed ferrous ions in said fixed volume of the oil-in-water emulsion to ferric ions, the latter ions being effective in breaking the emulsion; and
permitting said ferric ions to break the oil-in-water emulsion.



4,194,973
METHOD OF LOWERING THE COLOR OF EFFLUENT WHICH CONTAINS ARYL AZO- OR ARYL NITRO-CONTAINING COMPOUNDS

Roy E. Smith, Mill Hall, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.
Continuation of Ser. No. 782,440, Mar. 29, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,164
Int. Cl.² C02B *1/20;* **C02C** *5/02*
U.S. Cl. 210—50 **8 Claims**

1. A method of treating effluent, which contains chromophoric aryl azo- and/or aryl nitro-containing compounds, to lower the color of the effluent to predetermined ecologically acceptable levels, said method consisting essentially of the step of contacting said effluent with an effective amount of a reducing substance consisting of Fe(II) in the presence of metallic iron at a pH in the range of from about 3 to about 7.5 and at a temperature of from about 40° C. to about 80° C. for a time sufficient to chemically reduce and destroy the chromophore of said aryl azo- and aryl nitro-containing compounds and lower the color of the effluent to the predetermined ecologically acceptable levels.

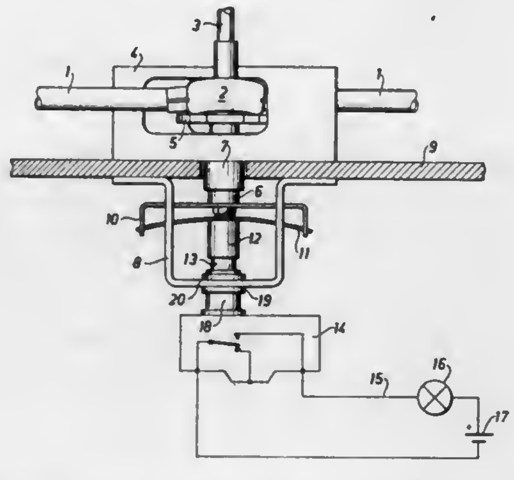
4,194,974
PRESSURE MONITORING DEVICE

Ulf L. P. Jonsson, Furulund, Sweden, assignor to Gambro AB, Lund, Sweden
Filed Dec. 5, 1977, Ser. No. 857,823
Claims priority, application Sweden, Dec. 3, 1976, 7613577
Int. Cl.² B01D *31/00*
U.S. Cl. 210—90 **24 Claims**

1. A pressure monitoring device adapted to couple a pressurized fluid conduit with a tripping device, said tripping device including a tripping switch movable between a first position in which a tripping signal is generated and a second position in which a tripping signal is not generated, and biasing means for biasing said tripping switch into said first position, the pressure monitoring device comprising:

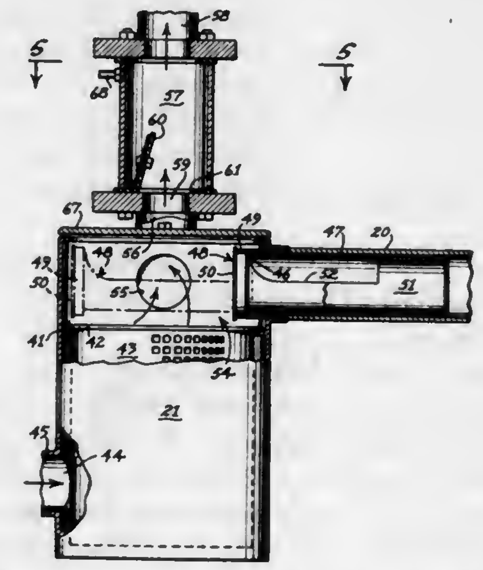
pressure transmission means operable in a first mode and in a second mode, said pressure transmission means when operating in said first mode being responsive to the pressure of the fluid in the pressurized fluid conduit, and when operating in said second mode being independent of the pressure of the fluid in the pressurized fluid conduit; and

coupling means operatively associated with said pressure transmission means and said tripping device for coupling said pressure transmission means to said tripping device, said coupling means being positionable in a first position and in a second position, said coupling means transmitting a pressure signal proportional to the pressure of the fluid in the pressurized fluid conduit to said tripping switch when said coupling means is positioned in said first position and said pressure transmission means is operating in said first mode whereby said tripping device generates a tripping signal when the pressure of the fluid passes a predetermined limit, and said coupling means biasing said tripping switch towards said second position independent of the pressure of the fluid in the pressurized fluid conduit when said coupling means is positioned in said second position.



4,194,975
BACKWASH SYSTEM FOR SWIMMING POOL

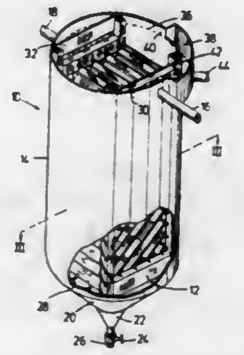
Marvin E. Baker, 815 Ewing Ave., Nashville, Tenn. 37203
Filed Jan. 8, 1979, Ser. No. 1,414
Int. Cl.² E04H *3/20;* **B01D** *23/26*
U.S. Cl. 210—108 **4 Claims**



1. A filtration backwash system for a swimming pool including a discharge line and a return line, comprising:
(a) a filter including a filter media and first and second filter ports on opposite sides of said filter media, said second filter port being in fluid communication with said return line,
(b) a strainer housing having a strainer member having opposite sides therein and a valve chamber on one side of said strainer member,
(c) a first strainer port in said strainer housing on the other side of said strainer member in fluid communication with said first filter port,
(d) a second strainer port in said valve chamber in fluid communication with said pool discharge line,
(e) a waste line in fluid communication with said valve chamber,
(f) a substantially vertically disposed discharge port in fluid communication with said waste line and having an upper valve seat,
(g) a discharge check valve member swingably mounted in said waste line above said discharge port operable only by gravity to close said discharge port, and operable to open said discharge port when the pressure below said valve member is greater than the combined weight of the check valve member and the liquid above said check valve member to permit flow of liquid only from said valve chamber outward through said waste line,
(h) a movable pressure-actuated valve operable to close said pool discharge line when the pressure within said valve chamber is greater than the pressure within said pool discharge line, and to open said pool discharge line when the pressure in said pool discharge line is greater than the pressure within the valve chamber, and
(i) reversible pump means for moving liquid in a normal direction through said pool discharge line, said open second strainer port, said strainer member, said first strainer port, said first filter port, said filter media, said second filter port and the return line, and in a reverse direction through the return line, said second filter port, said filter media, said first filter port, said first strainer port, said strainer member and said waste line.

4,194,976
GRAVITATIONAL SEPARATOR HAVING MEMBRANE BAFFLES THEREIN

Eli I. Robinsky, 66 Lytton Blvd., Toronto, Ontario, Canada
Filed Mar. 29, 1978, Ser. No. 891,184
Claims priority, application Canada, Oct. 5, 1977, 288155
Int. Cl.² B01D *43/00*
U.S. Cl. 210—137 **12 Claims**



1. A cross flow gravitational separator having membrane baffles therein to remove suspended solids from a liquid comprising:
(a) a vertically extending cylindrical tank having liquid inlet, a liquid outlet, and a bottom solids removal outlet,
(b) a single vertically extending membrane assembly having a rectangular horizontal cross section, the membrane assembly being received in the cylindrical tank to form separate vertically extending arc-shaped segments between the membrane assembly and the tank wall including an inflow segment in communication with the liquid inlet, an oppositely located outflow segment in communication with the liquid outlet, and a solids receiving segment in communication with the solids removal outlet,
(c) a plurality of substantially parallel spaced membranes extending across the membrane assembly, the membranes sloping downwardly towards the solids receiving segment,
(d) first liquid flow distributor means located between the inflow segment and the membrane assembly whereby the liquid from the liquid inlet is distributed to flow between

the membranes from the inflow segment to the outflow segment, the direction of flow being across the slope of the membranes, and

(e) means restricting flow from the membrane assembly to the solids receiving segment.

4,194,977

EXPRESSING PLATE FOR USE IN FILTER PRESS

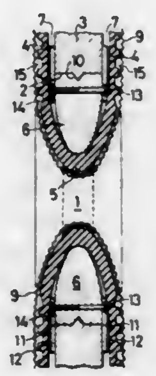
Shin-ichi Kubota, Osaka, and Masayuki Horimoto, Sakai, both of Japan, assignors to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Apr. 18, 1979, Ser. No. 31,028

Claims priority, application Japan, May 17, 1978, 53-59415

Int. Cl.^{2} B01D *25/12*

U.S. Cl. 210—231 **8 Claims**



1. An expressing plate for use in a filter press including a core plate with a prefilt passage throughgoing bore formed at the center thereof, and a pair of flexible fluid-tight sheets applied to the front and back of said core plate and connected together by a cylindrical portion extending through said throughgoing bore to define a prefilt passage bore, said expressing plate being characterized by comprising an annular body fitted between the inner periphery of the throughgoing bore and the outer periphery of the cylindrical portion of the pair of flexible fluid-tight sheets, and slipping-off preventing members applied to the front and back of the fitting boundary region between the core plate and the annular body to extend over both the core plate and the annular body, said slipping-off preventing members being fixed to at least either the core plate or the annular body.

4,194,978

METHOD AND DEVICE FOR REMOVING SOLID AND/OR LIQUID MEANS CONTAINING HARMFUL SUBSTANCES

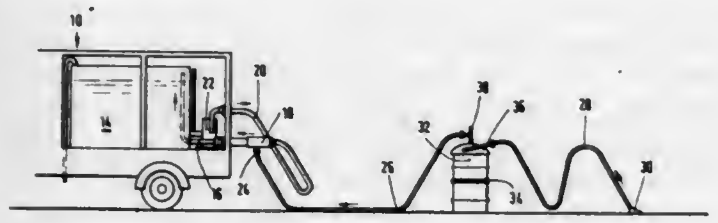
Erhard Crema, Leuchte 96, Frankfurt am Main, Fed. Rep. of Germany (6000)

Filed Dec. 22, 1978, Ser. No. 972,462

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758038

Int. Cl.^{2} B04C *1/00*

U.S. Cl. 210—242 S **12 Claims**



1. A system for removing harmful solid and/or liquid matter from a surface, comprising, a separator means including an inlet for sucking said matter from said surface, a container for containing said matter after said sucking, and an outlet; a reservoir containing water; pump means including ejector means having a first inlet for feeding water from said reservoir, a second inlet for sucking fluid from the outlet of said separator means and an outlet means for discharging water into said reservoir, the pumping means pumping water from and back into the reservoir in a closed loop circulation to create a vacuum at said first-mentioned inlet.

4,194,979

DRY CHEMICAL FIRE EXTINGUISHING POWDER CONTAINING ALKALI METAL GLUCONATE

Harald Gottschall, Hartwigstrasse 16, Schwäbisch Hall-Steinbach, Fed. Rep. of Germany

Filed Apr. 27, 1978, Ser. No. 901,016

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1977, 2728076

Int. Cl.^{2} A67D *1/00*

U.S. Cl. 252—7 **8 Claims**

1. A dry chemical fire extinguishing powder comprising as an active ingredient thereof a significant content of a substance selected from the group consisting of alkali salts of gluconic acid and its stereoisomers, the remainder, if any, of said powder, other than active ingredients and inert materials, consisting of at least one material selected from the group consisting of flowing agents and hydrophobic agents.

4,194,980

SULFURIZED OLEFIN LUBRICANT ADDITIVES AND COMPOSITIONS CONTAINING SAME

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,913

Int. Cl.^{2} C10M *1/38*

U.S. Cl. 252—45 **30 Claims**

1. A lubricating oil composition or grease prepared therefrom containing a major amount of a lubricating oil and a minor amount sufficient to improve extreme pressure properties thereof of a modified polysulfurized olefin produced by (1) reacting sulfur monochloride with an olefin having from 2 to 6 carbon atoms, reacting the product of that reaction with an alkali metal monosulfide and optionally free sulfur, wherein the ratio of the moles of alkali metal sulfide to the gram-atoms of free sulfur is from about 1.8 to about 2.2:1, and reacting the resulting product with an inorganic base in aqueous solution in an amount and for a time sufficient to reduce the chlorine content below about 0.5 wt. % and (2) thereafter reacting at a temperature of about 130° C. to about 155° C. the thus produced product and a cyclic polydisulfide for a time sufficient and under suitable reaction conditions so as to produce a modified sulfurized olefinic product of improved extreme pressure characteristics.

26. The composition of claim **1** wherein said cyclic polydisulfide is 1,1,5,5,9,9,13,13-octamethyl-3,4,7,8,11,12,15,16-octathiacyclohexadecane.

27. A polysulfurized olefin produced by the steps of (1) reacting sulfur monochloride with from 1 to 2 moles of a C_2–C_{12} olefin per mole of said sulfur monohalide at a temperature of from 20° C. to about 80° C., (2) reacting the product thereof with an alkali metal monosulfide and optionally free sulfur, wherein the ratio of the moles of alkali metal monosulfide to the gram-atoms of free sulfur is from about 1.8 to about 2.2:1 and (3) reacting this product with an aqueous solution containing from about 5 to about 20 wt. percent of an alkali metal hydroxide for a time sufficient to reduce the chlorine content below about 0.5 wt. percent, (4) reacting at a temperature of about 130° C. the thus produced sulfurized product and a cyclic polydisulfide.

30. The polysulfurized olefin of claim **27** wherein the cyclic polydisulfide is 1,1,5,5,9,19,13,13,-octamethyl-3,4,7,8,11,12,15,16-octathiacyclohexadecane.

4,194,981

POLYURETHANE OF NEOPENTYL GLYCOL-PHOSPHOSULFURIZED POLYOLEFIN AND LUBRICANT CONTAINING SAME

Kenneth G. Hammond, Poughkeepsie, and Raymond C. Schlicht, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 28, 1978, Ser. No. 973,838

Int. Cl.^{2} C10M *1/44;* C08K *5/01;* C08G *18/62;* C08K *5/10*

U.S. Cl. 252—46.7 **27 Claims**

1. A polyurethane polymer, useful as a dispersant in lube oil, which is the reaction product of a diisocyanate of the formula

$O{=}C{=}N{-}X{-}N{=}C{=}O$

wherein X is a divalent organo moiety and a polyol, said polyol prepared by

A. contacting a polyolefin with P_2S_5;

B. contacting the resultant polyolefin-P_2S_5 reaction product with steam;

C. removing inorganic phosphorus acid from the steam treated polyolefin-P_2S_5 reaction product;

D. contacting the inorganic acid free steam hydrolyzed polyolefin-P_2S_5 reaction product with a polyol of the formula

$HO{-}CH_2{-}(R)_n{-}CH_2OH$

wherein

n=0 or 1 and

R is a saturated or unsaturated substituted or unsubstituted alkylene group of 1 to 12 carbon atoms.

19. A lubricating oil composition comprising a major amount of lubricant oil and an effective detergent-dispersant amount of a polyurethane of claim **1**, said lubricating oil selected from the group consisting of mineral lubricating oil, synthetic ester lubricating oil, synthetic ether lubricating oil, and synthetic hydrocarbon lubricating oil.

4,194,982

N-SULFONYLATED POLYALKENYLSUCCINIMIDE AND LUBRICANT COMPOSITION

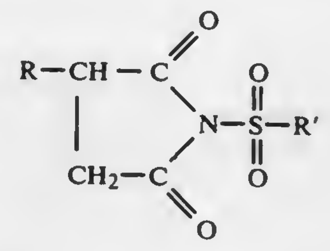
Kechia J. Chou, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,691

Int. Cl.^{2} C10M *1/38*

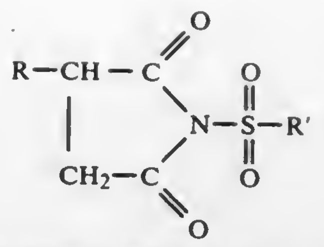
U.S. Cl. 252—47.5 **13 Claims**

1. An N-sulfonylated succinimide represented by the formula:



in which R is an aliphatic hydrocarbon radical having from 1 to 40 carbon atoms and R′ is a hydrocarbon radical having from about 6 to 20 carbon atoms.

8. A lubricating oil composition comprising a major portion of a hydrocarbon oil of lubricating viscosity, a minor amount of a metal-containing additive characterized by promoting the formation of hard deposits in an internal combustion engine and an effective deposit modifying amount of an N-sulfonylated hydrocarbon substituted succinimide represented by the formula:



in which R is an aliphatic hydrocarbon radical having from about 1 to 40 carbon atoms and R′ is a hydrocarbon radical having from about 6 to 20 carbon atoms.

4,194,983

PERFLUORINATED POLYALKYLETHER BASED LUBRICANT COMPOSITION

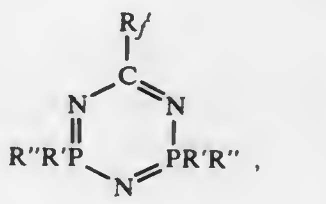
Kazimiera J. L. Paciorek, Corona Del Mar; Reinhold H. Kratzer, Irvine; Jacquelyn Kaufman, Costa Mesa; Thomas I. Ito, and James H. Nakahara, both of Fountain Valley, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 6, 1979, Ser. No. 9,728

Int. Cl.^{2} C10M *1/10*

U.S. Cl. 252—49.9 **10 Claims**

1. A lubricant composition comprising (1) a perfluorinated polyalkylether base fluid and (2) a corrosion inhibiting amount of a diphospha-s-triazine having the following formula:



wherein R*f* is a perfluoroalkyl or perfluoroalkylether group and R′ and R″ are the same or different aryl groups.

4,194,984

ETHYLENE COPOLYMER/ETHYLENICALLY UNSATURATED NITROGEN REACTANT ENE ADDUCTS HAVING UTILITY AS MULTIFUNCTIONAL V. I. IMPROVERS FOR LUBRICATING OILS

Robert L. Elliott, Scotch Plains, and Won R. Song, Maplewood, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 748,954, Dec. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 668,610, Mar. 19, 1976, abandoned. This application Aug. 17, 1978, Ser. No. 934,362

Int. Cl.^{2} C10M *1/28;* C08L *77/08*

U.S. Cl. 252—51.5 A **7 Claims**

1. Hydrolyzed oil soluble ene adduct of a C_3 to C_{24} ethylenically unsaturated nitrogen-containing reactant having at least one electron withdrawing group and a copolymer of ethylene, at least one C_3 to C_{50} alpha-monoolefin and at least one C_5 to C_{24} non-conjugated diene, said hydrolyzed ene adduct containing carboxylate groups in molar concentration ranging up to about the molar concentration of said reactant and having a number average molecular weight of from about 1,000 to about 500,000.

4,194,985

POLYMERIC COMPOSITIONS, METHOD FOR THEIR PREPARATION, AND LUBRICANTS CONTAINING THEM

Lester E. Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jan. 14, 1974, Ser. No. 433,322

Int. Cl.² C10M *1/32*

U.S. Cl. 252—51.5 A **8 Claims**

5. A lubricating composition comprising a major amount of a lubricating oil and a minor amount, sufficient to improve dispersancy, extreme pressure properties or viscosity, of a composition prepared by polymerizing, under free radical polymerization conditions and at a temperature of about 30°–90° C.; (A) at least one ethylenically unsaturated monomer having from 3 to about 10 carbon atoms and a terminal olefinic bond and selected from the group consisting of unsaturated monohydric and polyhydric alcohols and carboxylic acid esters thereof, esters of unsaturated carboxylic acids and saturated alcohols, vinyl cyclic compounds, unsaturated ethers, unsaturated ketones, amides of unsaturated carboxylic acids, unsaturated aliphatic hydrocarbons, alkenyl halides and unsaturated nitriles; in the presence of (B) at least one oil-soluble dispersant incapable of addition polymerization, said dispersant being prepared by the reaction of a substantially saturated hydrocarbon-substituted or halohydrocarbon-substituted succinic acid or anhydride with at least one alcohol; the amount of said dispersant being sufficient to produce a stable solution or dispersion of the resulting polymer in an inert diluent at a total concentration of said composition of about 20–90% by weight.

4,194,986

POWDERED OR FLAKED WASHING COMPOSITIONS ADAPTED TO AUTOMATIC LAUNDRY MACHINES

Hervé Tournier, Valleiry, and Alain Groult, Annemasse, both of France, assignors to Union Generale de Savonnerie, Marseille, France

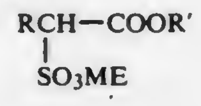
Filed Feb. 1, 1978, Ser. No. 874,227

Claims priority, application Switzerland, Feb. 2, 1977, 1223/77

Int. Cl.² C11D *7/54, 7/60*

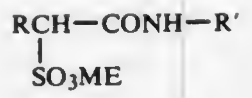
U.S. Cl. 252—102 **12 Claims**

1. A detergent composition mainly for automatic laundering machines which consists essentially of, based on the weight of the total composition, at least 60% of at least one alkali or ammonium salt of a fatty acid and no more than 10% of a mixture of surfactants containing 10 to 30% of at least one non-ionic water-soluble polyoxyalkylated surfactant selected from the group consisting of a polyoxyalkylated derivative of C_8–C_{20} alcohols, a polyoxyalkylated derivative of alkyl or di-alkyl phenols, a polyxylalkylated derivative of a polyoxypropylated propylene glycol, a polyoxyalkylated derivative of a polyoxypropylated diamine and a polyoxylalkylated derivative of a fatty amide and 90 to 70% of at least one water-soluble anionic surfactant, selected from the group consisting of an α-sulfonated fatty acid ester of the formula



$$\underset{\displaystyle SO_3ME}{RCH}\!-\!COOR'$$

wherein R is a linear alkyl radical with 6–20 C atoms, R′ is an alkyl radical selected from the group consisting of methyl, ethyl, propyl, butyl, hexyl and isomers thereof and ME is an alkali metal or a quaternary ion of ammonium, mono- or diethanolamine and an α-sulfonated fatty acid amide of the formula



$$\underset{\displaystyle SO_3ME}{RCH}\!-\!CONH\!-\!R'$$

wherein R is a linear alkyl radical with 6–20 C atoms, R′ is an alkyl radical selected from the group consisting of methyl, ethyl, propyl, butyl, hexyl and isomers thereof and ME is an alkali metal or a quaternary ion of ammonium, mono- or diethanolamine.

4,194,987

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

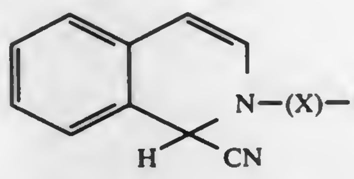
Gaylen R. Brubaker, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 26, 1978, Ser. No. 973,644

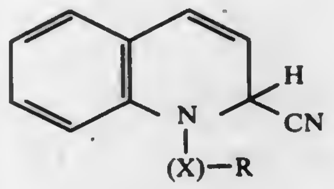
Int. Cl.² C11D *7/54*

U.S. Cl. 252—102 **13 Claims**

7. A bleaching composition consisting essentially of a peroxygen bleaching compound and as a peroxygen activator therefor an N-acylcyano cyclic amino selected from the class consisting of:



and



I

II

wherein R is a hydrocarbon radical selected from the group consisting of aliphatic of 1 to 18 carbon atoms and aromatic of the benzene and naphthalene series and X is selected from the class consisting of —C(O)— and —S(O_2)—, it being provided that the cyclic amine may contain a non-interfering substituent.

4,194,988

METHOD FOR THE PRODUCTION OF AQUEOUS, FINELY DISPERSED, SHELF-STABLE SILICONE OIL EMULSIONS

Wolfgang Schneider, and Kurt Niehaves, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed May 23, 1978, Ser. No. 908,751

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730923

Int. Cl.² B01J *13/00*

U.S. Cl. 252—312 **4 Claims**

1. A method for the preparation of aqueous, finely dispersed, shelf-stable silicone oil emulsions, consisting essentially of the following steps in order:

(A) mixing with agitation at a temperature of about 20° to 150° C., dimethyl polysiloxanes and about 0.1–0.3 part by weight, based on said dimethyl polysiloxanes of an emulsifier and obtaining a clear solution;

(B) neutralizing said clear solution with a basic material selected from the group consisting of organic and alkali bases; and

(C) diluting with water; wherein said emulsifier is selected from orthophosphoric acid partial esters consisting of monoesters of orthophosphoric acid, diesters of orthophosphoric acid and mixtures thereof, prepared by the reaction of:

(a) 1-n-octanol or 1-n-octenol with P_2O_5,

(b) straight-chain primary alcohols having 6–10 carbon atoms with phosphoric acids or phosphorus halogenides, or

(c) mixtures of primary alcohols having an average molecular weight of 110 to 160, which are straight-chain to an extent of at least 50 molar percent and contain 1–22 carbon atoms, with phosphoric acids, phosphorus oxides, or phosphorus halogenides.

4,194,989

PIPERIDINYL HYDROGEN 2-HYDROXYALKYL PHOSPHATES AND METAL SALTS THEREOF WHICH COMPOUNDS ARE USEFUL AS ULTRAVIOLET STABILIZERS FOR ORGANIC COMPOSITIONS

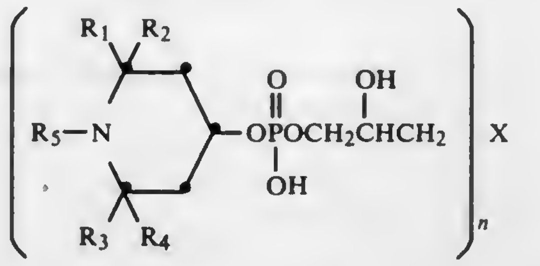
Gether Irick, Jr., and Richard H. S. Wang, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 27, 1978, Ser. No. 963,716

Int. Cl.² C09K *15/32*

U.S. Cl. 252—400 A **12 Claims**

1. An organic composition susceptible to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of piperidinyl phosphate having the formula:



wherein R_1 and R_2 are each alkyl having 1–6 carbons; R_3 and R_4 are each alkyl having 1–6 carbons or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring which is unsubstituted or substituted with a methyl group; R_5 is hydrogen, oxy, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 or 4 carbon atoms, propargyl, benzyl or alkyl substituted benzyl; M is either hydrogen or a metal ion selected from the group consisting of Li, Na, K, Mg, Ca, Ba, Mn, Co, Ni, Sn, Zn, Ce, and the amount of hydrogen for M can vary from zero to 100%; X is an alkyl, alkylene, oxyalkyl or oxyalkyleneoxy having 2 to 12 carbon atoms or an aryl, arylene, oxyaryl or oxyaryleneoxy with 6, 12 or 18 carbon atoms; and n is 1 to 4.

4,194,990

CATALYST AND PROCESS FOR THE PRODUCTION OF CHLOROFLUORINATED HYDROCARBONS

Wim J. M. Pieters, Morristown; William E. Gates, Green Township, Morris County; Emery J. Carlson, Chatham, and John E. Wilkalis, Morris Plains, all of N.J., assignors to Allied Chemical Corporation, Morristown, N.J.

Division of Ser. No. 767,716, Feb. 11, 1977, Pat. No. 4,088,705. This application Jan. 16, 1978, Ser. No. 869,730

Int. Cl.² B01J *27/10, 27/12*

U.S. Cl. 252—441 **9 Claims**

1. A novel catalyst composition which comprises in combination at least about 60% by weight of said composition of magnesium and copper ions, each in combination with fluoride ion and at least one alkali metal in combination with chloride ion.

4,194,991

ACIDIC MULTIMETALLIC HYDROCARBON CONVERSION CATALYTIC COMPOSITE

John F. Flagg, Rosemont, and George J. Antos, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 758,285, Jan. 10, 1977, Pat. No. 4,110,199. This application Dec. 15, 1977, Ser. No. 861,045

Int. Cl.² B01J *27/08, 27/10*

U.S. Cl. 252—441 **15 Claims**

1. An acidic catalytic composite comprising a halogenated porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.1 to about 10 wt. % uranium, and about 0.1 to about 3.5 wt. % halogen; wherein the platinum group metal, catalytically available cobalt, and uranium are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the uranium is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

4,194,992

METHOD FOR THE POLYMERIZATION OF OLEFINES AND MEANS SUITABLE THERETO

Margherita Corbellini, Milan, and Alberto Greco, Dresano, both of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 763,077, Jan. 27, 1977, abandoned. This application Jul. 20, 1978, Ser. No. 926,518

Claims priority, application Italy, Jan. 30, 1976, 19748 A/76; Jul. 13, 1976, 25257 A/76

Int. Cl.² C08F *4/64, 4/68*

U.S. Cl. 252—442 **5 Claims**

1. A method for the preparation of a catalyst containing titanium trichloride or vanadium trichloride and useful in the polymerization and copolymerization of ethylene with higher alphaolefines, which comprises vaporizing another metal selected from the group consisting of Al, Mg, Cr, Mn, Fe, V and Ti under vacuum and reacting the vapors thus obtained with $TiCl_4$ or VCl_4 at a low temperature.

4,194,993

METHOD OF MANUFACTURING POWDERED CLEANING COMPOSITION

James F. Deal, III, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 13, 1978, Ser. No. 885,559

Int. Cl.² C11D *7/32, 17/06*

U.S. Cl. 252—541 **2 Claims**

1. A method of preparing a powdered cleaning composition comprising the steps of:

polymerizing urea and formaldehyde in aqueous acidic solution to form a mass of polymer particles having an average particle size between about 10 and 105 microns and an oil value of at least about 90;

neutralizing the mass of polymer particles;

centrifuging the mass of polymer particles until the moisture content of said mass of polymer particles is less than about 43, but more than 30% based on the dry weight of the polymer;

sprinkling at least about 0.2% of polyethylene oxide powder having a molecular weight of at least about 20,000 onto freshly blended surfaces of the polymer mass as it is being blended; and

spraying sufficient surfactant into the polymer mass to lower the surface tension of the moisture therein to no more than about 40 dynes per centimeter.

4,194,994

SINTERED METAL OXIDE SEMICONDUCTOR HAVING ELECTRICAL CONDUCTIVITY HIGHLY SENSITIVE TO OXYGEN PARTIAL PRESSURE

Detlef Baresel, Stuttgart; Peter Scharner, Leonberg; Gerhard Huth, Stuttgart, and Winfried Gillert, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 26, 1977, Ser. No. 845,796

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1976, 2648373

Int. Cl.^{2} H01B *1/08*

U.S. Cl. 252—518 **1 Claim**

1. A semiconductor composition for sensors responsive to oxygen partial pressure in automotive exhaust gas with which the composition is in contact by a change in electrical conductivity, said composition consisting essentially of tin oxide doped with 0.2 to 20 mol% of an oxide selected from the group consisting of magnesium oxide and niobium pentoxide and having a conductivity characteristic which is approximately linear with respect to the oxygen content of said gas and substantially less catalytic effect on the oxidation of carbon monoxide than undoped tin oxide and which provides a change of electrical conductivity of at least one order of magnitude when the oxygen partial pressure in said gas changes by approximately one-half an order of magnitude.

4,194,995

WATER VAPOR ABSORBING AND TRANSMITTING ADHESIVE, A PROCESS FOR THE MANUFACTURE OF THIS ADHESIVE AND USE THEREOF

Walter Schermann; Arno Holst, both of Wiesbaden, and Wilhelm Fischer, Pirmasens, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,621

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736147

Int. Cl.^{2} C08L *1/28, 3/08*

U.S. Cl. 260—14 **5 Claims**

1. In a water vapor absorbing and transmitting adhesive containing at least one organic binding agent which is insoluble in water, and an addition of at least one hydrophilic polymer,

the improvement comprising that said hydrophilic polymer is a swellable modified starch ether or cellulose ether, which is modified by cross-linking effected by heat energy, or radiation, or by an additional chemical compound, which is insoluble in water to the extent of at least about 50 percent by weight, and which swells in aqueous liquids.

4,194,996

PHENOL FORMALDEHYDE COMPRESSION MOULDING COMPOSITION COMPRISING PHENOL FORMALDEHYDE-WOOD FILLER

Margarita D. Babina, Sverdlovsk; Evgeny S. Dunjushkin, Nizhny Tagil; Galina I. Popova, Sverdlovsk; Anatoly D. Sokolov, and Jury M. Smirnov, both of Moscow, all of U.S.S.R., assignors to Uralsky Lesotekhnichesky Institut, Sverdlovsk and Proizvodstvennoe Obiedinenie "Uralkhimplast", Nizhny Tagil, both of, U.S.S.R.

Filed Oct. 10, 1978, Ser. No. 949,724

Int. Cl.^{2} C08L *1/02*

U.S. Cl. 260—17.2 **5 Claims**

1. A compression-moulding composition containing 15 to 45 parts by weight of a phenol-formaldehyde resin, 47.5 to 75 parts by weight of a filler comprising a product of the treatment of crushed wood with an aqueous solution of phenol and formaldehyde at the boiling temperature of said solution in the presence of hydrochloric acid at a weight ratio between phenol, formaldehyde, water, hydrochloric acid and crushed wood equal to 0.15–0.80:0.045–0.864:6–15:0.0435–0.1086:1 respectively, 7 to 9 parts by weight of a curing agent, i.e. hexamethylenetetramine, 0.5 to 1 part by weight of a curing accelerator selected from the group consisting of calcium oxide and magnesium oxide and 0.6 to 0.9 part by weight of a lubricant selected from the group consisting of stearin and stearates.

4,194,997

SULFITE SPENT LIQUOR-UREA FORMALDEHYDE RESIN ADHESIVE PRODUCT

Folke J. Edler, Södra Fiskebäcksvägen 202, 421 58 Västra Frölunde, Gothenburg, Sweden

Continuation-in-part of Ser. No. 738,370, Nov. 3, 1976, abandoned, which is a continuation of Ser. No. 574,515, May 5, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 899,237

Int. Cl.^{2} C08L *97/00*

U.S. Cl. 260—17.5 **20 Claims**

1. An adhesive product comprising in substantially uncondensed admixture with each other, and in parts by weight, dry solids basis:

Urea-Formaldehyde Resin: 50–90

Spent Liquor from the Acid Sulfite Pulping of Lignocellulose: 10–50

the adhesive product containing from 0.2 to 4.0% by weight ammonium ion (expressed as NH_3) on a spent liquor solids basis,

the spent liquor component of the mixture prior to mixing having a pH of from 3–9,

the urea formaldehyde resin component of the mixture prior to mixing being characterized by a molar ratio of formaldehyde to urea of from 1.0–1.8 to 1; a pH of from 6–8; and a methylol content corresponding to a Witte number of from 1.0 to 1.8.

18. The method of making glued wood products which comprises applying to the surfaces of pieces of wood of bonding quantity of adhesive comprising in substantially uncondensed admixture with each other, and in parts by weight, dry solids basis:

Urea-Formaldehyde Resin: 50–90

Spent Liquor from the Acid Sulfite Pulping of Lignocellulose: 10–50

the adhesive containing from 0.2 to 4.0 % by weight ammonium ion (expressed as NH_3) on a spent liquor solids basis,

the sulfite liquor component of the mixture prior to mixing having a pH of from 3–9,

the urea formaldehyde resin component of the mixture prior to mixing being characterized by a molar ratio of formaldehyde to urea of from 1.0–1.8 to 1; a pH of from 6–8; and a methylol content corresponding to a Witte number of from 1.0 to 1.8 assembling and hot pressing the resulting adhesive-coated pieces of wood to form the glued wood product.

4,194,998

HIGHLY ABSORBENT POLYHYDROXY POLYMER GRAFT COPOLYMERS WITHOUT SAPONIFICATION

George F. Fanta, Peoria, Ill.; Edward I. Stout, Waco, Tex., and William M. Doane, Morton, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 748,032, Dec. 6, 1976, Pat. No. 4,134,863. This application Oct. 30, 1978, Ser. No. 955,828

Int. Cl.^{2} C08L *3/02*

U.S. Cl. 260—17.4 GC **16 Claims**

1. A method of preparing water-insoluble, aqueous fluid-absorbing compositions without saponification comprising the following steps:

a. graft polymerizing a nonionic acrylic monomer and an anionic sulfonic acid-substituted acrylic monomer onto a starch substrate, thereby forming an unsaponified water-insoluble graft copolymer, wherein the copolymerized nonionic monomer and anionic monomer comprise a synthetic copolymer moiety of said graft copolymer, and the weight ratio of nonionic monomer:anionic monomer in said synthetic copolymer moiety is in the range of about 9:1 to about 1:4, and wherein the weight ratio of starch:-synthetic copolymer moiety is in the range of 3:1 to 1:3;

b. drying said unsaponified water-insoluble graft copolymer from step (a) to a moisture level in the range of about 1 to 15% water by dry weight; and

c. recovering said unsaponified graft copolymer from step (b).

4,194,999

PROCESS FOR PRODUCING POWDERY RUBBER

Takao Hayashi; Yasuhiro Sakanaka, and Akihiko Shimizu, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Company, Ltd., Yamaguchi, Japan

Filed Nov. 7, 1977, Ser. No. 849,467

Claims priority, application Japan, Dec. 13, 1976, 51/148732

Int. Cl.^{2} C08L *1/28*

U.S. Cl. 260—17 R **6 Claims**

1. A process for producing a powdery rubber which comprises

mixing a rubber latex selected from the group consisting of anionic and nonionic rubber latex, with an aqueous solution of an anionic water soluble macromolecular compound which is dissociated in water to give negative charge at a ratio of 0.1 to 10 wt. % to the solid content of the rubber latex;

adjusting the pH of the mixture to an acidic condition;

adding to the aqueous solution a cationic compound selected from the group consisting of cationic polymers which are water soluble in acidic condition and cationic surfactants, which cationic compound causes a coacervation with the anionic water soluble macromolecular compound in an acidic condition, at a ratio of 0.1 to 10 wt. % to the solid content of the rubber latex thereby

separating the rubber particles from the rubber latex under the coacervation; and

adding an emulsion of a synthetic resin having a glass transition temperature higher than 30° C. to the rubber particles at a ratio of 1 to 50 wt. % (as a solid content) to a solid content of the rubber latex and

dehydrating and drying the resulting powdery rubber.

4,195,000

IMPACT MODIFIED THERMOPLASTIC COPOLYESTER

John J. Charles, Bloomingdale, and Robert C. Gasman, West Milford, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 887,755

Int. Cl.^{2} C08G *63/16;* **C08K** *7/14;* **C08L** *67/02*

U.S. Cl. 260—22 D **6 Claims**

1. Molding composition comprising:

(a) at least about 30 wt% of a copolyester of dimeric fatty acid, 1,4-butanediol and terephthalic acid, which copolyester contains between about 25 and about 30 wt% based on copolyester of dimeric fatty acid selected from the group consisting of dioleic, dilinoleic and dilinolenic acids and dialkyl esters of such acids and between about 70 and about 75 wt% based on copolyester of butylene terephthalate units, said copolyester having an intrinsic viscosity between about 0.5 and about 1.2 dl/g; and

(b) between about 35 and about 45 wt% based on total molding composition of glass reinforcing fibers having diameters between about 5 and about 20 microns and aspect rations of at least about 5.

4,195,001

FORMULATIONS AND PROCESS FOR EFFECTING STOPPAGE OF LEAKS OF LIQUID FROM TANKS, PIPES AND THE LIKE

Donald B. Lytton, Lincolnwood, Ill., assignor to Lake Chemical Co., Chicago, Ill.

Continuation-in-part of Ser. No. 809,153, Jun. 23, 1977, abandoned. This application Aug. 3, 1978, Ser. No. 930,514

Int. Cl.^{2} C08L *91/06;* **C09K** *3/10, 3/12*

U.S. Cl. 260—28 R **20 Claims**

1. A formulation for stopping seepage or like leaks in tanks and pipes through which liquids are flowing at low pressures or through which liquids are adapted to flow, said formulation having an initial putty or putty-like consistency as prepared, and being prepared by admixing separate A and B compositions, as set forth below, each of which has a putty or putty-like consistency and comprises:

A. A normally liquid epoxide resin base and a compatible wax or waxy material;

B. A normally liquid curing agent for said normally liquid epoxide resin base of composition A, and a compatible wax or waxy material; said compatible wax or waxy material being present in an amount in relation to and in cooperation with said epoxide resin base and said curing agent, when said A and B compositions are admixed in predetermined proportions and applied to a crevice or the like through which said liquids are flowing or adapted to flow, to effect stoppage of said seepage shortly after such application and substantially prior to the curing of said epoxide resin base being completed, said amount of the wax or waxy material content of the A and B compositions constituting at least about 10%, by weight, of the total of the A and B compositions based upon the sum of the epoxide resin base, the curing agent and the wax or waxy material.

4,195,002

WATER-DISPERSIBLE COATINGS CONTAINING BORON NITRIDE FOR STEEL CASTING DIES

Schrade F. Radtke, New Canaan, Conn.; Dodd S. Carr, Newark, N.J., and Max Kronstein, Bronx, N.Y., assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Filed Jul. 27, 1978, Ser. No. 928,725

Int. Cl.^{2} C08J *3/06;* **C08L** *9/04, 9/08, 67/06*

U.S. Cl. 260—29.2 E **8 Claims**

1. A process for the preparation of a dispersion composition for coating the surface of a steel casting die for molten metals, which comprises treating an aqueous dispersion of a water-dispersible film-forming polymer having a high fraction, a low polymer fraction and an unsaturated monomeric fraction with a water-soluble peroxide in an amount of from about 3 to about 7.5 parts by weight of the peroxide per 100 parts by weight of the polymer solids so as to bring about the polymerization of the unsaturated monomeric fraction and the further polymerization of the low polymer fraction without however losing the water-dispersible property of the polymer, and mixing from about 10% to about 48% by weight of boron nitride powder having a particle size less than 200 mesh with the resulting peroxide-modified aqueous dispersion containing from about 10% to about 27% by weight of the peroxide-modified polymer, the balance of the peroxide-modified aqueous dispersion being substantially water.

4,195,003

PHOSPHORUS ACID TO STABILIZE QUATERNIZED POLYACRYLAMIDE

John R. Hurlock, Hickory Hills, and Edward G. Ballweber, Glenwood, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 763,477, Jan. 28, 1977, Pat. No. 4,120,840. This application May 8, 1978, Ser. No. 904,083

The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.

Int. Cl.^{2} C08L *61/20*

U.S. Cl. 260—29.4 UA **4 Claims**

1. A stabilized water-in-oil emulsion of a water-soluble quaternary salt of polytrimethylaminomethyl acrylamide comprising:

A. 5–70% by weight of a hydrophobic liquid;

B. 0.1–21% by weight of a water-in-oil emulsifying agent;

C. 30–95% by weight of an aqueous phase consisting of water and a water-soluble quaternary salt of polytrimethylaminomethylol acrylamide;

D. 10–50% by weight of the water-in-oil emulsion of a water-soluble quaternary salt of polytrimethylaminomethylol acrylamide, said polytrimethylaminomethylol acrylamide having a particle size of from 0.1 microns to 10 microns within the emulsion;

said water-in-oil emulsion of polytrimethylaminomethylol acrylamide being stabilized by the steps of:

E. Adding to the water-in-oil emulsion of polytrimethylaminomethylol acrylamide from 5–80 mole percent of phosphorus acid based upon the weight of the quaternary salt of polytrimethylaminomethylol acrylamide contained within the water-in-oil emulsion, said water-in-oil emulsion having a pH of from 3–5.5;

F. Heating said water-in-oil emulsion for a period of time at a temperature of from 30°–90° C. sufficient to prepare a stabilized water-in-oil emulsion of polytrimethylaminomethylol acrylamide; and then,

G. Recovering said stabilized emulsion.

4,195,004

PROCESS FOR PREPARING WATER-DISPERSIBLE RESINS

Eduard M. A. A. J. Van Acker; Petrus G. Kooijmans, and Aart de Heer, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 21, 1978, Ser. No. 962,593

Int. Cl.^{2} C08L *33/14*

U.S. Cl. 260—29.6 TA **9 Claims**

1. A process for the preparation of hydroxyl- and carboxyl-containing resins dispersible in water with the aid of a base which comprises reacting 100 parts by weight of a copolymer component (A) prepared by reacting (a) from 10 to 60 parts by weight of a vinyl ester of an alpha-branched, saturated, aliphatic monocarboxylic acid, (b) from 10 to 50 parts by weight of styrene or vinyl toluene, (c) from 5 to 25 parts by weight of a hydroxyalkyl ester of an alpha,beta-ethylenically unsaturated monocarboxylic acid, and (d) from 0 to 40 parts by weight of an alkyl ester of an alpha,beta-ethylenically unsaturated monocarboxylic acid with about 5 to 25 parts by weight of a component (B) prepared by reacting trimellitic anhydride and a glycidyl ester of alpha-branched, saturated, aliphatic monocarboxylic acids in the mole ratio of from about 0.8:1 to 1:1.2.

4,195,005

AQUEOUS CAN COATINGS OF IMPROVED IMPERMEABILITY

George L. Brown, Scotch Plains, and Arthur T. Spencer, New Providence, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 18, 1977, Ser. No. 852,637

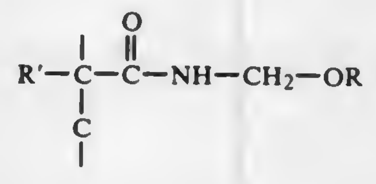
Int. Cl.^{2} C08L *33/02*

U.S. Cl. 260—29.6 TA **6 Claims**

1. A metal container containing a beverage or food and having its internal surface coated with an adherent sanitary liner, the coating which is in contact with said food or beverage having a Staypro value of at least about 6 and being a cured layer of a water-based coating composition consisting essentially of:

(A) from about 5 percent to about 60 percent by weight of an amine-neutralized or partially neutralized interpolymer formed in the presence of a vinyl polymerization catalyst and in the absence of mercaptan, said interpolymer being comprised of:

1. from about 10 percent to about 30 percent of acrylamide or methacrylamide in units of the structure:



$$\mathrm{R'{-}\underset{\substack{|\\ C\\ |}}{\overset{|}{C}}{-}\overset{\substack{O\\ \|}}{C}{-}NH{-}CH_2{-}OR}$$

where R′ is methyl or hydrogen and R is hydrogen or lower alkyl;

2. from about 5 percent to about 15 percent of units formed by vinyl polymerization of monoethylenically unsaturated carboxylic acid;

3. from about 10 percent to about 50 percent of units formed by vinyl polymerization of isobutylmethacrylate; and

4. from about 20 percent to about 45 percent of nitrile selected from acrylonitrile and methacrylonitrile; wherein said interpolymer is solubilized by neutralizing or partially neutralizing the acid groups of said interpolymer with a sufficient amount of monomeric amine to produce at least 0.200 milliequivalents of salt per gram of resin solids; and

(B) from about 40 percent to about 95 percent by weight of a liquid medium consisting of a mixture of water-soluble or water-miscible organic solvents and water, wherein at least 60 percent by weight of the mixture is water.

4,195,006

AQUEOUS CAN COATINGS OF IMPROVED IMPERMEABILITY

George L. Brown, Scotch Plains, and Arthur T. Spencer, New Providence, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,185

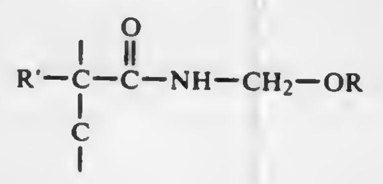
Int. Cl.^{2} C08L *33/02*

U.S. Cl. 260—29.6 TA **6 Claims**

1. A metal container containing a beverage or food and having its internal surface coated with an adherent sanitary liner, the coating which is in contact with said food or beverage having a Staypro value of at least about 6 and being a cured layer of a water-based coating composition consisting essentially of:

(A) from about 5 percent to about 60 percent by weight of an amine-neutralized or partially neutralized interpolymer formed in the presence of a vinyl polymerization catalyst and in the absence of mercaptan, said interpolymer being comprised of:

1. from about 10 percent to about 30 percent of acrylamide or methacrylamide in units of the structure:



$$\mathrm{R'{-}\underset{\substack{|\\ C\\ |}}{\overset{|}{C}}{-}\overset{\substack{O\\ \|}}{C}{-}NH{-}CH_2{-}OR}$$

where R′ is methyl or hydrogen and R is hydrogen or lower alkyl;

2. from about 5 percent to about 15 percent of units formed by vinyl polymerization of monoethylenically unsaturated carboxylic acid;

3. from about 10 percent to about 30 percent of units derived by vinyl polymerization of monovinyl aromatic monomer;

4. from about 10 percent to about 30 percent of units formed by vinyl polymerization of flexibilizing monomer selected from alkyl acrylates having up to 4 carbon atoms in each alkyl group; and

5. from about 20 percent to about 45 percent of nitrile selected from acrylonitrile and methacrylonitrile; wherein said interpolymer is solubilized by neutralizing or partially neutralizing the acid groups of said interpolymer with a sufficient amount of monomeric amine to produce at least 0.200 milliequivalents of salt per gram of resin solids; and

(B) from about 40 percent to about 95 percent by weight of a liquid medium consisting of a mixture of water-soluble or water-miscible organic solvents and water, wherein at least 60 percent by weight of the mixture is water.

4,195,007

PROCESS FOR STABILIZING AQUEOUS SOLUTION OF ACRYLIC OR METHACRYLIC HYDRAZIDE POLYMERS

Masahiro Kobayashi, and Tadao Yabuhara, both of Tokushima, Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

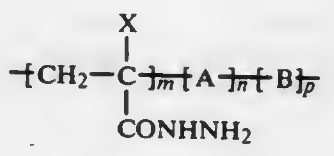
Filed Sep. 8, 1978, Ser. No. 940,739

Claims priority, application Japan, Sep. 9, 1977, 52-109199

Int. Cl.^{2} C08K *3/16*

U.S. Cl. 260—29.6 HN **6 Claims**

1. A process for stabilizing an aqueous solution of an acrylic or methacrylic hydrazide polymer which comprises adding hydrazine hydrate and/or a water-soluble alkaline earth metal salt of an inorganic acid to an aqueous solution of an acrylic or methacrylic hydrazide polymer having the following general formula:



$$\mathrm{\left[CH_2{-}\underset{\substack{|\\ CONHNH_2}}{\overset{\substack{X\\ |}}{C}}\right]_m \left[A\right]_n \left[B\right]_p}$$

wherein X is hydrogen atom or methyl group, A is acrylamide unit, an acrylate unit or a methacrylate unit, B is a monomer unit copolymerizable with acrylamide, acrylate or methacrylate, and there is the following relationship among m, n and p:

$m+n+p=100\%$ by mole

30% by mole $\leqq m \leqq 100\%$ by mole

0% by mole $\leqq n+p \leqq 70\%$ by mole

said hydrazine hydrate and/or said water-soluble alkaline earth metal salt being employed at least in an amount equal to the weight of said acrylic or methacrylic hydrazide polymer.

4,195,008

LATEX EXTENDED WITH GRAFTED MINERAL OIL

David P. Gruber, Northampton Township, Summit County, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 848,625, Nov. 4, 1977. This application Mar. 2, 1979, Ser. No. 16,992

Int. Cl.^{2} C08K *5/09*

U.S. Cl. 260—29.7 H **15 Claims**

1. A rubber processing petroleum oil containing, per 100 parts by weight of said oil, graft polymerized to said oil from about 2 to 20 parts by weight of at least one ethylenically unsaturated monomer selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, fumaric acid, vinyl benzoic acid, α-chloroacrylic acid, crotonic acid and itaconic acid, said oil having: (1) a pour point below about 30° C., (2) a SUS viscosity at about 38° C. of from about 40 to 27,000, (3) a molecular weight of from about 220 to 2,400, (4) a clay-gel molecular analysis of % by weight of from about 0 to 0.1 asphaltenes, from about 0.2 to 18 polar compounds, from about 10 to 80 aromatic compounds and from about 10 to 90 saturated compounds and (5) a carbon type analysis of from about 3 to 47% aromatic carbon atoms, from about 19 to 44% naphthenic carbon atoms and from about 31 to 73% paraffinic carbon atoms.

4,195,009

COATING SYSTEM

Robert A. Zimmermann, 6601 Rockbrook, St. Louis, Mo. 63133

Division of Ser. No. 576,556, May 12, 1975, Pat. No. 4,066,599. This application Nov. 14, 1977, Ser. No. 851,151

Int. Cl.^{2} C08K *5/01, 5/04;* **C08L** *9/00, 75/04*

U.S. Cl. 260—31.2 N **2 Claims**

2. A system adapted for the application of heat refelective and moisture-proof barrier to a substrate comprising:

a first formulation containing between about 22 and about 56% by weight of a hydroxyl terminated butadiene polymer, between about 5 and about 30% by weight of a polyether triol having a hydroxyl number of between about 300 and about 500, between about 10 and about 46% by weight particulate aluminum, between about about 0.4 and about 6% by weight of a molecular sieve dessicant, between about 0.1 and about 1.5% by weight of a mercury catalyst, up to about 4% by weight of a silicone resin, and up to 40% by weight of an organic solvent selected from the group consisting of aromatic solvents, ketones, esters and glycol ethers; and

a second formulation containing a urethane prepolymer derived from a polypropylene glycol ether polyol and toluene diisocyanate containing between about 13 and about 17% by weight free isocyanate groups;

the two formulations of said system being adapted to provide a reaction mixture for application to said substrate, said system comprising defined relative proportions of said formulations so as to provide a molar ratio of at least about 1.1 isocyanate groups per hydroxyl group in said reactive mixture at the site of the substrate to be coated.

4,195,010

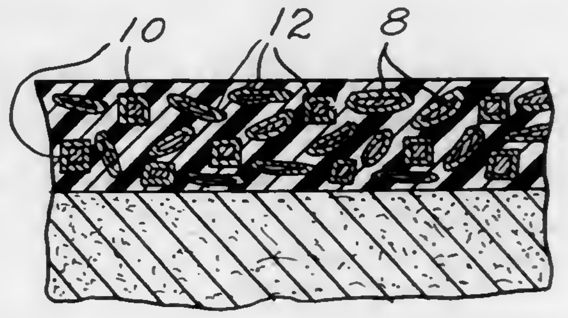
CERAMIC COATED QUARTZ PARTICLES

Alexander H. Russell, Owings Mills, and John L. McClinton, Hanover, both of Md., assignors to Burns & Russell Company of Baltimore City, Baltimore, Md.

Filed Jul. 6, 1977, Ser. No. 813,359

Int. Cl.^{2} C08K *3/34, 9/02, 9/06*

U.S. Cl. 260—40 R **16 Claims**



1. In a decorative fade resistant cast article suitable for exterior applications comprised of a cured resinous composition of an ethylenically unsaturated polyester resin, an ethylenically unsaturated polymerizable solvent and filler particles comprising color containing inorganic ceramic coated granules or a mixture of such ceramic granules and sand particles, wherein the improvement comprises imparting a fade resistant and three-dimensional color in a translucent resin medium to impart color to the cast article by selecting and combining filler particles wherein said filler particles comprise from about 15 percent to 100 percent by weight of said granules to 85 percent

to 0 percent by weight of sand and wherein said filler particles employed to provide color to said cast article have a Tyler screen size of from about 4 mesh to 200 mesh wherein said filler particles are treated with an ethylenically unsaturated organofunctional silane in an amount sufficient to provide an environmental composition and prevent discoloration of the filler particles and resin medium of the cast article and thereafter adding said filler particles to said polymerizable polyester resin, and polymerizable solvent wherein said filler particles comprise at least 50 percent by weight of said resinous composition.

4,195,011

INJECTION MOLDING COMPOSITIONS

Robert C. Gasman, West Milford, and John J. Charles, Bloomingdale, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jul. 11, 1977, Ser. No. 814,548
Int. Cl.^{2} C08K *3/36*
U.S. Cl. 260—40 R **20 Claims**

1. Injection molding composition comprising at least about 30 wt% PBT having an intrinsic viscosity between about 0.5 and about 2.0 dl/g and containing:

a. between about 0.5 and about 50 wt% based on total molding composition of thermally stable reinforcing fibers having diameters between about 5 and about 20 microns and aspect ratios of at least about 5, and
b. between about 5 and about 70 wt% based on total molding composition of novaculite having an average particle size between about 3 and about 5 microns, with at least 90% of such novaculite particles having a maximum particle size less than about 10 microns.

4,195,012

PROCESS FOR PREPARING 2-CHLORO-1-METHYLAMINOANTHRAQUINONE AND PLASTICS CONTAINING THE SAME

Samuel M. Gerber, Martinsville, and Robert E. Misner, Flemington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 891,369, Mar. 29, 1978, abandoned. This application Sep. 28, 1978, Ser. No. 946,685
Int. Cl.^{2} C08K *5/08, 5/18*
U.S. Cl. 260—42.21 **7 Claims**

1. A thermoplastic polymer substrate of from about 50 to about 150 mils thickness containing from about 0.02 to about 0.4%, by weight, based on the weight of said substrate, of a red colorant, 2-chloro-1-methylaminoanthraquinone.

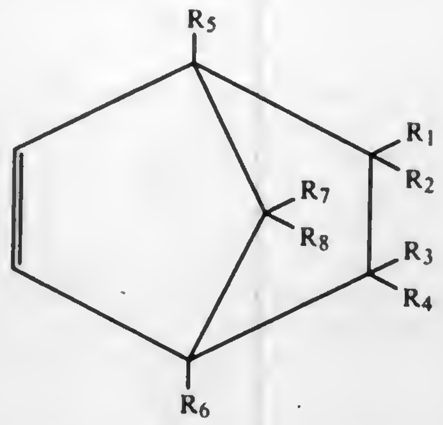
4,195,013

ELASTOMER COMPOSITION FOR PNEUMATIC TIRE TREADS

Yves de Zarauz, Le Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation of Ser. No. 706,700, Jul. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,817, Jun. 30, 1975, abandoned. This application Mar. 29, 1978, Ser. No. 891,446
Claims priority, application France, Jun. 28, 1974, 74 22809
Int. Cl.^{2} C08K *3/04*
U.S. Cl. 260—42.33 **4 Claims**

1. A pneumatic tire having a tread with an improved compromise between skid resistance and hysteresis properties, said tread comprising a sulfurvulcanized elastomeric terapolymer containing a filler such as carbon black or silica and an extension oil, said elastomeric tetrapolymer containing from about 18% to about 75% by weight of ethylene, from about 20% to about 45% by weight of an acyclic α-olefin having the formula $R\text{-}CH{=}CH_2$ wherein R represents an alkyl radical having from 1 to 8 carbon atoms, from about 2% to about 7% by weight of a nonconjugated diene and from about 5% to about 15% by weight of at least one cyclic sterically hindering unhalogenated mono-olefin monomer which is a norbornene compound having the formula



in which $R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8$ may be hydrogen or an aliphatic, cycloaliphatic or aromatic unhalogenated hydrocarbon radical.

4,195,014

UNSATURED POLYESTER RESINS HAVING IMPROVED FIRE RETARDANCE

Edwin Dorfman, Grand Island; Raymond R. Hindersinn, Lewiston, and Willis T. Schwartz, Jr., Grand Island, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 692,624, Jun. 3, 1976, Pat. No. 4,152,368, which is a continuation-in-part of Ser. No. 490,423, Jul. 22, 1974, abandoned, Continuation-in-part of Ser. No. 726,033, Sep. 23, 1976, Pat. No. 4,148,841, which is a continuation-in-part of Ser. No. 514,984, Oct. 10, 1974, Pat. No. 3,983,185, which is a continuation-in-part of Ser. No. 490,423, Jul. 22, 1974, abandoned. This application Jan. 21, 1977, Ser. No. 761,502
The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.
Int. Cl.^{2} C08K *3/08, 3/10;* **C08L** *67/06*
U.S. Cl. 260—45.75 R **67 Claims**

1. In a copolymerizable mixture of an unsaturated polyester composition and a copolymerizable ethylenically unsaturated monomer reactant capable of copolymerization to form a fire retardant polymer composition, said unsaturated polyester composition comprising a halogenated alpha, beta-ethylenically unsaturated polyester of a polycarboxylic compound and a polyhydric alcohol, which contains halogen in a proportion of about 4 up to about 50 weight percent, the proportion of said ethylenically unsaturated monomer to said unsaturated polyester composition being that necessary to produce on reaction of said ethylenically unsaturated monomer with said unsaturated polyester composition an infusible polyester resin, the improvement wherein said mixture contains an effective fire retardant proportion of about 0.2 to about 15 weight percent of an additive mixture consisting essentially of at least 0.1 weight percent of iron or an iron compound, at least 0.1 weight percent of a molybdenum compound and at least 0.1 weight percent of a copper or a copper compound; said proportions being based on the weight of the copolymerizable mixture.

4,195,015

HEAT AND AGING STABLE COPOLYETHERESTERAMIDES AND METHOD OF MANUFACTURING SAME

Gérard Deleens, Orsay; Bernard Guerin, Bures-sur-Yvette, and Claude Poulain, Orsay, all of France, assignors to ATO Chimie, Courbevoie, France

Continuation of Ser. No. 811,246, Jun. 29, 1977, abandoned. This application Jul. 7, 1978, Ser. No. 922,848
Claims priority, application France, Jul. 30, 1976, 76 23399
Int. Cl.^{2} C08K *5/18*
U.S. Cl. 260—45.75 C **8 Claims**

1. A thermoplastic aliphatic copolyetheresteramide based composition of high molecular weight stabilized to light, heat and oxidation comprising:

a copolyetheresteramide and 4-4′-bis-(α-α′-dimethylbenzyl)-diphenylamine in an amount of between about 0.05 and about 5% by weight of the copolyetheresteramide and between about 0.01 and about 2% by weight of a mixture of cuprous iodide and potassium iodide, the ratio by weight of said cuprous iodide to said potassium iodide being equal to between 0.1:1 and 1.9:1.

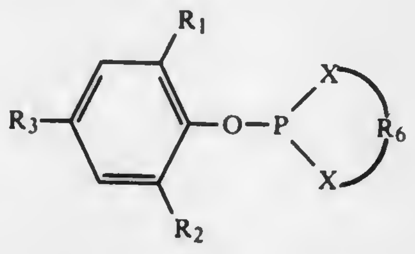
4,195,016

HINDERED PHENYL PHOSPHITES

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 710,063, Jul. 30, 1976, Pat. No. 4,094,855. This application May 8, 1978, Ser. No. 904,063
Int. Cl.^{2} C07F *9/15;* **C08K** *5/49, 5/52*
U.S. Cl. 260—45.85 R **12 Claims**

1. A compound of the formula



wherein

R_1 and R_2 are independently lower alkyl or hydrogen, provided that only one of R_1 and R_2 is hydrogen,
R_3 is $-(A)_q-COOR_4$ or CN where
A is alkylene of 1 to 6 carbon atoms,
R_4 is alkyl of 1 to 24 carbon atoms, phenyl or alkyl substituted phenyl,
q is 0 or 1,
X is S or O, and
R_6 phenylene, alkyl substituted phenylene or alkylene.

7. A composition of matter comprising an organic polymeric material normally subject to thermal, oxidative and ultraviolet degradation stabilized with

(a) 0.005% to 5% of a stabilizing compound according to claim **1**,
(b) 0 to 5% of a phenolic antioxidant,
(c) 0 to 5% of a thio co-stabilizer,
(d) 0 to 5% of a UV light protecting compound.

4,195,017

MALIGNIN, DERIVED FROM BRAIN TUMOR CELLS, COMPLEXES AND POLYPEPTIDES THEREOF

Samuel Bogoch, 46 E. 91st St., New York, N.Y. 10028

Continuation of Ser. No. 553,075, Feb. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 550,432, Feb. 18, 1975, Ser. No. 450,404, Mar. 12, 1974, and Ser. No. 385,451, Aug. 3, 1973. This application Nov. 17, 1977, Ser. No. 852,198
Int. Cl.^{2} A61K *39/00;* **C07C** *103/52;* **C07G** *7/00*
U.S. Cl. 260—112 R **11 Claims**

1. A product, Malignin, derived from brain tumor cells, which forms a single line precipitate with its specific antibody in quantitative precipitin tests and in Ouchterlony gel diffusion tests, is soluble in water and aqueous solutions having an acid or neutral pH, and insoluble at an alkaline pH, and has a spectrophotometric absorption peak wave length of 280 mμ, a molecular weight of about 10,000 and an amino acid composition approximately as follows:

	Approx. No. of Residues
Aspartic Acid	9
Threonine	5
Serine	5
Glutamic Acid	13
Proline	4
Glycine	6
Alanine	7
Valine	6
½ Cystine	1
Methionine	2
Isoleucine	4
Leucine	8
Tyrosine	3
Phenylalanine	3
Lysine	6
Histidine	2
Arginine	5
Approximate Total	89

the amino acids cysteic, hydroxyproline, norleucine, ammonia, isodesmosine, hydroxylysine, lysinonorleucine and gamma-aminobutyric acid being absent in detectable amounts.

2. The antibody, Anti-Malignin, prepared in a mammal in response to the product, Malignin, of claim **1**.

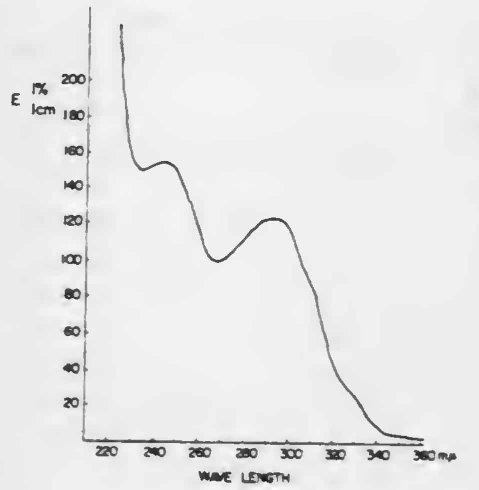
7. Polypeptides having the physicochemical specificities of the product of claim **1** and derived therefrom by sequential cleavage of units of approximately a molecular weight of 200 down to a molecular weight of approximately 5000.

4,195,018

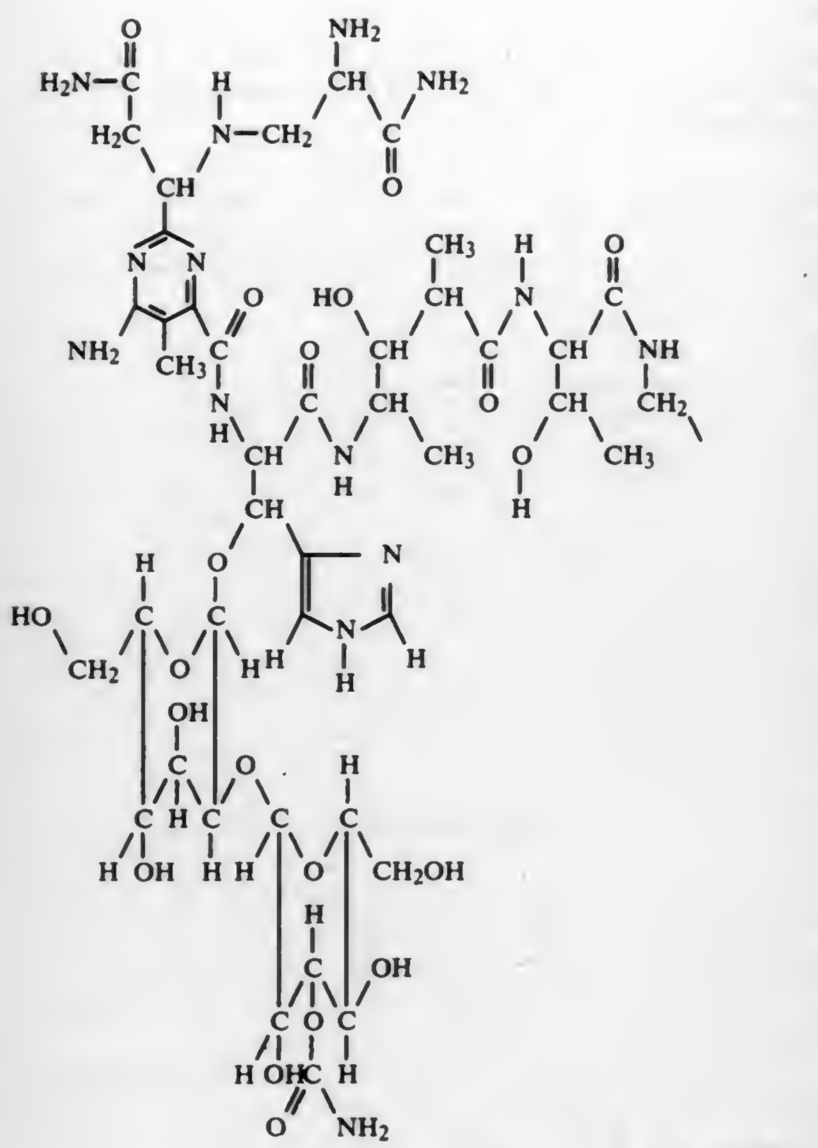
3-[(S)-1′-PHENYLETHYLAMINO]PROPYLAMINOBLEOMYCIN, NON-TOXIC SALT THEREOF, AND METHOD FOR PRODUCING SAME

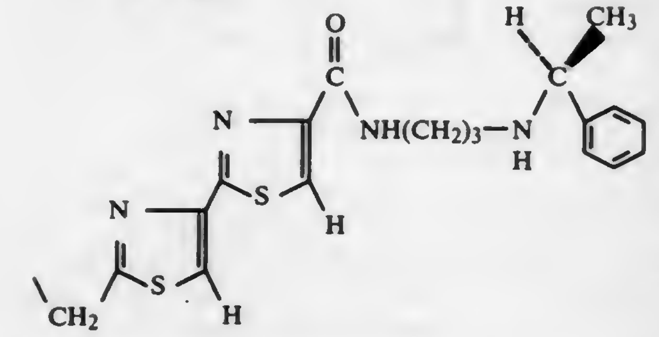
Tomohisa Takita, Asaka; Akio Fujii, Kamákura; Takeyo Fukuoka, Tokyo; Yasuhiko Muraoka, Kitamoto; Osamu Yoshioka, Yono, and Hamao Umezawa, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1978, Ser. No. 915,805
Claims priority, application Japan, Jul. 1, 1977, 52-77770; Oct. 14, 1977, 52-122485
Int. Cl.^{2} C07C *103/52;* **A61K** *37/100*
U.S. Cl. 260—112.5 R **2 Claims**



1. 3-[(S)-1′-Phenylethylamino]propylaminobleomycin represented by the formula





substantially free from the (R) stereoisomer and a non-toxic salt thereof.

4,195,019
WOOD AND PHENOL-FORMALDEHYDE COMPRESSION-MOULDING COMPOSITION AND METHOD FOR PREPARING THE SAME

Margarita D. Babina; Anna P. Gabets; Ida I. Pereskokova, and Galina I. Popova, all of Sverdlovsk, U.S.S.R., assignors to Nizhnetagilskoe Proizvodstvennoe Obiedinenie "Uralkhimplast" and Uralsky Lesotekhnichesky Institut, both of Sverdlovsk, U.S.S.R.

Filed Oct. 10, 1978, Ser. No. 949,726
Int. Cl.² C08L *1/02*
U.S. Cl. 260—17.2 **6 Claims**

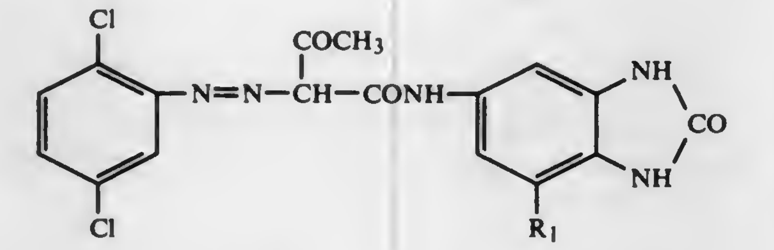
1. A compression-moulding composition containing 95 to 98 parts by weight of a product resulting from the treatment of crushed wood with an aqueous solution of phenol and formaldehyde at the boiling temperature of said solution in the presence of hydrochloric acid at a weight ratio between phenol, formaldehyde, water, hydrochloric acid, crushed wood equal to 0.15–0.40:0.048–0.27:10–15:0.0724–0.1086:1 respectively, 1 to 3 parts by weight of a curing agent, viz. hexamethylenetetramine, 0.5 to 1 part by weight of a curing accelerator selected from the group consisting of calcium oxide and magnesium oxide and 0.5 to 1 part by weight of a lubricant selected from the group consisting of stearin, oleic acid and stearates.

4,195,020
DICHLORO-PHENYL-AZO-ACETOACETYLAMINO-BENZIMIDAZOLONE PIGMENTS

Klaus Hunger, Kelkheim, and Joachim Ribka, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 703,243, Jul. 7, 1976, abandoned, which is a continuation of Ser. No. 507,617, Sep. 19, 1974, abandoned.
This application Feb. 23, 1979, Ser. No. 15,603
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1973, 2347532
Int. Cl.² C09B *29/36*
U.S. Cl. 260—157 **4 Claims**

1. A mono azo pigment of the formula



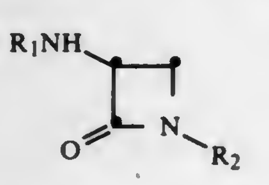
wherein R_1 is hydrogen, chlorine or methyl.

4,195,021
1,3-DISUBSTITUTED 2-AZETIDINONE ANTIBITOTICS

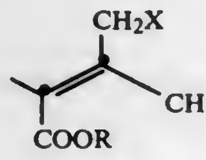
David K. Herron, Indianapolis, and Celia A. Whitesitt, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 26, 1977, Ser. No. 845,766
Int. Cl.² C07D *205/08;* A61K *31/395*
U.S. Cl. 260—239 A **14 Claims**

1. A compound of the formula



wherein R_2 is a group of the formula



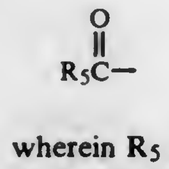
wherein R is a hydrogen or a carboxylic acid ester protecting group and

X is chloro, bromo, C_1–C_3 acyloxy, hydroxy, C_1–C_4 alkoxy, benzyloxy, or a group of the formula

$—SR_3$

wherein R_3 is C_1–C_4 alkyl, or phenyl, and

wherein R_1 is hydrogen or an acyl group of the formula



$R_5\overset{\overset{O}{\|}}{C}—$

wherein R_5 is

(a) hydrogen, C_1–C_4 alkyl, halomethyl or phenyl;

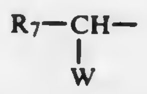
(b) benzyloxy, 4-nitrobenzyloxy, 2,2,2-trichloroethoxy, tert-butoxy, or 4-methoxybenzyloxy;

(c) an arylalkyl group of the formula

$R_6—(O)_m—CH_2—$

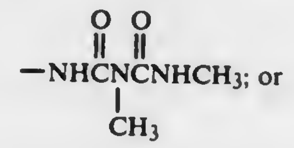
wherein m is 0 or 1 and R_6 is 1,4-cyclohexadienyl, phenyl or phenyl substituted with 1 or 2 substituents independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, C_1–C_4 alkyl and C_1–C_4 alkoxy;

(d) a substituted arylalkyl group of the formula



$R_7—\underset{\underset{W}{|}}{CH}—$

wherein R_7 is R_6 as defined above, 2-thienyl or 3-thienyl and W is hydroxy, protected hydroxy, carboxy, protected carboxy, amino, protected amino or a group of the formula



$—NH\overset{\overset{O}{\|}}{C}\underset{\underset{CH_3}{|}}{N}\overset{\overset{O}{\|}}{C}NHCH_3$; or

(e) a heteroaryl methyl group of the formula

$R_8CH_2—$

wherein R_8 is 2-thienyl, 3-thienyl, 2-furyl, 2-thiazolyl, 5-tetrazolyl, 1-tetrazolyl or 4-isoxazolyl,

and when R_1 is hydrogen, the hydrochloride acid addition salts of the amines represented thereby, and when R is hydrogen the pharmaceutically acceptable salts of the acids represented thereby.

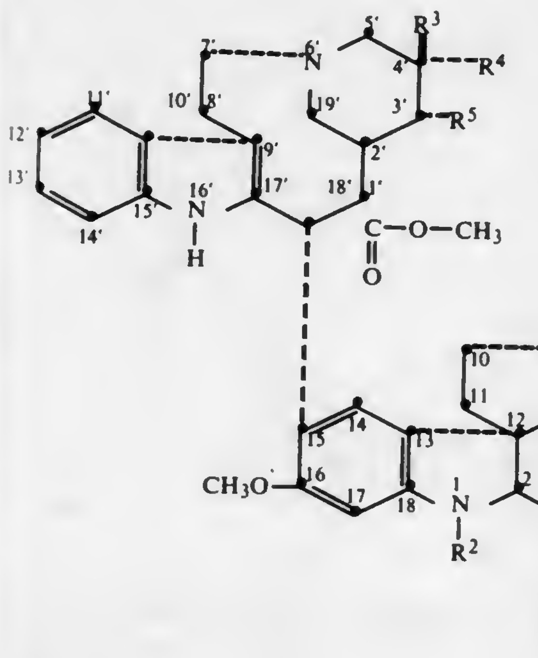
4,195,022
4-DESACETOXY-4α-HYDROXYVINBLASTINE AND RELATED COMPOUNDS

Gerald L. Thompson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 27, 1978, Ser. No. 890,422
Int. Cl.² C07D *519/04*
U.S. Cl. 260—244.4 **6 Claims**

1. An indole-dihydroindole of the formula

II



wherein R is OCH_3 or NH—NH_2, R^1 is H or acetyl, R^2 is CH_3 or CHO, and, when taken singly, R^5 is H and one of R^3 and R^4 is OH or H and the other is C_2H_5 and when R^4 and R^5 are taken together, they form an α-epoxide ring and R^3 is C_2H_5, with the proviso that, when R is NH—NH_2, R^1 is H, and pharmaceutically acceptable acid addition salts thereof.

4,195,023
2-(2-FUROYL)1,2-BENZISOTHIAZOLE-3-ONE, 2-(2-FUROYL) SACCHARIN, AND 2-(2-THENOYL) SACCHARIN

Dennis Mulvey, Milford; Howard Jones, Holmdel, and Morris Zimmerman, Watchung, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 20, 1975, Ser. No. 606,271
Int. Cl.² C07D *275/06*
U.S. Cl. 548—209 **3 Claims**

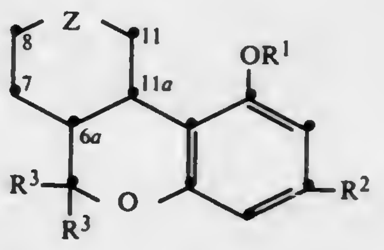
1. 2-(2-Furoyl)-1,2-benzoisothiazoline-3-one.

4,195,024
BENZOCYCLOHEPTAPYRANS, COMPOSITIONS, AND METHOD OF TREATMENT

Robert A. Archer, Indianapolis, Ind., and Moses W. McMillan, Vicksburg, Mich., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 884,883, Mar. 9, 1978, Pat. No. 4,152,451.
This application Jan. 29, 1979, Ser. No. 7,116
Int. Cl.² C07D *311/94*
U.S. Cl. 260—345.3 **17 Claims**

1. A compound having the formula



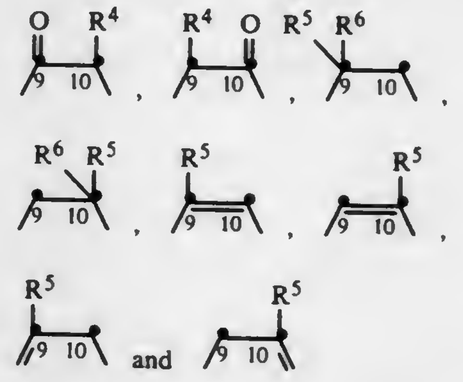
wherein:

R^1 is hydrogen or C_1–C_4 alkanoyl;

R^2 is C_5–C_{10} alkyl or C_5–C_{10} alkenyl;

R^3 is hydrogen or methyl; and

Z is selected from the group consisting of



wherein:

R^4 is hydrogen or C_1–C_4 alkoxycarbonyl;

R^5 is hydrogen or C_1–C_4 alkyl; and

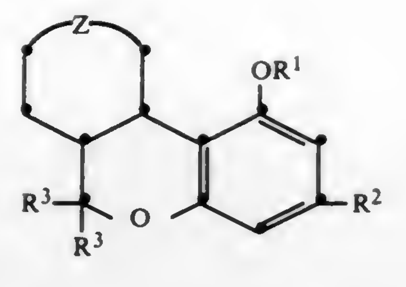
R^6 is hydrogen or hydroxy.

4,195,025
9-AMINO-DIBENZOPYRANS

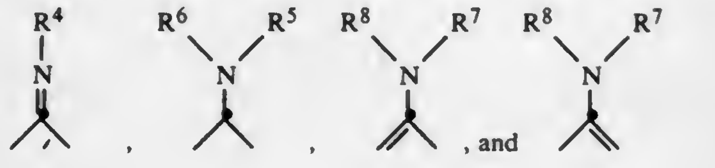
William A. Day, and Edward R. Lavagnino, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 878,844, Feb. 17, 1978, Pat. No. 4,152,450.
This application Jan. 29, 1979, Ser. No. 6,982
Int. Cl.² C07D *311/80, 295/08*
U.S. Cl. 260—345.3 **24 Claims**

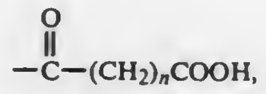
1. A compound having the general formula



wherein:
R¹ is hydrogen or C_1–C_4 alkanoyl;
R² is C_5–C_{10} alkyl or C_5–C_{10} alkenyl;
R³ is hydrogen or methyl; and
Z is selected from the group consisting of

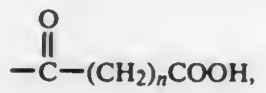


wherein:
R⁴ is hydroxy, C_1–C_4 alkoxy, or C_1–C_7 alkanoyloxy;
R⁵ taken singly is hydrogen, hydroxy, C_1–C_4 alkoxy, C_1–C_4 alkyl, CH_2C_2–C_4 alkenyl, CH_2C_2–C_4 alkynyl, C_1–C_7 alkanoyl, C_1–C_7 alkanoyloxy, phenyl-C_1–C_2 alkyl, phenyl-C_1–C_2 alkanoyl, —$(CH_2)_n$—OH, —$(CH_2)_n$'O—C_1–C_2 alkanoyl,



$$-\overset{O}{\overset{\|}{C}}-(CH_2)_nCOOH,$$

wherein n is 2, 3 or 4;
R⁶ taken singly is hydrogen, C_1–C_4 alkyl, CH_2C_2–C_4 alkenyl, CH_2C_2–C_4 alkynyl, C_1–C_7 alkanoyl, phenyl-C_1–C_2 alkyl or phenyl-C_1–C_2 alkanoyl;
R_5 and R_6 taken together with the nitrogen to which they are attached complete a heterocyclic ring selected from pyrrolidine, 2-oxopyrrolidine, 2,5-dioxopyrrolidine, piperidine, 2-oxopiperidine, 2,6-dioxopiperidine and morpholine;
R⁷ taken singly is hydrogen, C_1–C_7 alkanoyl, phenyl-C_1–C_2 alkanoyl or



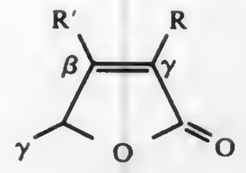
$$-\overset{O}{\overset{\|}{C}}-(CH_2)_nCOOH,$$

wherein n is 2, 3 or 4;
R⁸ taken singly is C_1–C_7 alkanoyl or phenyl-C_1–C_2 alkanoyl;
R⁷ and R⁸ taken together with the nitrogen to which they are attached complete a heterocylic ring selected from 2-oxopyrrolidine, 2,5-dioxopyrrolidine, 2-oxopiperidine and 2,6-dioxopiperidine;
and the non-toxic pharmaceutically acceptable acid addition salts and quaternary ammonium salts thereof.

4,195,026
SUBSTITUTED FURANS FROM BUTENOLIDES

George A. Kraus, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed Dec. 4, 1978, Ser. No. 966,268
Int. Cl.² C07D *307/36, 307/58*
U.S. Cl. 260—346.11 **12 Claims**

1. A method of preparing gamma position substituted furans from a butenolide comprising, reacting a butenolide of the formula:

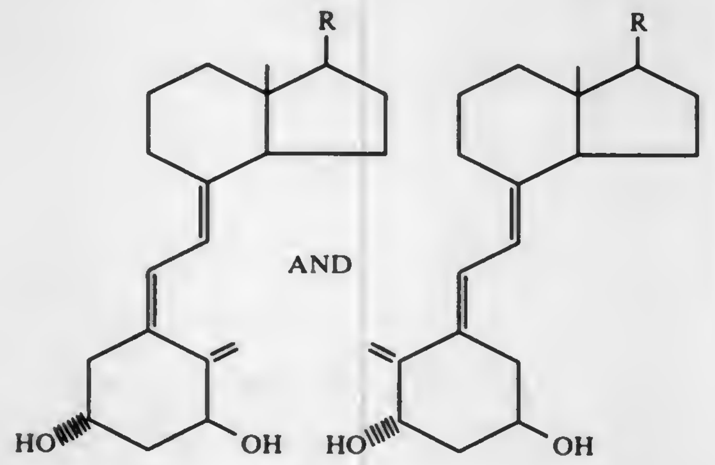


wherein R and R' are selected from the group consisting of hydrogen and non-functionally substituted alkyls, alkenyls, alkynyls and aryls with a trialkyl chlorosilane alkylating agent in the presence of a strong organic base and a suitable organic solvent for said base to provide a silane moiety alkylated furan ring containing intermediate; and thereafter
reacting said furan ring containing intermediate, under metallating conditions, with an organic electrophile to provide addition of said electrophile to the gamma position of said furan ring; and thereafter
removing the silane moiety from said ring to provide a gamma substituted furan.

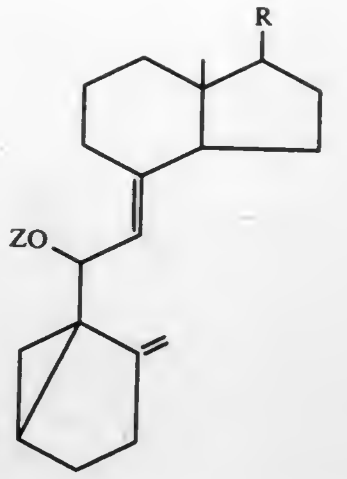
4,195,027
PROCESS FOR PREPARING 1α-HYDROXYLATED COMPOUNDS

Hector F. DeLuca; Heinrich K. Schnoes; David E. Hamer, and Herbert E. Paaren, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Continuation-in-part of Ser. No. 869,448, Jan. 16, 1978, abandoned. This application Jun. 12, 1978, Ser. No. 914,796
Int. Cl.² C07J *9/00*
U.S. Cl. 260—397.2 **65 Claims**

1. A method for preparing 1α-hydroxylated vitamin D compounds having the general formulae



wherein R is selected from the group consisting of substituted or unsubstituted, or saturated or unsaturated, or unsaturated and substituted cholesterol side chain groups, or where R may have the structure of the side chain of cholenic acid, or of homocholenic acid, or of 27-nor-25-ketocholesterol, or of 24-ketocholesterol,
which comprises subjecting compounds having the general formula



wherein R is defined as above and Z is selected from the group consisting of hydrogen, lower alkyl, lower acyl and aromatic acyl to allylic oxidation with selenium dioxide, recovering the corresponding 1α-hydroxy compound, acylating said 1α-hydroxy compound to form the 1α-O-acyl derivative, subjecting said derivative to acid catalyzed solvolysis, whereby the 5,6-cis and 5,6-trans-1α-O-acyl vitamin D compounds are produced in admixture, and removing the acyl groups from said compounds by hydrolysis or hydride reduction.

4,195,028
GRANULAR FLOCCULANTS AND THEIR MANUFACTURE

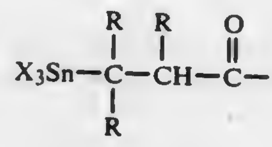
Wataru Agui, Tokyo; Nobuyuki Higosaki, Kiyose; Koichiro Yamanari; Toshio Furukawa, both of Tokyo, and Hiroshi Kuyama, Urawa, all of Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.
Filed Jan. 27, 1978, Ser. No. 872,963
Claims priority, application Japan, Jan. 31, 1977, 52-8801
Int. Cl.² C08K *3/34*
U.S. Cl. 260—42.43 **4 Claims**

1. A granular flocculant comprising one part by weight of high-molecular-weight polyvinylimidazoline flocculant and from about 0.05 to about 1.0 part by weight of water-insoluble, siliceous binder.

4,195,029
PROCESS FOR PRODUCING ORGANOTIN COMPOUNDS

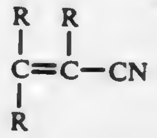
Eberhard Otto, Lindenfels; Wolfgang Wehner, Zwingenberg, and Hermann O. Wirth, Bensheim, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Nov. 8, 1978, Ser. No. 958,761
Claims priority, application Sweden, Nov. 14, 1977, 7713867
Int. Cl.² C07F *7/22*
U.S. Cl. 260—429.7 **16 Claims**

1. A process for the production of organotin compounds of the formula



$$X_3Sn-\underset{R}{\overset{R}{C}}-\overset{R}{CH}-\overset{O}{\overset{\|}{C}}-Y$$

wherein
X is a chlorine, bromine or iodine atom, the
R's independently of one another are each a hydrogen atom or alkyl,
Y is OH, NH_2 or OR' in which R' is a hydrocarbon group of aliphatic, cycloaliphatic or aromatic character, or said group substituted by a hydroxyl, mercapto, alkoxy, alkylthio, carboxyl or carboalkoxy grup, which comprises reacting, at −30° C. to +100° C., a tin dihalide with hydrogen chloride, hydrogen bromide or hydrogen iodine and an unsaturated nitrile of the formula



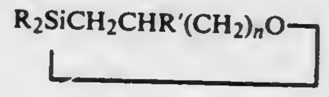
$$\underset{R}{\overset{R}{C}}=\overset{R}{C}-CN$$

in a reactant medium selected from the group consisting of water, aqueous hydrochloric acid, water and alcohol, carboxylic acid, and alcohol with the proviso that when the reactant medium is alcohol the molar ratio of alcohol to nitrile is at least about 6:1.

4,195,030
PREPARATION OF MONOMERIC ORGANOSILICON ESTERS

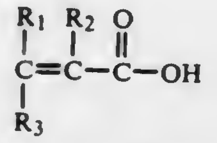
William G. Deichert, Macedon, N.Y.; Kai C. Su, Arlington, Tex., and Martin F. Van Buren, Webster, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 10, 1979, Ser. No. 2,284
Int. Cl.² C07F *7/08*
U.S. Cl. 260—448.2 E **17 Claims**

1. A process for producing a monomeric organosilicon ester by reacting a cyclosilalkoxane having the general formula



$$R_2SiCH_2CHR'(CH_2)_nO$$

wherein R is a monovalent hydrocarbon radical free of aliphatic unsaturation, R' is selected from the group consisting of H and CH_3 and n is an integral of from 1 to 2 inclusive with a free radical polymerizable monocarboxylic acid having the general formula



$$\underset{R_3}{\overset{R_1}{C}}=\overset{R_2}{C}-\overset{O}{\overset{\|}{C}}-OH$$

wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, monovalent hydrocarbon containing from 1 to 6 carbon atoms and a halogenated hydrocarbon containing from 1 to 6 carbon atoms by (1) contacting at least stoichiometric amounts of the cyclosilalkoxane with at least stoichiometric amounts of the carboxylic acid in the presence of from at least about 25.0 percent by weight, based on the total weight of the solution, of a solvent which forms an azeotrope with water and from about 0.01 percent to about 1.0 percent by weight, based on the total weight of the solution, of a free radical polymerization preventing inhibitor, from about 0.1% to about 3.0% by weight, based on the total weight of the solution, of a protonating catalytic acid, (2) heating said solution of step (1) to a temperature of from about 70° C. to about 135° C. for about 3 hours to about 6 hours while supplying a sufficient amount of air to maintain inhibitor activation, and (3) during the reaction continuously removing from the solution by azeotropic distillation water which is produced by the reaction thereby forming a free radical polymerizable monomeric unsaturated organosilicon ester without polymerizing either the free radical polymerizable monocarboxylic acid or the free radical polymerizable monomeric unsaturated organosilicon ester.

4,195,031

PROCESS FOR THE CONTINUOUS PRODUCTION OF MONOISOCYANATES

Wolfgang Reichmann, Duesseldorf; Klaus König, Leverkusen, and Johannes Koster, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 965,648

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2756928

Int. Cl.^{2} C07C *118/00*

U.S. Cl. 260—453 P **6 Claims**

1. A process for the continuous production of monoisocyanates corresponding to the formula

R—NCO

in which

R represents an aliphatic hydrocarbon radical containing 1 to 3 carbon atoms, comprising thermally decomposing the corresponding N-alkylcarbamic acid aryl esters corresponding to the formula

R—NH—CO—O—R′

in which

R has the meaning above and

R′ represents a radical of the type obtained by removing the hydroxyl group from a monophenol having a boiling point below 250° C. at normal pressure, and separating the decomposition products by decomposition, further characterized in that

(a) a solution of the N-alkylcarbamic acid aryl ester in an organic solvent, which solvent is inert under the reaction conditions and has a boiling point lying at least 20° C. above the boiling point of the monoisocyanate to be formed, is heated to a temperature of from 160° C. to 250° C. at normal pressure or at slightly reduced pressure within the range of 200 to 1013 mbar, thereby resulting in the decomposition of the ester into the corresponding monoisocyanate and the corresponding phenol, as well as the evaporation of the solvent and the decomposition products, and

(b) the vapors formed are fed into a distillation column with the monoisocyanate obtained at the head of the column and with the phenol and at least a major portion of the solvent obtained from a side stream or from several side streams.

4,195,032

PROCESS FOR CONTINUOUSLY WORKING UP SOLUTIONS OF THE TYPE ACCUMULATING IN THE PHOSGENATION OF MONOAMINES

Johannes Koster; Peter Heitkämper; Peter Fuhrmann, and Helmut Porkert, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,650

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806214

Int. Cl.^{2} C07C *118/00, 118/02*

U.S. Cl. 260—453 PH **4 Claims**

1. A process for continuously working up solutions of the type which accumulate during the phosgenation of monoamines corresponding to the following general formula:

R—NH_2 ps

wherein

R represents an alkyl radical containing from 1 to 3 carbon atoms which may be unsaturated; and which solutions consist essentially of carbamic acid chlorides corresponding to the following general formula:

R—NH—CO—Cl,

optionally monoisocyanates corresponding to the following general formula:

R—NCO,

wherein

R is defined as above;

and inert solvents boiling above 80° C. and at least 10° C. above the boiling point of the isocyanate R—NCO, with recovery of the pure monoisocyanate R—NCO by thermally decomposing the corresponding carbamic acid chloride and distilling the isocyanate obtained and the isocyanate already present, if any, characterized in that the solution to be worked up is introduced to any point into a product circuit which has been established

(a) by introducing a solution consisting essentially of the monoisocyanate to be recovered, the carbamic acid chloride to be decomposed and the above-mentioned solvent into a distillation column, in whose head the pure monoisocyanate and in whose sump the solvent, which may be contaminated, accumulate, at a point situated above the column sump;

(b) by removing from the column, at a point situated above the inlet mentioned in (a), a liquid product stream consisting essentially of a concentrated carbamic acid chloride solution, optionally containing monoisocyanate, in the above-mentioned solvents, and combining this product stream with at least part of the sump product obtained in accordance with (a);

(c) by introducing the combined streams obtained in accordance with (b) into a reaction vessel provided with a reflux condenser, or by effecting the combination mentioned in (b) within the above-mentioned reaction vessel, provision being made by heating the streams before and/or after their combination or before and/or after their introduction into the reaction vessel, to ensure that the liquid phase is at least partly evaporated with at least a partial decomposition of the carbamic acid chloride into monoisocyanate and hydrogen chloride; and

(d) by allowing the hydrogen chloride formed to escape as a gas above the reflux condenser and, at the same time, returning at least part of the condensate forming in the reflux condenser to the beginning of the circuit according to (a) as the solution to be introduced into the distillation column in accordance with (a), solvent, which may be contaminated, being continuously removed at the same time as a liquid from the reaction vessel mentioned in (c).

4,195,033

1-ACETYL OR 1-CYANO-2(2,2-DICHLOROVINYL)-3,3-DIMETHYL CYCLOPROPANE

Nazim Punja, Vokingham, England, assignor to Imperial Chemical Industries Limited, London, England

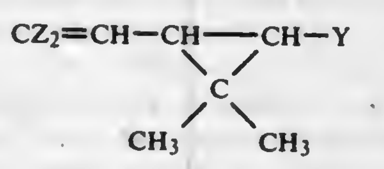
Division of Ser. No. 684,957, May 10, 1976, abandoned. This application Aug. 4, 1978, Ser. No. 931,297

Claims priority, application United Kingdom, May 16, 1975, 20887/75; May 16, 1975, 20889/75; Feb. 12, 1976, 5599/76

Int. Cl.^{2} C07C *49/26, 121/46*

U.S. Cl. 260—464 **3 Claims**

1. A compound of the formula:



wherein Y is acetyl or cyano, and Z is chlorine.

4,195,034

PROCESS FOR THE MANUFACTURE OF N-(SUBSTITUTED)-3-AMINOACRYLONITRILES

Murray K. Phibbs, Bath, and Peter A. Sipos, Kingston, both of Canada, assignors to Du Pont of Canada Limited, Montreal, Canada

Filed Nov. 22, 1978, Ser. No. 963,082

Claims priority, application Canada, Nov. 25, 1977, 291729

Int. Cl.^{2} C07C *120/00*

U.S. Cl. 260—465 E **8 Claims**

1. A process for the manufacture of N-(substituted)-3-aminoacrylonitriles of the formula N-(R_1R_2)—CH=CH—CN where R_1 is alkyl, —$(CH_2)_n$—NH—CH=CH—CN, phenyl or phenyl substituted with alkyl and/or —NH_2 groups, and R_2 is hydrogen or alkyl with the proviso that when R_1 is —$(CH_2)_n$–NH–CH=CH–CN R_2 is hyrdogen, n being 1 to 8, said process comprising the step of:

(a) contacting cyanoacetylene with an amine selected from the group consisting of (i) NHR_1R_2, where R_1 is alkyl, phenyl or phenyl substituted with alkyl and/or —NH_2 groups and R_2 is as above, and (ii) NH_2—$(CH_2)_n$—NH_2, where n is 1 to 8, in the presence of an inert atmosphere and at a temperature below the boiling point of cyanoacetylene and of said amine, said temperature being not greater than 40° C., with the proviso that when R_1 is alkyl or —$(CH_2)_n$—NH—CH—CH=CH—CN the temperature is not greater than 30° C., and

(b) recovering the N-(R_1R_2)-3-aminoacrylonitrile so obtained at a temperature of not greater than 50° C.

4,195,035

ALKANE-BISALKYL-PHOSPHINIC ANHYDRIDES AND PROCESS FOR THE MANUFACTURE OF ALKANE-PHOSPHONIC ANHYDRIDES AND ALKANE-BIS ALKYL-PHOSPHINIC ANHYDRIDES

Hans-Jerg Kleiner, Kronberg, and Walter Dursch, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

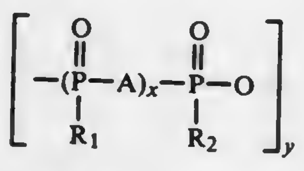
Filed Mar. 12, 1979, Ser. No. 19,786

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811628

Int. Cl.^{2} C07F *9/30*

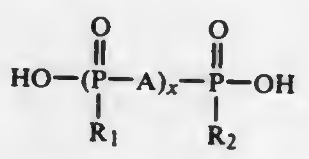
U.S. Cl. 260—545 P **3 Claims**

1. A process for the manufacture of alkane-phosphonic anhydrides and alkane-bisalkyl-phosphinic anhydrides of the formula II



$$\left[-(\underset{\substack{|\\ R_1}}{\overset{\substack{O\\ \|}}{P}}-A)_x-\underset{\substack{|\\ R_2}}{\overset{\substack{O\\ \|}}{P}}-O\right]_y \qquad \text{II}$$

in which R_1 and R_2 are alkyl having from 1 to 20 carbon atoms, A is alkylene having from 1 to 20 carbon atoms, x is zero or 1 and y is an integer equal to or greater than 1, which comprises heating to 250° to 450° C. an alkane-phosphonic acid or alkane-bisalkyl-phosphinic acid of the formula III



$$HO-(\underset{\substack{|\\ R_1}}{\overset{\substack{O\\ \|}}{P}}-A)_x-\underset{\substack{|\\ R_2}}{\overset{\substack{O\\ \|}}{P}}-OH \qquad \text{III}$$

in which R_1, R_2 and x have the aforesaid meaning, under reduced pressure and with splitting off of water.

4,195,036

DICHLOROACETAMIDES WHICH ARE ANTIDOTES FOR PROTECTING MAIZE AGAINST THE TOXIC ACTION OF HERBICIDAL ESTERS OF N,N-DISUBSTITUTED GLYCINES, METHODS FOR PREPARING THE ANTIDOTES, AND COMPOSITIONS COMPRISING THEM

Franco Gozzo, S. Donato Milanese; Luigi Abbruzzese, Milan, and Giorgio Siddi, S. Donato Milanese, all of Italy, assignors to Montedison S.p.A., Milan, Italy

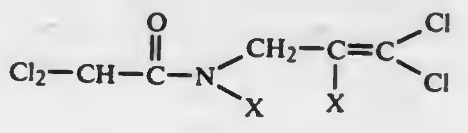
Filed Oct. 28, 1977, Ser. No. 846,351

Claims priority, application Italy, Oct. 29, 1976, 28867 A/76

Int. Cl.^{2} C07C *103/27*

U.S. Cl. 260—561 HL **3 Claims**

1. A dichloroacetamide having the general formula



in which

X is H or chlorine; and

R is H, an alkyl having from 1 to 5 carbon atoms, or an alkenyl having from 2 to 5 carbon atoms.

4,195,037

4-ALKOXY-3,5-DIAMINO-α,α,α-TRIFLUOROMETHYLBENZENE AND MANUFACTURE THEREOF AND HARDENER FOR POLYURETHANE ELASTOMER THEREOF

Takao Harada; Nobuhide Wada, both of Shizuoka; Hideaki Ohashi, Fujieda; Wataro Koike, Shizuoka, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

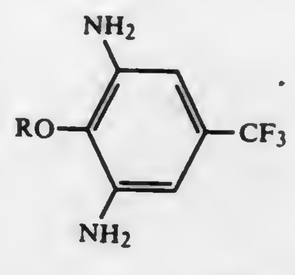
Filed Oct. 4, 1978, Ser. No. 948,348

Claims priority, application Japan, Dec. 21, 1977, 52-154193

Int. Cl.^{2} C07C *93/08*

U.S. Cl. 260—575 **2 Claims**

1. 4-Alkoxy-3,5-diamino-α,α,α-trifluoromethylbenzene having the formula



wherein R represents a C_1–C_8 alkyl group.

4,195,038

PREPARATION OF 3-BROMO-2-HYDROXY-4,4,5,5-TETRAMETHYLCYCLOPENTA-2-ENONE

Yunn H. Chiang, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 796,011, May 11, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 938,939

Int. Cl.^{2} C07C *45/00*

U.S. Cl. 260—586 C **9 Claims**

1. A process for the preparation of 3-bromo-2-hydroxy-4,4,5,5-tetramethyl cyclopenta-2-enone which comprises the sequential steps of:

(a) reacting bromine with at least about twenty-five moles of 2,6-dimethyl-2,5-heptadiene-4-one in a molecular equivalent ratio of about two to one in a suitable solvent at a temperature below about −20° C. whereby 2,3,5,6-tetrabromo-2,6-dimethyl-4-heptanone is formed in solution,

(b) adding to said solution a dehydrobromination agent in an amount sufficient to dehydrobrominate said 2,3,5,6-tetrabromo-2,6-dimethyl-4-heptanone to 3,5-dibromo-2,6-dimethyl-2,5-heptadiene-4-one, and

(c) adding said 3,5-dibromo-2,6-dimethyl-2,5-heptadiene-4-one to an amount of a very strong protic acid equivalent to the amount of said 2,6-dimethyl-2,5-heptadiene-4-one reacted with said bromine, at such a rate as to keep the temperature of the reaction mixture below 20° C.

4,195,039
HETEROGENEOUS PHASE OXIDATION OF OLEFINS TO KETONES

Hubert Mimoun, Rueil Malmaison, and Robert Charpentier, Villeneuve les Sablons, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 838,269, Sep. 30, 1977, Pat. No. 4,155,879. This application Dec. 5, 1978, Ser. No. 966,847

Claims priority, application France, Sep. 30, 1976, 76 29728

Int. Cl.^{2} C07C *27/12, 45/04*

U.S. Cl. 260—597 R **8 Claims**

1. A process for oxidizing olefins to carbonyl derivatives in heterogeneous phase, by means of a gas containing molecular oxygen, said olefins containing from 2 to 16 carbon atoms per molecule and having the general formula $R_1—CH{=}CH—R_2$ wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl, aryl, alkylaryl and aralkyl, or form together a bivalent radical, said process being conducted in the presence of a catalyst prepared according to a process consisting essentially of the steps of impregnating a carrier with a substantially non-aqueous solution having not more than 1% by weight of water, consisting essentially of an organic impregnating solvent having dissolved therein at least two components [A] and [B] of the general formula:

$$[A]=M_1X_nL_m$$

$$[B]=M_2Z_pL'_q$$

the molar ratio of [B]: [A] being 1:1 to 20:1, wherein M_1 is rhodium or palladium; X and Z are each an anionic group selected from a carboxylate, a nitrate, a sulfate, a perchlorate, a thiocyanate and a tetrafluoborate; n and p are integers selected from 1, 2 and 3, m being an integer selected from 1, 2, 3 and 6 or being O; M_2 is a metal selected from iron, copper, manganese and cobalt; q is an integer selected from 1 to 6 or is equal to O; L is a coordinate selected from water, an olefin, a polyolefin and benzonitrile and L' is a coordinate selected from water, dimethylformamide, hexamethylphosphorotriamide and dimethylsulfoxide and 1 to 40 moles of at least one halogen containing compound per rhodium or palladium atom, said halogen-containing compound being halogen, a halohydric acid, a lithium, sodium or ammonium chloride, carbon tetrachloride, chloroform or methylene chloride; and drying the resultant catalyst at a temperature not higher than 150° C.

4,195,040
PROCESS FOR PREPARING A METHYL-SUBSTITUTED BENZALDEHYDE

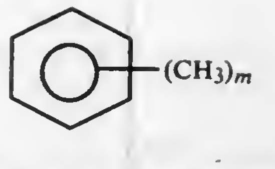
Carl A. Renner, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 8, 1979, Ser. No. 1,930

Int. Cl.^{2} C07C *45/02*

U.S. Cl. 260—599 **4 Claims**

1. Improved formylation process for preparing a methyl-substituted benzaldehyde by contacting and reacting, in a reaction mixture, at a temperature within the range about 0° to 120° C., the compound of the formula



wherein m is 2, 3, 4 or 5, carbon monoxide, hydrogen chloride and aluminum chloride catalyst, with the methyl-substituted benzaldehyde thus produced being separated from the reaction mixture and recovered, the improvement characterized in that the formylation reaction is carried out in the reaction mixture in the presence of chlorobenzene as a solvent.

4,195,041
PROCESS FOR PRODUCING P-HYDROXYBENZALDEHYDE

Masao Kawamura, Akashi; Tadaaki Nishi, Kakogawa; Kunioki Kato, Akashi; Hiroshi Mizokami, Kakogawa, and Tadashi Kanazawa, Hyogo, all of Japan, assignors to Seitetsu Kagaku Co.. Ltd., Hyogo, Japan

Filed Aug. 30, 1978, Ser. No. 938,125

Claims priority, application Japan, Sep. 7, 1977, 52-108084; Sep. 7, 1977, 52-108085; Sep. 8, 1977, 52-108552; Oct. 3, 1977, 52-119355

Int. Cl.^{2} C07C *45/00*

U.S. Cl. 260—600 R **13 Claims**

1. A process for producing p-hydroxybenzaldehyde through p-aminobenzaldehyde from p-nitrotoluene comprising the steps of:

reacting p-nitrotoluene with sodium polysulphide in a mixed solvent consisting of at least one alcohol and an alkali aqueous solution in the presence of an aprotic polar compound to produce p-aminobenzaldehyde,

adding the thus produced p-aminobenzaldehyde to an aqueous solution of sulphuric acid at 60°-100° C. to produce the sulphate thereof rapidly,

diazotizing, after cooling, the thus produced sulphate to produce a diazonium salt of p-aminobenzaldehyde, and

hydrolyzing the thus produced diazonium salt at 70°-100° C. thereby to produce p-hydroxybenzaldehyde.

4,195,042
RHODIUM HYDROFORMYLATION CATALYST

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 376,519, Jul. 5, 1973, Pat. No. 3,956,177, which is a continuation-in-part of Ser. No. 173,689, Aug. 20, 1971, abandoned. This application Mar. 2, 1976, Ser. No. 663,004

Int. Cl.^{2} C07C *45/08*

U.S. Cl. 260—604 HF **46 Claims**

1. In a hydroformylation process comprising contacting under suitable hydroformulation reaction conditions a hydrocarbon olefin, carbon monoxide, hydrogen and a hydroformylation catalyst, said suitable hydroformylation conditions being suitable for the production of aldehydes; the improvement comprising said catalyst having been prepared by combining, under suitable conditions for forming an intimate mixture effective as a hydroformylation catalyst, an organorhodium halide with a reducing agent in the presence of a phosphorus containing adjuvant;

said organorhodium halide being defined by the structure

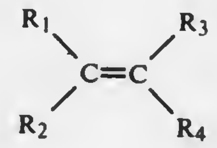
$$(L)_nRh(X)_m$$

wherein X is chlorine, bromine, or iodine; L is an unsaturated hydrocarbon group selected from cyclic dienes or cyclic trienes containing from 6 to 16 carbon atoms, n represents an integer of from 1 to 2, m represents an integer of from 1 to 2, and the sum of n plus m is equal to 2 or 3;

said reducing agent being selected from the group consisting of hydrazine and hydrides of Periodic Table Group IA, IIA, IIIA metals,

and wherein said phosphorus containing adjuvant is of the general formula L'_3P wherein each L' is the same or a different hydrocarbyl or hydrocarbyloxy radical selected from aryl or aryloxy radicals having 6 to 12 carbon atoms; alkaryl, aralkyl, alkaryloxy, or aralkoxy radicals having 7 to 12 carbon atoms; or alkyl or alkoxy radicals having 1 to 12 carbon atoms.

16. A process in accordance with claim **1** wherein said olefin has from 2 to 20 carbon atoms and is represented by the formula



wherein each R_1, R_2, R_3 and R_4 represents a hydrogen alkyl, alkenyl, cycloalkyl or cycloalkenyl radical.

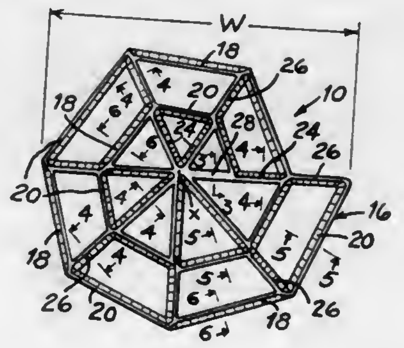
4,195,043
RANDOMLY DUMPABLE SELF ORIENTING SPIRAL PACKING ELEMENTS

Earl H. Foote, Atwater; Frank D. Moore, Tallmadge, and Ralph F. Strigle, Jr., Akron, all of Ohio, assignors to Norton Company, Worcester, Mass.

Filed Jan. 17, 1979, Ser. No. 4,076

Int. Cl.^{2} B01F *3/04*

U.S. Cl. 261—94 **10 Claims**



1. A randomly dumpable self orienting spiral packing element comprising:

a spiral wall member of predetermined wall thickness and axial height extending more than one spaced convolution around an axis and axially between opposite sides of the packing element and having

an inner convolution spaced from the axis; and

at least a part of at least one other outer convolution extending and spaced from the inner convolution;

a plurality of angularly spaced radial ribs of which at least one differs in radial length and radial wall portions thereof extending axially between the opposite sides and radially between the axis and adjoining wall portions of the spiral wall member; and

a plurality of open end cells of which at least one differs in size and volume extending axially between the opposite sides, angularly spaced radial wall portions of the ribs and adjoining wall portions of the spiral member; and a maximum transverse dimension between diametrically opposite wall portions of the packing element measured along an opposite side thereof greater than its axial length between the opposite sides.

4,195,044
HUMIDIFIER-NEBULIZER

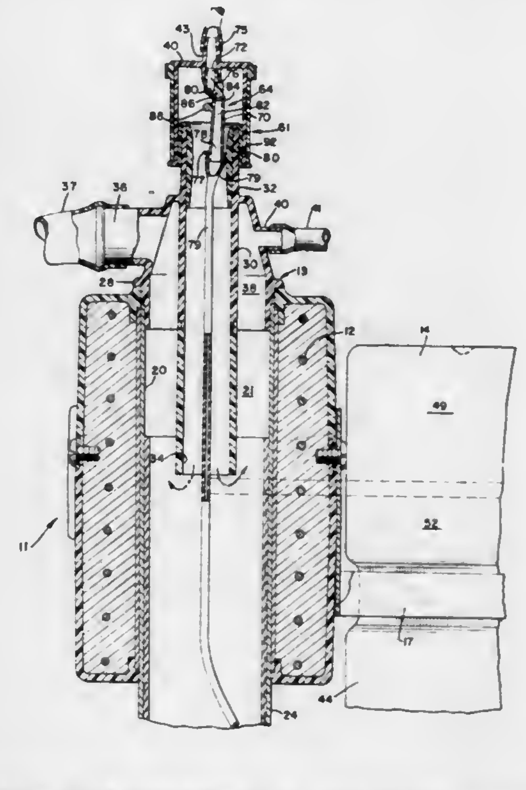
Kenneth G. Miller, Elk Grove Village, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Continuation-in-part of Ser. No. 826,119, Aug. 19, 1977, Pat. No. 4,110,419, which is a continuation of Ser. No. 569,490, Apr. 18, 1975, abandoned. This application Jan. 24, 1978, Ser. No. 872,026

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.^{2} A61M *15/00*

U.S. Cl. 261—142 **12 Claims**



1. Cartridge type humidifying and nebulizing apparatus for humidifying a breathable gas such as oxygen-supplemented air or the like to be inhaled by a patient undergoing inhalation therapy, said apparatus comprising in combination:

(a) cartridge module means embodying a tubular cartridge main body portion with an inner peripheral wall;

(b) said cartridge module means also including an upper end portion with cap means unitarily attached to said main body portion and a lower end portion unitarily attached to said main body;

(c) liquid holding means in association with said lower end portion of said cartridge means for helping retain humidifying liquid in association therewith during operative use of said apparatus;

(d) said cartridge module means further comprising liquid absorption means including an open center generally tubular liquid-absorption column member with an inner peripheral face constituting an evaporating surface for humidifying liquid disposed generally contiguously within and coextensive with a substantial part of said cartridge main body and lower end portion thereof, said absorption column having a lower end portion adapted to be wetted directly by humidifying liquid when in said liquid holding means, and to convey by absorption liquid upwardly adjacent said evaporating surface;

(e) said upper-end-portion-mounted cap means of said humidifier cartridge module means of paragraph (b) providing a generally closed air space above the humidifying liquid level of said liquid holding means of paragraph (c);

(f) said cap means unitarily including a gas inlet feed pipe for directing gas to be humidified into said cartridge main body, at a point above said liquid level, for humidification within said closed air space;

(g) said gas inlet feed pipe having a venturi insert means including an elongated body with longitudinally disposed upper and lower stem portions that are axially offset and constituting gas and liquid inlet passages respectively, said passages terminating inwardly in transversely adjacent orifices constituting part of the nebulizing means whereby a flow of pressurized gas out of the gas passage orifice past the orifice of said liquid passage creates a suction in the latter adapted to draw liquid therethrough from said liquid in said lower end portion to be aspiratively carried by said gas flow through said gas inlet feed pipe;

(h) said cartridge module means further including a separate projecting humidified-gas-outlet delivery pipe disposed a substantial distance above said liquid level and in direct fluid communication with said closed air space, said delivery pipe adapted to be connected with an output delivery tube leading to said patient, whereby said gas in said module and delivery tube is maintained in a substantially fully vapor-saturated condition.

4,195,045

COUPLING OF OPTIC-WAVEGUIDE ELEMENTS

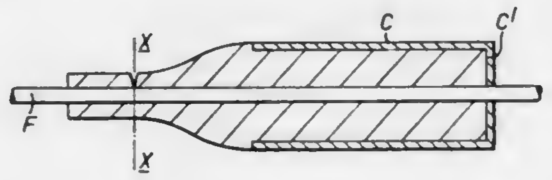
John F. Mead, Princes Risboro, England, assignor to Plessy Handel und Investments A.G., Zug, Switzerland

Filed Sep. 23, 1977, Ser. No. 835,918

Claims priority, application United Kingdom, Sep. 25, 1976, 39905/76

Int. Cl.² B29D *11/00*

U.S. Cl. 264—1 **1 Claim**



1. A method of accurately providing a fibre end with a surrounding sleeve comprising the steps of providing a precision made cylindrical sleeve, providing a sleeve of resiliently stretchable elastomer material, said elastomer sleeve having, when unstretched, an inside diameter substantially smaller than the outside diameter of the precision made cylindrical sleeve, is placed with an end part of its length over the open end part of the cylindrical precision sleeve, and the latter is closed at its other end by a plug or end wall having a co-axial bore closely fitting the fibre, in which the fibre is threaded through the thus assembled sleeves and the bores of the end walls thereof with the free end of said fibre projecting through the bore in the plug or end wall closing the elastomer sleeve, in which resin material is injected to fill the cavity formed jointly by the interior of the precision cylinder sleeve and the elastomer sleeve, in which before the resin material has set a knife edge member is introduced in a plane substantially normal to the axis of the fibre to cuttingly penetrate through the elastomer sleeve and the resin material, in which when the resin material has set the knife edge member is removed leaving a cleavage formed in the body of the resin material, in which subsequently the elastomer sleever is removed and in which the part of the resin material body which projects from the open end of the precision sleeve is, together with the fibre enclosed therein, snapped at the cleavage.

4,195,046

METHOD FOR MOLDING AIR HOLES INTO A TOOTH POSITIONING AND RETAINING APPLIANCE

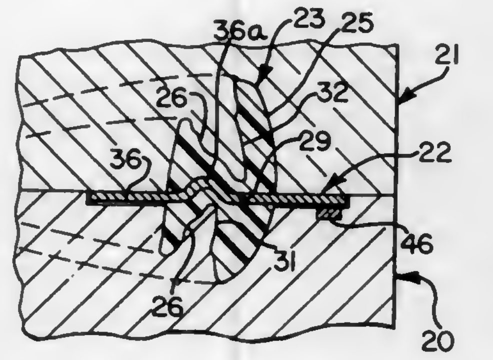
Peter C. Kesling, Green Acres, La Porte, Ind. 46320

Filed May 4, 1978, Ser. No. 902,874

Int. Cl.² A61C *13/00;* B29C *5/00;* B29H *3/00*

U.S. Cl. 264—16 **6 Claims**

1. A method for making a tooth positioning and retaining appliance with air holes, said appliance having an arch-shaped body of resilient material with upper and lower archways arranged in ideal arch relationship to receive upper and lower arches of a person, and air holes between the archways and the labial and lingual sides of the body, said method comprising the steps of setting up a mold having upper and lower mold members with models of the upper and lower dental arches to form the archways and an intermediate mold member, supporting air hole forming means by said intermediate mold member to extend at an acute angle to an occlusal plane of at least one of said models, closing the mold, filling the mold with curable molding material, curing the material, opening the mold, removing the molded appliance with the air hole forming means, and removing the air hole forming means from the appliance to define the air holes.



4,195,047

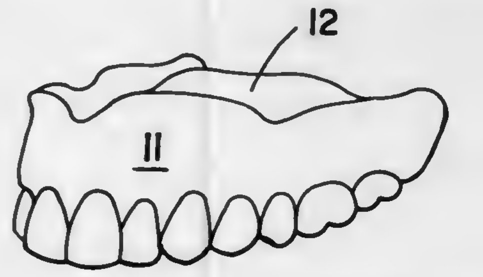
METHOD FOR REPAIRING BROKEN DENTURE

Herman R. Drennan, 32888 Palomares Rd., Castro Valley, Calif. 94546, and Norman A. Hana, 5520 Longview Dr., Paradise, Calif. 95969

Division of Ser. No. 731,282, Oct. 12, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,293

Int. Cl.² A61C *13/04;* B29C *5/00;* B29D *9/00*

U.S. Cl. 264—17 **2 Claims**



1. A method of repairing dentures comprising the steps of:

(1) gluing a broken denture together along its break to restore it to its original integral configuration;

(2) mixing a moldable, settable putty with a catalyst, said putty being a silicone type,

(3) gently forcing a portion of said putty under pressure onto a surface of said glued broken denture so it conforms to and extends across said break, thereafter allowing said putty to set-up,

(4) removing said broken denture from the resulting impression in said putty,

(5) separating said denture along said break and removing denture material on either side thereof;

(6) replacing said denture in the impression in said putty; and

(7) subsequently adding settable plastic material to the area of said break to bond pieces of said denture together as a unitary, serviceable denture.

2. A method of relining denture which contain a wash material on the roof pallate surface comprising the steps of:

(1) mixing a moldable settable putty with a catalyst, said putty being a silicone type;

(2) gently forcing a portion of said putty under pressure onto the surface of the wash material disposed on a denture with teeth in a sufficient amount to cover it with at least a layer of ¼ of an inch, and allowing said putty to set-up thereafter;

(3) placing said putty and denture in a dowelled two-part jig and setting the teeth of the denture and said putty with plaster-like material respectively in opposite parts of said jig and allowing said plaster-like material to harden,

(4) subsequently separating said jig,

(5) removing said wash material from the surface of said denture and

(6) reassembling said jig with a settable liquid plastic material between said denture and said putty in sufficient amount to fill the cavity left by removal of said wash material and allowing said plastic material to set-up and bond to said denture thereby effecting a reline thereof.

4,195,048

COMPENSATION FOR DIFFERING HEIGHTS OF DIFFERENT MOLDS CLAMPED BETWEEN THE MOLD-CLAMPING PLATES OF AN INJECTION-MOLDING MACHINE

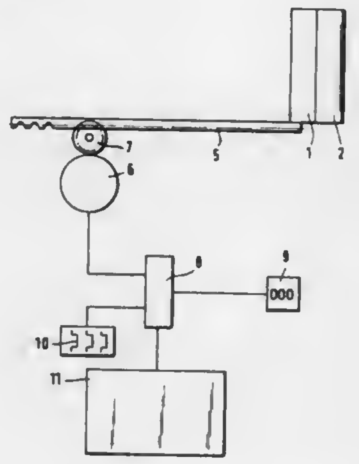
Dieter Jung, Freiamt-O, Fed. Rep. of Germany, assignor to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,138

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740830

Int. Cl.² B29C *3/06;* B29F *1/14*

U.S. Cl. 264—40.1 **2 Claims**



1. A method of controlling the operation of an injection-molding machine, the injection-molding machine comprising a pair of mold-clamping plates one of which is stationary and the other shiftable serving to clamp split molds between them and control means operative for controlling at least one machine operation in dependence upon the height of the mold clamped between the mold-clamping plates, the method comprising: generating a position signal indicative of the position of the shiftable mold-clamping plate using an absolute-coded angular position indicator coupled to the shiftable mold-clamping plate, applying the position signal to one input of a subtractor and displaying the position signal using a display means connected to receive the output signal of the subtractor, the displayed position signal being zero when the mold-clamping plates are pressed together into contact with each other with no mold clamped between them, inserting a split mold between the mold-clamping plates and clamping the mold closed whereby the mold-clamping plates are spaced from each other and the displayed position signal is non-zero, and applying to the subtracting input of the subtractor a signal causing the displayed position signal to become zero using a decades switch arrangement connected to said subtracting input by setting the decades switch arrangement to a value corresponding to said non-zero position signal, and applying the output signal of the subtractor to the control means.

4,195,049

METHOD OF INCREASING THE STRENGTH OF A BETA SILICON CARBIDE ARTICLE

Jack E. Noakes, Plymouth, and Leslie L. Terner, West Bloomfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 13, 1978, Ser. No. 924,122

Int. Cl.² C04B *35/56*

U.S. Cl. 264—63 **2 Claims**

1. A method of making a beta silicon carbide article which comprises:

forming a moldable mixture consisting of (a) beta silicon carbide particles, (b) from at least about 1/16% by weight to no more than ½% by weight of the total weight of the moldable mixture of niobium carbide particles, and (c) a binder material for supporting the beta silicon carbide particles and niobium carbide particles for molding operation, said binder being one which upon pyrolization forms a volatile phase and a non-volatile carbon phase;

molding said moldable mixture into a mold to form an article having the shape of the mold;

pyrolizing said article formed in the shape of the mold so that said binder gives off its volatile phase thereby to form its non-volatile carbon phase which binds said beta silicon carbide particles and niobium carbide particles together in the shape of the article;

silicidizing the article to transform the carbon remaining from said binder to beta silicon carbide.

4,195,050

METHOD FOR MAKING A FILTER

Peter A. Walther, am Neuschacht 44, Grünbach, Austria (2733)

Filed Sep. 29, 1978, Ser. No. 946,946

Claims priority, application Austria, Oct. 17, 1977, 7402/77

Int. Cl.² B29C *17/08, 25/00*

U.S. Cl. 264—137 **6 Claims**

1. A process for making a filter comprising placing in a hollow tubular envelope a plurality of small filter tubes closed at both of their ends, immersing the envelope together with the small filter tubes into a hardenable substance to a depth such that the said substance bonds one of the ends only of each of the small tubes and at the same time forms a bottom member on the envelope so as to close the gaps between the individual small tubes as well as the gaps between the envelope and the small tubes, and removing an amount of the layer of the hardenable substance together with the end of the small tubes, said immersing being to a depth of 30 mm into latex and such that the individual small filter tubes are wetted by the latex and the gaps between the small filter tubes are sealed, whereafter the surplus latex mass is allowed to drain, applying epoxy resin to said latex on said tubes then cutting the resin and latex layers and the ends of the small tubes from the envelope so that the ends of the small tubes embedded in latex or resin are opened, said epoxy, thereby forming a tube-sheet for said tubes and sheet for said tubes and said envelope.

4,195,051

PROCESS FOR PREPARING NEW POLYESTER FILAMENTS

Hans R. E. Frankfort, and Benjamin H. Knox, both of Kinston, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

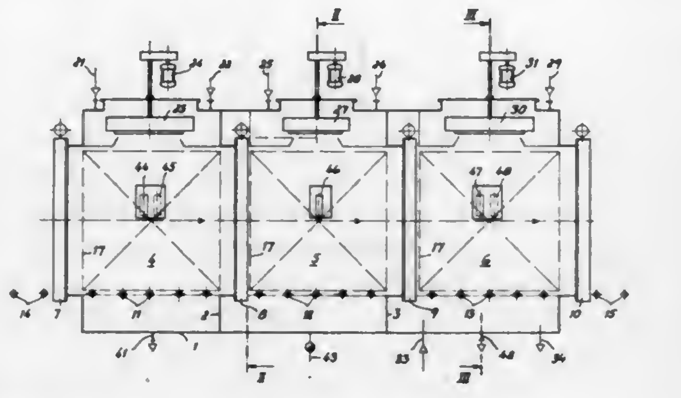
Division of Ser. No. 802,977, Jun. 2, 1977, Pat. No. 4,134,882, which is a continuation-in-part of Ser. No. 694,919, Jun. 11, 1976, abandoned. This application Oct. 5, 1978, Ser. No. 948,802

Int. Cl.² B28B *3/20;* D01D *5/12;* D01F *11/00*

U.S. Cl. 264—176 F **26 Claims**

1. In a process for melt-spinning ethylene terephthalate polyester and cooling in the atmosphere to solidify as filaments

with a low differential birefringence between the surface and the core of such filaments, the improvement, when withdrawing the filaments at a speed (V in yards/minute) of at least about 5500 yards/minute, wherein the polymer temperature (T_p), measured (in °C.) in the filter pack at a point 50–100 mils above the center of the spinneret plate, is maintained above a minimum value depending on an exponential of the speed V and a function of the length (L) and diameter (D) (in mils) of the spinneret capillary and the throughput (w) (in pounds per hour) per capillary according to the relationship:



$$T_p \geqq 284.5\left[\exp\left(\frac{V}{85{,}000}\right)\right] - 660\left(\frac{Lw}{D^4}\right)^{0.685}$$

4,195,052

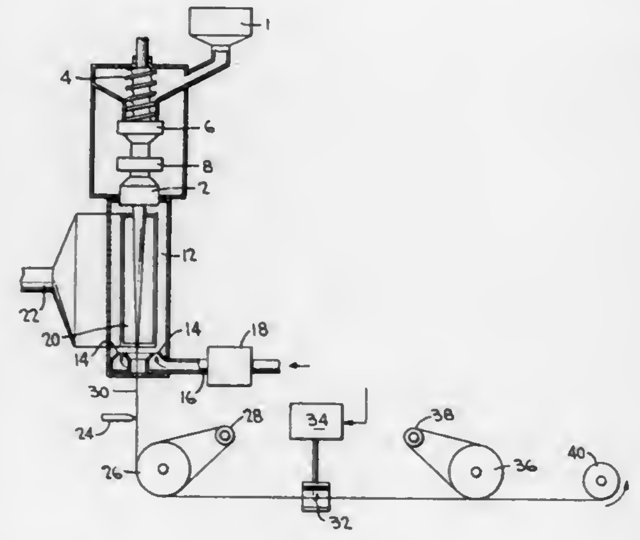
PRODUCTION OF IMPROVED POLYESTER FILAMENTS OF HIGH STRENGTH POSSESSING AN UNUSUALLY STABLE INTERNAL STRUCTURE

Herbert L. Davis, Convent Station; Michael L. Jaffe, Summit, both of N.J.; Herman L. LaNieve, III, and Edward J. Powers, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 26, 1976, Ser. No. 735,849

Int. Cl.² D01D ***5/12***

U.S. Cl. 264—210.5 **29 Claims**



1. A process for the production of improved polyester filaments of high strength having an unusually stable internal structure which particularly are suited for use at elevated temperatures and exhibit a work loss of 0.004 to 0.02 inch-pounds when cycled between a stress of 0.6 gram per denier and 0.05 gram per denier at 150° C. measured at a constant strain rate of 0.5 inch per minute on a 10 inch length of yarn of said filaments normalized to that of a multifilament yarn of 1000 total denier consisting essentially of:

(a) extruding a molten melt-spinnable polyester which contains 85 to 100 mol percent polyethylene terephthalate and 0 to 15 mol percent of copolymerized ester units other than polyethylene terephthalate having an intrinsic viscosity of 0.5 to 2.0 deciliters per gram through a shaped extrusion orifice having a plurality of openings to form a molten filamentary material,

(b) passing the resulting molten filamentary material in the direction of its length through a solidification zone having an entrance end and an exit end wherein said molten filamentary material is uniformly quenched and transformed into a solid filamentary material,

(c) withdrawing said solid filamentary material from said solidification zone while under a substantial stress of 0.015 to 0.150 gram per denier measured immediately below the exit end of said solidification zone,

(d) continuously conveying said resulting as-spun filamentary material from the exit end of said solidification zone to a first stress isolation device at a rate of 500 to 3000 meters per minute with said filamentary material as it enters said first stress isolation device exhibiting a relatively high birefringence of $+9\times10^{-3}$ to $+70\times10^{-3}$,

(e) continuously conveying said resulting filamentary material from said first stress isolation device to a first draw zone,

(f) continuously drawing said resulting filamentary material at a draw ratio of 1.01:1 to 3.0:1 while present in said first draw zone, and

(g) subsequently thermally treating said previously drawn filamentary material while under a longitudinal tension and present at a temperature above that of said first draw zone to achieve at least 85 percent of the maximum draw ratio of said as-spun filamentary material and impart a tenacity of at least 7.5 grams per denier to the same, with at least the final portion of said thermal treatment being conducted at a temperature within the range from about 90° C. below the differential scanning calorimeter peak melting temperature of the same up to below the temperature at which filament coalescence occurs.

4,195,053

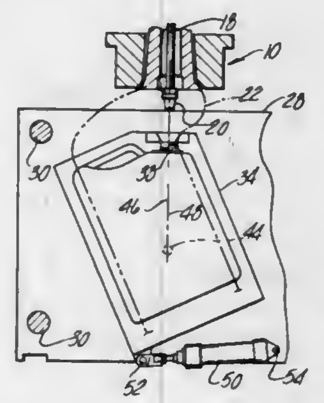
METHOD AND APPARATUS FOR BLOW MOLDING CONTAINERS

Edwin H. Lambarth, Manchester, Mich., assignor to Hoover Universal, Inc., Saline, Mich.

Filed Oct. 26, 1978, Ser. No. 955,129

Int. Cl.² B29C ***17/07***

U.S. Cl. 264—533 **12 Claims**



1. A method of blow molding a container with an angular neck having an upper opening from a parison of thermoplastic material that is positioned between open mold sections and about a blow pin having a vertical axis, said mold sections when closed and in their upright positions defining a cavity of the shape of said container with the axis of the angular neck being angularly disposed to said vertical axis, and said parison being sufficiently wide so that it encompasses the neck opening in the mold cavity when the mold sections are closed onto the parison, characterized by closing the mold sections onto said parison, moving the closed mold sections relative to said vertical axis until said neck axis coincides with the axis of said blow pin, advancing said blow pin axially into the angular neck of said cavity and blowing the parison to the shape of the cavity, and thereafter opening said mold sections and removing the blown container.

10. Apparatus for blow molding a container with an angular neck having a upper opening from a parison of thermoplastic material, comprising an extrusion head having an extrusion orifice with a vertical axis and an axially moveable blow pin coaxially extending through said orifice, means for advancing and retracting the blow pin, means for introducing blowing fluid to the blow pin, a pair of mold sections mounted on platens below said orifice and moveable between an open position for receiving said parison therebetween and a closed position to pinch the parison therebetween, said mold sections defining when closed a cavity of the shape of said container with the axis of the angular neck being angularly disposed with respect to and intersecting said vertical axis, and said extrusion orifice having a shape and dimension so that the parison extruded therefrom is sufficiently wide so that it encompasses the neck opening in the mold cavity when the mold sections are closed onto the parison, characterized in that said mold sections are mounted on said platens for relative movement between first positions wherein said neck axis is angularly disposed relative to said vertical axis and second positions wherein said neck axis coincides with the axis of said blow pin, and actuating means operatively connected between said mold sections and said platens for moving said mold sections to either of said positions.

4,195,054

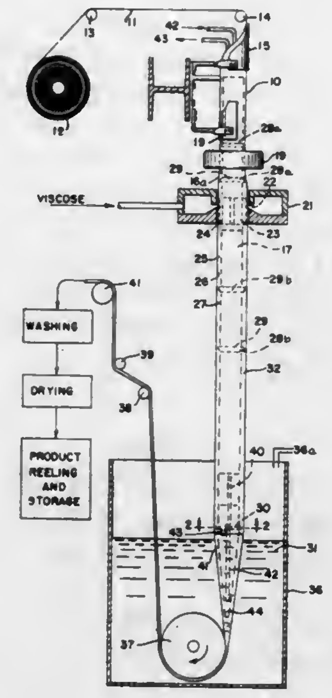
METHOD AND APPARATUS FOR THE MANUFACTURE OF FIBROUS CASING

Michael Verellen, Lille, and Ghislain Thaens, Lommel, both of Belgium, assignors to Teepak, Inc., Chicago, Ill.

Filed Apr. 21, 1978, Ser. No. 898,750

Int. Cl.² B29D ***7/22***

U.S. Cl. 264—558 **8 Claims**



1. An apparatus for the manufacture of fibrous sausage casing from a fibrous tube having interstices which can be filled with viscose which comprises in combination, means for advancing the tube, a mandrel having a top end and a bottom end over which the tube is axially advanced, means for impregnating the interstices of the tube with viscose while the tube is being advanced over the mandrel, means for coagulating the viscose impregnated in the tube with a coagulation agent, means for evacuating spent coagulating agent from the interior of the tube, gas applying means for directing a gas at a low positive pressure to flow between the tube and the mandrel, the gas flow being at a rate commensurate with the evacuation of the spent agent sufficient to support and maintain the tube in radially spaced relation to the mandrel but insufficient to cause a measurable change in the initial dimensions of the tube during the passage of the tube over the mandrel.

6. In the method for manufacturing fiber-reinforced cellulose sausage casing wherein a paper tube is passed downwardly over a mandrel, impregnated with viscose, subjected to the action of a coagulating liquid to regenerate cellulose and spent coagulating liquid is removed from the interior of the tube, the improvement comprising causing a gas stream to be flowed within the tube as the tube is passed over the mandrel to maintain the tube in radially spaced relation to the mandrel as it is passed thereover, the gas stream being flowed at a pressure commensurate with the evacuation of the spent liquid sufficient to maintain the cylindrical dimensions of the tube but insufficient to cause a measurable change in the dimensions of the tube, whereby contact of the tube with the mandrel is substantially avoided.

4,195,055

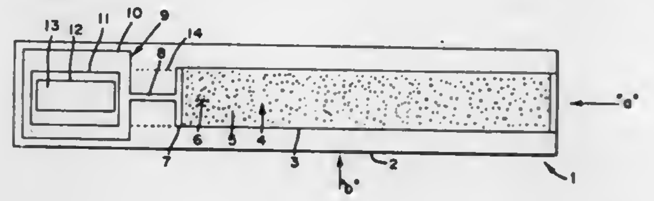
VAPOR-PHASE MOVING-BOUNDARY INDICATOR

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morristown, N.J.

Filed Jun. 1, 1978, Ser. No. 911,565

Int. Cl.² G01N ***21/06***

U.S. Cl. 422—56 **13 Claims**



1. In a device for monitoring the time-temperature history of an article comprising

(a) a closed vapor-impermeable container;

(b) a chamber forming one portion of said container;

(c) an indicator, comprised of an adsorptive substrate, through which vapor can permeate at measurable rate, having a solid deposited on at least the outer surface thereof, said solid capable of undergoing a color response upon contact with vapor specified below, and said indicator positioned inside said container such that the outer surface of said indicator, containing said solid, is in sealing contact with a portion of the inner surface of the container;

(d) a source of vapor within said chamber, said vapor being capable of traveling through the substrate by permeation thereof, and being constrained by said sealing contact to travel through said substrate in order to contact said solid; and

(e) means for providing said vapor at a given moment to the chamber; whereby a moving colored boundary is produced during travel of the adsorbed vapor throughout the indicator; the improvement which comprises a diacetylene compound, or mixture thereof, containing at least one —C≡C—C≡C— group per molecule, as said solid.

4,195,056

VAPOR PERMEATION TIME-TEMPERATURE INDICATOR

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 1, 1978, Ser. No. 911,629

Int. Cl.² G01N ***21/06***

U.S. Cl. 422—56 **20 Claims**

1. A device for monitoring the time-temperature history of an article comprising:

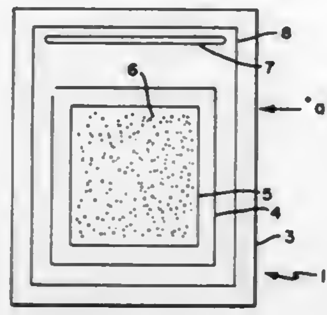
(a) a closed vapor-impermeable container;

(b) at least one vapor-permeable barrier within said container;

(c) vapor capable of permeating through the permeable barrier;

(d) means for providing vapor at a given moment to said container, said means positioned on one side of the barrier; and

(e) at least one indicator, comprised of a solid deposited on a substrate, capable of exhibiting a visual color response upon contact with said vapor, said indicator positioned on the other side of the barrier, whereby the barrier creates

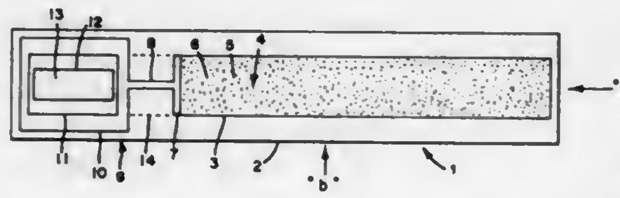


an induction period between the moment the vapor is introduced to said container and the moment said indicator exhibits the color response and wherein said indicator undergoes a color response over its entire exposed surface substantially simultaneously.

4,195,057
VAPOR-PHASE MOVING-BOUNDARY INDICATOR

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 30, 1978, Ser. No. 938,173
Int. Cl.^{2} G01N *21/06*
U.S. Cl. 422—56 **9 Claims**



1. In a device for monitoring the time-temperature history of an article including

(a) a closed vapor-impermeable container;

(b) a chamber forming one portion inside of said container;

(c) an adsorptive substrate, through which vapor can permeate at measurable rate, having an indicating compound deposited on at least the outer surface thereof, said compound capable of undergoing a color response upon contact with vapor or condensed vapor specified below, and said substrate positioned inside said chamber such that the outer surface of said substrate, containing said compound, is in sealing contact with a portion of the inner surface of said chamber;

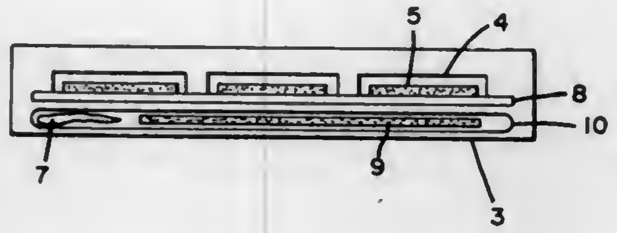
(d) a source of vapor, reactive with said compound to produce a color response, within said chamber, said vapor being capable of traveling through the substrate by permeation thereof, and being constrained by said sealing contact to contact said substrate at only one portion of the observable surface of said substrate prior to traveling through said substrate in order to contact said compound on the surface of said substrate; and

(e) means for providing said vapor at a given moment to the chamber; whereby a moving colored boundary is produced on the surface of the substrate during travel of the adsorbed vapor throughout the substrate, the improvement which comprises providing a polydiacetylene as said indicating compound in the form of a solution, in a solvent therefor, said solution being capable of exhibiting a visual color response upon contact with said vapor, and said vapor being soluble in said solution.

4,195,058
VAPOR PERMEATION TIME-TEMPERATURE INDICATOR

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 30, 1978, Ser. No. 938,175
Int. Cl.^{2} G01N *21/06*
U.S. Cl. 422—56 **10 Claims**



1. In a device for monitoring the time-temperature history of an article including:

(a) a closed vapor-impermeable container;

(b) at least one vapor-permeable barrier within said container;

(c) vapor capable of permeating through the permeable barrier;

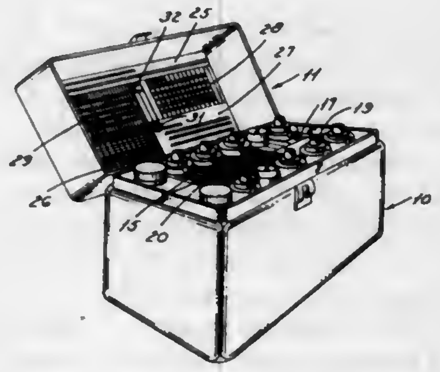
(d) means for providing vapor at a given moment to said container, said means positioned on one side of the barrier; and

(e) at least one indicator, capable of exhibiting a visual color response upon contact with said vapor or condensed vapor, said indicator positioned on the other side of the barrier, whereby the barrier creates an induction period between the moment the vapor is introduced to said container and the moment said indicator exhibits the color response, wherein the entire observable surface of the indicator is contacted by said vapor, producing a color response over said surface entire surface substantially simultaneously, the improvement which comprises said indicator being comprised of a solution of a polydiacetylene indicating compound in a solvent therefor, wherein said solution being capable of exhibiting a visual color response upon contact with said vapor, and said vapor being soluble in said solution.

4,195,059
CHEMICAL TEST KIT

Kayleen S. Whitcher, Adrian, and Mary Jo Benner, Ann Arbor, both of Mich., assignors to Aquaphase Laboratories, Inc., Adrian, Mich.

Continuation of Ser. No. 686,318, May 14, 1976, abandoned. This application Jun. 3, 1977, Ser. No. 803,361
Int. Cl.^{2} G01N *31/00*
U.S. Cl. 422—61 **8 Claims**



1. In a chemical test kit, the combination comprising

a housing,

means within said housing dividing said housing into a plurality of compartments,

each compartment having a row of container receiving portions,

and a container in each said container receiving portion of each said compartment,

means associated with each compartment having color indicia, the color indicia of said compartments differing from one another,

the containers in each compartment having color indicia corresponding to the color indicia of their compartment,

said containers in each compartment having consecutive written number or letter indicia thereon indicating the sequence in which they are to be used in a test,

a cover for said housing,

means for connecting said cover to said housing,

said cover having groups of written instructions thereon, the number of groups corresponding to the number of compartments, the written instructions for each group referring to the written indicia of that group,

the color indicia of each group of instructions being the same as the color indicia of the respective compartment,

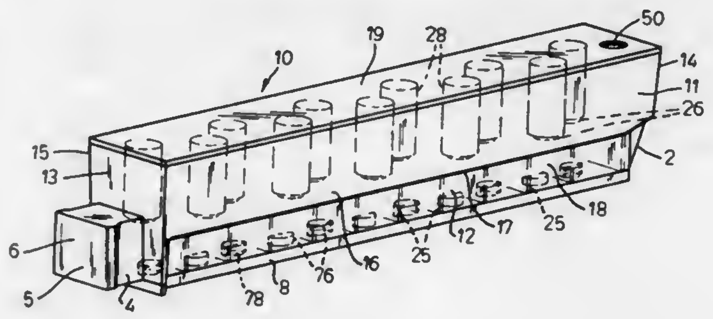
said containers of each compartment, said compartments and said groups of instructions in said cover each being characterized by additional visual geometric indicia for each patterned relative to one another to be visually distinguishable by color blind persons and differing from one another and differing from said written and color indicia,

the additional indicia for color blind persons being the same for containers of each compartment, for the corresponding compartment and the group of instructions for that compartment, the additional indicia for color blind persons differing between compartments.

4,195,060
LIQUID REAGENT CARTRIDGE CUVETTE

Harold S. Terk, Richardson, Tex., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 876,079, Feb. 8, 1978. This application Oct. 19, 1978, Ser. No. 953,055
The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.
Int. Cl.^{2} G01N *33/16, 21/24*
U.S. Cl. 422—61 **5 Claims**



1. A substantially rigid cuvette cartridge adapted for use with chemical and microbiological analysis apparatus, said cartridge comprising the following elements:

a cartridge having a chamber with an opening for receiving fluid to be analyzed and a floor portion;

a plurality of cuvettes in fluid communication with said chamber and extending in a given direction from said floor portion and having baffle means to direct the introduction of a liquid reagent;

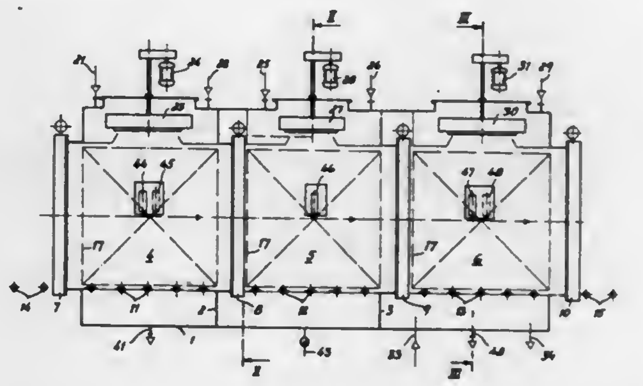
a first fluid passage means extending in a direction opposite said given direction;

a second fluid passage means extending in said given direction said first and second fluid passage means resulting in said fluid communication between said chamber and cuvettes.

4,195,061
STERILIZATION APPARATUS FOR INFUSION SOLUTIONS OR THE LIKE, FILLED IN CONTAINERS

Karl Kalasek, Vienna III, Austria, assignor to Firma Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna I, Austria

Filed May 16, 1978, Ser. No. 906,579
Claims priority, application Austria, May 17, 1977, 3532/77
Int. Cl.^{2} A61L *1/00, 3/00*
U.S. Cl. 422—109 **13 Claims**



1. A sterilization device adopted for processing in a substantially contamination-free manner a plurality of containers disposed on support means therefor, said containers being filled with goods to be sterilized, comprising in combination:

a housing provided with a passage for receiving and discharging said support means,

preheating means for preheating said containers to a predetermined temperature within said housing, and including first supply means adapted to supply a heated fluid to said preheating means,

heating means for at least maintaining said containers at said predetermined temperature within said housing, including second supply means adapted to supply said heated fluid to said heating means, so that said containers and the goods therein become sterilized,

cooling means disposed in said housing and adapted to use a cooled and circulating fluid for cooling said containers to a second predetermined temperature following sterilization of said containers by said heating means,

a plurality of openable and closeable doors arranged in said passage to define first, second and third chambers encompassing said preheating means, said heating means, and said cooling means, respectively, including means for separately controlling each of said chambers with respect to temperature and pressure prevailing therein, and means for passing said containers sequentially through said chambers, corresponding of said chambers substantially remaining intermittently closed, when said containers are being processed therein, and

agitating means provided in each of said chambers for circulating the fluid contained in the respective chamber therethrough.

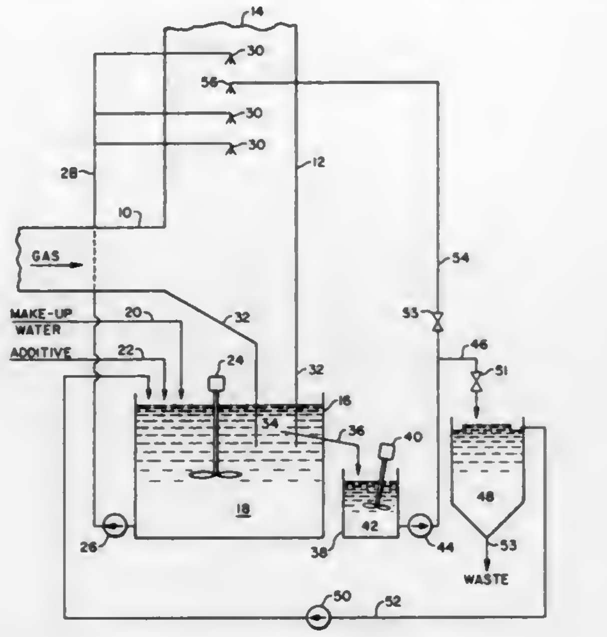
4,195,062
FLUE GAS SCRUBBING

James R. Martin, West Simsbury, and Khaldoun W. Malki, Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 21, 1978, Ser. No. 888,819
Int. Cl.^{2} C01B *17/82*
U.S. Cl. 422—168 **1 Claim**

1. A limestone additive flue gas scrubbing system for SO_2 removal comprising: a main reaction tank containing slurry; means for adding make-up water to said main reaction tank; means for adding limestone to said main reaction tank; duct means for confining the flue gas stream; means for pumping the slurry to an upper elevation and passing the slurry through the flue gas in direct contact therewith; confining means at a lower elevation for collecting the returning slurry and guiding the slurry back to said main reaction tank; a secondary reaction

tank; means for conveying a portion of the returning slurry directly from said confining means to said secondary reaction tank as the only supply thereto; a thickener; means for conveying a first portion of the slurry from said secondary reaction tank to said thickener; means for returning the liquid portion of said slurry from said thickener to said main reaction tank; means for conveying the remaining portion of the slurry from said second tank to an upper elevation and passing the slurry through the flue gas in direct contact therewith.



4,195,063

CATALYST ELEMENT FOR CLEANING EXHAUST GASES

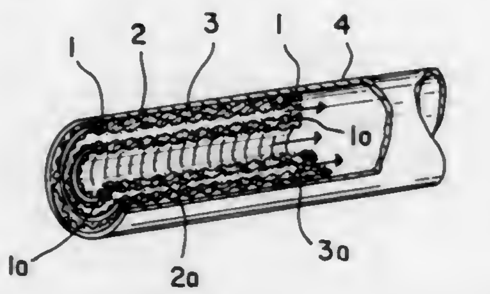
Kazuo Iwaoka; Tagao Toh, both of Toyonaka, and Minoru Fukada, Kodoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 814,974, Jul. 12, 1977, which is a continuation-in-part of Ser. No. 794,115, May 5, 1977, which is a continuation of Ser. No. 605,395, Aug. 18, 1975, abandoned. This application Dec. 11, 1978, Ser. No. 968,405

Claims priority, application Japan, Sep. 3, 1974, 49-101516; Sep. 3, 1974, 49-106251; Dec. 20, 1974, 49-147488; Jun. 2, 1975, 50-74986

Int. Cl.^{2} F01N *3/15;* **B01J** *8/02, 35/04*

U.S. Cl. 422—180 **3 Claims**



1. In combination with a main exhaust gas catalytic element cleaning device, an auxiliary catalytic element cleaning device situated upstream of said main device, said auxiliary device comprising:

a generally cylindrical elongated exhaust pipe section;

a first inner generally cylindrical heat resistant metal mesh support;

a first outer generally cylindrical heat resistant metal mesh support coaxial with and spaced apart from said inner support;

said supports having shapes conforming to the interior surface of said exhaust pipe section, so that the external surface of said outer support is disposed in juxtaposition with said interior exhaust pipe surface;

a first web comprising a layer of heat resistant catalytic material disposed between and retained in position by said inner and outer supports;

a second inner generally cylindrical heat resistant metal mesh support;

a second outer generally cylindrical heat resistant metal mesh support coaxial with and spaced apart from said inner support;

said second supports being disposed within and coaxially spaced from said first supports,

a second web comprising a layer of heat resistant catalytic material disposed between and retained in position by said second inner and outer supports;

a pair of end members secured to respective ends of said supports and to the interior surface of said exhaust pipe section, for maintaining said supports in alignment so that exhaust gases flow through said section in the longitudinal direction thereof in a path substantially confined to the internal surfaces of said first inner support, parallel to and in surface contact with interior surface portions of said first catalytic web and with both exposed surfaces of said second catalytic web, and

means for connecting and communicating said auxiliary catalytic device with said main catalytic device.

4,195,064

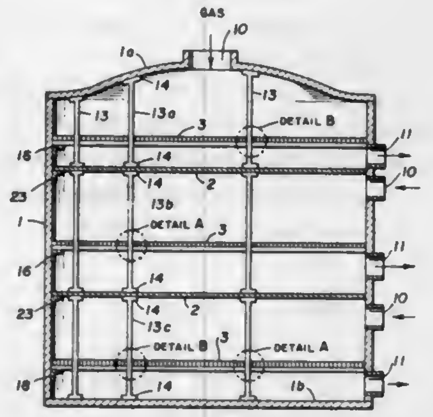
UNITIZED CATALYTIC REACTOR CONSTRUCTION

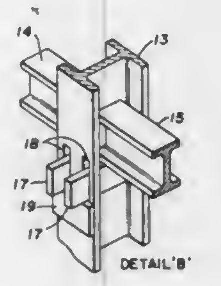
Joseph C. Betteken, St. Louis, and Jerome D. McDaniel, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 15, 1978, Ser. No. 933,700

Int. Cl.^{2} C01B *17/80;* **B01J** *8/04*

U.S. Cl. 422—191 **7 Claims**





1. In a vertical multistage catalytic reactor of the type comprising a large diameter cylindrical vessel divided into a plurality of superimposed serially disposed catalytic stages by a plurality of circular division plates supported on a plurality of vertical columns, and within each such stage an open grid support for a bed of catalyst, with fluid inlet and outlet means to each such stage disposed such that when in operation the

fluid entering each such stage is caused to flow through the bed of catalyst contained therein before existing such stage, the improvement which comprises providing as unitized support for said catalyst support grids within each such stage:

(a) a plurality of horizontally disposed beams for support of said catalyst support grids, said beams in turn being supported by said vertical columns as set forth in (d) through (g) below,

(b) at least a major portion of said vertical columns comprising a unitized structure from the top to the bottom of said vessel and being fixedly attached at the respective ends thereof to said top and bottom of said vessel,

(c) at least a portion of said vertical columns being windowed along their length with at least some of said beams being mounted for movement relative to said vertical columns through said windows,

(d) each such beam being of such length that either (i) said beam spans as a chord from one point on the inner circumference of said vessel to another point on said circumference and is movably supported by conventional means at both ends or (ii) at least one end of said beam abuts one of the remaining vertical columns with sufficient clearance therefrom to allow for thermal expansion without exertion of substantial force thereon,

(e) in combination with each junction between a beam and a window in a support column, a rocker means affixed to the support column and upon which the beam is supported,

(f) in combination with each junction between an end of a length of beam and a support column, a rocker means affixed to the support column and upon which the end of the beam is supported, and

(g) wherein each rocker means is affixed to the support column such that the surface of the rocker means in contact with the beam associated therewith is free to move as the beam thermally expands or contracts along its longitudinal axis.

4,195,065

LEACHING NICKELIFEROUS OXIDE ORES

Willem P. C. Duyvesteyn, Arvada, Colo., assignor to Amax Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 820,624, Aug. 1, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 958,287

Int. Cl.^{2} C01G *53/10*

U.S. Cl. 423—150 **13 Claims**

1. In a process for recovering nickel from nickeliferous oxide ores containing less than about 35% iron in which the ore is slurried with water, the slurry is preheated to a leaching temperature between about 230° C. and about 300° C., sulfuric acid in an amount between about 0.15 part and about 0.8 part for each part of dry ore is added to the preheated slurry to leach the nickel values from the nickeliferous oxide ores, the leached slurry is neutralized and the neutralized slurry is subjected to a liquids-solids separation operation, the improvement which comprises: adding at least one water-soluble compound selected from the group consisting of alkali metal or ammonium compounds to the slurry when the leaching reactions are more than half complete in small but effective amounts to minimize dissolution of silica, whereby the settling rate of the neutralized slurry is improved.

9. In a process for recovering nickel from nickeliferous oxide ores containing about 37.1% iron in which the ore is slurried with water, the slurry is preheated to leaching temperature between about 230° C. and about 300° C., sulfuric acid in an amount between about 0.15 part and about 0.8 part for each part of dry ore is incrementally added to the preheated slurry to maintain the aluminum content of the slurry at a value of less than about 3 grams per liter to leach the nickel values from the nickeliferous oxide ores, the leached slurry is neutralized and the neutralized slurry is subjected to liquid-solids separation, the improvement which comprises: adding at least one water-soluble compound selected from the group consisting of alkali metal or ammonium compounds to the slurry when the leaching reactions are more than 50% complete in small but effective amounts to minimize dissolution of silica whereby the settling rates of the neutralized slurry is improved.

4,195,066

PROCESS FOR THE PRODUCTION OF DENSE SINTERED SHAPED ARTICLES OF POLYCRYSTALLINE BORON CARBIDE BY PRESSURELESS SINTERING

Karl A. Schwetz, Sulzberg, Austria, and Georg Vogt, Kempten-Sankt Mang, Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,778

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2751998

Int. Cl.^{2} C04B *35/52;* **C01D** *31/36*

U.S. Cl. 423—291 **31 Claims**

1. A process for the manufacture of a dense sintered shaped article of boron carbide, which comprises

(i) forming a homogeneous mixture of

(a) boron carbide having a B:C atomic ratio within the range of from 4.5:1 to 3.5:1 and a particle size not exceeding 1 μm, and

(b) a carbon-containing component consisting of amorphous carbon or of an organic material that can be coked to form amorphous carbon at a temperature not exceeding 1000° C., in an amount corresponding to from 0.5 to 10% free carbon, based on the total weight of the boron carbide,

(ii) molding and shaping the mixture into a green body having a density of at least 50% of the theoretical density of boron carbide, and

(iii) sintering the green body in an atmosphere inert to boron carbide or in vacuo, at a temperature within the range of from 2100° C. to 2200° C., to form an article having a density of at least 90% of the theoretical density of boron carbide.

4,195,067

PROCESS FOR THE PRODUCTION OF REFINED METALLURGICAL SILICON

Peshotan S. Kotval, Hartsdale, and Harold B. Strock, North Tarrytown, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,758

Int. Cl.^{2} C01B *33/02*

U.S. Cl. 423—348 **40 Claims**

1. A process for the production of lowcoat refined metallurgical silicon from metallurgical grade silicon comprising:

a. dissolving metallurgical grade silicon in a liquid metal solvent to form a liquid metal solvent-silicon solution;

b. cooling said solution to a temperature at which silicon platelets form;

c. removing silicon platelets from said solution of metallurgical grade silicon in a liquid metal solvent, thereby recovering partially purified, essentially ironfree silicon platelets with adherent impurities derived from said metal solvent;

d. melting said partially purified silicon platelets in contact with acid silica slag in a melting zone, the resulting slag oxidation removing residual and adherent impurities from the silicon platelets; and

e. removing the silicon-slag melt from the melting zone in an unidirectional manner so as to directionally solidify said silicon, said directional solidification resulting in the obtaining of solidified refined metallurgical silicon and a region of solidified melt having a high concentration of impurities rejected by the refined metallurgical silicon as it solidifies, said directionally solidified refined metallurgical silicon comprising a multigrained silicon having a resistivity of from about 0.04 to about 0.2 ohm-cm, said silicon having impurity concentrations of up to, but not exceeding, about 1 ppm of aluminum, about 1 ppm of iron, about 2 ppm of titanium, about 2 ppm of boron, about 2 ppm of phosphorus, about 1 ppm of chromium, about 1 ppm of calcium and about 1 ppm of magnesium,

whereby said multigrained refined metallurgical silicon is produced at a substantially higher impurity content level than in a conventional high purity semiconductor grade silicon and has suitable properties for solar cell applications.

4,195,068

PROCESS FOR THE PRODUCTION OF FURNACE BLACK

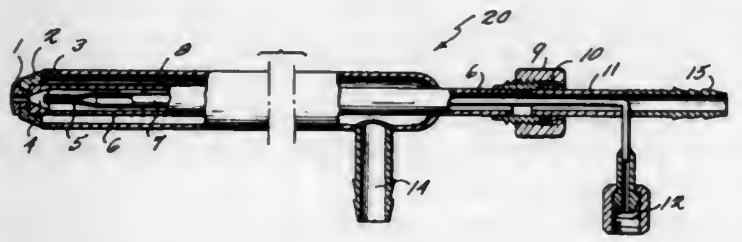
Lothar Rothbühr, Hermülheim; Gehard Kühner, and Gunther Dittrich, both of Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 555,084, Mar. 4, 1975, abandoned. This application Dec. 27, 1978, Ser. No. 973,716

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1974, 2410565

Int. Cl.^{2} C09C *1/48, 1/50*

U.S. Cl. 423—455 **13 Claims**



1. In a process for the production of carbon black low in coke and grit at a high hourly rate and high yield per unit of liquid feedstock employed to form the carbon black in a furnace black reactor including a burner-injector combination for the production of heat energy and for the injection of very fine drops of carbon black forming liquid, the improvement comprising employing as said reactor one having restriction therein, said burner-injector comprising an inner tube as said injector and a first jacket tube surrounding said inner tube, an exit nozzle, said jacket tube being constricted prior to said exit nozzle, said restriction being such that the cross-sectional area of the reactor passage is narrowed to no more than one-third the cross-sectional area before the restriction, and an outer tube surrounding said first jacket tube, said outer jacket tube being provided with 4 to 12 gas outlets distributed over 360°, the free diameter of the inner tube exist being between 40 and 75% of the free diameter of the first jacket tube, supplying liquid carbon black forming material through said inner tube, supplying a gaseous atomizing medium through said first jacket tube, mixing said liquid carbon black forming material with said gaseous atomizing medium immediately prior to said exit nozzle and in the area of restriction and supplying fuel gas through said gas outlet openings at an exit pressure of over 1.5 atmospheres absolute and a fuel gas exit speed of over 320 meters/sec.

4,195,069

PREPARATION OF VIOLET TICL$_3$

Andras G. Th. G. Kortbeek; Adrianus A. van der Nat; Wilhelmina J. M. van der Linden Lemmers, and Willem Sjardijn, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 17, 1977, Ser. No. 807,696

Claims priority, application United Kingdom, Jul. 12, 1976, 28897/76

Int. Cl.^{2} C01G *23/02*

U.S. Cl. 423—492 **9 Claims**

1. A process for the preparation of violet $TiCl_3$ by reducing $TiCl_4$ with an organoaluminum compound which comprises:

(a) premixing the $TiCl_4$ with a complexing agent in an inert organic solvent, the molar ratio complexing agent:$TiCl_4$ being within the range from 0.5:1 to 1.5:1;

(b) premixing the organoaluminum compound with a complexing agent in an inert organic solvent, the molar ratio complexing agent: organoaluminum compound being within the range from 0.5:1 to 1.5:1;

(c) carrying out the reduction to $TiCl_3$ and precipitation of $TiCl_3$ in a single step by combining at least one stoichiometric equivalent of $TiCl_4$ in the premixed composition of step (a) with one stoichiometric equivalent of the organoaluminum compound in the premixed composition of step (b) over a period of less than one hour at a temprature within the range 60° to 110° C.; the final concentration of violet $TiCl_3$ in the reaction mixture being at least 0.2 mol./liter.

4,195,070

PREPARATION OF A MGCL$_2$ SOLUTION FOR NALCO'S MGCL$_2$ PROCESS FROM MGSO$_4$ AND OTHER MGSO$_4$ SALTS

Ronald J. Allain, Richmond, Tex.; David G. Braithwaite, Golf, Fla., and Joseph P. Maniscalco, Sugarland, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 21, 1979, Ser. No. 22,397

Int. Cl.^{2} C01F *5/34;* **C01D** *5/10, 5/18*

U.S. Cl. 423—498 **5 Claims**

1. A method for the beneficiation of mixed salts containing potassium and magnesium sulfates which allows the recovery of anhydrous $MgCl_2$ and the recovery of potassium sulfate, said method comprising the steps:

(a) Dissolving a mixed double salt containing magnesium and potassium sulfates in water at a temperature between 50° C. and 90° C. and then filtering the residue from the solution;

(b) Adding to and dissolving into the filtered solution of (a), a molar equivalent of potassium chloride, the molar equivalent calculated on the solubilized magnesium cation requirement for chloride ion, thereby forming a solution;

(c) Heating the solution produced in step (b) within the range of 50° C.–90° C. for a period of time to allow equilibrium to be established, thereby forming an equilibrated solution;

(d) Adding sufficient ethylene glycol to the equilibriated solution of (c) to fully dissolve all $MgCl_2$ calculated to be present, then removing from solution the K_2SO_4 which precipitated on the addition of said ethylene glycol;

(e) Distilling water from the solution of step (d) thereby forming an anhydrous $MgCl_2$ solution in ethylene glycol and a precipitate of K_2SO_4, then removing said precipitate from said solution;

(f) Combining the K_2SO_4 precipitate of steps (d) and (e) and washing said precipitates with sufficient water maintained below 70° C. to remove entrained ethylene glycol, and recovering the washed K_2SO_4;

(g) Treating the anhydrous $MgCl_2$ solution in ethylene glycol formed in step (e) with anhydrous ammonia to form a $MgCl_2$ ammonia complex which precipitates from the ethylene glycol solution;

(h) Removing the complex precipitate from the ethylene glycol and washing it with a low boiling solvent for ethylene glycol to remove any ethylene glycol entrained in the precipitate;

(i) Heating the magnesium chloride ammonia complex to drive off ammonia leaving as a finished product completely anhydrous magnesium chloride.

4,195,071

POLYETHERS TO OBTAIN ANHYDROUS MAGNESIUM CHLORIDE

Ronald J. Allain, Richmond, Tex.; David G. Braithwaite, Golf, Fla., and Joseph P. Maniscalco, Sugar Land, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 1, 1979, Ser. No. 16,710

Int. Cl.^{2} C01F *5/34*

U.S. Cl. 423—498 **1 Claim**

1. An improved process for producing anhydrous magnesium chloride of the type comprising:

A. Mixing together a magnesium chloride hydrate, said hydrate containing minor amounts of water-soluble sulfate and boron compounds as impurities with diethyl ether of tetraethylene glycol to prepare 0.1–6.0% by weight slurry of $MgCl_2$ in the diethyl ether of tetraethylene glycol and an azeotropic agent having a boiling point less than the diethyl ether of tetraethylene glycol in a quantity sufficient to remove water from said slurry;

B. Distilling water from said slurry wherein an anhydrous solution of $MgCl_2$ in diethyl ether of tetraethylene glycol containing the water-soluble sulfate and boron compounds as insoluble impurities is formed;

C. Separating said $MgCl_2$ solution from the insoluble impurities;

D. Adding to the $MgCl_2$ solution about 3.0 moles of ethylene glycol per mole of $MgCl_2$ present so as to prepare a $MgCl_2$.3 moles ethylene glycol complex precipitate;

E. Separating precipitate from the diethyl ether of tetraethylene glycol and recovering the precipitate;

F. Dissolving said precipitate in ethylene glycol to prepare a solution of the precipitate in ethylene glycol, said ethylene glycol being used in a quantity so as to prepare an ethylene glycol solution containing from 1 to 20% by weight $MgCl_2$;

G. Treating the ethylene glycol magnesium chloride solution with ammonia to form a magnesium chloride-ammonia complex which is insoluble in the ethylene glycol with the temperature of the ethylene glycol magnesium chloride solution being within the range of between −15° to 50° C.;

H. Separating the magnesium chloride-ammonia complex from the ethylene glycol;

I. Washing the magnesium chloride-ammonia complex with a polar solvent having a lower boiling point than ethylene glycol to remove any ethylene glycol entrained in the magnesium chloride-ammonia complex;

J. Heating the magnesium chloride-ammonia complex to a temperature sufficient to drive off the ammonia for a sufficient period of time to remove the ammonia, thereby forming anhydrous magnesium chloride; and then.

K. Recovering anhydrous magnesium chloride which has a magnesium oxide content of less than 0.8% by weight and which is substantially free of impurities,

the improvement which comprises substituting dibutyl ether of tetraethylene glycol for the diethyl ether of tetraethylene glycol.

4,195,072

STABILIZED PLATELET FACTOR 4 IMMUNOASSAY STANDARDS

Erwin F. Workman, Jr., Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 5, 1978, Ser. No. 922,135

Int. Cl.^{2} G01N *33/16;* **A61K** *43/00*

U.S. Cl. 424—1 **5 Claims**

5. In a radioimmunoassay method for platelet factor 4 in blood plasma wherein concentrations of platelet factor 4 in standards are used to derive concentrations of platelet factor 4 in blood plasma by competitive binding of ^{125}I labeled platelet factor 4 and platelet factor 4 from test samples with platelet factor 4 antiserum, followed by precipitation and counting of bound ^{125}I labeled platelet factor 4, the improvement comprising using heparin stabilized platelet factor 4 standards and heparin stabilized ^{125}I labeled platelet factor 4.

4,195,073

RADIOIMMUNOASSAY OF ALPHA $_1$FETOPROTEIN

Edward S. Newman, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 846,089, Oct. 27, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 917,814

Int. Cl.^{2} G01N *33/16;* **A61K** *43/00;* **C07G** *7/00*

U.S. Cl. 424—1 **4 Claims**

1. In a radioimmunoassay to determine the alpha$_1$-fetoprotein content in an unknown comprising: forming a complex of the alpha$_1$-fetoprotein in said unknown with an antiserum; adding thereto radiolabeled alpha$_1$-fetoprotein; removing the resulting complex from solution; and measuring the amount of radiolabeled alpha$_1$-fetoprotein taken up in said complex against a standard, the improvement which comprises adding to said first complex radiolabeled alpha$_1$-fetoprotein purified by a process comprising:

(a) buffering a sample of a biological source material known to contain alpha$_1$-fetoprotein to a pH of about 7;

(b) subjecting said buffered sample to affinity chromatography by passage through a column containing an antibody specific for alpha$_1$-fetoprotein immobilized on a solid support and subsequently eluting the bound alpha$_1$-fetoprotein by treatment of the column with a suitable desorbing agent;

(c) removing substantially all of the albumin present in the eluate from step (b) by subjecting it to adsorption chromatography by passage through a column containing an adsorbent comprising an agarose gel covalently linked to dextran containing a blue chromophore;

(d) dialyzing the unabsorbed alpha$_1$-fetoprotein-containing solution from step (c);

(e) removing high molecular weight protein contaminants from the dialyzed solution from step (d) by subjecting it to gel filtration chromatography utilizing as the filtering material a hydrophilic, water-insoluble, cross-linked dextran polymer gel;

(f) treating the eluate containing alpha$_1$-fetoprotein from step (e) to remove protein contaminants by subjecting it to ion exchange chromatography utilizing as the filtering material a mixture of a cationic exchange resin and an anionic exchange resin;

(g) dialyzing the eluate containing alpha$_1$-fetoprotein from step (f);

(h) lyophilizing the dialyzed solution from step (g);

(i) disolving the powder formed in step (h) in a suitable buffer and subjecting the resulting to polyacrylamide gel electrophoresis.

4,195,074

PROCESS FOR PRODUCING A SOLUBLE RUBELLA ANTIGEN

John W. Safford, Jr., Wauconda, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 773,231, Mar. 1, 1977. This application Jan. 31, 1978, Ser. No. 873,940

Int. Cl.^{2} C12K *1/04, 7/00;* **G01N** *33/16;* **A61K** *39/20*

U.S. Cl. 424—12 **2 Claims**

1. A process for producing a soluble rubella antigen, said process comprising, in sequence:

(a) subjecting growth media of a tissue culture of rubella virus infected cells to chromatographic separation through a column consisting of a solid phase to which IgG, derived from human serum known to contain antibodies reactive with rubella antigens, has been convalently coupled;

(b) eluting from said column the rubella antigen materials bound to the IgG therein with a buffer having a pH of about 12;

(c) neutralizing the rubella antigen materials to a pH of about 8;
(d) subjecting the separated eluted rubella antigen materials to gel permeation chromatography to achieve material separation on the basis of molecular size;
(e) collecting the fractions containing said materials having a molecular weight of about 40,000 to about 60,000 daltons;
(f) isolating rubella antigen from said sized, separated eluted materials on the basis of relative reverse passive hemagglutination activity.

4,195,075

METHOD AND DEVICE FOR CONTROLLING INSECTS ON LIVESTOCK

William V. Miller, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 20, 1978, Ser. No. 944,513
Int. Cl.^{2} A01K *13/00*

U.S. Cl. 424—14 **11 Claims**

1. An insect control device for attachment to cattle or other livestock comprising:
(a) a polymeric resin matrix having dispersed therein an insectically effective amount of a liquid, insecticidally-active isomer of alpha-cyano-3-phenoxybenzyl-alpha-isopropyl-4-chlorophenyl acetate, and
(b) an attachment means for affixing said polymeric resin matrix to said animal.

4,195,076

PROCESS FOR THE PREPARATION OF HEMAGGLUTININ FROM VIRAL SOURCES AND METHODS OF UTILIZING SAME

Robert Fontanges, Lyon, France, assignor to Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

Division of Ser. No. 553,293, Feb. 26, 1975, Pat. No. 4,136,168. This application Sep. 25, 1978, Ser. No. 945,317
Claims priority, application France, Mar. 5, 1974, 74 07352
Int. Cl.^{2} A61K *9/12, 39/18;* **C12B** *1/00*

U.S. Cl. 424—43 **16 Claims**

1. A process for the obtention of viral proteins from flu virus by submitting cultures of *Myxovirus Influenzae* to the action of an enzyme or a mixture of proteolytic enzymes obtained from cultures of *Streptomyces fradiae,* concentrating the fractions including neuraminidase and hemagglutinin by diafiltration in aqueous solution on a selectively permeable membrane with a reticulate structure capable of retaining molecules of molecular weight exceeding 10,000 to form a concentrate of a material having a molecular weight in excess of 10,000, collecting the concentrate retained by the membrane of the diafiltration cell, then submitting said concentrate to fractionation by physical methods to collect the fraction containing substantially the viral hemagglutinin.

4,195,077

DETERGENT COMPOSITIONS COMPRISING MODIFIED PROTEINS

Robert A. Marsh, Newcastle upon Tyne; Gordon J. Mackie, Cramlington, and Peter Hale, Whitley Bay, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 534,914, Dec. 20, 1974, Pat. No. 4,115,548. This application Jun. 26, 1978, Ser. No. 919,192
Claims priority, application United Kingdom, Jan. 18, 1974, 2366/74
The portion of the term of this patent subsequent to Sep. 19, 1995, has been disclaimed.
Int. Cl.^{2} A61K *7/06*

U.S. Cl. 424—70 **4 Claims**

1. A composition for protecting keratinous material from the deleterious effects of detergent or from adverse climatic conditions, said composition comprising
(a) an effective amount of a modified protein selected from the group consisting of oxyethylated, oxypropylated, oxybutylated and N,N-dimethyl ethylene diamine modified gelatin, casein, and soy protein, said modified protein having a molecular weight greater than 5,000 and an isoionic point greater than 6;
(b) from 0.1% to 90% by weight of a surface-active agent; and
(c) a compatible carrier.

4,195,078

NABILONE GRANULATION

James W. Conine, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 9, 1979, Ser. No. 19,810
Int. Cl.^{2} A61K *31/79*

U.S. Cl. 424—80 **2 Claims**

1. A method of formulating nabilone for oral administration to mammals which comprises dissolving nabilone and polyvinylpyrrolidone or polyethylene glycol in anhydrous ethanol and using the thus-formed viscous solution to granulate a pharmaceutically-acceptable ethanol-insoluble excipient by thoroughly mixing the solution with the excipient, and then drying the thus-formed granulation.

4,195,079

NEW POLYCYCLIC ETHER ANTIBIOTIC

Walter D. Celmer, New London; Walter P. Cullen, East Lyme; John R. Oscarson, Pawcatuck; Liang H. Huang, East Lyme, all of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,901
Int. Cl.^{2} A61K *35/00*

U.S. Cl. 424—122 **6 Claims**

1. The antibiotic Compound 51,532 when in the form as the free acid is soluble in chloroform, ethyl acetate and methylisobutyl ketone and insoluble in water; has a melting point of 117°-132° C.; an optical rotation of $[a]_D^{25} = -11.0°$ at a concentration of 1% in chloroform; an average composition by weight of 62.83% carbon, 8.80% hydrogen and 28.37% oxygen (by difference); and when pelleted in KBr, exhibits characteristic absorption in the infrared region at the following wavelengths in microns: 2.88, 3.32, 5.75, 6.06, 6.80, 7.20, 7.90, 8.50, 9.03, 9.60, 10.12, 10.75 and 11.35.

4,195,080

INSECTICIDAL USE OF ORANGE JUICE ESSENCE OIL

Alberto P. Herrera, and Sebastian A. Vieto, both of P.O. Box 6614, Panama 5, Panama

Continuation of Ser. No. 846,252, Oct. 27, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,525
Int. Cl.^{2} A01N *9/02*

U.S. Cl. 424—186 **6 Claims**

1. A method for destroying insects which comprises contacting the insects with effective concentrations of an insecticidal composition comprising as its active ingredient orange juice essence oil obtained by vaporization of orange juice and recovery of the essence oil from the vaporized orange juice.

4,195,081

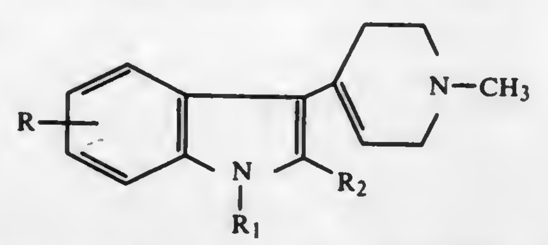
TREATING PSYCHIC DISORDERS WITH TETRAHYDROPYRIDIN-4-YL-1H-INDOLES

Lucien Nedelec, Le Raincy; Jacques Guillaume, Sevran, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jan. 10, 1979, Ser. No. 2,452
Claims priority, application France, Jan. 16, 1978, 78 01084
Int. Cl.^{2} A61K *31/44*

U.S. Cl. 424—263 **4 Claims**

1. A method of treating psychic disorders in warm-blooded animals comprising administering to warm-blooded animals an amount of at least one compound of the formula



wherein R is selected from the group consisting of hydrogen and methoxy, R_1 and R_2 are individually selected from the group consisting of hydrogen and methyl and their non-toxic, pharmaceutically acceptable acid addition salts sufficient to relieve psychic disorders.

4,195,082

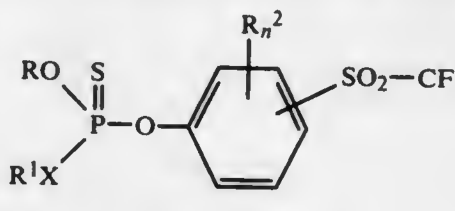
COMBATING ARTHROPODS WITH 0-ALKYL-0-TRIFLUOROMETHYLSULPHONYLPHENYL-THIONO (THIOL)-PHOSPHORIC ACID ESTERS

Hellmut Hoffmann, Wuppertal; Erich Klauke, Odenthal, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,078
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714038
Int. Cl.^{2} A01N *9/36;* **C07F** *9/165*

U.S. Cl. 424—216 **10 Claims**

1. An O-alkyl-O-trifluoromethylsulphonylphenylthiono (thiol)-phosphoric acid ester or ester-amide of the formula



in which
R and R^1 each independently is alkyl,
R^2 in hydrogen, halogen, alkyl or nitro,
n is 1, 2, 3 or 4,
X is oxygen, sulphur or NR^3, and
R^3 is hydrogen or alkyl.

9. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of an ester according to claim 1, in admixture with a diluent.

4,195,083

VETERINARY COMPOSITIONS AND METHOD FOR CONTROLLING ANTHROPOD ECTOPARASITES

John Hoy, 32 Becker St.; Gordon N. Emby, 16 Myrtle Ave. Post Office North Rand, both of, Johannesburg, Transvaal, and Edgar F. Meerholz, 22 Gloucester Ave., Sandringham, Johannesburg, Transvaal, all of South Africa

Continuation of Ser. No. 569,674, Apr. 21, 1975, abandoned, which is a continuation of Ser. No. 284,404, Aug. 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 855,556, Sep. 5, 1969, abandoned. This application Jun. 7, 1978, Ser. No. 913,353
Claims priority, application South Africa, Sep. 11, 1968, 685864
Int. Cl.^{2} A61K *31/675, 31/665, 31/66*

U.S. Cl. 424—200 **8 Claims**

1. A method for controlling arthropod ectoparasites of mammals infected with same which comprises contacting said mammals with an emulsion wash consisting of a non-aqueous pesticidal concentrate being substantially free of solvent therefor, and sufficient water to provide a total pesticide compound content of from 0.005 to 0.5 parts by weight per 100 parts by volume of said emulsion wash, wherein said non-aqueous pesticidal concentrate consists of: (a) from 65 to 95% by weight of a liquid pesticide compound or a liquid mixture of a liquid pesticide compound and a solid pesticide compound, said pesticide compound being effective for the control of arthropod ectoparasites of mammals, said liquid pesticide compound being selected from 2 -chloro-1 -(2,4 -dichlorophenyl) vinyl diethyl phosphate; O,O,O'O-tetraethyl S,S'-methylene-diphosphorodithioate; 2,3 -p-dioxanedithiol S,S-bis (O,O-diethyl phosphorodithioate); O,O-diethyl-O, 2 -isopropyl-4 -methyl-6-pyrimidyl phosphorothioate; O,O-diethyl O-2,4-dichlorophenyl phosphorothioate; O,O-diethyl S-(p-chlorophenylthio) methyl phosphorodithioate; O,O-diethyl O-4-bromo-2, 5-dichlorophenyl phosphorothioate; O,O-dimethyl O-(3-methyl-4-nitrophenyl) phosphorothioate; O,O-dimethyl O-1,2-dibromo-2,2-dichloroethyl phosphate; or dimethyl 3-methyl-4-methylthiophenyl phosphorothioate; and (b) an effective amount of at least one emulsifier for effecting emulsification of said pesticide compound in water.

4,195,084

TASTE-STABLE AQUEOUS PHARMACEUTICAL SUSPENSION OF TALL OIL SITOSTEROLS AND A METHOD FOR THE PREPARATION THEREOF

John T. H. Ong, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 757,711, Jan. 7, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 918,113
Int. Cl.^{2} A61K *31/56*

U.S. Cl. 424—238 **11 Claims**

1. A taste-stable aqueous pharmaceutical suspension for oral administration to reduce hypercholesteremia comprising: (a) a pharmaceutically active amount of finely ground tall oil sitosterols; (b) a pharmaceutically acceptable chelating agent in an amount sufficient to inhibit oxidative degradation of the tall oil sitosterols; (c) sodium carboxymethylcellulose; (d) sorbitol; (e) a surfactant selected from the class consisting of: polyoxyethylene (20) sorbitan monolaurate, polyoxyethylene (20) sorbitan monopalmitate, polyoxyethylene (20) sorbitan monooleate, polyoxyethylene (20) sorbitan monostearate, and sodium lauryl sulfate; (f) simethicone; and, (g) water.

4,195,085

COMPOSITIONS AND METHODS FOR TREATING GLAUCOMA BY THE TOPICAL ADMINISTRATION OF T-BUTYLAMINO-3-(4-MORPHOLINO-1,2,5-THIADIAZOL-3-YLOXY-2-PHOPANOL HYDROGEN MALEATE

Clement A. Stone, Blue Bell, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 793,817, May 4, 1977, abandoned, which is a continuation of Ser. No. 617,118, Sep. 26, 1975, abandoned. This application Aug. 29, 1978, Ser. No. 937,696
Int. Cl.^{2} A61K *31/535*

U.S. Cl. 424—248.51 **7 Claims**

1. A method for treating glaucoma and for lowering intraocular pressure which comprises topically applying to the glaucomatous eye an intraocular pressure lowering effective amount of t-butylamino-3-(4-morpholino-1,2,5-thiadiazol-3-yloxy)-2-propanol hydrogen maleate.

4,195,086

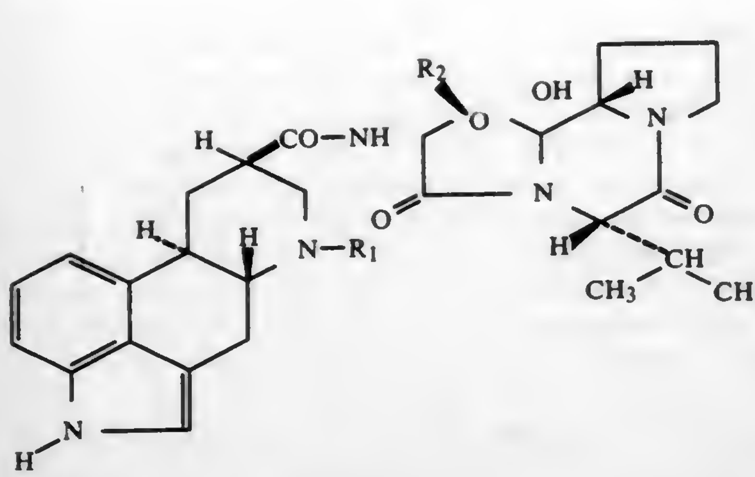
6-BRANCHED CHAIN ALKYL SUSTITUTED ERGOT ALKALOIDS

Theodor Fehr, Dornach, and Paul Stadler, Biel-Benke, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 762,647, Jan. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 587,289, Jun. 16, 1975, abandoned. This application Jul. 26, 1978, Ser. No. 928,199
Claims priority, application Switzerland, Jun. 21, 1974, 8533/74
Int. Cl.^{2} C07D *519/02*

U.S. Cl. 424—250 **18 Claims**

1. A compound of formula I,



I

wherein

R$_1$ is a branched chain alkyl of 3 to 5 carbon atoms, branched at the α-position to the nitrogen to which it is bound, and

R$_2$ is methyl or ethyl,

or a pharmaceutically acceptable acid addition salt thereof.

6. A pharmaceutical composition useful in treating migraine comprising 0.1 to 3 milligrams of a compound of claim **1** in association with a pharmaceutical carrier or diluent.

4,195,087
DERIVATIVES OF NAPHTHYRIDINE

Chaim Simonovitch, Rishon le Zion, Israel, assignor to Abic, Ltd., Ramat Gan, Israel

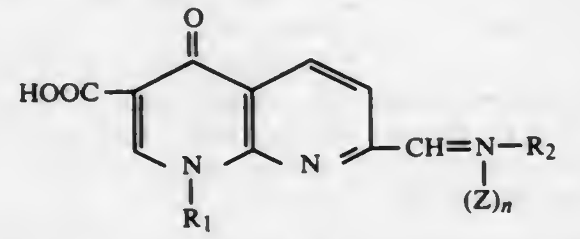
Filed Dec. 6, 1977, Ser. No. 857,900

Claims priority, application Israel, Dec. 10, 1976, 51092

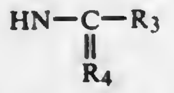
Int. Cl.^{2} C07D ***471/04***

U.S. Cl. 424—256 **26 Claims**

1. 3-Carboxy-4-oxo-1,40dihydro-1, 8-napthyridines of the formula

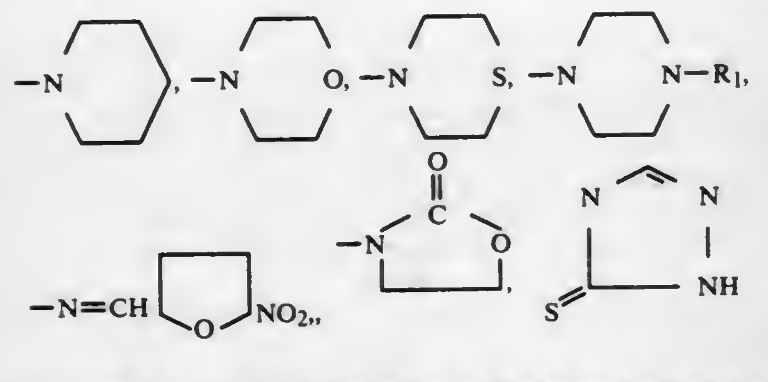


wherein R$_1$ is selected from the group consisting of straight and branched alkyl of 1–7 carbon atoms and cycloalkyl, Z stands for oxygen, n is 0 or 1, and R$_2$ is selected from the group consisting of the group OH; the group C_6H_5; the group —NHR$_1$ wherein R$_1$ has the same definition as above; the group



$$HN{-}\underset{\underset{R_4}{\parallel}}{C}{-}R_3$$

wherein R$_3$ is selected from the group consisting of straight and branched alkyl of 1–7 carbon atoms, cycloalkyl, NH_2, $NHNH_2$, OR$_1$ wherein R$_1$ has the same definition as above, phenyl, phenyl—OH and phenyl—NO_2 and wherein R$_4$ stands for O or NH; the group C_6H_5—R$_1$ wherein R$_1$ has the same definition as above; the group C_6H_5—Hal wherein Hal is a halogen; and a heterocyclic group selected from the group consisting of



wherein R$_1$ has the same definition as above; and physiologically acceptable salts thereof.

4,195,088
1,3-DIHYDRO-IMIDAZO-(4,5-B)-PYRIDIN-2-ONES

Fernando Barzaghi, Monza, and Mario Bianchi, Carate Brianza, both of Italy, assignors to Roussel Uclaf, Paris, France

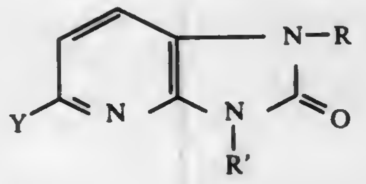
Filed Dec. 26, 1978, Ser. No. 972,942

Claims priority, application Italy, May 10, 1978, 49289 A/78

Int. Cl.^{2} A61K ***31/435;*** **C07D** ***235/00***

U.S. Cl. 424—256 **26 Claims**

1. A compound selected from the group consisting of the formula



wherein R is alkyl of 1 to 3 carbon atoms and R′ is pyridyl and Y is selected from the group consisting of hydrogen and chlorine and their non-toxic, pharmaceutically acceptable acid addition salts.

7. An antiulcerogenic and antisecretic composition comprising an antiulcerogically and antisecretically effective amount of at least one compound of claim **1** and an inert pharmaceutical carrier.

4,195,089
SYNERGISTIC COMPOSITION FOR MALARIA

William H. G. Richards, Orpington, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 606,004, Aug. 20, 1975, Pat. No. 4,031,220. This application Apr. 28, 1977, Ser. No. 791,857

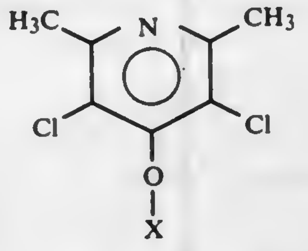
Claims priority, application United Kingdom, Aug. 20, 1975, 36523/75

The portion of the term of this patent subsequent to Jun. 21, 1994, has been disclaimed.

Int. Cl.^{2} A61K ***31/47, 31/44***

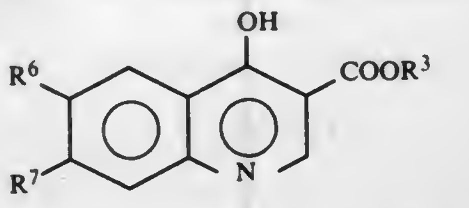
U.S. Cl. 424—258 **3 Claims**

1. A discrete unit dose pharmaceutical composition in the form of a tablet suitable for administration to a mammal from the species man which might be exposed to or suffering from malaria comprising a compound of formula (I):



(I)

wherein X is hydrogen, an alkali metal, the ammonium radical or a group $H(CH_2)_nCO$-, where n is an integer from 0 to 3, or a pharmaceutical or pharmacologically acceptable acid addition salt thereof when X is hydrogen in combination with a compound of formula (II):



(II)

wherein R^6 is n-decyloxy, R^7 is ethoxy and R^3 is ethyl or a pharmaceutically and pharmacologically acceptable acid addition salt thereof, together with a suitable carrier therefor; said composition containing a compound of formula (I) and a compound of formula (II), in amounts effective to treat man, in a weight by weight ratio (calculated as the base) in the range of 40:1 to 5:1 respectively.

4,195,090
2-(3-AMINO-2-HYDROXY-PROPOXY)PYRIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS THEREWITH

Jürg Frei, Schönenbuch; Knut A. Jaeggi, Basel; Franz Ostermayer, Riehen, and Herbert Schröter, Füllinsdorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

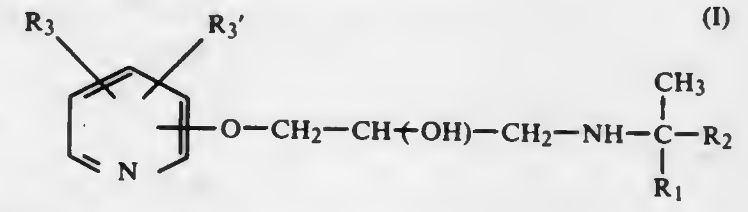
Division of Ser. No. 757,529, Jan. 7, 1977, Pat. No. 4,115,575, which is a continuation of Ser. No. 590,363, Jun. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 442,711, Feb. 14, 1974, abandoned. This application Mar. 3, 1978, Ser. No. 883,434

Claims priority, application Switzerland, Feb. 20, 1973, 2444/73; Finland, Jan. 23, 1974, 193/74

Int. Cl.^{2} A61K ***31/44;*** **C07D** ***213/46***

U.S. Cl. 424—263 **21 Claims**

1. A compound of the formula



(I)

wherein

R$_1$ denotes hydrogen or methyl,

R$_2$ denotes lower alkyl or phenyl-lower alkyl,

R$_3$ denotes lower alkyl, lower alkoxy, lower alkenyloxy, lower-alkylcarbonyl, lower alkylaminocarbonyl, lower-alkyleneamino-carbonyl, lower alkyl-carbonylamino, lower alkoxy-lower alkyl, lower alkyl-carbonylamino lower alkyl, di-(lower alkyl)-amino, amino-lower alkyl, hydroxy-lower alkyl, lower alkoxycarbonylamino-lower alkyl, halogen, cyano, nitro, hydroxyl or phenyl,

R$_3$′ denotes hydrogen, lower alkyl, lower alkoxy or halogen, in the form of an isomer mixture (racemate mixture), pure racemate, optical antipode, N-Oxide or a therapeutically acceptable salt thereof.

2. A pharmaceutical preparation useful as adrenergic β-receptor blocking agent in the treatment of angina pectoria, hypertonia and disturbances of the rhythm of the heart comprising a therapeutically effective amount of a compound of the formula (I) as claimed in claim **1**, or a therapeutically acceptable salt of such a compound, together with a pharmaceutically usable excipient.

4,195,091
APPETITE STIMULATING PYRROLO[2,1-B][3]BENZAZEPINES

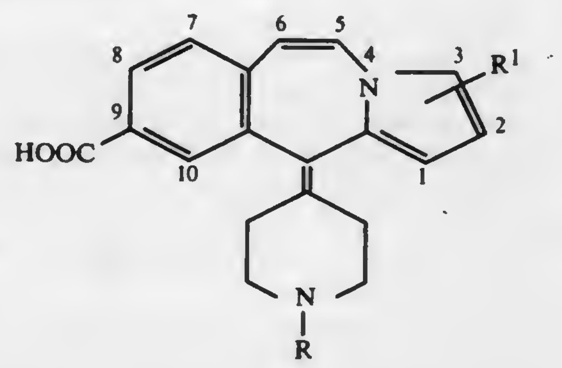
Joseph G. Atkinson, Montreal; Patrice C. Belanger, Dollard des Ormeaux, both of Canada; David C. Remy, North Wales, and Clarence S. Rooney, Worcester, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 15, 1978, Ser. No. 960,812

Int. Cl.^{2} A61K ***31/445;*** **C07D** ***487/04***

U.S. Cl. 424—267 **7 Claims**

6. A method of stimulating the appetite of a patient in need of such treatment which comprises the administration to a patient an effective appetite stimulating amount of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein:

R^1 is hydrogen, carboxy, lower alkyl; and

R is lower alkyl or lower(cycloalkylalkyl).

4,195,092
2-(SUBSTITUTED AMINO)-N-(3-SUBSTITUTED PHENYL)-2-IMIDAZOLINE-1-CARBOTHIOAMIDES

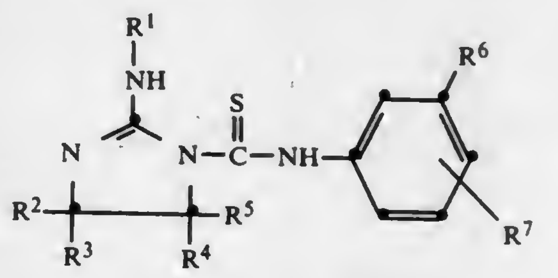
Terry W. Balko, Waldron, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 27, 1977, Ser. No. 865,091

Int. Cl.^{2} A61K ***31/415;*** **C07D** ***233/50***

U.S. Cl. 424—273 R **89 Claims**

1. A compound having the formula:



wherein R^1 represents
- (A) C_1–C_{18} alkyl;
- (B) C_2–C_{18} alkenyl;
- (C) C_4–C_{18} alkadienyl;
- (D) C_3–C_{12} cycloalkyl, optionally substituted with either one or two C_1–C_3 alkyl groups;
- (E) C_5–C_{12} cycloalkenyl, optionally substituted with either one or two C_1–C_3 alkyl groups;
- (F) C_6–C_{12} cycloalkadienyl, optionally substituted with either one or two C_1–C_3 alkyl groups;
- (G) phenyl, optionally substituted with from one to three groups selected from the group consisting of
  - (1) C_1–C_6 alkyl,
  - (2) C_1–C_6 alkoxy,
  - (3) C_1–C_6 alkylthio,
  - (4) trifluoromethyl,
  - (5) halo, and
  - (6) cyano;
- (H) (cycloalkyl)alkyl, containing no more than about 18 carbon atoms, in which the cycloalkyl moiety is as defined hereinabove;
- (I) phenylalkyl, containing no more than about 18 carbon atoms, in which the phenyl moiety is as defined hereinabove;
- (J) diphenylalkyl, containing no more than about 18 carbon atoms, in which each phenyl moiety is as defined hereinabove;

R^2 and R^3 independently are selected from the group consisting of
- (A) hydrogen,
- (B) C_1–C_3 alkyl, and
- (C) phenyl, with the proviso that when one of R^2 and R^3 is phenyl, the other of R^2 and R^3 is hydrogen;

R^4 and R^5 independently are selected from the group consisting of
- (A) hydrogen,
- (B) C_1–C_3 alkyl, and
- (C) phenyl, with the proviso that when one of R^4 and R^5 is phenyl, the other of R^4 and R^5 is hydrogen;

R^6 represents
- (A) halo,
- (B) trifluoromethyl,
- (C) cyano, or
- (D) 1,1,2,2-tetrafluoroethoxy;

R^7 represents hydrogen, C_1–C_3-alkyl, or halo, with the proviso that R^7 cannot be in the 2-position.

30. A method for reducing or eradicating a population of the insect species *Epilachna varivestis* which comprises administering to the insect by ingestion an insecticidally-effective amount of a compound of claim **1**.

4,195,093

FUROYL- AND THENOYL-ARYLOXYALKYL CARBOXYLIC ACID DERIVATIVES, THEIR PREPARATION AND THEIR USE IN THERAPY

Jacqueline S. Laforest, nee Boutillier du Retail, Vincennes; Sylviane S. J. Mignonac, nee Mondon, Chilly-Mazarin; Germaine Thuillier, nee Nachmias, Paris, and Pierre A. R. Bessin, Chilly-Mazarin, all of France, assignors to Albert Rolland S.A., Paris, France

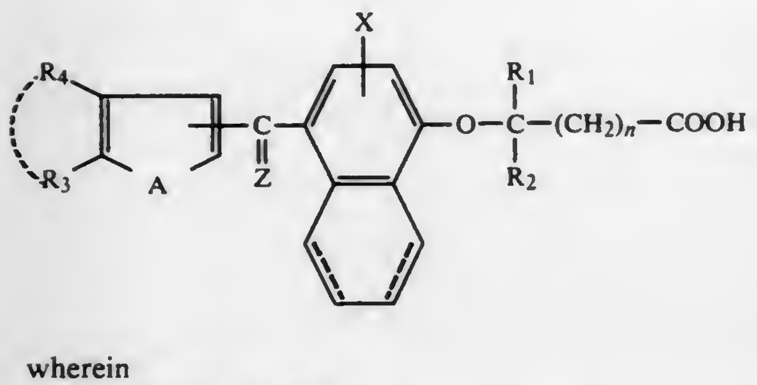
Filed Mar. 24, 1978, Ser. No. 889,986

Claims priority, application France, Apr. 6, 1977, 77 10405

Int. Cl.^{2} A61K *31/38, 31/34;* **C07D** *333/24, 307/77*

U.S. Cl. 424—275 **10 Claims**

1. A compound of the general formula I



(I)

wherein

n represents 0, 1 or 2,

A represents an oxygen or sulphur atom,

Z represents an oxygen atom or a hydroxyimino group,

X represents a hydrogen or halogen atom,

the dotted lines represent bonds which may be unsaturated or saturated,

each of R_1 and R_2, which may be the same or different, represents a hydrogen atom or an alkyl group, and

R_3 represents a hydrogen or halogen atom, or a methyl group, and

R_4 represents a hydrogen atom, or

R_3 and R_4 together with the two carbon atoms to which they are attached represent a benzene ring, or a salt thereof with a pharmaceutically acceptable base.

4,195,094

ZINC CONTAINING HYPOGLYCEMIC AGENTS

Charles L. Fox, Jr., Sherman, Conn., assignor to Research Corporation, New York, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,864

Int. Cl.^{2} C01B *25/08, 35/02;* **C07F** *3/06*

U.S. Cl. 424—289 **10 Claims**

1. A compound useful as an oral hypoglycemic agent which comprises a zinc salt of a sulfonyl urea compound selected from the group consisting of glyburide, glibornuride and tolbutamide.

7. A method of lowering blood sugar levels in warm-blooded animals which comprises administering orally to said animals an effective amount of a compound in accordance with claim 1.

4,195,095

TOPICAL APPLICATION OF THIOGLYCOLIC ACID IN THE TREATMENT OF DERMATOLOGICAL CONDITIONS

Aaron L. Sheffner, 18 Trombley Dr., Livingston, N.J. 07039

Division of Ser. No. 813,750, Apr. 4, 1969, Pat. No. 4,107,330. This application Aug. 14, 1978, Ser. No. 933,506

The portion of the term of this patent subsequent to Aug. 15, 1997, has been disclaimed.

Int. Cl.^{2} A61K *31/19*

U.S. Cl. 424—317 **13 Claims**

1. A process for the treatment of dandruff comprising applying to the dandruff effected skin of a person suffering therefrom, a dandruff alleviating amount of a topical composition containing about 0.1 to about 10% by weight of thioglycolic acid or a pharmaceutically acceptable salt thereof, and keeping said composition in contact with the affected skin for several hours.

4,195,096

CARBOXYLIC AMIDES AS FUNGICIDES TO EUMYCOTINA IN PHANEROGAMIA PLANT LIFE

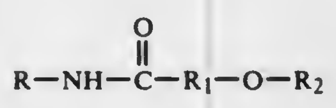
David E. Graham, Westfield, N.J., and Joseph P. Copes, deceased, late of Easton, Pa. (by Anna M. Copes, legal representative), assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 758,585, Jan. 12, 1977. This application May 23, 1978, Ser. No. 908,715

Int. Cl.^{2} A01N *9/20*

U.S. Cl. 424—320 **9 Claims**

1. A composition consisting essentially of a fungicidally effective amount of an amide having the formula



$$R-NH-\overset{\overset{\displaystyle O}{\|}}{C}-R_1-O-R_2$$

wherein R is an organic radical of from 4 to 20 carbon atoms and is selected from the group consisting of an acyclic alkyl radical, an alkenyl radical having one or more doubly bonded carbon atoms, a mono- or di-fluorinated benzyl radical and a mono- or di-chlorinated benzyl radical; R_1 is alkylene of from 1 to 6 carbon atoms and R_2 is alkyl of from 1 to 6 carbon atoms substituted with a hydroxy, carboxylate or a halo carboxylate group, and an inert carrier therefor.

4,195,097

METHOD FOR PREPARING ENZYMAYTIC COMPOSITION FOR ACCELERATION OF AGEING OF MEAT PRODUCTS

Leonid I. Stekolnikov; Boris A. Sevastyanov, both of Moscow; Gennady G. Shilov, Rostov-na-Donu; Anatoly A. Belousov, Moscow, and Nikolai D. Mamonov, Rostov-na-Donu, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Myasnoi Promyshlennosti, Moscow, U.S.S.R.

Filed Mar. 8, 1978, Ser. No. 884,540

Claims priority, application U.S.S.R., Mar. 14, 1977, 2464202

Int. Cl.^{2} A22C *11/00;* **A23P** *1/00;* **A23L** *1/31*

U.S. Cl. 426—61 **9 Claims**

1. A method for preparing an enzymatic composition for accelerating the aging of meat comprising:

(A) Separately dissolving 4 to 6 parts by weight hyaluronidase and 0.5 to 1.5 parts by weight serum albumin in water having a pH of from 2.0 to 2.5;

(B) Mixing said solution of hyaluronidase with said solution of serum albumin, thereby obtaining a water soluble complex of hyaluronidase and said serum albumin in solution and suspended particles of unreacted ingredients;

(C) Separating the water soluble complex solution from the suspended unreacted ingredients;

(D) Cooling said separated water soluble complex solution to 4 to 6 degrees centigrade;

(E) Precipitating the cooled water soluble complex from aqueous solution by means of an organic solvent present in a volumetric ratio between said organic solvent and aqueous solution of from 4:1 to 10:1 respectively;

(F) Separating the precipitated complex from the liquid phase; and

(G) Drying the separated precipitated complex successively with acetone and ethyl ether.

9. Meat or meat products treated with the composition prepared by the method of claim 1, by adding said composition in an amount of from about 0.05 to about 2 percent by weight of the meat or meat products.

4,195,098

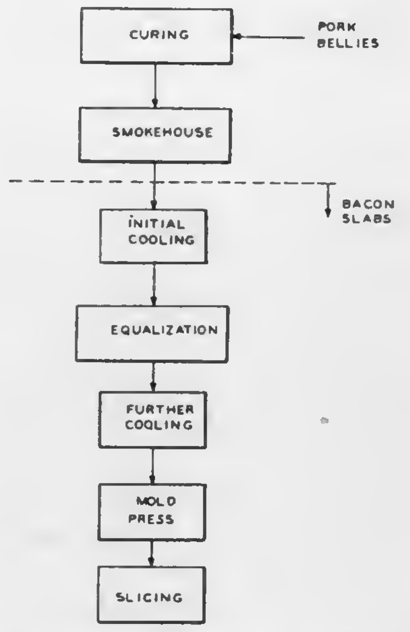
METHOD OF PREPARING BACON SLABS FOR SLICING

Carl W. Otto, Narragansett, R.I., assignor to Airco, Inc., Montvale, N.J.

Filed May 30, 1978, Ser. No. 910,918

Int. Cl.^{2} A23L *3/36*

U.S. Cl. 426—513 **9 Claims**



1. A method of preparing bacon slabs for slicing comprising the steps of cooling said slabs from a temperature of at least 90° F. to an average temperature of about 45°–50° F. thereby avoiding physical separation of the fat from the lean portions in said slabs, holding said cooled slabs under a temperature of about 40°–45° F. to substantially equalize temperature throughout said cooled slabs; further cooling said slabs to an average slab temperature of approximately 22°–26° F. without freezing said slabs and thereafter molding said further cooled slabs for slicing.

4,195,099

USE OF 2-OXABICYCLOOCTANE DERIVATIVES, FOR AUGMENTING OR ENHANCING THE FLAVOR OF FOODSTUFFS

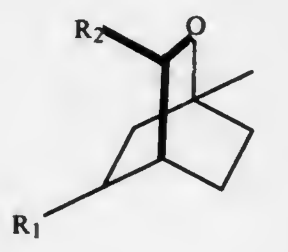
Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,128

Int. Cl.^{2} A23L *1/226, 1/235*

U.S. Cl. 426—536 **18 Claims**

1. A process for augmenting or enhancing the organoleptic properties of a foodstuff comprising the step of adding to said foodstuff from 0.05 parts per million up to about 500 parts per million of a cyclic chemical compound having the structure:



wherein R_1 is selected from the group consisting of hydrogen and methyl and R_2 is C_3–C_5 alkyl or alkenal.

4,195,100

USE OF 2-OXABICYCLOOCTANE DERIVATIVES IN AUGMENTING OR ENHANCING THE FLAVOR OF A FOODSTUFF

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

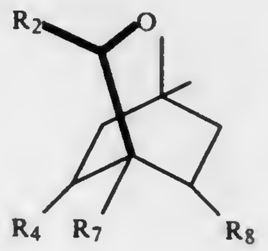
Continuation-in-part of Ser. No. 953,128, Oct. 20, 1978. This application Feb. 16, 1979, Ser. No. 12,695

The portion of the term of this patent subsequent to Mar. 25, 1997, has been disclaimed.

Int. Cl.^{2} A23L *1/226, 1/235*

U.S. Cl. 426—536 **16 Claims**

1. A process for augmenting or enhancing the flavor or aroma of a foodstuff comprising the step of adding to said foodstuff from 0.05 parts per million up to about 500 parts per million of said foodstuff of an oxabicyclo chemical compound having a structure:



wherein R_2 is C_2–C_5 alkyl or alkenyl; R_4 is hydrogen, methyl or ethyl; R_7 is hydrogen or methyl; and R_8 is hydrogen or methyl with the proviso that at least two of R_4, R_7 and R_8 are not hydrogen.

4,195,101

2′,6′-DIHYDROXY-9-(2,5-DIHYDROXYPHENYL)OCTYLPHENONE AND ITS USE AS AN ANTI-OXIDANT

Yutaka Saito, Funabashi; Yukichi Kimura, Narashino; Tomonori Sakamoto, Chiba; Masafu Shinbo, and Shoji Kameyama, both of Odawara, all of Japan, assignors to The Lion Dentifrice Co. Ltd., Tokyo, Japan

Filed Sep. 29, 1978, Ser. No. 946,968

Claims priority, application Japan, Nov. 22, 1977, 52-140372; Aug. 22, 1978, 53-102044

Int. Cl.^{2} A23L *1/28*

U.S. Cl. 426—546 **3 Claims**

1. A method for preventing oxidation of a foodstuff comprising admixing pure 2′,6′-dihydroxy-9-(2,5-dihydroxyphenyl)-octylphenone in the foodstuff in an amount effective to prevent the oxidation of the foodstuff.

4,195,102

AQUEOUS POLYESTER COATINGS

Edward T. Turpin, Elyria, Ohio, assignor to SCM Corporation, New York, N.Y.

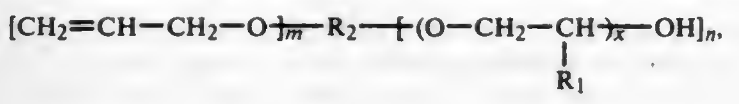
Division of Ser. No. 880,616, Feb. 23, 1978, Pat. No. 4,156,667, which is a continuation-in-part of Ser. No. 772,762, Feb. 28, 1977, abandoned. This application Dec. 6, 1978, Ser. No. 966,818

Int. Cl.^{2} B05D *1/06, 3/02*

U.S. Cl. 427—27 **4 Claims**

1. A process for coating a substrate with a waterdispersed, heat curable coating composition, comprising

providing a coating composition substantially free of a volatile organic cosolvent during heat curing, comprising an aqueous dispersion of (a) polyester resin, (b) aminoplast crosslinking resin, and (c) a reactive allyl ether alcohol having a molecular weight between 200 and 1200 for dispersing the polyester resin and aminoplast resin in water and cross-linking within the cured film upon heat curing said coating composition, wherein the weight ratio of said polyester and allyl ether is between 0.5/1 and 15/1, said allyl ether alcohol having the structure



$$[CH_2{=}CH-CH_2-O\rceil_m-R_2-\lceil(O-CH_2-\underset{\displaystyle R_1}{\underset{|}{CH}})_x-OH]_n,$$

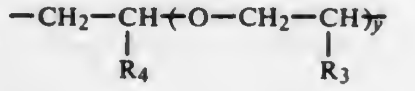
where
R_1 is hydrogen or a methyl group; and
R_2 is a divalent or trivalent hydrocarbon group and

$m=1$ or 2

$n=1$ or 2

$(n)(x)=1$–18, inclusive, or

R_2 is a divalent polyoxyalkylene group of the structure



$$-CH_2-\underset{\displaystyle R_4}{\underset{|}{CH}}(O-CH_2-\underset{\displaystyle R_3}{\underset{|}{CH}})_y$$

where R_3 and R_4, independently, are hydrogen or a methyl group,

$m=1$

$n=1$

$x+y=2$–18, inclusive, and

applying said coating composition to a substrate and heat curing the coating at temperatures between 120° C. and 300° C. without substantial volatilization of said allyl ether to provide a cured cross-linked film on the substrate.

4,195,103

METHOD OF DESENSITIZING CARBONLESS PAPER

John C. H. Chang, Naperville, Ill., assignor to Wallace Business Forms, Inc., Hillside, Ill.

Filed Aug. 30, 1978, Ser. No. 937,956
Int. Cl.^{2} B05C *5/00, 17/04*
U.S. Cl. 427—54.1 **7 Claims**

1. A method of desensitizing a carbonless paper having as a color developer thereof a member selected from the class consisting of an acid clay, a phenolic novolac resin and a metal salt of an organic carboxylic acid, comprising applying from about 10 to about 35 parts N-vinylpyrrolidone, from about 65 to about 90 parts of a free-radical co-polymerizable compound having at least one terminal ethylenic group per molecule and from about 1% to about 10% of the combined weight of said N-vinylpyrrolidone and said free-radical copolymerizable compound of a photoinitiator to selected portions of said paper and thereafter subjecting said paper to ultraviolet radiation.

4,195,104

VIDEOJET INK COMPOSITION

David A. Fell, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 909,469, May 25, 1978. This application Feb. 21, 1979, Ser. No. 13,406
Int. Cl.^{2} B05D *1/36, 5/00*
U.S. Cl. 427—261 **3 Claims**

1. A method for applying indicia to a substrate which comprises the steps of:

(1) providing and ink composition comprising a solution of (a) an epoxy-phenolic binder resin (b) at least one dye that is soluble and compatible with the components of the composition and (c) a solvent blend consisting essentially of from about 25 to 40% of an alcohol having 1 to 3 carbon atoms and mixtures thereof, from about 5 to 20% water, from about 25 to 40% of an aliphatic ketone having 3 to 8 carbon atoms and from about 0 to 20% of a lower alkylene glycol ether;

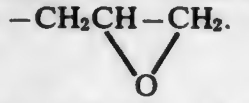
(2) applying said ink composition by a jet printing apparatus to the surfaces of a substrate selected from the group consisting of glass, ceramic, polymer coated wire and coated or uncoated aluminum or steel to form printed indicia thereon.

4,195,105

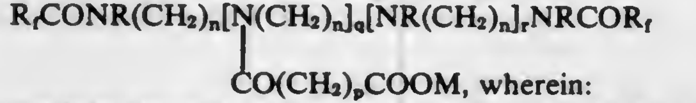
FLUORINATED POLYALKYLENE POLYAMIDES AS STAIN REPELLENTS

Frank Mares, Whippany; Bryce C. Oxenrider, Florham Park, both of N.J., and Cyril Woolf, deceased, late of Morristown, N.J. (by Helga Woolf, executrix), assignors to Allied Chemical Corporation, Morris Township, N.J.

Continuation-in-part of Ser. No. 677,357, Apr. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,929, Jun. 30, 1975, abandoned. This application Dec. 16, 1977, Ser. No. 861,371
Int. Cl.^{2} B05D *3/02*
U.S. Cl. 427—386 **13 Claims**

1. A compound capable of imparting oil and water resistance to nylon fiber upon applying said compound to the surface of said fiber by contact of a solution or dispersion of the compound in liquid medium with the surface of the fiber and then annealing the resulting fiber; said compound being a poly-(C_2 to C_{10}) alkylene polyamine containing a primary or methyl substituted nitrogen at each end of a chain, said terminal nitrogen atoms being acylated by fluorinated carboxylic acid groups; and said polyalkylene polyamine containing at least one interior nitrogen atom, acylated by a dibasic acid moiety of the group consisting of (C_4 to C_{14}) alkane dioic acid moieties and thiocarbonic acid moieties $-C(=O)S-$ and $-CS_2-$; wherein the improvement comprises a radical, terminally attached to said acylating dibasic acid moiety, of the group consisting of the esterifying radicals $-CH_2CH_2OH$, $-CH_2CH(CH_3)OH$, $-CH_2CHOHCH_2X$ (X being halogen or cyano), or $-CH_2CH-CH_2$. 

2. Compound of claim 1 having the formula:



$$R_fCONR(CH_2)_n[\underset{\displaystyle CO(CH_2)_pCOOM}{\underset{|}{N}}(CH_2)_n]_q[NR(CH_2)_n]_rNRCOR_f$$

wherein:

(1) Independently at each occurrence, R_f is highly fluorinated radical containing at least two and up to 20 perfluorinated carbon atoms;

(2) Independently at each occurrence, R is hydrogen or methyl;

(3) Independently at each occurrence, n is an integer from 2 to 10; and $(CH_2)_n$ is a straight chain or a chain containing propyl substituent radicals;

3. Compound of claim 1 wherein the polyalkylene polyamine moiety is a triazaalkane having its three nitrogen atoms arranged in a straight carbon-nitrogen chain, terminated at both ends by nitrogen atoms and having a C_2 to C_4 alkylene radical separating the interior nitrogen atom from each of the terminal nitrogen atoms; and wherein the fluorinated radicals in the carboxylic acid groups acylating said terminal nitrogen atoms have the formula $F(CF_2)_m$ or $(CF_3)_2CFO(CF_2)_m$, wherein independently at each occurrence, m is an integer from 5 to 10 and m' is an integer from 2 to 10.

9. Process of incorporation, with a nylon fiber, a compound of claim 3 comprising contacting a solution or dispersion of said compound in liquid medium with the surface of the fiber and then annealing the resulting fiber, whereby the fiber acquires repellency against water and oil.

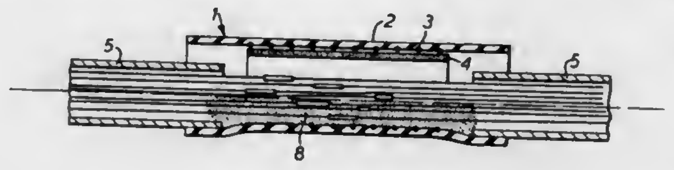
12. Process of claim 9 wherein the fiber is composed of poly-E-caproamide and wherein the fiber, in the form of a fabric, is impregnated with a polyfunctional epoxide compound or isocyanate and with a tertiary amine catalyst, included in the liquid treating medium.

4,195,106

HEAT RECOVERABLE ARTICLE

Jacques H. F. Brusselmans, Kessel-Lo, Belgium, assignor to N.V. Raychem S.A., Kessel-Lo, Belgium

Filed Aug. 14, 1978, Ser. No. 933,599
Claims priority, application United Kingdom, Aug. 22, 1977, 35161/77
Int. Cl.^{2} H02G *13/06;* **B32B** *31/00;* **B29C** *27/00*
U.S. Cl. 428—35 **15 Claims**



1. An article comprising a polymeric, hollow, heat-recoverable member that recovers radially, a heat-softenable insert positioned within the member, and, positioned between the heat-recoverable member and the insert, a separate thermal barrier comprising a polymeric material, the barrier being capable of preserving its structural cohesion at the application temperature of the article without preventing recovery of the heat-recoverable member.

11. A method of covering a heat-sensitive substrate comprising the steps of:

(a) placing about the substrate an article comprising a polymeric, heat-recoverable member containing both a heat-softenable insert and a separate thermal barrier between the member and the insert, the barrier being capable of preserving its structural cohesion at the application temperature of the article without preventing recovery of the heat-recoverable member; and

(b) applying heat from a heat source to the article to soften the insert and to recover the member, the heat barrier allowing sufficient heat to be transferred to soften the insert but preventing heat from damaging the heat-sensitive substrate, either by contact with the hot, heat-recovered member, or direct from the heat source.

4,195,107

SELF-ADHESIVE PLASTIC TILE

Walter C. Timm, New Windsor, N.Y., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 536,835, Dec. 27, 1974, abandoned. This application Apr. 26, 1978, Ser. No. 899,899
Int. Cl.^{2} A61F *13/02;* **E04C** *2/20*
U.S. Cl. 428—40 **10 Claims**

1. Plastic tile suitable for adhesion to walls, said plastic tile comprising vinyl chloride resin selected from the group consisting of vinyl chloride vinyl acetate copolymer, vinyl chloride homopolymer and mixtures, thereof, filler, and between about 10 and about 60 pounds per hundred pounds vinyl chloride resin of a plasticizer at least about 90% of which consists of butyl benzyl phthalate, said plastic tile having a hot-melt type pressure-sensitive adhesive coating, said adhesive coating comprising, as a resin ingredient, at least about 25 percent by weight of a vinylic copolymer having less than about 50 percent of styrene-type units and more than about 50 percent of units selected from the group consisting of isoprene, butadiene, and mixtures thereof.

4,195,108

ELECTROLITHOGRAPHIC PROCESS WHICH MAKES IT POSSIBLE TO IMPROVE THE SENSITIVITY OF MASKING RESINS, AND A MASK OBTAINED BY THIS KIND OF PROCESS

Maryse Gazard, and Jean-Claude Dubois, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 1, 1978, Ser. No. 901,617
Claims priority, application France, May 3, 1977, 77 13344
Int. Cl.^{2} B05D *3/06*
U.S. Cl. 428—195 **7 Claims**

1. An electron lithographic process which makes it possible to improve the sensitivity of masking resins, comprising:

(a) deposition upon a substrate which is to be etched, of a solution of said polymer in a solvent, this in such a manner as to produce a layer of uniform thickness;
(b) drying in order to eliminate the solvent;
(c) irradiation of the polymer by electrons having a given energy;
(d) copolymerisation by the grafting of a monomer to the initial polymer, said copolymerisation only taking place in the irradiated areas;
(e) developing of the mask by an agent which selectively dissolves the initial or grafted parts of the polymer;
(f) heat treatment of the substrate covered by the mask.

4,195,109

POLYMERIC ADHESIVE-COATED PAPER AND GYPSUM WALLBOARD PREPARED THEREWITH

William J. Long, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Continuation-in-part of Ser. No. 799,412, May 23, 1977, Pat. No. 4,119,752, which is a division of Ser. No. 491,097, Jul. 23, 1974, Pat. No. 4,051,291, which is a continuation of Ser. No. 221,324, Jan. 27, 1972, abandoned. This application Jun. 22, 1978, Ser. No. 918,181
The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.^{2} B32B *7/14, 31/12*
U.S. Cl. 428—198 **20 Claims**

1. In a panel comprising a rehydrated gypsum core securely bonded to a paper cover sheet by an adhesive disposed at the interface of said core and said cover sheet, the improvement wherein said adhesive is applied to said cover sheet as a latex or aqueous suspension of a polymer and is disposed at limited areas of said interface, the amount of adhesive present at said limited areas being sufficient to provide secure bonding of said paper cover sheet to said gypsum core when said adhesive has set, and wherein substantial areas of said interface are free of said adhesive, said free areas being sufficient to provide wet bonding of said cover sheet to said core prior to the setting of said adhesive, the portion of said paper cover sheet spaced from said interface being substantially free of adhesive.

10. A process for producing gypsum wallboard comprising the following steps:

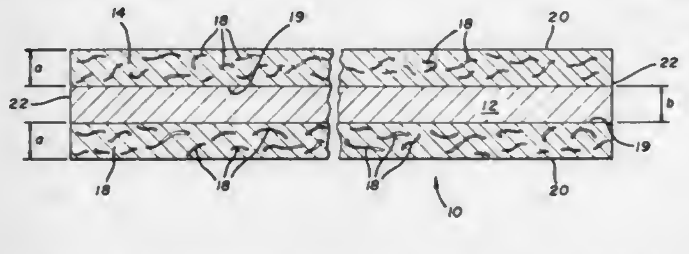
a. providing at least one paper cover sheet having a bond liner and applying a coating of an adhesive which is a latex or aqueous suspension of a synthetic polymer by calendering to provide a pattern having said adhesive at limited areas of said bond liner while leaving substantial areas free of said adhesive,

b. casting an aqueous slurry of calcium sulfate hemihydrate on said paper cover sheet over said bond liner with the water from said aqueous slurry establishing wet bonding between said slurry and the uncoated portions of said bond liner, and

c. setting said slurry to form a core and setting said adhesive to establish an adhesive bond between said core and said paper cover sheet at the limited areas containing said adhesive.

4,195,110
GLASS-REINFORCED COMPOSITE GYPSUM BOARD

Robert P. Dierks, and Robert J. Rillie, both of Des Plaines, Ill., assignors to United States Gypsum Company, Chicago, Ill.
Continuation of Ser. No. 592,960, Jul. 3, 1975, abandoned, which is a continuation of Ser. No. 415,038, Nov. 12, 1973, abandoned. This application Mar. 15, 1976, Ser. No. 666,539
Int. Cl.^{2} B32B *7/02, 13/02, 13/14*
U.S. Cl. 428—218 **18 Claims**



1. A reinforced gypsum board having two opposite exposed gypsum face surfaces terminating in edge surfaces, the board consisting essentially of

rehydrated stucco and randomly disposed glass fibers and being free of organic fibers,

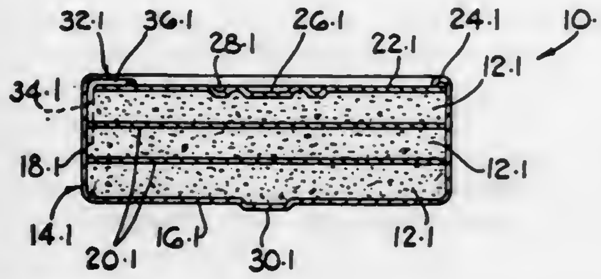
the fibers being selectively dispersed within the stucco so as to define, under said face surfaces, reinforced stucco portions in which said fibers are uniformly concentrated, and a core stucco portion disposed between said reinforced portions which is essentially free of said fibers,

said reinforced portions having a density of stucco which is substantially greater than that of the stucco of said core portion,

whereby said board has enhanced flexural strength.

4,195,111
LOAD SUPPORTING MEANS AND THE FORMATION THEREOF

Jacobus J. Rautenbach, Muldersdrift, South Africa, assignor to Fowler Holdings Limited, Pretoria, South Africa
Filed Oct. 25, 1977, Ser. No. 845,422
Int. Cl.^{2} B32B *7/02;* **E02D** *27/00;* **E04B** *2/00*
U.S. Cl. 428—218 **34 Claims**



1. A displaceable load supporting cell for supporting a load pressure of at least about 8,000 kPa with a compression of less than about 20%, and comprising at least one compacted layer of particulate material compacted under a pressure of at least about 12,000 kPa and having a height which is less than about one third of its minimum lateral dimension, retaining means for retaining the particulate material particles against dislodgement from the layer, and restraining means comprising at least one radially expansible restraining panel which is associated with the layer to extend transversely to the height of the layer, the restraining panel having a sufficient tensile strength to resist fracture during radial expansion under applied load pressures for which the cell is designed, the particulate material particles being such that while they are capable of being displaced relatively to each other under an applied load during compression of the cell, they co-operate frictionally with each other and with the restraining panel to restrain lateral displacement of the particles in the layer under an applied load.

26. A method of forming a load supporting cell for supporting a load pressure of at least about 8,000 kPa with a compression of less than about 20%, which includes the steps of filling a pan having a height less than about one third of its minimum lateral dimension and comprising a base panel and a retaining sleeve extending upwardly from the periphery of the base panel, with particulate material, positioning the pan in a die shaped to restrain lateral expansion of the pan, and applying a pressure of at least about 12,000 kPa to the particulate material to compact it into a layer in the pan, the base panel being radially expansible and having a sufficient tensile strength to resist fracture during radial expansion under applied load pressures for which the cell is designed, and the particulate material particles being such that while they are capable of being displaced relatively to each other under an applied load during compression of the cell, they co-operate frictionally with each other and with the base panel to restrain lateral displacement of the particles in the layer under an applied load.

4,195,112
PROCESS FOR MOLDING A NON-WOVEN FABRIC

Dennis R. Sheard, and Roger W. Taylor, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, United Kingdom
Filed Feb. 22, 1978, Ser. No. 880,304
Claims priority, application United Kingdom, Mar. 3, 1977, 9016/77
Int. Cl.^{2} B27J *5/00;* **D04H** *1/58*
U.S. Cl. 428—288 **8 Claims**

1. A process for molding a shaped article from an initial coherent, pliable, non-woven fabric comprising at least 20% of potentially adhesive fibers which have been formed from at least two fiber-forming polymeric components selected from the group consisting of polyolefines, polyamides, and polyesters, the components extending along the length of the fiber and one of the components having a lower softening temperature than the other components and forming at least part of the peripheral surface of the fiber, the fabric having discrete areas (A) in which fibers have been thermally bonded one to another, and discrete areas (B) in which thermally bonded fibers are absent, the molding process comprising the steps of

(a) shaping the fabric by pressing it against the surface of a mold,

(b) heating the shaped fabric while retained on the mold to a temperature at least equal to the softening temperature of the lower softening component but below the softening temperature of the other components of the potentially adhesive fibers to cause bonding of the potentially adhesive fibers in the discrete areas (B),

(c) cooling the fabric, wherein the time and temperature of the heating of step (b) produce a level of fiber bonding sufficient to cause the cooled fabric to retain its molded shape and

(d) removing the resulting shaped article from the mold.

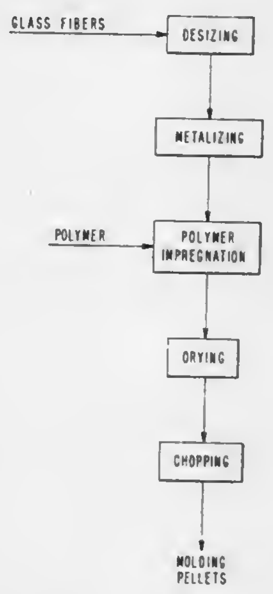
4,195,113
ENCAPSULATED IMPREGNATED ROVINGS

Richard L. Brook, Mt. Prospect, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.
Division of Ser. No. 557,656, Mar. 12, 1975. This application Sep. 14, 1978, Ser. No. 942,450
Int. Cl.^{2} D02G *3/00*
U.S. Cl. 428—375 **12 Claims**

1. A solid impregnated roving comprising a fibrous roving impregnated with a thermosetting resin in admixture with a thermoplastic resin, said admixture being in semi solid form, said impregnated roving being encapsulated within a thin membrane of thermoplastic encapsulating resin.

4,195,114
CONDUCTIVE PLASTIC AND METHOD OF PREPARATION

Edward G. Crosby, Marlboro, N.Y.; James E. Henning, Pampano Beach, Fla., and Frederick C. Hornbeck, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 754,939, Dec. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 609,658, Sep. 2, 1975, abandoned. This application Sep. 12, 1978, Ser. No. 941,701
Int. Cl.^{2} B32B *15/00, 17/00;* **D02G** *3/00*
U.S. Cl. 428—404 **5 Claims**



1. A plastic molding pellet comprising,

a core, in the form of at least one roving of metalized glass fibers, and

a surrounding body of a thermoplastic enclosing the glass fibers individually,

said body and said core being substantially equal in length and of a length to produce fibers averaging at least three-sixteenths of an inch in length in an article molded from the pellets,

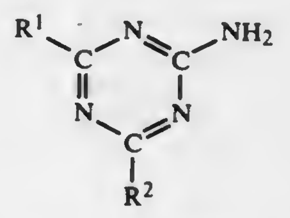
said core having a sufficient number of metalized glass fibers to give a subsequently molded article a useful value of electrical conductivity, and said body having a width sufficient to produce a weight percent of metalized glass fibers in the pellet in the range of 10 to 50 percent,

wherein said core of glass fibers comprises about 750 glass fibers.

4,195,115
COATING COMPOSITIONS

Brian Y. Downing, Kingswinford, and George D. Hamer, Birmingham, both of England, assignors to British Industrial Plastics Limited, Manchester, England
Filed Nov. 14, 1977, Ser. No. 851,375
Claims priority, application United Kingdom, Nov. 27, 1976, 49567/76; May 11, 1977, 19695/77
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.^{2} C08J *9/00, 9/10*
U.S. Cl. 428—482 **13 Claims**

1. An intumescent composition comprising a mineral acid catalyst, a source of carbon, a blowing agent and a solution, in an unsaturated monomer, of a plasticized unsaturated polyester having carbon-carbon unsaturation along its backbone chain, the unsaturated polyester being plasticized by means of 1 to 75 percent by weight (based on the weight of unsaturated polyester) of a plasticizer selected from the group consisting of alkyl phosphates, halogenated alkyl phosphates, halogenated paraffins and ester type plasticizers, the blowing agent comprising a salt of a polybasic carboxylic acid, containing not more than 2 non-carboxyl carbon atoms per carboxyl group, and a 2-amino s-triazine of general formula



wherein R^1 and R^2 may be the same or different and are selected from H, halogen, hydroxyl and amino groups and alkyl, substituted alkyl, alkenyl and substituted alkenyl groups containing not more than 6 carbon atoms.

4,195,116
HIGH SOLIDS THERMOSETTABLE COATING COMPOSITIONS CONTAINING 1,4-DIMETHYLOLCYCLOHEXANE

George J. Anderson; J. Owen Santer, both of East Longmeadow, and Timothy F. Desmond, Winchester, all of Mass., assignors to Monsanto Company, St. Louis, Mo.
Filed May 15, 1978, Ser. No. 905,710
Int. Cl.^{2} C08L *61/24*
U.S. Cl. 428—524 **9 Claims**

1. A liquid composition comprising 1,4-dimethylolcyclohexane, and an alkylated urea-formaldehyde condensate of average degree of condensation of about 3 or less, alkylated with a C_1 to C_4 alcohol, wherein the molar ratio of urea: formaldehyde:alcohol of the alkylated urea-formaldehyde condensate is in the range of about 1:2–3:1–2.5 and wherein the ratio of hydroxyl groups of the 1,4-dimethylolcyclohexane to alkoxymethyl groups of the alkylated urea-formaldehyde condensate is in the range of about 1:0.7 to about 1:2.5.

4,195,117
PROCESS FOR ELECTROPLATING DIRECTLY PLATEABLE PLASTIC WITH NICKEL-IRON ALLOY STRIKE AND ARTICLE THEREOF

Daniel Luch, Warwick, N.Y., assignor to The International Nickel Company, Inc., Suffern, N.Y.
Filed Mar. 9, 1979, Ser. No. 19,074
Int. Cl.^{2} B23P *3/20;* **C25D** *5/10, 5/12, 5/14*
U.S. Cl. 428—626 **5 Claims**

1. In an electroplated chromium-topped, directly plateable plastic object, suitable for a service condition at least as severe as service condition 3 or for a service condition requiring long term heat resistance, having a corrosion-resistant electrodeposited nickel layer underlying said chromium, the improvement comprising providing a nickel-iron alloy containing about 5%

to about 50% iron, up to 20% cobalt balance essentially nickel, as a strike electrodeposited layer immediately adherent to said directly plateable plastic.

4. In the process of electroplating directly plateable plastic to provide a plated object suitable for service conditions at least as severe as service condition SC3 or for a service condition requiring long term heat resistance, the improvement comprising employing as a strike deposit a nickel-iron alloy containing about 5% to about 50% iron, up to 20% cobalt, balance essentially nickel.

4,195,118
CONSTANT STRENGTH FUEL-FUEL CELL

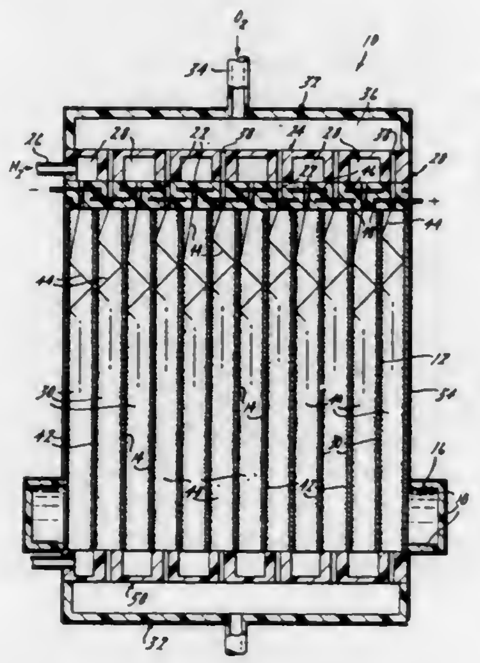
Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033
Filed Apr. 19, 1979, Ser. No. 31,622
Int. Cl.^{2} H01M *8/04*
U.S. Cl. 429—15 **1 Claim**

1. An improvement in the method of supplying "hydrogen" containing hydrocarbon fuels miscible with water to fuel cells, in a manner which provides a constant strength fuel to the cell comprising the steps of:

recirculating through the section of the fuel cell containing the liquid fuel,
the reject liquid materials from special type membrane filters, which retain or refuse to pass the basic fuel material,
disposing of the water passing through the filter,
controlling the fuel strength in the filter reject to produce the same concentration of fuel as in original feed stock,
by controlling the rate of filtration, and the quantity of recirculated fuel.

4,195,119
FUEL CELL

Joseph T. Kummer, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 21, 1978, Ser. No. 962,735
Int. Cl.^{2} H01M *8/08*
U.S. Cl. 429—38 **3 Claims**



1. A hydrogen/oxygen fuel cell comprising:

a honeycomb separator having a plurality of walls which form cells thereby to define a plurality of separate hydrogen compartments and oxygen compartments, said walls of said honeycomb separator being formed of a material having a porosity which allows a capillary transport therethrough of an electrolyte;
an electrolyte reservoir in contact with at least a portion of said honeycomb separator;
a hydrogen/oxygen fuel cell electrolyte in said reservoir, said hydrogen/oxygen fuel cell electrolyte being wicked into said walls of said honeycomb separator;
hydrogen supply means for supplying hydrogen to every other cell in a checkerboard fashion thereby to define hydrogen compartments in said honeycomb separator;
oxygen supply means for supplying oxygen to every cell not a hydrogen compartment thereby to define oxygen compartments in said honeycomb separator, said hydrogen compartments and said oxygen compartments being generally in a side-by-side relationship throughout said honeycomb separator;
electrode catalyst material deposited on said walls of said honeycomb separator defining said hydrogen compartments and said oxygen compartments;
current carrying means in each of said hydrogen compartments and said oxygen compartments for providing an electrical circuit to said electrode catalyst material in each of said compartments;
a first current collecting terminal means connected to each of said current carrying means located in said hydrogen compartments of said honeycomb separator to provide a first pole for said fuel cell;
a second current collecting terminal means connected to each of said current carrying means located in said oxygen compartments of said honeycomb separator to provide a second pole for said fuel cell; and
exhaust means for removing oxidation products and excess hydrogen and oxygen respectively from said hydrogen compartments and said oxygen compartments.

4,195,120
HYDROGEN EVOLUTION INHIBITORS FOR CELLS HAVING ZINC ANODES

Eleanor J. Rossler, Lorne Park, and Franciszek J. Przybyla, Mississauga, both of Canada, assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Nov. 3, 1978, Ser. No. 957,387
Int. Cl.^{2} H01M *10/44*
U.S. Cl. 429—50 **10 Claims**

1. An alkaline cell having a cathode, an anode and at least one electrolyte carrying separator disposed between said cathode and said anode, the combination being retained in a conductive container having a positive terminal electrically associated with said cathode and a negative terminal electrically associated with said anode, said terminals being electrically insulated from each other, said anode being predominantly zinc; and said cell having therein a surfactant which is an organic phosphate ester of the ethylene oxide-adduct type in an amount of from 0.001% to 5% by weight of the zinc component of said cell.

5. A process for inhibiting gas evolution in an alkaline cell which has a cathode, a predominantly zinc anode and at least one electrolyte carrying separator comprising incorporating a surfactant which is an organic phosphate ester of the ethylene oxide-adduct type in said cell in an amount of about 0.001% to 5% by weight of the zinc component of said cell.

4,195,121
THIN FLEXIBLE ELECTRODES AND THE METHOD FOR PRODUCING THEM

Gordon E. Peterson, Cleveland, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
Filed Mar. 28, 1978, Ser. No. 890,974
Int. Cl.^{2} H01M *4/54;* **C04B** *35/00*
U.S. Cl. 429—127 **5 Claims**

1. A method for producing a thin, flexible electrode comprising the steps:

(a) blending together an active material powder with a minor amount of an ethylene acrylic acid polymer powder to form a dry electrode mix; and
(b) compressing the dry electrode mix with a pressure between about 500 and about 10,000 pounds per square inch and heating it to a temperature of between about 60° C. and about 93° C. to form a thin, flexible electrode stock.

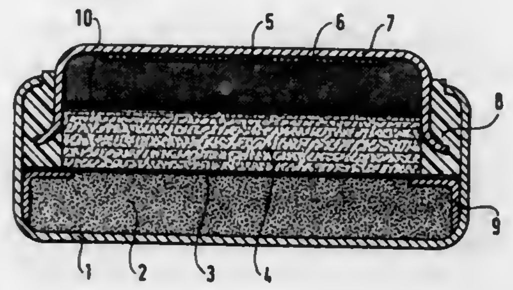
4,195,122
ADDITIVE FOR HIGH DRAIN RATE LITHIUM CELLS

Nehemiah Margalit, Levittown, and Philip E. Krouse, Yardley, both of Pa., assignors to ESB Technology Company, Yardley, Pa.
Filed Sep. 25, 1978, Ser. No. 945,426
Int. Cl.^{2} H01M *6/14*
U.S. Cl. 429—194 **8 Claims**

1. An improvement in an electrochemical cell having a lithium anode, a non-aqueous electrolyte comprised of a solvent and solute, other than alkali metal hexafluoro phasphate and a cathode, the improvement comprises having as an additive a minor portion of alkali metal hexafluorophosphate salt; wherein the amount of hexafluorophosphate salt ranges from 0.05 to 0.1 molar.

4,195,123
NON-AQUEOUS ELECTROLYTE LITHIUM BATTERY WITH IMPROVED STORAGE LIFE

Yves Jumel, Poitiers, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France
Filed Jan. 9, 1979, Ser. No. 2,090
Claims priority, application France, Jan. 10, 1978, 78 00507
Int. Cl.^{2} H01M *6/14*
U.S. Cl. 429—194 **5 Claims**



1. An electrochemical cell including a lithium negative electrode; a non-aqueous electrolyte which comprises a solute and at least one organic solvent; and a positive electrode spaced from the negative electrode, the positive electrode having a positive active material which is slightly soluble in said solvent; wherein the improvement comprises:

only the surface of the negative electrode being alloyed with at least one metal selected from the group formed by lead, tin, antimony and silver.

4,195,124
SOLAR RADIATION ENERGY ABSORBER

Hiroshi Doi, Katano; Shiyuichiro Ochiai, Ohmihachiman; Shigeyuki Kawai, Takarazuka; Kazuaki Miyamoto, and Tadashi Sasaki, both of Mishima, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Japan
Filed Apr. 21, 1977, Ser. No. 789,718
Claims priority, application Japan, Apr. 26, 1976, 51/48143
Int. Cl.^{2} B32B *15/04*
U.S. Cl. 428—469 **6 Claims**

1. A selective solar energy absorber consisting of a metallic copper or copper alloy substrate and a permanent black to dark brown copper oxide coating having a thickness of 0.2 to 0.6 microns on its surface, said coating having been produced by dipping the substrate in an aqueous alkaline solution consisting essentially of 3 to 10% by weight, based on the weight of water, of an alkali metal hydroxide or an alkali metal carbonate and 0.5 to 10% by weight, based on the weight of the aqueous alkaline solution of at least one member selected from the group consisting of peroxodisulfuric acid, alkali metal peroxodisulfate and ammonium peroxodisulfate, at a temperature of from 40° C. to 80° C. for a period of from 1 minute to 20 minutes.

4,195,125
PROCESS FOR OBTAINING INSULIN-PRODUCING ANIMAL CELLS

Adolf Wacker, Neu-Isenburg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Dec. 20, 1978, Ser. No. 971,526
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757169
Int. Cl.^{2} A01N *1/02*
U.S. Cl. 435—2 **3 Claims**

1. A process for obtaining insulin-producing cells which comprises fusing islet cells derived from pancreas with A9 cells or human He-La-cells growing in suspension.

4,195,126
ALBUMIN-DYE COMPLEX FOR FATTY ACID DETERMINATION

Leo M. Hall, Homewood, Ala., assignor to The Board of Trustees of the University of Alabama, Birmingham, Ala.
Filed Oct. 4, 1977, Ser. No. 839,361
Int. Cl.^{2} G01N *31/14, 33/16;* **C07G** *7/00*
U.S. Cl. 435—11 **36 Claims**

1. An albumin-dye complex comprising a serum or plasma albumin which contains less than 2 moles of endogenous fatty acids per mole of said serum or plasma albumin and which has been complexed with from 0.5 to 4.0 moles of a fatty acid and from 0.1 to 5.0 moles of a dye per mole of said serum or plasma albumin which dye may be displaced from said dye-albumin complex by free fatty acids.

4,195,127
PROCESS FOR IMMOBILIZING PROTEINS

Frank J. Hartdegen, Columbia, and Wayne E. Swann, Pasadena, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Division of Ser. No. 743,035, Nov. 18, 1976, Pat. No. 4,098,645, which is a continuation-in-part of Ser. No. 660,982, Feb. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 585,674, Jun. 10, 1975, abandoned. This application Nov. 16, 1977, Ser. No. 851,932
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.
Int. Cl.^{2} C07G *7/00, 7/02*
U.S. Cl. 435—174 **11 Claims**

1. A solution prepared by admixing, in the absence of water, an isocyanate-capped liquid polyurethane prepolymer and a protein, wherein said prepolymer is the reaction product of a polyether polyol with sufficient polyisocyanate to provide at least two free NCO groups per molecule of the prepolymer.

4,195,128
POLYMERIC CARRIER BOUND LIGANDS

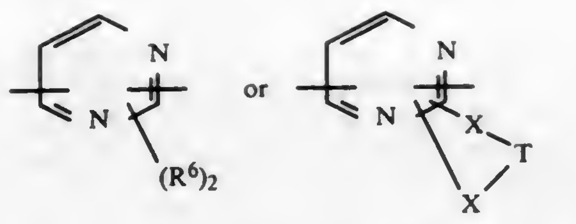
Dietrich Hildebrand, Odenthal, Fed. Rep. of Germany, and Thomas Gribnau, Weezenhof, Netherlands, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 792,297, Apr. 29, 1977, Pat. No. 4,144,128. This application Oct. 2, 1978, Ser. No. 948,186
Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619451
Int. Cl.^{2} C07G *7/02*
U.S. Cl. 435—178 **6 Claims**

1. A carrier bound ligand of the formula:

$$T—X—P—X—L$$

wherein

T represents the residue of a polymeric carrier;
X is independently a divalent oxygen or sulfur atom, —NH—, —NHR^5—, —CONH— or —CONR^5—, wherein R^5 is lower alkyl;
L is the residue of a ligand; and
P is



wherein each R^6 is hydrogen, hydroxyl, lower alkyl, lower alkoxy, loweralkylthio, loweracylamino, nitro, cyano, carboxamide, loweralkylsulphonyl, loweralkoxycarbonyl, phenyl, trifluoromethyl, chloromethyl or T—X—.

4,195,129

METHOD FOR IMMOBILIZING ENZYMES AND MICROBIAL CELLS

Saburo Fukui, Nagaokakyo; Tsutomu Yamamoto, and Takamitsu Iida, both of Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Japan

Continuation-in-part of Ser. No. 700,562, Jun. 28, 1976, abandoned, and Ser. No. 700,577, Jun. 28, 1976, abandoned. This application Dec. 29, 1977, Ser. No. 865,433

Claims priority, application Japan, Nov. 26, 1975, 50-140839; Nov. 26, 1975, 50-140840

Int. Cl.² C07G *7/02*

U.S. Cl. 435—182 **10 Claims**

1. A method for immobilizing enzymes or microbial cells which is characterized in the steps of:

uniformly mixing aqueous dispersion of enzymes or microbial cells with a monomer-free photo-curable resin having a number average molecular weight of 800 to 100,000, two or more photo-polymerizable ethylenically unsaturated groups per molecule and nonionic hydrophilic groups; and

irradiating actinic rays having a wave length of 2500 to 6000 Å to said mixture, whereby said enzymes or microbial cells are entrapped in said resin.

4,195,130

PROPAGATION OF FELINE INFECTIOUS PERITONITIS VIRUS IN TISSUE CULTURES

Yasutaka Hoshino, and Fredric W. Scott, Brooktondale, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Apr. 20, 1978, Ser. No. 898,057

Int. Cl.² C12N *7/00*

U.S. Cl. 435—235 **10 Claims**

1. A method of propagating feline infectious peritonitis virus which comprises culturing the virus in a feline infectious peritonitis virus growth supporting feline tissue culture at a feline infectious peritonitis virus propagation promoting temperature below normal feline body temperature.

4,195,131

ENVIRONMENTALLY CONTROLLED UNIT

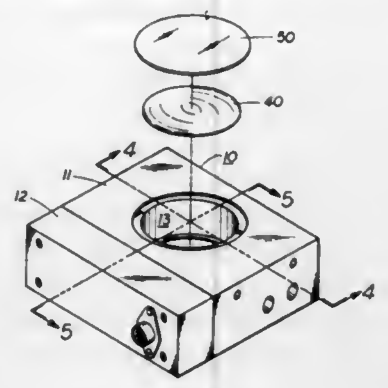
Gary R. Papas, 53 E. Rogues Rd., Huntington, N.Y. 11743

Continuation of Ser. No. 775,971, Mar. 9, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,864

Int. Cl.² C12B *1/00*

U.S. Cl. 435—291 **6 Claims**

1. An environmentally controlled unit comprising a block of heat conductive material with at least two parallel planar faces and a specimen chamber having two open ends interconnecting said faces, a circuitous passage penetrating said block surrounding said chamber and adapted to receive and exhaust temperature controlled fluid, a first passage penetrating said block to said chamber to supply fluid thereto, a second passage penetrating said block to said chamber to extract fluid therefrom, access to said passages from the outside of said block being provided on wall portions between said faces, a shoulder at one of said ends of said chamber, cover means mounted on said shoulder for sealing said one end, a specimen supporting element, and means for mounting said specimen supporting element to seal the other end of said chamber.



4,195,132

CROSS-LINKED PLASTICS BASED ON CYANIC ACID ESTERS AND METHOD OF PRODUCTION THEREOF

Rudolf Sundermann, New Martinsville, Pa.; Günther Rottloff, Cologne, and Ernst Grigat, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 5, 1977, Ser. No. 794,196

Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620487

Int. Cl.² C08G *73/06*

U.S. Cl. 521—155 **17 Claims**

1. A process for the production of crosslinked plastics based on cyanic acid esters comprising:

(A) reacting organic polyhydroxyl compounds with polycyanic acid esters at temperatures of from 30° to 150° C. to form partially crosslinked organic solvent-soluble prepolymers, and

(B) hardening said prepolymer by heating it to from 100° to 350° C.

4,195,133

CDB RUBBER MODIFIED THERMOPLASTICS

Raymond F. Murphy, Whippany, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 668,083, Mar. 18, 1976, Pat. No. 4,143,098. This application Nov. 28, 1978, Ser. No. 964,334

Int. Cl.² C08L *51/04*

U.S. Cl. 525—71 **11 Claims**

1. An impact resistant elastomer grafted styrene or styrene-acrylonitrile polymeric thermoplastic composition, the elastomer being a blend of (a) a conjugated diene butyl copolymer consisting of 85 to 99.5% by weight of a C_4–C_7 isoolefin and 15 to 0.5% by weight of a conjugated C_4–C_{14} diolefin, said copolymer having randomly distributed sites of conjugated diene unsaturation with (b) from 10 to 90% by weight of a chlorinated butyl rubber.

4,195,134

POLYESTER RESIN WITH IMPROVED RETENTION OF PROPERTIES

Ernest A. Coleman, Kinnelon, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,870

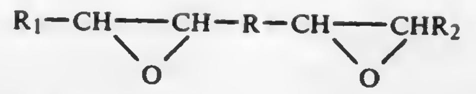
Int. Cl.² C08L *63/00*

U.S. Cl. 525—65 **13 Claims**

1. Polyester composition comprising a blend of:

(a) at least about 40 weight percent poly (C_2–C_4 alkylene terephthalate);

(b) between about 0.1 and about 15 weight % based on poly (C_2–C_4 alkylene terephthalate) of a diepoxy compound represented by the general formula:



$$R_1-\underset{\diagdown\,O\,\diagup}{CH-CH}-R-\underset{\diagdown\,O\,\diagup}{CH-CHR_2}$$

wherein R_1 and R_2 represent hydrogen, alkyl, cycloalkyl, aryl, or aralkyl, and R_1 and R_2 may be bonded to each other, and R represents alkylene, cycloalkylene, arylene, alkarylene or aralkylene, each of which may optionally have an ether group and/or an ester group, and R may be optionally bonded to R_1 and/or R_2; and

(c) between about 5 and about 20 weight % based on poly (C_2–C_4 alkylene terephthalate) of a multiphase composite polymer comprising:

(1) about 25 to about 95 weight percent of a first elastomeric phase polymerized from a monomer system comprising about 75 to 99.8% by weight C_1 to C_6 alkyl acrylate, 0.1 to 5% by weight crosslinking monomer, and 0.1 to 5% by weight graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethyleneically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and

(2) about 75 to 5 weight percent of a final, rigid thermoplastic phase polymerized in the presence of said elastomeric phase.

4,195,135

THERMOPLASTIC NITRILE RESIN BLENDS

George S. Li, Aurora, and John F. Jones, Cuyahoga Falls, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 846,289, Oct. 28, 1977, Pat. No. 4,153,648. This application Nov. 22, 1978, Ser. No. 926,813

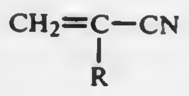
Int. Cl.² C08L *53/02, 55/02*

U.S. Cl. 525—69 **10 Claims**

1. The blend composed of 100 parts by weight of

(I) a polymer prepared by the polymerization of 100 parts by weight of

(A) from 50 to 90% by weight of at least one nitrile having the structure



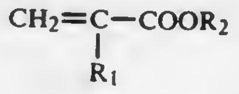
$$CH_2=\underset{R}{\underset{|}{C}}-CN$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

(B) from 10 to 50% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of

(1) styrene,

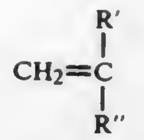
(2) an ester having the structure



$$CH_2=\underset{R_1}{\underset{|}{C}}-COOR_2$$

wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

(3) an alpha-olefin having the structure



$$CH_2=\overset{R'}{\overset{|}{\underset{\underset{R''}{|}}{C}}}$$

wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

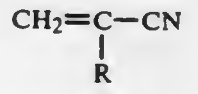
(4) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers, and

(5) vinyl acetate,

in the presence of from 1 to 40 parts by weight of

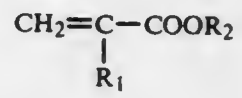
(C) a rubbery polymer selected from the group consisting of

(1) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and and isoprene and optionally at least one comonomer selected from the group consisting of styrene, a nitrile monomer having the structure



$$CH_2=\underset{R}{\underset{|}{C}}-CN$$

wherein R has the foregoing designation, and an ester having the structure



$$CH_2=\underset{R_1}{\underset{|}{C}}-COOR_2$$

wherein R_1 and R_2 have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer,

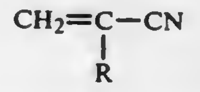
(2) an ethylene-propylene rubber, and

(3) a chlorobutyl rubber, and

from 5 to 15 parts by weight of

(II) a polymer resulting from the copolymerization of

(A) from 50 to 90% by weight of at least one nitrile having the structure

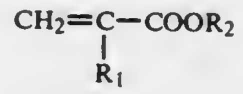


$$CH_2=\underset{R}{\underset{|}{C}}-CN$$

wherein R has the foregoing designation,

(B) from 10 to 50% by weight of indene, and

(C) from 0 to 40% by weight of an ester having the structure



$$CH_2=\underset{R_1}{\underset{|}{C}}-COOR_2$$

wherein R_1 and R_2 have the foregoing designations.

4,195,136

IMPACT-RESISTANT STYRENE RESIN COMPOSITION

Yasushi Sato, Yokohama; Toshio Ibaragi, Kawasaki; Masanobu Ishihara, Yokosuka, and Makoto Honda, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1978, Ser. No. 945,320

Int. Cl.² C08L *51/04, 53/02*

U.S. Cl. 525—71 **12 Claims**

1. A resin composition comprising (A) 75–98 parts by weight of a block copolymer mixture of a vinyl aromatic hydrocarbon and a conjugated diene and (B) 25 - 2 parts by weight of an

impact-resistant styrene resin, wherein said copolymer mixture (A) is a mixture of:

- (1) a copolymer consisting of at least one vinyl aromatic hydrocarbon polymer block and at least one conjugated diene polymer block, and having a vinyl aromatic hydrocarbon content of 55–85% by weight and a number average molecular weight of about 10,000 to about 500,000, and
- (2) a homopolymer of vinyl aromatic hydrocarbon or a copolymer consisting of at least one vinyl aromatic hydrocarbon polymer block and at least one conjugated diene polymer block, and having a vinyl aromatic hydrocarbon content of 75% by weight or more which is at least 5% by weight higher than that of the copolymer (1), said copolymer and said homopolymer both having a number average molecular weight of about 500 to about 130,000,

the weight ratio of said copolymer (1) to said homopolymer or copolymer (2) in said mixture being 1.5/1 or more, said copolymer (1) and said copolymer (2) being both obtained by polymerization with an organolithium compound as a catalyst in an inert organic solvent, and wherein said impact-resistant styrene resin (B) is a graftcopolymer of 97 to 88% by weight of a vinyl aromatic hydrocarbon on 3–12% by weight of a rubbery conjugated diene polymer.

4,195,137

METHOD OF PREPARING VINYL HALIDE POLYMERS AND COPOLYMERS WITH POLYOLEFINS

Leigh E. Walker, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 746,048, Nov. 30, 1976, Pat. No. 4,067,928, which is a continuation-in-part of Ser. No. 541,163, Jan. 15, 1975, Pat. No. 4,007,235. This application Dec. 30, 1977, Ser. No. 866,137

The portion of the term of this patent subsequent to Feb. 8, 1994, has been disclaimed.

Int. Cl.^{2} C08F *255/02*

U.S. Cl. 525—317 **5 Claims**

1. A high impact strength vinyl halide polymer of improved small particle size prepared by the improved process which comprises polymerizing in bulk a vinyl halide monomer, in the liquid phase, either alone or in combination with up to about 50% by weight of another ethylenically unsaturated monomer copolymerizable therewith, in the initial presence of more than about 1.8% by weight based on said vinyl halide monomer of a polyolefin or mixture of polyolefins having a weight average molecular weight of about 50,000 to about 1,000,000, wherein the improvement in said process comprises removing from the polymerization mass during the thick paste state thereof from about 2% to less than about 50% by weight of the vinyl halide charged to the polymerization mass, the effective concentration of said polyolefin or mixture of polyolefins after said vinyl halide removal being above about 3.5 weight percent based on vinyl halide remaining in said polymerization mass after said removal of vinyl halide whereby a more finely divided particulate product of high impact strength is obtained.

4,195,138

CHELATE RESINS PREPARED FROM THE CURED REACTION PRODUCT OF A POLYALKYLENEPOLYAMINE AND EPOXIDE

Eldon L. Ward, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 26, 1978, Ser. No. 918,874

Int. Cl.^{2} C08G *59/16, 73/02;* **C08J** *7/14*

U.S. Cl. 525—404 **14 Claims**

1. A method for preparing chelate resins comprising the step of contacting a cured reaction product of a polyamine of an aliphatic, alicyclic or aromatic hydrocarbon or an inertly substituted aliphatic, alicyclic or aromatic hydrocarbon and a polyfunctional epoxide with an effective amount of an alkali metal acid-salt of an α,β-ethylenically unsaturated carboxylic acid and alkali metal acid salt of a halogenated carboxylic acid at conditions such that the carboxyl groups of the carboxyl containing compound become pendent to the polymer chain of the cured reaction product.

11. A chelate resin comprising a cured reaction product of a polyamine of an aliphatic, alicyclic or aromatic hydrocarbon or an inertly substituted aliphatic, alicyclic or aromatic hydrocarbon and an epoxide having incorporated therein a polyfunctional effective amount of a polymerizate of an alkali metal acid-salt of an α,β-ethylenically unsaturated carboxylic acid.

4,195,139

FIRE RETARDANT COMPOSITION COMPRISING A MELAMINE-ALDEHYDE-PHOSPHATE CONDENSATE

Terence Goulding, and Michael L. Orton, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 30, 1978, Ser. No. 911,194

Claims priority, application United Kingdom, Jun. 8, 1977, 23912/77

Int. Cl.^{2} C08L *61/28, 61/32*

U.S. Cl. 525—441 **17 Claims**

1. A melamine-aldehyde-phosphate condensation product produced by reacting melamine and at least one aldehyde, or by reacting condensate of melamine and at least one aldehyde, with at least one oxyacid of phosphorus or precursor therefor or ester thereof until the condensation product is essentially non-acidic, the proportions of melamine and aldehyde being chosen such that the molar ratio of units derived from melamine:units derived from aldehyde in the condensation product is in the range 1:1.5 to 1:4.5, and the proportions of melamine and oxyacid of phosphorus or precursor therefor or ester thereof being chosen such that the molar ratio of units derived from melamine:phosphorus in the condensation product is in the range 1:0.4 to 1:1.7.

4,195,140

ADHESIVE-PROMOTING COMPOSITIONS

Frederick H. Sexsmith, Erie, and E. Chris Hornaman, Girard, both of Pa., assignors to Lord Corporation, Erie, Pa.

Division of Ser. No. 882,035, Feb. 28, 1978, which is a continuation-in-part of Ser. No. 659,976, Feb. 18, 1976, abandoned. This application Nov. 6, 1978, Ser. No. 958,081

Int. Cl.^{2} C08L *63/00*

U.S. Cl. 525—523 **5 Claims**

1. A two-package adhesion promoting composition comprising

- a first pack consisting essentially of triglycidyl isocyanurate and at least one crosslinking agent comprising at least one methylene donor; and
- a second pack consisting essentially of at least one methylene acceptor selected from the group consisting of monomeric polyhydric phenols, monomeric monohydric alkyl phenols and mixtures thereof;
- wherein the amount of triglycidyl isocyanurate is in the range from about 0.2 to about 8 parts by weight per part by weight of methylene acceptor and said methylene donor is present in at least a stoichiometric amount, based on methylene acceptor.

4,195,141

AQUEOUS SOLUTION OF MIXTURES OF SILICON-ORGANIC COMPOUNDS

Robert Büning, Troisdorf; Horst Hanisch, Rheidt; Hansjurgen Hass, and Karl-Martin Rödder, both of Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

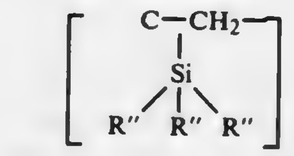
Continuation-in-part of Ser. No. 802,219, May 31, 1977, abandoned. This application Jul. 11, 1977, Ser. No. 814,807

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624888

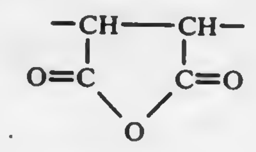
Int. Cl.^{2} C08L *43/04*

U.S. Cl. 525—328 **8 Claims**

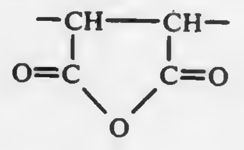
1. A copolymer with recurrent units of the formula



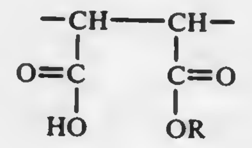
wherein R″ is alkoxy of 1 to 8 carbon atoms and



units, wherein 50 to 100% of the



units are substituted with



wherein R represents a hydrocarbon radical of 1 to 8 carbon atoms.

4,195,142

MODIFIED TERTIARY AMIDE POLYMERS

Kenneth W. Dixon, Sewickley, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Jun. 24, 1977, Ser. No. 809,942

Int. Cl.^{2} C08F *8/18, 8/20*

U.S. Cl. 525—340 **7 Claims**

1. A process for the preparation of a polymer or copolymer having tertiary amide chloride units comprising reacting at about 0°–70° C. a polymer or copolymer having tertiary amide groups with an acid chloride selected from the group consisting of thionyl chloride, phosgene, phosphorus trichloride, phosphorus pentachloride and oxalyl chloride, said polymer or copolymer having tertiary amide groups geing devoid of other groups reactive with said acid chloride or capable of hindering the desired reaction between said tertiary amide groups and said acid chloride.

4,195,143

RUBBER ARTICLES HAVING IMPROVED FATIGUE LIFE

John G. Sommer, Jr., Hudson, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 662,311, Mar. 1, 1976, abandoned, which is a continuation of Ser. No. 551,935, Feb. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 375,263, Jun. 29, 1973, Pat. No. 3,913,209, which is a continuation of Ser. No. 137,039, Apr. 23, 1971, abandoned. This application Feb. 27, 1978, Ser. No. 882,014

Int. Cl.^{2} C08D *9/00, 13/28;* **C08C** *17/28*

U.S. Cl. 525—354 **1 Claim**

1. In an improved resilient bushing having an annular molded vulcanized rubber insert in radially compressed relation between a cylindrical inner member and a cylindrical outer member, said improved bushing having initially low compression set, initially good reversion resistance and substantially improved fatigue life wherein said molded rubber insert comprises is a molded rubber compound vulcanized with from between 0.5 phr and 1.5 phr of sulfur the improvement characterized by the inclusion of from 0.5 phr to 15 phr of post vulcanization added elemental sulfur distributed within the matrix of the vulcanized rubber compound, with no further vulcanization step employed in the manufacture after the addition of the post vulcanization added elemental sulfur.

4,195,144

COPOLYMERS OF ALPHA-N-ALKYLSTYRENES AND STYRENE

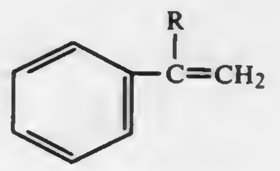
Helen E. Mertwoy, Dresher, and Henry Gisser, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 19, 1978, Ser. No. 952,873

Int. Cl.^{2} C08F *212/08*

U.S. Cl. 526—173 **9 Claims**

1. A solid anionic or radical catalyzed copolymer of styrene and an alpha-n-alkylstyrene represented by the formula:



wherein R is a straight chain alkyl having from 11 to 24 carbon atoms, said copolymer having about 20 to about 40 mole percent of the alpha-n-alkylstyrene.

4,195,145

PROCESS FOR THE PURIFICATION OF HIGHLY CRYSTALLINE POLYOLEFINS

Akinobu Shiga; Kiyoshi Matsuyama; Masahiro Kakugo, and Takatoshi Suzuki, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 959,806

Claims priority, application Japan, Nov. 11, 1977, 52/136137

Int. Cl.^{2} C08F *6/28*

U.S. Cl. 526—137 **9 Claims**

1. A process for the purification of propylene homopolymers or copolymers which comprises:

- (i) polymerizing propylene or copolymerizing propylene with other unsaturated hydrocarbon monomers in liquid propylene in the presence of a catalyst system consisting essentially of (a) an activated titanium trichloride obtained by reducing titanium tetrachloride with an organo-aluminum compound followed by activation and (b) an organo-aluminum compound;
- (ii) introducing the resulting polymer slurry into the upper portion of a counter-current washing tower to counter-currently contact the polymer slurry with a C_3–C_8 alcohol and liquid propylene, whereby said catalyst is deactivated

and at the same time the propylene homopolymers or copolymers dissolved in the polymer slurry and the catalyst are removed by washing, wherein said alcohol is used in an amount 0.1 to 50 times by mole based on said organoaluminum compound (b) and is supplied to the washing tower and wherein said liquid propylene is supplied to the lower portion of the washing tower; and

(iii) then after removing volatile monomers by flashing, contacting the powdery propylene homopolymers or copolymers with a gaseous epoxide at a temperature lower than melting point of said homopolymer or copolymer.

4,195,146

ESTERS OF CARBOXY AMINO PHENYL ISOCYANURATES AND VINYLIDENE CARBONYL OXY ALKANOLS

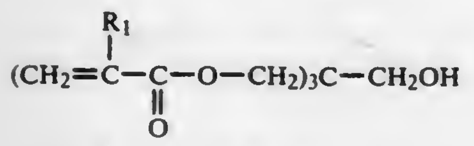
Kenneth H. Markiewitz, and Alfred J. Restaino, both of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 819,353, Jul. 27, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,265

Int. Cl.^{2} C08G *18/67*

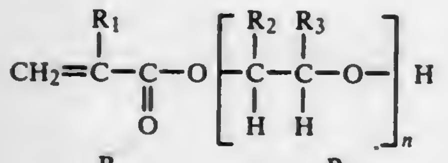
U.S. Cl. 526—261 **34 Claims**

1. A composition of matter comprising isocyanu rates of urethanes of an aromatic polyisocyanate and at least one vinylidene carbonyl oxy alkanol characterized by one of the following formulas:



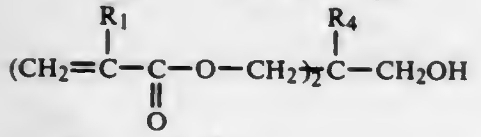
$$(\mathrm{CH_2{=}\overset{R_1}{\overset{|}{C}}-\underset{\underset{O}{\|}}{C}-O-CH_2)_3C-CH_2OH}$$

(1)



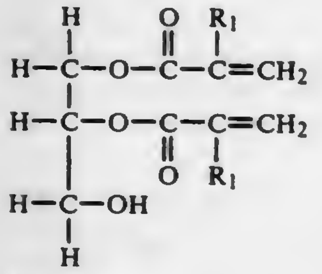
$$\mathrm{CH_2{=}\overset{R_1}{\overset{|}{C}}-\underset{\underset{O}{\|}}{C}-O}\left[-\mathrm{\underset{\underset{H}{|}}{\overset{\overset{R_2}{|}}{C}}-\underset{\underset{H}{|}}{\overset{\overset{R_3}{|}}{C}}-O-}\right]_n\mathrm{H}$$

(2)



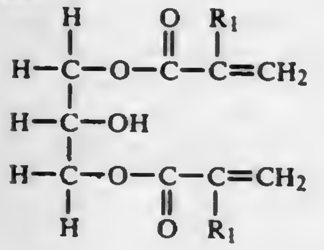
$$(\mathrm{CH_2{=}\overset{R_1}{\overset{|}{C}}-\underset{\underset{O}{\|}}{C}-O-CH_2)_2\overset{R_4}{\overset{|}{C}}-CH_2OH}$$

(3)



(4)

and



(5)

wherein R_1 is hydrogen or an alkyl group containing from one to four carbon atoms, R_2 is hydrogen, alkyl containing from 1 to 12 carbon atoms, or a chlorinated, brominated, or fluorinated alkyl group containing from 1 to 12 carbon atoms, R_3 is hydrogen, alkyl containing from 1 to 12 carbon atoms, or a chlorinated, brominated, or fluorinated alkyl group containing from 1 to 12 carbon atoms, R_4 is hydrogen, methyl or ethyl, and n is from one to four, with the proviso that R_2 and R_3 on adjacent carbon atoms are not both alkyl or chlorinated, brominated, or fluorinated alkyl.

4,195,147

PREPARATION OF CATIONIC AMINE-FUNCTIONAL COPOLYMERS

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Feb. 22, 1979, Ser. No. 14,101

Int. Cl.^{2} C08F *2/06, 220/58*

U.S. Cl. 526—312 **15 Claims**

1. A method of producing water dispersible amine-functional copolymers comprising copolymerizing monoethylenically unsaturated monomers including amine-functional monomer in organic solvent solution in the presence of a solubilizing acid in an amount to neutralize from 25% to 90% of the amine functionality in the copolymer.

4,195,148

POLYURETHANE SPRAY COMPOSITION CONTAINING LACTONE VISCOSITY MODIFIER

Edward L. Hagen, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

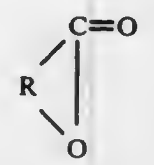
Filed Jul. 12, 1978, Ser. No. 924,105

Int. Cl.^{2} C08F *2/44;* **C08G** *18/10*

U.S. Cl. 528—48 **29 Claims**

1. A method of making a cured polyurethane article by spraying comprising the steps of:

(i) providing a composition which is a mixture of:
  (a) a polyurethane prepolymer;
  (b) a curative for the polyurethane prepolymer other than 4,4′-methylene bis (o-chloroaniline); and
  (c) a lactone having the formula:



wherein R represents an alkylene radical having from 4 to 6 carbon atoms;

(ii) spraying the said mixture onto a surface; and

(iii) thereafter subjecting the sprayed mixture to curing conditions.

4,195,149

HARD, RIGID, NON-ELASTOMERIC POLYURETHANE, COMPOSITIONS

Herbert Stutz, Karlsruhe, and Robert Gehm, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 25, 1977, Ser. No. 818,521

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1976, 2638859

Int. Cl.^{2} C08G *18/30*

U.S. Cl. 528—49 **2 Claims**

1. A cured, hard, rigid, non-elastomeric, molded polyurethane composition which is obtained by reacting

A. a liquid, hydroxylic polyether having a functionality of from 2 to 8 and an OH equivalent weight of from 50 to 250, or a mixture of such polyethers,

B. a monofunctional, hydroxylic polyether having a molecular weight of from 150 to 10,000,

C. a polyisocyanate and

D. a catalyst, auxiliaries and additives wherein the ratios of the amounts of A, B and C are so chosen that the ratio of the NCO groups of C to the sum of the OH groups of A and B is from 0.9:1 to 1.2:1 and B is used in amounts of from 5 to 50% by weight, based on the total weight of A, B and C and the average functionality of the total reaction mixture is from 2 to about 3.

4,195,150

NOVEL COMPOSITION FOR PREPARING URETHANE/UREA BLOCK COPOLYMERS

Vincent J. Gajewski, Jackson, N.J., and Elliot Eisenbach, New York, N.Y., assignors to M & T Chemicals Inc., Woodbridge, N.J.

Filed Oct. 13, 1978, Ser. No. 951,176

Int. Cl.^{2} C08G *18/16*

U.S. Cl. 528—52 **12 Claims**

1. A novel composition for preparing elastomeric urethane-urea copolymers, said composition comprising (1) an oligomeric reaction product of a difunctional alkylene polyol with a stoichiometric excess of an aromatic diisocyanate such that the terminal groups of said reaction product are isocyanate groups, (2) a chain extending agent selected from the group consisting of aromatic diamines wherein each amine group is bonded to a carbon atom of an aromatic carbocyclic ring, and (3) a catalytically effective amount of a quaternary ammonium compound of the general formula $R_4N^+OR'^-$ wherein each R is individually selected from the group consisting of hydrogen, alkyl and hydroxyalkyl such that each alkyl or hydroxyalkyl group contains from 1 to 20 carbon atoms, cycloalkyl, aryl, alkaryl and aralkyl, wherein the alkyl portion of said alkaryl or aralkyl groups contain from 1 to 20 carbon atoms and R′ is selected from the group consisting of hydrogen, alkyl containing from 1 to 20 carbon atoms and phenyl.

4,195,151

PHENOL-ALDEHYDE-AMINE RESIN/GLYCOL CURATIVE COMPOSITIONS

Raymond A. Dunleavy, Charleston, and Anthony J. Papa, Saint Albans, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 743,613, Nov. 22, 1976, Pat. No. 4,107,106. This application Jun. 1, 1978, Ser. No. 911,523

Int. Cl.^{2} C08G *8/20, 8/28, 14/06, 14/12*

U.S. Cl. 528—163 **6 Claims**

1. A curative mixture comprising: as a first component, the reaction product of reactants from each of the three classes

(I) a phenol which has at least one unsubstituted reactive position on the aromatic nucleus,

(II) a aldehyde, and

(III) an aromatic amine,

which reaction product contains no substantial amount of component from any other class of reactant, and, as a second component,

an organic diol,

said mixture containing from about 20 to about 80 parts by weight of said first component per 100 parts by weight of said first and said second components together.

4,195,152

N-ALKYL POLYAMINES AND CURING OF EPOXY RESINS THEREWITH

Don E. Floyd, Minneapolis, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Division of Ser. No. 821,014, Aug. 1, 1977, Pat. No. 4,126,640. This application Jul. 20, 1978, Ser. No. 926,363

Int. Cl.^{2} C08L *63/00*

U.S. Cl. 528—87 **8 Claims**

1. A composition comprising the reaction product of an epoxy resin having terminal epoxide group and an N-alkyl polyamine of the formula

$$R-[NH(CH_2)_x]_y-NHR'$$

where R is an aliphatic hydrocarbon radical having from 5–8 carbon atoms, x is an integer of 2 or 3, y is an integer of 2–4 and R′ is H, R or R″ where R″ is an aliphatic hydrocarbon substituent having 2–14 carbon atoms with the proviso that R″ may

(a) contain an oxygen atom in the chain

(b) contain a hydroxyl substituent

(c) contain a phenyl substituent, or

(d) contain any combination of (a), (b) and (c).

4,195,153

NON-CRYSTALLIZING EPOXY RESIN ACCELERATOR

Harold G. Waddill, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Oct. 19, 1978, Ser. No. 952,867

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.^{2} C08G *59/56*

U.S. Cl. 528—94 **11 Claims**

1. As a composition of matter, an accelerator combination that is synergistic for accelerating the curing of a polyglycidyl ether of a polyhydric phenol cured with an amine, said accelerator combination comprising N-aminoethylpiperazine and an alkanolamine.

4,195,154

NOVEL 2-AMIDO- OR 2-AMINO-ALKYL ETHERS OF POLYHYDRIC POLYPHENOLS AND PROCESS FOR PREPARING SAME

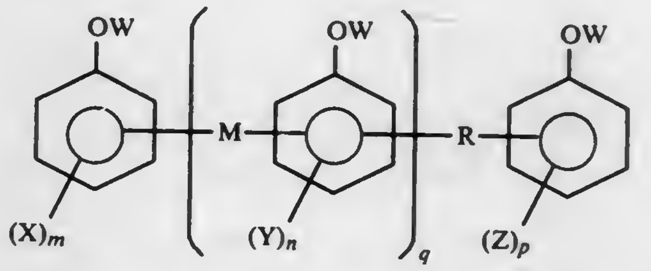
Mark E. Kaiser, and Harry A. Smith, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 15, 1977, Ser. No. 824,768

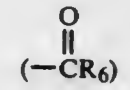
Int. Cl.^{2} C08G *59/50;* **C07C** *87/28, 103/38*

U.S. Cl. 528—98 **13 Claims**

1. A process for preparing a compound of the formula

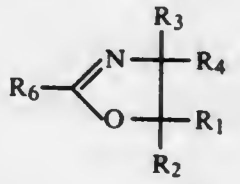


wherein R is a chemical bond, oxygen, sulfur, alkylene or alkylidene; W is hydrogen or a $(-CR_1R_2-CR_3R_4-NHR_5)$ group with the proviso that at least two W groups are $(-CR_1R_2-CR_3R_4-NHR_5)$ groups; wherein R_1-R_4 are each independently hydrogen, lower alkyl or hydroxy-substituted lower alkyl; R_5 is a

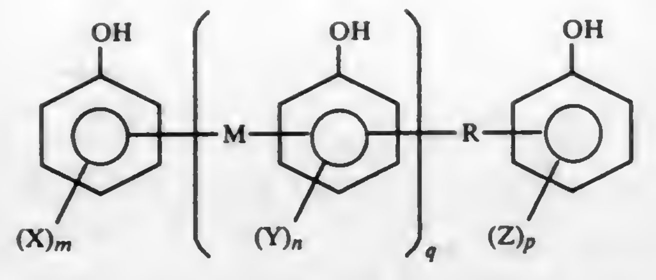


$$(-\overset{\overset{O}{\|}}{C}R_6)$$

group, wherein R_6 is hydrogen, hydrocarbyl or inertly substituted hydrocarbyl; X, Y and Z are each independently inert substituents; m and p are each independently integers of from zero to four, inclusive; n is an integer of from zero to three, inclusive; q is a number of from zero to about ten; and M is alkylene or alkylidene, comprising reacting by contacting a 2-oxazoline of the formula:



with a polyhydric polyphenol of the formula:



in the presence of a small but catalytic amount of at least tin or one transition metal salt, said transition metal salt catalyst being a salt of a metal in groups 1b, 2b, 6b, 7b and 8 which is included in rows 4 and 5 of the Periodic Table of the Elements, inclusive.

4,195,155

HYDROGENATED POLYNITRILE MIXTURE AND USE AS EPOXY HARDENER

Charles A. Drake, and Ralph P. Williams, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 2, 1978, Ser. No. 902,191
Int. Cl.² C08G *59/50*

U.S. Cl. 528—121 **6 Claims**

1. A process for hardening or curing an epoxy resin which comprises admixing the same in suitable proportions with a product obtained by hydrogenating under hydrogenation conditions the heavy reaction product obtained upon removal of the light fraction from a reaction mass obtained upon reacting olefinically unsaturated nitrile with monoolefinic hydrocarbon containing an allylic hydrogen atom in the presence of a monoadduct reaction product of a monoolefinic hydrocarbon and an olefinically unsaturated nitrile.

4,195,156

FLAME RETARDANT COPOLYCARBONATES

Roderick A. Bruckdorfer, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 13, 1978, Ser. No. 951,417
Int. Cl.² C08G *63/62*

U.S. Cl. 528—171 **5 Claims**

1. A flame retardant non-opaque thermoplastic copolycarbonate comprising 95 to 99.8 weight percent of units derived from an aromatic dihydroxy compound and 0.01 to 5.0 weight percent of units derived from the alkali metal salt of a dihydroxy benzene mono or di sulfonic acid.

4,195,157

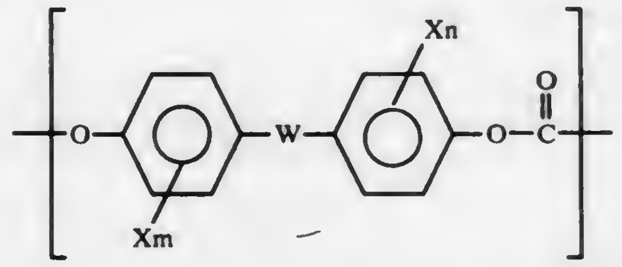
POLYCARBONATE COMPOSITIONS HAVING IMPROVED BARRIER PROPERTIES

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 28, 1978, Ser. No. 882,240
Int. Cl.² C08G *63/62*

U.S. Cl. 528—174 **10 Claims**

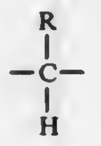
1. A flame retardant, high molecular weight aromatic polycarbonate having an I.V. of 0.40–1.0 dl/g and improved water vapor transmission and gas barrier properties, said polycarbonate being represented by the general formula



wherein Xm and Xn can each independently be a halogen, a C_1–C_4 alkyl, and mixtures thereof provided that at least either Xm or Xn is a halogen; m and n are each 0.1–2.5 with the proviso that when either Xm or Xn is a halogen, then m plus n equal at least 0.1, but no more than about 2.5; and, W can be a member selected from the following group:

(a) $\left(CH_2\right)_R$ wherein R is an integer of 0–10 with the proviso that when Xm and Xn are chlorine and m and n are each 1, r is 0 or 2–10;

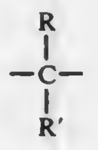
(b)



$$-\overset{R}{\underset{H}{C}}-$$

wherein R is a member of the group consisting of C_1–C_{10} alkyl and C_6–C_{14} aryl;

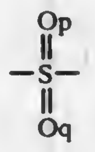
(c)



$$-\overset{R}{\underset{R'}{C}}-$$

wherein R and R′ can each independently be the same as R in (b) above;

(d)



$$-\overset{\overset{O_p}{\|}}{\underset{\underset{O_q}{\|}}{S}}-$$

wherein p and q can each independently be 0–1; and

(e) —0—.

4,195,158

PROCESS FOR THE PREPARATION OF GRANULAR OXYMETHYLENE POLYMERS HAVING IMPROVED MECHANICAL PROPERTIES

Karlheinz Burg, Wiesbaden; Alwin Heller, Erzhausen; Hans-Dieter Sabel, Schwalbach; Helmut Schlaf, Kelkheim, and Gunter Sextro, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 8, 1978, Ser. No. 931,985

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2735946

Int. Cl.² C08G *2/28*

U.S. Cl. 528—230 **3 Claims**

1. A process for preparing a granular oxymethylene polymer adapted to be molded into articles having good impact strength which comprises preparing a polymer consisting essentially of oxymethylene units and from 0.1 to 20% by weight of oxyalkylene units having from 2 to 8 adjacent carbon atoms in the main chain, introducing said copolymer into a methanol/water solvent mixture having a methanol content of at least 75% by weight to form a solution or dispersion of said polymer at a temperature 5° to 65° C. above the sintering temperature of said polymer, mixing said solution or dispersion with a cooling agent which is a methanol/water solvent mixture having a methanol content of at least 75% by weight at a temperature of 1° to 10° C. below the sintering temperature of said polymer to form a granular polymer precipitate comprising up to 25% by weight of the mixture of solution or dispersion and cooling agent, isolating those particles of the precipitated polymer having a grain diameter of more than 70 microns and drying them.

4,195,159

POLYESTER-AMIDE-IMIDE WIRE COATING POWDER

James R. Kwiecinski, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 726,036, Sep. 23, 1976, Pat. No. 4,117,032. This application Jun. 26, 1978, Ser. No. 919,539
Int. Cl.² G08G *63/68*

U.S. Cl. 528—288 **9 Claims**

1. A solventless, aromatic polyester-amide-imide comprising the reaction product of:

(1) an aromatic diamine;
(2) about 100 to about 110 mole % (of the stoichiometric amount needed to react with said diamine) of a trimellitic compound selected from the group consisting of trimellitic anhydride, trimellitic acid, trimellitic acid halide, and mixtures thereof;
(3) about 35 to about 100 mole % in excess of the stoichiometric amount needed to react with said trimellitic compound of a polyol; and
(4) about 3 to about 25 mole % (based on total moles in total reaction product) of a second aromatic compound selected from the group consisting of monoanhydride, diacid, tri-acid, di-ester, and mixtures thereof.

4,195,160

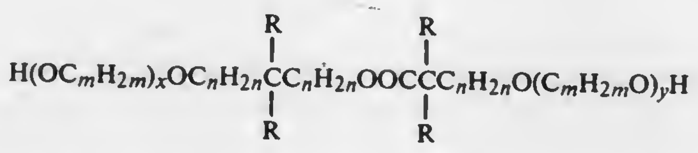
EPOXIDE DERIVATIVES OF ESTER DIOL ALKOXYLATES AND COMPOSITIONS THEREOF

Oliver W. Smith, South Charleston; Joseph V. Koleske, Charleston, and Robert J. Knopf, Saint Albans, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 837,720, Sep. 29, 1977. This application Jan. 4, 1979, Ser. No. 883
Int. Cl.² C08G *63/20*

U.S. Cl. 528—297 **20 Claims**

1. An epoxide modified ester diol alkoxylate comprising the reaction product of (A) an ester diol alkoxylate of the general formula:



$$H(OC_mH_{2m})_xOC_nH_{2n}\overset{R}{\underset{R}{C}}C_nH_{2n}OOC\overset{R}{\underset{R}{C}}C_nH_{2n}O(C_mH_{2m}O)_yH$$

wherein m is an integer having a value of from 2 to 4, n is an integer having a value of from 1 to 5, x and y are integers each having a value of from 1 to 20 and R is an alkyl group having from 1 to 8 carbon atoms; and (B) from 0.2 to 1 mole of a diepoxide per mole of (A).

16. An epoxide modified ester diol alkoxylate as claimed in claim 1, said alkoxylate capped with from 0.1 to 1 anhydride equivalent per hydroxyl equivalent initially charged with an intramolecular anhydride of a polycarboxylic acid.

4,195,161

POLYESTER FIBER

Herbert L. Davis, Convent Station; Michael L. Jaffe, North Plainfield, and Michael M. Besso, West Orange, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 400,864, Sep. 26, 1973, abandoned. This application Mar. 22, 1978, Ser. No. 888,961
Int. Cl.² C08G *63/70, 63/18*

U.S. Cl. 528—309 **25 Claims**

1. An improved polyester filament exhibiting no substantial tendency to undergo self-crimping upon the application of heat comprising at least 85 mol percent of polyethylene terephthalate suitable for use in commercial applications having an interconnected highly oriented crystalline microstructure co-extensive with the length of the said filament coexisting with an interdispersed substantially disoriented non-crystalline phase, said filament exhibiting a propensity to undergo a low degree of shrinkage with a high degree of force at an elevated temperature as evidenced by a modulus ratio of at least 0.1.

4,195,162

METHOD FOR PRODUCING POLYLAUROLACTAM POWDER COMPOSITIONS FOR THE COATING OF METALS AT HIGH TEMPERATUES

Rainer Feldmann, Marl; Hans-Joachim Panoch; Heinz Scholten, both of Haltern, and Roland Feinauer, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Division of Ser. No. 722,110, Sep. 10, 1976, Pat. No. 4,143,025. This application Jul. 13, 1978, Ser. No. 924,355

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1975, 2545267

Int. Cl.² C08G *69/16*

U.S. Cl. 528—313 **7 Claims**

1. A method of producing polylaurolactam powders comprising:

(a) polymerizing laurolactam in the presence of about 2 to 10 percent by weight of water, based on said laurolactam, about 0.3 to 0.7 percent by weight of phosphoric acid, based on said laurolactam and at a temperature of about 265° to 300° C. in the absence of chain stabilizers under an internal pressure of about 14 to 25 bars to a polylaurolactam having a relative viscosity of about 1.25 to 1.45 measured in a 0.5 percent meta-cresol solution at 25° C.;
(b) granulating said polylaurolactam of (a);
(c) extracting said granulated polylaurolactam with ethanol or methanol at a temperature of about 25° to 70° C.;
(d) reducing to powdered form said extracted polylaurolactam of (c) at a temperature of about 0° to 45° C. to obtain approximately round powder grains; and
(e) further polymerizing said round powder grains at a temperature between about 140° C. and below the melting point of said polyalurolactam to said polylaurolactam powders having a relative viscosity of about 1.55 to 1.65 measured in a 0.5 percent meta-cresol solution at 25° C.

4,195,163

ACTIVATED ANIONIC POLYMERIZATION OF LACTAMS WITH LIQUID ISOCYANATOALLOPHANATE ACTIVATOR

Rolf-Volker Meyer; Rolf Dhein, and Friedrich Fahnler, all of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

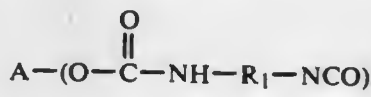
Filed Oct. 16, 1978, Ser. No. 951,712

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746702

Int. Cl.² C08G *69/20, 69/18*

U.S. Cl. 528—315 **3 Claims**

1. A process for preparing a polyamide capable of being shaped into a hollow body comprising polymerizing a lactam with the aid of at least one anionic lactam polymerization catalyst and as activaotor, a liquid isocyanatoallophanate having an isocyanate content of from 10 to 25% by weight and produced by reacting a urethane isocyanate of the formula



$$A-(O-\overset{\overset{O}{\|}}{C}-NH-R_1-NCO)_n$$

with a diisocyanate of the formula $R_1(NCO)_2$ wherein A is the residue of an organic compound having n hydroxy groups which has had its hydroxyl groups removed, n is an integer of from 1 to 4 and R_1 is the residue of an organic diisocyanate which has had its isocyanate groups removed.

4,195,164
TRANSPARENT POLYAMIDES

Rolf-Volker Meyer; Rolf Dhein, and Friedrich Fahnler, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,227

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737257

Int. Cl.² C08G *69/26*

U.S. Cl. 528—339 **6 Claims**

1. A transparent thermoplastic copolyamide obtained by polycondensing

(1) 70–100 mol % of a mixture of positional isomeric diaminodicyclohexyl methanes composed of
 (a) 75–95 mol % of 4,4′-diamino isomers,
 (b) 3–20 mol % of 2,4′diamino isomers and
 (c) 0–1 mol % of 2,2′-diamino isomers;
(2) 0–30 mol % of at least one member selected from the group consisting of C_6–C_{12} acyclic aliphatic diamines and C_8–C_{15} cycloaliphatic diamines other than the diaminodicyclohexyl methanes of (1), the molar ratio of all of the cycloaliphatic diamines of (1) and (2) to the acyclic aliphatic diamine of (2) being at least 4:1 and the sum of (a)–(c) and of (1)–(2), respectively, being 100 mol %, and
(3) an equivalent quantity of dicarboxylic acid consisting of
 (d) 50–100 mol % of azelaic acid and
 (e) 50–0 mol % of at least one member selected from the group consisting of isophthalic acid and adipic acid with the proviso that either the dicarboxylic acid component consists of at least two dicarboxylic acids or the diamine component consists of the isomeric mixture of (1) and at least one diamine of (2), the sum of (d)+(e) being 100 mol %.

4,195,165
ALIPHATIC POLYAMIDE FROM DISUBSTITUTED DECANE DIAMINE

Josef Pfeifer, Therwil, and Heinz Peter, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

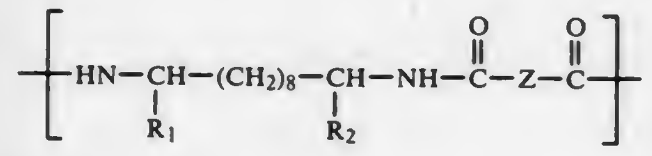
Filed Oct. 26, 1978, Ser. No. 954,807

Claims priority, application Switzerland, Oct. 28, 1977, 13147/77

Int. Cl.² C08G *69/26*

U.S. Cl. 528—346 **12 Claims**

1. An aliphatic polyamide which has a reduced specific viscosity of at least 0.3 to about 3.0 dl/g, measured on a 0.5% solution of m-cresol at 25° C., and which consists of identical or different recurring structural elements of the formula I



$$\left[-HN-\underset{R_1}{\underset{|}{CH}}-(CH_2)_8-\underset{R_2}{\underset{|}{CH}}-NH-\overset{O}{\overset{\|}{C}}-Z-\overset{O}{\overset{\|}{C}}-\right] \qquad (I)$$

in which

R₁ and R₂ independently of one another are straightchain or branched-chain alkyl having 3–20 C atoms, or cycloalkyl having 4–12 C atoms, and

Z is an aliphatic radical having at least 2 C atoms.

4,195,166
ALKANEDIAMIDE-LINKED POLYPHTHALOCYANINES COORDINATED WITH SnCL₂

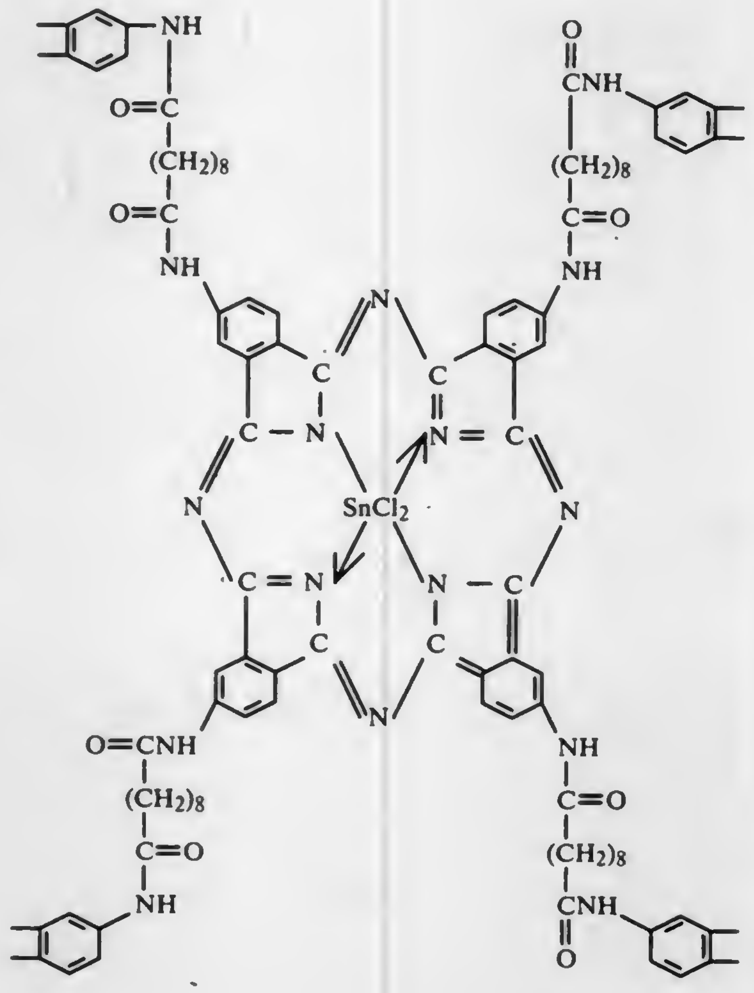
James R. Griffith, Riverdale, and Jacques G. O'Rear, Temple Hills, both of Md., assignors to The United State of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1978, Ser. No. 954,031

Int. Cl.² C08G *73/06, 79/12*

U.S. Cl. 528—270 **1 Claim**

1. A polyphthalocyanine resin having a nucleus represented by the structural formula:



4,195,167
GRADIENT POLYMERS OF TWO OR MORE CYCLIC, ORGANIC, RING-OPENING, ADDITION POLYMERIZABLE MONOMERS AND METHODS FOR MAKING SAME

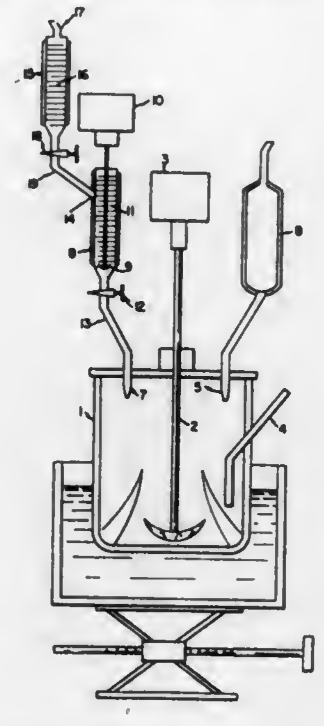
Robert J. Knopf, and Kenneth L. Hoy, both of Saint Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 691,022, May 28, 1976, abandoned. This application Nov. 9, 1978, Ser. No. 959,221

Int. Cl.² C08G *65/08*

U.S. Cl. 528—408 **30 Claims**

1. Polymer of a starter and at least two different 1,2-epoxide monomers capable of ring-opening, addition polymerization with themselves and each other, said polymers being characterized by polymer chains attached to said starter and along which the proportion of mer units provided by a first said monomer in a given chain length gradually increases as the proportion of mer units provided by a second said monomer gradually decreases, said characterizing polymer chains being produced by the process which comprises: introducing a starter and at least one primary polymerizable feed composition comprising at least one 1,2-epoxide monomer capable of ring-opening, addition polymerization from at least one primary feed source to a polymerization zone, said primary polymerizable feed composition continually varying in compositional content of the 1,2-epoxide monomers therein during said continuous introduction; simultaneously adding to said primary feed source at least one different 1,2-epoxide monomer capable of ring-opening, addition polymerization with itself and said first mentioned monomer, from at least one secondary feed source so as to continually change the compositional content of the polymerizable monomers in said primary polymerizable feed composition in said primary feed source; and continuously polymerizing the primary polymerizable feed composition introduced to the polymerization zone until the desired polymerization has been achieved.



4,195,168
METHOD OF TREATING SUSPENSIONS OF VINYL CHLORIDE/VINYL ACETATE COPOLYMERS

Eldred G. E. Bobbin, St. Neots, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 5, 1978, Ser. No. 893,273

Claims priority, application United Kingdom, Apr. 19, 1977, 16170/77

Int. Cl.² C08F *6/10*

U.S. Cl. 528—495 **4 Claims**

1. A method of treating an aqueous suspension of a granular copolymer of vinyl chloride and vinyl acetate which is produced by copolymerizing vinyl chloride and vinyl acetate in an aqueous suspension wherein

the pressure of a vessel containing the aqueous suspension is released by venting and the suspension is then heated at a temperature and pressure sufficient to effect a vaporous outflow, from the suspension, of water vapor, residual vinyl chloride and residual vinyl acetate, after the copolymerization is completed; and

wherein said treating comprises adding to the aqueous suspension, after the end of the copolymerization but before said heating, an amount of at least one steam-volatile phenol selected from 2,6-ditertiarybutyl-4-methyl-phenol; 2,6-ditertiarybutyl-4-methoxy-phenol; and 2,4-dimethyl-6-tertiarybutyl-phenol which amount of phenol is sufficient to satisfy the absorption capacity of the copolymer granules and still provide a sufficient residual quantity thereof for carry-over with the residual vinyl acetate, substantially to prevent any polymerization of the residual vinyl acetate in the outflow as a result of the presence of the phenol with the vinyl acetate, the amount of phenol added being 10 to 1000 ppm based on the total weight of monomers initially charged.

4,195,169
DEVOLATILIZING POLYMERS OF STYRENE AND ACRYLIC OR METHACRYLIC ACID

Duane B. Priddy, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 832,850, Sep. 13, 1977, abandoned. This application Nov. 16, 1978, Ser. No. 961,157

Int. Cl.² C08F *6/10, 6/28*

U.S. Cl. 528—500 **8 Claims**

1. A process for the devolatilization of styrene-acrylic acid or styrene-methacrylic acid resins which form gels when subjected to devolatilization at a temperature in excess of about 200° C. and below the decomposition temperature of the polymer, the resin being a polymer of a monomer mixture of from about 1 to 30 parts by weight of acrylic acid or methacrylic acid and 99 to 70 parts by weight of styrene wherein a polymer having polymerized therein styrene and acrylic or methacrylic acid is in intimate admixture with a volatile solvent for the styrene and acrylic acid or methacrylic acid polymer, is subjected to devolatilization the improvement which comprises contacting the styrene-acrylic acid or methacrylic acid polymer containing a volatile solvent to be devolatilized, with from about 0.1 to about 30 parts by weight per 100 parts by weight of the polymer of a monohydric compound of the formula:

ROH

wherein R is hydrogen, alkyl, aryl, aralkyl, alkaryl, alkoxy or polyalkoxy, such groups containing up to 40 carbon atoms and mixtures thereof with the further limitation that the —OH group is primary or secondary.

4,195,170
3′,4′-EPISULFIDO KANAMYCIN B COMPOUNDS

Hamao Umezawa; Sumio Umezawa; Shigeo Seki; Shunzo Fukatsu, all of Tokyo, and Shuntaro Yasuda, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

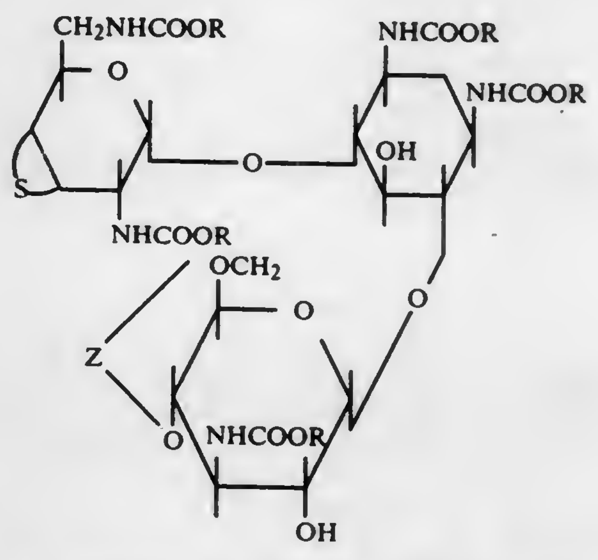
Division of Ser. No. 745,016, Nov. 26, 1976. This application Feb. 23, 1978, Ser. No. 880,401

Claims priority, application Japan, Dec. 9, 1975, 50/145930; Dec. 10, 1975, 50/146345

Int. Cl.² C07H *15/22*

U.S. Cl. 536—10 **3 Claims**

1. Penta-amino-protected, 4″,6″-hydroxyl-protected, 3′,4′-episulfido derivatives of kanamycin B represented by the formula



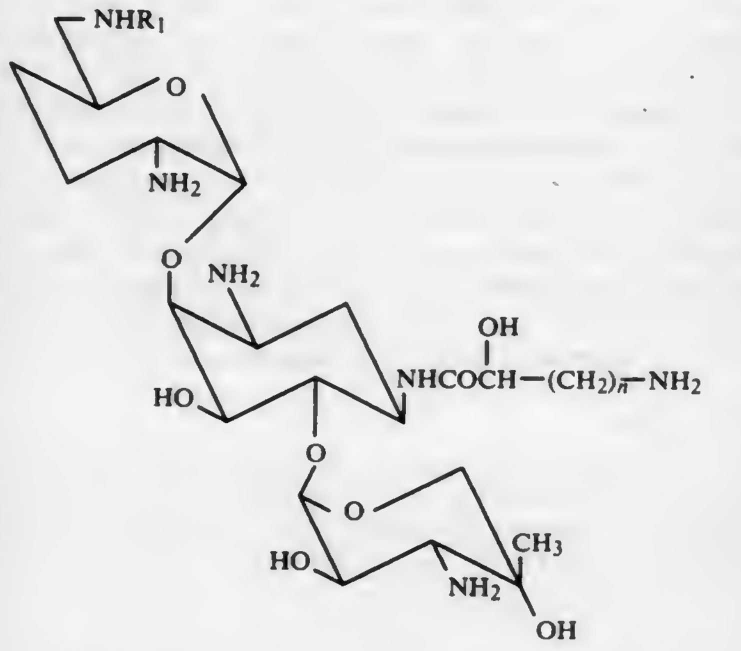
wherein R represents lower alkyl and Z represents lower alkylidene, arylidene formed from benzaldehyde, anisaldehyde or tolualdehyde, cyclohexylidene or tetrahydropyranylidene wherein the episulfido group is in the α- or β-position.

4,195,171

DERIVATIVES OF AN ANTIBIOTIC XK-62-2 AND PROCESS FOR THE PRODUCTION THEREOF

Shinji Tomioka, Machida, and Yasuki Mori, Kawasaki, both of Japan, assignors to Abbott Laboratories, North Chicago, Ill.
Division of Ser. No. 704,750, Jul. 12, 1976, Pat. No. 4,097,664.
This application Apr. 5, 1978, Ser. No. 893,824
Claims priority, application Japan, Jul. 15, 1975, 50-85767; Jul. 15, 1975, 50-85768
Int. Cl.² C07H *15/22*
U.S. Cl. 536—17 R **4 Claims**

1. Compounds represented by the formula:



wherein R₁ represents a hydrogen atom or a methyl group, and n is the integer 2, and the pharmaceutically acceptable, nontoxic, acid addition salts thereof.

4,195,172

SALTS OF N-GLYCOSYL DERIVATIVES OF POLYENE MACROLIDES, ESPECIALLY N-METHYLGLUCAMINE SALTS AS WELL AS THE METHOD OF THEIR PREPARATION

Leonard Falkowski, Gdańsk; Zuzanna Kowszyk-Gindifer; Zofia Płóciennik, both of Warsaw; Jan Zielinski, Gdańsk; Halina Dahlig, Warsaw; Jerzy Golik; Ewa Jakobs, both of Sopot; Pawel Kolodziejczyk; Elzbieta Bylec, both of Gdańsk; Danuta Roślik-Kamińska; Wladyslawa Wagner, both of Warsaw; Jan Pawlak, Sopot, and Edward Borowski, Gdańsk, all of Poland, assignors to Politechnika Gdanska, Gdańsk and Instytut Przemyslu Farmaceutycznego, Warsaw, both of, Poland
Continuation-in-part of Ser. No. 787,265, Apr. 13, 1977, abandoned. This application May 10, 1978, Ser. No. 905,178
Claims priority, application Poland, Apr. 22, 1976, 188979
Int. Cl.² C07H *17/08*
U.S. Cl. 536—17 R **3 Claims**

1. N-methylglucamine salt of the N-glycosyl derivative of amphotericin B.

4,195,173

PROCESS FOR PREPARING PSEUDO-DISACCHARIDES

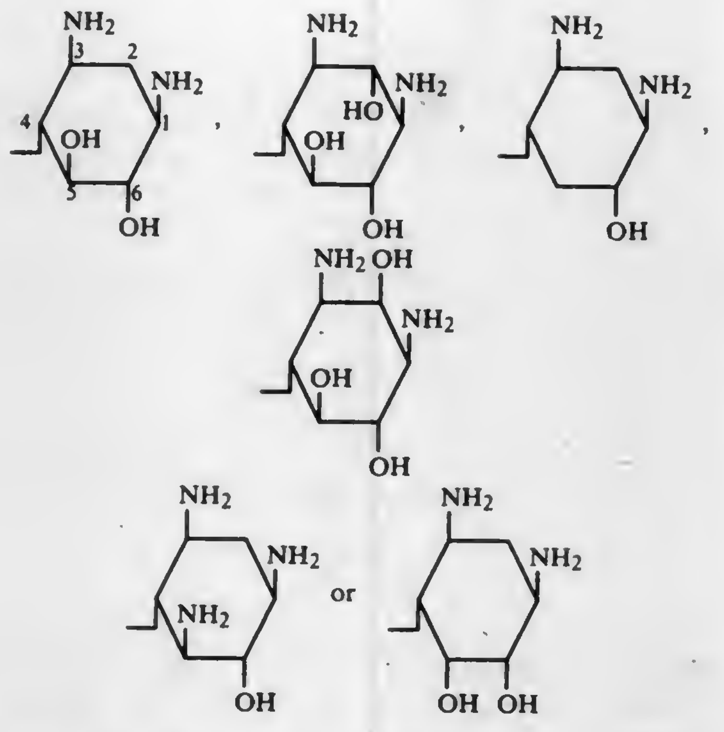
Hans Paulsen; Rolf Jansen, both of Hamburg, and Peter Stadler, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jun. 14, 1978, Ser. No. 915,473
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1977, 2730372
Int. Cl.² C07H *15/22*
U.S. Cl. 536—17 R **3 Claims**

1. A process for the preparation of a compound, an acid-addition salt or an N-protected derivative thereof, said compound having the formula

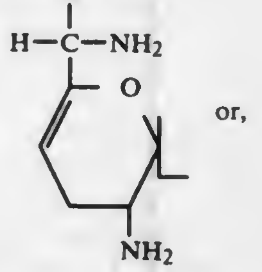
X—O—Y (I)

in which

Y is a radical of the formula

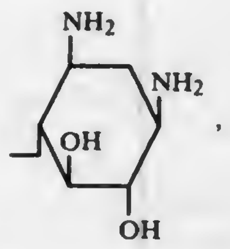


and X is a radical of the formula

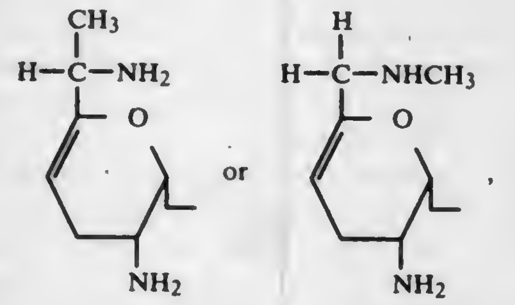


or,

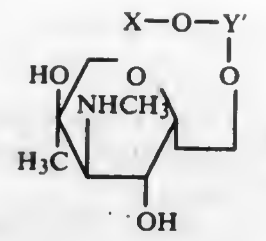
when Y is a radical of the formula



X is a radical of the formula



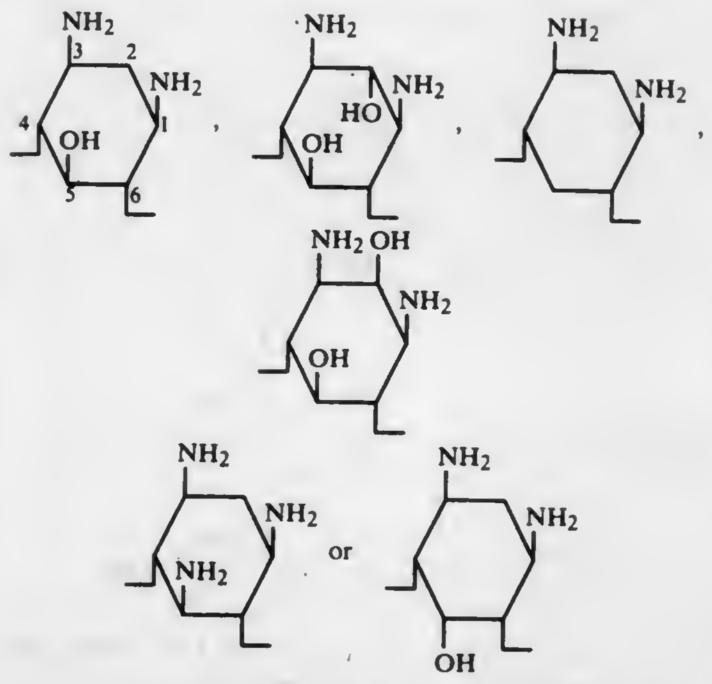
the bond between X and Y being a (1→4)-glycosidic bond in each case, which comprises cleaving a compound of the formula



(III)

in which

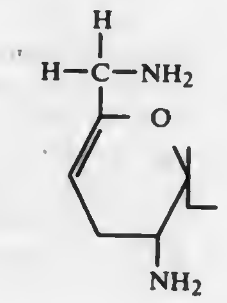
Y' is a radical



which is linked glycosidically with the radical X in the 4-position and glycosidically with the garosaminyl radical attached to said radical Y' in the 6-position and

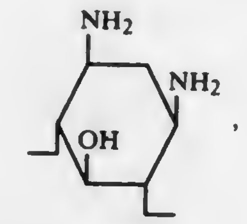
in which

X is a radical of the formula

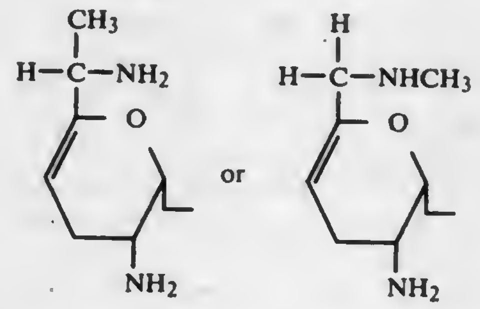


or,

when Y' is a radical of the formula



X is a radical of the formula



in free form or in the form of an N-protected derivative, by treatment with an oxidizing agent selected from the groups consisting of manganese dioxide, sodium periodate, potassium hexacyanoferrate-III and potassium permanganate so as to product groups which are present and isolating the compound of the formula (I).

4,195,174

SYNTHESIS OF 2-AMINO-2-DEOXYGLYCOSES AND 2-AMINO-2-DEOXYGLYCOSIDES FROM GLYCALS

Raymond U. Lemieux, and R. Murray Ratcliffe, both of Edmonton, Canada, assignors to Chembiomed Ltd., Edmonton, Canada
Filed Apr. 7, 1978, Ser. No. 894,366
Claims priority, application United Kingdom, Apr. 14, 1977, 15536/77
Int. Cl.² C07H *11/02*
U.S. Cl. 536—18 **22 Claims**

6. O-acylated-2-azido-2-deoxyglycosyl nitrates.

4,195,175

PROCESS FOR THE MANUFACTURE OF CHITOSAN

Quintin P. Peniston, Rte. 7, Box 7710, Bainbridge Island, Wash. 98110, and Edwin L. Johnson, Rte. 5, Box 4246, Issaquah, Wash. 98027
Filed Jan. 3, 1978, Ser. No. 866,793
Int. Cl.² C08B *37/08*
U.S. Cl. 536—20 **3 Claims**

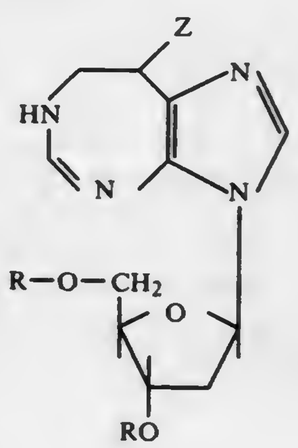
1. A process wherein an alkali solution is used for the deacetylation of ground chitin to yield a soluble chitosan product and in which the alkali solution is recovered and reused in the process, that comprises, kneading the ground chitin with 2 to 7 parts of 35 to 50 percent sodium hydroxide solution per part of chitin, heating the resulting mixture to from 40° to 80° C., packing the mixture in containers to expel entrapped air, sealing the containers and displacing residual air with nitrogen, holding the mixture in a quiescent state at 40° to 80° C. for from 160 to 40 hours, removing the alkali solution, washing and drying the resulting chitosan product, and recovering the removed alkali solution and reusing the same in said process.

4,195,176

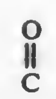
IMIDAZOLE COMPOUNDS, METHODS FOR THEIR PRODUCTION AND CONVERSION OF SAID COMPOUNDS INTO (R)-3-(2-DEOXY-β-D-ERYTHRO-PENTOFURANOSYL)-3,6,7,8-TETRAHYDROIMIDAZOL[4,5-D][1,3]DIAZEPIN-8-OL

David C. Baker, and Sterling R. Putt, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.
Division of Ser. No. 841,098, Oct. 11, 1977, Pat. No. 4,117,229.
This application Jun. 23, 1978, Ser. No. 918,255
Int. Cl.² C07H *17/02;* A61K *31/70;* C07D *235/00*
U.S. Cl. 536—24 **7 Claims**

1. A compound of the formula



and acid-addition salts thereof, wherein Z is ~OH or =O and R is hydrogen or Acyl of the formula R¹



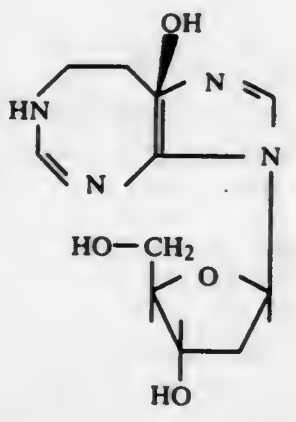
$$\overset{O}{\overset{\|}{C}}$$

wherein R^1 is a radical having up to twelve carbon atoms, with proviso that when Z is ~OH, R is Acyl of the formula R^1

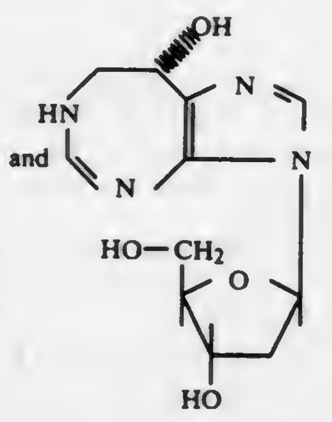
$$\overset{O}{\overset{\|}{C}}$$

wherein R^1 is a radical having up to twelve carbon atoms.

7. A process for preparing (R)-3-(2-deoxy-β-D-erythro-pentofuranosyl)-3,6,7,8,-tetrahydroimidazol[4,5-d][1,3]diazepin-8-ol which comprises resolving a mixture of compounds of the formulae



and



using reverse-phase chromatography employing a derivatized column of silica gel and a polar solvent system.

4,195,177

HYDROXYALKYL-ETHERIFIED GLYCOLIPID ESTER

Shigeo Inoue, Saitama; Yoshiharu Kimura, Ichikawa, and Manzo Kinta, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

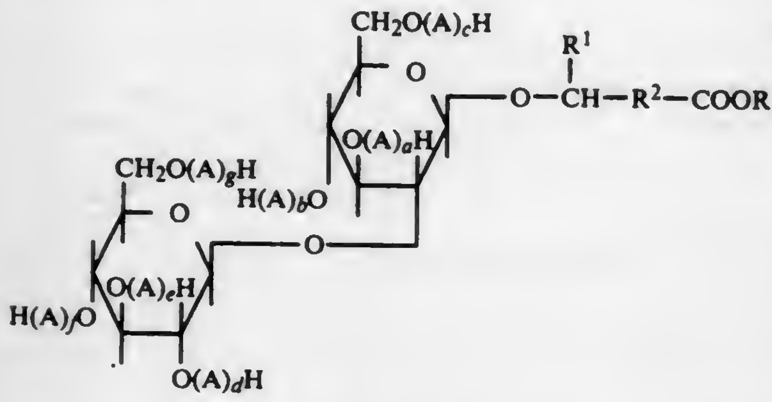
Filed Nov. 21, 1978, Ser. No. 962,664

Claims priority, application Japan, Mar. 3, 1978, 53/24306

Int. Cl.^{2} C07H *15/08, 13/04*

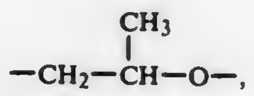
U.S. Cl. 536—116 **4 Claims**

1. A hydroxyalkyl-etherified glycolipid ester represented by the formula (I),



(I)

wherein R^1 represents methyl or hydrogen, R^2 represents a saturated or unsaturated hydrocarbon group having 11 to 15 carbon atoms when R^1 is methyl or, R^2 represents a saturated or unsaturated hydrocarbon group having 12 to 16 carbon atoms when R^1 is hydrogen, R^3 represents a saturated or unsaturated hydrocarbon group having 1 to 20 carbon atoms, A represents $—CH_2—CH_2—O—$ or



$$-CH_2-\overset{CH_3}{\overset{|}{CH}}-O-,$$

and a,b,c,d,e,f and g represent integers whose sum ranges from 1 to 60.

4,195,178

METHYLENECYCLOPENTANE DERIVATIVES

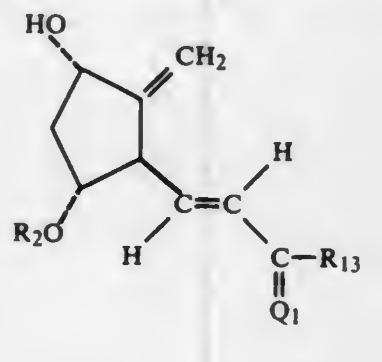
Douglas R. Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 764,332, Jan. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 691,792, Jun. 1, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,689

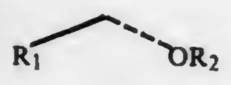
Int. Cl.^{2} C07D *407/08, 407/14*

U.S. Cl. 542—426 **7 Claims**

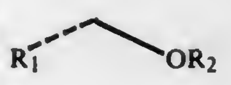
1. A process for preparing a compound of the formula



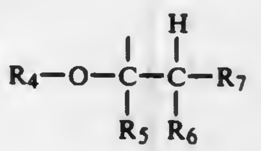
wherein Q_1 is



or

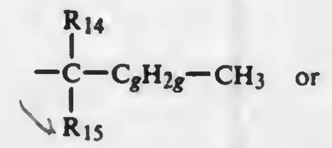


wherein R_1 is hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein R_2 is tetrahydropyranyl, tetrahydrofuranyl, or a group of the formula

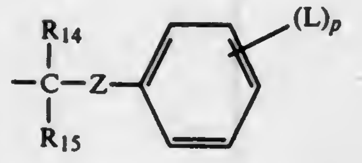


$$R_4-O-\overset{|}{\underset{R_5}{\underset{|}{C}}}-\overset{H}{\overset{|}{\underset{R_6}{\underset{|}{C}}}}-R_7$$

wherein R_4 is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_5 and R_6, taken together, are $—(CH_2)_b—O—(CH_2)_c—$, b is one, 2, or 3, and c is one, 2, or 3 with the proviso that b plus c is 2, 3, or 4, and wherein R_7 is hydrogen or phenyl; and wherein R_{13} is

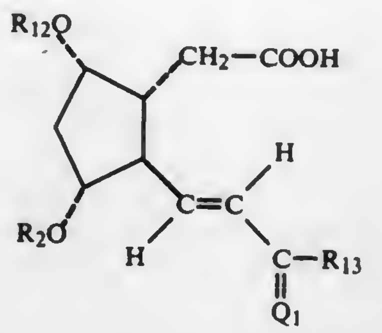


$$-\overset{R_{14}}{\overset{|}{\underset{R_{15}}{\underset{|}{C}}}}-C_gH_{2g}-CH_3 \quad \text{or} \qquad (1)$$

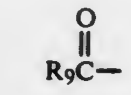


(2)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $—CR_{14}R_{15}—$ and terminal methyl, wherein R_{14} and R_{15} are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_{14} and R_{15} is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_{14} nor R_{15} is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between $CR_{14}R_{15}—$ and the phenyl ring; and wherein L is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_{16}—$ wherein R_{16} is alkyl of one to 4 carbon atoms, inclusive, and p is zero, one, 2, or 3, with the proviso that not more than two L's are other than alkyl and when p is 2 or 3 the L's are either the same or different; which comprises starting with a compound of the formula



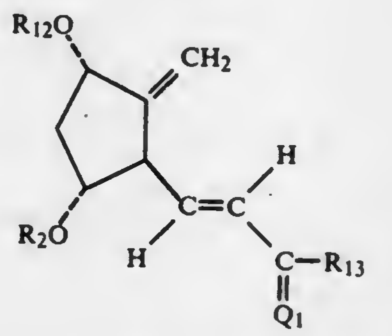
wherein Q_1, R_2, and R_{13} are as defined above, and wherein R_{12} is (1) silyl, $—Si(A)_3$ wherein A is alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one or 2 fluoro, chloro, or alkyl of one to 4 carbon atoms, inclusive, or aralkyl of 7 to 12 carbon atoms, inclusive, the A groups being the same or different; or (2) carboxyacyl, represented by the formula



$$R_9\overset{O}{\overset{\|}{C}}-$$

wherein R_9 is hydrogen, alkyl of one to 19 carbon atoms, inclusive, or aralkyl of 7 to 12 carbon atoms, inclusive, wherein alkyl or aralkyl are substituted with zero to 3 halo atoms; and subjecting it to the steps of

(a) oxidative decarboxylation by treating in solution with a copper (II) salt and a lead (IV) salt followed by thermal or photochemical decarboxylation to form a compound of the formula



wherein Q_1, R_2, R_{12}, and R_{13} are as defined above; and

(b) replacing the R_{12} groups of the product of step "a" with hydrogen by base hydrolysis.

4,195,179

5-(INDOL-3-YLMETHYLENE)-1,3-DIMETHYL-2-METHYLAMINO-4-IMIDAZOLIDINONE

Robert J. Wells, and Peter T. Murphy, both of Cromer, Australia, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 2, 1977, Ser. No. 830,242

Claims priority, application United Kingdom, Sep. 7, 1976, 36997/76

Int. Cl.^{2} C07D *403/00*

U.S. Cl. 542—444 **3 Claims**

1. Essentially pure (E)-5-(indol-3-ylmethylene)-1,3-dimethyl-2-methylimino-4-imidazolidinone.

4,195,180

SULFAM (NA) PHTHALEINS

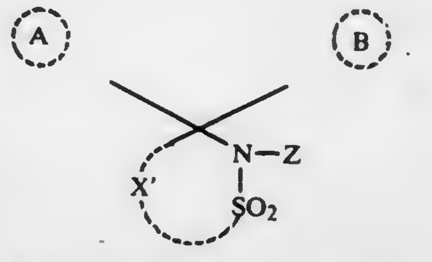
Alan L. Borror, Lexington; Louis Cincotta, Andover; Ernest W. Ellis, Carlisle, and James W. Foley, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 23, 1977, Ser. No. 836,067

Int. Cl.^{2} C07D *275/06, 417/10, 279/02*

U.S. Cl. 544—33 **9 Claims**

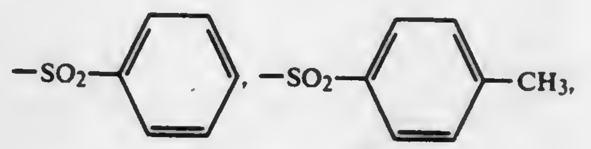
1. A compound of the formula



wherein A is a 4'-hydroxynaphthyl moiety; B is a naphthyl moiety; X' represents the atoms necessary to complete a ring-closing moiety selected from a 2,3-dihydrobenz[d]isothiazole-1,1-dioxide moiety and a 2,3-dihydronaphtho[1,8-de]-1,2-thiazine-1,1-dioxide moiety; and Z is the moiety

$$-\overset{O}{\overset{\|}{C}}O(CH_2)_2Y$$

wherein Y is an electron-withdrawing group selected from $—CN$, $—SO_2CH_3$,



$—COCH_3$ and $—SO_2N(CH_2Ph)_2$.

4,195,181

1,3,4-THIADIAZOLE COMPOUNDS AND HERBICIDAL COMPOSITIONS

Carl Metzger, Wuppertal; Ludwig Eue, and Robert R. Schmidt, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 433,604, Jan. 15, 1974, abandoned. This application Feb. 24, 1977, Ser. No. 771,729

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1973, 2303079

Int. Cl.^{2} A01N *9/12;* **C07D** *417/04*

U.S. Cl. 544—316 **4 Claims**

1. A compound selected from the group consisting of 1-[5-tert.-butyl-1,3,4-thiadiazolyl-(2)]-3-methylhexahydropyrimidin-2-one, 1-[5-trifluoromethyl-1,3,4-thiadiazolyl-(2)]-3-methylhexahydropyrimidin-2-one, and 1-[5-ethylsulfonyl-1,3,4-thiadiazolyl-(2)]-3-methylhexahydropyrimidin-2-one.

4,195,182

TRANS-Δ^2-PROSTAGLANDIN ANALOGUES

Masaki Hayashi; Seiji Kori, both of Takatsuki, and Takanori Okada, Osaka, all of Japan, assignors to Ono Pharmaceutical Co. Ltd., Osaka, Japan

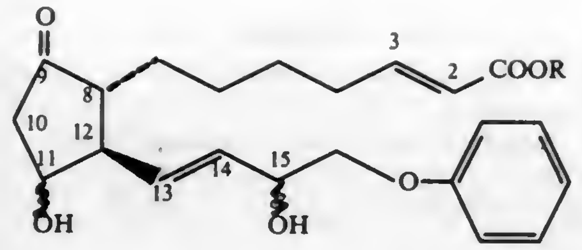
Filed Aug. 12, 1977, Ser. No. 824,384

Claims priority, application United Kingdom, Aug. 23, 1976, 35080/76

Int. Cl.^{2} C07C *177/00*

U.S. Cl. 180—53 **11 Claims**

1. A compound of the formula:



VI

(wherein R represents a hydrogen atom or a methyl group, and the double bonds between C_2–C_3 and C_{13}–C_{14} are trans) and cyclodextrin clathrates of such compounds and, when R represents a hydrogen atom, non-toxic salts thereof.

4,195,183

ω-NOR-AROMATIC-13,14-DEHYDRO-PROSTAGLANDINS AND PROCESS FOR THEIR PREPARATION

Carmelo Gandolfi; Franco Faustini; Walter Moretti; Mario M. Usardi, and Roberto Ceserani, all of Milan, Italy, assignors to Farmitalia Certo Erba S.p.A., Milan, Italy

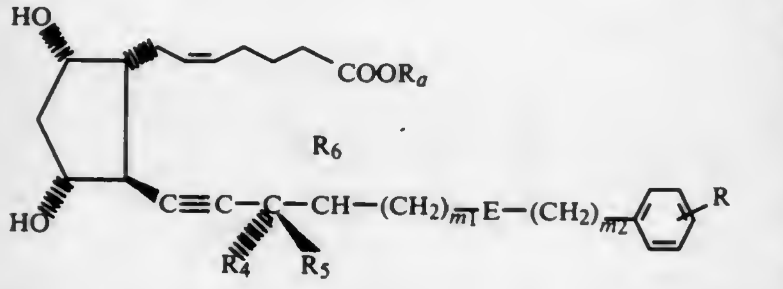
Division of Ser. No. 833,609, Sep. 15, 1977, which is a division of Ser. No. 786,802, Apr. 12, 1977. This application May 2, 1978, Ser. No. 901,999

Claims priority, application Italy, Jun. 1, 1976, 23826 A/76; Dec. 16, 1976, 30458 A/76

Int. Cl.^{2} C07C *177/00*

U.S. Cl. 560—53 **3 Claims**

1. An optically active or racemic PGF_α compound of the formula



wherein:

R_a is hydrogen, C_1–C_{12} alkyl or a cation of a pharmaceutically of veterinarily acceptable base;
one of R_4 and R_5 is hydrogen and the other is hydroxyl or C_1–C_6 alkoxy;
R_6 is hydrogen or C_1–C_4 alkyl;
each of m_1 and m_2 is independently zero, 1, 2 or 3;
E is oxygen or sulphur
R is hydrogen, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy or C_1–C_6 trihaloalkyl.

4,195,184

PREPARATION OF UNSATURATED MONOESTERS BY CATALYTIC OXIDATIVE CARBONYLATION OF DIOLEFINS

Haven S. Kesling, Jr., Drexel Hill, and Lee R. Zehner, Media, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

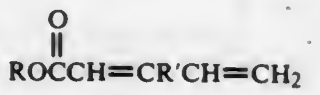
Filed May 26, 1978, Ser. No. 910,058

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.^{2} C07C *69/52*

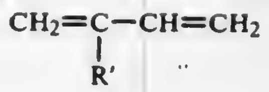
U.S. Cl. 560—207 **24 Claims**

1. A process for the preparation of a diene monoester having the formula



$$ROC(=O)CH{=}CR'CH{=}CH_2$$

wherein R is an alkyl group of from 1 to 4 carbon atoms and R′ is hydrogen or a methyl group, which comprises reacting a diolefin of the formula



$$CH_2{=}C(R'){-}CH{=}CH_2$$

wherein R′ is as above described with a mixture of carbon monoxide and oxygen and a stoichiometric amount of a dehydrating agent selected from the group consisting of acetals, ketals, carboxylic orthoesters, trialkylorthoborates and 1,1-dialkoxycycloalkanes, at a pressure of between about 15 psig and 5000 psig and at a temperature in the range of about 25° C. to 200° C. in the presence of an effective amount of a catalytic mixture of a platinum group metal compound selected from the group consisting of palladium, ruthenium, rhodium, and platinum, halides, cyanates, sulfates, nitrates, oxides, oxalates, acetates, and trifluoroacetates or mixtures thereof, an organic mono- or poly-dentate ligand or coordination complex compound selected from the group consisting of alkyl, aryl and halogen-substituted phosphines, arsines, stibines, and alkali metal salts, and a copper (I), copper (II), iron (II) or iron (III) oxidant salt compound and recovering the desired diene monoester.

4,195,185

PROCESS OF PREPARING ORGANIC ACIDS

Johann G. D. Schulz, Pittsburgh, and Edward T. Sabourin, Allison Park, both of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 814,217, Jul. 5, 1977, Pat. No. 4,137,418, which is a continuation-in-part of Ser. No. 696,752, Jun. 16, 1976, Pat. No. 4,052,448. This application Jul. 12, 1978, Ser. No. 923,953

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.^{2} C07G *51/20*

U.S. Cl. 562—407 **5 Claims**

1. A process for converting a carbonaceous material to a mixture of polycyclic aromatic polycarboxylic acids that is substantially soluble in acetone and substantially soluble in water which comprises subjecting an aqueous slurry containing coal to reaction with aqueous nitric acid having a concentration of about 5 to about 90 percent at a reaction temperature of about 15° to about 200° C. in an atmosphere containing molecular oxygen having a pressure of about 14.7 to about 1470 pounds per square inch gauge over a period of about 0.5 to about 15 hours, mechanically separating the solids in the resulting slurry, separating nitric acid and water from the resulting filtrate by distillation and then extracting the remainder of said filtrate with a polar solvent to obtain said mixture of polycyclic aromatic polycarboxylic acids.

4,195,186

PROCESS FOR PREPARING ORGANIC ACIDS

Johann G. D. Schulz, Pittsburgh, and Edward T. Sabourin, Allison Park, both of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Jul. 12, 1978, Ser. No. 924,054

The portion of the term of this patent subsequent to Oct. 4, 1994, has been disclaimed.

Int. Cl.^{2} C07C *51/20*

U.S. Cl. 562—407 **6 Claims**

1. A process for preparing a mixture of polycyclic aromatic polycarboxylic acids that is substantially soluble in acetone but substantially insoluble in water which comprises subjecting an aqueous slurry containing coal to reaction with aqueous nitric acid having a concentration of about 5 to about 90 percent at a reaction temperature of about 15° to about 200° C. in an atmosphere containing molecular oxygen having a pressure of about 14.7 to about 1470 pounds per square inch gauge over a period of about 0.5 to about 15 hours, mechanically separating the solids in the resulting slurry, extracting the resulting solids with a polar solvent to separate therefrom a mixture of polycyclic aromatic polycarboxylic acids substantially soluble in acetone but substantially insoluble in water and a mixture of polycyclic aromatic polycarboxylic acids substantially insoluble in acetone and substantially insoluble in water.

4,195,187

PROCESS FOR SELECTIVELY OXIDIZING ISOBUTYLENE TO METHACROLEIN AND METHACRYLIC ACID

Thomas H. Vanderspurt, Gillette, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,712

Int. Cl.^{2} C07C *45/04, 51/32, 57/04*

U.S. Cl. 562—545 **4 Claims**

1. In a process for selectively oxidizing isobutylene to methacrolein and methacrylic acid, the improvement which comprises contacting isobutylene with oxygen in vapor phase in the presence of an oxidation catalyst produced by a method which comprises (1) preparing an aqueous solution of ammonium molybdate; (2) dissolving in the said aqueous solution at least one water-soluble compound of an element selected from phosphorus, manganese, germanium, zirconium, tin, tellurium, cerium and hafnium; (3) admixing with said resulting aqueous solution in (2) at least one water-insoluble compound of a metal selected from titanium, vanadium, niobium, antimony, and tantalum to form a suspension; (4) removing the aqueous phase of said suspension and recovering a solid catalyst precursor; (5) heating said solid catalyst precursor at a temperature between about 150° C. and 300° C. for a period of time between about 1 and 48 hours; (6) compressing the dried catalyst precursor under a pressure of between about 40,000 and 80,000 psi; and (7) calcining the compressed catalyst precursor at a temperature between about 400° C. and 700° C. in a non-reducing atmosphere; wherein the atomic ratio of elements in the catalyst varies between about 0.3 and 2.4 atoms selected from phosphorus, manganese, germanium, zirconium, tin, tellurium, cerium and hafnium, and between about 0.4 and 3.6 atoms selected from titanium, vanadium, niobium, antimony and tantalum, per twelve atoms of molybdenum.

4,195,188

STEAM ASSISTED HYDROCARBON OXIDATION PROCESS

William E. Slinkard, Corpus Christi, Tex.; Anthony B. Baylis, Berkeley Heights, N.J.; Peter B. DeGroot, Corpus Christi, and Michael P. Hughes, Odessa, both of Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,897

Int. Cl.^{2} C07C *51/20, 53/08*

U.S. Cl. 562—549 **9 Claims**

1. A process for preparing acetic acid by the vapor phase oxidation of lower aliphatic hydrocarbons which process comprises reacting alkanes having 2–10 carbon atoms with an oxygen-containing gas in the vapor phase above atmospheric pressure at from about 220°–400° C. in the presence of a catalytic amount of a catalyst consisting essentially of a reduced vanadium oxide and steam wherein the molar ratio of steam to alkane is from about 0.1 to 2.0 and the molar ratio of oxygen to alkane is from about 0.05 to 1.0.

4,195,189

PREPARATION OF BIPHENOLS BY THE OXIDATIVE COUPLING OF ALKYLPHENOLS

Roger A. Earley, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Feb. 15, 1979, Ser. No. 12,374

Int. Cl.^{2} C07C *37/00, 39/12*

U.S. Cl. 568—730 **9 Claims**

1. A process for preparing carbon-carbon coupled condensation products from a 2,6-dialkylphenol which comprises contacting the 2,6-dialkylphenol in a molten state with an oxidizing agent consisting essentially of activated basic cupric oxide having a surface area of from 5 to about 50 m^2/gram.

4,195,190

PREPARATION OF ETHYLENE GLYCOL

Thomas R. Bierschenk, Corpus Christi; Rowland Pettit, Austin, and Donald R. Nielsen, Corpus Christi, all of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 3, 1978, Ser. No. 892,791

Int. Cl.^{2} C07C *29/02, 31/20*

U.S. Cl. 568—860 **4 Claims**

1. In a process for preparing ethylene glycol wherein ethylene, oxygen and water are reacted in the presence of a catalyst at a moderately elevated temperature under a pressure sufficient to maintain the liquid phase and for a time sufficient to effect the desired degree of conversion, the improvement wherein said catalyst consists of an iodine source which is iodine or an iodine compound and a bromine source which is bromine or a bromine compound wherein the molar ratio of bromine, expressed as HBr, to iodine, expressed as HI, is not more than about 1:1.

4,195,191

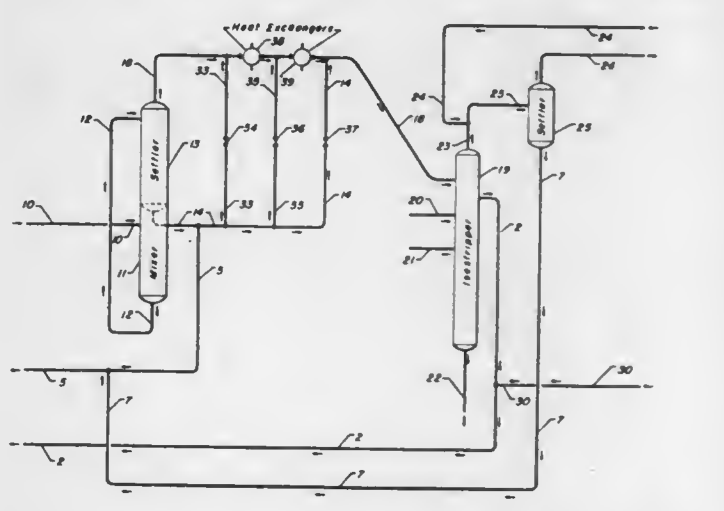
NON-REGENERATIVE HF ALKYLATION PROCESS

William G. Boney, Rolling Meadows, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 562,699, Mar. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 360,258, May 14, 1973, abandoned. This application Mar. 25, 1976, Ser. No. 670,491

Int. Cl.^{2} C07C *3/54*

U.S. Cl. 585—706 **8 Claims**



1. A process for the alkylation of an isoparaffin with an olefin, to produce a normally liquid alkylate product, which process comprises the steps of:

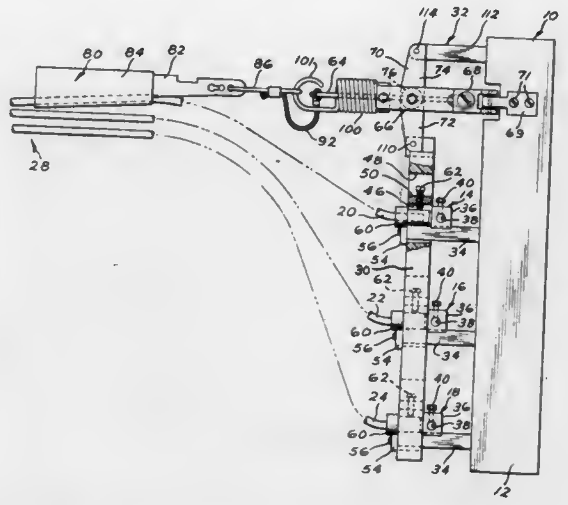
(a) reacting said isoparaffin with said olefin, in admixture with a hydrogen fluoride catalyst, in an alkylation reaction zone, at alkylating conditions resulting in a reaction product effluent containing (i) normally liquid alkylate, (ii) unreacted isoparaffin, (iii) hydrogen fluoride catalyst and, (iv) polymer products;
(b) introducing said reaction product effluent into a separation zone and therein settling the same into (i) a liquid hydrocarbon phase and, (ii) a liquid hydrogen fluoride phase containing said polymer products;
(c) recycling a first portion of said liquid hydrogen fluoride phase to said reaction zone for contact therein with said isoparaffin and olefin;
(d) heating said liquid hydrocarbon phase to a tempeerature greater than the temperature of said reaction product effluent, and in the range of about 125° F. to about 200° F.;
(e) commingling a second unheated portion of said liquid hydrogen fluoride phase with said heated hydrocarbon phase, in an amount which is soluble in said heated hydrocarbon phase; and,
(f) stripping the resulting mixture, in a stripping zone, in countercurrent contact with an isoparaffin-containing stream and separately removing therefrom (i) unreacted isoparaffin with residual hydrogen fluoride and, (ii) said normally liquid alkylate product, containing polymer products.

ELECTRICAL

4,195,192
SAFETY DISCONNECT SWITCH FOR SUSPENDED CABLES

James W. Hackney, New Albany, and Edwin E. Glasscock, Clarksville, both of Ind., assignors to Hackney-Glasscock, Inc., New Albany, Ind.

Filed Oct. 2, 1978, Ser. No. 947,609
Int. Cl.² H02G *7/18*
U.S. Cl. 174—40 R **18 Claims**

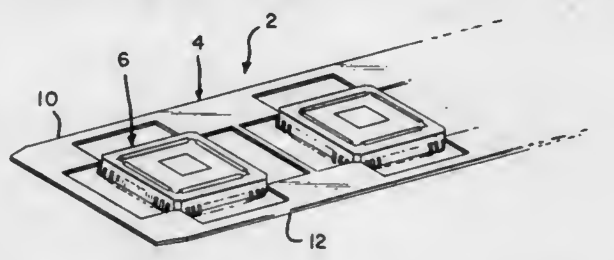


14. A safety disconnect switch for use with a suspended electrical cable extending between anchors and comprising:
a. a base means serving as an anchor at one end of the cable span;
b. quick-release connector means for joining incoming power supply lead wires to the terminal ends of the wires of a suspended electrical cable;
c. detent switch means comprising a first resilient wire anchoring means for attachment to a given wire of the electrical cable at a point remote from the terminal end of that wire, a second releasable locking means for holding the resilient wire anchoring means to the base means, and trigger means for opening the releasable locking means upon a predetermined tension force being exerted on the given wire of the cable.

4,195,193
LEAD FRAME AND CHIP CARRIER HOUSING

Dimitry Grabbe, Lisbon Falls, Me., and Ronald Patterson, Dauphin, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 23, 1979, Ser. No. 14,397
Int. Cl.² H05K *1/04*
U.S. Cl. 174—52 FP **16 Claims**

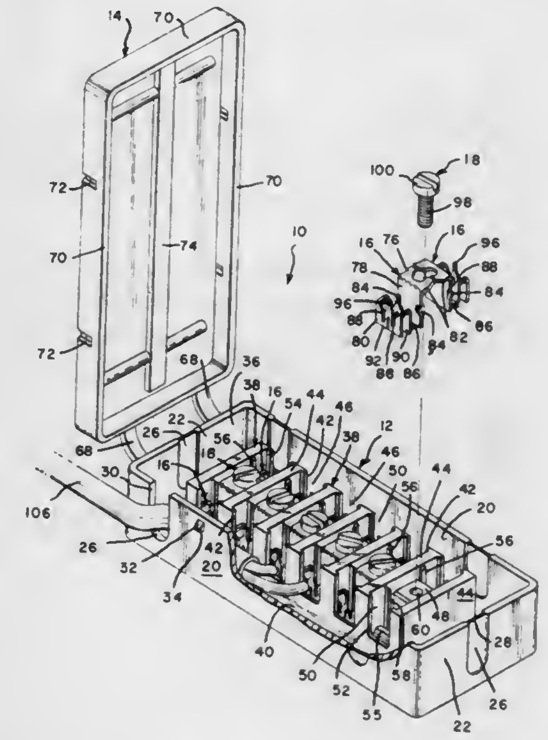


1. The combination of a chip carrier housing and a lead frame, said housing and lead frame being capable of receiving integrated circuit chips in a range of sizes and having varying numbers of terminal pads thereon,
said lead frame comprising a plurality of leads extending radially from the geometric center of said lead frame, each of said leads having an inner end portion, an intermediate portion, and an outer end portion, said inner end portion of each of said leads being proximate to the center of said lead frame, said outer end portion being remote from said center, and said intermediate portion being between said inner and outer end portions
at least one of said leads being . composite lead, said inner end portion of said composite lead comprising a trunk lead and branch leads, said trunk lead extending from said center of said lead frame, said branch leads extending from the side edges of said trunk lead at spaced intervals and at increasing distances from said center of said lead frame,
said housing comprising a plastic frame-like structure molded onto said intermediate portions of said leads, said frame like structure having oppositely directed faces, external laterally facing sidewall portions and internal side wall portions, said inner end portions of said leads extending radially from said internal sidewall portions in a plane which is between said oppositely directed faces, and
a web molded integrally with said frame, said web being between said oppositely directed faces and extending from said internal sidewall portions substantially to said center of said lead frame, said inner end portions of said leads being supported by said web whereby,
an integrated circuit chip having dimensions which lie within a predetermined range can be packaged in said chip carrier housing by removing a portion of said web and portions of said inner ends of said leads and forming an opening in said web which is dimensioned to receive said chip, and the number of leads available for electrical connections to said chip can be increased by removing portions of said inner end portion of said trunk lead whereby said branch leads become available for electrical connections to said chip.

4,195,194
JUNCTION BOX

Charles W. Kuster, Mt. Joy, and Floyd H. Renshaw, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 22, 1978, Ser. No. 908,295
Int. Cl.² H01R *9/08*
U.S. Cl. 174—59 **3 Claims**



1. A junction box, comprising:
a. a base member of insulating material having a floor and upstanding walls to define a compartment;
b. a structure within the compartment consisting of a plurality of vertical walls which define a plurality of cells, each cell being electrically isolated from another,
c. barrier means positioned in each cell adapted to divide the cell into two cavities, further, each of said vertical walls having a vertical rib near said barrier means to define a vertical channel therebetween;
d. a plurality of conductive terminals having a U-shaped spring section at one end and a terminating section at another end, said terminals being positioned in the cavities with the legs of the U-shaped spring section extending onto the barrier means; and

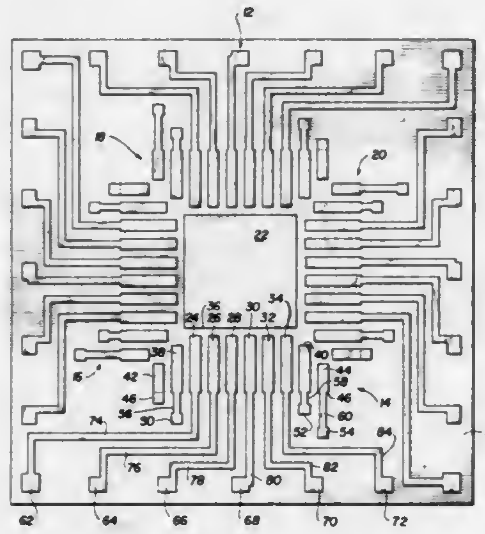
e. commoning means adapted to be removably biased against the legs of the two spring sections overlying the barrier means in each cell whereby

the two terminals therein may be selectively electrically joined.

4,195,195
TAPE AUTOMATED BONDING TEST BOARD

William R. R. de Miranda, Clearwater, Fla., and Edwin R. Smith, Jamestown, N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 28, 1978, Ser. No. 946,490
Int. Cl.² H05K *1/02*
U.S. Cl. 174—68.5 **12 Claims**



1. A universal electrical conductor pattern fabricated on a dielectric substrate for electrically contacting semiconductor chip assemblies of different sizes and numbers of leads, comprising in combination:

four sets of regularly spaced outer conductor bonding pads orthogonally located around the periphery of a central area on one face of said dielectric substrate, said bonding pads being rectangular in shape and extending outwardly from the periphery of said central area;

each set of said four sets of bonding pads respectively consisting of,

(a) a first subset of bonding pads having line rectangular dimensions located side by side in parallel relationship and having their forward and rearward edges in registration with one another, said forward edges defining said periphery of said central area;

(b) a second subset comprised of at least two outer lead bonding pads, one located on each side of said first subset and being arranged in parallel therewith and having respective forward edges spaced at predetermined distance back from the forward edges of said first subset of bonding pads and having respective rear edges in registration with the rear edges of said first subset; and

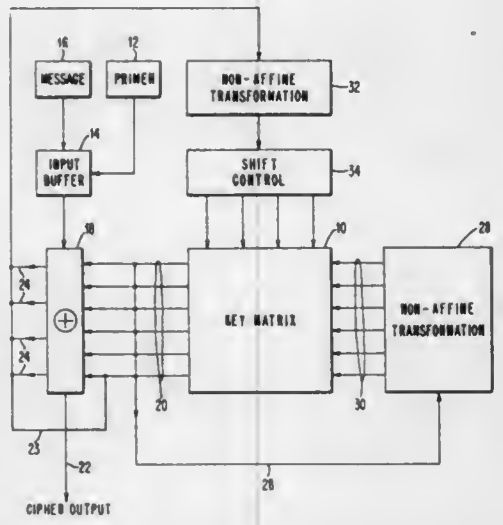
(c) a third subset of at least two outer lead bonding pads, one on each side of said second subset in parallel relationship therewith and having forward edges spaced back from the forward edges of said second subset and at least one bonding pad of said third subset having a rearward edge in registration with the rear edges of said first and second subset; and

respective electrical conductor means in the form of interconnects and vias joined to the rear edges of said four sets of outer lead bonding pads.

4,195,196
VARIANT KEY MATRIX CIPHER SYSTEM

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,728
Int. Cl.² H04L *9/00*
U.S. Cl. 178—22 **9 Claims**



1. A variant key cryptographic system comprising:

input means for introducing a plurality of electrical signals in binary form as message information to be enciphered or deciphered;

priming means for presenting a plurality of random binary signals to said input means to initialize the system prior to introducing message information thereto,

matrix storage means for arranging a cipher key in an n×m matrix array, wherein m and n are greater than 1;

a plurality of modulo-two adders interconnected with each other for adding selected elements from said matrix with binary signals obtained from said input means;

feedback means connected to said plurality of modulo-two adders;

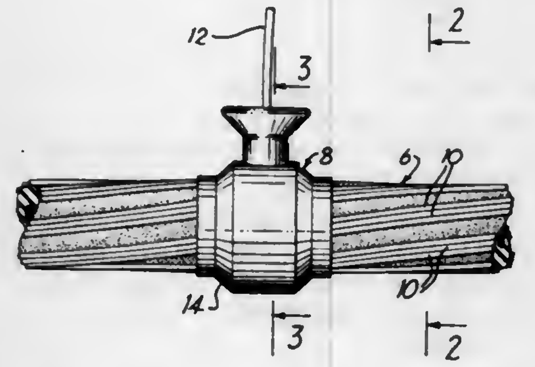
non-affine transformation means connected to said feedback means for transforming the feedback signals present on the lines contained in said feedback means;

shift control means connected to said non-affine transformation means for rearranging selected matrix elements within said n×m matrix array.

4,195,197
CORROSION RESISTANT URD CABLE

George W. Kurr, Fair Lawn, and Michael Myers, Westfield, both of N.J., assignors to Federated Metals Corporation, New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,755
Int. Cl.² H01R *3/06, 5/04*
U.S. Cl. 174—78 **20 Claims**

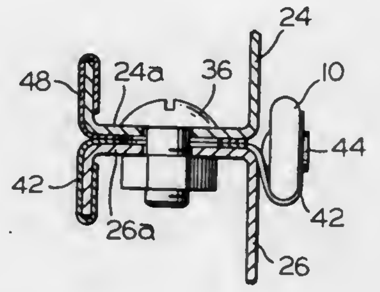


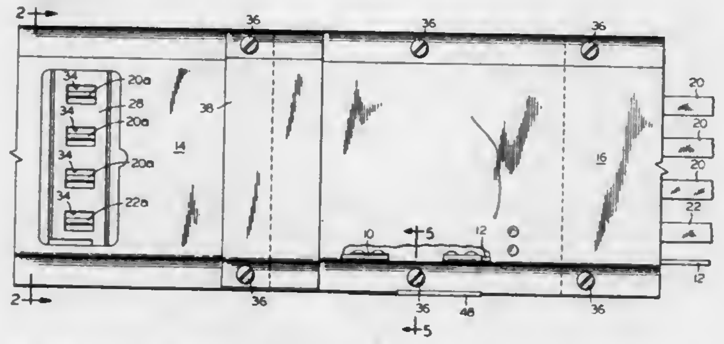
7. In a URD cable comprising a central internal core, a semi-conductor material surrounding said core, an insulation material surrounding said semi-conductor material and surrounded by a second semi-conductor material, and a series of concentric neutral wires spirally applied around said second semi-conductor material and in contact with an anode connecting wire, the improvement comprising a casting of a low-melt alloy surrounding the URD cable over the area of contact between said neutral wires and said anode connecting wire so as to contact at least 50% of the surface area of each of said neutral wires and said connecting wire whereby a secure, long-lasting electrical connection is provided between said neutral wires and said anode.

4,195,198
BUSWAY GROUND BUS JOINT

Werner A. Krause, Plantsville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,561
Int. Cl.² H02G *5/06*
U.S. Cl. 174—94 S **6 Claims**





1. An electrical joint between first and second ground busbars of two busway sections joined end-to-end, wherein each busway section includes a housing consisting of top and bottom covers secured together along coextensive, lapped, laterally extending top and bottom cover flanges, and wherein at the joined ends of adjacent busway sections, the top cover overhangs the bottom cover of one busway section and the bottom cover overhangs the top cover of the other busway section such that the overhang portions of the top and bottom covers assume a lapped relation upon joining the two busway sections end-to-end, said ground busbar electrical joint comprising,

A. a first electrically conductive foil having a first portion wrapped in electrical connection with a termination of said first ground busbar and a second portion wrapped over the lateral flange of the overhanging portion of the top cover of one busway section;

B. a second electrically conductive foil having a first portion wrapped in electrical connection with a termination of said second ground busbar and a second portion wrapped over the lateral flange of the overhanging portion of the bottom cover of the other busway section,

(1) whereby, upon joining the busway sections end-to-end, the second portions of the first and second foils are in electrical contacting interengagement sandwiched between the lapped flanges of the overhanging portions of the top and bottom busway section covers; and

C. a fastener clamping the lapped flanges of the overhanging top and bottom cover portions together to exert joint clamping pressure on said electrical contacting second portions of said first and second foils.

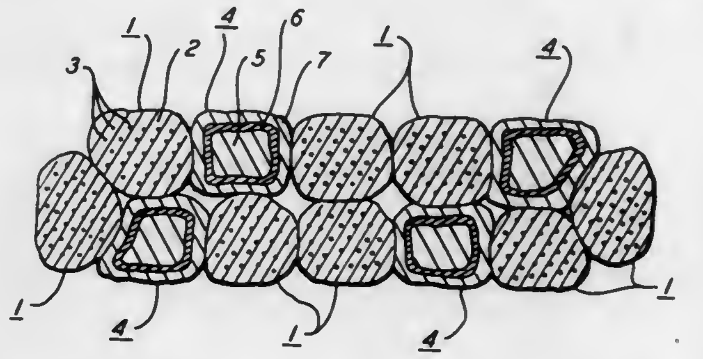
4,195,199
SUPERCONDUCTING COMPOSITE CONDUCTOR AND METHOD OF MANUFACTURING SAME

Hans Hillmann, and Engelbert Springer, both of Rodenbach, Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,943

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736157

Int. Cl.² H01B *12/00*
U.S. Cl: 174—128 S **13 Claims**



1. A superconducting composite conductor comprising:

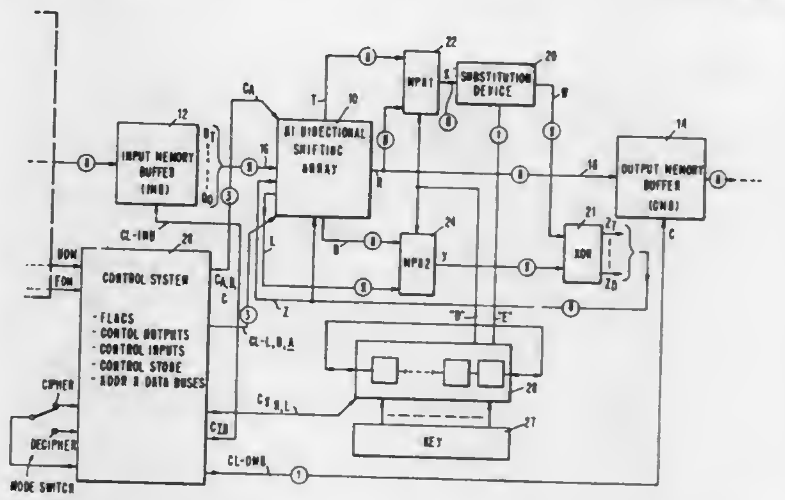
(a) several strands with a superconductive intermetallic compound of at least two elements each containing at least one core of at least one higher melting point element of the compound having, at least on its surface, a layer of the compound, embedded in an alloy of at least one lower melting point element of the compound and a carrier metal; and

(b) at least one strand of a stabilizing metal of high thermal and electric conductivity which is normally conducting at the operating temperature of the superconducting composite conductor containing at least one region which extends along the strand and is enclosed by a layer inhibiting diffusion, the strand of stabilizing metal joined to the strands with the superconductive intermetallic compound by diffusion of at least one lower melting point element of the compound.

4,195,200
KEY CONTROLLED BLOCK-CIPHER CRYPTOGRAPHIC SYSTEM EMPLOYING A MULTIDIRECTIONAL SHIFT MATRIX

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1976, Ser. No. 701,060
Int. Cl.² H04L *9/00*
U.S. Cl. 178—22 **15 Claims**



1. A Block-Cipher Cryptographic System for enciphering-/deciphering a block of binary data under the control of a unique binary key, said system including a multidirectional shift matrix capable of shifting in at least two directions along a predetermined coordinate of said matrix said system further

including means for loading said matrix with a block of data to be cryptographically transformed, means for loading said binary key, means for causing said matrix to shift to a predetermined distance along a coordinate of said array which is a function of said key, end around connection means for said array for transferring data shifted out of one edge thereof back into the opposite edge, and means for continuing said shifting operations for a predetermined number of rounds until the cryptographic transformation process is completed.

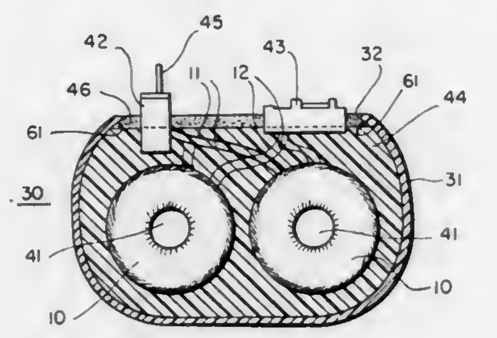
4,195,201
INDUCTIVE COIL MODULE

Frank J. Gryl, Jr., and James A. Mahler, both of East Windsor, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed May 10, 1978, Ser. No. 904,653

Int. Cl.^{2} H01F *17/08, 15/02, 15/10, 27/30*

U.S. Cl. 178—46 **10 Claims**



1. A coil module, comprising:
- a housing having a substantially oval cross section and a plurality of leaded inductive coils therein;
- a potting compound encapsulating the coils;
- a portion of the housing overhanging the potting compound;
- a hardened material, covering the potting compound, captured between the overhang and the potting compound; and
- at least one connector embedded in the hardened material with a portion thereof accessible through an opening in the housing.

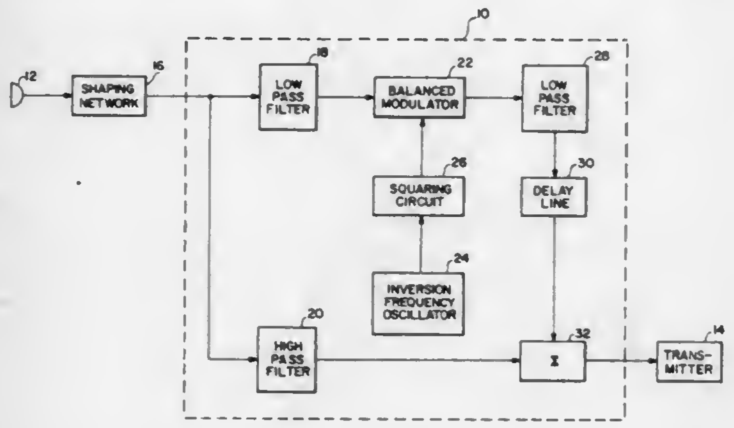
4,195,202
VOICE PRIVACY SYSTEM WITH AMPLITUDE MASKING

Arnold M. McCalmont, Acton, Mass., assignor to Technical Communications Corporation, Concord, Mass.

Filed Jan. 3, 1978, Ser. No. 866,244

Int. Cl.^{2} H04K *1/04*

U.S. Cl. 179—1.5 S **16 Claims**



1. Apparatus for encoding a variable amplitude analog information signal in the audio frequency range for transmission in a privacy mode to a remote receiver where the signal is to be recovered in a clear mode, the analog information signal comprising a voice signal corresponding to speech having a discernible cadence and intersyllabic generation rate, said apparatus comprising:
- A. means for splitting the voice signal into at least two separate frequency bands;
- B. means for time delaying at least one of said frequency bands relative to the other of said frequency bands by a predetermined time delay increment;
- C. means for recombining said time delayed frequency band with the other of said frequency bands to produce a composite signal for transmission; and
- D. said predetermined time delay increment being selected so that it approximates in value the time constant of the cadence and intersyllabic generation rate of the speech so that relatively high amplitude portions of said delayed frequency band appear in said composite signal at times of occurrence of relatively low amplitude portions of the other of said frequency bands to provide substantial amplitude smearing in said composite signal.

4,195,203
NOISE CANCELLING SYSTEM FOR FM RECEIVER

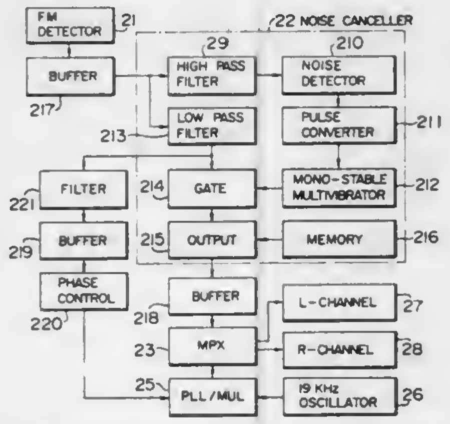
Koichi Sakai; Satoru Horie, both of Tokyo; Shinji Kitahara, Kauwasaki, and Kozo Suzuki, Tokyo, all of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Feb. 14, 1978, Ser. No. 877,723

Claims priority, application Japan, Feb. 22, 1977, 52-17755; Sep. 9, 1977, 52-108418

Int. Cl.^{2} H04H *5/00*

U.S. Cl. 179—1 GD **2 Claims**



1. A noise-cancelling system for FM receivers wherein the output of an FM detector circuit is supplied to a multiplex demodulation circuit through a noise canceller circuit, said noise canceller circuit comprising:
- a high-pass filter having an input coupled to receive the output of said FM detector circuit, and an output;
- first circuit means coupled for detecting pulsive noise at said high-pass filter output and providing at an output a control signal when said pulsive noise is detected;
- a low-pass filter having an input coupled to receive the output of said FM detector circuit, and an output providing a stereo composite signal;
- a gate circuit having an input responsive to said control signal and an input coupled to receive said stereo composite signal, said gate circuit normally passing said stereo composite signal to said multiplex demodulation circuit and interrupting said stereo composite signal when said control signal indicates that pulsive noise is detected by said first circuit means; and
- storage means coupled for supplying to said multiplex demodulation circuit, during said interruption, a DC signal representative of an output of said gate circuit which is provided immediately prior to said interruption;

said noise-cancelling system further including:
- second circuit means coupled for receiving said stereo composite signal from said low pass filter and deriving therefrom a 19 KHz pilot signal; and phase-locked loop and oscillator circuit means coupled for receiving said 19 KHz pilot signal and generating and supplying to said multiplex demodulation circuit and 38 KHz signal in synchronism with said 19 KHz pilot signal.

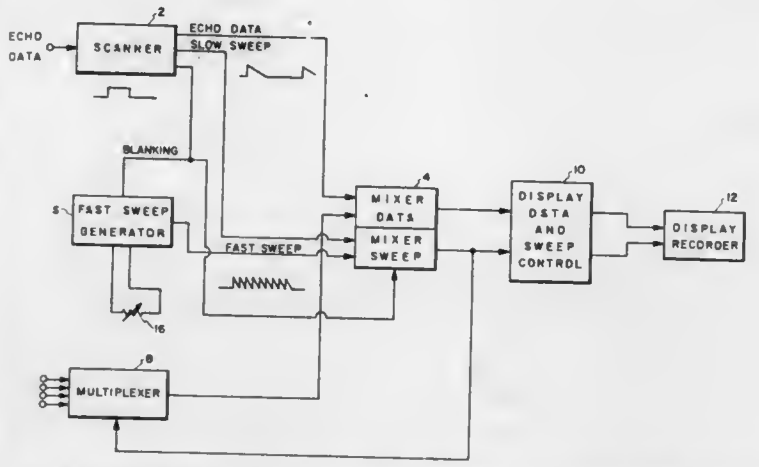
4,195,204
SIGNAL MIXER CIRCUIT

Gary L. Troutman, Littleton, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 14, 1976, Ser. No. 676,864

Int. Cl.^{2} H04J *3/16*

U.S. Cl. 370—84 **4 Claims**



1. A control circuit for controlling a recording instrumentality comprising,
- first signal generator means,
- said first signal generator means being operative to generate first control signals characterized in being sawtooth pulse signals of relatively slow ramp with successive pulses occurring at spaced intervals,
- said first signal generator means being also operative to generate blanking signals, said blanking signals occurring coincidently with said sawtooth pulse
- first buffer amplifier means,
- coupling means for applying said first control signal to the input of said first buffer amplifier means,
- second signal generator means,
- said second signal generator means being operative to produce second control signals characterized in being sawtooth pulse signals of relatively fast ramp and of a significantly higher frequency than said first control signal,
- second buffer amplifier means,
- coupling means for applying said second control signals to the input of said second buffer amplifier means,
- said last named coupling means including a switching means responsive to said blanking signal to block the application of said second control signals to said second buffer amplifier means during the occurrence of said first control signals,
- output circuit means including a summing junction, and
- means connecting the output of said first buffer amplifier means and the output of said second buffer amplifier means to said summing junction whereby output signals of said control circuit comprise a composite of interleaved signals of said first and second control signals.

4,195,205
SIGNAL TRANSFER SYSTEM FOR TIME DIVISION SWITCHING SYSTEMS

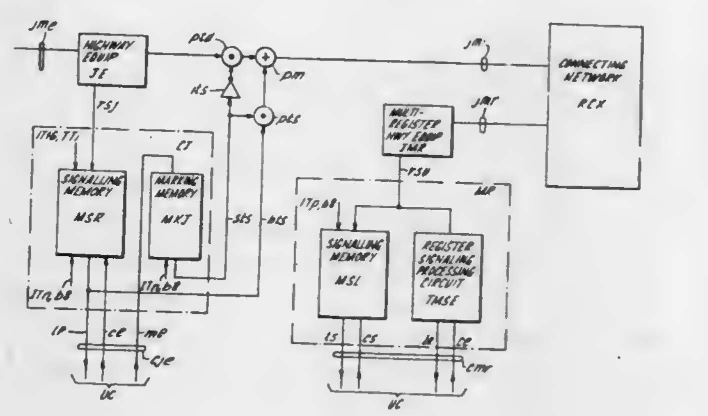
Michael Andre R. Henrion, Boulogne, France, and Marcel A. van Brussel, Hoboken, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 21, 1978, Ser. No. 918,296

Int. Cl.^{2} H04J *3/12*

U.S. Cl. 370—10 **7 Claims**

1. A signal transfer system for a time division switching system comprising:
- at least one multiplex highway carrying a signaling channel and speech channels;
- a network means for selectively connecting said speech channels to one another;
- multiregister means connectable to said speech channels for receiving register signaling information therefrom;
- a central processor having access to said network and to said multiregister means;
- a line signaling controller including:
- (a) a signaling memory comprising: a first plurality of memory cells;
- (b) a marking memory comprising: a second plurality of memory cells;
- (c) means for storing in each signaling memory cell line signaling information for a corresponding speech channel;
- (d) means for storing in each marking memory cell an information bit for a corresponding speech channel, each said information bit being supplied by said central processor and having a predetermined value when said corresponding speech channel may contain register signaling information;



- (e) means for reading each of said pluralities of signaling memory and marking memory cells corresponding to a speech channel during a predetermined bit time slot of said corresponding speech channel;
- (f) switching means for transmitting over said multiplex highway line signaling information stored in a signaling memory cell in response to the information bit stored in a corresponding marking memory cell having said predetermined value; and
- selection means for selecting a signaling bit in information transmitted in a corresponding speech channel and for transmitting said line signaling bit to said multiregister means concurrently with register signaling information for said corresponding channel.

4,195,206
PATH TEST APPARATUS AND METHOD

James R. Baichtal, Las Altos, Calif., assignor to TRW, Inc., Los Angeles, Calif.

Continuation of Ser. No. 762,934, Jan. 26, 1977, abandoned. This application Oct. 26, 1978, Ser. No. 954,780

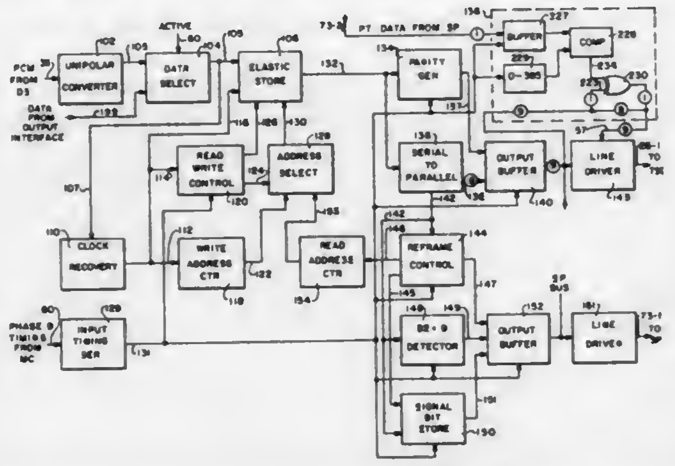
Int. Cl.^{2} H04J *3/14*

U.S. Cl. 370—14 **12 Claims**

1. In a telephone system having an interface including an input portion connecting to an input line for receiving input telephone signals and having an output portion connected to an output line for transmitting output signals in time frames each consisting of a plurality of time slots, test apparatus comprising:
- test signal generator means, connected to said input portion, for connecting a test signal to a selected one of said time slots whereby said test signal occurs in said selected time slot in said input portion, said test generator means including means for sending a plurality of said test signals in the same time slot in successive time frames,
- control means connected to said test generator means for specifying said selected time slot,
- means for connecting a data path between said input portion and said output portion whereby said test signal occurs in

a corresponding time slot in said successive time frames in said output portion, and

means for detecting said test signal occurring in said corresponding time slot in said output portion, said means for detecting including means for receiving said plurality of test signals in said successive time frames in said corresponding time slot including memory means for storing a control count from an initial count to a predetermined



count corresponding to the successive test signals for each of said time slots and logic means connected to receive said sequential test signals in said successive time frames in said specified time slots for incrementing said control count from said initial count to said predetermined count whereby said logic means generates a control signal when said count reaches said predetermined count thereby verifying the continuity of said path between said input portion and said output portion.

4,195,207
TELEPHONE PUSH BUTTON SWITCH ASSEMBLY HAVING SEQUENTIAL OPERATED CONTACT STRUCTURE

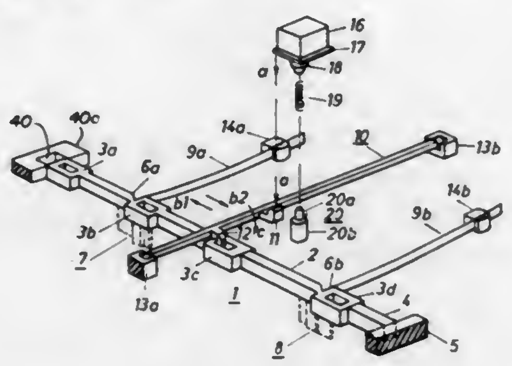
Peter S. E. Sommansson, Tyreso, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 3, 1978, Ser. No. 866,251

Claims priority, application Sweden, Jan. 8, 1977, 7701358

Int. Cl.^{2} H01H *9/00;* H04M *1/26*

U.S. Cl. 200—1 B **8 Claims**



1. Switch apparatus comprising displaceable push-button means, a longitudinally slidable arm, means for displacing said arm between actuated and released positions in accordance with displaced and released positions of said push-button means, first and second oppositely directed wedge elements secured to said arm for displacement therewith, a pair of pivotal contact arms disposed on opposite sides of each of said wedge elements, each said wedge element having two offset actuator surfaces positioned with respect to said contact arms to pivotally move said contact arms in timed sequence as said longitudinally slidable arm travels between said actuated and released positions, and fixed contact means positioned adjacent said pivotal arms for undergoing opened and closed electrical switch contact therewith as said contact arms are pivotably moved and released.

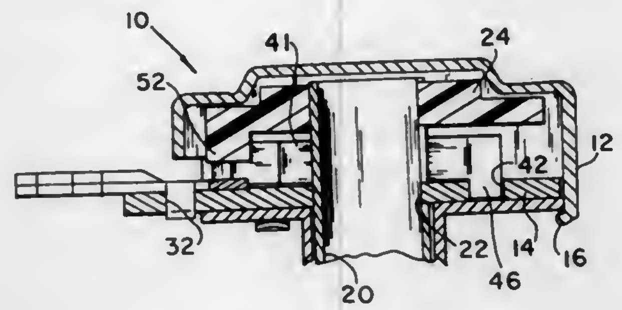
4,195,208
SINGLE POLE DOUBLE THROW SNAP SWITCH

Mark L. Petre, and Ellis P. Lipp, both of Frankfort, Ind., assignors to Embart Industries, Inc., Indianapolis, Ind.

Filed Jul. 20, 1978, Ser. No. 926,438

Int. Cl.^{2} H01H *19/32*

U.S. Cl. 200—63 R **6 Claims**



1. A single pole, double throw snap switch comprising:

(a) a terminal board having an aperture substantially at its center portion,

(b) a pair of electrical terminals carried by said terminal board closely spaced from one another providing a gap therebetween,

(c) a third electrical terminal carried by said terminal board and extending into said gap,

(d) a spring contact blade having opposed ends, one of said ends pivotly carried in a slot provided in a wall of said aperture, the other end extending into said gap and engaging said third terminal,

(e) a shaft extending into said aperture and a rotor carried by said shaft to be rotatable therewith, and

(f) actuator means carried by said rotor engaging said spring contact blade to move said spring blade between said first and third and between said second and third electrical terminals.

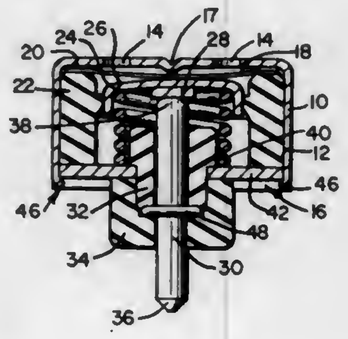
4,195,209
PRESSURE RESPONSIVE ELECTRICAL SWITCH AND MEANS OF CONTACT GAP SETTING THEREFOR

Kenneth P. Mlyniec, Lebanon, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 24, 1978, Ser. No. 927,655

Int. Cl.^{2} H01H *35/34*

U.S. Cl. 200—83 R **7 Claims**



1. A pressure responsive switch for changing electrical switching state in response to a fluid pressure which equals or exceeds a desired pressure threshold level, comprising:

a cylindrical conductive casing having a central, generally cylindrical cavity and defining at least one upper fluid inlet orifice communicating with said cavity, said casing defining a position limiting boss extending downward adjacent said inlet orifice into said cavity, and said casing further defining a lower opening communicating with said cavity,

a nonconductive elastic membrane extending across the upper portion of said cavity beneath said fluid inlet orifice and said position limiting boss, and sealingly attached at its periphery to the interior of said casing,

a conductive, pressure actuatable plunger in the upper portion of said cavity including a pressure receiving surface directly beneath said membrane,

an electrical connector,

means mounting said electrical connector centrally in said cavity out of electrical contact with said casing such that a first end of said connector extends out of said cavity through said lower opening in said conductive casing and a second end of said connector is positioned in said cavity, and

means in said cavity providing an electrical path between said conductive casing and said plunger and applying a predetermined upward spring force to said plunger urging said plunger out of contact with said second end of said connector, the upward movement of said plunger and said membrane being limited by said position limiting boss,

whereby when the fluid admitted by said fluid inlet orifice reaches the desired pressure threshold level, said plunger is moved downward by the fluid pressure against said spring force such that said plunger contacts said second end of said connector and provide an electrical path between said connector and said casing.

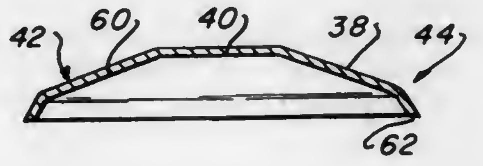
4,195,210
SWITCHING ASSEMBLIES

Walter R. Pounds, Lafayette, and Bill D. Dunlap, Longmont, both of Colo., assignors to KB-Denver, Inc., Frederick, Colo.

Filed Feb. 27, 1979, Ser. No. 15,808

Int. Cl.^{2} H01H *1/24, 13/52*

U.S. Cl. 200—159 A **7 Claims**



1. In a switching assembly which includes an insulative substrate upon which is carried a plurality of conductive paths respective portions of which are selectively bridged upon depression of a resilient conductive contact element, the improvement comprising:

said contact element being generally in the shape of a dome but having a central region of substantially planar conformation from which the remainder of said dome slants integrally downward and outward to a lower marginal rim portion;

and said dome-shaped element being disposed adjacent to said substrate with at least a portion of said rim portion being in electrical and physical contact with one of said portions of one of said paths, said central region being generally in registry over another of said portions in another of said paths to enable connection between said central region and that other portion upon depression of said central region.

4,195,211
SINGLE POLE TRIP AND GANGED POLE CLOSING FOR MULTIPHASE HIGH-VOLTAGE POWER CIRCUIT BREAKERS

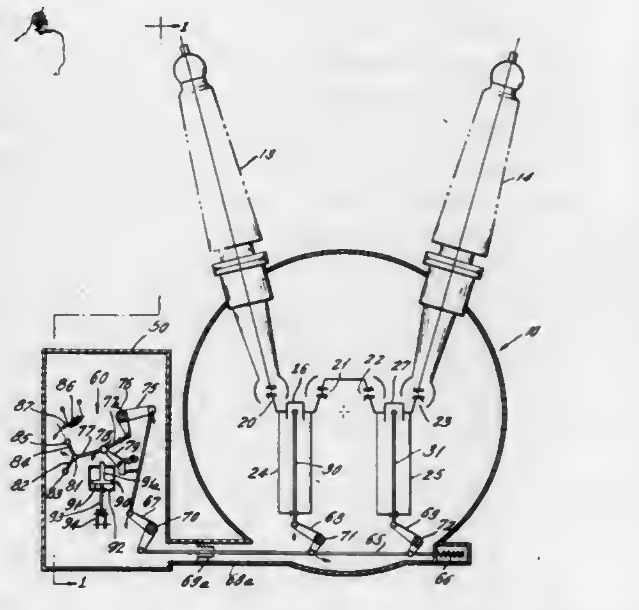
Wilfred A. Aslan, Seal Beach; Giovanni P. Guaglione, Irvine; James R. McCloud, Anaheim, and Henry G. Meier, Glendale, all of Calif., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Jun. 18, 1976, Ser. No. 697,332

Int. Cl.^{2} H01H *3/00*

U.S. Cl. 200—153 D **10 Claims**

1. A high-voltage three-phase circuit breaker for a high-power electrical transmission system; said circuit breaker having separate tanks for containing each of the three circuit breaker phases; each of said three circuit breaker phases including contact interrupter means disposed within their respective tank and terminal bushings extending through the wall of each tank and connected to a respective contact interrupter means; each of said contact interrupter means being movable between a closed position and an open position; a respective contact operating mechanism for each of said contact interrupter means; each of said contact operating mechanisms of each of said three phases comprising a trip-free linkage connected to their respective said contact interrupter means and being adapted to hold their said respective contact operating mechanism in their said closed position; biasing means connected to each of said contact interrupter means to bias each of said contact interrupter means to their said open position; respective trip means for each of said trip-free linkages of each of said three phases to enable the individual opening of said contact interrupter means of any of said phases independently of any of the other phases; and a single mechanical ganged closing mechanism mechanically connected to each of said trip-free linkages of each of said three phases, and operable to move each of said contact interrupter means to their said closed position in response to the operation of said single closing mechanism with minimum pole spread.



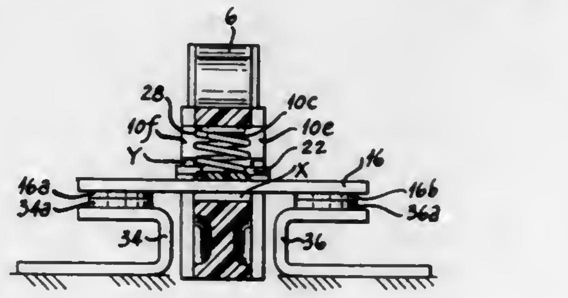
4,195,212
CONTACTOR HAVING HIGHER FAULT CURRENT WITHSTANDABILITY

Robert O. Graham, Milwaukee; John A. Rauenbuehler, New Berlin, and Albert C. Snowdon, Shorewood, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 6, 1977, Ser. No. 803,759

Int. Cl.^{2} H01H *1/20, 1/50, 3/60*

U.S. Cl. 200—243 **4 Claims**



1. An electric switch having higher fault current withstandability comprising:

stationary contact means;

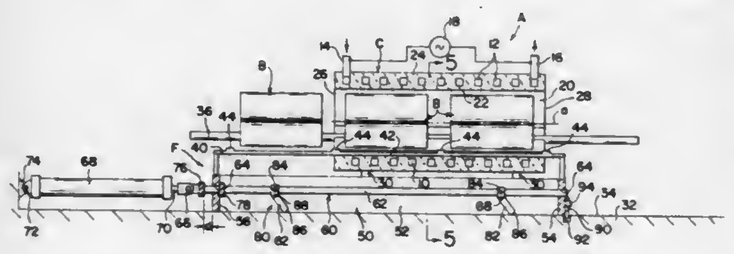
movable contact means;

and operating means for closing said movable contact means with respect to said stationary contact means comprising:

an electrically insulating contact carrier and means coupling the same to said operating means for movement thereby;
and supporting means comprising resilient means supporting said movable contact means on said contact carrier so as to cause stressing of said resilient means when the movable contact means close thereby to afford adequate contact pressure and wear allowance:
and means providing said switch with higher fault current withstandability comprising auxiliary stop means incorporated in said contact carrier effective upon blow-open of said contact means under high fault current conditions which causes opening movement of said movable contact means relative to said supporting means and further stressing of said resilient means causing arc currents to flow for limiting said opening movement of said movable contact means to an amount that slightly exceeds the full wear allowance and is effective to confine said arc currents between said contact means and keep the gap therebetween small enough to control the rate of energy dissipation and reduce serious arc damage to other parts of the switch.

4,195,213
FEEDING MECHANISM FOR INDUCTION HEATING COIL

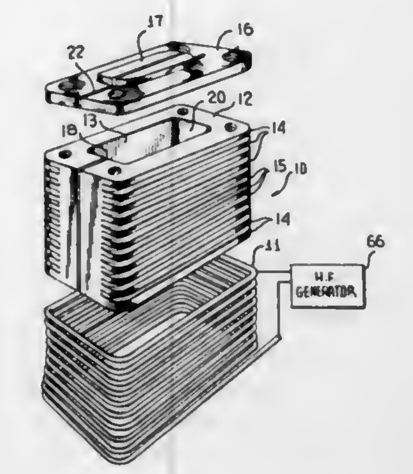
Joseph W. Chiboroski, Brooklyn Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed Mar. 6, 1978, Ser. No. 883,648
Int. Cl.² H05B *5/18*
U.S. Cl. 219—10.69 21 Claims



1. A mechanism for feeding a succession of elongated workpieces having a given length axially along a given path through an elongated workpiece receiving passage of a multiturn induction heating coil, said mechanism comprising: slide rail means fixedly positioned within and extending axially through said passage for supporting the said workpieces thereon for sliding advance movement therealong through said passage; a driven member extending longitudinally through and reciprocable axially of said passage and having at least two driving lugs spaced axially of said passage a distance exceeding said given length for engaging the workpieces resting on said slide rail means and slidably pushing them forwardly therealong in spaced relation to one another on the advance reciprocation stroke of said driven member; elevating means for selectively shifting said driven member between a first elevational position with said driving lugs spaced from said path and a second elevational position with said driving lugs in said path; and actuating rod means connected to and actuating both said driven member and said elevating means and reciprocable through alternate advance and return strokes for reciprocating said driven member axially of said passage between a first retracted position and a second extended position; said elevating means including cam means actuated by said actuating rod means for shifting said driven member from said first elevational position into said second elevational position during the initial portion of the said advance stroke of said power drive means to shift said driven member from said retracted position to said extended position and for shifting said driven member back into said first elevational position during the initial portion of the said return stroke of said power drive means.

4,195,214
APPARATUS FOR INDUCTION HEATING OF METAL PLATES WITH HOLES

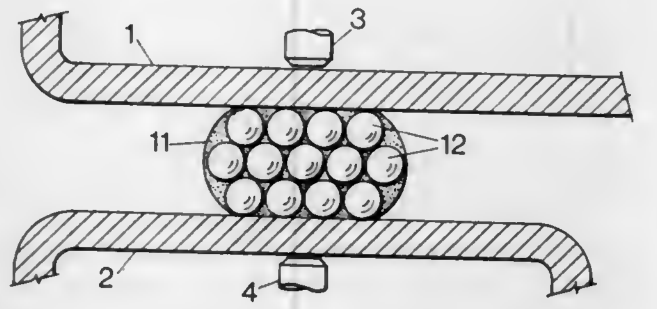
Howard L. Gerber, Park Forest, Ill., assignor to The Continental Group, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 700,494, Jun. 28, 1976, Pat. No. 4,104,498. This application Jan. 16, 1978, Ser. No. 869,770
Int. Cl.² H05B *5/18*
U.S. Cl. 219—10.79 17 Claims



1. A flux concentrator for induction heating of preselected areas of metal plates, said flux concentrator comprising a transformer; said transformer comprising a single winding secondary coil form in the form of a thick wall tubular body of a selected height, said body having remote end faces, said body being interrupted by an axial slot extending from the exterior of said body to the interior thereof for the full height of said body, and a multiple winding primary coil wrapped around the exterior of said secondary coil form with the windings of said primary coil bridging said slot; and a nosepiece overlying one of said coil form end faces in electrical conducting relation, said nosepiece being in the form of a generally axially coextensive cover plate for said coil form and having a longitudinal slot therein for the full height thereof, said nosepiece slot being in alignment with said coil form slot with a portion of said nosepiece slot forming an axial extension of said coil form slot, and a shield telescoped over said primary coil for preventing radio-frequency currents from being introduced into adjacent machinery.

4,195,215
WELDABLE SEALANT FORMS

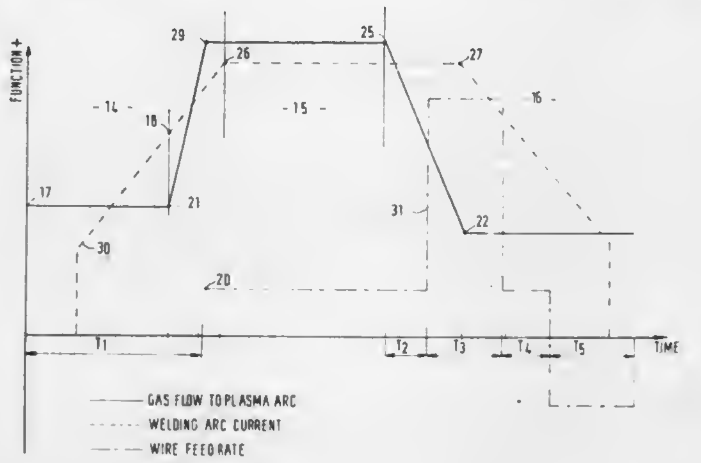
Robert W. Clarke, Box 1166, S-171 23 Solna, Sweden
Continuation of Ser. No. 771,660, Feb. 24, 1977, abandoned, which is a continuation of Ser. No. 610,440, Sep. 4, 1975, abandoned. This application Oct. 13, 1978, Ser. No. 951,047
Claims priority, application Sweden, Sep. 20, 1974, 7411829
Int. Cl.² B23K *11/10*
U.S. Cl. 219—91.21 14 Claims



1. A method of welding two metal members together in which a sealant is used between mating surfaces, said sealant containing discrete non-spherical metal beads of a rounded shape and controlled as to bead size; and bringing the members together by spot welding through the beads, with the beads providing spacing and gap filling functions as well as bridge metal in order to lessen depletion of the members being welded.

4,195,216
PLASMA WELDING

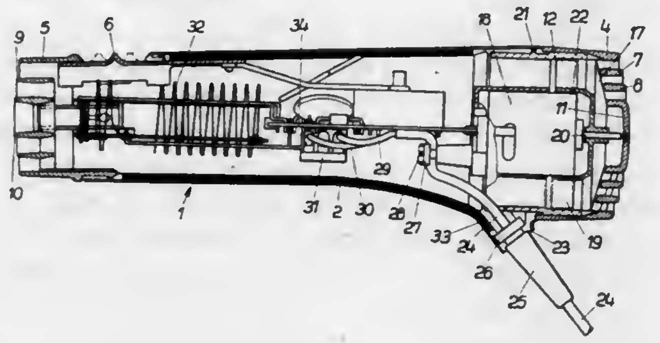
Derek J. Beauchamp, Gloucestershire, and Donald L. A. Weston, Bristol, both of England, assignors to Rolls-Royce Limited, London, England
Filed Mar. 13, 1978, Ser. No. 886,144
Claims priority, application United Kingdom, Mar. 18, 1977, 11642/77
Int. Cl.² B23K *9/10*
U.S. Cl. 219—121 P 5 Claims



1. A method of terminating a plasma welding operation comprising the steps of: initiating the conclusion of a welding run to close the keyhole formed during the welding run by the plasma arc piercing the workpiece, and subsequently increasing the rate of feed of filler material to the weld.

4,195,217
HAIR DRYER

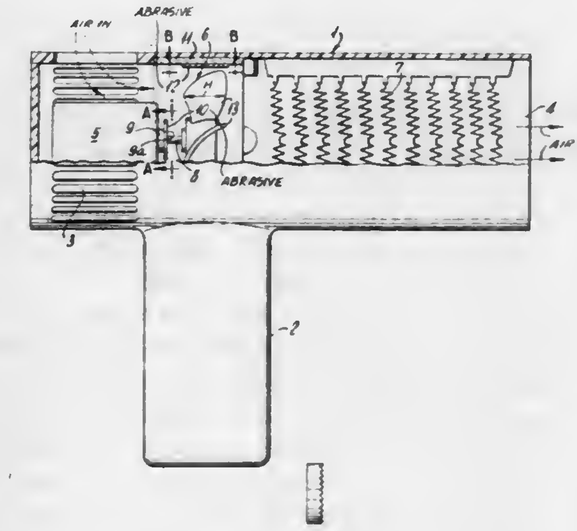
Heinrich Möller, Kelkheim, and Karl-Heinz Hoffmann, Wehrheim, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 15, 1978, Ser. No. 878,071
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1977, 2708581
Int. Cl.² H05B *1/00;* A45D *20/08*
U.S. Cl. 219—370 10 Claims



1. A portable hair dryer comprising:
a first generally semi-cylindrical grip member, said first grip member having a pair of longitudinal contoured edge portions, said first grip member further having a recessed lip portion at least at a first end thereof and at least a first interior locking surface adjacent a second end thereof;
a second generally semi-cylindrical grip member, said second grip member having a pair of longitudinal contoured edge portions, said contoured edge portions of said first and second grip members being of complimentary shape whereby said grip members may be engaged with one another by said edge portions to define a tubular housing having a substantially regular outer surface, said housing further having openings at oppositely disposed ends thereof, said second grip member also having a recessed lip portion at least at the first end thereof and at least a first interior locking surface adjacent the second end thereof;
heater means mounted within the housing defined by said grip members;
blower means mounted within the housing defined by said grip members, said blower means including a tubular air intake passage defining member, said intake passage defining member extending outwardly through the first end opening of said housing, said intake passage defining member having a locking surface thereon;
tubular air intake grid means, said intake grid means having an inner diameter greater than the outer diameter of said blower means passage defining member and an outer diameter equal to the outer diameter of an adjacent end portion of said housing, said intake grid means fitting over the outwardly extending part of said blower means passage defining member and said grip member lip portions whereby said intake grid means forms a first extension of said regularly shaped housing, said intake grid means having a locking surface thereon complimentary in shape to the locking surface on said blower means passage defining member whereby said blower means and intake grid means are non-releasably locked together by engagement of said complimentary locking surfaces and said grip members are secured together by the capture of the lip portions thereof within said intake grid means;
tubular exhaust grid means, said exhaust grid means having a first portion which defines a second extension of said housing, said exhaust grid means further including a plurality of resilient locking projections extending outwardly therefrom into the second end opening of said housing, said locking projections engaging said locking surfaces on the interior of said first and second grip members to thereby non-releasably connect said exhaust grid means to said grip members and simultaneously hold said grip member edge portions in the engaged condition; and
control switch means, said control switch means being mounted within said housing adjacent the second end opening thereof and including a movable actuator extending outwardly through an aperture in said housing to a point not exceeding the outer diameter of said housing in regions adjacent said aperture.

4,195,218
DRYER

Henry J. Walter, Wilton, and Roy W. White, Norwalk, all of Conn., assignors to Clairol Incorporated, New York, N.Y.
Filed Aug. 31, 1977, Ser. No. 829,543
Int. Cl.² H05B *1/02*
U.S. Cl. 219—370 7 Claims



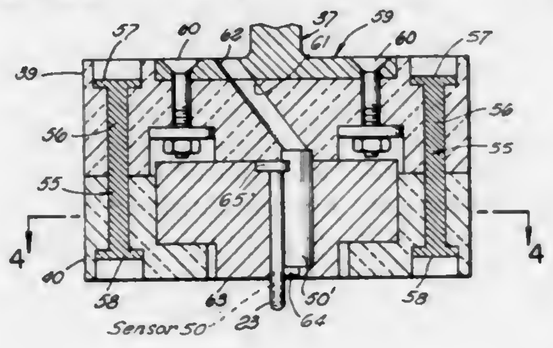
1. A hair dryer having a housing comprising:
(a) an air inlet and an air outlet;

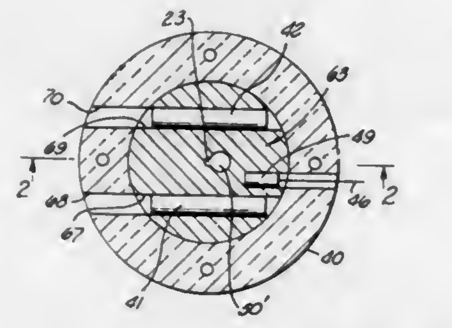
(b) electric heating means;
(c) a fan having a plurality of blades;
(d) a shaft having two ends, one end of which is secured to the axial center of said fan;
(e) motor means connected to the other end of said shaft for rotating said fan;
(f) a motor shroud rigidly connected to said motor and surrounding the fan blades;
(g) a first abrasive element rigidly attached to said motor shroud adjacent to said blades, whereby a portion of the loose hair which enters the dryer housing along with air through the air inlet and becomes entrapped about said blades is abraded by said first abrasive element during rotation of the fan blades and said abraded hair is discharged along with the air flowing through the dryer housing and out of the air outlet; wherein said motor includes bearing means surrounding said shaft, said bearing means providing a surface, and a second abrasive element rigidly attached to said surface, whereby a portion of said loose hair which enters the dryer and becomes entrapped about said motor shaft between the fan and motor bearing surface is abraded by said second abrasive element during rotation of the fan blades and said abraded hair is discharged along with the air flowing through the dryer housing and out of the air outlet wherein said first and second abrasive elements are shaped as discs.

4,195,219
HEATING APPARATUS

Egon F. Friese, Tustin, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 19, 1978, Ser. No. 907,552
Int. Cl.² H05R *1/02*
U.S. Cl. 219—388 15 Claims



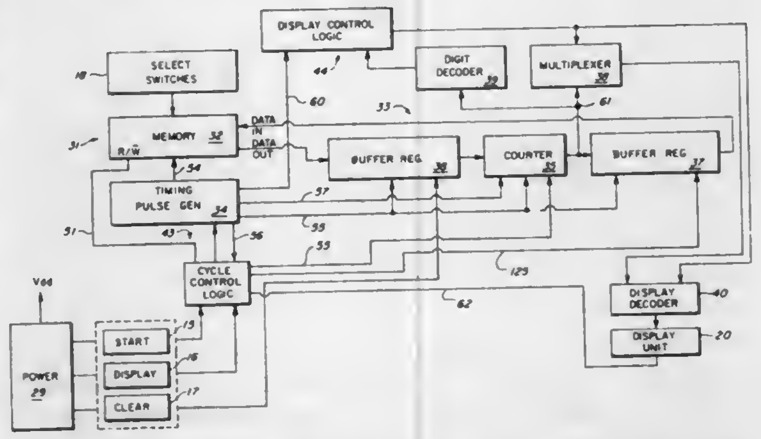


1. Heating apparatus comprising: a delivery head including a heat conductive storage body and a heat conductive projection fixed relative to said body, said projection extending outwardly of said body to deliver heat to each successive one of a plurality of work pieces, said projection being in heat conductive relation with said body; a first thermocouple fixed contiguous to said projection and being sensitive to the temperature of said projection; a second thermocouple fixed contiguous to said body and being sensitive to the temperature of said body; a first heating element fixed relative to said projection in heat conductive relation therewith for supplying heat directly to said projection; a second heating element fixed relative to said body in heat conductive relation therewith for supplying heat directly to said body; first means connected from said first thermocouple to said first heating element to keep said projection at a first predetermined approximately constant temperature, said first temperature being the working temperature of a work piece; and second means connected from said second thermocouple to said second heating element to keep said body at a second predetermined approximately constant temperature, said body having a size and said first and second means acting in a manner such that heat is quickly resupplied to said projection after heat therein has been conducted to a work piece so that said projection quickly regains said working temperature before engaging the next one of said work pieces thus making possible increased production.

4,195,220
PORTABLE ELAPSED TIME RECORDER

Stanley M. Bristol, 1470 Stonebridge Trail, Wheaton, Ill. 60178, and Norman E. Bullock, 7733 Belmont Ave., Elmwood Park, Ill. 60635

Filed Nov. 21, 1977, Ser. No. 853,098
Int. Cl.² G07C *1/10*
U.S. Cl. 235—92 T 22 Claims



1. In a time recording apparatus for providing a record of elapsed time for each of a plurality of different functions, the combination comprising: data processing means operable when enabled to provide elapsed time data, enabling means operable to enable said data processing means for a time interval during which elapsed time is to be recorded for one of said functions, said data processing means including timing means for providing timing pulses at a predetermined rate, and pulse counting means for counting said timing pulses during said time interval to provide said elapsed time data, data storage means having a plurality of individually addressable data storage locations, including a separate data storage location corresponding to each of said functions, select means manually operable to generate signals for selecting the data storage location for a function for which elapsed time is to be recorded, data transfer means for transferring data at the selected data storage location to said pulse counting means at the start of said time interval to preset said pulse counting means to a count representing elapsed time previously recorded for the corresponding function, whereby the data provided by said pulse counting means at the end of said time interval represents cummulative elapsed time for said function, and means for permitting the cummulative elapsed time data provided by said data processing means to be stored at said selected data storage location.

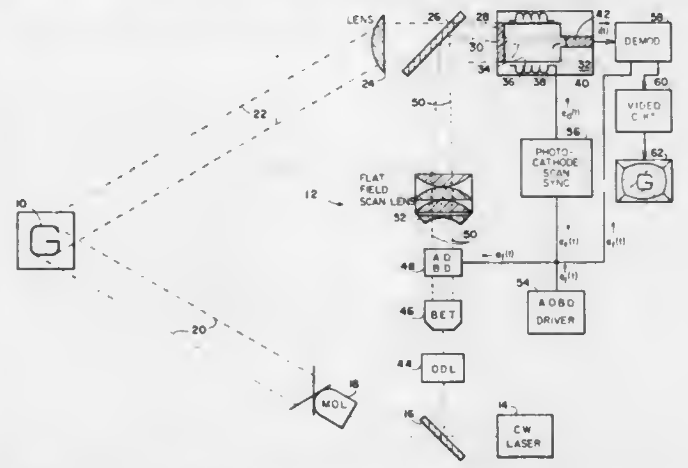
4,195,221
SCANNING FOCUSED LOCAL OSCILLATOR OPTICAL HETERODYNE IMAGING SYSTEM

Steven E. Moran, Lakeside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 3, 1978, Ser. No. 921,663
Int. Cl.² H04N *7/18*
U.S. Cl. 455—609 15 Claims

1. Optical heterodyne apparatus for viewing the image of an arbitrary object which is carried on the wavefront of a first coherent light signal, said apparatus comprising:

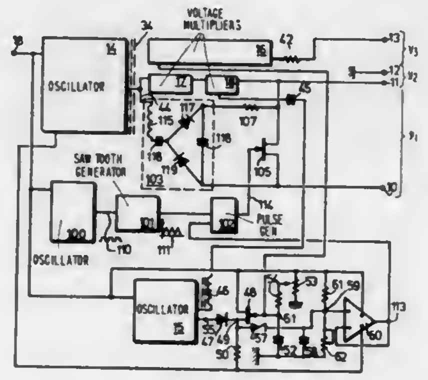
an array of light responsive elements, each of said light responsive elements having a light sensitive surface and comprising means for generating an electric signal that represents the light impinging upon its light sensitive surface;
lens means receiving said first coherent light signal for focusing said image on said array of light responsive elements;
means for providing second coherent light signal, the frequencies of said first and second coherent light signals being different;
focusing means for sequentially focusing said second coherent light signal within an Airy disc upon the light sensitive surface of each of said light responsive elements, each light responsive element generating a heterodyne signal when said second coherent light signal is focused upon its light sensitive surface;
detection means for receiving said heterodyne signals, and for generating a set of signals in response to said heterodyne signals which is capable of providing a viewable representation of said image, and
signal exclusion means positioned between said light responsive elements and said detection means for preventing said detection means for receiving signals representing light of said first coherent light signal which are generated by any of said light responsive elenents except the light responsive element upon which said second coherent light signal is focused.



4,195,222
POWER-SUPPLY DEVICE FOR A MICROCHANNEL TUBE

Jean-Pierre Fouilloy, Velizy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 22, 1978, Ser. No. 888,838
Claims priority, application France, Mar. 24, 1977, 77 08802
Int. Cl.² H01J *39/12*
U.S. Cl. 250—213 VT 12 Claims

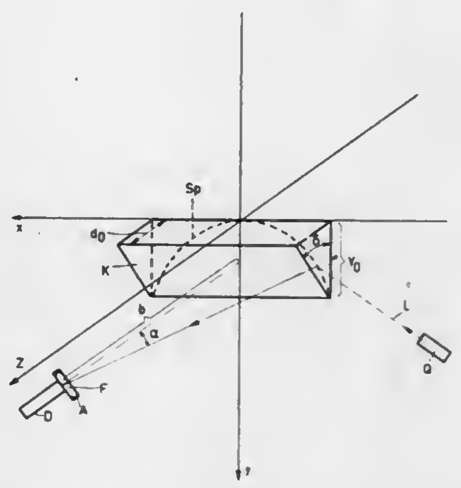


1. A power supply for a microchannel tube of the type which includes a screen, a microchannel plate having an input and an output, and a photocathode comprising:
first means for providing a substantially constant direct voltage between the output of the microchannel plate and the screen;
second means for providing a substantially constant direct plate voltage between the input of the microchannel plate and the output of the microchannel plate;
third means for superimposing a variable direct voltage on said direct plate voltage and for controlling said variable direct voltage as an inverse function of the average current flowing to the screen when a first range of illumination is incident on said tube; and
fourth means for providing a photocathode voltage between said photocathode and said input of said microchannel plate and for controlling said photocathode voltage as an inverse function of said average current flowing to the screen when a second range of illumination is incident on said tube;
said second range of illumination including higher illumination levels than said first range, the lowest illumination level in said second range being at least as high as the lowest illumination level in said first range.

4,195,223
APPARATUS FOR OPTICALLY SCANNING A SURFACE

Udo Bergmann, Schwarzenbek, and Karl Klose, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,420
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703504
Int. Cl.² H01J *3/14*
U.S. Cl. 250—216 4 Claims



1. In an apparatus for scanning a surface of the type comprising:
light source means which function to project a beam of light along a first portion of an optical path to said surface and to scan said surface with said beam, whereby light is caused to issue from said surface and, in the case of a homogeneous non-textured surface, to issue with a greater intensity from a first portion of said surface than from a second portion of said surface and
light detector means which receive said issuing light along a second portion of said optical path;
the improvement comprising:
wedge compensating means disposed on said optical path which function to attenuate light so that, in the case of a homogeneous non-textured surface, the intensity of light received by said detector means from said first portion of the surface is substantially equal to the intensity of light received by said detector means from the second portion of said surface.

4,195,224

GAS LEAKAGE DETECTION APPARATUS

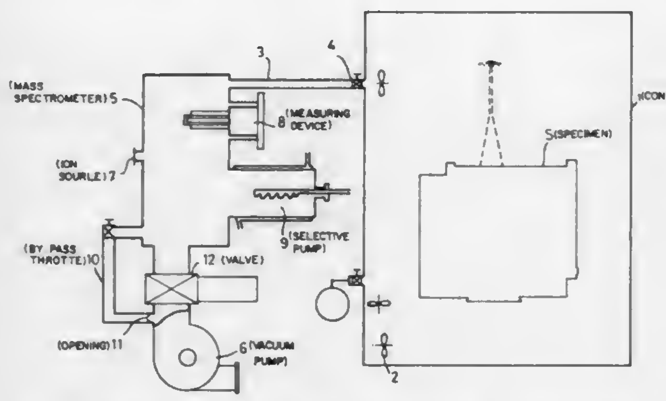
Georg Sänger, Voorschoten, and Alfred K. Franz, Lisse, both of Netherlands, assignors to Organisation Europeenne de Recherches, Paris, France

Filed Sep. 25, 1978, Ser. No. 945,630

Claims priority, application Belgium, Oct. 4, 1977, 181438

Int. Cl.² B01D *59/44*

U.S. Cl. 250—289 **1 Claim**



1. A gas leakage detection apparatus comprising a mass spectrometer with which there is associated a first pumping device for creating a relative vacuum in the apparatus, a selective pumping device having a first pumping speed for air and a second pumping speed for the gas which is to be analysed, said second pumping speed being lower than the said first pumping speed, and a throttling device connected between the selective pumping device and the first pumping device, this throttling device having an opening chosen so as to let through a flow which is very small compared with the flow produced by the selective pumping device for the air.

4,195,225

METHOD FOR ASSAYING ENDOTOXINS

Narbik A. Karamian, Bethesda, Md.

Continuation-in-part of Ser. No. 745,966, Nov. 29, 1976, Pat. No. 4,093,381. This application Jun. 2, 1978, Ser. No. 912,091

The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.

Int. Cl.² G01J *1/42*

U.S. Cl. 250—373 **6 Claims**

1. A process for assaying endotoxins in aqueous liquids at levels as low as 1 to 5 parts per billion comprising the following steps:

(a) introducing a known volume of the sample into a sample cell having a length of at least 12 centimeters,

(b) maintaining the temperature of the sample between 20° and 30° C.,

(c) passing ultra violet radiation of a wave length between 200 and 800 nm thru said liquid sample in the cell,

(d) measuring the absorbance of the detecting radiation at 258 nm.

4,195,226

LUMINESCENT MATERIAL AND PREPARATION AND USE THEREOF

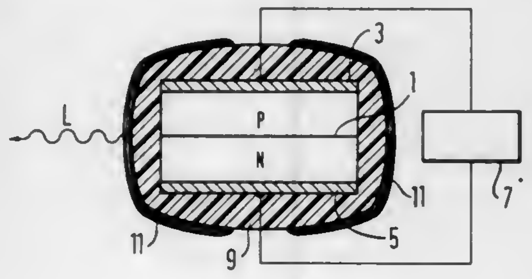
David J. Robbins, Malvern, England, and Dieter H. Bimberg, Grenoble, France, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Munich, Fed. Rep. of Germany

Division of Ser. No. 742,539, Nov. 17, 1976, which is a continuation-in-part of Ser. No. 664,975, Mar. 8, 1976, abandoned, and a continuation-in-part of Ser. No. 664,976, Mar. 8, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,419

Claims priority, application United Kingdom, Mar. 7, 1975, 9664/75; Mar. 7, 1975, 9665/75

Int. Cl.² G01T *1/20;* H01J *31/50;* C09K *11/08;* G01N *21/38*

U.S. Cl. 250—363 R **7 Claims**



1. A scintillator arrangement comprising:

(a) a luminescent material which consists essentially of a pentaphosphate of the formula XP_5O_{14} constituting a solid matrix, a multiplicity of luminescent sites being uniformly distributed throughout said matrix, X being an ion of at least one rare earth metal;

(b) a source of ionizing radiation applied to said material, whereby secondary radiation is emitted by said material; and

(c) means exposed to said secondary radiation for producing a perceptible signal in response to said secondary radiation.

4,195,227

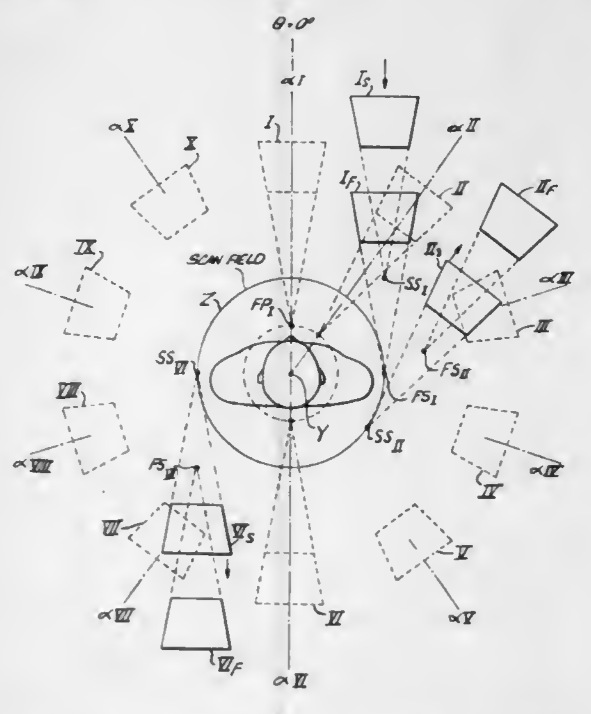
WHOLE BODY IMAGING SYSTEM MECHANISM

Richard W. Carman, Foxboro, and Edward J. Doherty, III, Halifax, both of Mass., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 20, 1978, Ser. No. 917,356

Int. Cl.² G02B *5/00*

U.S. Cl. 250—505 **1 Claim**



1. A scanning apparatus for an array of highly focused collimators comprising a collimator support frame for supporting collimators in an inwardly focused array surrounding a scan field, said collimator supporting frame having opposed spaced apart support plates; a plurality of equally angularly spaced collimator mounts alternately moveably mounted on opposing surfaces of said support plates surrounding the scan field, said collimator mounts being moveable radially toward and away from the axis of said scan field; means for simultaneously moving all said collimator mounts such that alternate collimator mounts move in synchronism radially toward and away from the axis of the scan field; a plurality of carriage means, each moveably engaged to a respective collimator mount, being moveable on such respective collimator mount in a direction transverse to the said radial movement of such collimator mount, annular means rotatably mounted on said collimator support frame surrounding said scan field; a plurality of translating means each pivotally engaged to said annular means opposite and slidably engaged to a respective carriage means; means for rotating said annular means with respect to said collimator support frame to impart motion to each carriage means transverse to the radial movement of the collimator mount moveably engaged thereto; and means for rotating said collimator support frame a predetermined angular increment about the axis of the scan field.

4,195,228

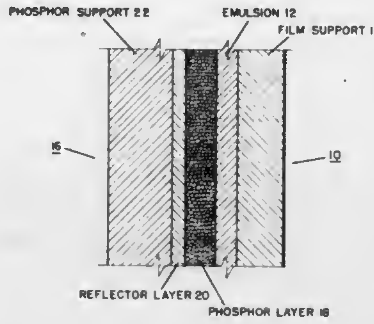
COLOR CONTRAST RADIOGRAPHIC DEVICE

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 19, 1978, Ser. No. 907,441

Int. Cl.² G01J *1/58*

U.S. Cl. 250—483 **8 Claims**



1. An x-ray image converter which comprises a pair of phosphors each capable of converting x-radiation to visible wavelength radiation of different colors and one of said phosphors exhibiting differential absorption of the x-radiation in the 35-50 KeV region due to different K_α edge effects so as to provide a color shift in an associated color photographic film when exposed to said phosphors after passage through a photographed object.

4,195,229

X-RAY PHOTOGRAPHING APPARATUS

Tooru Suzuki, Atsugi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 30, 1977, Ser. No. 865,869

Claims priority, application Japan, Jan. 5, 1977, 52/149

Int. Cl.² G01N *21/34, 23/04*

U.S. Cl. 250—445 T **24 Claims**

1. An X-ray photographing apparatus comprising:

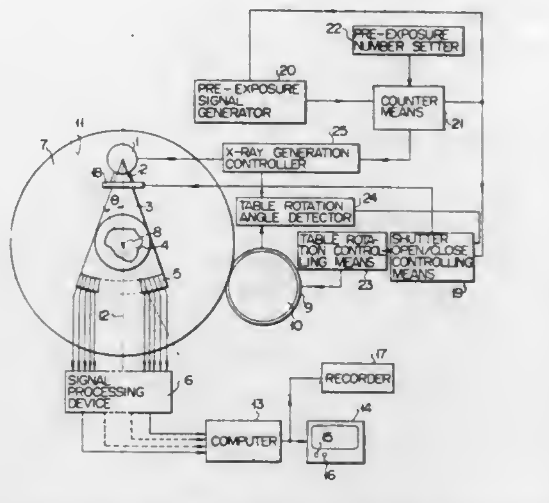
X-ray generating means for generating an X-ray pulse beam;

X-ray shielding means for shutting off the X-ray pulse beam emitted from said X-ray generating means;

means for determining when the output intensity of the X-ray pulse beam from said X-ray generating means reaches a substantially constant level and for generating a pre-exposure termination signal;

means for controlling said X-ray shielding means and for permitting it to be opened upon receipt of said pre-exposure termination signal; and

an X-ray generation controller responsive to said determining means when the output intensity of the X-ray pulse beam from said X-ray generating means does not reach said substantially constant level to maintain said X-ray shielding means in said X-ray pulse beam path and responsive to said controlling means when the output intensity of the X-ray pulse beam reaches said substantially constant level to remove said X-ray shielding means from said X-ray pulse beam path.


22
PRE-EXPOSURE NUMBER SETTER
20
PRE-EXPOSURE SIGNAL GENERATOR
COUNTER MEANS
21
11
7
1
25
X-RAY GENERATION CONTROLLER
18
2
3
24
TABLE ROTATION ANGLE DETECTOR
8
4
TABLE ROTATION CONTROLLING MEANS
SHUTTER OPEN/CLOSE CONTROLLING MEANS
5
23
19
12
9
10
17
RECORDER
SIGNAL PROCESSING DEVICE
6
13
14
COMPUTER
15
16

4,195,230

INPUT SCREEN

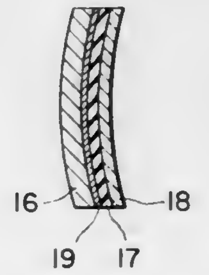
Saburo Ataka, Tokyo; Kiyohisa Inao, Hachioji; Kanetosi Tada, Nagano; Yoshinori Okamura, and Isamu Kimura, both of Yamanashi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of, Japan

Filed Mar. 28, 1978, Ser. No. 891,033

Claims priority, application Japan, Apr. 1, 1977, 52-36126

Int. Cl.² G01J *1/58*

U.S. Cl. 250—483 **11 Claims**



1. An input screen of an X-ray image intensifier tube comprising a substrate of aluminum or aluminum alloy; an evaporated aluminum film deposited on a major surface of said substrate, the surface of said evaporated aluminum film not adjacent said substrate being smooth; a continuous, smooth cesium iodide film deposited on said evaporated aluminum film, said evaporated aluminum film acting to substantially prevent unevenness, cracking and exfoliation of said cesium iodide film and to create a strong bond between the substrate and the cesium iodide film; and a photoelectric film deposited on said cesium iodide film, whereby degradation of a picture produced by said input screen due to cracks in or exfoliation of said cesium iodide film or an uneven surface of said cesium iodide film is substantially prevented.

4,195,231

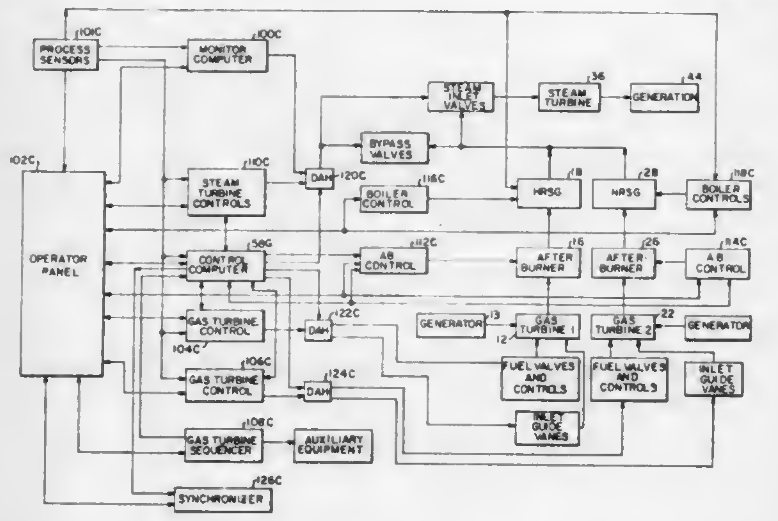
COMBINED CYCLE ELECTRIC POWER PLANT HAVING AN IMPROVED DIGITAL/ANALOG HYBRID GAS TURBINE CONTROL SYSTEM

Terry J. Reed, North Huntingdon; Jack R. Smith, Pittsburgh, and Roy W. Kiscaden, Springfield, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,726

Int. Cl.² H02P *9/04*

U.S. Cl. 290—40 R **8 Claims**



1. A combined cycle electric power plant comprising at least one gas turbine, means for generating steam in response to heat energy from said gas turbine, a steam turbine driven by steam supplied to it from said steam generating means, means for generating electric power under the driving power of said turbines, means for controlling the operation of said turbines and said steam generating means, said controlling means including a gas turbine control system having means for controlling the flow of fuel to said gas turbine, digital computer means for generating a fuel control signal during automatic gas turbine operation, a backup analog control for said gas turbine, means for transferring said controlling means between automatic and backup modes of operation, a digital/analog interface circuit for coupling said digital computer means for and said analog control to said fuel flow controlling means, said digital computer means including means for generating a speed control output and a megawatt load control output respectively during automatic speed and load modes of gas turbine operation, said digital computer means further including means for limiting the speed and load outputs to limit blade path temperature, means for generating the computer fuel control signal in response to said speed and load outputs, said analog control including a startup control which applies a fuel control signal to said interface circuit to control speed during startup and to control load during the load mode, a blade path temperature limit control coupled to the input of said interface circuit to hold or run back the fuel control signal output from said interface circuit for blade path temperature limiting and predetermined limit controls being connected between said gas turbine interface circuit and said fuel controlling means to limit the fuel control·signal in both the automatic and manual gas turbine modes.

4,195,232

SELECTION ACKNOWLEDGEMENT SYSTEM FOR A LAUNDRY APPLIANCE

Roque D. Marcade, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 26, 1978, Ser. No. 872,603

Int. Cl.² G08B *1/08*

U.S. Cl. 307—130 **14 Claims**

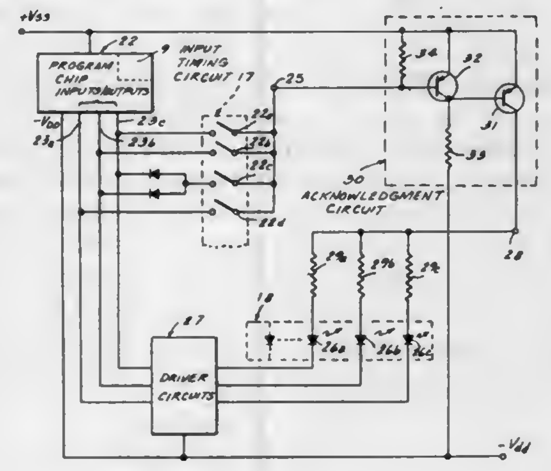
1. A selection acknowledgment system for a programmable laundry appliance having a plurality of user-selected functions and associated logic circuitry to implement said functions, said logic circuitry operating such that a delay of a fixed period exists between a time when a user selects and a time when said selected function is initiated by said appliance, said logic circuitry providing indication to the user that said selected function has been entered into the appliance program at the end of said fixed delay, said acknowledgment system comprising:

a plurality of function selection switches;

a plurality of normally on function indicator lights;

program circuit means for controlling functions during operation of the laundry appliance, said program circuit means including a plurality of control lines, at least some of said control lines connecting both to a respective function selection switch and to a respective function indicator light; and

acknowledgment switching means connected to said function selection switches and function indicator lights for immediately extinguishing said function indicator lights when one of said function selection switches is operated by a user, thereby immediately informing the user that a selected function has been entered into said program circuit means.



4,195,233

INVERTER STARTING SYSTEM

János Udvardi-Lakos, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

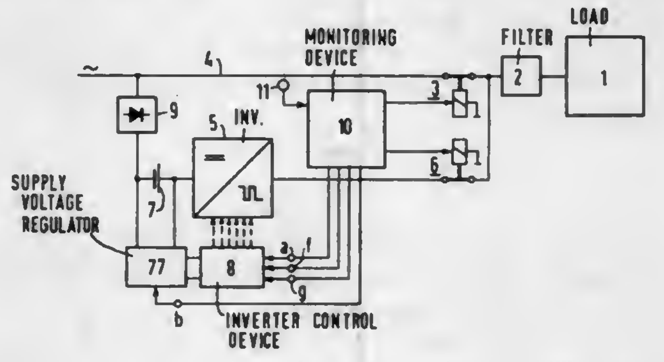
Filed Jan. 27, 1978, Ser. No. 872,834

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706395

U.S. Patent Mar. 25, 1980 Sheet 1 of 2

Int. Cl.² H02J *9/06*

U.S. Cl. 307—66 **5 Claims**



1. In an inverter adapted for alternating standby or load operation, which comprises a power section with controlled main valves and a control device with a control unit having an oscillator with a time determining capacitor for forming firing pulses and a monitoring device for a single or three phase network for generating a disturbance signal and forming a start command upon sensing a disturbance, the improvement comprising start control logic means coupled to be operative in standby operation, said start control logic having an input coupled to sense at least one parameter of the monitored network voltage and including a memory for storing said at least one parameter of the network voltage in the event of a disturbance and means to charge the time determining capacitor of said oscillator, in dependence on the value stored in said memory, to a voltage which will cause the control unit to deliver firing pulses to the control valves in the power section of the inverter, upon occurrence of the disturbance signal, in such a manner that the firing pulses supplied to said power section cause it to have an output voltage when it begins operating which corresponds to the stored parameter of the network voltage at the instant of the disturbance.

4,195,234

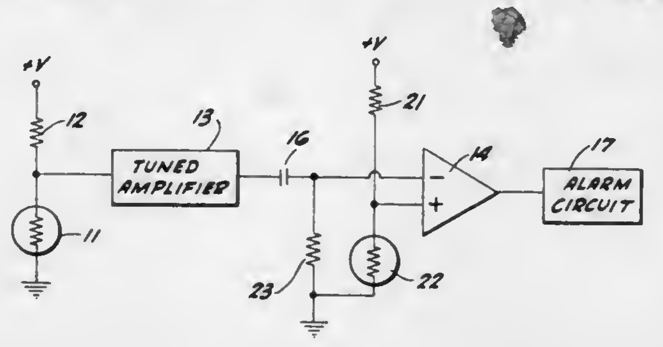
INFRARED INTRUSION ALARM SYSTEM WITH TEMPERATURE RESPONSIVE THRESHOLD LEVEL

Herbert L. Berman, Los Altos Hills, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Feb. 2, 1978, Ser. No. 874,380

Int. Cl.² H01J *39/00;* **H01H** *47/24*

U.S. Cl. 307—117 **8 Claims**



1. In a system for detecting the presence of an intruder in a protected area by a change in infrared energy from an ambient level to a threshold level: means including a sensing element for providing an electrical signal in response to a change in the infrared energy, means for providing a reference signal corresponding to the threshold level, means responsive to the electrical signal and the reference signal for delivering an output signal when the energy in the protected area reaches the threshold level, and means responsive to the ambient temperature in the protected area for adjusting the level of the reference signal to maintain a substantially constant sensitivity notwithstanding changes in the ambient temperature.

4,195,235

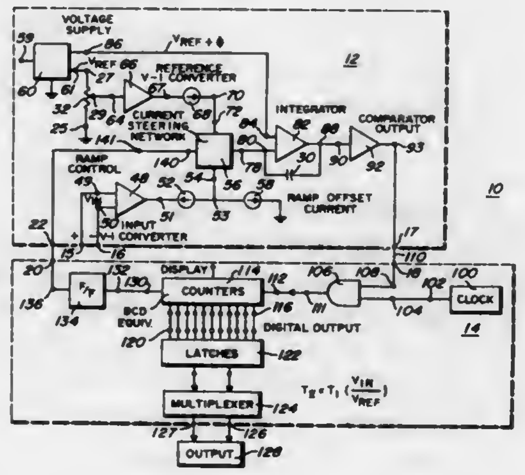
ANALOG-TO-DIGITAL CONVERTER SYSTEM

John A. Schoeff, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 570,908, Apr. 23, 1975, Pat. No. 4,092,726, which is a division of Ser. No. 370,519, Jun. 15, 1973, abandoned. This application Nov. 14, 1977, Ser. No. 851,250

Int. Cl.² H03K *1/14;* **G08C** *5/00*

U.S. Cl. 307—229 **6 Claims**



1. A circuit for processing a changing analog voltage for use in an electrical system providing a control signal, the circuit including in combination:

first voltage-to-current converter means having input terminals connected to receive the analog voltage and an output terminal, said first voltage-to-current converter means providing an analog current at said output terminal having a magnitude proportional to the magnitude of the changing analog voltage and a first direction;

current steering means having a first input terminal, a second input terminal connected to said output terminal of said first voltage-to-current converter means, a control terminal connected to receive the control signal, and an output terminal, said current steering means electrically connecting one of said first and second terminals to said output terminal thereof during the absence of the control signal, said current steering means being responsive to the control signal to connect the other of said first and said second terminals to said output terminal thereof; and

reference current means having a reference voltage amplifier with input and output terminals, voltage supply means for providing a reference voltage of substantially constant magnitude to one of said input terminals of said voltage reference amplifier, and second voltage-to-current converter means having a first terminal connected to said output terminal of said reference voltage amplifier and an output terminal coupled to said first input terminal of said current steering means, said second voltage-to-current converter means providing a reference current which has a substantially constant predetermined magnitude that is proportional to the magnitude of said reference voltage and a second direction.

4,195,236

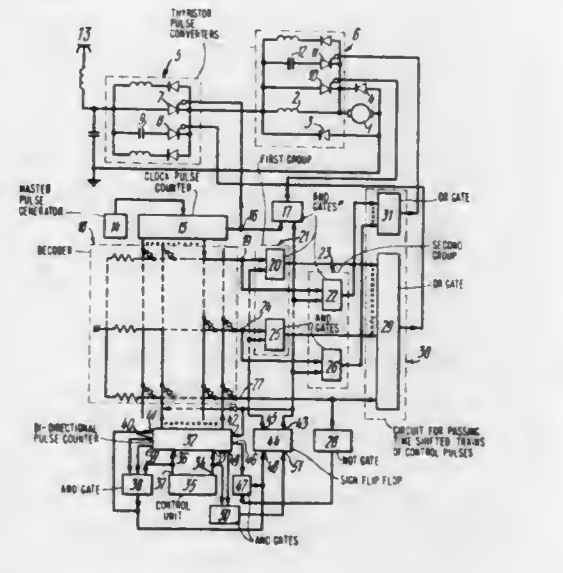
DEVICE FOR DISCRETE CONTROL OF THYRISTOR-PULSE CONVERTERS

Anatoly Y. Kallnichenko; Viktor I. Kirillov; Aron A. Rabinovich; Vladimir V. Maleev, and Vagiz S. Sakaev, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia, Moscow, U.S.S.R.

Filed Mar. 23, 1978, Ser. No. 889,411

Int. Cl.² H03K *17/72*

U.S. Cl. 307—252 K **1 Claim**



1. A device for discrete control of thyristor-pulse converters, each converter comprising power thyristors, comprising:

a master pulse generator having an output;

a control unit having an add output and a subtract output;

a clock pulse counter having a complementing input, a control output and a plurality of logic outputs whose number is equal to twice the number of digits, the complementing input of said clock pulse counter being connected to the output of said master generator, and the control input being connected to the power thyristor of one of said thyristor-pulse converters;

a bidirectional pulse counter having an add input, a subtract input, a reset input receiving a signal resetting the bidirectional pulse counter, a setting input receiving a signal setting the bidirectional pulse counter to its final state, a first output producing a signal at the first control phase, a second output producing a control start signal, a third output producing a signal indicative of the maximum pulse duration being attained, a fourth output producing a signal indicative of the state of the bidirectional pulse counter, corresponding to the maximum pulse duration of the output parameter of one of said thyristor-pulse converters, and a plurality of logic outputs whose number is equal to the number of logic outputs of said clock pulse counter and is equal to twice the number of digits, said bidirectional pulse counter being connected through said add input and said subtract input to the add output and the subtract output of said control unit, respectively;

a decoder matching the operation of said clock pulse counter and said bidirectional pulse counter, and having a plurality of inputs, a first output bus producing a signal determining the initial pulse duration, a second output bus producing a signal determining the penultimate value of the pulse duration, and a third output bus producing a signal determining the maximum pulse duration, said decoder being connected through said inputs to the logic outputs of said clock pulse counter and to the logic outputs of said bidirectional pulse counter;

a first individual AND gate having a first input, a second input and an output, and being connected through its first input to the control output of said clock pulse counter and connected through its output to said power thyristor of a second thyristor-pulse converter;

first and second groups of AND gates, the number of AND gates in each group being determined by the number of digits of said clock pulse counter and said bidirectional pulse counter and by the reuired control range of the output parameter of said thyristor-pulse converters, each AND gate of said groups having a first input, a second input and an output, said first input being connected to said first output bus of said decoder;

a NOT gate having an input and an output, said input being connected to the third output bus of said decoder;

a sign flip-flop having a first input, a second input, a first output and a second output, the first output of said sign flip-flop being connected to the second inputs of said AND gates of the first group, the second output being connected to the second input of said first individual AND gate, to the second inputs of said AND gates of the second group, and to the reset input of said bidirectional pulse count;

a second individual AND gate having a first input, a second input and an output, the first input being connected to the output of said NOT gate, the second input being connected to the second output of said bidirectional pulse counter, and the output being connected to the first input of said sign flip-flop;

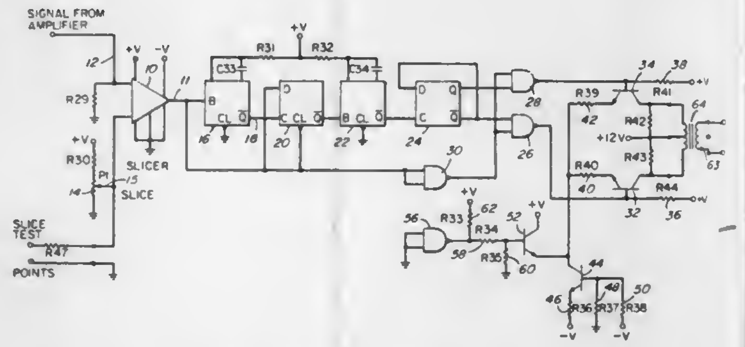
a third individual AND gate having a first input, a second input and an output, the first input being connected to the add output of said control unit, the second input being connected to the third output of said bidirectional pulse counter, and the output of said third AND gate being connected to the second input of said sign flip-flop;

a fourth individual AND gate having a first input, a second input, a third input, and an output, the first input of said fourth AND gate being connected to the subtract output of said control unit, the second input being connected to the first output of said bidirectional pulse counter, the third input being connected to said fourth output of said bidirectional pulse counter, and the output being connected to the first input of said sign flip-flop and to the setting input of said bidirectional pulse counter; and

a circuit for passing the time-shifted trains of control pulses fed from the output buses of said decoder to the power thyristors of said thyristor-pulse converters, said circuit including at lease one OR gate, each OR gate of said circuit having inputs, the number of inputs being equal to the number of AND gates in said groups, each said OR gate of said circuit being connected through said inputs to the outputs of said AND gates of one of said groups and being connected through an output to said power thyristor of one of said thyristor-pulse converters.

4,195,237
UNIPOLAR TO BIPOLAR CONVERTER

George J. Meslener, Acton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Filed May 8, 1978, Ser. No. 904,108
Int. Cl.^{2} H03K *5/00*
U.S. Cl. 307—261 **6 Claims**



1. A unipolar to bipolar converter comprising:

a source of unipolar data pulses each having a pulse width in excess of a time duration t and of noise pulses each having a pulse width less than said time duration t;

first one-shot multivibrator means having an input coupled to said source, said means normally providing a first output signal therefrom indicative of one binary state and switching to a second output signal therefrom indicative of the other binary state for said time duration t when said means receives the leading edge of one of said pulses;

first flip-flop means having an input coupled to receive the output signals of said first one-shot multivibrator means, and being coupled to receive said pulses from said source, said flip-flop means providing a first output signal of one fixed binary state upon the simultaneous presence of one of said source pulses and said first one-shot multivibrator means one binary state output signal, said flip-flop means otherwise providing a second output signal of the opposite fixed binary state;

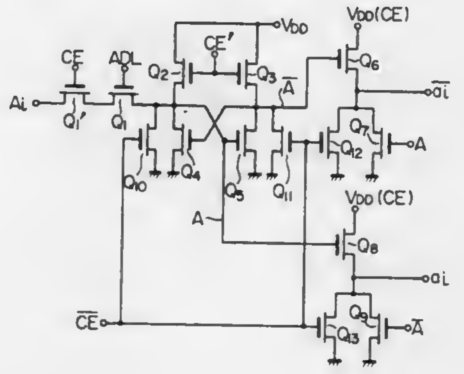
second one-shot multivibrator means having an input coupled to receive the output signals from said first flip-flop means, said second one-shot multivibrator means normally providing a first output signal therefrom indicative of one binary state and switching to a second output signal therefrom indicative of the other binary state for a time duration t_1 when said second one-shot multivibrator means receives the trailing edge of said first flip-flop means first output signal;

second flip-flop means having an input coupled to receive the output signals of said second one-shot multivibrator means, said second flip-flop means providing alternate output signals indicative of two binary state, said second flip-flop means changing from one state to another upon the receipt of the trailing edge of said second one-shot multivibrator means second output signal; and

means controlled by said second flip-flop means and said source for providing an output signal which corresponds to the alternate switching of the polarity of said source pulses dependent upon the state of said second flip-flop means alternate output signals.

4,195,238
ADDRESS BUFFER CIRCUIT IN SEMICONDUCTOR MEMORY

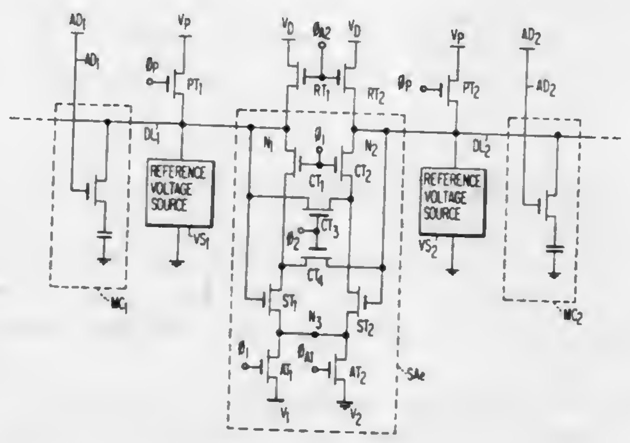
Takashi Sato, Kodaira, Japan, assignor to Hitachi, Ltd., Japan
Division of Ser. No. 692,367, Jun. 3, 1976, Pat. No. 4,074,148.
This application Jan. 3, 1978, Ser. No. 866,370
Claims priority, application Japan, Jun. 4, 1975, 50-66565
The portion of the term of this patent subsequent to Feb. 14, 1995, has been disclaimed.
Int. Cl.^{2} H03K *3/286, 3/353;* G11C *8/00*
U.S. Cl. 307—270 **11 Claims**



1. A driver circuit in an address buffer for a memory circuit comprising first, second, third, and fourth MISFETs, each having a source, a drain and a gate and in which the sources of said first and third MISFETs are respectively coupled to the drains of said second and fourth MISFETs for providing outputs of the buffer, characterized in that the gates of said first and third MISFETs are respectively coupled to complementary address input sources for providing complementary input signals, that the gates of said second and fourth MISFETs are cross-coupled to the drains thereof, and that output terminals are respectively connected to the drains of said second and fourth MISFETs, thereby causing one of complementary output signals appearing at either one of said output terminals in response to said complementary input signals to clamp to a potential provided to the source of said second and fourth MISFETs.

4,195,239
FLIP-FLOP COMPRISING TWO FIELD EFFECT TRANSISTORS CONTROLLABLY CONNECTED TO NODES OF THE FLIP-FLOP AND THEN CROSSWISE TO SERVE AS A SENSE AMPLIFIER

Shunichi Suzuki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Filed May 24, 1978, Ser. No. 909,086
Claims priority, application Japan, May 24, 1977, 52-60609
Int. Cl.^{2} H03K *5/20, 3/286, 3/353;* G11C *7/06*
U.S. Cl. 307—355 **7 Claims**



1. A sense amplifier for use in combination with sources of a first and a second activation voltage, said sense amplifier having a first and a second node and an activation point and comprising:

precharge means for precharging said first and second nodes to a precharge voltage;

a first field effect transistor having an insulated gate connected to said first node, and a first of source and drain connected to said activation point;

a second field effect transistor having an insulated gate connected to said second node, and a first of source and drain connected to said activation point;

first control means between said first node and a second of the source and drain of said first field effect transistor for controllably electrically connecting and disconnecting said first node to and from said second of the source and drain of said first field effect transistor;

second control means between said second node and a second of the source and drain of said second field effect transistor for controllably electrically connecting and disconnecting said second node to and from said second of the source and drain of said second field effect transistor simultaneously with the connection and the disconnection effected by said first control means, respectively;

third control means between said first node and said second of the source and drain of said second field effect transistor for controllably electrically connecting said first node to said second of drain and source of said second field effect transistor in substantial coincidence with the disconnection effected by said first and said second control means;

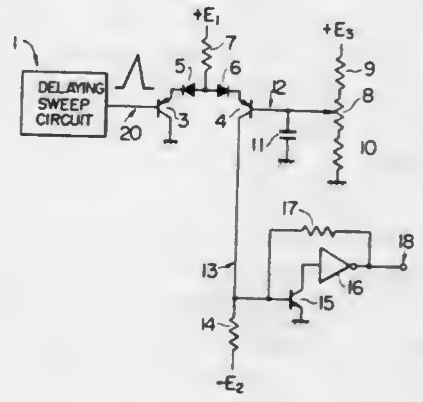
fourth control means between said second node and said second of the source and drain of said first field effect transistor for controllably electrically connecting said second node to said second of drain and source of said first field effect transistor simultaneously with the connection effected by said third control means;

first activation means for electrically connecting and disconnecting said activation point to and from the source of said first activation voltage in substantial coincidence with the connection effected by said first and said second control means and simultaneously with the disconnection effected by said first and said second control means, respectively; and

second activation means for electrically connecting said activation point to the source of said second activation voltage after the disconnection effected by said first and said second control means, wherein said first activation voltage is higher than said second activation voltage by at least the higher threshold voltage between said first and second transistors and is lower than said precharge voltage by at least said higher threshold voltage.

4,195,240
VOLTAGE COMPARATOR CIRCUIT HAVING DEAD ZONE

Kiyoshi Otofuji, Kodaira, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Japan
Filed Nov. 9, 1977, Ser. No. 849,791
Claims priority, application Japan, Jun. 3, 1977, 52-64686
Int. Cl.^{2} H03K *5/153*
U.S. Cl. 307—362 **4 Claims**



1. A voltage comparator circuit comprising:

a differential amplifier for receiving a changing input voltage which rises from a minimum voltage level and a predetermined reference voltage to produce at its output a signal corresponding to the difference between both said voltages; and

a dead zone forming circuit means including an emitter-grounded transistor whose base is connected directly to the output of said differential amplifier, a polarity inverting IC gate whose input is connected to the collector of said emitter-grounded transistor, and a resistor which positive-feeds back the output of said IC gate to the base of said emitter-grounded transistor, the resistance value of said resistor determining the width of the dead zone formed by the dead zone forming circuit, said IC gate producing an output signal after the time for which the level of said input voltage changes from its minimum voltage level to reach the level of said predetermined reference voltage.

4,195,241

CONTACTLESS CONTROL PULSE GENERATOR FOR ROTARY MACHINE TIMING

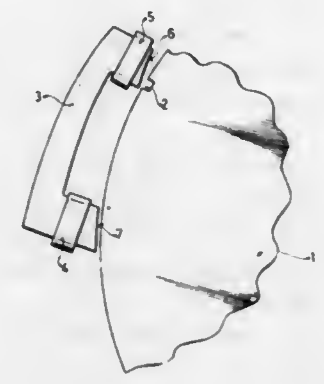
Heinz Möller, Stuttgart, and Joachim Hess, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1977, Ser. No. 833,030

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646887

Int. Cl.^{2} H02K *19/20*

U.S. Cl. 310—168 **6 Claims**



1. A contactless control pulse generator for synchronizing electrically produced events with rotary movement in a machine, comprising, in combination:

a rotor (1) having at least its peripheral region made of magnetically conducting material,

a U-shaped stator (3) made of magnetically conducting material with its legs facing, adjacent to, and spaced by a gap from, the peripheral portion of said rotor (1), said stator being equipped with a magnet (4) and an electrical pick-up device (5) provided at different locations on said stator, said electrical pick-up device (5) of said stator (3) being constituted so as to produce an electrical signal in response to a change in magnetic flux in a magnetic circuit through said stator,

said rotor having at least one irregularity (2) of a configuration and location suitable for producing, as the rotor rotates, a change in the magnetic resistance of the magnetic circuit through said stator and said rotor, and

one of said stator legs having an end facing the rotor which is broader, in the circumferential direction, than said irregularity (2) of said rotor and the other of said stator legs presenting a peaked linear ridge to the air gap between it and the rotor, said linear ridge running substantially across the width of the periphery of the rotor.

4,195,242

BRUSH DEVICE

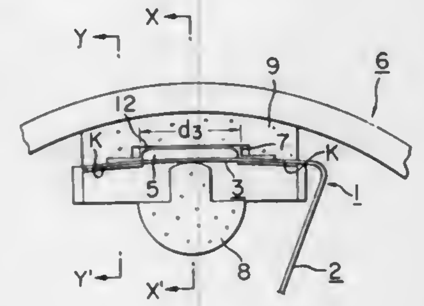
Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1977, Ser. No. 841,362

Claims priority, application Japan, Apr. 28, 1977, 52/54467[U]; May 27, 1977, 52/61927; Jun. 3, 1977, 52/72104[U]; **Jul. 13, 1977, 52/93057[U]; Jul. 13, 1977, 52/93058[U]**

Int. Cl.^{2} H02K *13/00*

U.S. Cl. 310—239 **15 Claims**



1. A brush device integrally constructed with a commutator slide, a brush base extending from the commutator slide and a terminal portion extending from the brush base, the brush device being operatively supported when the brush base is inserted into a terminal insert hole having an inside wall surface, the terminal insert hole being provided on a motor case cover, characterized in that the brush device has a cut and raised piece on the brush base portion thereof, the cut and raised piece having a sharp burr on the edge of its tip on the side thereof contacting the inside wall surface of the terminal insert hole, and that the sharp burr provided on the tip of the cut and raised piece on the brush base contacts and cuts into the inside wall surface to secure the brush device in the terminal insert hole.

4,195,243

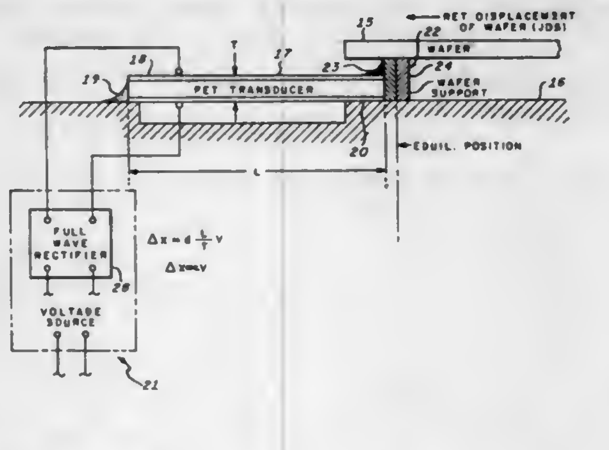
PIEZOELECTRIC WAFER MOVER

James B. Thaxter, Townsend, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,273

Int. Cl.^{2} H01L *41/10*

U.S. Cl. 310—317 **7 Claims**



1. Apparatus for effecting movement of an object relative to a reference comprising:

transducer means having a portion thereof fixed with respect to the reference;

means frictionally coupling said transducer means to said object; and

means for applying a potential difference to said transducer means to accelerate said frictional coupling means and said transducer means, the potential difference being selectively capable of exceeding the critical acceleration of said object with respect to said frictional coupling means for effecting relative motion between said frictionally coupling means and said object.

4,195,244

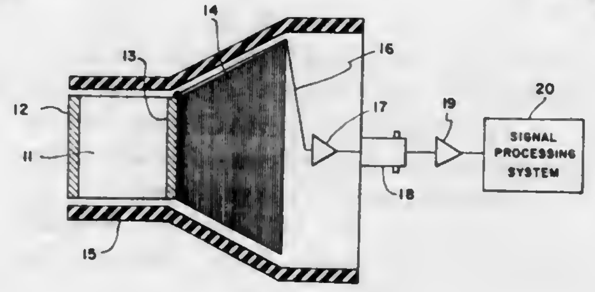
CDS SOLID STATE PHASE INSENSITIVE ULTRASONIC TRANSDUCER

Joseph S. Heyman, Gloucester, Va., assignor to The United States of America a. represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 26, 1978, Ser. No. 928,130

Int. Cl.^{2} H01L *41/18*

U.S. Cl. 310—311 **6 Claims**



1. An ultrasonic phase insensitive transducer comprising:

a CdS crystal annealed in an inert atmosphere at a temperature and for a period of time to provide substantially maximum acoustic attenuation at the operating frequency of the crystal; and

first and second electrodes attached to said CdS crystal.

4,195,245

SEALED BEAM LAMP FOR AUTOMOBILE

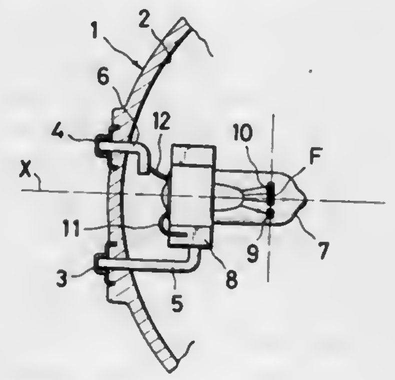
Hideo Miyazawa, Mitaka, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,491

Claims priority, application Japan, Jun. 20, 1977, 52-80826[U]

Int. Cl.^{2} H01J *5/16, 61/40;* **H01K** *1/26, 1/30*

U.S. Cl. 313—113 **6 Claims**



1. A sealed beam lamp for an automobile comprising:

a reflector having a rotary axis,

a halogen bulb mounted on said reflector, and

a plurality of filaments disposed in said halogen bulb, said plurality of filaments being arranged one above the other in a substantially vertical direction substantially on a common line running in a direction perpendicular to said rotary axis of said reflector.

4,195,246

SUPPORT STRUCTURE FOR DIRECTLY-HEATED CATHODE OF CATHODE RAY TUBE

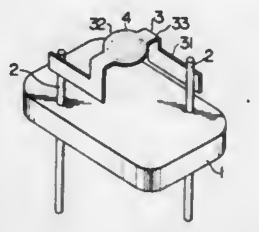
Yukihiro Izumida; Kitaro Sasaki, both of Mobara, and Yoshinobu Miyamoto, Chiba, all of Japan, assignors to Hitachi, Ltd., Japan

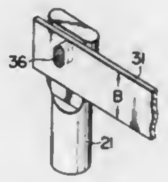
Filed Oct. 10, 1978, Ser. No. 949,403

Int. Cl.^{2} H01J *1/15*

U.S. Cl. 313—292 **3 Claims**

1. A support structure for a directly-heated cathode of a cathode ray tube, comprising a base of insulating material and support rods which pierce said base and is rigidly fixed to said base and to which strip leads of said cathode are fixed through resistance welding, wherein said support rods are provided in their predetermined positions with respective protrusions having top plane areas which are to be contacted with the surface of said strip leads, the length of said top plane area extending in the direction of the width of said strip lead being 30–80% of the size of said width of said strip lead, and said strip leads are fixed to said support rods by welding said strip leads to said protrusions through resistance welding.





4,195,247

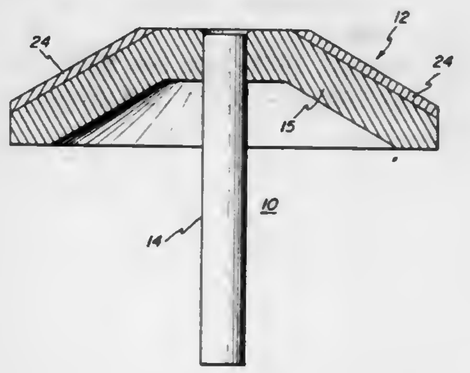
X-RAY TARGET WITH SUBSTRATE OF MOLYBDENUM ALLOY

Harold H. Hirsch, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,290

Int. Cl.^{2} H01J *35/08*

U.S. Cl. 313—330 **9 Claims**



1. In a rotating X-ray target comprising a molybdenum-containing body and a tungsten-containing focal track supported thereon, the improvement wherein the molybdenum-containing body comprises molybdenum alloyed with at least one additive from the group consisting of iron, silicon cobalt, hafnium carbide, thorium oxide, zirconium oxide, titanium dioxide, aluminum oxide, magnesium oxide, silicon dioxide, yttrium oxide, and the rare earth metal oxides, wherein the content of molybdenum is at least about 90 percent by weight and the amounts of iron, silicon, cobalt or hafnium carbide, when present, fall in the following ranges:

iron—0.05 to 0.3 percent by weight,
silicon—0.05 to 0.3 percent by weight,
cobalt—0.05 to 0.3 percent by weight,
hafnium carbide—0.1 to 5 percent by weight of the molybdenum content,

the total additive content being in the range of from about 0.05 percent to abou 10 percent by weight.

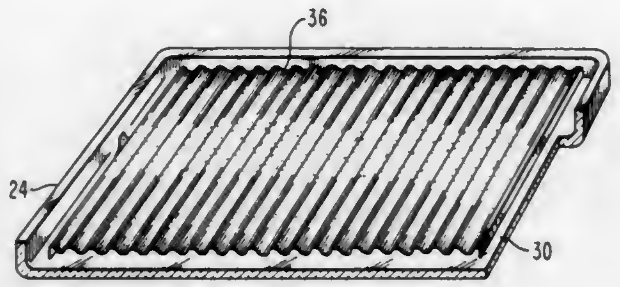
4,195,248
COLOR PICTURE TUBE HAVING IMPROVED CORRUGATED MASK

Ralph J. D'Amato, and Robert P. Stone, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 8, 1978, Ser. No. 940,577

Int. Cl.^{2} H01J *29/07*

U.S. Cl. 313—403 **10 Claims**



1. In an apertured mask type color picture tube having a faceplate, a cathodoluminescent screen on the faceplate, a corrugated apertured mask adjacent the screen and electron gun means for producing a plurality of electron beams and directing said beams through said mask to impinge upon said screen wherein the mask corrugations are substantially parallel and extend in a first direction with the corrugated waveform extending in a second direction, said mask including an aperture-to-aperture spacing variation in the second direction which is a function of mask-to-screen spacing, the improvement comprising:

the mask further including a variation in aperture-to-aperture spacing which increases with decreasing electron beam angle of incidence relative to said mask and decreases with increasing electron beam angle of incidence relative to said mask.

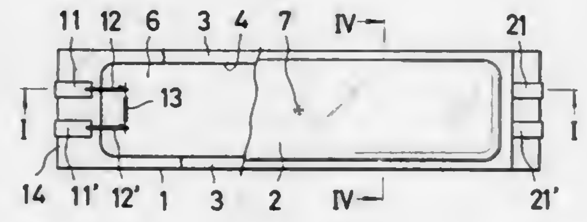
4,195,249
FLAT TYPE OF FLUORESCENT LAMP

Kazuo Ariga, Tokyo; Norimasa Oinuma, Machida, and Mitunari Yoshida, Tokyo, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1978, Ser. No. 937,920

Int. Cl.^{2} H01J *61/32, 61/36, 61/42*

U.S. Cl. 313—493 **6 Claims**



1. A flat fluorescent lamp comprising

first and second elongated shells, each shell having peripheral joint portions adapted to be sealed together, each of said first and second shells having depths substantially less than the distance between opposing joint portions;

means for sealing said peripheral joint portions of said elongated shells together so that said elongated shells form a sealed elongated hollow body;

at least two rigid plate-like surfaces projecting outwardly from respective opposite ends of said sealed elongated hollow body, said plate-like surfaces extending from one of said elongated shells;

at least two pairs of conductors, each pair extending from a respective one of said plate-like surfaces at said respective opposite ends of said elongated sealed hollow body to within said sealed hollow body;

a discharge electrode supported by and electrically connected between the conductors of each pair of said conductors and being located within said sealed elongated hollow body and defining a substantially linear discharge path therebetween; and

at least two pairs of flat metallic strips, each pair of flat metallic strips being adhesively mounted on a respective one of said plate-like surfaces at respective ends of said sealed elongated hollow body and electrically connected to the respective conductors of the corresponding pair of said wires.

4,195,250
AUTOMATIC MEASURING AND TOOL POSITION COMPENSATING SYSTEM FOR A NUMERICALLY CONTROLLED MACHINE TOOL

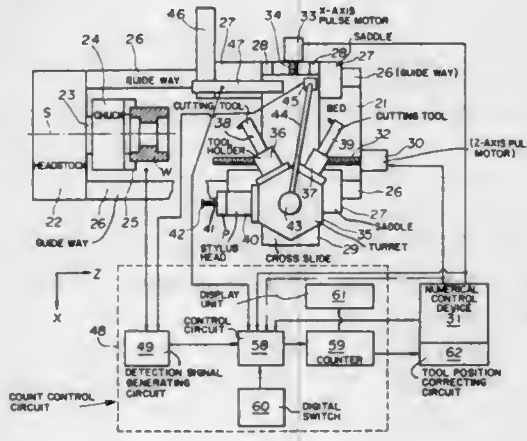
Tamotsu Yamamoto, Sagamihara, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1977, Ser. No. 855,520

Claims priority, application Japan, Dec. 8, 1976, 51-147386; Jul. 8, 1977, 52-90538[U]

Int. Cl.^{2} G05B *13/00*

U.S. Cl. 318—561 **5 Claims**



1. In an automatic measuring and tool position compensating method for a numerically controlled machine tool comprising the steps of putting the dimension of a stylus secured to a stylus head and a desired dimension of a workpiece to be machined into a count control circuit, moving said stylus under numerical control to bring said stylus alternately into contact with two opposite points on a workpiece to be measured, and measuring an amount of movement of said stylus head effected for a period of time between an instant when said stylus leaves from one of said two points on said workpiece and an instant when said stylus leaves from the other point of said workpiece by counting a train of pulses for measurement generated in a digital type measuring device to provide a measurement value, the improvement comprising additionally inputting said measurement value into said count control circuit for effecting the measurement of an actual dimension, the amount of deviation of the workpiece and the required compensation of the tip position of the relevant tool through a process of addition and substraction.

4,195,251
HIGH INTENSITY DISCHARGE LAMP HAVING SAFETY DEVICE WITH PYROPHORIC MATERIAL

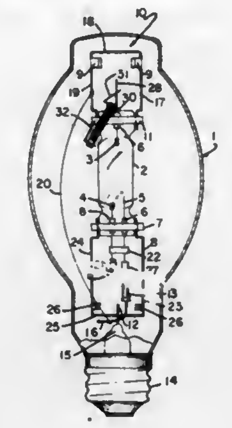
William I. Bamberg, Medford, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jun. 22, 1978, Ser. No. 917,993

Int. Cl.^{2} H01J *17/34*

U.S. Cl. 315—73 **3 Claims**

1. In a high intensity arc discharge lamp of the type having an arc tube within an outer envelope which contains either a vacuum or an inert gas, the improvement which comprises means to render the arc tube inoperative when the outer envelope is damaged sufficiently to admit air therewithin, said means comrpising a pyrophoric conductor electrically in series with the arc tube, said pyrophoric conductor being of the type that will spontaneously ignite in the presence of air at a temperature somewhat above room temperature, said pyrophoric conductor comprising a yarn of loosely wound filaments of a combustible metal coated with a powdered reaily ignitable material.



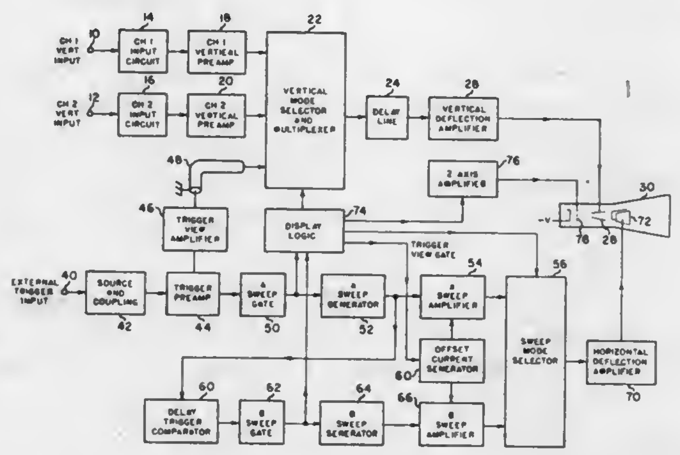
4,195,252
ZERO DELAY TRIGGER VIEW

Ronald W. Roberts, Cornelius, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 16, 1978, Ser. No. 961,437

Int. Cl.^{2} G01R *13/28*

U.S. Cl. 315—392 **7 Claims**



1. In an oscillographic device having vertical and horizontal deflection systems, a circuit for providing an apparent time shift of a preselected waveform display, comprising:

a sweep generator for generating a sweep sawtooth signal the width of which is substantially coincident with the time interval of said waveform display;

means for generating a gate signal the gate width of which is substantially coincident with the time interval of said waveform display;

means coupled to said gate signal generating means for generating a predetermined offset current during the time interval that said gate signal is generated;

means for combining said sweep sawtooth signal and said offset current to produce a sawtooth voltage the level of which is shifted by a predetermined level; and

means for coupling said sawtooth voltage to said horizontal deflection system.

4,195,253
METHOD OF AGEING A GAS DISCHARGE LAMP

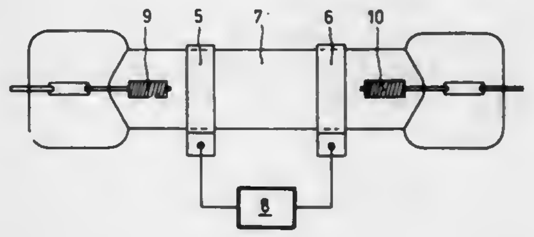
Peter C. Drop; Walter J. R. de Rop, and Robert L. M. E. Maes, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 745,957, Nov. 29, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,164

Claims priority, application Netherlands, Dec. 4, 1975, 7514124

Int. Cl.^{2} H01J *9/44*

U.S. Cl. 316—1 **6 Claims**



1. A method for reducing the starting voltage in an arc discharge lamp which comprises: an arc discharge lamp providing lamp having a vacuum-tight sealed light-transmissive discharge vessel in which at least first and second electrodes are disposed and which contains a gas filling, and producing a high frequency glow discharge in said discharge vessel for a finite time interval.

4,195,254
CONTROL CIRCUIT FOR A D.C. MOTOR

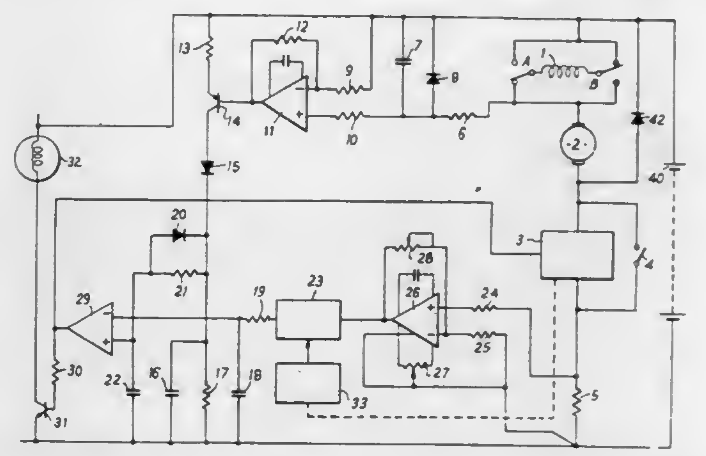
David Gurwicz, Gateshead, England, and Grant C. Melocik, Chardon, Ohio, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 14, 1978, Ser. No. 924,583

Claims priority, application United Kingdom, Aug. 3, 1977, 32576/77

Int. Cl.^{2} H02P *5/10*

U.S. Cl. 318—334 **5 Claims**



1. A circuit for controlling the temperature of a d.c. motor having an armature and a field winding, comprising:

a chopper control circuit connected in series with the field winding and armature;

voltage sensing means for sensing the resistive voltage drop across the field winding due to current flow in the winding;

current sensing means for sensing current in the field winding, said current sensing means including means for deriving a voltage proportional to said current having a current shunt connected in series with the chopper control circuit;

comparing means for comparing the sensed voltage across the field winding with the voltage proportional to said current and providing an output signal when the comparison indicates that the temperature of the field winding exceeds a predetermined level; and

a sample and hold circuit operable to sense and retain a voltage proportional to the voltage across the current shunt during each "on" period of the chopper control circuit and to supply the retained voltage to the comparing means, the output from the comparing means limiting the mark-space ratio of the chopper control circuit and controlling the armature current, the chopper control circuit reducing the armature current of the motor in response to receiving the output signal from the comparing means.

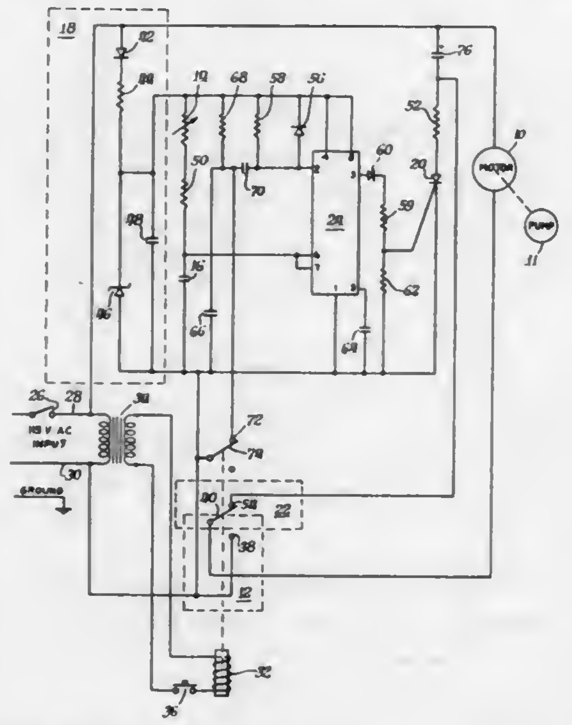
4,195,255
ELECTRONIC BRAKE FOR AC MOTORS

Emil J. Guttmann, Morton Grove, Ill., assignor to Cole-Parmer Instrument Company, Chicago, Ill.

Filed Dec. 5, 1977, Ser. No. 857,214

Int. Cl.^{2} H02P *3/18*

U.S. Cl. 318—762 12 Claims



1. A circuit for electronically braking a motor operated by an AC power source comprising:

first switch means coupling one side of the AC power source to one side of the motor when said switch means is in its closed condition;

a DC voltage source;

a variable resistance;

a first capacitor connected to said DC voltage source through said variable resistance such that the charging rate of the capacitor is capable of being varied by said variable resistance;

means for permitting said DC voltage source to charge said first capacitor when said first switch means is opened and removes AC power from the motor;

a thyristor switch having a gate, an anode and a cathode, said cathode being connected to the one side of the AC power source;

a resistor connected by one end to said anode;

second switch means for coupling the other end of said resistor to the one side of said motor when said first switch means is in its opened condition, the other side of said motor being connected to the other side of the AC power source; and

control means having an output coupled to the gate for applying a constant DC voltage to said gate for turning on the thyristor swtich when said first switch means is in its opened condition and having an input connected to said first capacitor for comparing the voltage level across the first capacitor with a predetermined voltage level, and for removing the DC voltage from the gate to enable the thyristor switch to turn off after a timed interval defined by when the voltage across the first capacitor reaches the predetermined level so that the timed interval is a function of the variable resistance.

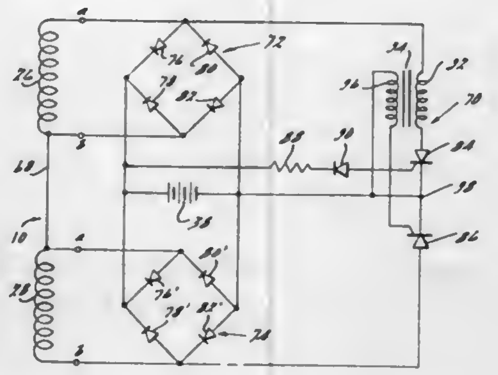
4,195,256
ALTERNATOR WITH PARALLEL WINDINGS AND REGULATOR THEREFOR

Thomas F. Carmichael, Ortonville, Mich., assignor to Syncro Corporation, Troy, Mich.

Filed Oct. 25, 1977, Ser. No. 845,360

Int. Cl.^{2} H02J *7/14*

U.S. Cl. 322—90 9 Claims



1. For a permanent magnet alternator having a rotor with a plurality of permanent magnet poles for providing a magnetic field, a stator with a plurality of poles cooperating with said plurality of permanent magnet poles, and winding means for said stator comprising at least two sets of windings connected in parallel so that the rotation of said rotor relative to said stator provides a magnetic field-induced current in each of said sets of windings, and utilization means connected to said windings for receiving the additive output current of said sets of windings, a regulating circuit comprising:

detecting means for detecting a predetermined electrical condition; and

circuit means including controlled conduction means associated with said detecting means for conducting in response to said predetermined electrical condition, said circuit means further including connecting means connected to said controlled conduction means and connecting said sets of windings in series so that said controlled conduction means connects a shunting path across the series connection of said sets of windings provided by said connecting means upon conduction of said controlled conduction means and so that the current through said shunting path is less than said additive output current of said sets of windings received by said utilization means.

4,195,257
TESTING APPARATUS FOR A CIRCUIT ASSEMBLY

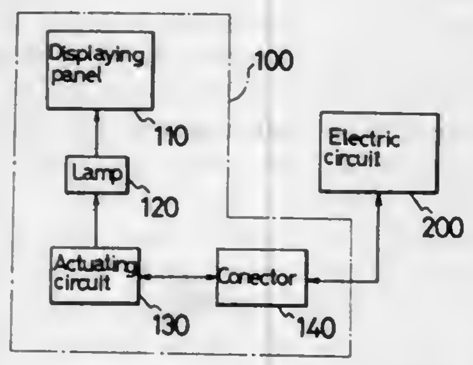
Susumu Yoshida, and Kiyomitu Kimura, both of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Nov. 29, 1976, Ser. No. 745,823

Claims priority, application Japan, Dec. 4, 1975, 50/165135[U]; Feb. 5, 1976, 51/12045

Int. Cl.^{2} G01R *15/12*

U.S. Cl. 324—73 R 6 Claims



1. A testing apparatus for testing a control system for controlling an electrically driven vehicle and having a main circuit which includes a battery having positive and negative terminals, an electric motor connected in series to the battery and a chopper circuit which is connected between the motor and the battery for regulating a voltage applied to the electric motor from the battery and a control circuit having relays, logic units including monitor circuits for monitoring the condition of the chopper circuit, and the control circuit and the chopper circuit being divided into a circuit element unit which includes capacitors and reactors and a semiconductor element unit which includes semiconductor elements on an electrical insulating board having a connector member with sockets for electrically connecting the logic units to the circuit elements of the control system, said testing apparatus comprising a displaying panel which includes a drawing of a circuit assembly of the control system to be tested, an indicating lamp member having indicating lamps which are positioned at a portion of said drawing of said circuit assembly, an actuating circuit member for energizing said indicating lamp member, and a connecting member which includes a first connector means having a plurality of terminals for connecting said logic units which are extracted from said sockets of said connector member to said actuating circuit member and a second connector means to be connected to said connector member from which said logic units logic units are extracted from said sockets and for electrically connecting the circuit assembly to be tested to said actuating circuit member and to said logic units first, second and third terminals of said first connector means being connected to the terminals of the battery of the main circuit, said actuating circuit member comprising:

a voltage detecting means electrically connected to said lamp member and a corresponding test point of the control system to be tested by way of said first connector member, for illuminating said lamp member by detecting the potential of said corresponding point, and a voltage setting circuit which comprises a controllably variable constant voltage setting circuit means for applying constant voltage to said lamp member and said voltage detecting member, said constant voltage means including a zener diode connected in parallel to said lamp member and said voltage detecting means, a plurality of series connected resistor elements connected between said zener diode and said first terminal of said first connector means which is to be connected to the battery, and an voltage changeover circuit means for controlling said constant voltage setting circuit to supply a constant current to said voltage detecting means and said indicating lamp member.

4,195,258
LOGIC ANALYZER FOR INTEGRATED CIRCUITS, MICROCOMPUTERS, AND THE LIKE

Yao T. Yen, Cupertino, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 1, 1977, Ser. No. 773,435

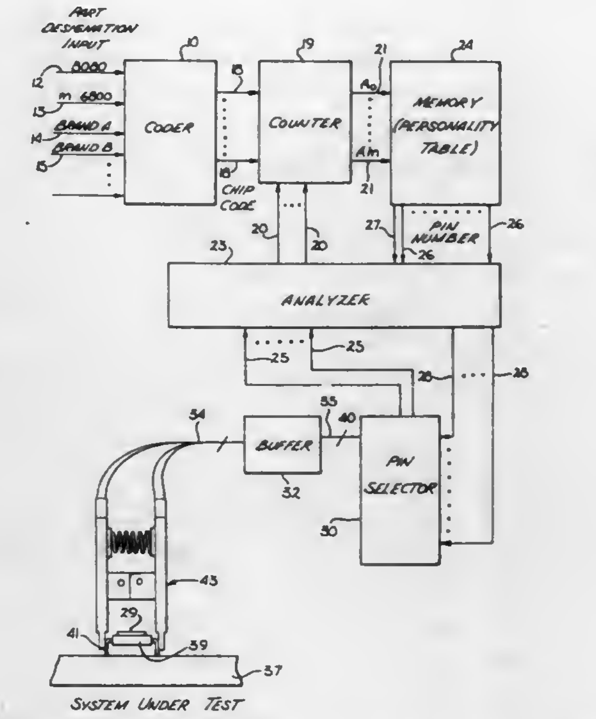
Int. Cl.^{2} G01R *15/12*

U.S. Cl. 324—73 AT 12 Claims

1. In an apparatus for testing or analyzing a plurality of circuits where each of said circuits includes a single connector means and where predetermined signal paths of said circuits are coupled to different contacts of said single connector means, a improvement for selecting said predetermined signal paths comprising;

memory means for storing data for each of said circuits representative of said coupling between said predetermined signal paths of said circuits and said different contacts; and

selection means, coupled to said memory means and said contacts of said connector means, for selecting said predetermined signal paths as a function of said data stored in said memory;



whereby predetermined signal for each of said circuits may be selected for testing or analyzing without requiring the manual unscrambling of probes.

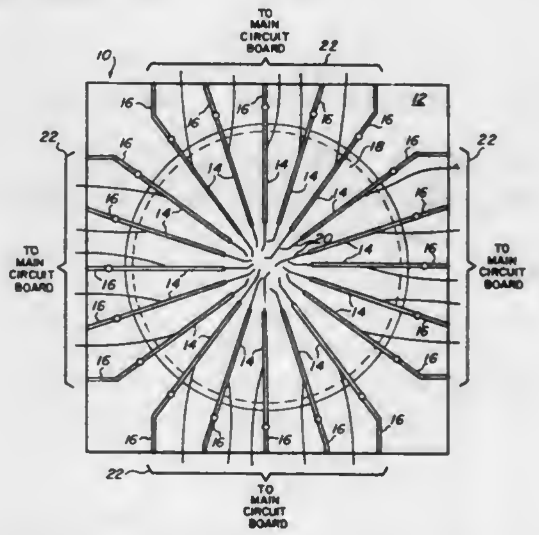
4,195,259
MULTIPROBE TEST SYSTEM AND METHOD OF USING SAME

Lee R. Reid, Plano, and Charles R. Ratliff, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 4, 1978, Ser. No. 893,118

Int. Cl.^{2} G01R *1/06, 31/02*

U.S. Cl. 324—158 P 7 Claims



1. A multiprobe test system for testing microcircuits comprising:

moveable support means for locating a semiconductor slice having a plurality of integrated circuits thereon;

electrical support means located in parallel spaced relation to said moveable support means;

a plurality of data-detector probes electrically connected to said electrical support means for detecting the surface of said semiconductor slice, each of said data-detector probes including:

a support body,

an arm connected to said support body and extending therefrom in an angular fashion,

a probe tip having an angular point connected to said arm and extending therefrom, and

sensing means comprising a force sensitive material bonded to said arm for sensing when said probe tip makes contact with said semiconductor slice and generating a signal indicative thereof;

detector circuit means electrically associated with and connected to said data-detector probes for delivering electrical signals signifying that said data-detector probes have made contact with said semiconductor slice, said detector circuit means comprising a multichannel circuit wherein each channel includes:
  filtering means for reducing noise from a signal delivered from said force sensitive material,
  amplifier circuitry electrically connected to said filter means for transforming the impedance of said signal,
  electronic discriminator means for screening spurious signals such that only signals above a fixed threshold voltage will be detected, said discriminator means being electrically connected to said amplifier circuitry,
  latch circuit means for latching said signal, and
  buffer driver means for boosting the power of said signal and delivering an output signal;

means for evaluating output signals received from said detector circuit means as delivered by said buffer driver means thereof; and

system output means electrically connected to said means for evaluating and operatively associated therewith for displaying said detector circuit means signals.

4,195,260

APPARATUS FOR SENSING DETERIORATION OF DEVELOPING SUBSTANCE INCLUDING FERROMAGNETIC CARRIER AND NON-MAGNETIC TONER PARTICLES

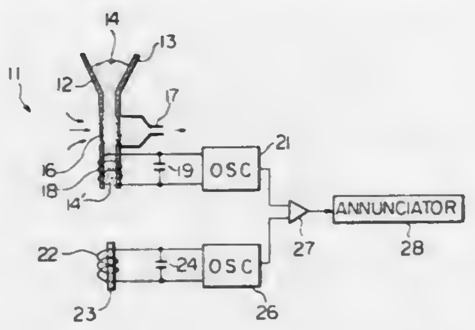
Koji Sakamoto; Seiichi Miyakawa, and Susumu Tatsumi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 6, 1978, Ser. No. 875,345

Claims priority, application Japan, Feb. 9, 1977, 52-13884

Int. Cl.^{2} G01N *9/00*

U.S. Cl. 324—204 **28 Claims**



2. An apparatus for sensing deterioration of a developing substance which includes ferromagnetic carrier particles and non-magnetic toner particles, the apparatus comprising:
  first means for applying a predetermined force to the developing substance for readily removing substantially all of the toner particles therefrom except for spent toner particles which are strongly adhered to the carrier particles;
  second means for measuring the toner density of the remaining developing substance after removal of the toner particles therefrom; and
  third means for providing a reference toner density for comparison with the measured toner density.

4,195,261

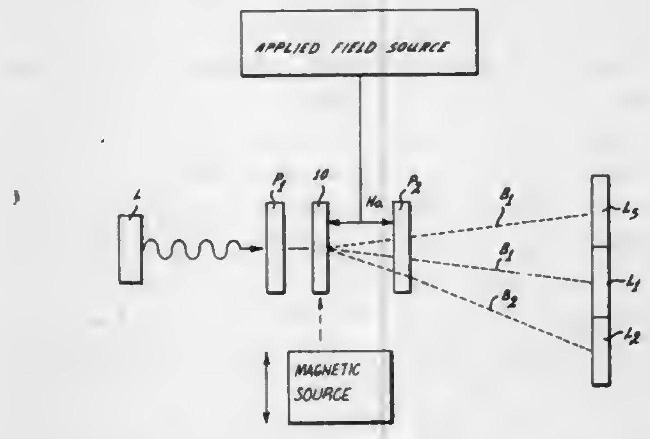
METHOD AND APPARATUS FOR MEASURING THE STRIPE WIDTH AND COLLAPSE FIELD OF MAGNETIC MATERIALS

Robert L. Zwingman, Poway, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 825,533, Aug. 18, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,257

Int. Cl.^{2} G01R *33/00*

U.S. Cl. 324—210 **7 Claims**



1. A method for measuring certain parameters of a thin film magnetic material having stripe domains thereon especially adaptable for magnetic bubble memories, comprising the steps of:
  subjecting the thin film magnetic material to a magnetic field to align the stripe domains in parallel,
  removing the magnetic field used to align the stripe domains while maintaining the magnetic field necessary to maintain the domains in stripe form and subjecting the parallel magnetic stripe domains to a source of polarized light to form a first and second order of diffracted beams of light,
measuring the intensity of the first order of diffracted beam of light and the angle of diffraction of said first order beam of light to determine stripe width.

4,195,262

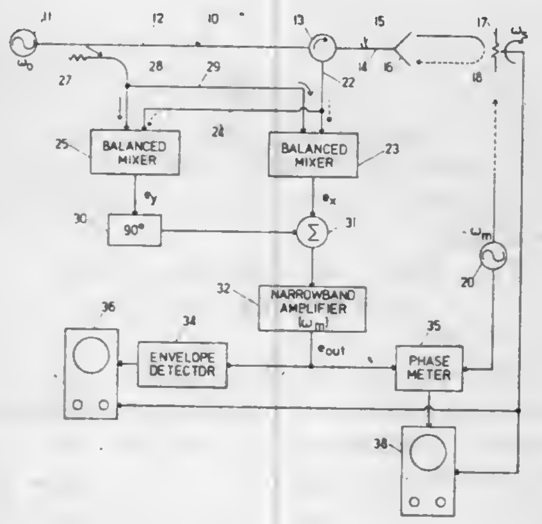
APPARATUS FOR MEASURING MICROWAVE ELECTROMAGNETIC FIELDS

Ray J. King, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 6, 1978, Ser. No. 958,189

Int. Cl.^{2} G01S *1/44;* **H04B** *17/00*

U.S. Cl. 455—67 **21 Claims**



1. Apparatus for measuring the microwave field radiated from an antenna, comprising:
(a) a microwave source;
(b) a transmitting antenna for radiating microwaves from said source and for receiving microwave radiation;
(c) a scattering electric field probe positionable in the radiated field of said transmitting antenna to receive microwave radiation therefrom and re-radiate a microwave signal back to said antenna, said field probe comprising:
  (1) a scattering antenna selectively responsive to the electric field component of the radiated microwave field,
  (2) a modulatable impedance electrically connected in said scattering antenna,
  (3) means for modulating said impedance at a frequency substantially less than the frequency of said microwave source,
  (4) means for spinning said scattering antenna about an axis of rotation at an angular frequency substantially less than the frequency of modulation of said impedance;
(d) phase insensitive means for receiving a signal from said microwave source and the microwave signal from said scattering probe received by said transmitting antenna, and for combining and demodulating the signals to yield an output signal at the frequency at which said scattering antenna impedance is modulated and phase shifted proportional to the phase shift of the microwave signal received by said transmitting antenna, and with a magnitude which is independent of such phase shift and a function of the magnitude of the electric field received by said scattering antenna; and
(e) means for comparing a signal at a frequency coherent with the frequency of spinning of said scattering antenna with the output signal from said phase insensitive means, to thereby allow measurement of the relative tilt angle of the major axis of the microwave electric field received by said scattering antenna.

4,195,263

SELECTIVE CALL RADIO COMMUNICATION RECEIVER

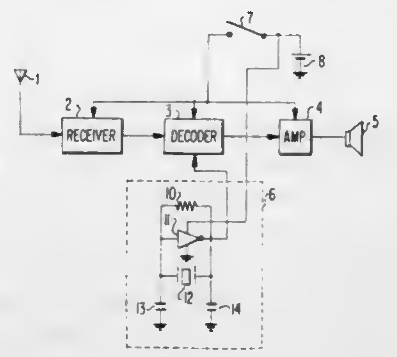
Masaru Masaki, and Akio Yotsutani, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1977, Ser. No. 845,744

Claims priority, application Japan, Oct. 29, 1976, 51-146416[U]

Int. Cl.^{2} H04B *1/06*

U.S. Cl. 455—343 **1 Claim**



1. A selective call radio communication receiver of the type including a radio receiver circuit adapted to demodulate the radio frequency selecting signal received, a decoder circuit for decoding the demodulated selecting signal, a crystal oscillator circuit connected to the decoder circuit for producing different timing functions, and a battery, the improvement comprising:
  connection means directly and continuously connecting at least said crystal oscillator circuit with said battery; and
  switch means for selectively connecting the radio receiver circuit with said battery, said switch means being switchable between a first position in which said receiver is inoperable and a second position in which said receiver is operable, said crystal oscillator circuit being energized at all times regardless of the position of said switch means.

4,195,264

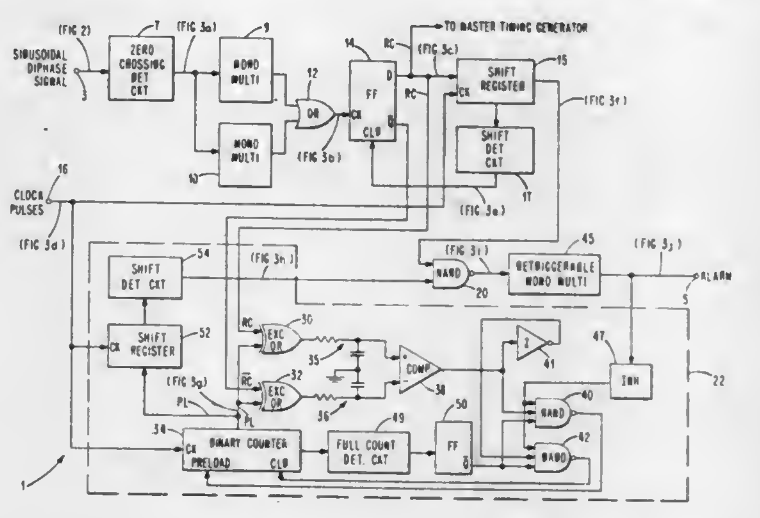
NOISE DETECTION CIRCUIT

Charles R. Marchetti, Wellesley, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 26, 1978, Ser. No. 899,923

Int. Cl.^{2} H03K *13/32, 5/20*

U.S. Cl. 328—134 **11 Claims**



1. A noise detection circuit for detecting noise associated with a binary encoded signal and for producing an alarm signal in response to the detection of such noise, said noise detection circuit comprising:
  first circuit means operative to receive said binary encoded signal and to derive a recovered clock signal therefrom comprising a train of recovered clock pulses of fixed duration and further operative to derive a gate signal comprising a train of gate pulses each corresponding to a different one of the recovered clock pulses of the recovered clock signal;
  alarm gate means having a first input, a second input, and an output, each of the gate pulses produced by the first circuit means being applied to the first input of the alarm gate means;
  phase lock loop circuit means coupled to the first circuit means and to the second input of the alarm gate means and comprising:
    second circuit means operative to produce a phase lock signal of the same frequency as, but phase displaced with respect to, the recovered clock signal produced by the first circuit means, said phase lock signal comprising a series of pulses phase displaced with respect to the recovered clock pulses of the recovered clock signal;
    phase circuit means coupled to the first circuit means and to the second circuit means and operative to detect the phase difference between the recovered clock signal produced by the first circuit means and the phase lock signal produced by the second circuit means and to alter the timing of the phase lock signal with respect to the recovered clock signal by an amount related to the extent of phase difference between the recovered clock signal and the phase lock signal; and
    third circuit means coupled to the second circuit means and to the second input of the alarm gate means and operative to receive the phase lock signal from the second circuit means and to derive therefrom an alarm gate signal comprising a series of gate pulses phase displaced with respect to the pulses of the phase lock signal, the pulses of said alarm gate signal being applied to the second input of the alarm gate means;
  said alarm gate means being operative when gate pulses are applied to the first and second inputs having a predetermined first relationship to each other to produce an alarm signal at its output indicating that the binary encoded signal has noise associated therewith, and operative when gate pulses are applied to the first and second inputs having a predetermined second relationship to each other to

produce a second signal at its output indicating the absence of noise associated with the binary encoded signal.

4,195,265
VARIABLE RESPONSE NOTCH FILTER FOR MACHINE RESONANCE ELIMINATION IN A SERVO CONTROL SYSTEM

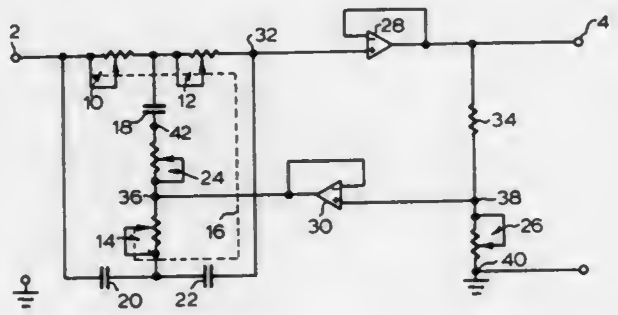
Enn Vali, Burlington, Canada, assignor to Westinghouse Canada Limited, Hamilton, Canada

Filed Jun. 8, 1978, Ser. No. 913,526

Claims priority, application Canada, Nov. 7, 1977, 282504

Int. Cl.² H03B *1/04*

U.S. Cl. 328—167 **3 Claims**



1. A servo system including an improved twin-T notch filter, said system including control signals for controlling the motion of a mechanical apparatus, said apparatus having a band of natural resonating frequencies, the notch filter receiving the control signals at input terminals and permitting the passage of the control signals therethrough to output terminals operably connected to the apparatus, said notch filter substantially eliminating any component of the control signals substantially equal in frequency to said natural resonating frequencies, said notch filter comprising means for feeding back an in-phase amount of the control signal from the output terminals to the base of the twin-T filter, said means including a control means for regulating the amount of control signal fedback thereby adjusting the notch width to an effective minimum and thereby minimizing phase delay effects on the frequency components of said signal in close proximity to but less than said natural resonating frequencies.

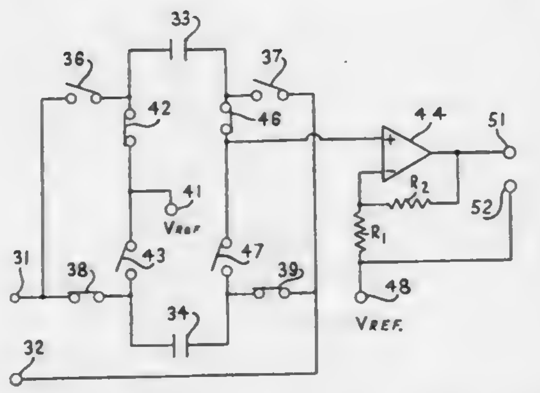
4,195,266
COMMUTATING SIGNAL LEVEL TRANSLATOR

David Bingham, Los Altos, Calif., assignor to Intersil, Inc.,, Cupertino, Calif.

Filed Jun. 1, 1978, Ser. No. 911,496

Int. Cl.² H03F *1/02*

U.S. Cl. 330—9 **10 Claims**



1. A commutating signal level translator system comprising:
a pair of input terminals adapted to have a differential voltage impressed thereacross,
an amplifier having first and second inputs and an output,
first and second capacitors,
a reference voltage terminal,
switching means connected to said capacitors for connecting said first capacitor across said input terminals and said second capacitor between said reference voltage terminal and said first amplifier input and reversing said capacitor connections,
a resistor network connecting said second amplifier input to said reference voltage terminal and to said amplifier output, and
first and second output terminals with said first output terminal connected to said amplifier output and said second output terminal connected to said reference voltage terminal.

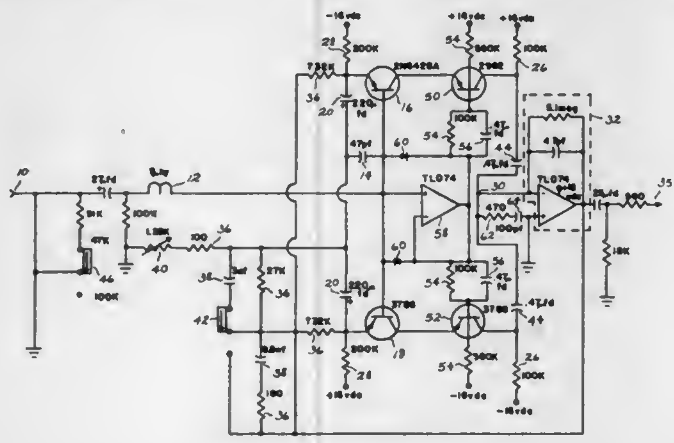
4,195,267
LOW-LEVEL PREAMPLIFIER CIRCUIT

Gerald R. Stanley, Mishawaka, Ind., assignor to Crown International, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 874,040, Feb. 1, 1978, Pat. No. 4,158,820. This application Nov. 6, 1978, Ser. No. 957,682

Int. Cl.² H03F *1/26, 1/183*

U.S. Cl. 330—265 **5 Claims**



1. A low-level preamplifier circuit for an audio input comprising an NPN bipolar transistor, a PNP bipolar transistor, an operational amplifier, the bases of said transistors connected in AC common for receiving the audio input, an AC common connection between said transistor emitters, means for providing a negative voltage feedback at said AC common connection for said transistor emitters, the collectors of said transistors being connected in a summing mode to the input terminal of said operational amplifier, whereby RFI input into said transistor bases generates complementary cancelling distortion in said transistor collectors, and means for holding the collector to emitter voltage of each transistor substantially constant.

4,195,268
CRYSTAL OSCILLATOR INCLUDING ADJUSTABLE AUTO TRANSFORMER FOR NEUTRALIZING CRYSTAL CAPACITANCE

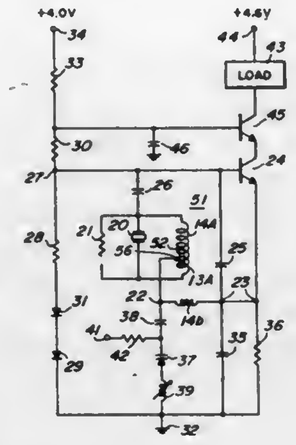
Sviataslov Zarkov, River Forest, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1978, Ser. No. 882,204

Int. Cl.² H03B *5/36;* **H03C** *3/22*

U.S. Cl. 331—116 R **3 Claims**

1. In a variable, high frequency crystal oscillator including an electronic tank circuit comprising a crystal and a pair of capacitors connected in series and coupled to said crystal, said crystal having a physical capacitance, C_o; first and second inductance means; means for coupling the first and second inductance means into the tank circuit for neutralizing the physical capacitance, C_o, of the crystal and for providing an impedance transformation between the crystal and the remainder of the tank circuit; and impedance varying means coupled into the tank circuit for varying the frequency of oscillation thereof, the improvement comprising:
an auto transformer having said first and second inductance means as windings thereof with a tap at their juncture,
said first and second inductance means being disposed end to end on a common form, and a movable metallic slug having linear dimensions less that the linear dimensions of said inductance means disposed inside of said form,
said metallic slug being movable between the extremities of said inductance means, the extremities of said inductance means being coupled across said crystal and
the tap and the extremity of one of said inductance means being coupled into said tank circuit.



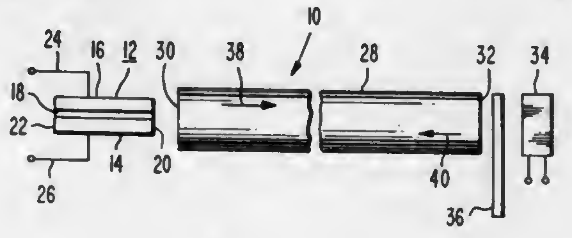
4,195,269
TWO-WAY SINGLE FIBER OPTICAL COMMUNICATION SYSTEM

Michael Ettenberg, Freehold, and Henry Kressel, Elizabeth, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,808

Int. Cl.² H04B *9/50;* **H01S** *3/10*

U.S. Cl. 332—7.51 **6 Claims**



1. A two way optical communication system comprising:
(a) first means for providing a beam of modulated optical radiation,
(b) second means for detecting the modulated optical radiation from said first means,
(c) third means for carrying said beam of optical radiation from said first means to said second means,
(d) fourth means between the second means and the third means periodically operable between a condition in which it allows the beam of radiation to reach the second means and a condition in which it reflects the beam of radiation back along said third means toward said first means, and
(e) said first means also serving to detect the radiation reflected back along said third means.

4,195,270
DIELECTRIC SLAB POLARIZER

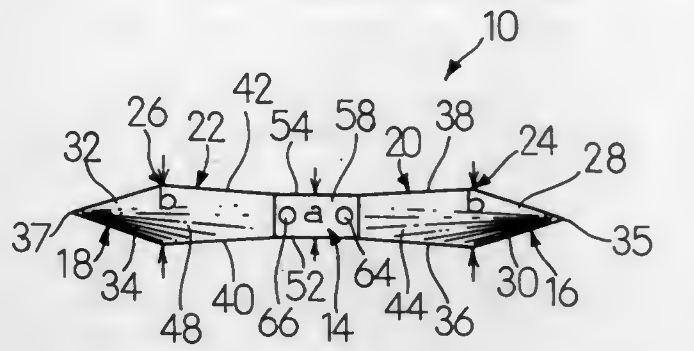
Lawrence L. Rainwater, Salt Lake City, Utah, assignor to Sperry Corporation, New York, N.Y.

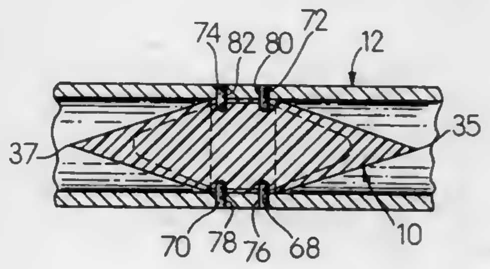
Filed May 30, 1978, Ser. No. 910,327

Int. Cl.² H01P *1/16*

U.S. Cl. 333—21 A **7 Claims**

1. In a waveguide section, an improved dielectric slab polarizer for providing an approximate ninety degree differential phase shift transformation of RF field polarization, comprised by:
a rectangular polyhedron middle section;
a pair of conical opposite end sections tapered to converge away from said middle section and spaced along the axis of said waveguide section; and





a pair of intermediate sections convergently tapered toward said middle section which merge with said middle section and said opposite end sections.

4,195,271
BROAD-BAND 180° PHASE SHIFTER

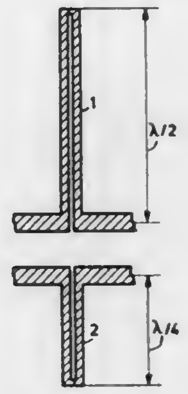
Burkhard Schiek, and Jürgen Köhler, both of Halstenbek, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1977, Ser. No. 851,440

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653676

Int. Cl.² H01P *3/08, 1/18, 9/00*

U.S. Cl. 333—161 **4 Claims**



1. A 180° phase shifter for use in planar microwave circuits such as microstrip, microslot, striplines and the like, said phase shifter comprising a first transmission line having a $\lambda/2$ long meander formed by a pair of coupled lines connected at one end and a reference transmission line having a $\lambda/4$ long meander formed by a pair of coupled lines connected at one end disposed opposite said $\lambda/2$ long meander so that the phase of a signal applied to said first transmission line is shifted by approximately 180° with respect to the phase of a signal applied to said reference transmission line.

4,195,272

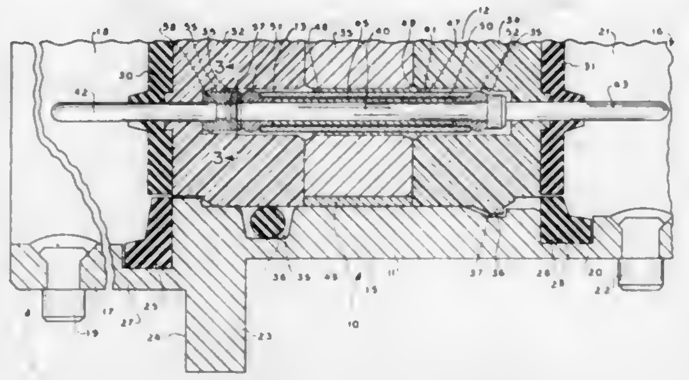
FILTER CONNECTOR HAVING CONTACT STRAIN RELIEF MEANS AND AN IMPROVED GROUND PLATE STRUCTURE AND METHOD OF FABRICATING SAME

Kamal S. Boutros, Downsview, Canada, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 6, 1978, Ser. No. 875,363

Int. Cl.^{2} H03H ***7/04;*** **H01R** ***19/10, 13/66, 17/16***

U.S. Cl. 333—182 **31 Claims**



1. A filter connector comprising:
an electrically conductive outer shell;
an inner body within said shell including a ground plate electrically coupled to said shell, a longitudinally extending channel, and retention means disposed within said channel; and
a filtered contact assembly disposed at least partially within said chamber including a contact member, filter means electrically coupled to and mounted in a fixed axial position on said contact member, said filter means also including a ground electrode electrically coupled to said ground plate with conductive adhesive material, locking means, carried by said contact member for engaging said retention member to maintain said filtered contact assembly in a fixed axial position relative to said inner body, and a resilient sleeve disposed between said locking means and said filter means for providing axial stress isolation between said filter means and said contact member.

4,195,273

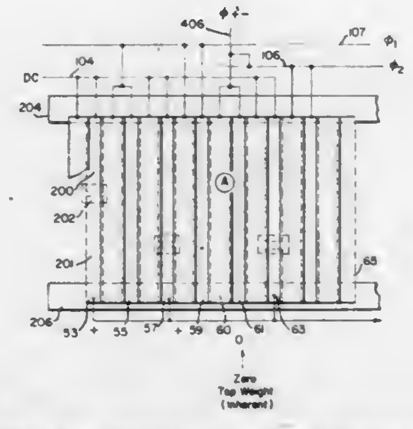
CTD CHARGE SUBTRACTION TRANSVERSAL FILTER

Paul R. Prince, Fountain Valley, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 29, 1976, Ser. No. 737,114

Int. Cl.^{2} H03H ***7/28;*** **G11C** ***19/28, 27/02;*** **H01L** ***29/78***

U.S. Cl. 333—165 **9 Claims**



1. A charge transfer transversal filter adapted for responding to input signal charges, comprising:
a substrate;
at least one first section and at least one second opposite polarity section disposed on said substrate, each of said sections having at least one group of electrodes along said substrate with each group providing a time delay and including charge transfer electrodes and a sensing electrode, said first and second section having a crossover area along said substrate between opposite polarity sections;
a set of electrodes disposed across said crossover area for providing a fraction or more of said time delay to the signal charges;
a source of first phase clock pulses coupled to selected charge transfer electrodes of said first section;
a source of second phase clock pulses coupled to selected charge transfer electrodes of said second section;
means for coupling together selected ones of said sensing electrodes of said first and second sections;
reset means, coupled to at least said selected ones of said sensing electrodes for periodically applying a reset voltage thereto; and wherein
the relative location of said electrodes and the relative timing of said first and second phase clock pulses are such that as charges are transferred under the sensing electrodes of said at least one first section, charges are transferred out from under the sensing electrodes of said at least one second section.

4,195,274

TEMPERATURE COMPENSATING CIRCUIT FOR VARACTOR DIODES

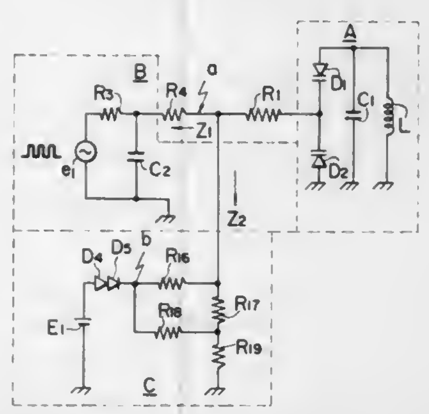
Hisashi Suganuma, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 1, 1978, Ser. No. 930,115

Claims priority, application Japan, Aug. 1, 1977, 52/81554

Int. Cl.^{2} H01V ***3/00;*** **H03K** ***3/26;*** **H03H** ***5/12***

U.S. Cl. 334—15 **6 Claims**



1. A temperature compensating circuit for a tuning circuit having a varactor diode, comprising:
(a) a varactor diode having an anode and a cathode and exhibiting a negative temperature coefficient, said varactor diode being responsive to a control voltage applied to its cathode for producing a capacitance value in accordance with the value of said control voltage;
(b) temperature compensating means for providing a biasing voltage to the anode of said varactor diode, said biasing voltage having an amplitude level controlled to compensate substantially for the temperature sensitivity of said varactor diode, said temperature compensating means including a constant voltage source having positive and negative terminals, a first resistor and a temperature compensating diode having an anode and a cathode and exhibiting a negative temperature coefficient, said negative terminal and the cathode of said temperature compensating diode being connected to ground and said biasing voltage provided by said temperature compensating means being present at the anode of said temperature compensating diode, said negative temperature coefficient of said temperature compensating diode being substantially equal to the negative temperature coefficient of said varactor diode, said first resistor being connected between said positive terminal and the anode of said temperature compensating diode; and
(c) a second resistor connected between the anode of said temperature compensating diode and the anode of said varactor diode for coupling the biasing voltage to the anode of said varactor diode, said second resistor having a resistance value high enough to prevent said temperature compensating means from interfering with the tuning operation of said tuning circuit.

4,195,275

MULTIPLE ELECTROMAGNETIC RELAY

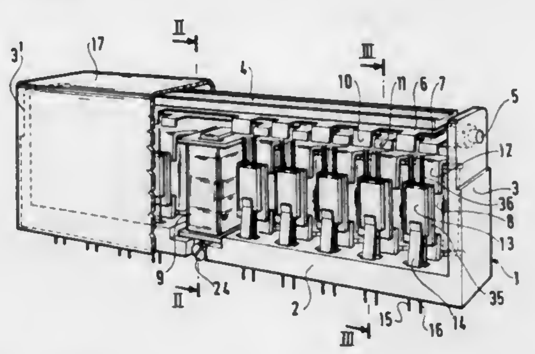
Henri Kraess, and Paul Bloch, both of Strasbourg, France, assignors to Societe Anonyme dite: La Telephonie Industrielle et Commerciale - Telic, Strasbourg, France

Filed Oct. 6, 1978, Ser. No. 949,360

Claims priority, application France, Nov. 8, 1977, 77 33544

Int. Cl.^{2} H01H ***1/52, 9/20***

U.S. Cl. 335—120 **7 Claims**



1. A multiple electromagnetic relay comprising on a support, a control relay, a plurality of individual relays and a common bar made of insulative material, said common bar being situated above said control relay and above said individual relays and including a conductor bar, said individual relays each having at least one moving contact integral with an armature and one fixed contact connected to said conductor bar, means for mounting said common bar for pivoting about an axis under the control of the control relay, whereby an electrical circuit is completed between a moving contact and a fixed contact of one of the individual relays and is established by energizing firstly said control relay then said individual relay and then by de-energizing said control relay and then said individual relay, and wherein said relay further comprises means for mechanical locking of the moving contact by the fixed contact, such that unlocking is obtained and the electrical circuit is broken by momentarily energizing the control relay.

4,195,276

ELECTROMAGNETIC RELAY AND METHOD FOR ITS ADJUSTMENT

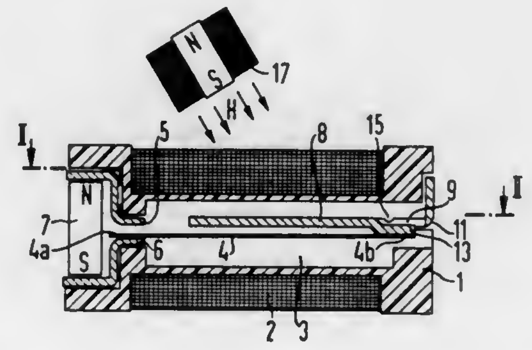
Ulf Rauterberg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 12, 1978, Ser. No. 868,980

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1977, 2701230

Int. Cl.^{2} H01H ***51/27***

U.S. Cl. 335—151 **14 Claims**



1. In an electromagnetic relay having a switching element mounted within the relay and resiliently movable therein having a free end which cooperates with at least one other component of the relay to provide a switching effect and an attachment end, the improvement of the switching element having its attachment end mounted to an elongated ferromagnetic adjustment plate, the switching element being resiliently movable with respect to the adjustment plate, the adjustment plate having a clamping joint of attachment to a body of the relay, and the adjusting plate being bendable with respect to the clamping point, the adjusting plate being provided with a theoretical bending point intermediate its clamping point and the point of attachment of the switching element.

4,195,277

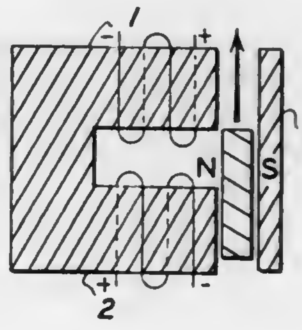
MOVING PERMANENT MAGNET LIMITED MOTION ACTUATOR

John R. Leicht, Bedford, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 26, 1978, Ser. No. 918,987

Int. Cl.^{2} H01F ***7/08***

U.S. Cl. 335—229 **5 Claims**



1. An electromagnetic actuator mechanism comprising at least two electromagnetic poles of opposite polarity, an armature comprising a permanent magnet positioned within the field of magnetic influence of said at least two electromagnetic poles, the actuator mechanism being characterized in that said armature is adapted to move in a direction perpendicular to said magnetic field.

4,195,278

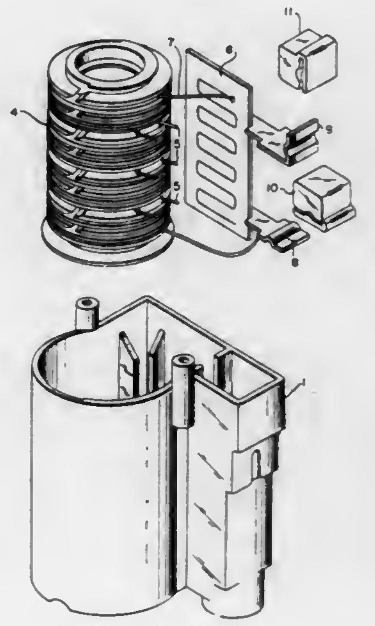
HIGH VOLTAGE TERMINAL STRUCTURE AND FLYBACK TRANSFORMER

Richard F. Doyle, Corfu, and Edward T. Myers, Tonawanda, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 15, 1979, Ser. No. 3,166

Int. Cl.^{2} H01F ***27/04***

U.S. Cl. 336—90 **2 Claims**



1. A combination comprising a high voltage terminal, a television receiver high voltage circuit, said circuit including a

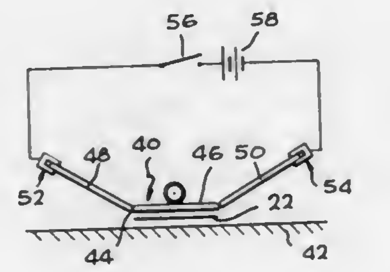
secondary winding of a flyback transformer enclosed in a resin-filled, non-conductive container characterized by a conducting tab electrically coupled to a high voltage end of said secondary winding; said tab located inside said container to have a first tab surface positioned substantially parallel to an exterior surface of said container; a non-conductive casing means having a first casing surface positioned substantially adjacent to an interior surface opposite said exterior surface of said container and a second casing surface positioned substantially adjacent to said first tab surface; said casing means extending from said first casing surface to said second casing surface and extending to partially surround said tab to provide a third casing surface positioned substantially adjacent to a second tab surface opposite said first tab surface; said container, said casing and said tab having a hole extending from said outer surface to at least said second tab surface; a conducting pin extending through said hole at least from said outer surface to said first tab surface, said conducting pin making electric contact with said tab.

4,195,279

ATTACHING OF STRAIN GAGES TO SUBSTRATES

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Meyer M. Lemcoe, Upper Arlington, and Harry E. Pattee, Columbus, both of Ohio

Filed Feb. 16, 1978, Ser. No. 878,539
Int. Cl.² G01L *1/22*
U.S. Cl. 338—2 **5 Claims**



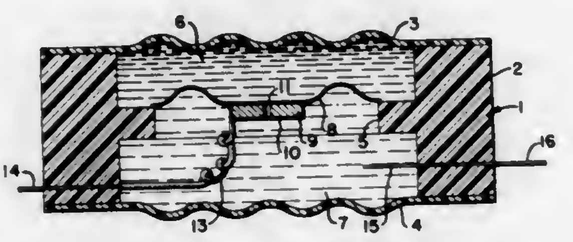
1. A method for installing a strain gage device having a substantially flat lower surface portion, on a substantially flat base, comprising:
  placing a solid foil of brazing material between said gage and said base prior to heating of them; and
  heating the foil to a temperature between the melting points of said foil and said base;
  said step of heating including passing a current through at least said foil primarily in a direction along the plane of said foil between opposite sides thereof.

4,195,280

TUNED ELECTROLYTIC DETECTOR

Herbert V. Hillery, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1955, Ser. No. 506,391
Int. Cl.² G01V *1/00;* H04B *13/00;* H04R *15/00*
U.S. Cl. 367—171 **4 Claims**



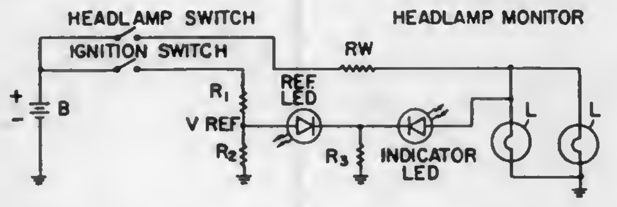
1. A tuned electrolytic detector cell comprising an inert plastic casing of generally cylindrical configuration, a pair of diaphragms closing the ends of said casing, an interior wall portion disposed transversely within said casing and having an opening for fluid communication therethrough, a compliant diaphragm secured to said wall portion and having an aperture centrally disposed therein, an orificed cathode box having a mass therein, attached to the central portion of said compliant diaphragm with the orifice thereof aligned with said aperture thereby to establish fluid communication therethrough, and an anode in said casing.

4,195,281

LAMP OUTAGE INDICATOR CIRCUIT

Robert E. Bell, Harper Woods, Mich., assignor to Essex Group, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 779,662, Mar. 21, 1977, abandoned. This application Jun. 15, 1978, Ser. No. 915,840
Int. Cl.² G08B *23/00;* H05B *37/03;* B60Q *11/00*
U.S. Cl. 340—79 **7 Claims**



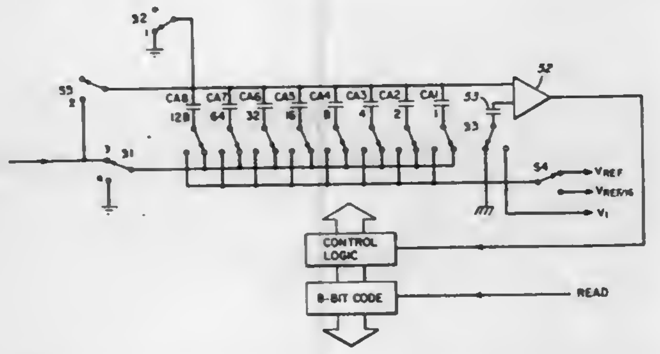
1. A lamp outage sensing and indicating circuit for sensing and indicating outage of a lamp, comprising:
  a bridge circuit comprising first and second primary legs, said first primary leg comprising a relatively small electrical resistance and said lamp, said second primary leg comprising a pair of resistors;
  a secondary leg connected at one end intermediate said pair of resistors and at the other end intermediate said relatively small electrical resistance and said lamp; said secondary leg comprising reference and sensing semiconductor devices; said reference and sensing semiconductor devices being of the type which exhibit a turn-on threshold voltage above which said device is substantially conductive and below which said device is substantially nonconductive; said reference and sensing semi-conductor devices being connected such that whenever said lamp is operative, said reference semiconductor device is conductive and said sensing semiconductor device nonconductive, and whenever said lamp is inoperative, said sensing semiconductor device is conductive and said reference semiconductor device is nonconductive.

4,195,282

CHARGE REDISTRIBUTION CIRCUITS

Frank L. Cameron, Wellesley Hills, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 874,239, Feb. 1, 1978. This application Nov. 24, 1978, Ser. No. 963,489
Int. Cl.² H03K *13/02*
U.S. Cl. 340—347 AD **9 Claims**



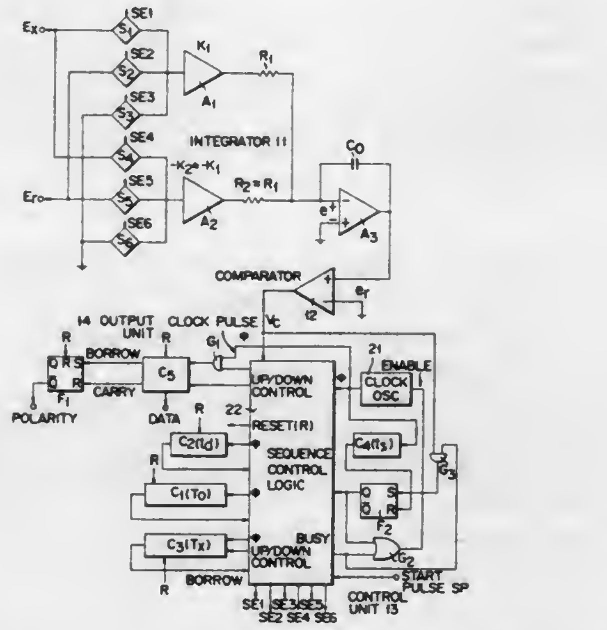
1. A charge redistribution circuit for pulse-code modulation encoding comprising:
  a single binary weighted capacitor array for the generation of both segment and step boundaries of voice being encoded, each capacitor of said array having a pair of opposed plates, one plate of each of said capacitors being commonly coupled together;
  a binary comparator having a pair of inputs and an output, a first of said inputs being adapted to be coupled to a reference bias potential, and a second of said inputs being coupled to said commonly coupled plates of said capacitor array;
  means for receiving an input analog voice signal;
  first switching means for connecting said commonly coupled plates to ground potential and for disconnecting said plates from ground potential;
  a first common line;
  a second common line;
  second switching means for selectively connecting said first common line to said receiving means or to ground potential;
  third switching means for selectively connecting said second common line to a predetermined reference voltage V_{REF}, or to a reference voltage $V_{REF/n}$ which is one nth said predetermined voltage, and for selectively coupling said first comparator input to ground potential or to said reference bias potential;
  fourth switching means, including a switch for each said capacitor, for selectively coupling the other plates of each of said capacitors of said array to said first common line, or to said second common line;
  code generating means for providing a digital output upon receipt of a read instruction and control signals applied thereto; and
  control logic means for controlling said four switching means, responsive to the output of said comparator, and for providing control signals to said generating means, wherein n is a positive integer.

4,195,283

METHOD FOR CONVERTING AN ANALOG VOLTAGE TO A DIGITAL VALUE FREE FROM CONVERSION ERRORS, AND AN INTEGRATING TYPE ANALOG-TO-DIGITAL CONVERTER CAPABLE OF ELIMINATING CONVERSION ERRORS

Masaoki Ishikawa, 8-8-14, Tsukimino, Yamato-shi, Kanagawa-ken, Japan

Filed Aug. 1, 1978, Ser. No. 930,011
Claims priority, application Japan, Aug. 9, 1977, 52-95353
Int. Cl.² H03K *13/20*
U.S. Cl. 340—347 NT **18 Claims**



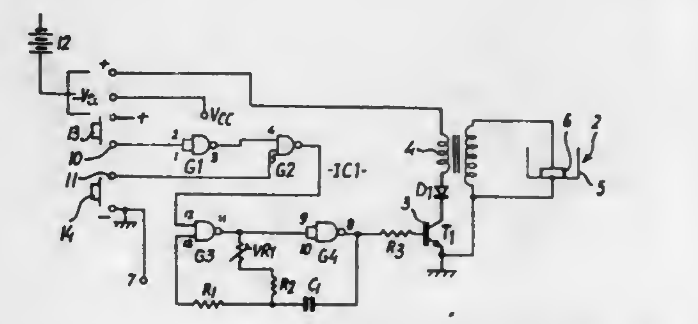
1. A method for converting an unknown analog voltage to a digital value comprising the steps of:
(1) executing first and second conversion cycles, said first and second independent conversion cycles, each conversion cycle comprising integrating an unknown analog voltage over a first time period which is the same for both of said conversion cycles and integrating a reference voltage over a second time period which is the same for both of said conversion cycles, said second time period of each of said first and second conversion cycles comprising first and second subperiods, the polarities of the unknown analog voltages in the respective first periods of said first and second conversion cycles being opposite to each other, the polarities of the reference voltage in the respective first and second subperiods of the second period of each of said first and second conversion cycles being opposite to each other, an integration output level at the begining of the first period of each of the first and second conversion cycles being the same as an integration output level at the end of the second period thereof, a predetermined subperiod of the first conversion cycle being equal in time duration to a corresponding predetermined subperiod of the second conversion cycle in which the polarity of the reference voltage is opposite to that in the predetermined subperiod of the first conversion cycle, and
(2) counting clock pulses of predetermined frequency in a first direction in the predetermined subperiods of said first and second conversion cycles and in a second direction during the other subperiods of the first and second conversion cycles.

4,195,284

SOUND GENERATOR

Michael J. Hampshire, Liversedge; Norman J. Poole, and John Parkes, both of Manchester, all of England, assignors to Ward & Goldstone Limited, Salford, England

Filed Aug. 9, 1977, Ser. No. 823,112
Claims priority, application United Kingdom, Aug. 11, 1976, 33341/76; Oct. 20, 1976, 43466/76
Int. Cl.² G08B *3/10*
U.S. Cl. 340—384 E **30 Claims**



1. A sound generator comprising a substantially circular end face, a cylindrical side wall integral with said end face, about the entire circumference of said end face, extending in one direction from said end face, and having a major cylindrical axis perpendicular to said end face, said end face and side wall defining a cylindrical enclosure closed at said end face, and open at the opposite axial end defined by said side wall, a crystal attached to said end face, oscillator means for pulsing said crystal at a pulsing frequency and for vibrating the end face and the integral side wall to generate audible pressure waves from the end face and from the integral side wall.

4,195,285

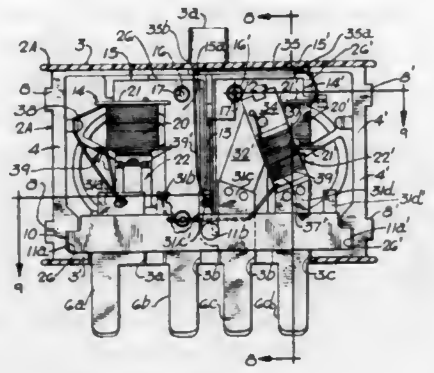
DOUBLE BUZZER ASSEMBLY

Alexander E. Bukala, Chicago, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Dec. 1, 1978, Ser. No. 965,272
Int. Cl.² G08B *3/00*
U.S. Cl. 340—402 **25 Claims**

1. A multi-input buzzer assembly comprising: a housing assembly including a main housing body having a parts-receiving opening confronted by a cover with said main housing body; first and second buzzer units mounted in said main housing body through said parts-receiving opening; a timer and terminal-carrying sub-assembly mounted through said parts-

receiving opening in said main housing body, said sub-assembly including a support base carrying respective terminals exposed to the outside of said main housing body and making separate electrical connection with said buzzer units so that the buzzer units can be independently energized, and a timer including heater means and normally closed switch means in series with one of said buzzer units which open the circuit to said unit after the heater means has been energized for a given period of time.



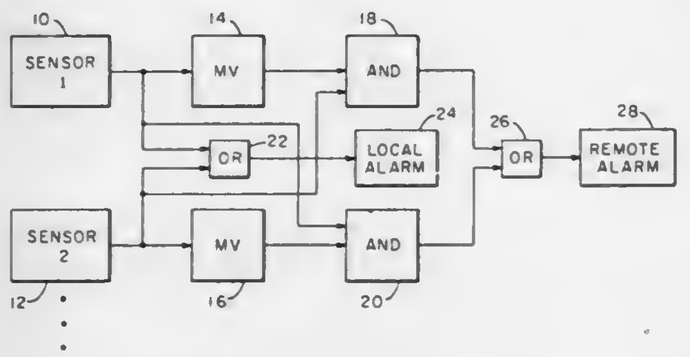
4,195,286
ALARM SYSTEM HAVING IMPROVED FALSE ALARM RATE AND DETECTION RELIABILITY

Aaron A. Galvin, Lexington, Mass., assignor to American District Telegraph Company, New York, N.Y.

Filed Jan. 6, 1978, Ser. No. 867,479

Int. Cl.² G08B *29/00*

U.S. Cl. 340—501 **5 Claims**



1. An alarm system comprising:

a plurality of sensors providing overlapping coverage of a common protected area and each providing a sensor signal when actuated by an alarm condition in the protected area;

OR circuit means coupled to said sensors and operative in response to any one of the sensor signals to provide a first alarm signal having high detection reliability; and

logic circuit means coupled to said sensors and operative in response to sensor signals from at least two of said sensors present within a predetermined time interval to provide a second alarm signal having a low false alarm rate;

said time interval commencing immediately upon the occurrence of the first of said sensor signals.

4,195,287
FIRE AND ABSENCE DETECTION AND ALARM SYSTEM FOR BED OCCUPANTS

Roy G. McCoy, 120 Douglas St., Cartersville, Ga. 30120, and James C. Mathis, Hill St., Milan, Tenn. 38358

Filed Nov. 28, 1977, Ser. No. 855,375

Int. Cl.² G08B *19/00*

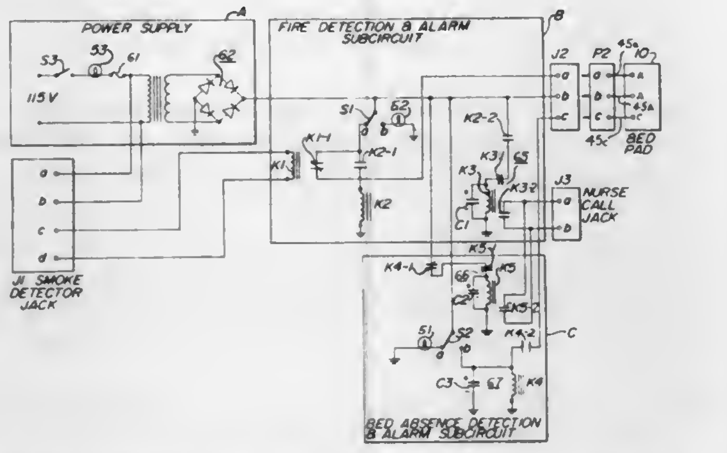
U.S. Cl. 340—521 **10 Claims**

1. A bed occupant security system comprising:

(a) an integral sensing assembly for disposal in a bed including a first means for sensing abnormally high temperature conditions in said bed and a second means for sensing the absence of said occupant,

(b) means coupled to said first means for sensing abnormally high temperature conditions for producing a first signal having a first characteristic, and

(c) means responsive to said second means for sensing the absence of said occupant for producing a second signal having a second characteristic distinguishing it from said first signal.


POWER SUPPLY
115 V
FIRE DETECTION & ALARM SUBCIRCUIT
J2
P2
BED PAD
NURSE CALL JACK
J1 SMOKE DETECTOR JACK
BED ABSENCE DETECTION & ALARM SUBCIRCUIT

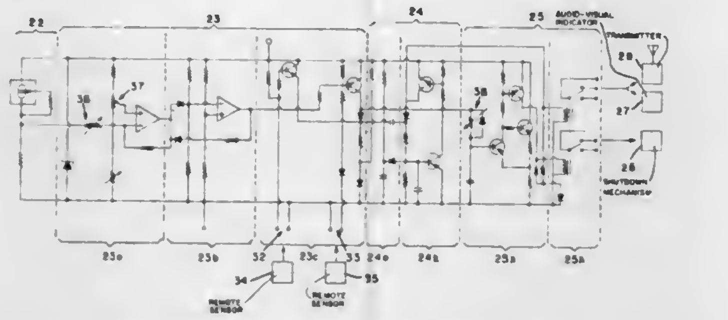
4,195,288
ALARM SYSTEM

Henry H. Morton, 100 Covington St., Wadesboro, N.C. 28170

Filed Feb. 21, 1978, Ser. No. 879,428

Int. Cl.² G08B *19/00*

U.S. Cl. 340—539 **11 Claims**



1. An alarm device comprising: a protective loop, said loop including a coded module and a pair of conductors joined to said coded module, said conductors connected to normally opened and normally closed sensing means, a multi-functional alarm control means connected to said conductors, said multi-functional alarm control means containing an analyzer circuit for discriminating between normally open or normally closed violations and having high voltage and radio frequency input protection, said coded module and said analyzer circuit cooperating to prevent defeat of said sensing means.

4,195,289
MICROWAVE INTRUSION OR MOVEMENT DETECTORS

Martin T. Cole, East Bentleigh, Australia, assignor to I.E.I. Proprietary Limited, Huntingdale, Australia

Continuation-in-part of Ser. No. 637,394, Dec. 3, 1975, abandoned. This application Jan. 31, 1978, Ser. No. 873,922

Int. Cl.² G01S *9/42;* G08B *13/18;* H01Q *13/06*

U.S. Cl. 340—554 **6 Claims**

1. A microwave movement detector, comprising:

a transmitter for generating and radiating a microwave signal;

a microwave receiver for detecting reflected surveying signals from said transmitter;

a microwave transmission means for coupling a reference signal from said transmitter to said microwave receiver;

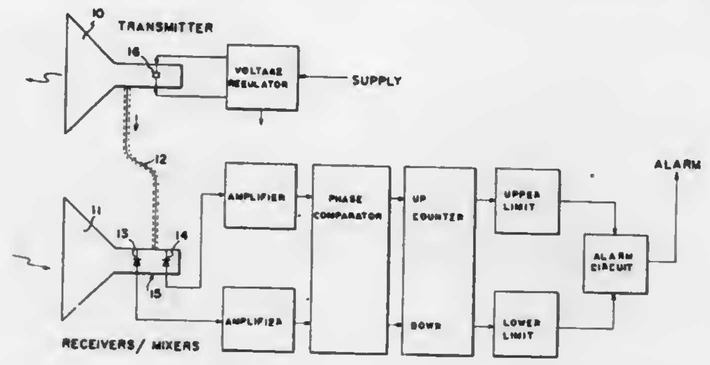
said microwave receiver comprises:

a waveguide;

a plurality of receiving/mixing means producing outputs which are a function of said reference signal and said reflected surveying signal, each of said receiving/mixing means positioned within said waveguide for creating a unique phase delay between said reference signal and said reflected surveying signal;

phase comparison means responsive to each of said receiving/mixing devices for creating first and second level signals as a function of the relative phase delay between the outputs of said receiving/mixing means;

a counter means for counting in a first direction in response to signals of said first level from said phase comparing means and in a second direction in response to signals of said second level from said phase comparing means; and means to produce an alarm when said counter exceeds a predetermined upper or lower count.



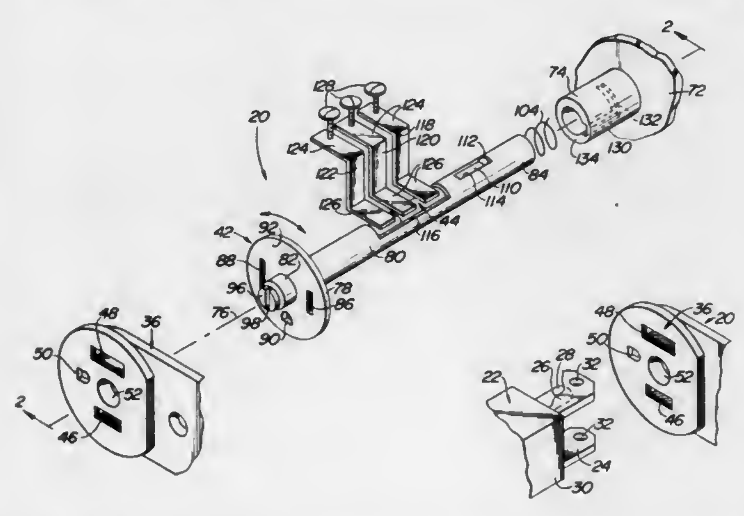
4,195,290
ELECTRICAL RECEPTACLE FOR USE IN ALARM SYSTEM

Paul Magil, and William F. Word, III, both of Long Beach, Calif., assignors to Paul Alan Magil & Associates, Costa Mesa, Calif.

Filed Mar. 24, 1978, Ser. No. 889,786

Int. Cl.² G08B *13/02, 21/00*

U.S. Cl. 340—568 **16 Claims**



1. A receptacle for receipt of at least one electrical plug having at least two prongs, said receptacle comprising a face portion including at least one pair of openings and at least one pair of electric power terminals located behind the face portion, each pair of terminals aligned with a corresponding pair of openings, lockout means and switching means, said lockout means being moveable between a closed position in which said lockout means occludes at least one of an associated pair of openings to prevent the prongs of an electrical plug from being inserted therethrough and into electrical communication with the power terminals and an open position wherein the lockout means does not occlude either opening, to thereby enable the prongs of the plug to be inserted therethrough and into electrical communication with the power terminals, said switching means being electrically isolated from said power terminals and providing a first signal indicating either the presence of a plug within the associated pair of openings (if the lockout means is in the open position) or indicating the existence of the lockout means in the closed position.

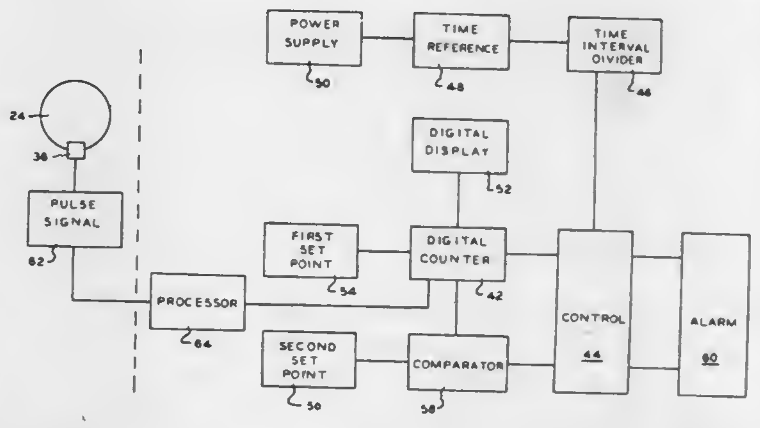
4,195,291
DIGITAL CONTROLLED ROTATION SENSOR

Kenneth N. Burks, Jr., Little Rock, Ark., assignor to Ward Industries, Inc., Jackson, Mich.

Filed Apr. 24, 1978, Ser. No. 898,707

Int. Cl.² G08B *21/00*

U.S. Cl. 340—671 **2 Claims**



1. A digital controlled rotation sensor for sensing the reduction of the rate of rotation of a member comprising, in combination, a sensor rotatably driven by the member to be sensed, said sensor producing an electronic signal pulsating at a rate directly proportioned to the rate of rotation of the member to be sensed and comprising a rotatable shaft drivenly connected to the member to be sensed, a circular disc mounted on said shaft for rotation therewith, alternately positioned light transparent and opaque portions defined on said disc, an infrared light source located adjacent one side of said disc and infrared light sensing means disposed adjacent the other side of said disc for sensing the rate of alternation of said light transparent and opaque portions past said light source producing said electronic signal, a digital counter receiving said electronic signal and counting the pulsations thereof, time reference signal producing means introducing a time reference signal into said digital counter, a first adjustable set point comparator connected to said digital counter capable of being pre-set to sense a predetermined pulse count and sensing the pulse count of said digital counter, alarm indicating means connected to said digital counter and set point comparator and producing an alarm control signal upon said set point comparator's sensing a predetermined reduction in the number of pulses being counted by said digital counter and the setting of said comparator, a second adjustable set point comparator connected to said digital counter capable of being pre-set to sense a predetermined pulse count and sensing the pulse count of said digital counter, said second set point comparator being connected to said alarm indicating means producing a second alarm control signal upon said second set point comparator sensing a predetermined reduction in the number of pulses being counted by said digital counter and the setting of said second set point comparator which is a greater reduction than the reduction in the number of pulses compared by said first set point comparator.

4,195,292
PROGRAMMABLE BOBBIN THREAD DETECTOR

Joseph M. Puhich, 3655 Prune Ridge Ave., Apt. 169, Santa Clara, Calif. 95051

Filed Mar. 9, 1978, Ser. No. 884,994

Int. Cl.² B65H *63/02;* G08B *29/00*

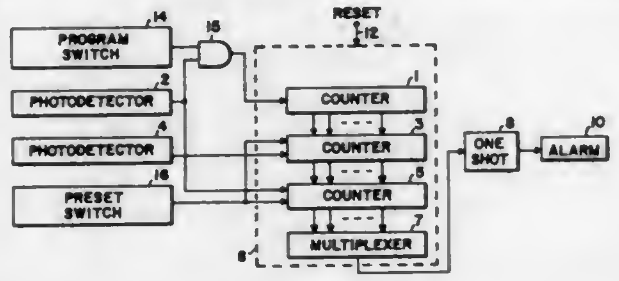
U.S. Cl. 340—677 **22 Claims**

1. An apparatus for indicating that the length of thread remaining on a sewing machine bobbin in the form of a number of thread revolutions, each one of which corresponds to a bobbin revolution, is at least as long as a predetermined seam length, comprising:

means for monitoring the number of thread revolutions remaining on said bobbin, said means for monitoring comprising:

first means for counting the number of bobbin revolutions occurring when sewing a seam of said predetermined length;

second means for counting, coupled to said first means and preset with the complement of the contents of said first means, the number of thread revolutions in a full bobbin; and



third means, coupled to said second means and preset with the complement of the contents of said second means, for counting each bobbin revolution occurring during subsequent sewing operations; and

means for generating a signal when the number of thread revolutions remaining on said bobbin is sufficient to complete only one more seam of said predetermined length.

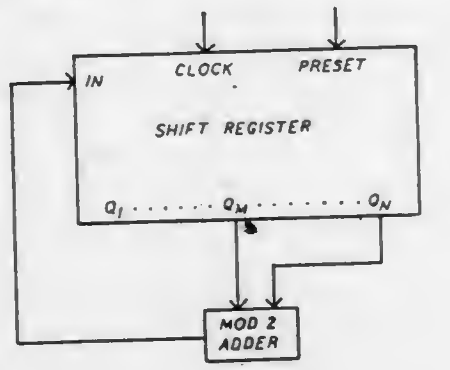
4,195,293
RANDOM DOT GENERATOR FOR RASTER SCAN VIDEO DISPLAYS

Jed Margolin, 555 W. Middlefield Rd, #B201, Mountain View, Calif. 94043

Filed May 18, 1978, Ser. No. 906,966

Int. Cl.^{2} G06K *15/20*

U.S. Cl. 340—732 **11 Claims**



1. A random dot generator for raster scan video displays comprising:

clock means for providing clock pulses at a selected rate in synchronism with the scanning rate of the video display;

a linear-feedback-shift-register having a plurality of stages including an output stage, said register being responsive to said clock pulses and operative to provide a miximal length pseudorandom binery bit sequence from said output stage;

preset means for presetting said register to the same non-zero state after the completion of each field of video display; and

means for applying said bit sequence to the normal video input terminal of a video display.

4,195,294
DUAL CHANNEL PROXIMITY FUZE

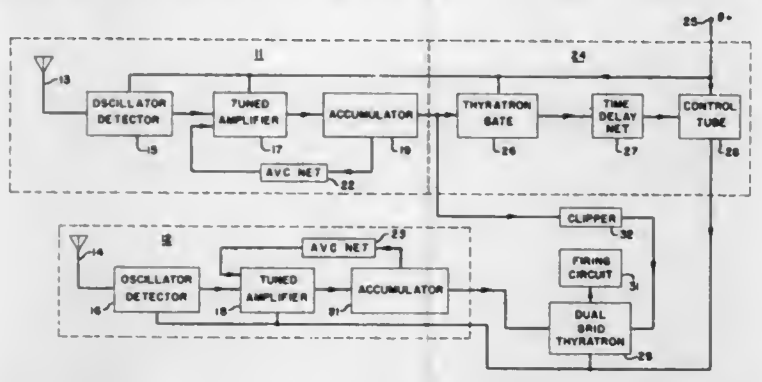
John D. Reid, Little Rock, Ark., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 15, 1956, Ser. No. 622,510

Int. Cl.^{2} F42C *13/04;* G01S *9/02*

U.S. Cl. 343—7 PF **8 Claims**

1. A fuze for detonating a projectile in proximity to a target comprising, first normally effective transceiver channel means for effecting radiation of a first electromagnetic signal into space and for receiving electromagnetic signals therefrom, including any portion of said first radiated signal reflected from a target, second transceiver channel means initially ineffective to radiate and receive a signal adapted to being rendered effective for effecting radiation of a second electromagnetic signal into space and for receiving electromagnetic signals therefrom, including any portion of said second radiated signal reflected from a target, control circuit means for rendering said second channel means effective, and normally nonoperating electroresponsive detonating circuit means adapted to being rendered operating by said channel means for detonating said projectile.



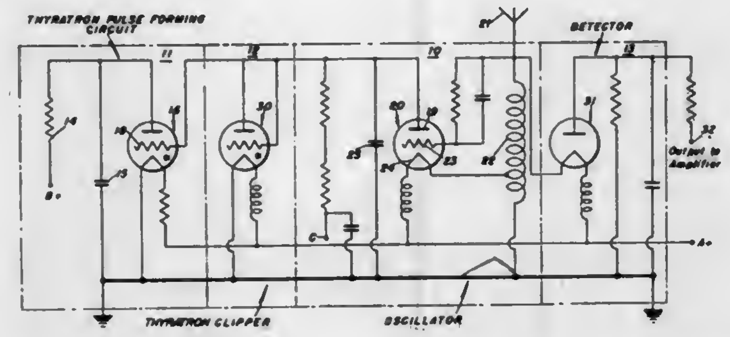
4,195,295
PULSE DOPPLER-RADIO PROXIMITY FUZE

John H. Kuck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 210,851, Feb. 14, 1951. This application Jan. 14, 1959, Ser. No. 786,899

Int. Cl.^{2} F42C *13/04;* G01S *9/02*

U.S. Cl. 343—7 PF **5 Claims**



1. A fuze for exploding projectiles and the like in proximity to a target, comprising, means for generating radio frequency waves, means for propagating said generated waves through the space intervening between the projectile and the target, a portion of said propagated waves being reflected back by said target toward said propagation means, means connected to said propagation means for simultaneously detecting said generated waves and said reflected waves to provide a signal for firing said fuze, said detecting means being sensitive to said reflected waves only in the presence of said generated waves, a variable impedance connected to said wave generating means, and means for varying said impedance from a relatively high value to a relatively low value thereby terminating the operation of said wave generating means to render said detecting means insensitive both to reflected waves and to spurious waves.

4,195,296
MICROWAVE CIRCULATOR

John C. Williams, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.

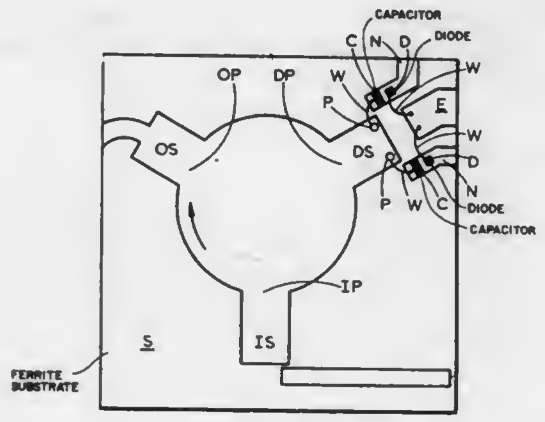
Filed Mar. 13, 1978, Ser. No. 886,133

Claims priority, application United Kingdom, Mar. 14, 1977, 10614/77

Int. Cl.^{2} G01S *9/50*

U.S. Cl. 343—8 **5 Claims**

1. A signal detection device for a Doppler radar system or the like comprising a circulator having an input port for receiving a signal to be transmitted toward a target, an antenna port for supplying to an antenna of the radar the signal to be transmitted and for receiving an echo signal reflected from the target, a detector port for supplying a signal comprising the echo signal and a small portion of the signal to be transmitted transferred thereto from said input port, said portion of said signal to be transmitted at said detector port having a phase which varies transversely of said detector port, said detection device further including a first and second detector means each connected to a respective one of two points spaced transversely across said detector port for producing, from said echo signal and said portion of said signal to be transmitted, two output signals of different phase and a frequency indicative of the velocity of the target relative to the radar system, the phase difference between said output signals being indicative of approach or recession of the target with respect to the radar system.



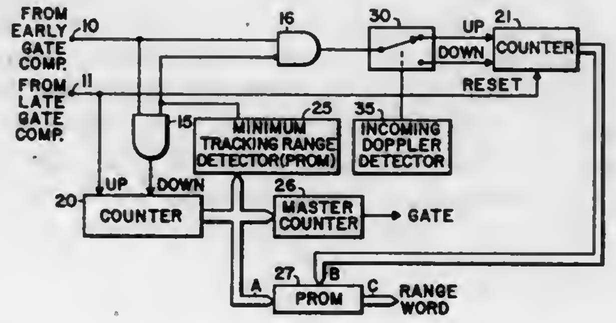
4,195,297
SHORT RANGE RADAR TRACKING APPARATUS

Leo B. Conner, Jr., Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 23, 1978, Ser. No. 880,669

Int. Cl.^{2} G01S *9/14, 9/37*

U.S. Cl. 343—12 R **6 Claims**



5. In a doppler radar of the type having early and late gate, leading edge tracking means, a method of estimating the range of a target during short range tracking comprising the steps of:

(a) counting doppler cycles from the early gate circuitry; and

(b) changing the range by a predetermined distance for each doppler cycle.

4,195,298
TARGET RADAR REFLECTOR

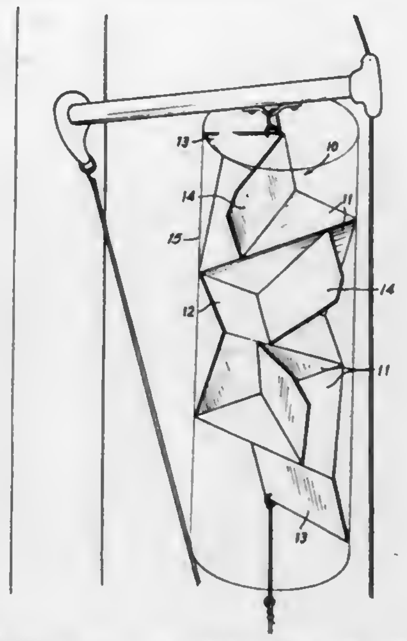
John H. Firth, 15 The Gowers, Harlow, Essex, England

Filed Jun. 21, 1978, Ser. No. 917,573

Int. Cl.^{2} H01Q *15/18*

U.S. Cl. 343—18 C **11 Claims**

1. A radar reflector having a major axis and comprising at least six corner reflectors directed outwardly of said major axis and disposed along two successive helical paths one of which paths is sinistrorse and the other of which paths is dextrorse.



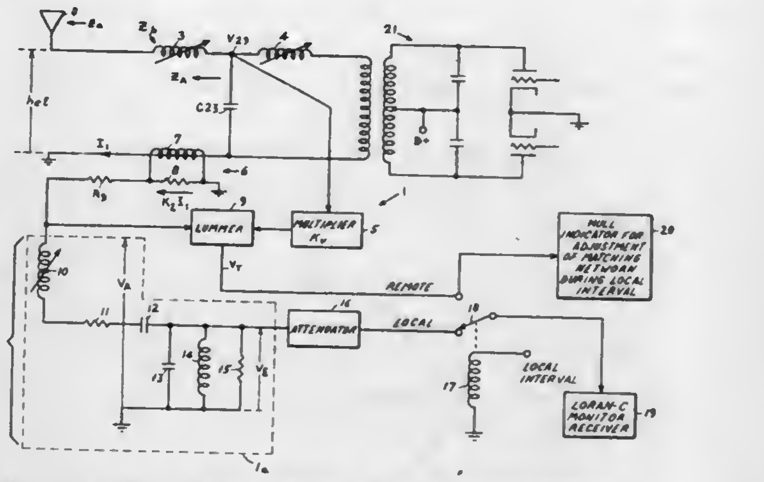
4,195,299
LORAN-C SYSTEM MONITOR CIRCUIT

James P. Van Etten, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 2, 1978, Ser. No. 882,690

Int. Cl.^{2} G01S *1/24*

U.S. Cl. 343—103 **8 Claims**



1. A Loran-C system monitor circuit comprising:

a Loran-C antenna and coupling circuit therefore disposed at a given site, said antenna and coupling circuit therefore being employed for both transmitting and receiving Loran-C signals;

first means disposed at said given site coupled to said antenna coupling circuit to detect far-field remote signals; and

second means disposed at said given site coupled to said antenna coupling circuit to detect far-field local signals.

4,195,300
DEVICE FOR SIMULATING THE LOCATING SIGNALS OF AN ILS BEACON

Claude A. Gouley, Cugnaux, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jul. 13, 1978, Ser. No. 923,930

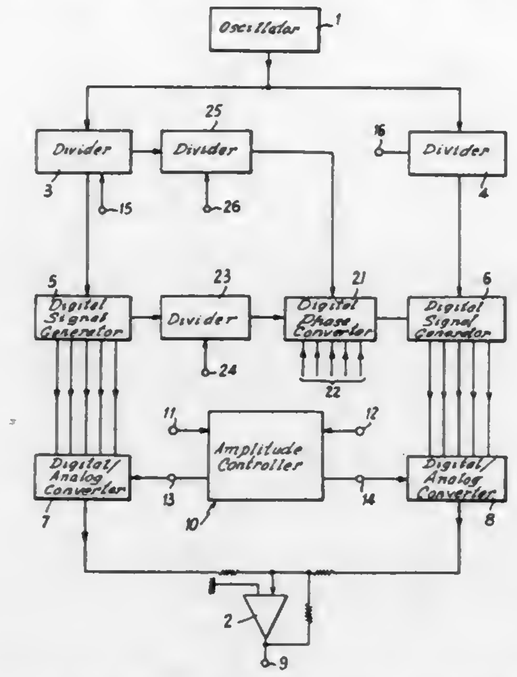
Claims priority, application France, Jul. 20, 1977, 77 22212

Int. Cl.^{2} G01S *1/24*

U.S. Cl. 343—109 **9 Claims**

1. A device for simulating the locating signals emitted by an ILS beacon having a radiation pattern comprising two elongated lobes, each of which lobes is symmetrical with respect to a longitudinal axis and corresponds to a high frequency signal carrying a low frequency sinusoidal modulation signal, said low frequencies being different from each other and each being specific to the lobe to which it corresponds,

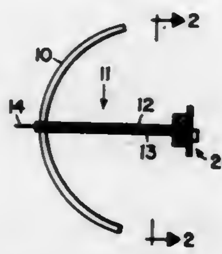
said device comprising two chains in parallel respectively adapted for the generation of said sinusoidal modulation signals, wherein each chain comprises a digital generator for one of said signals and a digital/analog converter provided with an input for controlling the reference amplitude of its output voltage and wherein said device comprises an at least partially digital arrangement for producing reference voltages applied to said inputs for controlling said digital/analog converters.



4,195,301
DISC ANTENNA FEED FOR PARABOLIC REFLECTOR

Peter J. Conroy, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1977, Ser. No. 821,021
Int. Cl.^{2} H01Q *19/12*
U.S. Cl. 343—700 MS **9 Claims**



1. An antenna comprising:

(a) a reflector having a generally paraboloidal shape with an axis through the focus thereof;

(b) a feedline including an outer electrical conductor and an inner electrical conductor, said outer conductor being affixed to said reflector in outwardly extending relationship generally coaxial with the axis of said reflector and said inner conductor extending through an opening in said reflector to form an input for the antenna;

(c) a first disc formed of electrically conducting material and affixed coaxially to the outer conductor in spaced relation to said reflector, said first disc having a first, centrally located opening therethrough and a second opening spaced radially outwardly from the first opening with the inner conductor of said feedline extending outwardly through the first opening and inwardly back through the second opening in spaced relation from said reflector; and

(d) a second disc formed of electrically conducting material and affixed coaxially to the outer conductor between said reflector and said first disc and in spaced relation therefrom, the inner conductor of said feedline extending through the second opening of said first disc being electrically connected to said second disc in radially outwardly spaced relation to the center thereof, said first disc forming a ground plane and said second disc forming a disc radiator of a disc antenna feed for said reflector.

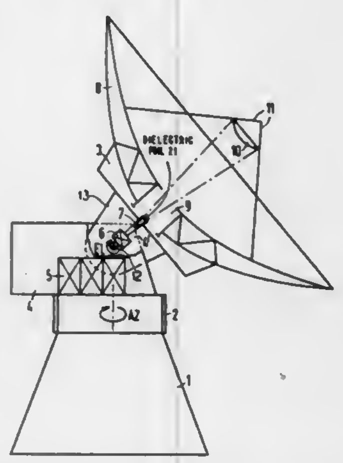
4,195,302
DOUBLE REFLECTOR ANTENNA WITH FEED HORN PROTECTION

Uwe Leupelt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 800,654, May 26, 1977, abandoned. This application Oct. 5, 1978, Ser. No. 948,669

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628713

Int. Cl.^{2} H01Q *1/02, 19/18*
U.S. Cl. 343—704 **1 Claim**



1. A double reflector rotation symmetrical antenna, such as a Cassegrain or Gregory antenna for the frequency range above 6 GHz and in particular above 10 GHz, installed in a satellite base station, comprising, a base member, an elevation shaft, a housing mounted on said base member, an antenna frame member rotatably supported on said elevation shaft, said elevation shaft supported by said housing, a primary reflector mounted on said frame member and formed with a central opening, a secondary reflector supported from said primary reflector and aligned with said central opening, and a primary field radiator mounted behind said primary reflector on said frame member to direct and receive radiant energy from said secondary reflector and including a receiving amplifier mounted within said housing and a radiating far field horn which on its end is covered with a thin dielectric foil to protect it from weather such as rain and snow and which extends from said housing toward said primary reflector which has substantial thickness at its center about said central opening and said horn terminates before the plane defined by the outer end of said central opening and is spared therefrom such that the walls of said central opening partially shield said horn from moisture such as rain, snow and ice.

4,195,303
MAGNETIC PRINTING PROCESS AND APPARATUS

Donald W. Edwards, Wilmington, Del., and Emery J. Gorondy, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 771,062, Feb. 25, 1977, which is a continuation-in-part of Ser. No. 672,553, Mar. 31, 1976, abandoned. This application Mar. 15, 1977, Ser. No. 777,242

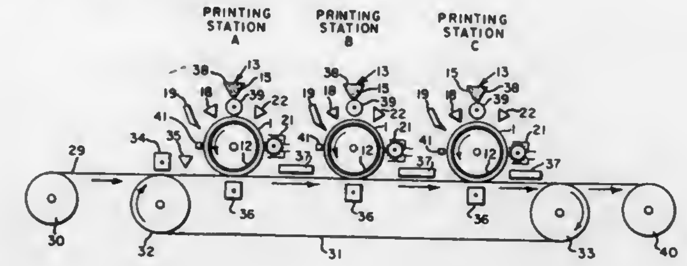
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.^{2} G01D *15/06;* **G11B** *9/00*
U.S. Cl. 346—74.1 **89 Claims**

1. Magnetic printing process comprising:

(a) providing a ferromagnetic material capable of continuously discharging an electric charge through its thickness to a support on which it is imposed, said support being electrically grounded; and

(b) forming a magnetic image on said ferromagnetic material by (i) magnetizing said ferromagnetic material in its entirety and thereafter heating one or more portions of said ferromagnetic material so as to at least partially demagnetize said portions; or (ii) magnetizing selected portions of said ferromagnetic material;



(c) developing the magnetic image by decorating the image with a ferromagnetic toner comprising a ferromagnetic component and a resin which substantially encapsulates the ferromagnetic component;

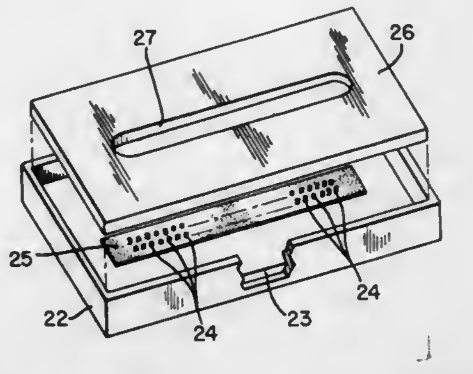
(d) transferring the developed image to a substrate; and

(e) adhering said developed image to said substrate.

4,195,304
CHARGE PLATE AND METHOD OF MANUFACTURE

James L. Gudorf, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 5, 1978, Ser. No. 912,495
Int. Cl.^{2} G01D *15/18*
U.S. Cl. 346—75 **6 Claims**



1. A charge plate for an ink jet printer comprising:

(a) a rigid support plate provided with a medially extending elongated slot,

(b) a non-conductive plastic electrode support structure provided with a series of molded charge tunnels and cast in place adheringly against the walls of said slot,

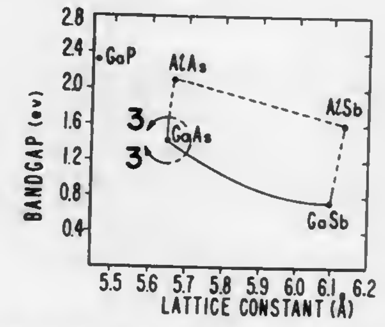
(c) charge electrodes adhered to the walls of said tunnels, and

(d) electrical lead means attached to said electrodes.

4,195,305
LATTICE CONSTANT GRADING IN THE $Al_yGa_{1-y}As_{1-x}Sb_x$ ALLOY SYSTEM

Ronald L. Moon, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 25, 1978, Ser. No. 945,653
Int. Cl.^{2} H01L *29/16*
U.S. Cl. 357—16 **6 Claims**



1. A semiconductor device subassembly comprising a crystalline GaAs substrate and a transition layer of AlGaAsSb grown on said substrate and compositionally graded in Al content to substantially match the lattice constant of said substrate at said substrate surface, said layer further graded in diminishing Al composition in the direction of growth.

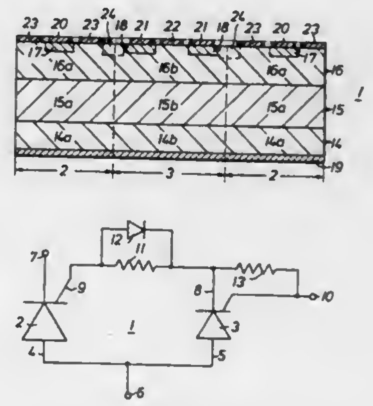
4,195,306
GATE TURN-OFF THYRISTOR

Marius Fullmann, Neu-Isenburg; Friedhelm Sawitzki, Frankfurt am Main, and Dieter Silber, Hausen, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 4, 1976, Ser. No. 711,690

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1975, 2534703

Int. Cl.^{2} H01L *29/747*
U.S. Cl. 357—38 **13 Claims**

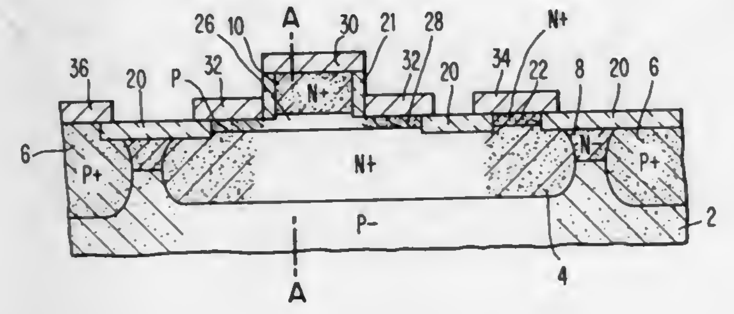


1. In a gate turn-off thyristor device including: a semiconductor body having three zones of alternatingly opposite conductivity type between the major surfaces thereof which constitute the control base, main base and counter-emitter zones respectively of a gate turn-off thyristor, and an emitter zone of a conductivity type opposite that of said control base zone formed in said control base zone at one of said major surfaces; said control base, main base and counter emitter zones of said semiconductor body being each divided into first and second regions with said emitter zone being in said first region of said control base zone, whereby said emitter zone and said first regions of each of said control base, main base and counter-emitter zones constitute a main gate turn-off thyristor; a further emitter zone of a conductivity type opposite that of said control base zone formed in said second region of said control base zone at said one major surface, whereby said further emitter zone and said second regions of each of said control base, main base and counter-emitter zones constitute an auxiliary gate turn-off thyristor; a common ohmic contact for said first and second regions of said counter-emitter zone; a respective ohmic contact on said one major surface for each of said first region of said control base zone, said second region of said control base zone, said emitter zone and said further emitter zone; and conductive means connecting said contact for said first region of said control base zone to said contact for said further emitter zone, whereby said contact for said first region of said control base zone and said common contact for both regions of said counter-emitter zone constitute the load current terminals of said thyristor device and said ohmic contact for said second region of said control base zone constitutes the control current input terminal of said thyristor device for turning same on and off; the improvement wherein: said first and second regions of at least one of said zones of said semiconductor body are differently doped to cause said auxiliary thyristor to have a turn-off gain and a holding current which are sufficiently less than the turn-off gain and the holding current respectively of said main thyristor so that said auxiliary thyristor will remain conducting during the current conducting switched-on state of said main thyristor and continuously feed a control current to said control electrode of said main thyristor to reduce the forward voltage drop of said main thyristor

whereby the on-state behavior of said semiconductor switch is improved and the holding current of said semiconductor switch is reduced.

4,195,307
FABRICATING INTEGRATED CIRCUITS INCORPORATING HIGH-PERFORMANCE BIPOLAR TRANSISTORS

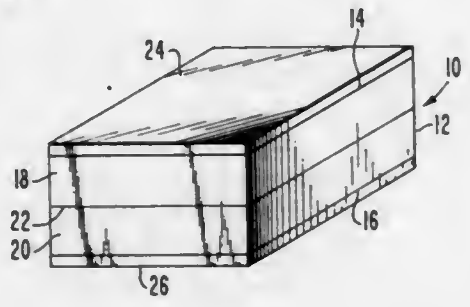
Chakrapani G. Jambotkar, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 818,640, Jul. 25, 1977, Pat. No. 4,099,987. This application Apr. 17, 1978, Ser. No. 896,654
Int. Cl.^{2} H01L *29/06, 29/72*
U.S. Cl. 357—56 **5 Claims**



1. A high performance bipolar semiconductor device in a silicon body comprising:
- a mesa emitter having a height of between about 5000 and 12000 Angstroms above said silicon body;
- passivation on the side peripheral surface of said mesa emitter;
- a base region including extrinsic and intrinsic base regions;
- said extrinsic base region surrounding said mesa emitter in said silicon body;
- said intrinsic base region forming a junction with said mesa emitter substantially in one plane; and
- an electrical contact to the top surface of said mesa emitter;
- an electrical contact to said extrinsic base region;
- said contact to said base region surrounding the said emitter mesa and abutting the said passivation on the peripheral surface of said emitter; and
- the thickness of said electrical contacts are substantially equal and about 1.5 to 2 times smaller than the height of said mesa emitter.

4,195,308
OHMIC CONTACT FOR P TYPE INDIUM PHOSPHIDE

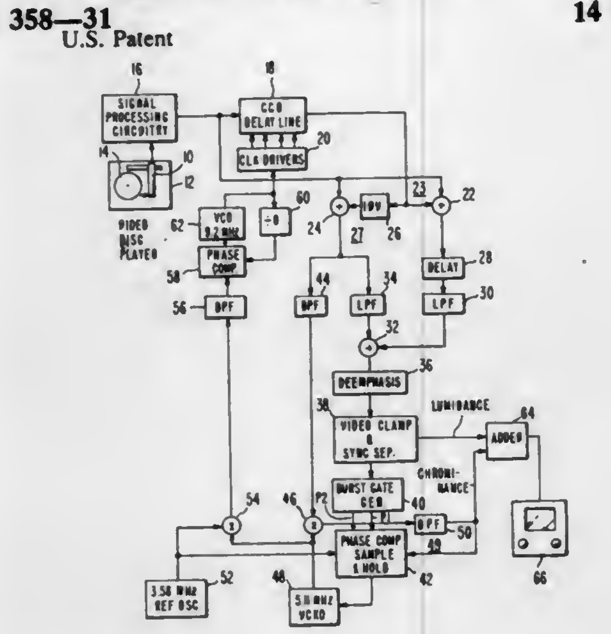
Frank Z. Hawrylo, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 5, 1978, Ser. No. 903,117
Int. Cl.^{2} H01L *23/48*
U.S. Cl. 357—67 **7 Claims**



1. A semiconductor device comprising:
- a body including a region of P type indium phosphide, and
- a contact on said P type indium phosphide region, said contact comprising an alloy of gold, germanium and zinc in which the germanium is present in an amount of 11% to 14% by weight.

4,195,309
VIDEO PROCESSING SYSTEM INCLUDING COMB FILTERS

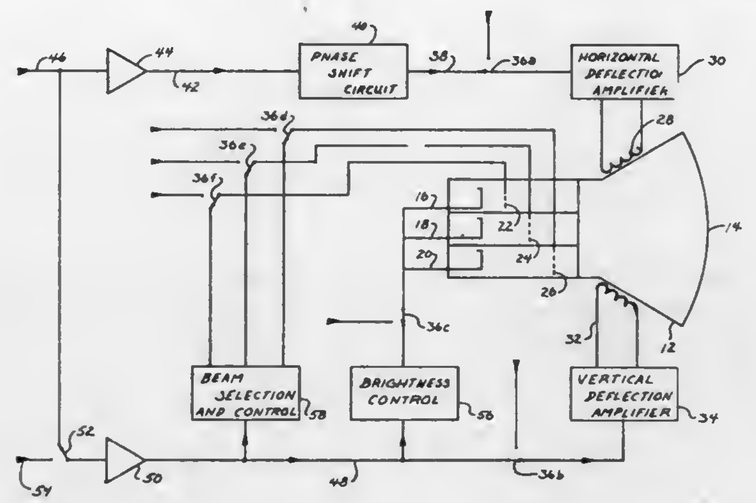
Christopher, Todd J., Indianapolis, Ind., and Larry L. Tretter, Poughkeepsie, N.Y., assignors to RCA Corporation, New York, N.Y.
Filed Dec. 4, 1978, Ser. No. 966,512
Int. Cl.^{2} H04N *9/535, 5/79*
U.S. Cl. 358—31 **14 Claims**



1. A system for processing composite color video signals including a luminance component occupying a given band of frequencies and a chrominance component interleaved with said luminance component over a portion of said given band and inclusive of a color synchronizing component, said composite color video signal components being concomitantly subject to spurious frequency variations; said system comprising:
- means for receiving said composite color video signals;
- controllable delay means coupled to said receiving means for imparting a controllable amount of delay to said composite color video signals;
- first comb filter means including means for subtractively combining signals provided by said delay means and said receiving means;
- second comb filter means including means for additively combining signals provided by said delay means and said receiving means;
- frequency reference means for providing a fixed reference frequency;
- first means for frequency translating the output of said first comb filter means to a frequency substantially equal to the reference frequency;
- second means, responsive to said reference frequency means and to said frequency translated signal for providing an output signal including said spurious frequency variations to said frequency translating means, whereby said spurious frequency variations are substantially reduced in said frequency translated signal;
- third means coupled to said second means and said reference frequency means for providing an output signal at a nominal frequency and including said spurious frequency variations;
- means, coupled between said third means and said controllable delay means and responsive to said third means output signal for varying the delay imparted by said delay means concomitantly with said spurious frequency variations in a sense establishing an inverse relationship between said spurious frequency variations and the concomitant delay variations; and
- means for combining the output signals from said second comb filter means and said first means for providing an output composite color video signal.

4,195,310
KINESCOPE DRIVE SYSTEM FOR DISPLAYING AUDIO SIGNALS

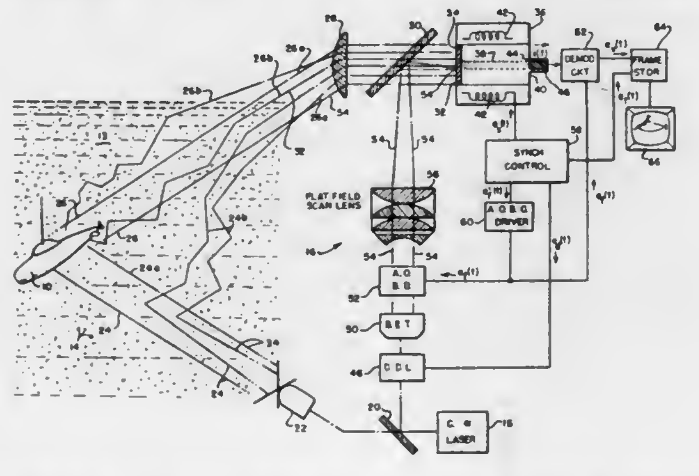
John L. Anello, Auburn, Calif., assignor to Phastek, Auburn, Calif.
Filed Jul. 12, 1978, Ser. No. 923,826
Int. Cl.^{2} H04N *9/02*
U.S. Cl. 358—81 **5 Claims**



1. A system for driving a kinescope in response to an audio signal to produce an aesthetic pattern thereon that varies with the frequency and amplitude of the audio signal, said kinescope being of the type having a screen, a cathode for producing an electron beam for impinging on the screen, and first and second orthogonal deflection means for deflecting the beam to effect excitation of selected regions of the screen, said system comprising means for coupling said audio signal to said first deflection means, phase shifting means for shifting the phase of said audio signal by 90° at a given audio frequency, means coupling the outlet of said phase shifting means to said second deflection means, means for adjusting said given audio frequency within the audio range; means responsive to the amplitude of the audio signal for varying the intensity of the beam produced by said cathode so that the brightness of said pattern varies with the magnitude of said audio signal; and, switch means for alternately producing a first output which activates said cathode and a second output which deactivates said cathode and means responsive to said audio signal for activating said switch in response to the magnitude of said audio signal.

4,195,311
COHERENCE LENGTH GATED OPTICAL IMAGING SYSTEM

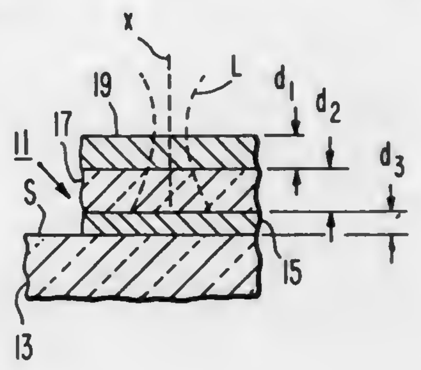
Steven E. Moran, Lakeside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 28, 1978, Ser. No. 937,655
Int. Cl.^{2} H04N *7/18*
U.S. Cl. 358—95 **11 Claims**



1. Apparatus for overcoming scatter interference in viewing an object through a diffusive medium, said apparatus comprising:
- source means for providing a coherent light signal of selected coherence length;
- means receiving a first component of said provided coherent light signal for projecting said first component through said diffusive medium to said object;
- means positioned to receive a portion of said first component of said coherent light signal which is reflected by said object back through said diffusive medium, said portion comprising a received coherent light signal;
- means receiving a second component of said provided coherent light signal for shifting the frequency of said second component by a selected amount to provide a local oscillator coherent light signal;
- means optically coupled to said receiving means and said frequency shifting means for heterodyning said local oscillator coherent light signal with light of said received coherent light signal during each time period in a succession of time periods to provide successive sets of discrete heterodyne signals, the heterodyne signals of one of said sets together representing reflective surfaces of said object which are included in a viewing space having a linear dimension which is on the order of said coherence length of said provided coherent light signal; and
- optical delay means lying on the optical path traversed by said local oscillator coherent light signal for changing the length of said optical path by a distance on the order of the coherence length of said provided coherent light signal at the conclusion of each of said time periods.

4,195,312
RECORDER AND ANTIREFLECTIVE RECORD BLANK HAVING AN OPTICALLY PASSIVE TRANSPARENT LAYER

Alan E. Bell, East Windsor, and Robert A. Bartolini, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Feb. 24, 1978, Ser. No. 880,759
Int. Cl.^{2} G01D *15/34;* **G11B** *7/00;* **H04N** *5/76*
U.S. Cl. 179—100.1 G **3 Claims**



1. In a radiant energy recording system employing a recording laser providing light of a given frequency; a record blank comprising the combination of:
- a substrate;
- a layer of material exhibiting high reflectivity at said given frequency, said layer overlying a surface of said substrate;
- a first coating, of a thickness equal to an integer multiple of the half-wavelength of the laser light output passing therethrough, exhibiting light transparency at said given frequency, said first coating overlying said layer; and
- a second transmissive coating exhibiting both absorptivity and antireflectivity at said given frequency, said second coating overlying said first coating;
- wherein the antireflectivity of said second coating minimizes energy loss due to reflection, the reflectivity of said layer minimizes energy loss into said substrate and the thickness of said first coating causes light reflected by said layer to be in phase with light reflected at the boundary of the second coating and the first coating thereby effecting an enhancement of the sensitivity of the record blank.

4,195,313

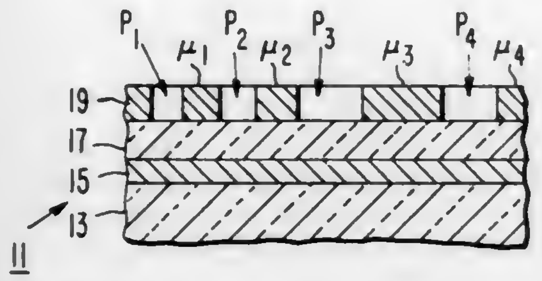
ANTIREFLECTIVE INFORMATION RECORD HAVING AN OPTICALLY PASSIVE TRANSPARENT LAYER

Alan E. Bell, East Windsor, and Robert A. Bartolini, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 880,759, Feb. 24, 1978. This application Dec. 14, 1978, Ser. No. 969,472

Int. Cl.^{2} H04N *5/76;* G11B *7/24*

U.S. Cl. 179—100.1 G **4 Claims**



1. In a radiant energy recording system employing a recording laser providing light of a given frequency an information record comprising the combination of:

a substrate having a light reflective surface;

a first coating, of a thickness equal to an integer multiple of the half-wavelength of the laser light output passing therethrough, exhibiting light transparency at said given frequency, said first coating overlying said light reflective surface; and

a second transmissive coating, said second coating overlying said first coating, said second coating being formed from a light absorptive material and having an information track formed therein;

wherein said information track comprises a succession of spaced pits, with variations in the spacing between successive pit edges representative of recorded information;

said second coating exhibiting antireflectivity at said given frequency in all regions other than those occupied by said pits;

wherein the antireflectivity of said second coating minimizes energy loss due to reflection, the reflectivity of said substrate surface minimizes energy loss into said substrate and the thickness of said first coating causes light reflected by said substrate surface to be in phase with light reflected at the boundary of the second coating and the first coating thereby effecting an enhancement of the sensitivity of the information record.

4,195,314

TUNING CIRCUIT FOR HIGH FREQUENCY RECEIVING APPARATUS WITH RESIDUAL SIDEBAND MODULATION, ESPECIALLY FOR TELEVISION RECEIVERS

Willy Minner, Schwaigern; Paul Sieber, and Ibolya Haraszti, both of Heilbronn, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

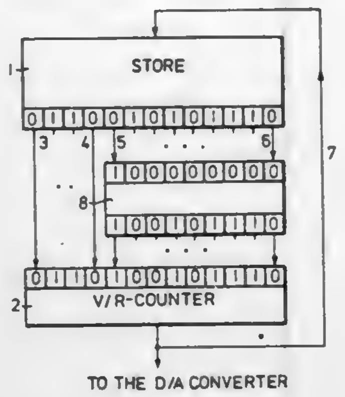
Filed Apr. 21, 1978, Ser. No. 898,867

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720170

Int. Cl.^{2} H04N *5/44*

U.S. Cl. 455—185 **8 Claims**

1. In combination with a high frequency receiving apparatus employing residual sideband modulation wherein the frequencies of the received signals are asymmetrically located with respect to the center frequency of the selection curve of said receiving apparatus; a tuning circuit comprising digital storage means for storing an encoded voltage corresponding to a selected one of said asymmetrically located frequencies, a counter for generating an encoded tuning voltage, and a digital-to-analog converter having an input coupled to the input of said storage means and the output of said counter for generating an analog voltage corresponding to the encoded tuning voltage at the output of said counter; wherein the improvement comprises digital circuit means coupled to said counter for shifting said analog voltage to a value corresponding to a frequency closer to said center frequency than said selected asymmetrically located frequency, said receiver being tuned to said selected frequency by fine tuning means.



4,195,315

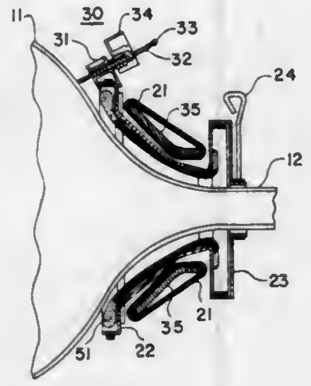
LOCKABLE ADJUSTMENT MEANS FOR SELF-CONVERGING ADJUSTABLE YOKE ASSEMBLY

Charles P. Pytlarz, Lake Zurich, and Richard L. Rost, Barrington, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 29, 1978, Ser. No. 947,130

Int. Cl.^{2} H01F *15/02*

U.S. Cl. 358—248 **7 Claims**



1. For use in a color television receiver including a picture tube having a funnel and a neck;

a low-cost self-converging beam deflection yoke and mounting system adapted to fit on said neck in close proximity to said funnel, said deflection yoke having a flexible plastic liner sandwiched between pairs of appropriately shaped horizontal and vertical deflection coils and including clamp means for securing said liner to the neck of the picture tube;

screw adjustment means mounted to said liner for abutting engagement with said funnel, rotation of said screw adjustment means tilting said yoke on said neck and altering its axial position with respect to the tube axis; and

lock means for releasably securing said screw adjustment means in position.

4,195,316

APPARATUS AND METHOD FOR CORRECTING IMPERFECTION IN A POLYGON USED FOR LASER SCANNING

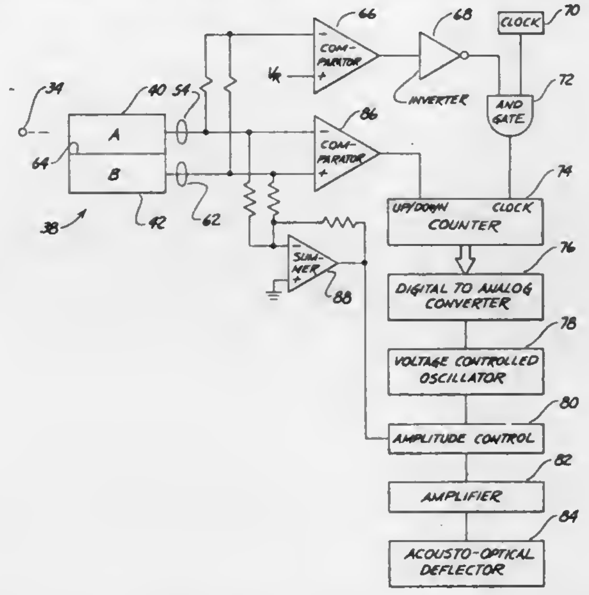
Ronald P. Sansome, Weston, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,582

Int. Cl.^{2} H04N *1/04*

U.S. Cl. 358—285 **1 Claim**

1. A light scanning apparatus, comprising: means for generating a laser beam, a multifaceted reflective polygon positioned in the beam path, amplitude modulating means intermediate the laser gernerating means and the polygon for deflecting the beam, means for rotating the polygon, whereby a beam being reflected from successive facets of the polygon sweeps along a scan path to provide successive raster lines, and a photoreceptor positioned to have a portion of each of the raster lines extend thereacross, the improvement comprising: detector means being positioned along the scan path adjacent to the photoreceptor in the path of at least part of the balance of each of said raster lines, said detector means including a reflective surface and a transparent surface, first light sensing means spaced relative to said reflective surface to receive light reflected from said reflective surface, second light sensing means spaced relative to said transparent surface to receive light passing therethrough, means connecting said first and second light sensing means with the amplitude modulating means to provide at least one signal indicative of the presence of the beam at a said surface, the modulating means being responsive to said signal to adjust the location of the beam so as to be incident upon both of said surfaces simultaneously.



4,195,317

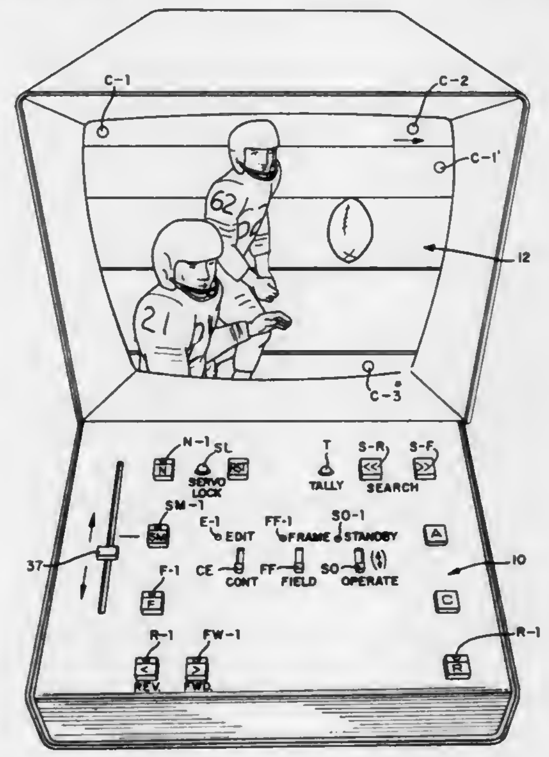
VIDEO RECORDING AND PLAYBACK EDITING SYSTEM WITH DISPLAYED CUE SIGNALS

Boyd L. Stratton, Woodside, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 842,247, Oct. 14, 1977, abandoned. This application Apr. 7, 1978, Ser. No. 894,413

Int. Cl.^{2} H04N *5/78;* G11B *27/02*

U.S. Cl. 360—14 **20 Claims**



1. A circuit for use with a video recording system in which a plurality of segments of video information may be recorded and subsequently replayed in succession for display upon a video monitor, comprising:

cue signal means for providing cue signals at selected times during recording of said segments of video information,

means for recording each of said plurality of segments of video information at one of a plurality of record locations on a magnetic recording medium,

means for replaying said plurality of segments of video information from said record locations on said magnetic recording medium,

means for generating a clocking signal as successive segments of video information are recorded or replayed,

counter means for cyclically assuming successive count states in response to said clocking signal,

storage means, responsive to said counter means and to said cue signal means, for storing the count state of said counter means upon receipt of each of said cue signals, and

means for generating a cue display signal in response to said storage means whereby said cue display signal may be superimposed upon the video information during recording said replay.

4,195,318

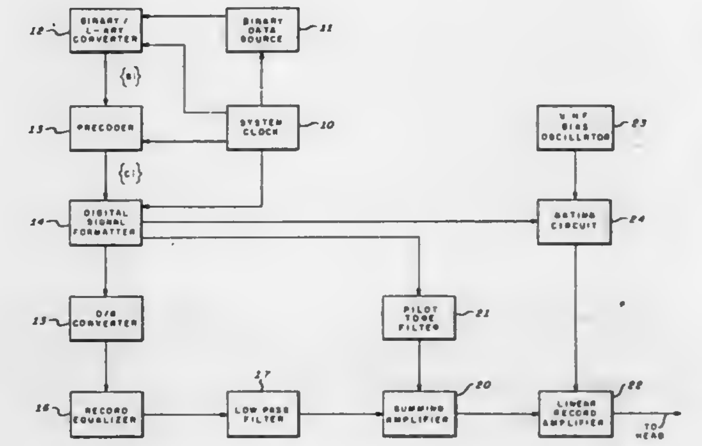
HIGH DENSITY BIAS LINEARIZED MAGNETIC RECORDING SYSTEM UTILIZING NYQUIST BANDWIDTH PARTIAL RESPONSE TRANSMISSION

Robert Price, Lexington; John W. Craig, Sudbury, both of Mass.; Avraham Perahia, Simi Valley, Calif., and Hartvig E. Melbye, Wayland, Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 20, 1978, Ser. No. 888,130

Int. Cl.^{2} G11B *5/09*

U.S. Cl. 360—39 **44 Claims**



1. A high density digital magnetic data storage system for storing digital data represented as data pulse signals, comprising

recording channel means responsive to said data pulse signals for providing recording signals,

magnetic interface means having a magnetic recording medium and read and record head means responsive to said recording signals, said head means and said magnetic medium adapted for relative motion with respect to each other for recording said recording signals on said medium,

reading channel means responsive to said recorded signals for providing read back pulse signals corresponding thereto,

said recording channel means, magnetic interface means and reading channel means comprising a partial response channel with the amplitude spectrum of said readback pulse signals having a null at the Nyquist frequency,

bias means for providing a bias signal to said head means for linearizing the recording process with respect to said medium,

recovery means responsive to said read back signals for providing recovered signals corresponding to said data pulse signals,

pilot tone generating means in said recording channel means for generating a pilot tone signal,

means for combining said pilot tone signal with said recording signals for recording on said medium,

pilot tone recovery means in said reading channel means responsive to said head means for recovering said recorded pilot tone,

envelope detector means responsive to said recovered pilot tone for providing a signal in accordance with the envelope thereof, and

gain control means responsive to said envelope signal for adjusting the gain of said reading channel means in accordance with said envelope signal, thereby gain stabilizing said system.

4,195,319

APPARATUS FOR DETECTING INFORMATION INDEX SIGNAL FROM MAGNETIC TAPE

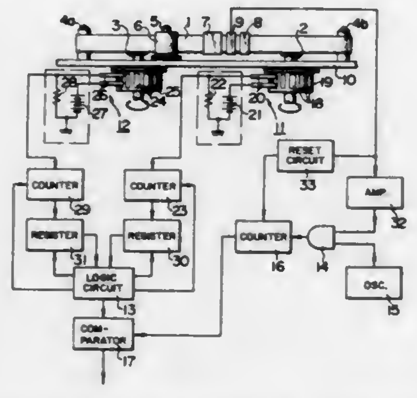
Masatoshi Ida, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Dec. 26, 1978, Ser. No. 972,808

Claims priority, application Japan, Jan. 12, 1978, 53/2459

Int. Cl.^{2} G11B *15/43*

U.S. Cl. 360—72.1 **5 Claims**



1. An apparatus for generating a count signal from a magnetic tape comprising a tape take-up shaft adapted to be driven for rotation at a uniform rate during a rapid advance or rewind of the tape for taking up the magnetic tape in which a plurality of information items are recorded, a first pulse generator responsive to the rotation of the tape take-up shaft to produce a reference pulse signal, a tape supply shaft adapted to rotate as the tape is taken up on the take-up shaft with a rotational speed which increases with an increasing diameter of tape roll on the take-up shaft, a second pulse generator responsive to the rotation of the tape supply shaft to produce a pulse signal at a rate which depends on the varying speed of the supply shaft, means for counting the number of pulses produced per unit time by the first and second pulse generators, a logic circuit for converting a ratio of the number of both pulses into a continuous voltage value which is proportional to the varying tape speed, a detecting head for detecting a signal-free area between adjacent information items recorded on the magnetic tape, an AND gate enabled by a detection signal from the detecting head for passing clock pulses from a clock pulse generator, a pulse counter for receiving clock pulses from the AND gate, and a comparator receiving the count output from the pulse counter and a voltage value from the logic circuit and converting the count output into a corresponding voltage value, the comparator producing a count signal for information retrieval only upon coincidence between the both voltage values.

4,195,320

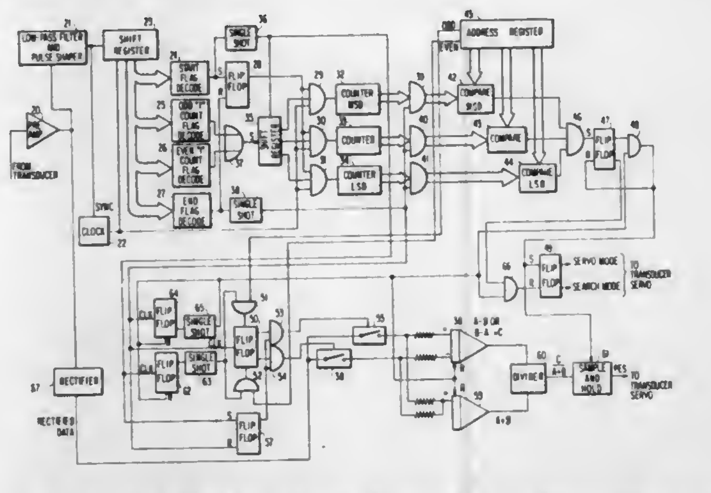
RECORD TRACK IDENTIFICATION AND FOLLOWING

Rolf Andresen, Broomfield, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1978, Ser. No. 906,301

Int. Cl.^{2} G11B *21/10, 5/82*

U.S. Cl. 360—78 **6 Claims**



1. A record member having a plurality of servo sector areas, including servo track follow integration areas comprising equal numbers of signal bursts respectively representing binary "1" and binary "0", the improvement comprising a predetermined arrangement of said signal bursts to identify a plurality of record track location lines, said predetermined arrangement being characterized by the insertion of one of first or second binary codes which exhibit high self-correlation properties at positions within said integration areas corresponding to a consecutive number of said signal bursts equal to a digit in an address identifying one of said track location lines, said first and second binary codes bring complements and composed of an odd number of said signal bursts and being selected so as to maintain the number of signal bursts representing binary "1" and binary "0" in said servo track follow integration areas equal.

4,195,321

APPARATUS FOR LOADING A PLURALITY OF FLOPPY DISKS IN A READING AND/OR WRITING UNIT

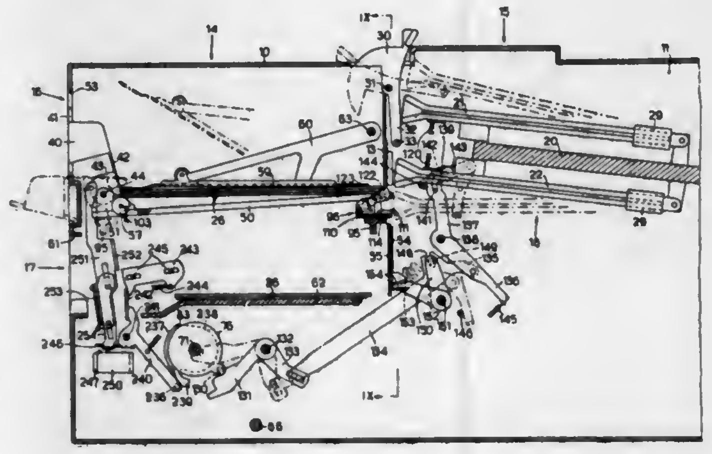
Cesare Chelin, Caluso, and Armando Costa, Ivrea, both of Italy, assignors to Ing. C. Olivetti & Co., S.p.A., Italy

Filed Apr. 13, 1978, Ser. No. 896,220

Claims priority, application Italy, Apr. 20, 1977, 67873 A/77

Int. Cl.^{2} G11B *17/00*

U.S. Cl. 360—98 **4 Claims**



1. An apparatus for sequentially recording and/or reading one at a time a plurality of flexible magnetic disks piled one on top of the other, and for simultaneously recording and/or reading a single flexible magnetic disk, said apparatus comprising:

a unit for simultaneously recording and/or reading two flexible magnetic disks, said unit comprising a first and a second transducer, a first and a second driving spindle, first positioning means for positioning each disk of said plurality of disks with respect to said first transducer and said first driving spindle, and second positioning means for positioning said single disk with respect to said second transducer and said second driving spindle;

a loading stacker having a substantially horizontal base plate on which said plurality of disks are piled one on top of the other, said base plate being disposed substantially aligned with said first positioning means;

a receiving stacker disposed below said loading stacker for receiving each disk of said plurality of disks already recorded and/or read by said unit;

feeding means for sequentially feeding one at a time said plurality of disks from said loading stacker to said first positioning means of said unit;

ejecting means for ejecting each disk of said plurality of disks already recorded and/or read by said unit from said first positioning means to said receiving stacker; and

introducing means for manually introducing said single disk into said second positioning means of said unit, said introducing means being operable independently from said feeding means, whereby the introduction of said single disk into said unit is independent from the feeding operation of each disk of said plurality of disks.

4,195,322

RECORD/PLAYBACK HEAD AND DATA STORAGE APPARATUS THEREFOR

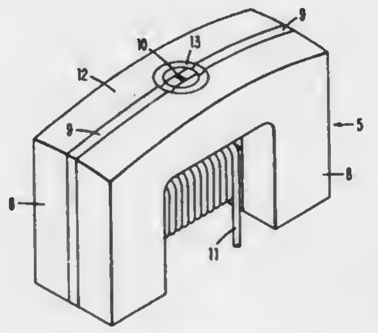
Allen R. Cox, Tucson, Ariz.; Rafael Pascual, Winchester, England, and Leonard J. Rigbey, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 1, 1978, Ser. No. 939,033

Claims priority, application United Kingdom, Sep. 30, 1977, 40815/77

Int. Cl.^{2} G11B *5/60, 5/22, 21/20*

U.S. Cl. 360—103 **31 Claims**



1. A record/playback head, intended in use to coact with a moving flexible recording medium to establish an air bearing therebetween, comprising:

a progressively curved convex medium-facing surface in which a transducing element is provided and having an endless unbroken groove formed therein spaced from and completely surrounding the transducing element.

4,195,323

THIN FILM MAGNETIC RECORDING HEADS

Fred S. Lee, Oklahoma City, Okla., assignor to Magnex Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 830,104, Sep. 2, 1977. This application May 24, 1978, Ser. No. 909,285

Int. Cl.^{2} G11B *5/16*

U.S. Cl. 360—113 **8 Claims**

1. A magnetic transducer head and slider assembly comprising:

a substrate having uniformly smooth surface and thickness at least equal to slider length;

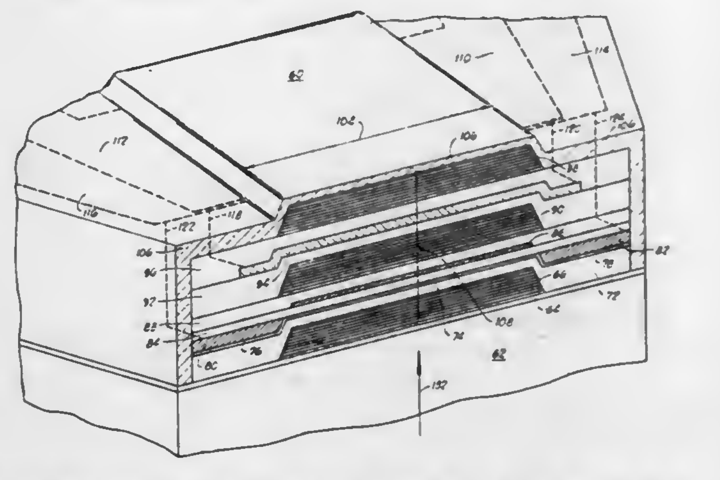
shield means consisting of magnetostatically coupled multi-layer thin films deposited insulatively on said substrate;

sensor means and substantially coextensive therewith magnetic thin film deposited insulatively on said shield means;

conductor means in electrical contact with said sensor means;

bias means comprising a thin film of permanent magnetic material deposited insulatively on said sensor means and substantially coextensive therewith;

shield pole means consisting of magnetostatically coupled multi-layer thin films deposited insulatively to overlay said bias means and substantially coextensive therewith;



write conductor means deposited insulatively on said pole means and substantially coextensive therewith;

trailing edge pole means consisting of magnetostatically coupled multi-layer thin films deposited insulatively to overlay said write conductor means; and

passive means deposited to overlay and encapsulate the composite of the film layers while exposing said conductor means; so as to form a highly sensitive thin film head.

4,195,324

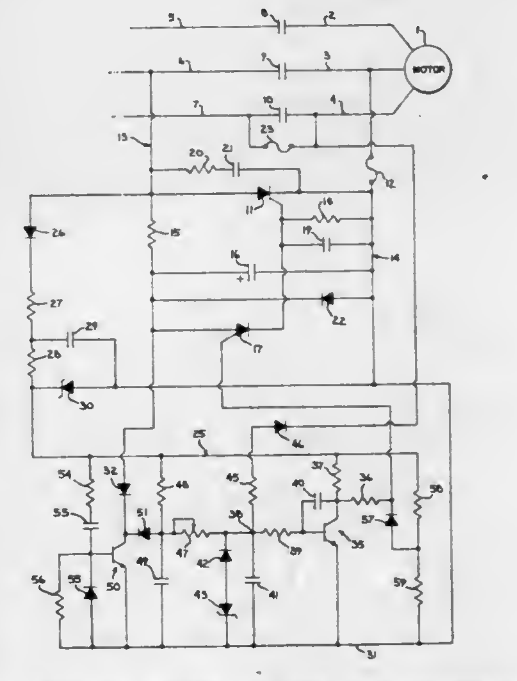
HEATING CIRCUIT FOR AN ELECTRIC MOTOR

Richard W. Waltz, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 26, 1978, Ser. No. 928,303

Int. Cl.^{2} H02H *7/08*

U.S. Cl. 361—25 **6 Claims**



1. A motor heating circuit for use in combination with a motor starter having a set of line contacts which couple a.c. line current to the winding of an a.c. motor, comprising:

electronic switch means having current conducting elements which are connected across one of said line contacts and a current control element which is responsive to an applied gating signal to enable current conduction through said current conducting elements to said motor winding;

gating signal generator means having an output connected to said current control element and being operable to generate said gating signal once during each cycle of line current, the timing of said generated gating signal being a function of the magnitude of a command signal applied to its input terminal;

a feedback circuit coupled to the a.c. motor to generate a feedback signal indicative of motor temperature;

a reference circuit for generating a preselected signal; and

a summing circuit connected to said feedback signal circuit and said reference signal circuit for generating a command signal to the input of said gating signal generator which is proportional in magnitude to the sum of said feedback signal and said reference signal.

4,195,325

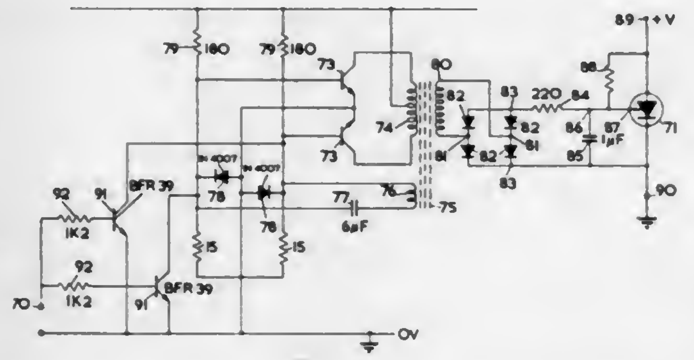
MEANS FOR PROTECTING HAZARDOUS AREAS AGAINST ELECTRICAL FAULTS

Edward G. Richardson, Bath, and Keith H. Williamson, Fetcham, both of England, assignors to National Research Development Corporation, London, England

Filed Dec. 13, 1977, Ser. No. 860,219

Int. Cl.² H02H *3/20, 7/20*

U.S. Cl. 361—56 **7 Claims**



1. An electrical safety device for fail-safe protection of an electrical system against electrical transients, which device comprises an SCR to provide a short circuit for hazard isolation, a first biassing circuit arranged to supply a first bias signal capable of switching on the SCR and a second biassing circuit arranged to supply a second SCR bias signal equal in magnitude and of opposite polarity to the first bias signal so that in normal use the SCR is off, the second biassing circuit being operative to remove the second bias signal in response to an input thereto of an electrical transient signal having a rate of change in excess of a threshold value so that the first bias signal switches on the SCR to provide the short circuit for hazard isolation.

4,195,326

PREDETERMINED TEMPERATURE COEFFICIENT CAPACITOR

Frank A. Ruegg, Brea, and William A. Vitriol, Anaheim, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Sep. 12, 1977, Ser. No. 832,327

Int. Cl.² H01G *4/36*

U.S. Cl. 361—274 **8 Claims**

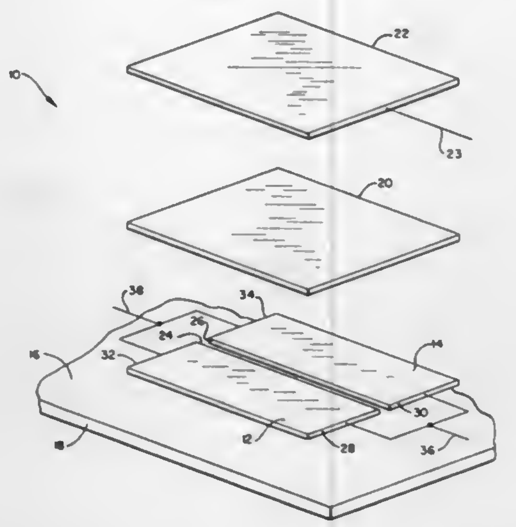
1. A thick film capacitor with a predetermined fixed temperature coefficient of capacitance, said capacitor comprising:

a substrate;

a first layer of at least two separate electrodes of different materials positioned side by side in the same layer plane, said two separate electrodes being physically in contact with each other;

a dielectric layer fired on said two separate electrodes; and

a top layer electrode formed over said dielectric, the effects of said dielectric layer being fired over said two separate electrodes providing in conjunction with said top layer electrode a negative temperature coefficient of capacitance with one of said two separate electrodes and a positive temperature coefficient of capacitance with the other of said two separate electrodes, said two separate electrodes operating in conjunction with said top layer electrode to provide a capacitor with said predetermined temperature coefficient of capacitance.



4,195,327

DEVICE FOR REGULATING THE ANGLE OF ELEVATION OF THE HEADLAMPS OF A VEHICLE

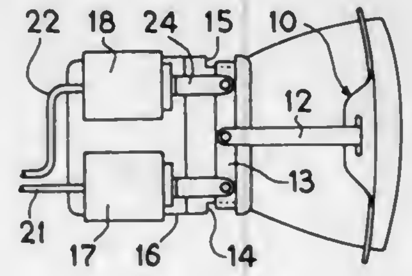
Gerard Piquot, Bois-Colombes, France, assignor to Automobiles Peugeot, Paris, France

Filed Mar. 10, 1978, Ser. No. 885,204

Claims priority, application France, Mar. 18, 1977, 77 08194

Int. Cl.² B60Q *1/10;* **F21M** *3/00*

U.S. Cl. 362—66 **3 Claims**



1. A device for regulating the angle of elevation or depression of a vehicle headlamp comprising means for mounting the headlamp on the vehicle to be pivotable about an axis which is transverse to the direction of the beam of light given out by the headlamp, driving means connected to an upper part of the headlamp, a swing-bar connected to said driving means, a support for mounting the swing-bar on the vehicle, the swing-bar being pivotable relative to the support, two fluid-operated jacks carried by the support and each having a rod capable of occupying two positions, means for supplying fluid to the jacks, the swing-bar having end portions respectively pivoted to the rods of the jacks, and abutments fixed relative to the support and cooperable with the end portions of the swing-bar for defining end-to-end travel positions of the swing-bar.

4,195,328

OPEN VEHICLE LIGHTING SYSTEM UTILIZING DETACHABLE VEHICLE OPERATOR HELMET MOUNTED LIGHT

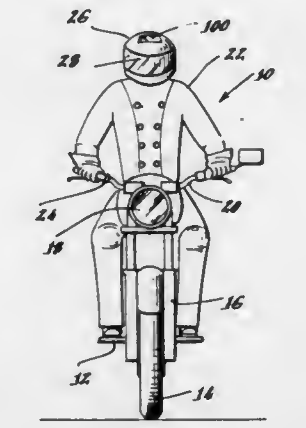
William R. Harris, Jr., 109 Wilton Rd., Westport, Conn. 06880

Filed Jun. 19, 1978, Ser. No. 916,513

Int. Cl.² F21V *33/00*

U.S. Cl. 362—72 **10 Claims**

1. In a lighting system for an open vehicle carrying an operator exposed to the vehicle surroundings, including a main headlight having means to rigidly secure it to the vehicle for projecting a beam of light forward of the vehicle, an electrical circuit connecting the main headlight to a power source, a switch forming part of the electrical circuit, the switch being located for access by the operator and activatable by the operator to cause the main headlight to project a beam of light, the improvement therein comprising an auxiliary headlight detachably mounted on a helmet worn by the vehicle operator, electrical circuit connecting means detachably connecting the auxiliary headlight to the electrical circuit and switch of the main headlight to be activatable by the operator to project an auxiliary beam of light in conjunction therewith, the auxiliary headlight projecting the auxiliary beam of light in a plurality of directions independent of the direction of the beam of the main headlight at the discretion of the vehicle operator under conditions of vehicle use and the main headlight and the auxiliary headlight being spaced apart in a vertical plane normal to the path of travel of the vehicle to project two distinct separate sources of light when viewed from a remote location in the forward path of travel of the vehicle, whereby improved illumination of the path of travel of the vehicle, enhanced visibility of the vehicle and operator and greater safety of operation is obtained.



4,195,329

DIAGNOSTIC LAMP, PARTICULARLY FOR CHECKING TEETH

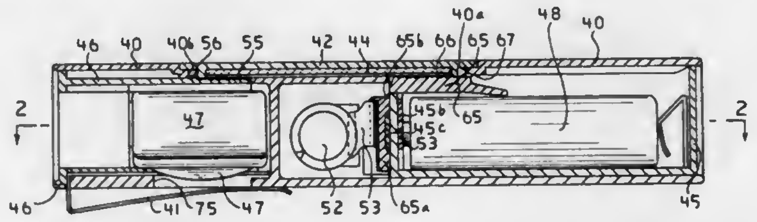
Philippe-Guy E. Woog, Vesenaz, Switzerland, assignor to Les Produits Associes LPA SA, Geneva, Switzerland

Continuation-in-part of Ser. No. 744,751, Nov. 24, 1976. This application Dec. 1, 1977, Ser. No. 856,396

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2725793

Int. Cl.² B25B *23/18*

U.S. Cl. 362—120 **7 Claims**



1. A diagnostic lamp for fluorescent excitation of a fluorescible material applied to a part of a body to be tested, comprising:

a housing of a size which can be handled easily and conveniently by a user, said housing having two opposing open ends;

two insert assemblies, each of which is removably push fitted into one of the two opposing open ends of said housing;

one of said insert assemblies including a light source and adapted for accommodating a power supply for said light source, and associated electrical circuitry;

the other of said insert assemblies containing a dispenser for fluorescible material;

a filter positioned in-front of said light source for allowing the transmission of a exciting radiation necessary to the generation of fluorescence of the fluorescible material; and

a cover attached to the housing, having a mirror on an inside surface thereof, said cover being movable between an open position where the light source and mirror are exposed and a closed position in which the light source and mirror are protected by said cover.

4,195,330

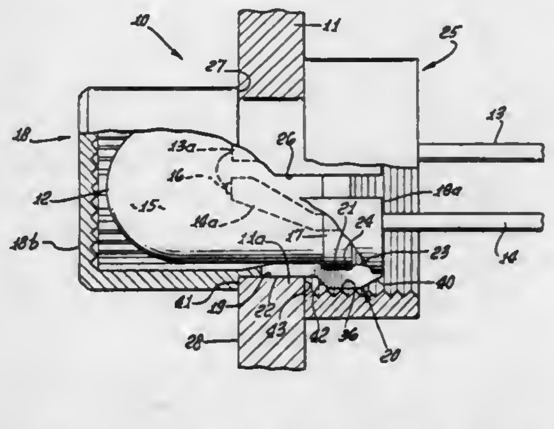
LENS CLIP AND CAP FOR LED OR LIGHT UNIT ASSEMBLY

John M. Savage, Jr., 8118 W. 83rd St., Apt. C, Playa Del Rey, Calif. 90291

Continuation-in-part of Ser. No. 787,016, Apr. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 638,626, Dec. 8, 1975, abandoned. This application May 19, 1978, Ser. No. 907,735

Int. Cl.² H01R *33/00*

U.S. Cl. 362—226 **39 Claims**



1. In a light emitting diode assembly attachable to a display panel, said assembly comprising:

(a) a light emitting diode, having locking structure thereon, said structure defining a boss,

(b) a lens cap receiving the diode forwardly therein, clips means integral with the cap and projecting sidewardly proximate the diode locking structure,

(c) said clip means defining spring fingers projecting rearwardly at the side of the diode, the fingers defining first grooves to receive the boss on the diode and second grooves to receive portions of the display panel adjacent an opening formed therein, and wherein,

(d) the spring fingers define first cam surfaces rearwardly of the first grooves and angled to be radially spread by the diode boss in response to forward insertion of the diode into the cap.

4,195,331

LAMP CHANGING MODULE

Eric. M. Jones, Los Angeles, Calif., assignor to Karl Storz Endoscopy-America, Inc., Los Angeles, Calif.

Filed Dec. 30, 1977, Ser. No. 865,940

Int. Cl.² F21V *25/12;* **H01J** *5/02, 5/12, 5/14, 5/48*

U.S. Cl. 362—368 **22 Claims**

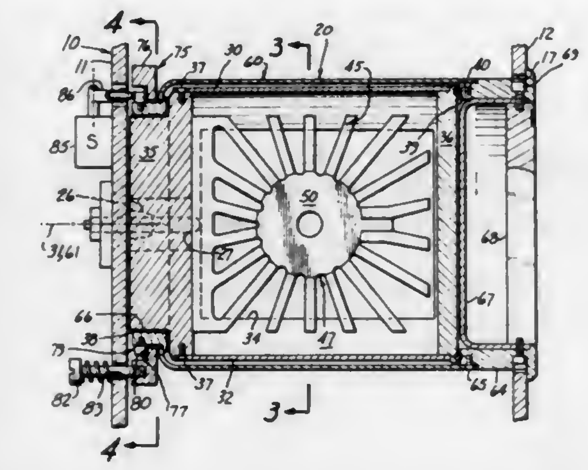
1. A lamp changing module for totally enclosing and assuring the total enclosure of a lamp at the time when the module is withdrawn from a support means, and permitting exposure of the lamp when it is connected to said support means, said module comprising:

an internal sheath having an axis and a window facing said axis, said window having a peripheral extent not greater than 180°;

lamp mounting means non-rotatably secured to said sheath, and connected thereto for axial movement therewith, said lamp mounting means being adapted to support a lamp so it emits light toward said window;

electrical connection means carried by said lamp mounting means adapted to make electrical connection with the lamp;

a tubular cover surrounding said sheath having an axis and an aperture facing said axis, said cover being mounted to said sheath for rotation relative thereto, said axes being coincident or parallel, and said window and aperture being so disposed and arranged that in a first relative angular position of the sheath and cover they are aligned to give direct visual access to the lamp, and in a second relative angular position they are non-aligned so as to prevent direct visual access to the lamp; and key means having a first portion attachable to said support means and a second portion carried by the module, said key means preventing removal of the module from the support means when the sheath and the cover are in said first relative angular position, and enabling removal of the module from the support means when the sheath and the cover are in said second relative angular position.



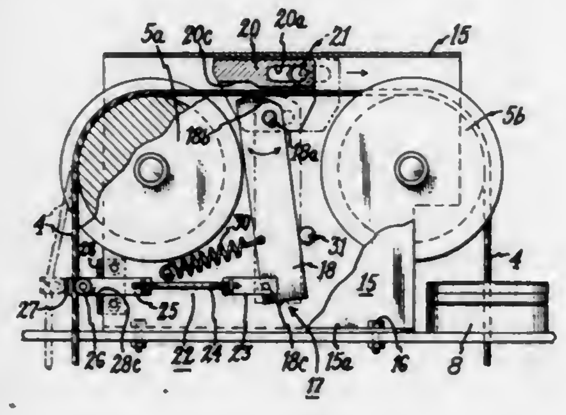
4,195,332
LUMINAIRE HOIST SAFETY DEVICE WITH AUTOMATIC BRAKE MEANS ADJACENT TOP CABLE GUIDE

Richard L. Thompson, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed May 22, 1978, Ser. No. 908,187

Int. Cl.^{2} F21V *21/36*

U.S. Cl. 362—391 **10 Claims**



1. Hoist apparatus and safety device therefor comprising, in combination, a pole, fixed support means secured at the top of said pole, load support means movable between the top and bottom of said pole, hoist means for raising and lowering said load support means on said pole, cable guide means mounted on said fixed support means, hoist cable means passing around said guide means and connected at one end to said load support means and at the other end to said hoist means, and brake means adjacent to said guide means and in operative engagement with said hoist cable means and responsive to the breakage thereof for automatically clamping and holding said hoist cable means for preventing fall of said load support means.

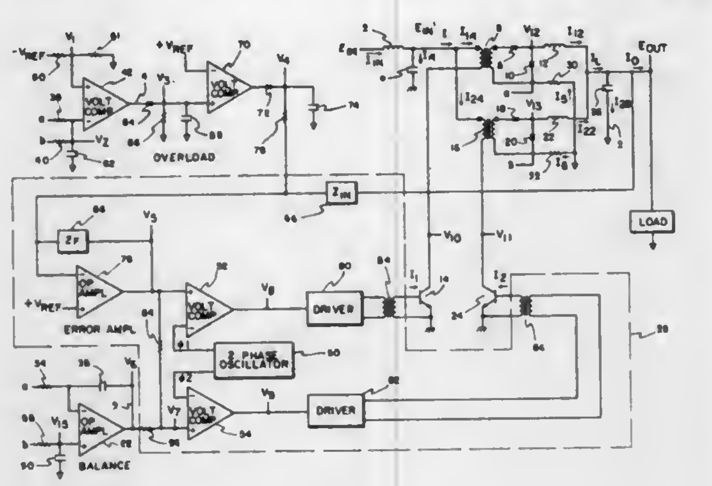
4,195,333
DC TO DC VOLTAGE CONVERTER

Kurt K. Hedel, Utica, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed May 30, 1978, Ser. No. 910,330

Int. Cl.^{2} H02M *3/335*

U.S. Cl. 363—21 **9 Claims**



1. A staggered mode DC to DC voltage converter for converting an input DC signal subject to voltage variations to a regulated output DC voltage comprising:

an input filter consisting of a first inductor and first capacitor connected in series, having said input DC signal applied across said inductor and capacitor;

a first single ended converter having a first and second input terminal, said first input terminal being connected to said input filter at a point located between said first inductor and said first capacitor, and said second input terminal being connected to a first switching means so as to switch said first single ended converter to a conducting or nonconducting state at specific times, said first single ended converter further comprising a first transformer means whose output current is first rectified by a first rectification means being connected to both ends of said first transformer means and then averaged by a first averaging means to yield a first average current;

a second single ended converter having a first and second input terminal, said first input terminal being connected to said input filter at a point located between said first inductor and said first capacitor, and said second input terminal being connected to a second switching means so as to switch said second single ended converter to a conducting and nonconducting state at specific times, said second single ended converter further comprising a second transformer means whose output current is first rectified by a second rectification means being connected to both ends of said second transformer means and then averaged by a second averaging means to yield a second averaged current;

a control means having a first and second output terminal connected to said first and second switching means to switch said second single ended converter to a conducting or nonconducting state at specific times when said first single ended converter is switched to a nonconducting or conducting state respectively;

an output filter having a first and second terminal, said first terminal being connected to said first and said second single ended converters to accept the d.c. and a.c. components of said first and second averaged current, said a.c. currents being out of phase with one another combining so as to reduce the ripple current in said output, said first terminal of said output filter being connected to a first input terminal of said control means; and

a power balancing means for equally balancing the power between said first and second single ended converters and providing a balance signal to said control means to adjust the specific times that said first and second switching means are turned on and off.

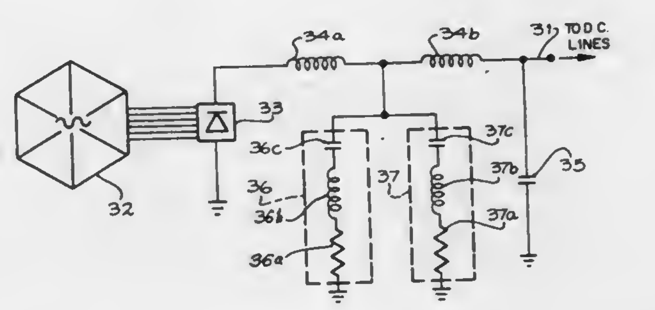
4,195,334
HIGH-VOLTAGE DC TRANSMISSION SYSTEM AND METHOD

Elijah R. Perry, Portola Valley, and Mario Rabinowitz, Menlo Park, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Nov. 25, 1977, Ser. No. 854,977

Int. Cl.^{2} H02M *1/12*

U.S. Cl. 363—44 **18 Claims**



1. In a system for transmitting high-voltage DC comprising a high-voltage, high frequency superconducting generator having at least four phases and generating a voltage of at least substantially 138 kV at a frequency of at least substantially 120 Hz, rectifying means coupled directly to said generator to receive the output therefrom free of step-up transformer action applied to the output of said generating means so as to provide a high voltage DC output, and filtering means coupled to receive said DC output of said rectifying means, said filtering means being characterized by a substantial reduction of reactance for filtering the DC output.

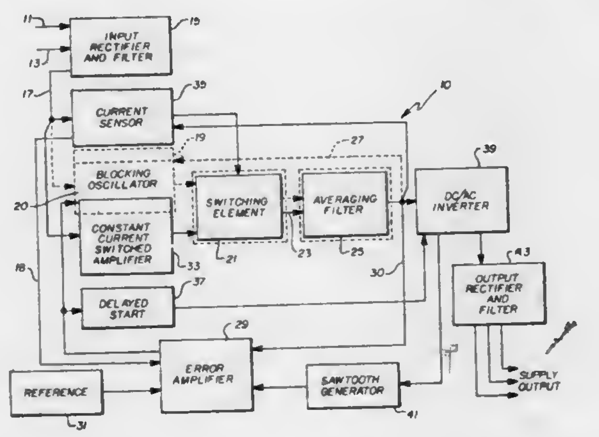
4,195,335
SWITCHING POWER SUPPLY HAVING A WIDE RANGE INPUT CAPABILITY

David Murakami, Federal Way, and Donald J. Sommer, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 20, 1978, Ser. No. 926,455

Int. Cl.^{2} H02P *13/16*

U.S. Cl. 363—49 **14 Claims**



1. A switching regulator type power supply which advances operationally from a startup mode to a steady state mode, comprising:

a. input means for receiving an input voltage;

b. switching and filtering means providing an intermediate voltage signal when energized;

c. circuit means for energizing said switching and filtering means, including a circuit portion operative to function as a blocking oscillator during an initial portion of the time that the power supply is operating in its startup mode, and as a constant current switched amplifier thereafter, including during the time that the power supply is operating in its steady state mode; and

d. output means responsive to said intermediate voltage signal for providing a supply output voltage.

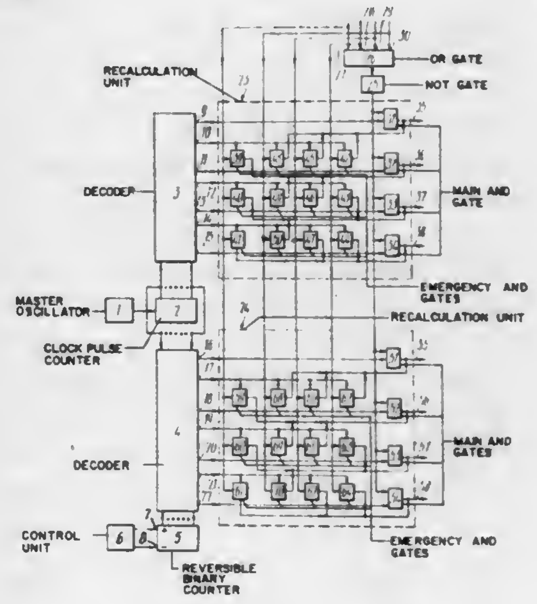
4,195,336
DIGITAL CONTROL DEVICE FOR MULTIPHASE THYRISTOR-PULSE D.C. CONVERTER

Anatoly Y. Kalinichenko, Moscow, U.S.S.R., assignor to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia, Moscow, U.S.S.R.

Filed May 17, 1978, Ser. No. 907,020

Int. Cl.^{2} H02M *7/515*

U.S. Cl. 363—137 **1 Claim**



1. A digital control device controlling a multiphase thyristor-pulse d.c. converter and comprising:

a master oscillator;

a clock pulse counter having an input connected to an output of said master oscillator, and outputs;

a control unit;

a reversible counter having add and subtract inputs respectively connected to add and subtract outputs of said control unit, and outputs;

a first decoder having inputs connected to respective outputs of said clock pulse counter, main outputs equal in number to the number of phases of the converter, and auxiliary outputs alternating with said main outputs, the number of said auxiliary outputs being one less than the number of said main outputs;

a second decoder having inputs connected to respective outputs of said clock pulse counter and to respective outputs of said reversible counter, main outputs equal in number to the number of phases of the converter, and auxiliary outputs alternating with said main outputs, the number of said auxiliary outputs being one less than the number of said main outputs;

a NOT gate having an input and an output;

an OR gate having inputs connected to an emergency output of a respective phase of the converter, and an output connected to said input of said NOT gate;

a first recalculation unit including main AND gates and emergency AND gates;

said main AND gates of said first recalculation unit being equal in number to the number of phases of the converter, each main AND gate having a first input connected to said output of said NOT gate, a second input connected to a respective main output of said first decoder, and an output connected to a control electrode of a main thyristor of a respective phase of the converter;

said emergency AND gates of said first recalculation unit being divided into groups whose number is equal to the number of phases of the converter, the number of said emergency AND gates in each group being equal to the number of auxiliary outputs of said first decoder, each emergency AND gate having a first input connected to a respective auxiliary output of said first decoder, a second input connected to said emergency output of a respective phase of the converter, the control electrode of a main thyristor of one of the other phases of the converter being connected to an output of a respective emergency AND gate of a respective group;

a second recalculation unit including main AND gates and emergency AND gates;

said main AND gates of said second recalculation unit being equal in number to the number of phases of the converter, each main AND gate having a first input connected to the output of said NOT gate, a second input connected to a respective main output of said second decoder, and an output connected to a control electrode of a switching thyristor of a respective phase of the converter; and

said emergency AND gates of said second recalculation unit being divided into groups whose number is equal to the number of phases of the converter, the number of said emergency AND gates in each group being equal to the number of auxiliary outputs of said second decoder, each emergency AND gate having a first input connected to a respective auxiliary output of said second decoder, a second input connected to said emergency output of a respective phase of the converter, the control electrode of a switching thyristor of one of the other phases of the converter being connected to an output of a respective emergency AND gate of a respective group.

4,195,337
CONTROL METHOD UTILIZING A MODEL CONTROL SCHEME

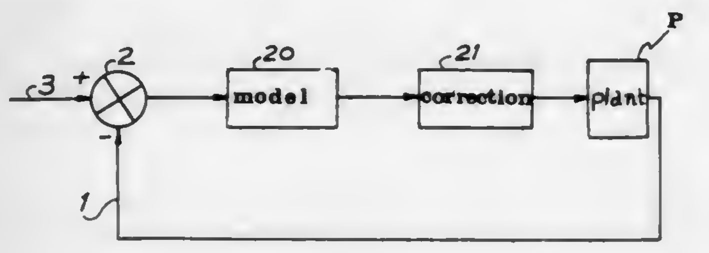
Pierre Bertrand, Plessis Robinson; Michel Jamet, Nantes; Jacques Strub, Les Ulis, and Eric Walter, Cachan, all of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Neuilly sur Seine, France

Filed May 24, 1978, Ser. No. 909,063

Claims priority, application France, May 26, 1977, 77 16114

Int. Cl.^{2} G05B *13/02, 17/02;* G06G *7/66*

U.S. Cl. 364—106 **14 Claims**



2. A method for controlling a process, said process being effected by a plant responsive to a control signal applied thereto and generating a plant output signal in accordance with a predetermined plant transfer function, said method comprising the steps of:

generating an error signal from said plant output signal and a reference signal, said error signal being indicative of deviations from said plant output signal from said reference signal;

generating from said error signal respective proportional and successive order derivative output signals in accordance with a predetermined model transfer function; and

generating, in accordance with a second predetermined transfer function, inverse from said plant transfer function, said control signal from said aforementioned proportional and successive order derivative output signals, said control signals being of the form $k_0+k_1p+k_2p^2+\ldots k_np^n$, where $p, p^2 \ldots p^n$ represents the first, second . . . and nth derivative output signals; and

adjusting said predetermined model transfer function to define desired response time and overshoot for said plant.

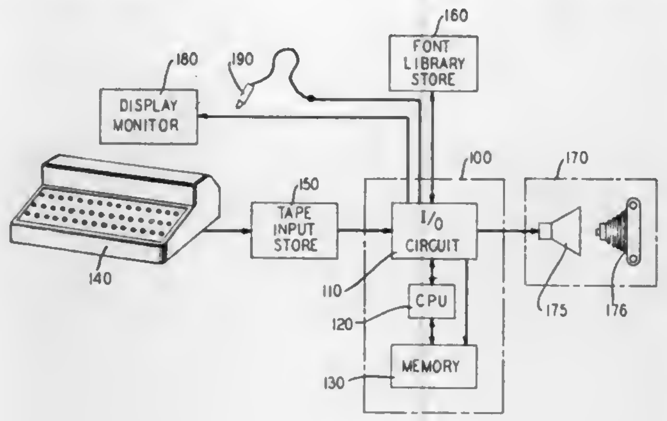
4,195,338
COMPUTER TYPESETTING

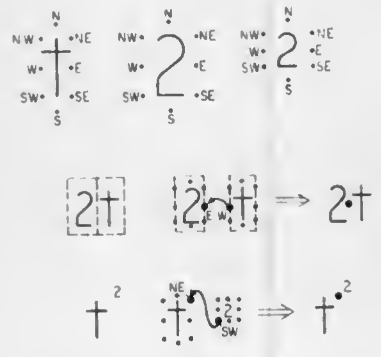
Richard D. Freeman, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 6, 1970, Ser. No. 35,025

Int. Cl.^{2} G06F *3/14;* G03B *15/00*

U.S. Cl. 364—200 **10 Claims**





1. In a computer display system comprising

(A) a display device for generating relatively-positioned symbol images in response to applied sequences of signals specifying the shape and position of said images,

(B) a data processor comprising

(1) means for storing a first plurality of data sequences, each describing individual symbols, and a second plurality of data sequences corresponding to a control program,

(2) means responsive to said control program for nondestructively reading from said means for storing and transferring to said display device selected ones of said first plurality of data sequences,

(3) means responsive to said control program for generating and transferring to said display device data sequences specifying the desired position of at least a first one of said selected data sequences, the improvement comprising

means for storing additional information specifying spatial coordinate positions, relative to a reference point on a corresponding symbol, of a plurality of concatenation points associated with said corresponding symbol, and

means responsive to said control program for generating and transferring to said display device data signals specifying the coincidence of at least one specified concatenation point of a given symbol with specified concatenation points on adjacent symbols.

4,195,339
SEQUENTIAL CONTROL SYSTEM

Walter A. Smith, and Raymond T. Harp, both of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 4, 1977, Ser. No. 821,942

Int. Cl.^{2} G11C *8/00*

U.S. Cl. 364—200 **6 Claims**

1. A multi-cycle control system for causing a series of events

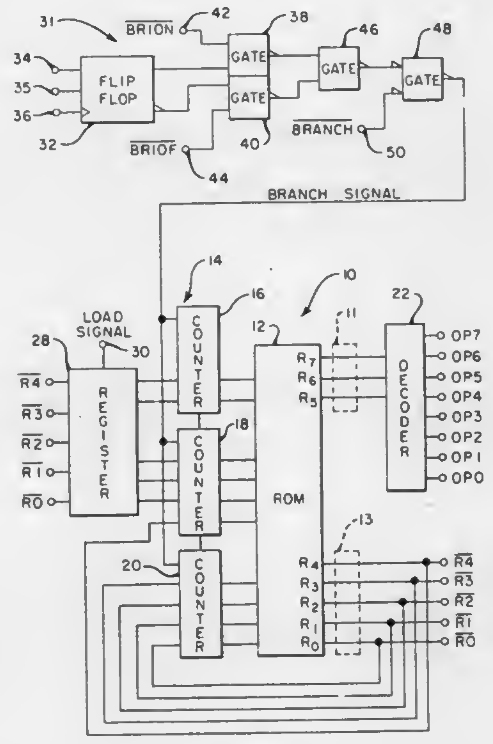
to occur in sequence and capable of altering said sequence, comprising:

storage means for storing a plurality of coded instruction words at a corresponding plurality of addresses, each word comprising a first and a second portion;

address register means coupled to the storage means for providing an address to select a coded instruction word, said address register means being capable of incrementing the address provided in successive operations of the system by a predetermined increment and also capable of modifying the address in a non-incrementing mode;

decoding means coupled to the storage means and capable of generating operating code signals including conditional and unconditional branch signals from predetermined signal combinations of said first portion of each coded instruction word;

second register means coupled to the address register means and to the storage means for receiving said second portion of each coded instruction word from said storage means under control of an operating code signal from the decoding means to provide part of a new address and presenting an address modifying code which corresponds to said second portion to the address register means to cause a modified address to be provided to the storage means by the address register means during a subsequent operation of the system; and



branch control means coupled to and controlled by the decoding means and coupled to the address register means for controlling whether or not an address modifying code is loaded into the address register means during a given operation, said branch control means including indicator means settable during a first cycle by a signal from a selected origin, and also including logic means responsive to the condition of the indicator means and to conditional and unconditional branch signals, and capable of controlling said second register means to determine whether or not a modified address is provided to the storage means by the address register means during a subsequent cycle of operation of the system.

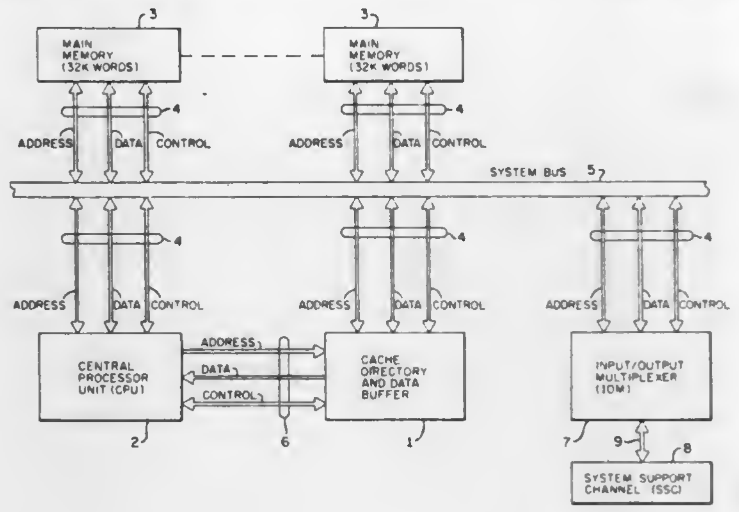
4,195,340
FIRST IN FIRST OUT ACTIVITY QUEUE FOR A CACHE STORE

Thomas F. Joyce, Burlington, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 22, 1977, Ser. No. 863,091

Int. Cl.^{2} G06F *13/00;* G11C *9/06*

U.S. Cl. 364—200 **10 Claims**


3
MAIN MEMORY (32K WORDS)
3
MAIN MEMORY (32K WORDS)
4
ADDRESS
DATA
CONTROL
SYSTEM BUS
5
CENTRAL PROCESSOR UNIT (CPU)
ADDRESS
DATA
CONTROL
CACHE DIRECTORY AND DATA BUFFER
INPUT/OUTPUT MULTIPLEXER (IOM)
2
6
1
7
9
8
SYSTEM SUPPORT CHANNEL (SSC)

1. A data processing system comprising:

a system bus;

an addressable main memory coupled to said bus, said main memory including a plurality of sets of word locations, each set of word locations being defined by a column address, and each word location within a set being defined by a row address, said main memory receiving an address word comprising said row address and said column address from said bus for identifying a word location for reading a data word onto said bus or for writing said data word received from said bus;

a central processor unit coupled to said bus, and at least one data handling unit coupled to said bus for transmitting data to said bus for storage in said main memory;

a cache coupled to said system bus including;

a data buffer having a plurality of word locations arranged in a plurality of sets of word locations defined by said column address, and an addressable directory having a plurality of word locations corresponding in number to the number of sets in said data buffer and being addressable by said column address, each word location on said directory storing a row address of a corresponding one of said words of said set stored in said data buffer;

an input buffer coupled to said bus, having a plurality of storage locations, and being operative to store information applied to said system bus by said central processor unit, said at least one data handling unit or said main memory during a bus cycle when said central processor unit, said at least one data handling unit or said main memory requests access to said bus for transfer of said information, said central processor unit, said at least one data handling unit and said main memory generating signals included within said information for specifying which type of operation is to be performed with respect to said information;

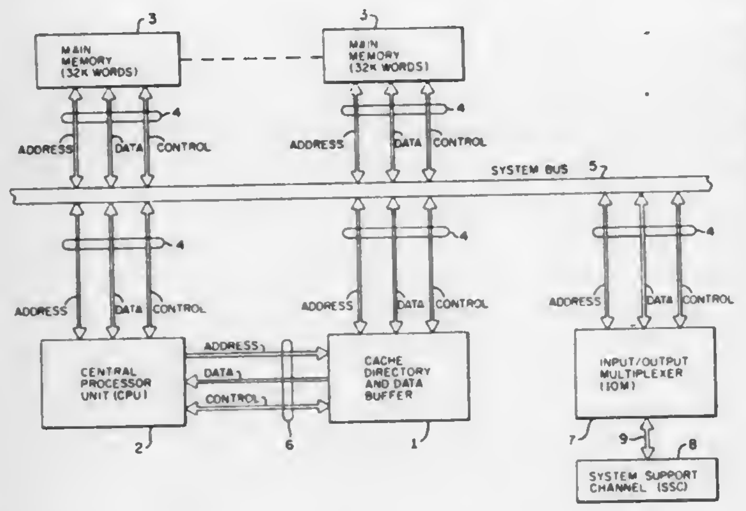
a replacement address file coupled to said central processor unit for storing memory request addresses received therefrom when said central processor unit requests said data word from said cache; and

means responsive to said signals included within said information for selecting transfer signals representative of an address from said input buffer or said address file to said directory and said data buffer for writing the corresponding data word in said data buffer to update and replace respectively said data word previously stored in said data buffer in accordance with said generated signals.

4,195,341
INITIALIZATION OF CACHE STORE TO ASSURE VALID DATA

Thomas F. Joyce, Burlington, and William Panepinto, Jr., Tewksbury, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 22, 1977, Ser. No. 863,094
Int. Cl.^{2} G06F *13/00;* G11C *9/06*
U.S. Cl. 364—200 18 Claims


MAIN MEMORY (32K WORDS)
3
MAIN MEMORY (32K WORDS)
3
4
ADDRESS
DATA
CONTROL
SYSTEM BUS
5
CENTRAL PROCESSOR UNIT (CPU)
2
ADDRESS
DATA
CONTROL
6
CACHE DIRECTORY AND DATA BUFFER
1
INPUT/OUTPUT MULTIPLEXER (IOM)
7
9
8
SYSTEM SUPPORT CHANNEL (SSC)

1. A data processing system comprising:

a system bus;

an addressable main memory coupled to said bus, said main memory including a plurality of sets of word locations, each set of word locations being defined by an address;

a central processor unit coupled to said bus;

a cache coupled to said bus including,

a data buffer having a plurality of word locations for storing data words arranged in a plurality of sets of word locations defined by said address; and

a directory having a plurality of word locations corresponding to the number of sets in said data buffer, each word location of said directory storing an address of a corresponding one of said words of said set stored in said data buffer;

said cache further including mode control means coupled to said bus for receiving an initialization signal therefrom, indicative of said system startup operation for initializing;

cache main memory request means coupled to said mode control means for generating a sequence of main memory requests when conditioned by said mode control means; and

address generation means for generating main memory addresses included within said requests, said address generation means coupled to said bus and to said main memory requests means, said address generation means being conditioned by said request means to transfer a predetermined sequence of addresses included within corresponding ones of said sequence of requests to said system bus, said main memory in response to said requests applying to said system bus, information read out from the word locations corresponding to said sequences of addresses for writing into said data buffer and said directory thereby placing information stored in said cache in a known state.

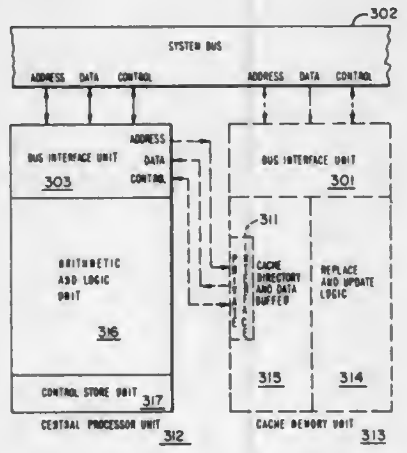
4,195,342
MULTI-CONFIGURABLE CACHE STORE SYSTEM

Thomas F. Joyce, Burlington, and Thomas O. Holtey, Newton Lower Falls, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 22, 1977, Ser. No. 863,098
Int. Cl.^{2} G06F *9/08*
U.S. Cl. 364—200 2 Claims

1. In a data processing system, having a system bus; and a main memory, a cache memory, a central processing unit (CPU) and a communications controller all connected in parallel to said system bus, said controller operating to supervise interconnection between said units via siad bus for transferring data therebetween, said CPU including memory request means for generating data requests, and said cache memory including private interface means connecting said cache memory directly to said CPU for permitting direct transmission of data requests from said CPU to said cache memory and direct transmission of requested data from said cache memory to said CPU; cache directory and data buffer means for evaluating said data requests and generating a first predetermined output when the requested data is not present in said cache memory; and system bus interface means connecting said cache memory to said system bus for obtaining CPU requested data not found in said cache memory from said main memory via said system bus in response to said first predetermined output from said cache directory and data buffer means; the improvement comprising:

selection means in said main memory responsive to a system operator for controlling the configuration of said main memory, said main memory being partitioned in modules, said modules having data stored therein in sequentially numbered addresses to constitute a banked storage mode, or said modules being arranged in pairs of modules, the first modules in each said pairs having even numbered addresses and the second modules in each of said pairs having odd numbered addresses, said pairs of modules having successive elements of said data stored sequentially therein in said even and odd numbered addresses, alternating between said modules to constitute an interleaved storage mode;



read request means included in said system bus interface means, responsive to said first predetermined signal and said selection means, for obtaining a word containing the data requested by said CPU either from a specific address in one of said modules in said banked storage mode, or for obtaining two words containing data requested by said CPU from two successive adjacent addresses in two of said interleaved mode modules, one word being obtained from the first module of one of said pairs and the second of said words being obtained from the second module in said one of said pairs;

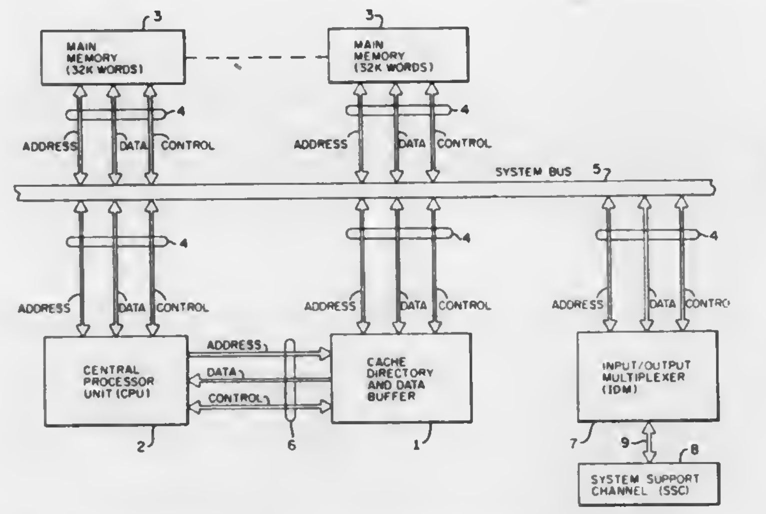
said cache memory generating a second predetermined output; and said read request means also including

banked double pull means responsive to said second predetermined output from said cache memory, and said selection means, for obtaining two words containing CPU requested data from two successive addresses in one of said modules in said banked storage mode.

4,195,343
ROUND ROBIN REPLACEMENT FOR A CACHE STORE

Thomas F. Joyce, Burlington, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 22, 1977, Ser. No. 863,102
Int. Cl.^{2} G06F *13/00;* G11C *9/06*
U.S. Cl. 364—200 10 Claims


MAIN MEMORY (32K WORDS)
3
MAIN MEMORY (32K WORDS)
3
4
ADDRESS
DATA
CONTROL
SYSTEM BUS
5
CENTRAL PROCESSOR UNIT (CPU)
2
ADDRESS
DATA
CONTROL
6
CACHE DIRECTORY AND DATA BUFFER
1
INPUT/OUTPUT MULTIPLEXER (IOM)
7
9
8
SYSTEM SUPPORT CHANNEL (SSC)

1. A data processing system comprising:

a system bus;

an addressable main memory coupled to said bus, said main memory including a plurality of sets of word locations, each set of word locations being defined by a column address, and each word location within a set being identified by a row address, said main memory receiving an address word comprising said row address and said column address from said bus for reading a data word onto said bus, or for writing said data word received from said bus;

a cache coupled to said system bus including:

a data buffer having a plurality of word locations arranged in a plurality of sets of word locations defined by column address for storing said data words received from said bus, and

a directory including a plurality of word locations corresponding in number to the number of sets in said data buffer and being addressable by said column address, each word location of said directory storing a row address of a corresponding one of said words of said set stored in said data buffer, each column of said data buffer and said directory defined by said column address having a plurality of levels;

said cache further including round robin circuit means coupled to said directory and said data buffer for generating signals to indicate a next of said levels into which replacement information is to be written, said round robin circuit means including:

a plurality of random access memory (RAM) circuits for storing n bits of information for each nth power of 2 number of levels in each of said column addresses of said RAM circuits, said bits of information being coded to indicate the next level of said column address into which replacement information is to be written, said circuits include output circuit means for receiving signals from said RAM circuits during a replacement operation;

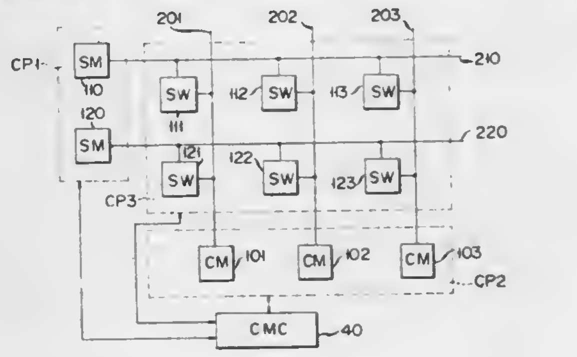
an encoder coupled to said output circuit means, said RAM circuits responsive to said column address to provide said stored bits of information to said encoder, said encoder providing loading signals having a value determined by said output circuit means for writing said replacement information into the next level of said column address of said directory and said data buffer on a first in/first out basis; and,

a counter coupled to said encoder and to said RAM circuits to increment by one said encoder output and store an incremented count in said column address of said RAM circuits for enabling the storing of information corresponding to said replacement information in the location of said data buffer identical of that stored in main memory during said replacement operation.

4,195,344
COMPUTER SYSTEM WITH A CONFIGURATION MONITOR

Isamu Yamazaki, Kawasaki, Japan, assignor to The President of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Apr. 4, 1978, Ser. No. 893,407
Claims priority, application Japan, Apr. 8, 1977, 52/39411
Int. Cl.^{2} G06F *15/16, 15/20*
U.S. Cl. 364—200 6 Claims



1. A computer system comprising:

a plurality of information processing modules which are provided in at least first and second configuration points, each of said information processing modules having an identification number;

a plurality of switching modules provided in a third configuration point, each switching module having a configuration point (CP) number;

a configuration monitoring center for at least monitoring connecting conditions between said switching modules and the configuration monitoring center;

a source of timing signals included within the monitoring center;

timing signal lines coupled to said information processing modules and to said switching modules for delivering said timing signals from said configuration monitoring center to inquire about conditions of said information processing modules and switching modules in said first to third configuration points;

status lines coupling said information processing modules and switching modules to said configuration monitoring center for delivering response signals representing the conditions and identification numbers of said information processing modules and configuration point numbers of the switching modules in said first and second configuration points and said third configuration point to said configuration monitoring center;

status distribution lines coupled between said information processing modules and said switching modules for transferring said response signals from said information processing modules in said first and second configuration points to said switching modules in said third configuration point;

said switching modules in said third configuration point each including means responsive to said timing signals for delivering a combination of response signals from said information processing modules in said first and second configuration points to said configuration monitoring center by way of said status lines.

4,195,345

METHOD AND APPARATUS FOR DETECTING THE FAULTY WORKING OF SPINNING UNITS OF OPEN-END SPINNING MACHINES

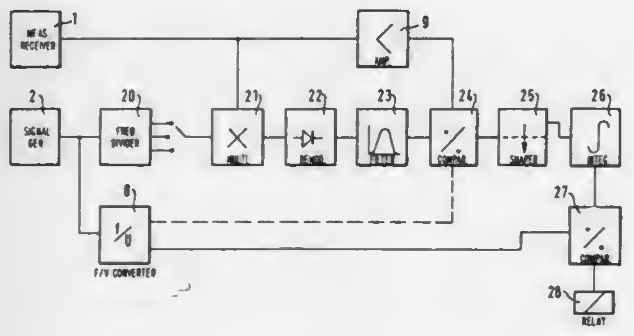
Peter Artzt, Pfullingen; Gerhard Egbers; Rolf Guse, both of Reutlingen, and Sobrab Tabibi, Pfullingen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Feb. 11, 1977, Ser. No. 767,997

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605737

Int. Cl.² D01H *13/22;* G06F *15/46*

U.S. Cl. 364—470 19 Claims



1. A method of detecting faulty working of spinning units of an open-end spinning machine by monitoring faults occuring in yarn being produced by open-end spinning machines, a fault sensing device positioned between a spinning compartment and a bobbin which receives the yarn, said fault sensing device generating an electrical signal responsive to faults occurring in said yarn, said method comprising the following steps:

(a) generating a signal of predetermined frequency corresponding to the speed of delivery of said yarn from open-end spinning machine,

(b) electrically multiplying said signal generated by said fault sensing device by said signal of predetermined frequency for generating a differential-frequency signal,

(c) filtering and shaping said differential-frequency signal, and

(d) integrating and comparing said filtered and shaped signal with a preset threshold value for producing a signal indicating faulty working of said spinning unit.

4,195,346

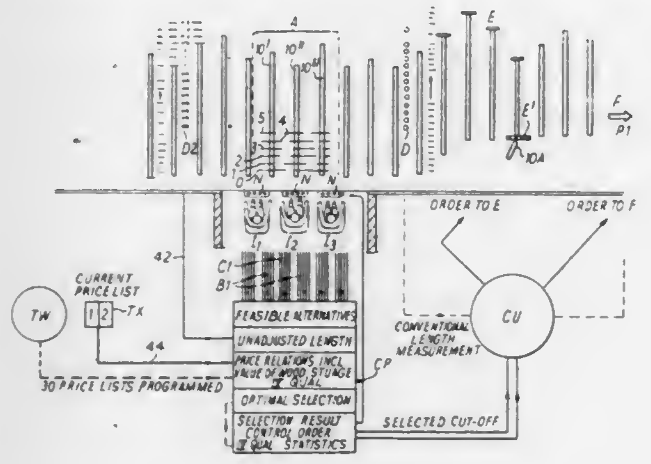
METHOD AND APPARATUS FOR SORTING AND CLASSIFYING TIMBER

Staffan H. Schroder, Kyrkangsvagen 9, S-802, 40 Gavle, Sweden

Continuation-in-part of Ser. No. 670,389, Mar. 25, 1976, abandoned. This application Nov. 8, 1977, Ser. No. 849,687

Int. Cl.² G06F *15/46*

U.S. Cl. 364—475 11 Claims



1. A method of cutting untrimmed pieces of lumber and sorting the cut pieces of lumber according to quality, comprising:

measuring the length of each untrimmed piece of lumber;

selecting a plurality of alternative cut-off lengths for each piece of lumber;

determining the quality value of each usable piece of lumber which would result from cutting in each of said alternative cut-off lengths;

calculating the total value of the usable piece of lumber and a cut-off waste piece resulting from cutting in each of said alternative cut-off lengths by multiplying the length of said usable and waste pieces by their respective quality value and summing each pair of said multiplications;

determining the cut-off length which produces the maximum total value of said usable and waste pieces from said untrimmed piece of lumber; and

cutting said untrimmed piece of lumber at the cut-off length which was determined to yield the maximum total value.

4,195,347

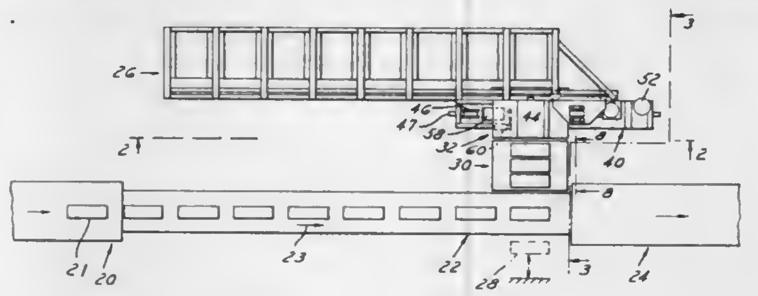
BUFFER APPARATUS FOR ARTICLE PROCESSING SYSTEMS

George D. MacMunn, Southfield, and Shelden M. Kavieff, Farmington Hills, both of Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Jun. 19, 1978, Ser. No. 916,823

Int. Cl.² G06F *15/46;* B65G *1/06*

U.S. Cl. 364—478 17 Claims



5. In an article storage and retrieval machine for use with a storage device having horizontal and vertical rows of storage bins arranged in a plurality of columns and levels defining a matrix of storage bins, said machine having a carriage supported for horizontal movement, a carriage drive motor, an elevator supported on the carriage for vertical movement, an elevator drive motor, an article carrying table supported on the elevator for lateral movement, and a table drive motor, the improvement comprising:

control means for operating said machine in storage and retrieval modes, said control means including programmable means for calculating control functions indicative of the column and level address of a storage bin in said storage device from a load number and the number of storage bins in one of said horizontal and vertical rows, input means responsive to the location of said carriage and said elevator relative to the columns and levels in said storage device, and comparison means for controlling the operation of said carriage and elevator drive motors in response to combinations of said control functions and signals from said input means.

4,195,348

COMBINED ELECTRONIC DIGITAL SCALE AND CALCULATOR STORING SELECTABLE PROGRAMS

Nobuyasu Kakutani, Yau, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1978, Ser. No. 880,093

Claims priority, application Japan, Feb. 22, 1977, 52-19578; Mar. 31, 1977, 52-40331[U]

Int. Cl.² G01B *3/08;* G06F *7/48*

U.S. Cl. 364—562 7 Claims

1. A small portable electronic data processing apparatus, comprising:

a housing;

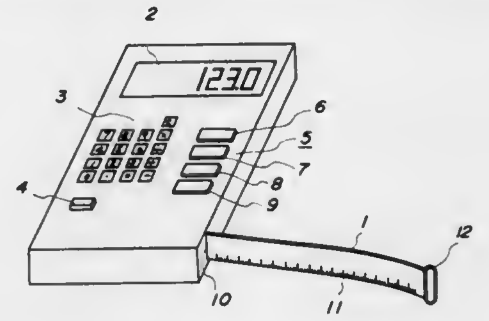
a rotary support means mounted within said housing and adapted to be rotated within said housing;

an extensible member coiled onto said support means and adapted to be pulled out from said housing;

detection means for measuring the degree of rotation of said support means thereby generating an output detection signal indicative of the extending length of said extensible member when pulled out from said housing;

counter means responsive to said output detection signal for providing a count indicative of the length of said extensible member when pulled out from said housing in accordance with said output detection signal generated by said detection means;

program storage means for storing a plurality of programs, said programs being capable of processing said count from said counter means which is representative of the length of said extensible member when pulled out from said housing to yield a predetermined type of resultant output data;



storage means for storing said count provided by said counter means thereby resulting in the storage of preliminary measurement data;

first selection means on said housing for selecting one of said plurality of programs stored in said program storage means;

processing means responsive to an output signal from said storage means and from said program storage means for processing said preliminary measurement data stored in said storage means in accordance with said one of said plurality of programs selected by said first selection means thereby yielding said predetermined type of resultant output data; and

display means for displaying said resultant output data.

4,195,349

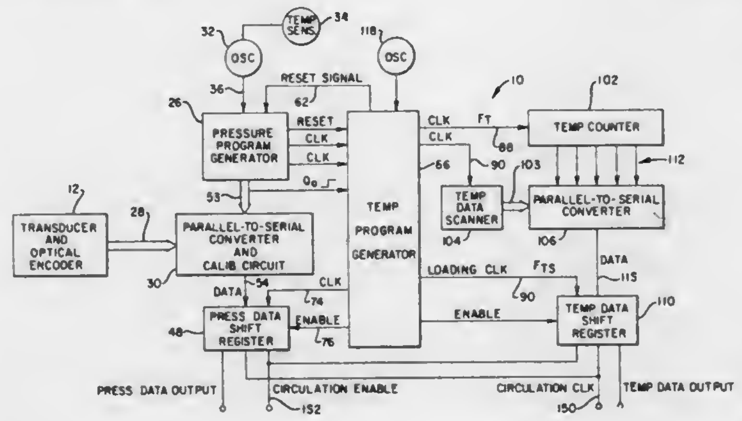
SELF CALIBRATING ENVIRONMENTAL CONDITION SENSING AND RECORDING APPARATUS

Hayati Balkanli, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Jan. 26, 1978, Ser. No. 872,530

Int. Cl.² E21B *47/06;* G01L *7/04*

U.S. Cl. 364—571 20 Claims



14. Apparatus for use in deep boreholes in the earth for sensing, digitizing and storing values of downhole pressure and temperature conditions comprising, in combination:

a pressure transducer;

an encoder coupled to the pressure transducer for producing a digital data pressure word having a plurality of data bits representative of the pressure level sensed by the pressure transducer;

a temperature transducer;

a first oscillator coupled to the temperature transducer for producing a first clock signal having a frequency which is proportional to the temperature level sensed by the temperature transducer;

a first gating generator coupled to the first oscillator for generating a series of successive enabling pulses, the duration of each enabling pulse being substantially equal to the clock cycle period of the first clock signal;

a first parallel-to-serial data converter having a first input circuit coupled to the encoder to receive the digital data pressure word and having a second input circuit coupled to the first gate generator for receiving the successive enabling pulses, and having an output circuit for conducting the pressure word data bits serially during the successive gate intervals;

a first serial data storage unit coupled to the output circuit of the parallel-to-serial data converter for receiving and storing the pressure word data bits as they are sequentially gated by the first counting circuit;

a second oscillator for generating a second clock signal having a frequency which is substantially greater than the frequency of the first clock signal;

an N-cycle counter coupled to the second oscillator for generating a reset pulse in response to a count of N clock cycles, N being a positive integer;

a temperature data counting circuit coupled to the second oscillator for generating a temperature data word having a plurality of data bits representative of its count during a temperature data counting cycle;

a second gating generator for generating a series of successive enabling pulses;

a second parallel-to-serial data converter having a first input circuit coupled to the temperature data counting circuit for receiving the temperature data bits, a second input circuit coupled to the second gate generator for receiving the successive enabling pulses, and having an output circuit for conducting the temperature data word bits serially during the successive gating intervals;

a second serial data storage unit coupled to the output circuit of the second data converter for receiving and storing the temperature data word bits as they are sequentially gated by the second gating generator; and,

control circuitry logically interconnecting the first and second gating generators, N-cycle counter, temperature data counting circuit, and first and second serial data storage units for enabling the N-cycle counter simultaneously with the gating of the first data bit of the pressure word, enabling the temperature data counting circuit simultaneously with the gating of the last data bit of the pressure word, disabling the temperature data counting circuit in response to the reset pulse produced by the N-cycle counter, and enabling the first and second serial data storage units for loading the pressure and temperature data words, respectively, in response to the reset pulse produced by the N-cycle counter.

4,195,350

METHOD AND APPARATUS FOR ELIMINATING DEADBAND IN DIGITAL RECURSIVE FILTERS

James K. Moore, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,977

Int. Cl.² G06F *7/38*

U.S. Cl. 364—724 4 Claims

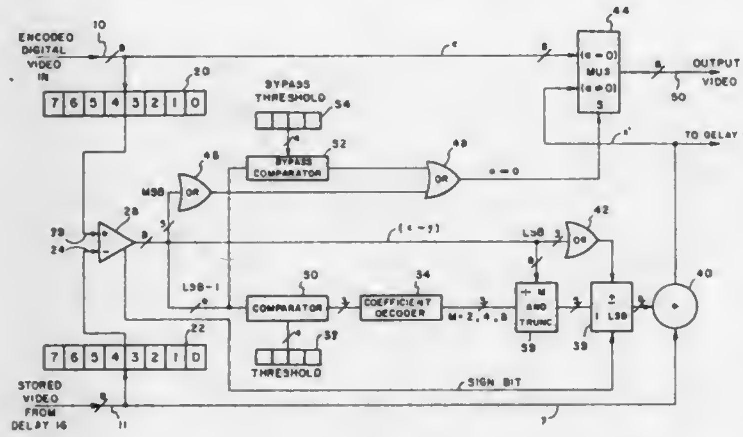
1. Method of providing a digital recursive filter free of the deadband effects that would otherwise result from rounding of the product resulting from fractional multiplication of a num-

ber representing the difference between the input to the filter and the time-delayed output from the filter, wherein said product is represented by a digital word containing a plurality of digits, which word may have either positive or negative sense and which should eventually go to zero, comprising the steps of:

(a) truncating to the next lower digit at the cycling frequency of the filter the absolute value of the product-representing word by dropping n least significant digits where R^{-n} is the value of the multiplier in radix R,

(b) if any of the dropped n least significant digits has a non-zero value adding to the absolute value of the truncated digital word a least significant "one", while retaining the sign of the pretruncated word, and

(c) repeating steps (a) and (b) at the cycling frequency of the filter until the value of the difference between the input to the filter and the output from the filter becomes zero.



4,195,351

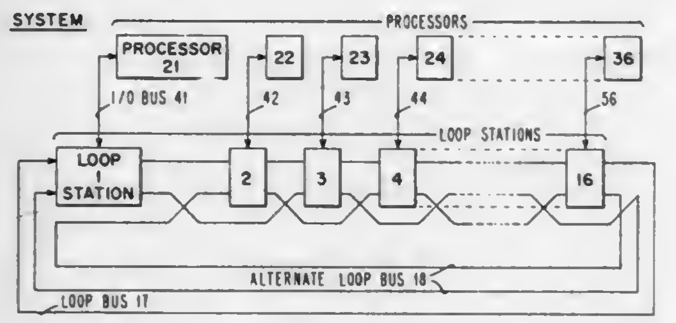
LOOP CONFIGURED DATA TRANSMISSION SYSTEM

Robert P. Barner, Rockville, Md.; Anne M. Gulick, Carmel; John A. deVeer, Millbrook, both of N.Y., and Jan G. Oblonsky, Brookeville, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 27, 1978, Ser. No. 872,853

Int. Cl.² G06F *15/16*

U.S. Cl. 364—900 **11 Claims**



1. A communication system comprising:

multiple stations connected in a masterless mode by a plurality of parallel data lines and a single clock line in a closed loop unidirectional configuration;

data transmission means at each of said stations for transmission of data to another one of said stations over said data lines;

a clock generator at each of said stations to generate clock pulses for transmission to the succeeding station over said clock line; the input to said clock generator connected to said clock line for receiving clock pulses from the preceding station, whereupon each of the clock pulses generated by said clock generator is synchronized to an input clock pulse received from said preceding station;

data detection means associated with each of said stations for detecting the presence of data on any of said data lines at the input end of each of said stations, and for generating a signal during each of said clock pulses in which data is not present on any of said data lines;

gate means at each of said stations operated by a respective station data detection means signal for gating the transmission of data from the output end of the respective station onto said closed loop;

whereby data transmission from any one of said stations onto said closed loop can be effected by operation of said gate means during the first clock pulse immediately following a clock pulse in which data was not detected on any of said data lines at the input end of the station.

4,195,352

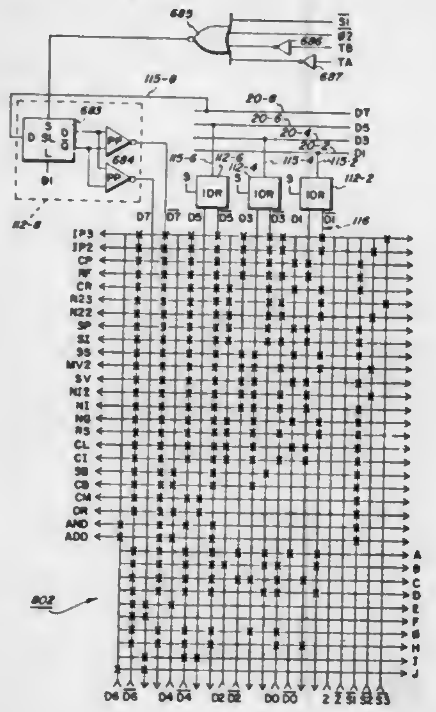
SPLIT PROGRAMMABLE LOGIC ARRAY

George K. Tu, Rolling Hills; George E. Mager; Lamar T. Baker, both of Manhattan Beach, and Robert E. Markle, Palos Verdes, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 8, 1977, Ser. No. 814,054

Int. Cl.² G06F *9/00;* **H03K** *19/08, 19/34*

U.S. Cl. 364—900 **4 Claims**



1. In a microprocessor being suitable for executing through command signals a plurality of instructions stored in a memory in accordance with a plurality of machine cycles, each of said instructions including an operational code, a programmable logic array comprising:

(a) first means responsive to said operational code of the instruction being executed for producing a number of internal programmable logic array commands at first and second sets of outputs;

(b) second means adjacent to said first means and connected to said first set of outputs for producing desired microprocessor command signals;

(c) third means adjacent to said first means, connected to said second set of outputs, and positioned opposite said second means relative to said first means for producing desired command signals, whereby said first means is positioned in between said second and third means; and

(d) said first means comprises a NOR logic array having column lines for receiving said operational code and row lines including NOR logic means for generating said internal programmable logic array commands in accordance with the logic arrangement of the array; and said second and third means each comprise a NOR logic array having row lines including means for receiving said internal programmable logic array commands and column lines including NOR logic means for generating said microprocessor command signals in accordance with the logic arrangement of the array.

4,195,353

WORD PROCESSOR COMPRISING IMPROVED EDITING MEANS

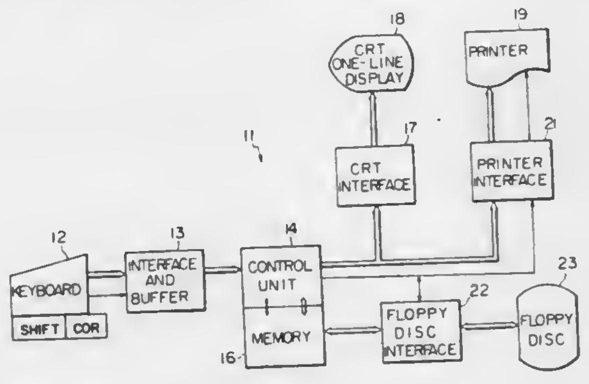
Shintaro Abe, and Tomoyuki Haganuma, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 5, 1978, Ser. No. 867,284

Claims priority, application Japan, Jan. 14, 1977, 52/3155; Apr. 18, 1977, 52/44390; Apr. 18, 1977, 52/44391; Apr. 19, 1977, 52/44706; Apr. 19, 1977, 52/44708

Int. Cl.² G06F *3/02, 3/12, 3/14*

U.S. Cl. 364—900 **19 Claims**



1. A word processor comprising;

an input keyboard;

a memory for storing data input from the keyboard;

a display unit for displaying one line of data from the memory;

a printer for printing the line of data;

a display buffer for storing the line of data for display by the display unit;

a print buffer for storing the line of data for printing by the printer;

control means for decoding data transmitted from the memory to the display buffer and causing the line of data to be transmitted from the memory to the print buffer for printing in response to a predetermined data code;

mass storage means;

interface means for transmitting data between the memory and the mass storage means, the control means causing the line of data to be transmitted from the memory to the mass storage means in response to the predetermined data code; and

editing means for dividing the memory into first and second sections and transmitting the line of data from the mass storage means to the second section of the memory for editing;

the keyboard having a key which, when depressed, causes the control means to serially transfer data from the second section to the first section of the memory, data entered from the keyboard being serially added to data in the first section, the data in the first section being transmitted to the display buffer followed by the data in the second section for display by the display unit.

4,195,354

SEMICONDUCTOR MATRIX FOR INTEGRATED READ-ONLY STORAGE

Jury V. Kruzhanov, 103498, korpus 431, kv. 112; Viktor P. Dubinin, 103498, korpus 445, kv. 120; Viktor S. Ovchinnikov, 103527, korpus 839, kv. 11, and Vladimir E. Safronov, 103527, korpus 811, kv. 146, all of Moscow, U.S.S.R.

Filed Aug. 7, 1978, Ser. No. 931,422

Claims priority, application U.S.S.R., Aug. 16, 1977, 2517209[I]

Int. Cl.² G11C *11/36*

U.S. Cl. 365—105 **1 Claim**

1. A semiconductor matrix for an integrated read-only storage, comprising:

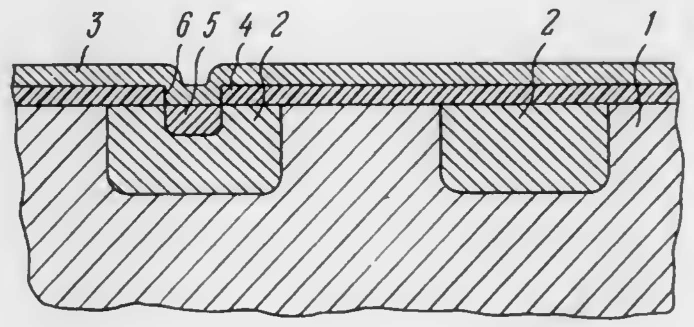
a substrate;

semiconductor buses of a first type conductivity, formed in said substrate;

metallic buses arranged in an intersection relationship to said semiconductor buses of said first type conductivity;

a dielectric layer having said metallic buses disposed thereon and adapted to isolate said semiconductor buses from said metallic buses;

a plurality of components of said matrix, formed at the locations where said semiconductor buses of said first type conductivity intersect said metallic buses and implemented on the basis of a semiconductor region of said first type conductivity, only some components of said components therein having a second type conductivity; and



windows formed in said dielectric layer above said second type conductivity semiconductor regions of said some components and comprising openings registered with said windows so that the area of p-n junction between the second type conductivity semiconductor region and the first type conductivity semiconductor region as well as the capacitance of said p-n junction are reduced, thereby providing increased integration and speed of operation of the integrated read-only storage.

4,195,355

PROCESS FOR MANUFACTURING A FERROELECTRIC DEVICE AND DEVICES MANUFACTURED THEREBY

George A. Rohrer, Sault Ste. Marie, Mich., assignor to Technovation, Inc., Sault Ste. Marie, Mich.

Continuation-in-part of Ser. No. 316,417, Dec. 18, 1972, Pat. No. 3,939,292, which is a continuation-in-part of Ser. No. 76,059, Sep. 28, 1970, Pat. No. 3,728,694. This application Feb. 17, 1976, Ser. No. 658,199

Int. Cl.² G11C *11/22;* **B05D** *5/12*

U.S. Cl. 365—145 **18 Claims**

1. A process for manufacturing a ferroelectric device, comprising the steps of:

forming a first electrical contact;

forming, by vapor deposition performed in a vacuum at a pressure no greater than 1×10^{-5} Torr and at a temperature of from about 390° C. to 440° C., a stable thin film of potassium nitrate over at least a portion of said first electrical contact;

relieving said vacuum to a pressure of approximately one atmosphere with a dry predetermined gas for a first predetermined period of time;

reapplying said vacuum;

forming a second electrical contact over at least a portion of said stable thin film of potassium nitrate;

vacuum depositing a covering of silicon monoxide over said first electrical contact, said thin film of potassium nitrate, and said second electrical contact; and

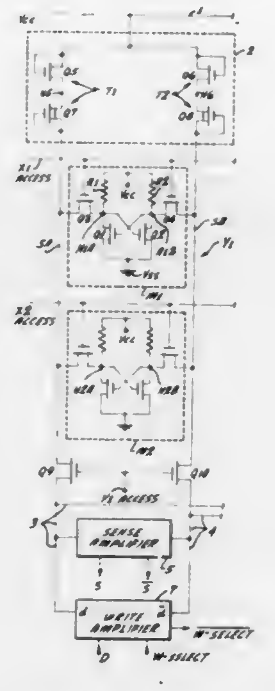
heating said first and second electrical contacts, said thin film of potassium nitrate, and said covering of silicon monoxide for a second predetermined period of time and at a predetermined temperature.

10. A ferroelectric device manufactured in accordance with the process of claim 1.

4,195,356
SENSE LINE TERMINATION CIRCUIT FOR SEMICONDUCTOR MEMORY SYSTEMS

Timothy R. O'Connell, and George S. Leach, both of Phoenix, Ariz., assignors to Electronic Memories and Magnetics Corporation, Encino, Calif.

Filed Nov. 16, 1978, Ser. No. 961,240
Int. Cl.^{2} G11C *11/40*
U.S. Cl. 365—189 **17 Claims**



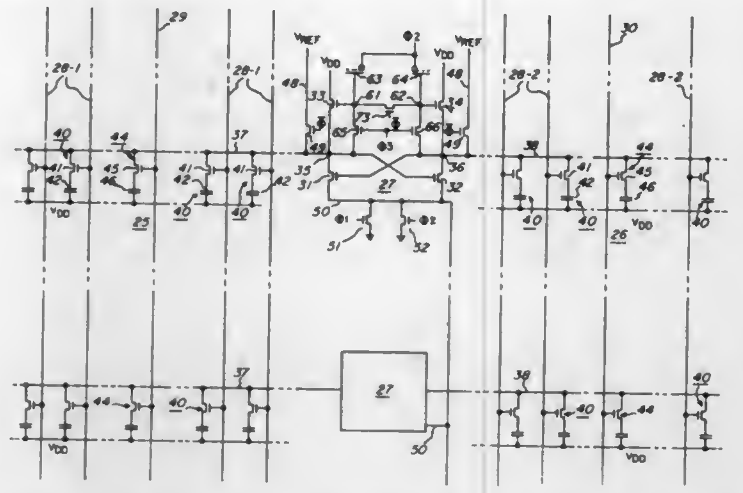
1. A semiconductor memory system comprising:
a plurality of memory cells, each memory cell having a 1st memory node having a high or low voltage value in accordance with the state of the memory cell;
a 1st sense line for said plurality of memory cells, said 1st sense line being selectively coupleable to a 1st memory node of a selected one of said plurality of memory cells, each 1st memory node at its low voltage value being capable when coupled to said 1st sense line of pulling said 1st sense line to a corresponding low voltage value;
a supply bus of relatively high pull-up voltage;
a 1st sense line termination circuit interconnected between said 1st sense line and said supply bus of relatively high pull-up voltage for pulling said 1st sense line toward a predetermined intermediate voltage value when no 1st memory node at a low voltage value is coupled to said 1st sense line, and for permitting said 1st sense line to be pulled down to a low voltage value when a 1st memory node at a low voltage value is coupled thereto;
said 1st sense line termination circuit comprising a 1st enhancement mode FET device and a 1st depletion mode FET device connected in series with each other and between said 1st sense line and said bus of relatively high voltage, the source of one FET device being connected to said 1st sense line and the drain of the other FET device being connected to said supply bus, said 1st enhancement mode FET device having its drain and gate interconnected.

4,195,357
MEDIAN SPACED DUMMY CELL LAYOUT FOR MOS RANDOM ACCESS MEMORY

Chang-Kiang Kuo, Houston, and Shyh-Chang Tsaur, Stafford, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1978, Ser. No. 915,632
Int. Cl.^{2} G11C *7/00*
U.S. Cl. 365—210 **6 Claims**

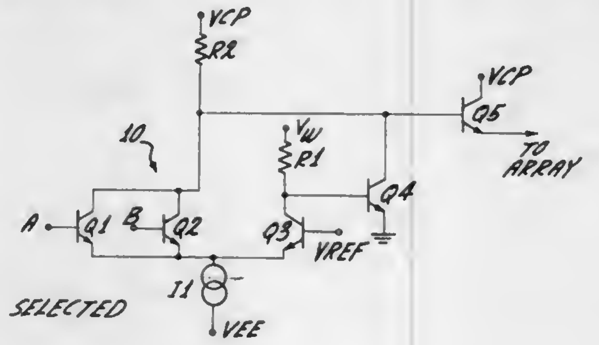
1. In a memory system of the type having array of rows and columns of memory cells, a sense amplifier positioned at the center of each column line, and a pair of rows of dummy cells including a dummy cell connected to each half of each column line, the improvement wherein each row of dummy cells is positioned at a median position between the ends of each half of each column line, a plurality of said memory cells being connected to each column line half on both sides of each row of dummy cells.



4,195,358
DECODER FOR A PROM

Raymond C. Yuen, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 26, 1978, Ser. No. 973,175
Int. Cl.^{2} G11C *8/00, 17/00*
U.S. Cl. 365—230 **10 Claims**



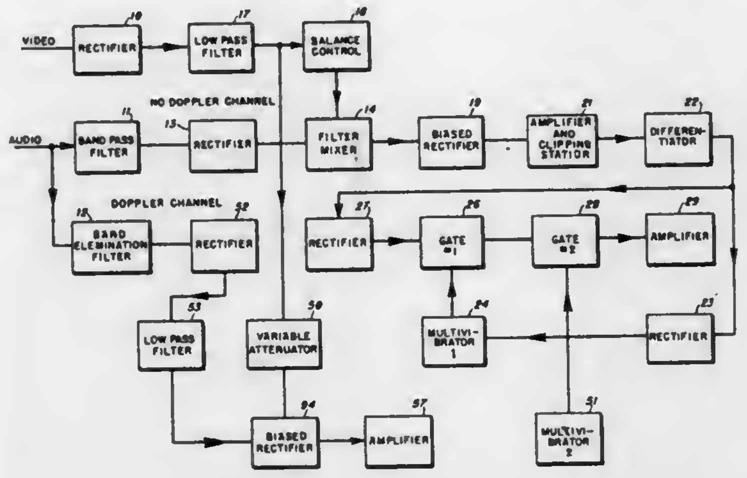
7. A circuit for programming a PROM comprising
a gate whose output corresponds to a NOR truth table,
a control gain element connected to the output of said gate and connected between a high voltage source and a reference voltage source,
an additional gain element connected to said high voltage source and to the PROM and responsive to the condition of said control gain element.

4,195,359
AUTOMATIC ECHO DETECTION AND CLASSIFICATION SYSTEM

Paul H. Miller, 1400 S. Joyce St., Apt. B-1709, Arlington, Va. 22202, and Tillman H. Schafer, 509 Shady Dr., Endwell, N.Y. 13760

Filed Jun. 28, 1954, Ser. No. 439,941
Int. Cl.^{2} G01S *9/66*
U.S. Cl. 367—94 **2 Claims**

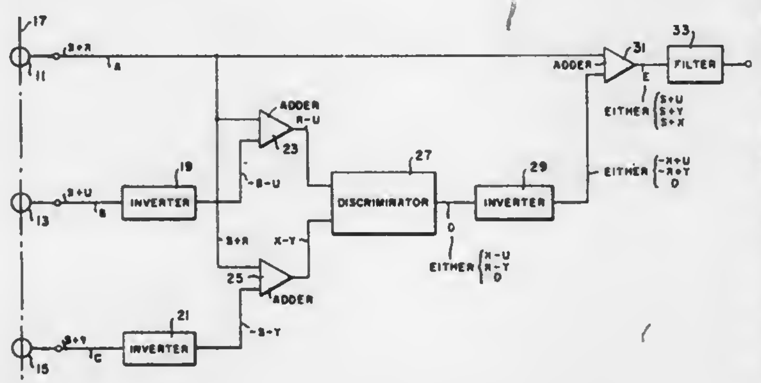
1. In an automatic echo detection and classification system wherein sonar equipment transmits pulses toward a target in predetermined and equal time intervals and receives background, doppIered and undopplered echoes which are produced as video output and audio output, the improvement which comprises means for establishing a non-directional background reference signal voltage from the video output, means for separating the audio output into dopplered signal voltage outside the reverberation band and undopplered signal voltage within the reverberation band, means for algebraically adding the background reference signal voltage to both the dopplered and undopplered signal voltages, a first amplifier for the resultant dopplered signal voltage, a target indicator alarm, a first energizing circuit therefor operative by the amplified dopplered signal voltage to indicate that a target has been located, means for obtaining from the resultant undopplered signal voltage a selected signal voltage above a predetermined level, a first gate normally in closed position, a first multivibrator therefor and operable by the selected undopplered signal voltage to move to open position for a predetermined interval to pass a first echo of a predetermined duration, a second gate normally in open position for passing the first echo after it has passed the first gate, a second multivibrator for the second gate operative to close the second gate for a predetermined period, an amplifier for the undopplered signal voltage of the first echo after it has passed through both the first and second gates, a second energizing circuit for the target alarm, said second circuit including the second multivibrator, and being operative to energize the second multivibrator by the amplified undopplered signal voltage of the first echo after it has passed through the second gate and after the predetermined period for which the second gate is closed and a second echo appears, which is substantially within the same range as the first echo, the second gate will be open for passing of the second echo to operate the target indicator alarm.



4,195,360
SIGNAL PROCESSING CIRCUIT

Noel O. Fothergill, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Oct. 16, 1973, Ser. No. 408,969
Int. Cl.^{2} H04B *1/12*
U.S. Cl. 367—136 **12 Claims**



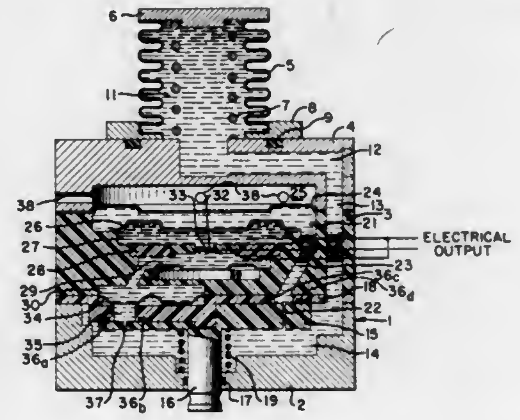
1. A signal processing circuit particularly adapted for use in the detection of a selected signal against background noise, comprising:
separate inputs which comprise at least first, second and third inputs which provide respectively the selected signal plus a first noise signal, the selected signal plus a second noise signal, and the selected signal plus a third noise signal, the three noise signals being uncorrelated;
first combining means arranged to produce from the first and second inputs a fourth signal from which the selected signal has been eliminated and which comprises the difference between the first and second noise signals;
second combining means arranged to produce from the second and third inputs a fifth signal from which the selected signal has been eliminated and which comprises the difference between the second and third noise signals;
means arranged to compare the fourth and fifth signals, and when said signals are of the same polarity to select the signal which has an instantaneous value closer to zero, and to present that signal as an instantaneous intermediate output;
means arranged to compare the fourth and fifth signals, and when the two signals are of opposite polarity, to present zero as the said instantaneous intermediate output; and
third combining means by which a selected one of the said inputs is combined with the said intermediate output in a manner tending to eliminate the noise component therein, the output of the third combining means containing the selected signal with a higher signal-to-noise ratio than any of the incoming signals.

11. A signal processing circuit according to claim 1, in which the inputs are obtained from microphones and the selected input signal is an acoustic signal coming from the object whose presence the circuit is required to ascertain.

4,195,361
VARIABLE FREQUENCY ACOUSTIC FILTER

Herbert V. Hillery, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1956, Ser. No. 581,261
Int. Cl.^{2} H04R *23/00*
U.S. Cl. 367—149 **6 Claims**



1. In a hydroacoustic filter and electrolytic detector system of the character described, means for providing a housing for a unitary assembly of an electrolytic detector and a hydroacoustic filter circuit of selectable frequency attenuation characteristic to provide a plurality of band pass ranges for said system, which comprises an electrolytic detector cell, a first acoustic capacitance means connected in series with a first side of the input of said circuit, a second series connected acoustic capacitance connected in a second signal input side of said circuit, switching means providing a first plurality of hydraulic inductance-resistance tubes, with a preselected one of said plurality of tubes being normally disposed in a position to provide a shunting of the remainder of the hydroacoustic filter and electrolytic detector system, said switching means further including means providing a second plurality of hydraulic inductance-resistance tube members disposed for selective connection of a predetermined one thereof in series with said first named input capacitance and contemparaneously with a predetermining one of said first tubes, means for selecting one each of said plurality of series and shunt tubes to provide in conjunction with the other filter elements preselected signal attenuation in a desired frequency range, means providing a third acoustic capacitance in series with said series inductance-resistance tube, a fourth capacitance means providing a shunting of the signal output of said third capacitance around said detector cell, means providing a fluid connection of said detector cell, and means for deriving an output of predetermined frequency characteristics from said detector.

DESIGN PATENTS

GRANTED MAR. 25, 1980

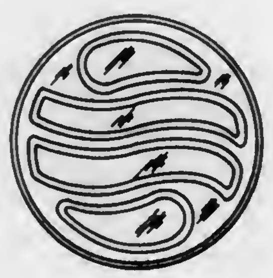
ERRATA

For CLASS	See PATENT NO.
D24–099	254,552
D26–066	254,575

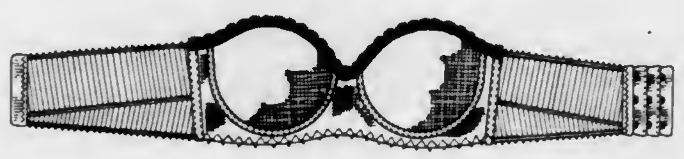
DESIGNS

MARCH 25, 1980

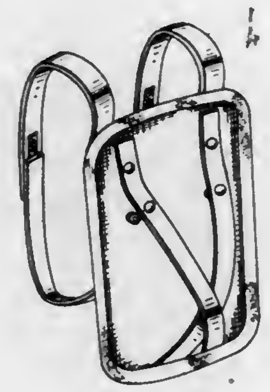
254,516
CANDY TABLET
Raymond K. Meibaum, Florissant, Mo., assignor to Sunmark, Inc., St. Louis, Mo.
Filed Apr. 27, 1978, Ser. No. 901,283
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—1



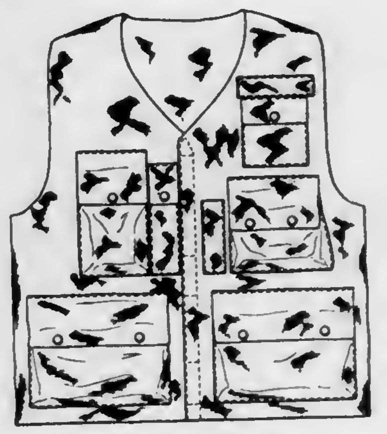
254,517
BRASSIERE
John C. Henson, Greenville, Tex., assignor to Henson-Kickernick,Inc., Greenville, Tex.
Filed Oct. 20, 1977, Ser. No. 843,806
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



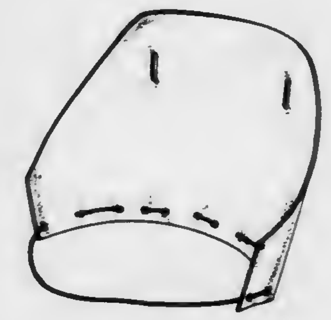
254,518
CHILD'S CHEST OR BACK TOTE
Paula Taggart, 4123 Tracy St., Los Angeles, Calif. 90027
Filed Jun. 17, 1977, Ser. No. 807,423
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—25



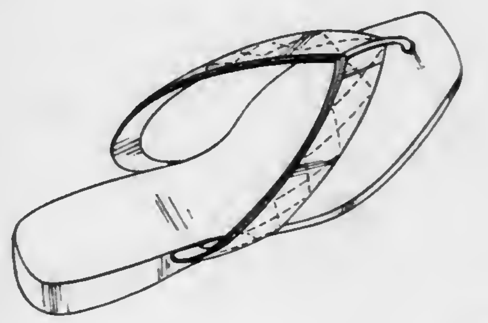
254,519
VEST
Ernest W. Kramer, Minneapolis, Minn., and Don W. Dunlap, Topeka, Kans., assignors to Medical Associates International, Inc., Topeka, Kans.
Filed Jan. 30, 1978, Ser. No. 873,213
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—190



254,520
VISION SHIELD FOR A STUDENT TYPIST OR THE LIKE
Gerald A. Amirault, 693 Portsmouth Ave., Kingston, Ontario, Canada
Filed Dec. 16, 1977, Ser. No. 861,352
Claims priority, application Canada, Nov. 3, 1977, 0311772
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—234



254,521
SANDAL
Marcella M. Katz, 10573 Le Conte Ave., Los Angeles, Calif. 90024, assignor to Marcella M. Katz, Los Angeles, Calif.
Filed Jul. 11, 1977, Ser. No. 814,783
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—270

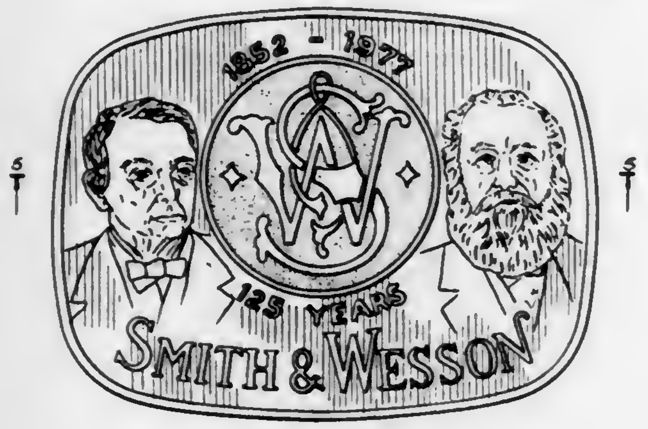


254,522

BELT BUCKLE

John Moreton, Windsor, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.
Filed Dec. 15, 1977, Ser. No. 861,073
Term of patent 14 years
Int. Cl. D02—*07*

U.S. Cl. D2—427

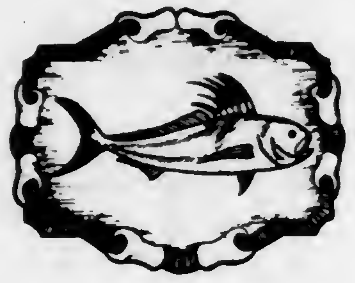


254,523

BELT BUCKLE

Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckles & Jewelry, Inc., Los Angeles, Calif.
Filed Oct. 28, 1977, Ser. No. 846,618
Term of patent 14 years
Int. Cl. D02—*07*

U.S. Cl. D2—431

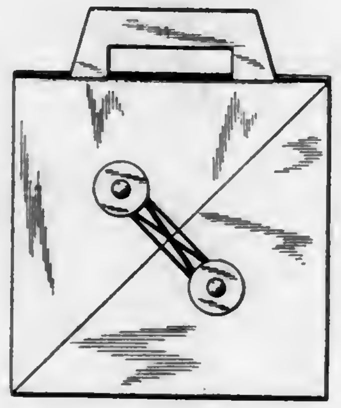


254,524

CARRYING CARTON FOR SHOES OR THE LIKE

William J. Cohen, Hingham, Mass., assignor to CITC Industries, Inc., New York, N.Y.
Division of Ser. No. 651,957, Jan. 23, 1976, Pat. No. Des. 248,123. This application Oct. 26, 1977, Ser. No. 845,622
Term of patent 14 years
Int. Cl. D3—*02*

U.S. Cl. D3—30

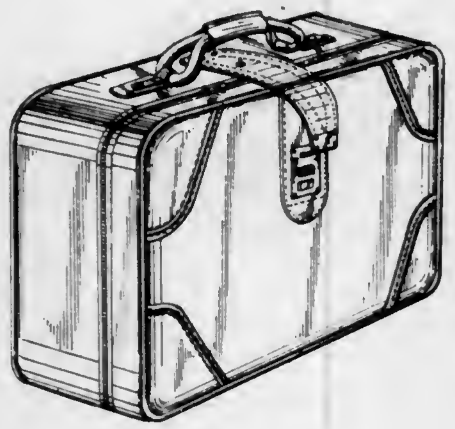


254,525

LUGGAGE CASE

Michael Davis, Meschanic Township, Lawrence County, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.
Filed Sep. 7, 1977, Ser. No. 831,356
Term of patent 14 years
Int. Cl. D3—*01*

U.S. Cl. D3—71

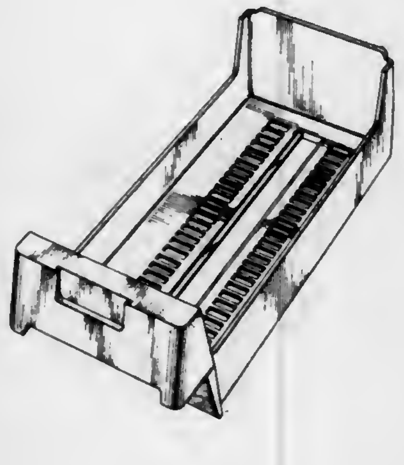


254,526

CARD FILE DRAWER

Gary A. Dolphin, Sr.; James F. Hampshire, and Greg P. Terek, all of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Dec. 1, 1977, Ser. No. 856,323
Term of patent 14 years
Int. Cl. D6—*06*

U.S. Cl. D6—191

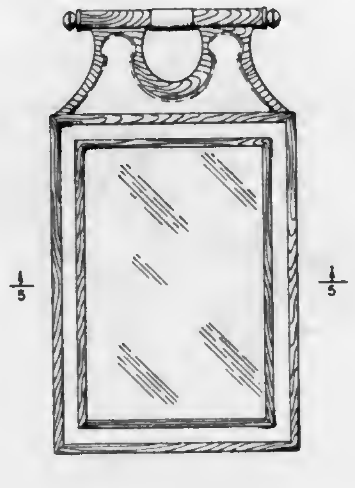


254,527

MIRROR FRAME OR THE LIKE

John Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 836,193
Term of patent 14 years
Int. Cl. D6—*07*

U.S. Cl. D6—241

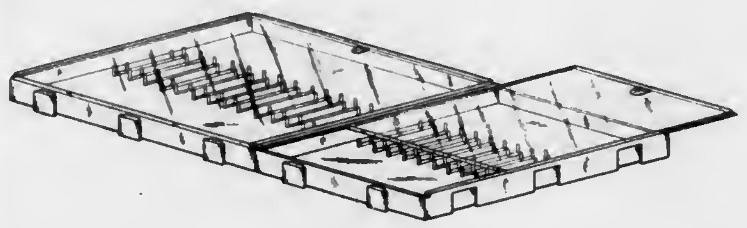


254,528

SET OF MODULAR DISPLAY CASES FOR WRITING IMPLEMENTS

Louis Reichman, 111 Audley St., Kew Gardens, N.Y. 11415
Filed Jun. 6, 1977, Ser. No. 804,101
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*

U.S. Cl. D6—157

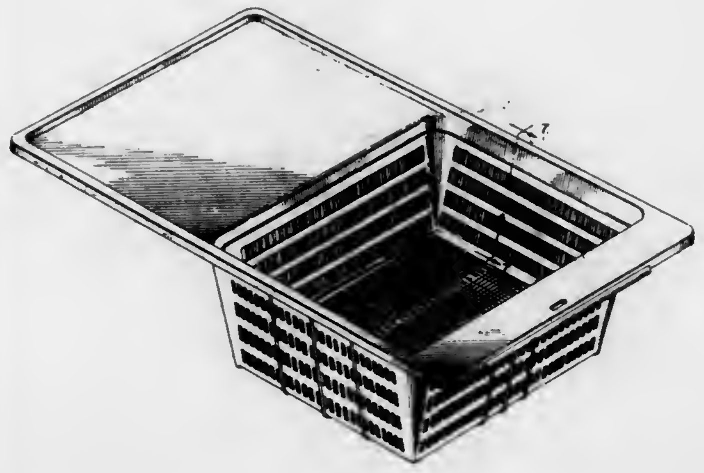


254,529

COMBINED CUTTING BOARD AND COLANDER

Philip J. Arnoff, Lyndhurst, Ohio, assignor to Transco Plastics Corporation, Cleveland, Ohio
Filed May 9, 1977, Ser. No. 794,970
Term of patent 14 years
Int. Cl. D7—*04, 05*

U.S. Cl. D7—46

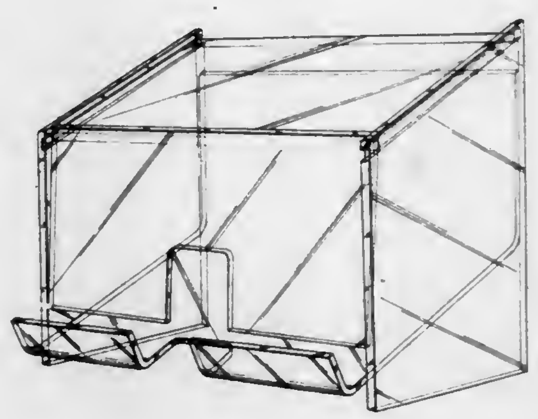


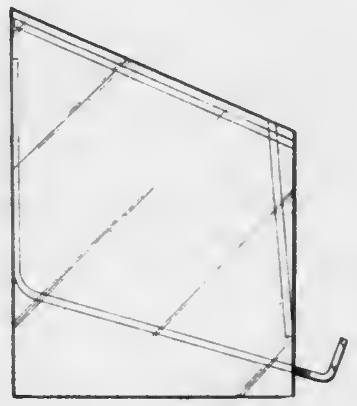
254,530

STRAW DISPENSER

Douglas Armstrong, 1420 Warden Ave., Scarborough, Ontario, Canada
Filed Sep. 26, 1977, Ser. No. 836,915
Claims priority, application Canada, May 12, 1977, 1205773
Term of patent 7 years
Int. Cl. D07—*06*

U.S. Cl. D7—75



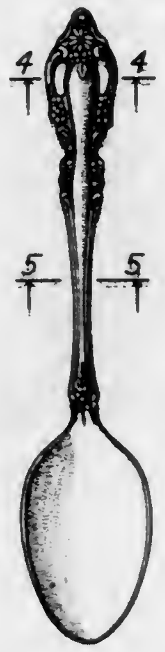


254,531

SPOON OR SIMILAR ARTICLE

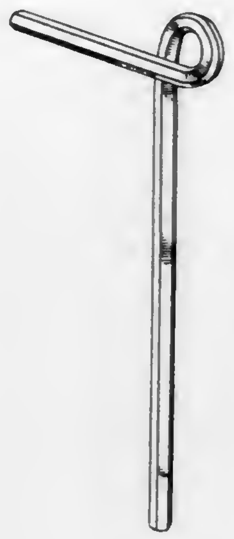
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 27, 1977, Ser. No. 865,010
Term of patent 14 years
Int. Cl. D7—*03*

U.S. Cl. D7—137



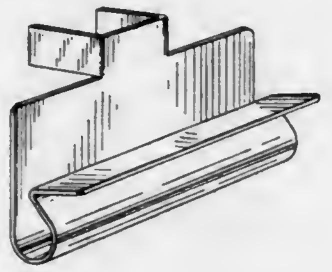
254,532
WRENCH

Eugene M. Kelley, 1796 Larkspur, Pomona, Calif. 91766
Filed Jun. 10, 1977, Ser. No. 805,617
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—29



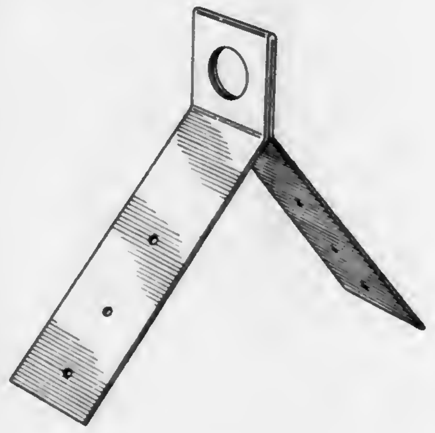
254,533
LOCKING DEVICE TO PREVENT REMOVAL OF SLIDING WINDOWS AND DOORS

Alfred Gist, Rte. 1, Box 110, Bandon, Oreg. 97411
Filed Dec. 19, 1977, Ser. No. 861,657
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331



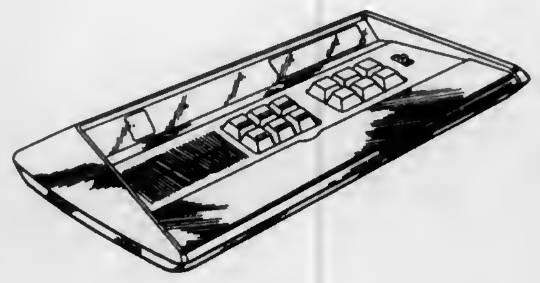
254,534
ROOFING SAFETY BRACKET

John H. Glynn, 7 Richgrove Dr., Apt. 1006, Weston, Ontario M9R 2L1, Canada, and Patrick J. Glynn, 21 Richgrove Dr., Apt. 712, Weston, Ontario M9R 2L2, Canada
Filed Mar. 20, 1978, Ser. No. 888,035
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356



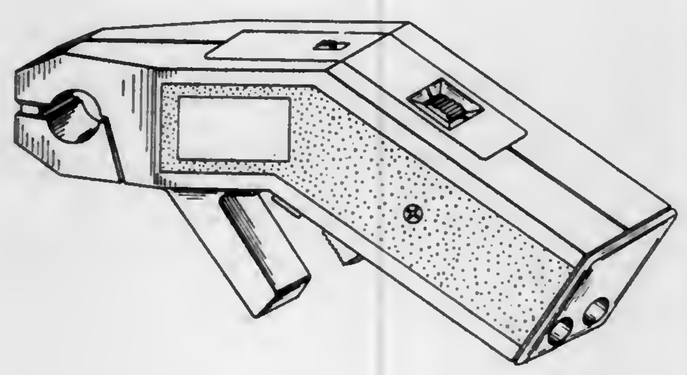
254,535
COMBINED TIME CLOCK AND BIORHYTHM CALCULATOR

Ian S. McCrae, Atlanta, Ga., assignor to Kosmos International Ltd., Nassau, The Bahamas
Filed Feb. 1, 1978, Ser. No. 874,269
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2



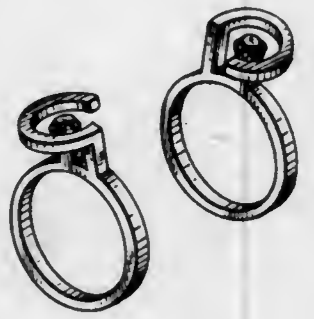
254,536
GUN FOR DETERMINING CURRENT OR POWER IN AN ELECTRICAL CONDUCTOR

Wesley B. Davis, Canal Winchester, and Jeffrey A. Dierker, Westerville, both of Ohio, assignors to F. W. Bell, Inc., Columbus, Ohio
Filed Nov. 16, 1977, Ser. No. 852,177
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—79



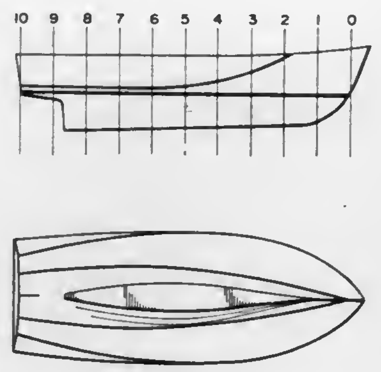
254,537
DOUBLE RING

Mildred Abelson, 15 Sycamore La., Roslyn Heights, N.Y. 11577
Filed Jul. 14, 1978, Ser. No. 924,899
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—34



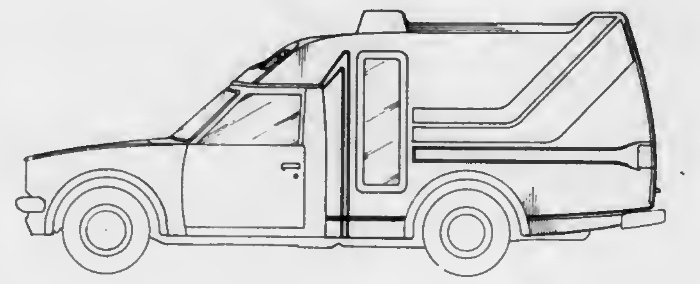
254,538
BOAT HULL

George A. Lundgren, 6225 Heights Rd., Santa Rosa, Calif. 95404
Filed Jan. 24, 1977, Ser. No. 761,999
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



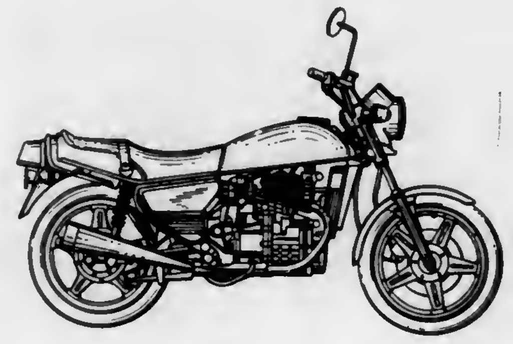
254,539
VAN

Wayne M. Mertes, Sun Valley, Calif., assignor to Dolphin Camper Company, Sun Valley, Calif.
Filed Feb. 6, 1978, Ser. No. 875,629
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—99



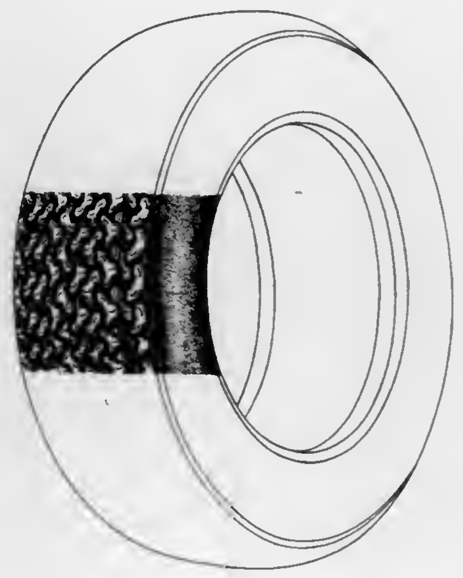
254,540
MOTORCYCLE

Einosuke Miyachi, Urawa, and Tsutomu Okuno, Fujimi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 8, 1978, Ser. No. 885,028
Claims priority, application Japan, Sep. 13, 1977, 52-36532
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



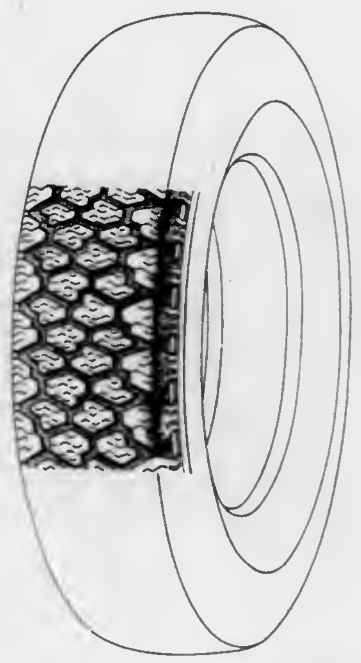
254,541
TIRE

Michael A. Kolowski, Tallmadge; Daniel J. Lindner, North Canton; John E. Lynch, Bedford, and Charles W. Roberts, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 14, 1978, Ser. No. 877,649
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



254,542
TIRE

Leon J. Hitzky, Bonneweg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 12, 1978, Ser. No. 950,932
Claims priority, application United Kingdom, Apr. 28, 1978, 984420/78
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151



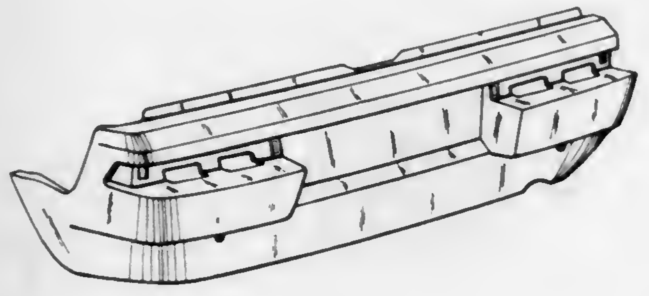
254,543

VEHICLE BODY REAR BUMPER UNIT

Giorgio Margiaria, Moncalieri, and Francesco Gay, Turin, both of Italy, assignors to Comind S.p.A. and Fiat Societa per Azioni, both of Turin, Italy

Filed Jan. 4, 1978, Ser. No. 866,895
Claims priority, application Italy, Jul. 5, 1977, 53307 B/77
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D12—169



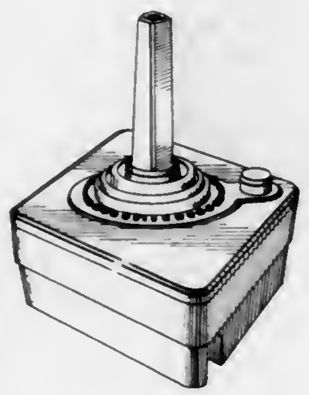
254,544

VIDEO GAME CONTROL UNIT

Kevin P. McKinsey, Soquel, and Gerald R. Aamoth, Santa Clara, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Jun. 13, 1977, Ser. No. 806,318
Term of patent 14 years
Int. Cl. D13—*03*

U.S. Cl. D13—12



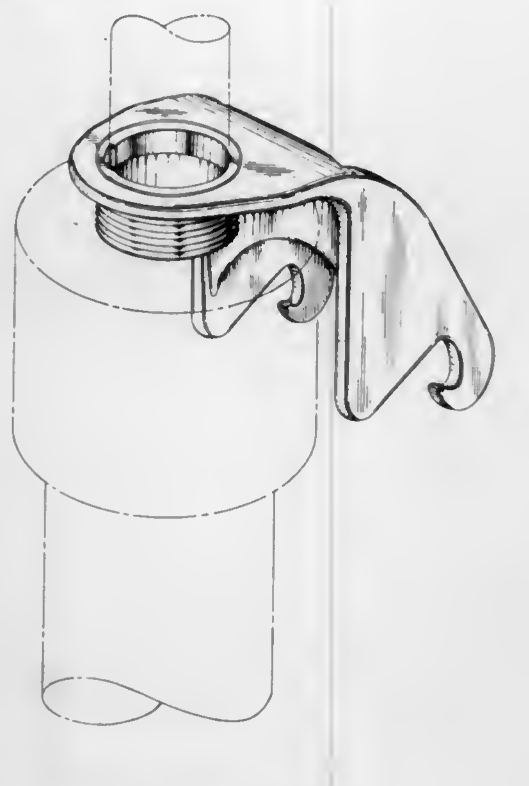
254,545

HIGH VOLTAGE FUSE END FITTING

David M. Evans, Palatine, and Henry W. Scherer, Mount Prospect, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Sep. 27, 1977, Ser. No. 837,239
Term of patent 14 years
Int. Cl. D13—*03*

U.S. Cl. D13—35



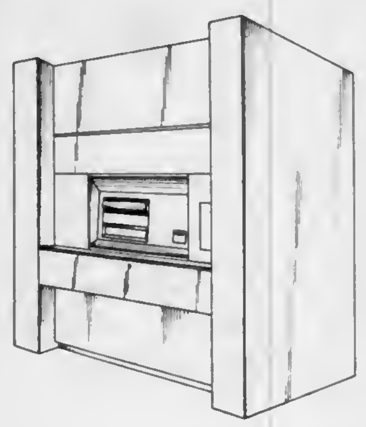
254,546

CUSTOMER ACTIVATED TERMINAL ENCLOSURE

James S. Berman, New York, and Sigurd Stegmaier, Malverne, both of N.Y., assignors to Citibank, N.A., New York, N.Y.

Filed Feb. 7, 1978, Ser. No. 875,943
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D14—42



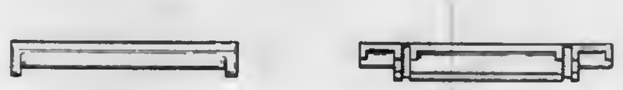
254,547

LAWN MOWER HAND GRIP

Lee L. Karsten, Racine, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed Jul. 25, 1977, Ser. No. 818,558
Term of patent 14 years
Int. Cl. D15—*03*

U.S. Cl. D15—18



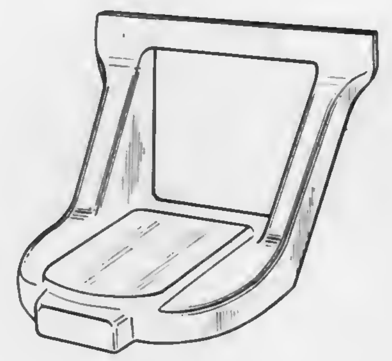
254,548

HYDRAULIC HOSE GUARD FOR USE WITH EXCAVATING MACHINES OR THE LIKE

Allyn C. Dowd, Sterling Heights, and Miles N. Stiller, West Bloomfield, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Jul. 21, 1977, Ser. No. 817,644
Term of patent 14 years
Int. Cl. D15—*04*

U.S. Cl. D15—28



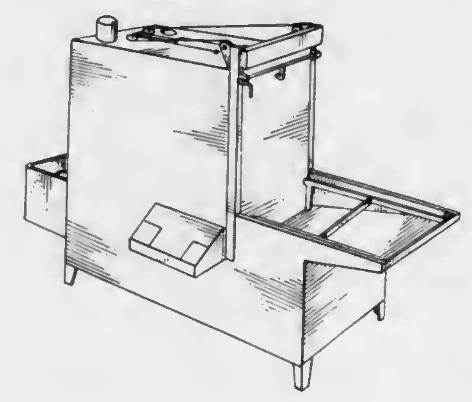
254,549

PARTS CLEANING AND DE-GREASING MACHINE

Richard W. Gentry, 8192 Tokay, Fontana, Calif. 92335

Filed Jun. 10, 1977, Ser. No. 805,616
Term of patent 14 years
Int. Cl. D15—*05*

U.S. Cl. D15—34



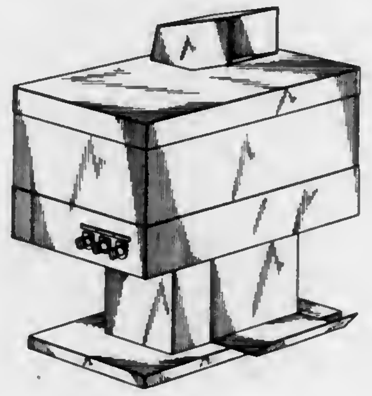
254,550

AUTOMATIC TOWEL RINSING MACHINE

Judson L. Smith, 5432 Lighthouse La., Tempe, Ariz. 85283

Filed Sep. 12, 1977, Ser. No. 832,512
Term of patent 14 years
Int. Cl. D15—*05*

U.S. Cl. D15—39



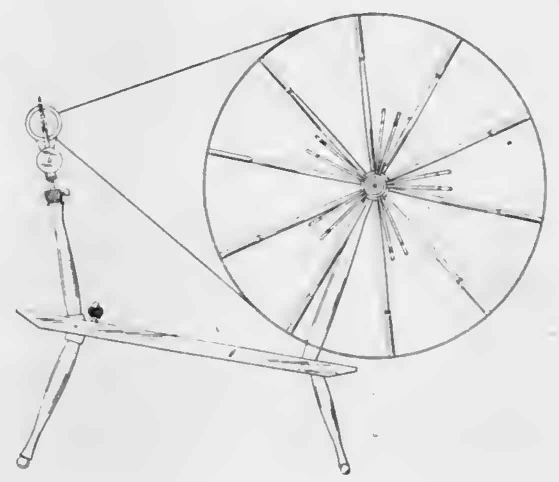
254,551

SPINNING WHEEL

Luis A. Turner, 8406 SW. 58th Ave., Portland, Oreg. 97219

Filed Jun. 10, 1977, Ser. No. 805,620
Term of patent 14 years
Int. Cl. D15—*06*

U.S. Cl. D15—66



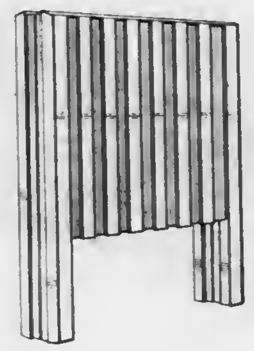
254,552

ENCLOSURE FOR A TELEPHONE JUMPER-WIRE INTERFACE UNIT

John A. Mahan, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 6, 1978, Ser. No. 884,036
Term of patent 14 years
Int. Cl. D13—*03;* D14—*99*

U.S. Cl. D24—99

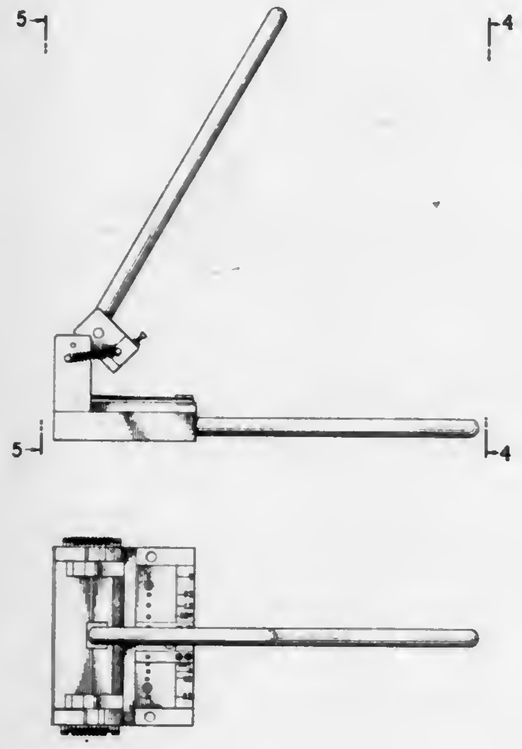


254,553
MULTI-CONTACT ELECTRICAL CONNECTOR FIXTURE PRESS

Philip J. Thomas, Costa Mesa; Roger D. Lang, Irvine, and John A. McAllister, Mission Viejo, all of Calif., assignors to Circuit Assembly Corp., Costa Mesa, Calif.

Filed May 9, 1977, Ser. No. 794,765
Term of patent 14 years
Int. Cl. D15—*09*

U.S. Cl. D15—123

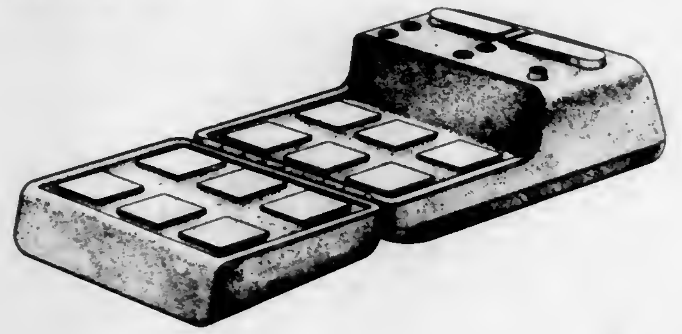


254,554
FOLDING KEYBOARD PAD

Donald M. Genaro, Haworth; Rembert R. Stokes, Middletown, both of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 23, 1978, Ser. No. 889,611
Term of patent 14 years
Int. Cl. D18—*01;* D14—*02, 03*

U.S. Cl. D18—12

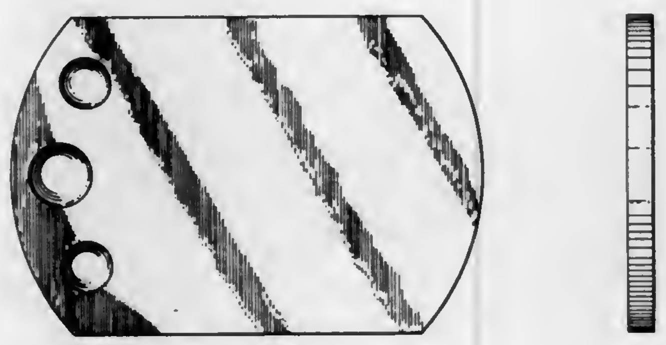


254,555
MIXING PALETTE

Wallace R. Kean, 2454 Sharon Oaks Dr., Menlo Park, Calif. 94025, and Melvin R. Rouse, 3401 Investment Blvd., No. 7, Hayward, Calif. 94545

Filed Jun. 14, 1977, Ser. No. 806,557
Term of patent 14 years
Int. Cl. D19—*06*

U.S. Cl. D19—35

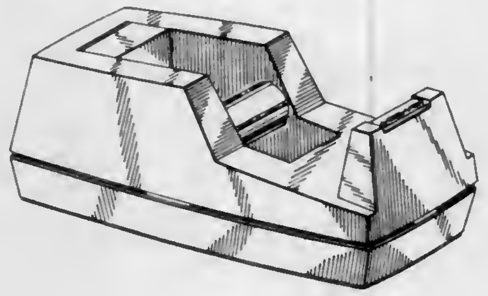


254,556
TAPE DISPENSER

Logan W. Johnson, Edina, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jul. 24, 1978, Ser. No. 927,116
Term of patent 14 years
Int. Cl. D19—*02*

U.S. Cl. D19—69

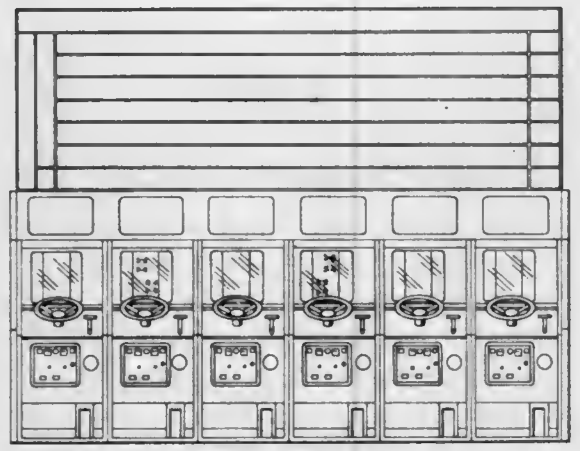


254,557
COIN-OPERATED AUTO RACE AMUSEMENT DEVICE

Richard A. Nunis, Laguna Beach, Calif., assignor to Walt Disney Productions, Burbank, Calif.

Filed Oct. 3, 1977, Ser. No. 839,284
Term of patent 14 years
Int Cl. D21-01

U.S. Cl. D21-01

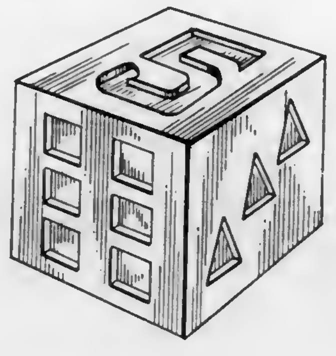


254,558
GAME DIE

James A. Rice, 6 Hamilton Rd., Brookline, Mass. 02146

Filed Aug. 29, 1977, Ser. No. 828,880
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—41

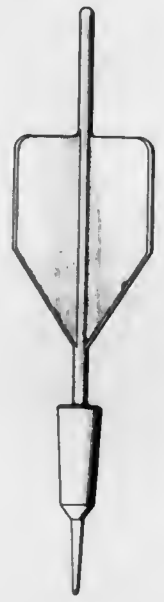


254,559
DART

John F. Chmela, 1106 Beechwood Dr., Mt. Prospect, Ill. 60056

Filed Dec. 12, 1977, Ser. No. 859,663
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—49

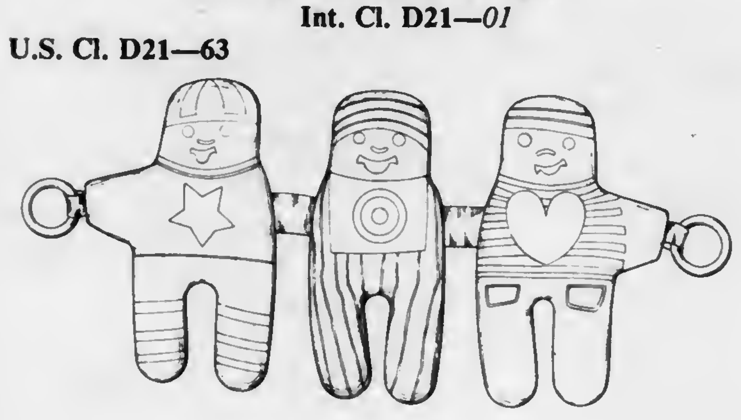


254,560
CRIB TOY OR SIMILAR ARTICLE

Phillip Johnson, Hopewell, N.J.; Lawrence Grubb, Monkton, and Danny E. Simpson, Baltimore, both of Md., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 8, 1978, Ser. No. 884,652
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—63

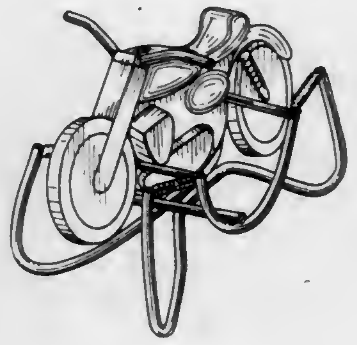


254,561
ROCKING TOY

Carl H. Alley, 2310 Murray Ave., Baltimore, Md. 21219, and Michael B. Alley, 1728 Burham Rd., Baltimore, Md. 21222

Filed Nov. 7, 1977, Ser. No. 848,824
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—68

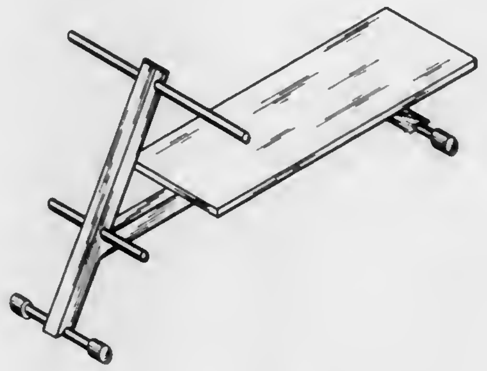


254,562
PHYSICAL EXERCISER

John M. Pearo, 3211 Castleleigh Rd., Beltsville, Md. 20705

Filed Nov. 17, 1977, Ser. No. 852,474
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D21—195

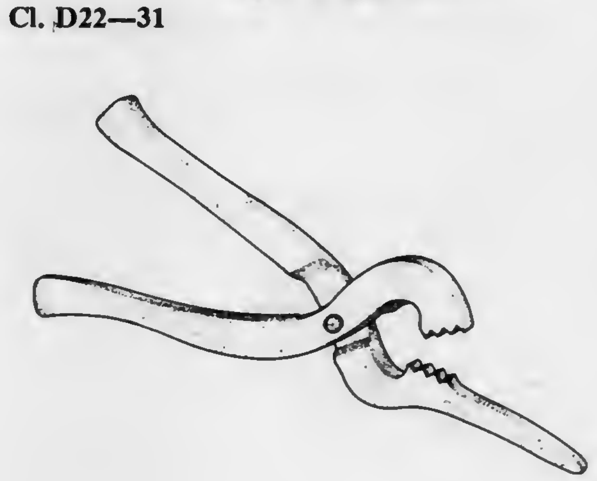


254,563
FISH GRIPPING TOOL

George F. Nihizer, 39 S. Pleasant, Fairborn, Ohio 45324

Filed Dec. 12, 1977, Ser. No. 859,657
Term of patent 14 years
Int. Cl. D22—*05*

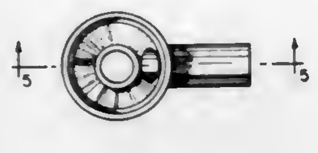
U.S. Cl. D22—31

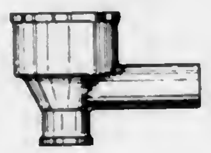


254,564

VACUUM BREAKING TEE

Robert L. Johnson, 590 - 1st. Ave. South, Seattle, Wash. 98104
Continuation-in-part of Ser. No. 798,905, May 20, 1977. This application Apr. 16, 1979, Ser. No. 30,535
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40

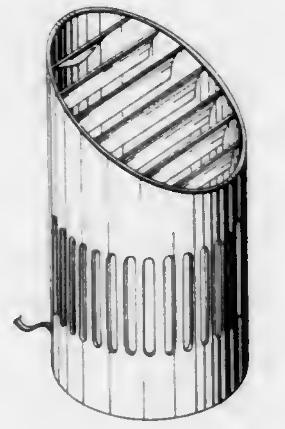




254,565

FAN

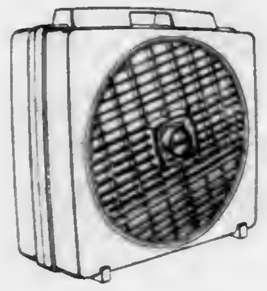
Rohn A. Brown, 1218 E. Del Rio Dr., Tempe, Ariz. 85282
Filed Nov. 21, 1977, Ser. No. 853,641
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



254,566

PORTABLE FAN HOUSING

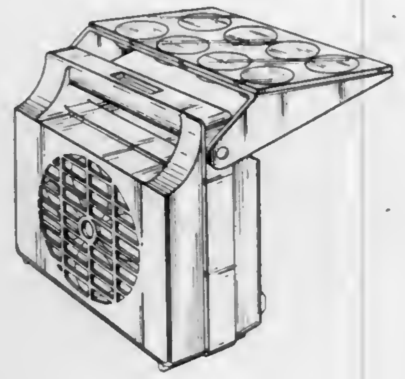
Kevin T. Cummins, Eltham, Australia, assignor to Kemtron Operations Pty. Ltd., Australia
Filed Apr. 13, 1978, Ser. No. 896,000
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



254,567

SOLAR POWERED PORTABLE FAN

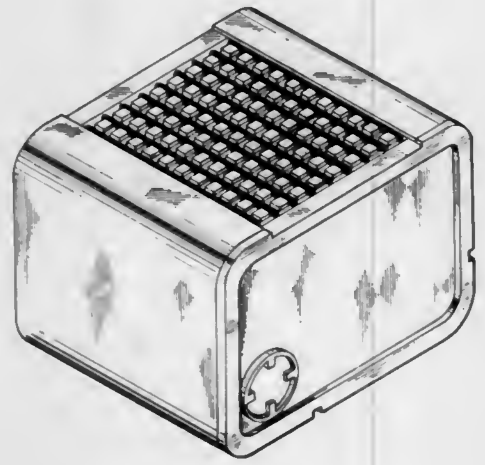
Clyde Wagner, 325 E. Stocker St., Glendale, Calif. 91207
Filed Apr. 14, 1978, Ser. No. 896,788
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



254,568

CONTAINER FOR STORAGE AND DISPENSING OF MEDICAL TEST STRIPS OR SIMILAR ARTICLE

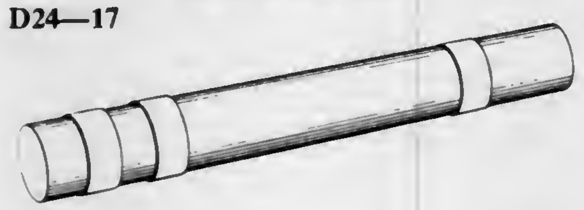
John C. Mack, Jr., and Dean M. Peterson, both of Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 12, 1977, Ser. No. 859,885
Term of patent 14 years
Int. Cl. D24—*01;* D10—*04*
U.S. Cl. D24—8



254,569

HOUSING FOR A PORTABLE HAND-HELD, DIGITAL, HEART RATE INDICATOR DEVICE

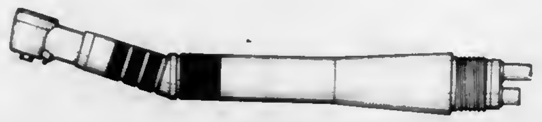
James G. Moffat, and Gregory Lekhtman, both of Montreal, Canada, assignors to Biosig Inc., Montreal, Canada
Filed May 16, 1978, Ser. No. 906,158
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

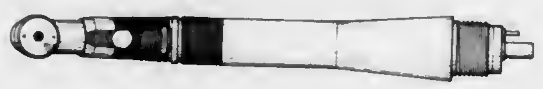


254,570

AIR TURBINE HANDPIECE

Francis J. McDonald, Needham, Mass., assignor to Healthco, Inc., Boston, Mass.
Filed Mar. 23, 1979, Ser. No. 23,038
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—12

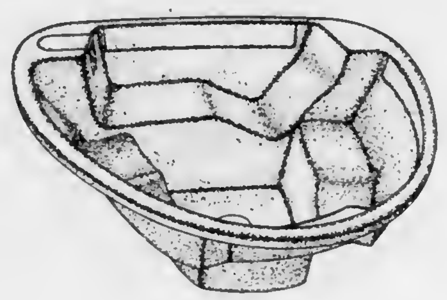


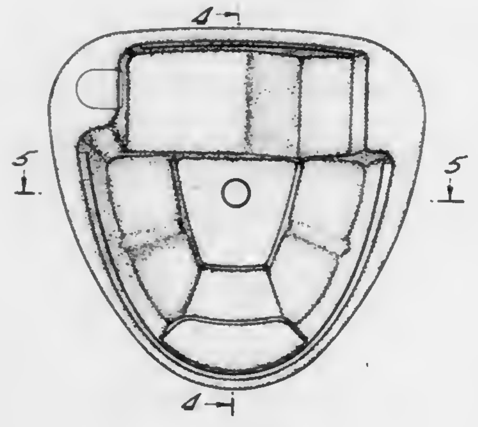


254,571

HYDROTHERAPY SPA

Richard G. Reineman, Newport Beach, Calif., assignor to Marlin Fiberglass, Huntington Beach, Calif.
Continuation-in-part of Ser. No. 005,912, Jan. 23, 1979. This application Jun. 11, 1979, Ser. No. 47,269
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38

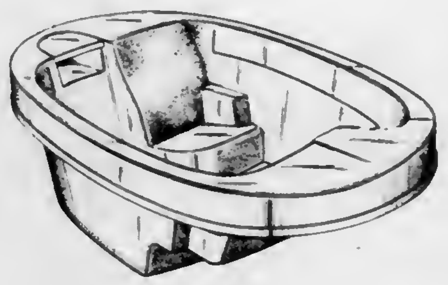


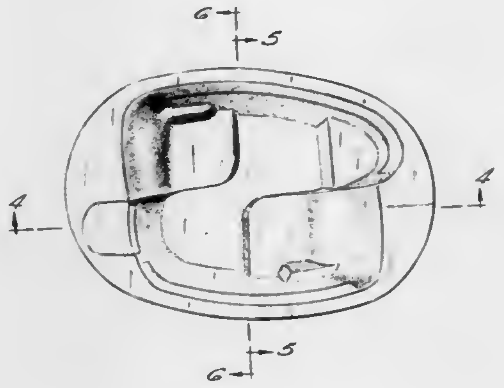


254,572

HYDROTHERAPY SPA

Richard G. Reineman, Newport Beach, Calif., assignor to Marlin Fiberglass, Huntington Beach, Calif.
Continuation-in-part of Ser. No. 005,913, Jan. 23, 1979, abandoned. This application Jun. 11, 1979, Ser. No. 47,271
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38

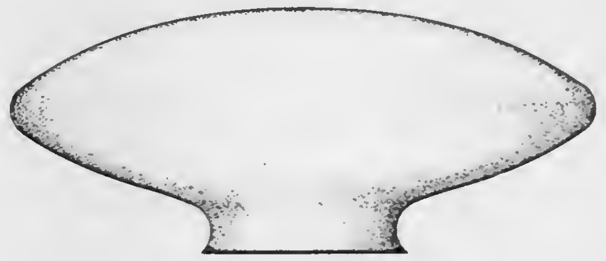




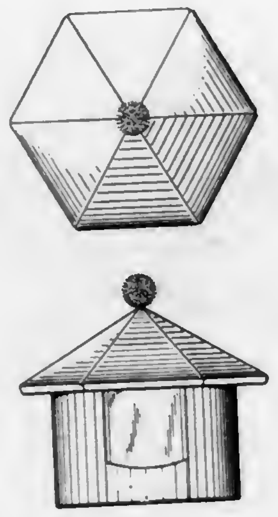
254,573

BUILDING

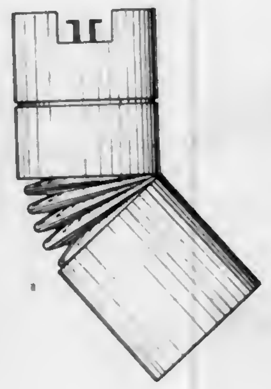
Robert K. S. Han, 999 Green St., No. 2701, San Francisco, Calif. 94133
Filed Aug. 16, 1978, Ser. No. 934,087
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—18



254,574
PET HOUSE
Ruth Schneider, R.D. 2, Box 21R, Hartly, Del. 19953
Filed Apr. 13, 1978, Ser. No. 896,159
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



254,575
TRACK LIGHT
Joseph R. Strignano, 300 E. 56th St., New York, N.Y. 10022
Filed Jan. 30, 1978, Ser. No. 873,288
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—66



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  - Harms, Jack L.; and Seberg, Charles H., 4,194,504, Cl. 128-214.400.
  - Safford, John W., Jr., 4,195,074, Cl. 424-12.000.
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  - McCracken, Donald G., 4,194,767, Cl. 285-134.000.
- AES Technology Systems, Inc.: *See—*
  - Savit, Joseph, 4,194,342, Cl. 53-492.000.
- Afanasiev, Valery K.: *See—*
  - Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K., 4,194,945, Cl. 162-135.000.
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  - Kumata, Ken; and Namikawa, Hiroshi, 4,194,916, Cl. 106-47.00R.
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  - Falk, Alfons B.; Stenman, Antero E.; and Wikland, Svante, 4,194,761, Cl. 280-705.000.
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  - Svensson, Bengt H.; Lindberg, Lars G.; and Hallstedt, Karl G. A., 4,194,796, Cl. 308-9.000.
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  - Madsen, Rud F., 4,194,557, Cl. 165-94.000.
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  - Laforest, Jacqueline S., nee Boutillier du Retail; Mignonac, Sylviane S. J., nee Mondon; Thuillier, Germaine, nee Nachmias; and Bessin, Pierre A. R., 4,195,093, Cl. 424-275.000.
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  - Hudson, Thomas J.; Huni, Jean-Paul R.; Potocnik, Vinko; and MacMillan, Donald W., 4,194,959, Cl. 204-243.00R.
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  - Cook, Lloyd A.; Reynolds, Kim A.; and Mark, Werner J., 4,194,667, Cl. 228-4.100.
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  - Waltz, Richard W., 4,195,324, Cl. 361-25.000.
- Allen, Herbert. Convertible bag assembly. 4,194,602, Cl. 190-57.000.
- Allen, John J.: *See—*
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  - Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, deceased, 4,195,105, Cl. 427-386.000.
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  - Kepler, James L., 4,194,528, Cl. 137-554.000.
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  - Connors, Dorothy; Chapman, Robert D.; Winkler, Robert J.; and Winkler, Timothy K., 4,194,312, Cl. 38-102.500.
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  - Duyvesteyn, Willem P. C., 4,195,065, Cl. 423-150.000.
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  - Fell, David A., 4,195,104, Cl. 427-261.000.
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  - Clem, Arthur G., 4,194,970, Cl. 209-263.000.
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- American Delphi, Inc.: *See—*
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  - Davis, Thomas F., 4,194,913, Cl. 106-1.220.
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  - Grubb, Daniel B., 4,194,276, Cl. 29-56.600.
  - Kuster, Charles W.; and Renshaw, Floyd H., 4,195,194, Cl. 174-59.000.
- Anderson, Bernard O.: *See—*
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- Anderson, Kenneth E. External female urinary drainage device. 4,194,508, Cl. 128-295.000.
- Anderson, Michael C.: *See—*
  - Morrow, James G., Sr.; Anderson, Michael C.; and Siehr, Richard L., 4,194,638, Cl. 212-46.00R.
- Ando, Tsuneo: *See—*
  - Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.
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- Antos, George J.: *See—*
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- Applications Mecaniques et Robinetterie Industrielle: *See—*
  - Bonafous, Maurice J., 4,194,749, Cl. 277-163.000.
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- Araki, Yoshitaka: *See—*
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- Baker, Lamar T.: *See—*
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- Baker, Marvin E. Backwash system for swimming pool. 4,194,975, Cl. 210-108.000.
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  - Joekel, Alfred, 4,194,381, Cl. 72-100.000.
- Balkanli, Hayati, to Lynes, Inc. Self calibrating environmental condition sensing and recording apparatus. 4,195,349, Cl. 364-571.000.
- Balko, Terry W., to Eli Lilly and Company. 2-(Substituted amino)-N-(3-substituted phenyl)-2-imidazoline-1-carbothioamides. 4,195,092, Cl. 424-273.00R.
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  - Dye, John F.; and Friebel, Virgil F., 4,194,464, Cl. 118-501.000.
- Ballweber, Edward G.: *See—*
  - Hurlock, John R.; and Ballweber, Edward G., 4,195,003, Cl. 260-29.4UA.
- Bamberg, William I., to GTE Sylvania Incorporated. High intensity discharge lamp having safety device with pyrophoric material. 4,195,251, Cl. 315-73.000.
- Bandell, Ira, to Cosmetic Arts, Inc. Nail polish kit. 4,194,617, Cl. 206-45.000.
- Bandoh, Kazuo, to Dai-Ichi Seiko Co., Ltd. Insert loading apparatus in transfer encapsulation. 4,194,865, Cl. 414-403.000.
- Banta, Fred L., to Burndy Corporation. Fire protective structure. 4,194,521, Cl. 137-67.000.

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  - Barthelemy, Louis; and Barbedienne, Roger S., 4,194,616, Cl. 198-778.000.
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- Barnsbee, Clive D., to Eastman Kodak Company. Apparatus and method for selectively reclaiming parts from film cartridges. 4,194,926, Cl. 134-29.000.
- Barry, James D., to United States of America, Air Force. Remotely controlled electromagnetic optical focusing assembly. 4,194,811, Cl. 350-255.000.
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- Bauman, John F. Attachment means for industrial push broom handles. 4,194,259, Cl. 15-146.000.
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  - Deichert, William G.; Su, Kai C.; and Van Buren, Martin F., 4,195,030, Cl. 260-448.20E.
  - Fischer, David J.; McCandless, James A.; and Hager, James D., 4,194,814, Cl. 351-160.00R.
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  - Boggs, Daniel R., 4,194,684, Cl. 233-26.000.
- Bayer Aktiengesellschaft: *See—*
  - Hildebrand, Dietrich; and Gribnau, Thomas, 4,195,128, Cl. 435-178.000.
  - Hoffmann, Hellmut; Klauke, Erich; and Hammann, Ingeborg, 4,195,082, Cl. 424-216.000.
  - Koster, Johannes; Heitkamper, Peter; Fuhrmann, Peter; and Porkert, Helmut, 4,195,032, Cl. 260-453.0PH.
  - Metzger, Carl; Eue, Ludwig; and Schmidt, Robert R., 4,195,181, Cl. 544-316.000.
  - Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,163, Cl. 528-315.000.
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  - Paulsen, Hans; Jansen, Rolf; and Stadler, Peter, 4,195,173, Cl. 536-17.00R.
  - Reichmann, Wolfgang; Konig, Klaus; and Koster, Johannes, 4,195,031, Cl. 260-453.00P.
  - Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, 4,195,132, Cl. 521-155.000.
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  - Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., 4,195,188, Cl. 562-549.000.
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  - Ruegg, Frank A.; and Vitriol, William A., 4,195,326, Cl. 361-274.000.
- Beeckmans, Jan M., to Canadian Patents & Development Limited. Method of sorting fluidized particulate material and apparatus therefor. 4,194,971, Cl. 209-467.000.
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  - Dingle, Raymond; Gossard, Arthur C.; and Stormer, Horst L., 4,194,935, Cl. 148-175.000.
  - Freeman, Richard D., 4,195,338, Cl. 364-200.000.
  - Logan, Ralph A.; and Tsang, Won-Tien, 4,194,933, Cl. 148-171.000.
- Bellaff, Leslie, to Weaver, William W. Home heating system. 4,194,488, Cl. 126-112.000.
- Bellemore, Norman I.: *See—*
  - Zabner, Adolf; and Bellemore, Norman I., 4,194,645, Cl. 220-306.000.
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  - Lombardi, Claudio; and Belletti, Lorenzo, 4,194,476, Cl. 123-122.00H.
- Belousov, Anatoly A.: *See—*
  - Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,195,097, Cl. 426-61.000.
- Belousov, Anatoly V.: *See—*
  - Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,194,435, Cl. 91-234.000.
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- Benner, Mary Jo: *See—*
  - Whitcher, Kayleen S.; and Benner, Mary Jo, 4,195,059, Cl. 422-61.000.
- Bennett, Foster C., to Rheocast Corporation. Method to form metal containing nondendritic primary solids. 4,194,552, Cl. 164-71.000.
- Benson, Harvey S.; and Wood, Charles D., III, to Southwest Research Institute. Draft power sensor and method for improving performance in earthmoving equipment. 4,194,574, Cl. 172-430.000.
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  - Lucas, James H.; and Berg, David A., 4,194,757, Cl. 280-461.00A.
- Bergmann, Udo; and Klose, Karl, to U.S. Philips Corporation. Apparatus for optically scanning a surface. 4,195,223, Cl. 250-216.000.
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  - Richter, Jurgen; Purrer, Alois; and Eisenhut, Werner, 4,194,686, Cl. 235-376.000.
- Berman, Herbert L., to Optical Coating Laboratory, Inc. Infrared intrusion alarm system with temperature responsive threshold level. 4,195,234, Cl. 307-117.000.
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  - Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., 4,194,267, Cl. 17-52.000.
- Berthelsen, Mogens. Apparatus for cutting up and conveying material. 4,194,699, Cl. 241-236.000.
- Bertrand, Pierre; Jamet, Michel; Strub, Jacques; and Walter, Eric, to Agence Nationale de Valorisation de la Recherche (Anvar). Control method utilizing a model control scheme. 4,195,337, Cl. 364-106.000.
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  - Laforest, Jacqueline S., nee Boutillier du Retail; Mignonac, Sylviane S. J., nee Mondon; Thuillier, Germaine, nee Nachmias; and Bessin, Pierre A. R., 4,195,093, Cl. 424-275.000.
- Besso, Michael M.: *See—*
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- Betteken, Joseph C.; and McDaniel, Jerome D., to Monsanto Company. Unitized catalytic reactor construction. 4,195,064, Cl. 422-191.000.
- Bey, Michael P.; and Bey, Paul P. Digital color densitometer and exposure meter. 4,194,838, Cl. 356-404.000.
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  - Bey, Michael P.; and Bey, Paul P., 4,194,838, Cl. 356-404.000.
- Bianchi, Mario: *See—*
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- Biebuyck, Lawrence F., to Howmet Corporation. Security astragal for double door assembly. 4,194,776, Cl. 292-346.000.
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- Bierschenk, Thomas R.; Pettit, Rowland; and Nielsen, Donald R., to PPG Industries, Inc. Preparation of ethylene glycol. 4,195,190, Cl. 568-860.000.
- Biggs, Ronald L. Magnetic door stay retainer. 4,194,771, Cl. 292-251.500.
- Billings, Ronald P.; and Hysell, Ellen M., to Mobil Oil Corporation. Fluid catalytic cracking. 4,194,965, Cl. 208-113.000.
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- Bingham, David, to Intersil, Inc.,. Commutating signal level translator. 4,195,266, Cl. 330-9.000.

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Birnbach, Lawrence H.; and Birnbach, Curtis A. Automatic control of the moisture content of the soil. 4,194,691, Cl. 239-63.000.

Bishop, Arthur E. Rotary valves. 4,194,531, Cl. 137-596.000.

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Blaske, Theodore A.; and Yu, Ho Y., to Varo Semiconductor, Inc. Method of passivating a semiconductor device utilizing dual polycrystalline layers. 4,194,934, Cl. 148-174.000.

Bleeker, Lyle A.; and Owen, Richard, to Minnesota Mining and Manufacturing Company. Fiber optical element imaging and illumination assembly. 4,194,827, Cl. 355-1.000.

Bleikamp, Roy H., Jr., to Monsanto Company. Electrical connection for electrodes. 4,194,960, Cl. 204-280.000.

Bloch, Paul: *See—*

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Blocker, Edwin W., Jr., to Combustion Engineering, Inc. Centerless grinder. 4,194,323, Cl. 51-103.00R.

Bobbin, Eldred G. E., to Imperial Chemical Industries Limited. Method of treating suspensions of vinyl chloride/vinyl acetate copolymers. 4,195,168, Cl. 528-495.000.

Bodenbenner, Kurt; and von Plessen, Helmold, to Hoechst Aktiengesellschaft. Process for regenerating waste sulfuric acid. 4,194,952, Cl. 203-12.000.

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Boggs, Daniel R., to Baxter Travenol Laboratories, Inc. Centifugal apparatus using polyester elastomer tubing. 4,194,684, Cl. 233-26.000.

Bogoch, Samuel. Malignin, derived from brain tumor cells, complexes and polypeptides thereof. 4,195,017, Cl. 260-112.00R.

Bohlmark, John, to F M Mattsson Aktiebolag. Lever mechanism. 4,194,406, Cl. 74-110.000.

Boley, Robert E., to Stallion Corporation. Well driving and monitoring system. 4,194,393, Cl. 73-151.000.

Boller, Peter K., to Consumers Glass Company Limited. Container adapted to be stacked vertically and on its side. 4,194,626, Cl. 206-509.000.

Bonafous, Maurice J., to Applications Mecaniques et Robinetterie Industrielle. Sealing ring. 4,194,749, Cl. 277-163.000.

Bonas Machine Company Limited: *See—*

Griffith, John D., 4,194,539, Cl. 139-196.300.

Boney, William G., to UOP Inc. Non-regenerative HF alkylation process. 4,195,191, Cl. 585-706.000.

Bonora, Anthony C.; and Lorenz, Karl, to Siltec Corporation. Semiconductor wafer polishing machine and wafer carrier therefor. 4,194,324, Cl. 51-131.500.

Boon, Bruce T. E.; and Timmins, Armand P., to Eastern Cyclone Industries, Inc. Self cleaning collector system. 4,194,859, Cl. 406-172.000.

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Borror, Alan L.; Cincotta, Louis; Ellis, Ernest W.; and Foley, James W., to Polaroid Corporation. Sulfam (na) phthaleins. 4,195,180, Cl. 544-33.000.

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Bouteille, Daniel; Thomasse, Andre; and Petrimaux, Eric, to La Telemecanique Electrique. Control circuit for pneumatic shift register. 4,194,533, Cl. 137-624.180.

Boutros, Kamal S., to Bunker Ramo Corporation. Filter connector having contact strain relief means and an improved ground plate structure and method of fabricating same. 4,195,272, Cl. 333-182.000.

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Bragg, Charles G. An apparatus with a transversing hoist loader assembly. 4,194,867, Cl. 414-542.000.

Braid, Milton, to Mobil Oil Corporation. Sulfurized olefin lubricant additives and compositions containing same. 4,194,980, Cl. 252-45.000.

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Breau, Arisma J. Double dolly. 4,194,449, Cl. 104-172.00B.

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Briggs, Peter D.; and Sharkey, Dennis R., to FMC Corporation. Labelling machine. 4,194,941, Cl. 156-361.000.

Bristol, Stanley M.; and Bullock, Norman E. Portable elapsed time recorder. 4,195,220, Cl. 235-92.00T.

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Bromberg, John R., 4,194,669, Cl. 228-120.000.

Brook, Richard L., to DeSoto, Inc. Encapsulated impregnated rovings. 4,195,113, Cl. 428-375.000.

Brookman, Edward T.; Lohmann, Robert P.; and Markowski, Stanley J., to United Technologies Corporation. Means for improving the performance of burner shroud diffusers. 4,194,359, Cl. 60-39.360.

Brown, Fred; and Vinezeano, Anthony D., to Andrew Corporation. Corrugated elliptical waveguide with permanent twist. 4,194,380, Cl. 72-64.000.

Brown, George L.; and Spencer, Arthur T., to Mobil Oil Corporation. Aqueous can coatings of improved impermeability. 4,195,005, Cl. 260-29.6TA.

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Brown, Joe L. Fluid dispensing apparatus. 4,194,653, Cl. 222-402.250.

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Brubaker, Gaylen R., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,194,987, Cl. 252-102.000.

Bruckdorfer, Roderick A., to Dow Chemical Company, The. Flame retardant copolycarbonates. 4,195,156, Cl. 528-171.000.

Brusselmans, Jacques H. F., to N.V. Raychem S.A. Heat recoverable article. 4,195,106, Cl. 428-35.000.

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Bukala, Alexander E., to Littelfuse, Inc. Double buzzer assembly. 4,195,285, Cl. 340-402.000.

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Buning, Robert; Hanisch, Horst; Hass, Hansjurgen; and Rodder, Karl-Martin, to Dynamit Nobel Aktiengesellschaft. Aqueous solution of mixtures of silicon-organic compounds. 4,195,141, Cl. 525-328.000.

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Chow, Weichien, 4,194,800, Cl. 339-17.0CF.

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Buresi, Georges; Roche, Olivier C.; and Viallard, Michel B., to Compagnie Francaise des Petroles, S.A. Disconnectable riser columns for under water oil wells. 4,194,568, Cl. 166-340.000.

Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, to Hoechst Aktiengesellschaft. Process for the preparation of granular oxymethylene polymers having improved mechanical properties. 4,195,158, Cl. 528-230.000.

Burke, Oliver W., Jr., deceased (by Scala, Norma, administratrix); and Humphreys, Victor T., to Darrah, Marion; and Houghton, Joseph Y., co-trustees. Intrachromoleucospheruloid pigment compositions and processes for producing same. 4,194,920, Cl. 106-308.00M.

Burks, Kenneth N., Jr., to Ward Industries, Inc. Digital controlled rotation sensor. 4,195,291, Cl. 340-671.000.

Burndy Corporation: *See—*

Banta, Fred L., 4,194,521, Cl. 137-67.000.

Burnett, Craig R.: *See—*

Safranko, John W.; Burnett, Craig R.; and Kilburn, James E., 4,194,924, Cl. 134-12.000.

Burns & Russell Company of Baltimore City: *See—*

Russell, Alexander H.; and McClinton, John L., 4,195,010, Cl. 260-40.00R.

Burroughs Corporation: *See—*

Yuen, Raymond C., 4,195,358, Cl. 365-230.000.

Zwingman, Robert L., 4,195,261, Cl. 324-210.000.

Burroughs Wellcome Co.: *See—*

Richards, William H. G., 4,195,089, Cl. 424-258.000.

Butler Manufacturing Company: *See—*

Chalpin, Stephen F., Jr., 4,194,325, Cl. 52-14.000.

Paton, W. Donald; and Steenson, Thomas W., 4,194,333, Cl. 52-235.000.

Bylec, Elzbieta: *See—*

Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Byram, David C.; and Nowicki, John V., Jr., to Minnesota Mining and Manufacturing Company. Bracket assembly. 4,194,636, Cl. 211-71.000.

Byrd, Carlisle O., Jr., to Johns-Manville Corporation. Method and apparatus for filling seams between adjacent fiber blanket insulation modules. 4,194,282, Cl. 29-451.000.

C. A. Weidmuller KG: *See—*

Fitzler, Arno; and Kordt, Hans-Herbert, 4,194,801, Cl. 339-19.000.

C. R. Bard, Inc.: *See—*

Pickering, Keldon S.; and Ferguson, Keith T., 4,194,509, Cl. 128-350.00R.

Cadwallader, John Y.; and Frasier, Edward J. Downdraft woodburning stove. 4,194,487, Cl. 126-61.000.

Cafer, James E.: *See—*

Martin, Michael G.; Carver, Ronald M.; and Cafer, James E., 4,194,315, Cl. 43-55.000.

Caldwell, Edward C. Device for use in paired associate learning. 4,194,301, Cl. 35-9.00R.

Cale, Roland E., to Schaefer Equipment Incorporated. Railway car brake beam lever mounting. 4,194,599, Cl. 188-231.000.

Callaghan, William I.; Dawson, Dennis E.; Gubser, William D.; and Vero, Joseph A., to Towmotor Corporation. Transmission control. 4,194,720, Cl. 251-77.000.

Callahan, James J.: *See—*

Snow, John P.; and Callahan, James J., 4,194,593, Cl. 184-7.00D.

Cam-Stat Incorporated: *See—*

Hewitt, William L., 4,194,875, Cl. 431-45.000.

Cameron, Frank L., to GTE Laboratories Incorporated. Charge redistribution circuits. 4,195,282, Cl. 340-347.0AD.

Cameron Iron Works, Inc.: *See—*

Baker, Gerald S.; and Hahn, Guerry L., 4,194,718, Cl. 251-14.000.

Campagna, James V., Jr., to Motion Reflector Industries, Inc. Motion reflector. 4,194,809, Cl. 350-97.000.

Campbell, Ramsey G., to Stauffer Chemical Company. Removal of radioactive lead and polonium from tobacco. 4,194,514, Cl. 131-17.00R.

Campos, Juan M. Medical case. 4,194,628, Cl. 206-570.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*

Fothergill, Noel O., 4,195,360, Cl. 367-136.000.

Canadian Patents & Development Limited: *See—*

Beeckmans, Jan M., 4,194,971, Cl. 209-467.000.

Canon Kabushiki Kaisha: *See—*

Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.

Canon Kabushiki Kaisha Toshitama Hara: *See—*

Hara, Toshitami; Hajimoto, Yoshioki; Shirato, Yoshiaki; and Matsushima, Massaki, 4,194,812, Cl. 350-357.000.

Carl Freudenberg, Firma: *See—*

Forch, Hans; and Niklas, Helmut, 4,194,748, Cl. 277-152.000.

Carlson, Alfred D.: *See—*

Herpers, Ferdinand J.; Kroll, Harley E.; Carlson, Alfred D.; and Dodge, Paul D., 4,194,263, Cl. 15-353.000.

Carlson, Emery J.: *See—*

Pieters, Wim J. M.; Gates, William E.; Carlson, Emery J.; and Wilkalis, John E., 4,194,990, Cl. 252-441.000.

Carlson, Norman G. Solar heat storage systems. 4,194,496, Cl. 126-430.000.

Carman, Richard W.; and Doherty, Edward J., III, to Union Carbide Corporation. Whole body imaging system mechanism. 4,195,227, Cl. 250-505.000.

Carmichael, Thomas F., to Syncro Corporation. Alternator with parallel windings and regulator therefor. 4,195,256, Cl. 322-90.000.

Carns, Arthur. Dog waste scoop. 4,194,777, Cl. 294-1.0BA.

Carpenter, Gregory A.: *See—*

Crowther, William H.; and Carpenter, Gregory A., 4,194,452, Cl. 108-138.000.

Carr, Dodd S.: *See—*

Radtke, Schrade F.; Carr, Dodd S.; and Kronstein, Max, 4,195,002, Cl. 260-29.20E.

Carver, Ronald M.: *See—*

Martin, Michael G.; Carver, Ronald M.; and Cafer, James E., 4,194,315, Cl. 43-55.000.

Caterpillar Tractor Co.: *See—*

Gurwicz, David; and Melocik, Grant C., 4,195,254, Cl. 318-334.000.

Hall, Lowell R., 4,194,532, Cl. 137-596.000.

Cavagnaro, William A., to Eastman Kodak Company. Apparatus for producing duplex copies. 4,194,829, Cl. 355-3.0TR.

CBS Inc.: *See—*

Moore, James K., 4,195,350, Cl. 364-724.000.

Celanese Corporation: *See—*

Davis, Herbert L.; Jaffe, Michael L.; LaNieve, Herman L., III; and Powers, Edward J., 4,195,052, Cl. 264-210.500.

Davis, Herbert L.; Jaffe, Michael L.; and Besso, Michael M., 4,195,161, Cl. 528-309.000.

Nowak, Michael T.; and Rybny, Charles B., 4,194,955, Cl. 204-159.150.

Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., 4,195,188, Cl. 562-549.000.

Vanderspurt, Thomas H., 4,195,187, Cl. 562-545.000.

Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. New polycyclic ether antibiotic. 4,195,079, Cl. 424-122.000.

Centronics Data Computer Corp.: *See—*

Zerillo, Samuel D., 4,194,846, Cl. 400-124.000.

Ceserani, Roberto: *See—*

Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, 4,195,183, Cl. 560-53.000.

Chalpin, Stephen F., Jr., to Butler Manufacturing Company. Gutter system for skylights or the like. 4,194,325, Cl. 52-14.000.

Chambers Corporation: *See—*

Hess, Gerald W., 4,194,321, Cl. 49-389.000.

Scherer, Richard M., 4,194,495, Cl. 126-339.000.

Chambers, Douglas L.; and Wan, Chong T. Wan, to Advanced Coating Technology, Inc. Cathode for sputtering. 4,194,962, Cl. 204-298.000.

Champion International Corporation: *See—*

Dutcher, Daniel P., 4,194,632, Cl. 206-626.000.

Kaiser, Thomas J., 4,194,630, Cl. 206-586.000.

Lohrbach, Mervin; and Peeples, Richard, 4,194,679, Cl. 229-39.00R.

Scott, Raymond G.; and Wysocki, Lawrence S., 4,194,680, Cl. 229-43.000.

Scott, Raymond G.; and Wysocki, Lawrence S., 4,194,681, Cl. 229-43.000.

Wysocki, Lawrence, 4,194,677, Cl. 229-17.00R.

Chang, John C. H., to Wallace Business Forms, Inc. Method of desensitizing carbonless paper. 4,195,103, Cl. 427-54.100.

Chapman, Robert D.: *See—*

Connors, Dorothy; Chapman, Robert D.; Winkler, Robert J.; and Winkler, Timothy K., 4,194,312, Cl. 38-102.500.

Charles, John J.; and Gasman, Robert C., to GAF Corporation. Impact modified thermoplastic copolyester. 4,195,000, Cl. 260-22.00D.

Charles, John J.: *See—*

Gasman, Robert C.; and Charles, John J., 4,195,011, Cl. 260-40.00R.

Charpentier, Robert: *See—*

Mimoun, Hubert; and Charpentier, Robert, 4,195,039, Cl. 260-597.00R.

Chateau, Georges M.; and Falkner, Chester B., Jr., to Societe Nationale Elf Aquitaine (Production). Subsea station. 4,194,857, Cl. 405-203.000.

Chelin, Cesare; and Costa, Armando, to Ing. C. Olivetti & Co., S.p.A. Apparatus for loading a plurality of floppy disks in a reading and/or writing unit. 4,195,321, Cl. 360-98.000.

Chembiomed Ltd.: *See—*

Lemieux, Raymond U.; and Ratcliffe, R. Murray, 4,195,174, Cl. 536-18.000.

Chemische Werke Huls AG: *See—*

Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,195,162, Cl. 528-313.000.

Schneider, Wolfgang; and Niehaves, Kurt, 4,194,988, Cl. 252-312.000.

Chen, Nai Y.; and Wang, Ikai, to Mobil Oil Corporation. Catalytic conversion of hydrocarbons in reactor fractionator. 4,194,964, Cl. 208-108.000.

Chiang, Yunn H., to Polaroid Corporation. Preparation of 3-bromo-2-hydroxy-4,4,5,5-tetramethylcyclopenta-2-enone. 4,195,038, Cl. 260-586.00C.

Chiboroski, Joseph W., to Park-Ohio Industries, Inc. Feeding mechanism for induction heating coil. 4,195,213, Cl. 219-10.690.

Chlorine Engineers Corp., Ltd.: *See—*

Ichisaka, Teruo; and Ikegami, Tadao, 4,194,670, Cl. 228-179.000.

Chou, Kechia J., to Texaco Inc. N-sulfonylated polyalkenylsuccinimide and lubricant composition. 4,194,982, Cl. 252-47.500.

Chow, Weichien, to Bunker Ramo Corporation. Connector assembly for leadless microcircuit device. 4,194,800, Cl. 339-17.0CF.

Christensen, Charles W.: *See—*

Paterson, Malcolm M.; Paxson, William J.; and Christensen, Charles W., 4,194,633, Cl. 209-152.000.

Christensen, Inc.: *See—*

Ostertag, Alfred, 4,194,582, Cl. 175-321.000.

Christensen, Robert F., to Gibson, Shirley I., a part interest. Collapsible and reusable container insulator. 4,194,627, Cl. 206-545.000.

Christopher, Todd J.; and Tretter, Larry L., to RCA Corporation. Video processing system including comb filters. 4,195,309, Cl. 358-31.000.

Chromalloy American Corporation: *See—*

Mal, M. Kumar; and Tarkan, Stuart E., 4,194,910, Cl. 75-236.000.

Chrysler Corporation: *See—*

Kuusik, Uno, 4,194,520, Cl. 137-54.000.

Chung, Harold S.; Johnson, George C.; and Huang, Tracy J., to Mobil Oil Corporation. Ore beneficiation process. 4,194,969, Cl. 209-5.000.

Ciba-Geigy Corporation: *See—*

Frei, Jurg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,195,090, Cl. 424-263.000.

Otto, Eberhard; Wehner, Wolfgang; and Wirth, Hermann O., 4,195,029, Cl. 260-429.700.

Pfeifer, Josef; and Peter, Heinz, 4,195,165, Cl. 528-346.000.

Spivack, John D., 4,195,016, Cl. 260-45.85R.

Wheeler, Ian R.; and Robertson, George H., 4,194,921, Cl. 106-309.000.

Cilia, Philip F.: *See—*

Faust, Clifford C.; and Cilia, Philip F., 4,194,369, Cl. 62-371.000.

Cincotta, Louis: *See—*

Borror, Alan L.; Cincotta, Louis; Ellis, Ernest W.; and Foley, James W., 4,195,180, Cl. 544-33.000.

Citizen Watch Co., Ltd.: *See—*

Kume, Kazunari; and Nomura, Yasushi, 4,194,351, Cl. 368-82.000.

Nishida, Mitsuo, 4,194,355, Cl. 368-282.000.

Claassen, Peter; Zeiringer, Rudolf; and List, Helmut, to Hans List. Transducer for measuring the internal pressure in pipes. 4,194,401, Cl. 73-730.000.

Clairol Incorporated: *See—*

Walter, Henry J.; and White, Roy W., 4,195,218, Cl. 219-370.000.

Clarke, Robert W. Weldable sealant forms. 4,195,215, Cl. 219-91.210.

Clawson, Bert G.: *See—*

Segerson, James M.; and Clawson, Bert G., 4,194,709, Cl. 244-155.00R.

Clem, Arthur G., to American Colloid Company. Method for screening particulate materials. 4,194,970, Cl. 209-263.000.

Coal Industry (Patents) Ltd.: *See—*

Kenny, Peter; and Johnson, Stanley N., 4,194,790, Cl. 299-79.000.

Cobos, Charles R. Method of and apparatus for providing supplemental heat to buildings. 4,194,688, Cl. 237-53.000.

Coburn, Robert E., to Molins Machine Company, Inc. Web director. 4,194,662, Cl. 226-110.000.

Codman & Shurtleff, Inc.: *See—*

Walker, Peter S., 4,194,250, Cl. 3-1.910.

Coe, Stanley S. Lettering triangle. 4,194,293, Cl. 33-448.000.

Coen Company: *See—*

Voorheis, Temple S.; and Siegert, Louis D., 4,194,874, Cl. 431-8.000.

Cole, Martin T., to I.E.I. Proprietary Limited. Microwave intrusion or movement detectors. 4,195,289, Cl. 340-554.000.

Cole-Parmer Instrument Company: *See—*

Guttmann, Emil J., 4,195,255, Cl. 318-762.000.

Coleman, Ernest A., to GAF Corporation. Polyester resin with improved retention of properties. 4,195,134, Cl. 525-65.000.

Coleman, Lester E., to Lubrizol Corporation, The. Polymeric compositions, method for their preparation, and lubricants containing them. 4,194,985, Cl. 252-51.50A.

Columbia Machine, Inc.: *See—*

Holbrook, Fred D.; and Holbrook, Perry, 4,194,925, Cl. 134-24.000.

Combustion Engineering, Inc.: *See—*

Blocker, Edwin W., Jr., 4,194,323, Cl. 51-103.00R.

Martin, James R.; and Malki, Khaldoun W., 4,195,062, Cl. 422-168.000.

Combustion Unlimited Incorporated: *See—*

Straitz, John F., III, 4,194,876, Cl. 431-202.000.

Commerical Shearing, Inc.: *See—*

Petro, John D., 4,194,366, Cl. 60-483.000.

Compagnie des Montres Longines Francillon SA: *See—*

Thomi, Michel; Groothuis, Michel; and Meylan, Serge, 4,194,353, Cl. 368-38.000.

Compagnie Francaise des Petroles: *See—*

Marais, Lionel R., 4,194,567, Cl. 166-311.000.

Compagnie Francaise des Petroles, S.A.: *See—*

Buresi, Georges; Roche, Olivier C.; and Viallard, Michel B., 4,194,568, Cl. 166-340.000.

Thery, Jean P.; Alban, Claude M.; and Jordi, Albert P., 4,194,572, Cl. 169-66.000.

Compagnie Generale des Etablissements Michelin: *See—*

de Zarauz, Yves, 4,195,013, Cl. 260-42.330.

Roger, Jack, 4,194,548, Cl. 152-361.00R.

Congleton, Wayne L.; and Placey, Pat E. Egg carton. 4,194,682, Cl. 229-45.0EC.

Conine, James W., to Eli Lilly and Company. Nabilone granulation. 4,195,078, Cl. 424-80.000.

Conner, Leo B., Jr., to Motorola, Inc. Short range radar tracking apparatus. 4,195,297, Cl. 343-12.00R.

Connors, Dorothy; Chapman, Robert D.; Winkler, Robert J.; and Winkler, Timothy K., to Alpha Nova Engineering, Inc. Needlepoint supporting frame and clip assembly. 4,194,312, Cl. 38-102.500.

Conroy, Peter J., to Motorola, Inc. Disc antenna feed for parabolic reflector. 4,195,301, Cl. 343-700.0MS.

Consumers Glass Company Limited: *See—*

Boller, Peter K., 4,194,626, Cl. 206-509.000.

Continental Group, Inc., The: *See—*

Gerber, Howard L., 4,195,214, Cl. 219-10.790.

Conway, Raymond J.; and Shah, Hasmukh T., to FMC Corporation. Apparatus for maximizing the firing field of a rotatable gun. 4,194,432, Cl. 89-41.00C.

Cook, Lloyd A.; Reynolds, Kim A.; and Mark, Werner J., to Alforge Metals Corporation, Limited. Apparatus for pressure welding metal workpieces. 4,194,667, Cl. 228-4.100.

Cooper Industries, Inc.: *See—*

Mitchhart, Ray M.; and Zingl, Hans, 4,194,419, Cl. 81-57.330.

Cooper, Jacob: *See—*

Schwab, James J.; and Cooper, Jacob, 4,194,888, Cl. 55-2.000.

Copes, Anna M., legal representative: *See—*

Graham, David E.; and Copes, Joseph P., deceased, 4,195,096, Cl. 424-320.000.

Copes, Joseph P., deceased: *See—*

Graham, David E.; and Copes, Joseph P., deceased, 4,195,096, Cl. 424-320.000.

Corbellini, Margherita; and Greco, Alberto, to Snamprogetti, S.p.A. Method for the polymerization of olefines and means suitable thereto. 4,194,992, Cl. 252-442.000.

Corcokios, Nicholas, to United Technologies Corporation. Stator vane cluster. 4,194,869, Cl. 415-216.000.

Cornell Research Foundation, Inc.: *See—*

Hoshino, Yasutaka; and Scott, Fredric W., 4,195,130, Cl. 435-235.000.

Corning Glass Works: *See—*

Knowles, Daniel H., 4,194,462, Cl. 118-405.000.

Cosmetic Arts, Inc.: *See—*

Bandell, Ira, 4,194,617, Cl. 206-45.000.

Costa, Armando: *See—*

Chelin, Cesare; and Costa, Armando, 4,195,321, Cl. 360-98.000.

Cotton, Lawrence M., to Stanley Works, The. Grooving indexer for routing apparatus. 4,194,543, Cl. 144-137.000.

Cox, Allen R.; Pascual, Rafael; and Rigbey, Leonard J., to International Business Machines Corporation. Record/playback head and data storage apparatus therefor. 4,195,322, Cl. 360-103.000.

Cox, Don; and Cox, Gail. Camper. 4,194,785, Cl. 296-169.000.

Cox, Gail: *See—*

Cox, Don; and Cox, Gail, 4,194,785, Cl. 296-169.000.

Craig, John W.: *See—*

Price, Robert; Craig, John W.; Perahia, Avraham; and Melbye, Hartvig E., 4,195,318, Cl. 360-39.000.

Crankshaw, Gary K.; and Braymer, George W., to Upjohn Company, The. Vial and closure. 4,194,640, Cl. 215-6.000.

Cranmore, John W., to Lucas Industries Limited. Pivotal mounting arrangement. 4,194,850, Cl. 403-140.000.

Crawford, Carroll O. Potted plant support. 4,194,319, Cl. 47-27.000.

Crema, Erhard. Method and device for removing solid and/or liquid means containing harmful substances. 4,194,978, Cl. 210-242.00S.

Crnkovic, James J. Fireplace thermal reflector apparatus. 4,194,490, Cl. 126-141.000.

Crosby, Edward G.; Henning, James E.; and Hornbeck, Frederick C., to International Business Machines Corporation. Conductive plastic and method of preparation. 4,195,114, Cl. 428-404.000.

Crown International, Inc.: *See—*

Stanley, Gerald R., 4,195,267, Cl. 330-265.000.

Crowther, William H.; and Carpenter, Gregory A. Convertible table. 4,194,452, Cl. 108-138.000.

Csatary, Laszlo K. Intra-uterine contraceptive device. 4,194,503, Cl. 128-130.000.

Cullen, Walter P.: *See—*

Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,195,079, Cl. 424-122.000.

Culp, Harry L. Rotary cleaning device. 4,194,260, Cl. 15-230.140.

Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., to Shur-Line Manufacturing Co., Inc. Applicator with multi-positional handle. 4,194,852, Cl. 403-299.000.

Custom Concepts, Incorporated: *See—*

Kubiatowicz, James F., 4,194,461, Cl. 116-77.000.

Cutler, Norman W., Jr., to Polaroid Corporation. Compact die cutting apparatus. 4,194,423, Cl. 83-589.000.

Cutter, Larry I., to Walter Kidde & Company, Inc. Safe deposit box nests and method of constructing same. 4,194,453, Cl. 109-56.000.

Cycowicz, Izchak; and Frimmet, Alfred, to Mohasco Corporation. Wall proximity chairs and hardware therefor. 4,194,783, Cl. 297-88.000.

Dahlig, Halina: *See—*

Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Dahlstrom, Baesley I.: *See—*

Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., 4,194,685, Cl. 235-375.000.

Dai-Ichi Seiko Co., Ltd.: *See—*

Bandoh, Kazuo, 4,194,865, Cl. 414-403.000.

Daikoku, Takahiro: *See—*

Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,194,384, Cl. 72-325.000.

Daimler-Benz Aktiengesellschaft: *See—*

Reidelbach, Willi; Renner, Hermann; and Klie, Wolfgang, 4,194,763, Cl. 280-784.000.

D'Amato, Ralph J.; and Stone, Robert P., to RCA Corporation. Color picture tube having improved corrugated mask. 4,195,248, Cl. 313-403.000.

Damico, Dennis J.; and Martin, Brian, to Lord Corporation. Method of bonding employing an adhesive composition containing polyisocyanate reaction products having an available isocyanate content of not more than 0.5 percent. 4,194,940, Cl. 156-331.000.

Darrah, Marion: *See—*

Burke, Oliver W., Jr., deceased; and Humphreys, Victor T., 4,194,920, Cl. 106-308.00M.

Dashineau, Melvin A.: *See—*

Ueltz, Herbert F. G.; Dashineau, Melvin A.; and Pino, James J., 4,194,887, Cl. 51-309.000.

Data Motion, Inc.: *See—*

Seitz, Alan F., 4,194,660, Cl. 226-74.000.

Date, Nobuaki: *See—*

Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.

Davidson, Edmund B., to RCA Corporation. Water based photoresist. 4,194,912, Cl. 430-322.000.

Davis, Herbert L.; Jaffe, Michael L.; LaNieve, Herman L., III; and Powers, Edward J., to Celanese Corporation. Production of improved polyester filaments of high strength possessing an unusually stable internal structure. 4,195,052, Cl. 264-210.500.

Davis, Herbert L.; Jaffe, Michael L.; and Besso, Michael M., to Celanese Corporation. Polyester fiber. 4,195,161, Cl. 528-309.000.

Davis, Thomas F., to AMP Incorporated. Electroless tin and tin-lead alloy plating baths. 4,194,913, Cl. 106-1.220.

Dawson, Dennis E.: *See—*

Callaghan, William I.; Dawson, Dennis E.; Gubser, William D.; and Vero, Joseph A., 4,194,720, Cl. 251-77.000.

Day, William A.; and Lavagnino, Edward R., to Eli Lilly and Company. 9-Amino-dibenzopyrans. 4,195,025, Cl. 260-345.300.

Deal, James F., III, to Milliken Research Corporation. Method of manufacturing powdered cleaning composition. 4,194,993, Cl. 252-541.000.

Dean, Edward H.: *See—*

Figge, Irving E.; and Dean, Edward H., 4,194,938, Cl. 156-212.000.

Deerwester, Donald A., to Pappageorge, George, a part interest. Apparatus and method for separation of sausage chubs. 4,194,268, Cl. 17-52.000.

De Grijs, Johan C., to U.S. Philips Corporation. Solar collector. 4,194,493, Cl. 126-442.000.

DeGroot, Peter B.: *See—*

Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., 4,195,188, Cl. 562-549.000.

de Heer, Aart: *See—*

Van Acker, Eduard M. A. A. J.; Kooijmans, Petrus G.; and de Heer, Aart, 4,195,004, Cl. 260-29.6TA.

Dehner, James L., to Pullman Incorporated. Railway car center sill. 4,194,451, Cl. 105-416.000.

Deichert, William G.; Su, Kai C.; and Van Buren, Martin F., to Bausch & Lomb Incorporated. Preparation of monomeric organosilicon esters. 4,195,030, Cl. 260-448.20E.

Deinlein-Kalb, Hans, to Klinger AG. Method of and apparatus for ascertaining the state of aggregation of a medium. 4,194,390, Cl. 73-61.00R.

Delany, James F.: *See—*

Kress, George H.; and Delany, James F., 4,194,584, Cl. 180-9.24R.

Deleens, Gerard; Guerin, Bernard; and Poulain, Claude, to ATO Chimie. Heat and aging stable copolyetheresteramides and method of manufacturing same. 4,195,015, Cl. 260-45.75C.

Delmed, Inc.: *See—*

Faust, Clifford C.; and Cilia, Philip F., 4,194,369, Cl. 62-371.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., to Wisconsin Alumni Research Foundation. Process for preparing 1α-hydroxylated compounds. 4,195,027, Cl. 260-397.200.

de Miranda, William R. R.; and Smith, Edwin R., to United States of America, Army. Tape automated bonding test board. 4,195,195, Cl. 174-68.500.

Denckla, W. Donner. Electrophoresis apparatus. 4,194,963, Cl. 204-299.00R.

De Nicola, Joseph P., to Instron Corporation. Testing machine grip. 4,194,402, Cl. 73-859.000.

Derby, Norwin C.: *See—*

Williamson, Robert R.; and Derby, Norwin C., 4,194,652, Cl. 222-185.000.

de Rop, Walter J. R.: *See—*

Drop, Peter C.; de Rop, Walter J. R.; and Maes, Robert L. M. E., 4,195,253, Cl. 316-1.000.

Desmond, Timothy F.: *See—*

Anderson, George J.; Santer, J. Owen; and Desmond, Timothy F., 4,195,116, Cl. 428-524.000.

DeSoto, Inc.: *See—*

Brook, Richard L., 4,195,113, Cl. 428-375.000.

Sekmakas, Kazys; and Shah, Raj, 4,195,147, Cl. 526-312.000.

Detalle, Bernard, to Societe Europeene de Propulsion. Device for imparting a movement of rotation to a craft when it is launched. 4,194,706, Cl. 244-3.230.

Deutsch, Leslie J.: *See—*

Deutsch, Ralph; and Deutsch, Leslie J., 4,194,426, Cl. 84-1.240.

Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co. Ltd. Echo effect circuit for an electronic musical instrument. 4,194,426, Cl. 84-1.240.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co. Ltd. Generation of noise-like tones in an electronic musical instrument. 4,194,427, Cl. 84-1.240.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*

Rothbuhr, Lothar; Kuhner, Gehard; and Dittrich, Gunther, 4,195,068, Cl. 423-455.000.

deVeer, John A.: *See—*

Barner, Robert P.; Gulick, Anne M.; deVeer, John A.; and Oblonsky, Jan G., 4,195,351, Cl. 364-900.000.

de Zarauz, Yves, to Compagnie Generale des Etablissements Michelin. Elastomer composition for pneumatic tire treads. 4,195,013, Cl. 260-42.330.

Dhein, Rolf: *See—*

Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,163, Cl. 528-315.000.

Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,164, Cl. 528-339.000.

Diamond, John N. Single sheathing roof panel. 4,194,335, Cl. 52-419.000.

Dice, Harry E., Sr., to Hardesty, George K. C., a part interest. Pickproof lock. 4,194,379, Cl. 70-421.000.

Dickenson, Robert A., to Rohr Industries, Inc. Flight thrust reverser and vertical thrust control divergent nozzle systems. 4,194,692, Cl. 239-265.390.

Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, to Otto Fuchs KG; and Schuro Heinz Schurmann GmbH & Co. Method of making insulated construction element. 4,194,284, Cl. 29-509.000.

Dienstuhl, Karl W.: *See—*

Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,194,284, Cl. 29-509.000.

Dierks, Robert P.; and Rillie, Robert J., to United States Gypsum Company. Glass-reinforced composite gypsum board. 4,195,110, Cl. 428-218.000.

Diesel Kiki Company, Ltd.: *See—*

Yamaguchi, Toshio, 4,194,607, Cl. 192-84.00T.

Dilley, Charles A. Gutter cleaner tool. 4,194,780, Cl. 294-19.00R.

Dillinger, Lester L. Machine for reaming tubes of different lengths. 4,194,258, Cl. 15-104.10R.

Dimitracopoulos, Panayotis C.: *See—*

Kennington, Frank W.; and Dimitracopoulos, Panayotis C., 4,194,415, Cl. 74-805.000.

Dingle, Raymond; Gossard, Arthur C.; and Stormer, Horst L., to Bell Telephone Laboratories, Incorporated. Method of making high mobility multilayered heterojunction devices employing modulated doping. 4,194,935, Cl. 148-175.000.

Ditges, Gunter, to Myer, Roth & Pastor Machinenfabrik GmbH. Wire straightening apparatus having a hydraulically driven wire feed. 4,194,541, Cl. 140-147.000.

Dittrich, Gunther: *See—*

Rothbuhr, Lothar; Kuhner, Gehard; and Dittrich, Gunther, 4,195,068, Cl. 423-455.000.

Dixon, Kenneth W., to GAF Corporation. Modified tertiary amide polymers. 4,195,142, Cl. 525-340.000.

Doane, William M.: *See—*

Fanta, George F.; Stout, Edward I.; and Doane, William M., 4,194,998, Cl. 260-17.4GC.

Dobhan, Herbert: *See—*

Tilch, Gerhard; Friedrich, Wolfgang; Dobhan, Herbert; Hetterich, Hermann; Horling, Peter; and Finzel, Sigismund, 4,194,752, Cl. 280-11.280.

Dr. C. Otto & Comp. G.m.b.H.: *See—*

Pries, Erich, 4,194,951, Cl. 202-227.000.

Dr. Ing. Rudolf Hell GmbH: *See—*

Knop, Hans G., 4,194,839, Cl. 356-407.000.

Dodge, Paul D.: *See—*

Herpers, Ferdinand J.; Kroll, Harley E.; Carlson, Alfred D.; and Dodge, Paul D., 4,194,263, Cl. 15-353.000.

Doherty, Edward J., III: *See—*

Carman, Richard W.; and Doherty, Edward J., III, 4,195,227, Cl. 250-505.000.

Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Solar radiation energy absorber. 4,195,124, Cl. 428-469.000.

Donnelly, Thomas L., Jr. Bed for stimulating circulation. 4,194,499, Cl. 128-24.00R.

Dorfman, Edwin; Hindersinn, Raymond R.; and Schwartz, Willis T., Jr., to Hooker Chemicals & Plastics Corp. Unsatured polyester resins having improved fire retardance. 4,195,014, Cl. 260-45.75R.

Dostal, Gerald A.; and Havlick, Richard S., to N. A. Taylor Co., Inc. Bench back rest convertible to locked table top. 4,194,784, Cl. 297-126.000.

Dow Chemical Company, The: *See—*

Bruckdorfer, Roderick A., 4,195,156, Cl. 528-171.000.

Kaiser, Mark E.; and Smith, Harry A., 4,195,154, Cl. 528-98.000.

Priddy, Duane B., 4,195,169, Cl. 528-500.000.

Ward, Eldon L., 4,195,138, Cl. 525-404.000.

Dow Corning Corporation: *See—*

Trombley, Wayne E., 4,194,815, Cl. 351-160.00R.

Downing, Brian Y.; and Hamer, George D., to British Industrial Plastics Limited. Coating compositions. 4,195,115, Cl. 428-482.000.

Downing Displays, Inc.: *See—*

Downing, Jack G., 4,194,313, Cl. 40-610.000.

Downing, Jack G., to Downing Displays, Inc. Articulated panel display. 4,194,313, Cl. 40-610.000.

Doyle, Richard F.; and Myers, Edward T., to GTE Sylvania Incorporated. High voltage terminal structure and flyback transformer. 4,195,278, Cl. 336-90.000.

Drake, Charles A.; and Williams, Ralph P., to Phillips Petroleum Company. Hydrogenated polynitrile mixture and use as epoxy hardener. 4,195,155, Cl. 528-121.000.

Dravo Corporation: *See—*

Wacker, Karl; and Feigk, Fritz, 4,194,729, Cl. 266-144.000.

Drennan, Herman R.; and Hana, Norman A. Method for repairing broken denture. 4,195,047, Cl. 264-17.000.

Dresser Industries, Inc.: *See—*

Mitchell, Howard E., 4,194,578, Cl. 175-53.000.

Dresser, Thorpe: *See—*

Edison, Robert R.; and Dresser, Thorpe, 4,194,966, Cl. 208-132.000.

Drop, Peter C.; de Rop, Walter J. R.; and Maes, Robert L. M. E., to U.S. Philips Corporation. Method of ageing a gas discharge lamp. 4,195,253, Cl. 316-1.000.

Drown, Clifford F.: *See—*

Martin, Kenneth R.; and Drown, Clifford F., 4,194,257, Cl. 9-342.000.

Du Pont of Canada Limited: *See—*

Phibbs, Murray K.; and Sipos, Peter A., 4,195,034, Cl. 260-465.00E.

Dubinin, Viktor P.: *See—*

Kruzhanov, Jury V.; Dubinin, Viktor P.; Ovchinnikov, Viktor S.; and Safronov, Vladimir E., 4,195,354, Cl. 365-105.000.

DuBois, Edmund H.; and Sheldon, John D., to Outboard Marine Corporation. Speed and clutch control for engines including shift interlock. 4,194,609, Cl. 192-0.096.

Dubois, Jean-Claude: *See—*

Gazard, Maryse; and Dubois, Jean-Claude, 4,195,108, Cl. 428-195.000.

Dumont, Claude: *See—*

Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,195,081, Cl. 424-263.000.

Dunjushkin, Evgeny S.: *See—*

Babina, Margarita D.; Dunjushkin, Evgeny S.; Popova, Galina I.; Sokolov, Anatoly D.; and Smirnov, Jury M., 4,194,996, Cl. 260-17.200.

Dunlap, Bill D.: *See—*

Pounds, Walter R.; and Dunlap, Bill D., 4,195,210, Cl. 200-159.00A.

Dunleavy, Raymond A.; and Papa, Anthony J., to Union Carbide Corporation. Phenol-aldehyde-amine resin/glycol curative compositions. 4,195,151, Cl. 528-163.000.

Du Pont de Nemours, E. I., and Company: *See—*

Edwards, Donald W.; and Gorondy, Emery J., 4,195,303, Cl. 346-74.100.

Frankfort, Hans R. E.; and Knox, Benjamin H., 4,195,051, Cl. 264-176.00F.

Renner, Carl A., 4,195,040, Cl. 260-599.000.

Dursch, Walter: *See—*

Kleiner, Hans-Jerg; and Dursch, Walter, 4,195,035, Cl. 260-545.00P.

Dutcher, Daniel P., to Champion International Corporation. Candy and pill dispenser carton. 4,194,632, Cl. 206-626.000.

Duyvesteyn, Willem P. C., to Amax Inc. Leaching nickeliferous oxide ores. 4,195,065, Cl. 423-150.000.

Dye, John F.; and Friebel, Virgil F., to Ball Corporation. Record care pad. 4,194,464, Cl. 118-501.000.

Dynamit Nobel Aktiengesellschaft: *See—*

Buning, Robert; Hanisch, Horst; Hass, Hansjurgen; and Rodder, Karl-Martin, 4,195,141, Cl. 525-328.000.

Dynetics Engineering Corp.: *See—*

Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., 4,194,685, Cl. 235-375.000.

Dzieciuch, Matthew A.: *See—*

Weintraub, Marvin H.; Gealer, Roy L.; Dzieciuch, Matthew A.; and Gealer, Roy L., 4,194,972, Cl. 210-43.000.

Dzus Fastener Co., Inc.: *See—*

Wright, Andrew C. W., 4,194,429, Cl. 85-5.00P.

Earley, Roger A., to ICI Americas Inc. Preparation of biphenols by the oxidative coupling of alkylphenols. 4,195,189, Cl. 568-730.000.

Earls, David E.; and Long, Gary N., to Union Carbide Corporation. Multiple bed rapid pressure swing adsorption for oxygen. 4,194,891, Cl. 55-26.000.

East Wind Industries, Inc.: *See—*

Melander, Clarence, 4,194,247, Cl. 2-2.000.

Eastern Company, The: *See—*

Evans, Gordon C., 4,194,858, Cl. 405-259.000.

Eastern Cyclone Industries, Inc.: *See—*

Boon, Bruce T. E.; and Timmins, Armand P., 4,194,859, Cl. 406-172.000.

Eastman, George Y., to Thermacore, Inc. Freeze accommodating heat pipe. 4,194,559, Cl. 165-105.000.

Eastman Kodak Company: *See—*

Barnsbee, Clive D., 4,194,926, Cl. 134-29.000.

Cavagnaro, William A., 4,194,829, Cl. 355-3.0TR.

Irick, Gether, Jr.; and Wang, Richard H. S., 4,194,989, Cl. 252-400.00A.

Matteson, Lawrence J.; and Shonts, David J., 4,194,818, Cl. 354-33.000.

Sethi, Gurdip S., 4,194,822, Cl. 354-121.000.

Easton, John T.; and Harden, Harry J. Wedge and bolt assembly for panel units. 4,194,717, Cl. 249-192.000.

Eaton Corporation: *See—*

Garrett, Wayne H.; and Neuman, Richard F., 4,194,596, Cl. 188-72.700.

Graham, Robert O.; Rauenbuehler, John A.; and Snowdon, Albert C., 4,195,212, Cl. 200-243.000.

Hicks, Bradford W., 4,194,586, Cl. 180-24.090.

Richards, Donald L., 4,194,770, Cl. 285-206.000.

Richards, Elmer A., 4,194,410, Cl. 74-339.000.

Stine, Clifford R.; and Wojtecki, Rudolph G., 4,194,536, Cl. 138-149.000.

Ebner, Josef E. Tumbling mill. 4,194,710, Cl. 241-182.000.

Eckels, John F. Externally applied support for a penis. 4,194,502, Cl. 128-79.000.

Ecolaire Incorporated: *See—*

Williams, George J.; and Boyer, Robert C., 4,194,671, Cl. 228-183.000.

Edamura, Mizuo: *See—*

Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,194,930, Cl. 148-16.600.

Edison, Robert R.; and Dresser, Thorpe, to Atlantic Richfield Company. Apparatus and method for improved fluid distribution in a tube of a direct fired heater. 4,194,966, Cl. 208-132.000.

Edler, Folke J. Sulfite spent liquor-urea formaldehyde resin adhesive product. 4,194,997, Cl. 260-17.500.

Edson, Sydney, to Textron Inc. Molded peg strip. 4,194,637, Cl. 211-96.000.

Edwards, Donald W.; and Gorondy, Emery J., to Du Pont de Nemours, E. I., and Company. Magnetic printing process and apparatus. 4,195,303, Cl. 346-74.100.

Edwards, William J.; and Hurler, Herbert T., to Singer Company, The. Blind stitch mechanism. 4,194,456, Cl. 112-176.000.

Egbers, Gerhard: *See—*

Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,195,345, Cl. 364-470.000.

Egger, Hanns. Method for storing waste materials and their combustion residues in a manner harmless to underground water. 4,194,855, Cl. 405-128.000.

Ehara, Takao: *See—*

Yamauchi, Noriyuki; Toko, Yoshiaki; and Ehara, Takao, 4,194,864, Cl. 414-283.000.

Eisenbach, Elliot: *See—*

Gajewski, Vincent J.; and Eisenbach, Elliot, 4,195,150, Cl. 528-52.000.

Eisenhut, Werner: *See—*

Richter, Jurgen; Purrer, Alois; and Eisenhut, Werner, 4,194,686, Cl. 235-376.000.

Elbert, Raymond J.; and Sara, Raymond V., to Union Carbide Corporation. Stress relieving of metal/ceramic abradable seals. 4,194,673, Cl. 228-219.000.

Electric Power Research Institute, Inc.: *See—*

Perry, Elijah R.; and Rabinowitz, Mario, 4,195,334, Cl. 363-44.000.

Electronic Memories and Magnetics Corporation: *See—*

O'Connell, Timothy R.; and Leach, George S., 4,195,356, Cl. 365-189.000.

Electronics for Medicine, Inc.: *See—*

Feldman, Charles L., 4,194,511, Cl. 128-696.000.

Elektroschmelzwerk Kempten GmbH: *See—*

Schwetz, Karl A.; and Vogt, Georg, 4,195,066, Cl. 423-291.000.

Elevator Equipment Co.: *See—*

Lawrence, William A. P.; and Welchel, Robert J., 4,194,534, Cl. 137-625.390.

Eli Lilly and Company: *See—*

Archer, Robert A.; and McMillan, Moses W., 4,195,024, Cl. 260-345.300.

Balko, Terry W., 4,195,092, Cl. 424-273.00R.

Benefiel, Robert L.; and Krumkalns, Eriks V., 4,194,899, Cl. 71-76.000.

Conine, James W., 4,195,078, Cl. 424-80.000.

Day, William A.; and Lavagnino, Edward R., 4,195,025, Cl. 260-345.300.

Herron, David K.; and Whitesitt, Celia A., 4,195,021, Cl. 260-239.00A.

Ong, John T. H., 4,195,084, Cl. 424-238.000.

Thompson, Gerald L., 4,195,022, Cl. 260-244.400.

Eller, Dennis E., to Hess, Donald J., a part interest. Truck tire safety reflector. 4,194,810, Cl. 350-99.000.

Elliott, Robert L.; and Song, Won R., to Exxon Research & Engineering Co. Ethylene copolymer/ethylenically unsaturated nitrogen reactant ene adducts having utility as multifunctional V. I. improvers for lubricating oils. 4,194,984, Cl. 252-51.50A.

Ellis, Ernest W.: *See—*

Borror, Alan L.; Cincotta, Louis; Ellis, Ernest W.; and Foley, James W., 4,195,180, Cl. 544-33.000.

Elvegaard, Eilif. Clamping structure. 4,194,712, Cl. 248-68.00R.

Emby, Gordon N.: *See—*

Hoy, John; Emby, Gordon N.; and Meerholz, Edgar F., 4,195,083, Cl. 424-200.000.

Emde, Friedhelm: *See—*

Stengel, Edgar; and Emde, Friedhelm, 4,194,728, Cl. 266-125.000.

Emerson Electric Co.: *See—*

Mlyniec, Kenneth P., 4,195,209, Cl. 200-83.00R.

Emhart Industries, Inc.: *See—*

Petre, Mark L.; and Lipp, Ellis P., 4,195,208, Cl. 200-63.00R.

Endo, Yoshinori, to Yamaha Hatsudoki Kabushiki Kaisha. EGR Recirculation at low load in internal combustion engines. 4,194,474, Cl. 123-119.00A.

Energy Conversion Devices, Inc.: *See—*

Lewis, Gary D., 4,194,826, Cl. 354-299.000.

Energy Transportation Group, Inc.: *See—*

Tornay, Edmund G., 4,194,870, Cl. 417-53.000.

Epstein, Max: *See—*

Marhic, Michel E.; Epstein, Max; and Kwan, Larry I., 4,194,808, Cl. 350-96.320.

Erbstoesser, Steven R.: *See—*

Stokley, Charles O.; and Erbstoesser, Steven R., 4,194,561, Cl. 166-162.000.

Erco Industries Limited: *See—*

Hatherly, David G., 4,194,953, Cl. 204-95.000.

Williams, Roy E., 4,194,961, Cl. 204-286.000.

Eriksson, Jan. A. L. Device in an apparatus for processing trees. 4,194,542, Cl. 144-2.00Z.

Ermisch, Dorothee: *See—*

Mallek, Heinz; Ermisch, Dorothee; and Jablonski, Werner, 4,194,455, Cl. 110-251.000.

Erschens, Willi, to August Bilstein, Firma. Vehicle jack. 4,194,725, Cl. 254-126.000.

ESB Technology Company: *See—*

Margalit, Nehemiah; and Krouse, Philip E., 4,195,122, Cl. 429-194.000.

Esselte Pendaflex Corporation: *See—*

Becker, Werner; and Schrotz, Kurt, 4,194,448, Cl. 101-295.000.

Essex Group, Inc.: *See—*

Bell, Robert E., 4,195,281, Cl. 340-79.000.

Ettenberg, Michael; and Kressel, Henry, to RCA Corporation. Two-way single fiber optical communication system. 4,195,269, Cl. 332-7.510.

Euclid Products Co., Inc., The: *See—*

Finke, Theodore R.; and Mavko, Edward M., 4,194,683, Cl. 232-15.000.

Eue, Ludwig: *See—*

Metzger, Carl; Eue, Ludwig; and Schmidt, Robert R., 4,195,181, Cl. 544-316.000.

Eunipp AG: *See—*

Flisch, Hermann, 4,194,420, Cl. 82-2.700.

Evans, Anthony C.; and Goering, Karl, to Kelsey Hayes Co. Disc brake anti-rattle means. 4,194,597, Cl. 188-73.500.

Evans, Gordon C., to Eastern Company, The. Mine roof bolt anchor installation. 4,194,858, Cl. 405-259.000.

Evans, Lewis L. Ladder stand-off. 4,194,592, Cl. 182-214.000.

Ewald, Roland; and Lembke, Herbert, to G. L. Rexroth GmbH. Hydraulic control valve. 4,194,719, Cl. 251-30.000.

Extrados Company Limited: *See—*

Svirklys, Ferdinand M., 4,194,320, Cl. 47-59.000.

Exxon Production Research Company: *See—*

Jahns, Hans O., 4,194,856, Cl. 405-130.000.

Stokley, Charles O.; and Erbstoesser, Steven R., 4,194,561, Cl. 166-162.000.

Exxon Research & Engineering Co.: *See—*

Elliott, Robert L.; and Song, Won R., 4,194,984, Cl. 252-51.50A.

Murphy, Raymond F., 4,195,133, Cl. 525-71.000.

F M Mattsson Aktiebolag: *See—*

Bohlmark, John, 4,194,406, Cl. 74-110.000.

Fa. Dieter Haubold Industrielle Nagelgerate: *See—*

Lange, Wilfried, 4,194,621, Cl. 206-343.000.

Facet Enterprises, Inc.: *See—*

Miller, Donald L., 4,194,610, Cl. 192-111.00A.

Fachbach, Heinz: *See—*

Kirchweger, Karl; Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,194,484, Cl. 123-195.00C.

Fahnler, Friedrich: *See—*

Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,163, Cl. 528-315.000.

Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, 4,195,164, Cl. 528-339.000.

Faktor, Marc M.; and Stevenson, John L., to Post Office, The. Electrolytic etch preparation of semiconductor surfaces. 4,194,954, Cl. 204-129.300.

Falk, Alfons B.; Stenman, Antero E.; and Wikland, Svante, to Aktiebolaget Hagglund & Soner. Suspension system for tracked vehicles. 4,194,761, Cl. 280-705.000.

Falkner, Chester B., Jr.: *See—*

Chateau, Georges M.; and Falkner, Chester B., Jr., 4,194,857, Cl. 405-203.000.

Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, to Politechnika Gdanska; and Instytut Przemyslu Farmaceutycznego. Salts of N-glycosyl derivatives of polyene macrolides, especially N-methylglucamine salts as well as the method of their preparation. 4,195,172, Cl. 536-17.00R.

Fanta, George F.; Stout, Edward I.; and Doane, William M., to United States of America, Agriculture. Highly absorbent polyhydroxy polymer graft copolymers without saponification. 4,194,998, Cl. 260-17.4GC.

Farge, Jean C.: *See—*

Krantz, Tibor; and Farge, Jean C., 4,194,906, Cl. 75-125.000.

Farmer, William R. Erratically rollable game device. 4,194,737, Cl. 273-58.0BA.

Farmitalia Certo Erba S.p.A.: *See—*

Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, 4,195,183, Cl. 560-53.000.

Faser Industries: *See—*

Lewis, Robert P., 4,194,622, Cl. 206-363.000.

Faust, Clifford C.; and Cilia, Philip F., to Delmed, Inc. Cryogenically frozen package articles. 4,194,369, Cl. 62-371.000.

Faustini, Franco: *See—*

Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, 4,195,183, Cl. 560-53.000.

Fauth, Gunter, to AGFA-Gevaert, A.G. Arrangement of a photographic camera having two deviating mirrors. 4,194,823, Cl. 354-150.000.

Fauth, Gunter, to AGFA-Gevaert, A.G. Photographic camera. 4,194,825, Cl. 354-212.000.

Fauth, Gunter: *See—*

Stemme, Otto; Lermann, Peter; and Fauth, Gunter, 4,194,821, Cl. 354-86.000.

Fechillas, Michael R.: *See—*

Ness, Irving S.; and Fechillas, Michael R., 4,194,507, Cl. 128-287.000.

Federated Metals Corporation: *See—*

Kurr, George W.; and Myers, Michael, 4,195,197, Cl. 174-78.000.

Fehr, Theodor; and Stadler, Paul, to Sandoz Ltd. 6-Branched chain alkyl sustituted ergot alkaloids. 4,195,086, Cl. 424-250.000.

Feigk, Fritz: *See—*

Wacker, Karl; and Feigk, Fritz, 4,194,729, Cl. 266-144.000.

Feinauer, Roland: *See—*

Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,195,162, Cl. 528-313.000.

Feistel, Horst, to International Business Machines Corporation. Variant key matrix cipher system. 4,195,196, Cl. 178-22.000.

Feistel, Horst, to International Business Machines Corporation. Key controlled block-cipher cryptographic system employing a multidirectional shift matrix. 4,195,200, Cl. 178-22.000.

Feldman, Charles L., to Electronics for Medicine, Inc. Detecting capacitively coupled ECG baseline shift. 4,194,511, Cl. 128-696.000.

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Finley, Bill G.; and Finley, Terry L., to Rug Specialist Inc. Vacuum extraction cleaning machine. 4,194,262, Cl. 15-314.000.

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Tilch, Gerhard; Friedrich, Wolfgang; Dobhan, Herbert; Hetterich, Hermann; Horling, Peter; and Finzel, Sigismund, 4,194,752, Cl. 280-11.280.

Firth, John H. Target radar reflector. 4,195,298, Cl. 343-18.00C.

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Fischer, David J.; McCandless, James A.; and Hager, James D., to Bausch & Lomb Incorporated. Transparent opthalmic lens having engraved surface indicia. 4,194,814, Cl. 351-160.00R.

- Fischer, Siegbert: *See—*
  - Pfalzer, Lothar; and Fischer, Siegbert, 4,194,968, Cl. 209-3.000.
- Fischer, Wilhelm: *See—*
  - Schermann, Walter; Holst, Arno; and Fischer, Wilhelm, 4,194,995, Cl. 260-14.000.
- Fisher, John S. Method for constructing town houses and the like. 4,194,339, Cl. 52-745.000.
- Fisher, Robert D.: *See—*
  - Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., 4,194,685, Cl. 235-375.000.
- Fisher, Robert E., to Up-Right, Inc. Mobile scaffold with fixed-use-position outriggers. 4,194,591, Cl. 182-17.000.
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- Flagg, John F.; and Antos, George J., to UOP Inc. Acidic multimetallic hydrocarbon conversion catalytic composite. 4,194,991, Cl. 252-441.000.
- Flisch, Hermann, to Eunipp AG. Automatic bar-loading apparatus for a multi-spindle automatic lathe. 4,194,420, Cl. 82-2.700.
- Floyd, Don E., to Henkel Corporation. N-Alkyl polyamines and curing of epoxy resins therewith. 4,195,152, Cl. 528-87.000.
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  - Briggs, Peter D.; and Sharkey, Dennis R., 4,194,941, Cl. 156-361.000.
  - Brubaker, Gaylen R., 4,194,987, Cl. 252-102.000.
  - Conway, Raymond J.; and Shah, Hasmukh T., 4,194,432, Cl. 89-41.00C.
  - Myers, Harold E.; and Sheetz, Charles E., 4,194,343, Cl. 53-493.000.
  - Peters, Ronald L., 4,194,347, Cl. 56-328.0TS.
- Foerster, George S.; and Stuhler, Harold A., to N L Industries, Inc. Production of purified lead and antimony oxide. 4,194,904, Cl. 75-78.000.
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- Fontanges, Robert, to Science Union et Cie, Societe Francaise de Recherche Medicale. Process for the preparation of hemagglutinin from viral sources and methods of utilizing same. 4,195,076, Cl. 424-43.000.
- Foote, Earl H.; Moore, Frank D.; and Strigle, Ralph F., Jr., to Norton Company. Randomly dumpable self orienting spiral packing elements. 4,195,043, Cl. 261-94.000.
- Foote, John P., to U.S. Armament Corporation. Ejector assembly for a firearm adapter. 4,194,314, Cl. 42-25.000.
- Forch, Hans; and Niklas, Helmut, to Carl Freudenberg, Firma. Radial shaft sealing ring. 4,194,748, Cl. 277-152.000.
- Ford Motor Company: *See—*
  - Giardini, Dante S., 4,194,322, Cl. 51-81.00R.
  - Kummer, Joseph T., 4,195,119, Cl. 429-38.000.
  - Nichols, Robert W.; and Pierce, Stanley L., Jr., 4,194,604, Cl. 192-3.300.
  - Noakes, Jack E.; and Terner, Leslie L., 4,195,049, Cl. 264-63.000.
  - Rado, William G., 4,194,480, Cl. 123-148.0ND:
  - Weintraub, Marvin H.; Gealer, Roy L.; Dzieciuch, Matthew A.; and Gealer, Roy L., 4,194,972, Cl. 210-43.000.
  - Wood, Tony J., 4,194,395, Cl. 73-304.00C.
- Fork, Frank W., to H. H. Robertson Company. Electrical wiring distribution system. 4,194,332, Cl. 52-220.000.
- Forman, Hugh M.; and Rauschenberger, Richard A., to G. D. Searle & Co. Container support means. 4,194,715, Cl. 248-311.10R.
- Foseco International Limited: *See—*
  - George, Raymond D.; and Stevenson, John, 4,194,918, Cl. 106-80.000.
- Foseco Trading AG: *See—*
  - Matsumoto, Chiaki; Imai, Hirokatsu; and Okawa, Masaru, 4,194,730, Cl. 266-275.000.
- Fothergill, Noel O., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Signal processing circuit. 4,195,360, Cl. 367-136.000.
- Foti, Thomas M. Probe for nystagmus testing. 4,194,512, Cl. 128-742.000.
- Fouilloy, Jean-Pierre, to U.S. Philips Corporation. Power-supply device for a microchannel tube. 4,195,222, Cl. 250-213.0VT.
- Fowler Holdings Limited: *See—*
  - Rautenbach, Jacobus J., 4,195,111, Cl. 428-218.000.
- Fox, Charles L., Jr., to Research Corporation. Zinc containing hypoglycemic agents. 4,195,094, Cl. 424-289.000.
- Frankfort, Hans R. E.; and Knox, Benjamin H., to Du Pont de Nemours, E. I., and Company. Process for preparing new polyester filaments. 4,195,051, Cl. 264-176.00F.
- Franz, Alfred K.: *See—*
  - Sanger, Georg; and Franz, Alfred K., 4,195,224, Cl. 250-289.000.
- Frasier, Edward J.: *See—*
  - Cadwallader, John Y.; and Frasier, Edward J., 4,194,487, Cl. 126-61.000.
- Freeman, Richard D., to Bell Telephone Laboratories, Incorporated. Computer typesetting. 4,195,338, Cl. 364-200.000.
- Frei, Jurg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, to Ciba-Geigy Corporation. 2-(3-Amino-2-hydroxy-propoxy)pyridine derivatives and pharmaceutical compositions therewith. 4,195,090, Cl. 424-263.000.
- Freuler, Fred H. Spreader roll. 4,194,275, Cl. 26-100.000.
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  - Dye, John F.; and Friebel, Virgil F., 4,194,464, Cl. 118-501.000.
- Friedr. Fingscheidt GmbH: *See—*
  - Zimmermann, Waldemar, 4,194,265, Cl. 16-82.000.
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- Friese, Egon F., to International Telephone and Telegraph Corporation. Heating apparatus. 4,195,219, Cl. 219-388.000.
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  - Koster, Johannes; Heitkamper, Peter; Fuhrmann, Peter; and Porkert, Helmut, 4,195,032, Cl. 260-453.0PH.
- Fuji Xerox Co., Ltd.: *See—*
  - Tsukamoto, Takuzo; Sakamoto, Tamotsu; and Okamoto, Yoshikazu, 4,194,465, Cl. 118-658.000.
- Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Method of manufacturing heat-transfer wall for vapor condensation. 4,194,384, Cl. 72-325.000.
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  - Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,195,018, Cl. 260-112.50R.
- Fukada, Minoru: *See—*
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- Fukatsu, Shunzo: *See—*
  - Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,195,170, Cl. 536-10.000.
- Fukaya, Yasuhiro: *See—*
  - Uto, Yoshimitsu; Omae, Takashi; Fukaya, Yasuhiro; and Yoshida, Yasuyuki, 4,194,672, Cl. 228-194.000.
- Fukui, Saburo; Yamamoto, Tsutomu; and Iida, Takamitsu, to Kansai Paint Co., Ltd. Method for immobilizing enzymes and microbial cells. 4,195,129, Cl. 435-182.000.
- Fukumori, Masahito: *See—*
  - Ide, Tsuneyuki; Takagi, Ken-ichi; Watanabe, Michio; Ohhira, Seiichi; Fukumori, Masahito; and Kondo, Yoshikazu, 4,194,900, Cl. 75-0.50C.
- Fukuoka, Takeyo: *See—*
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- Fullerton, W. Wardle: *See—*
  - O'Rourke, Edward C.; and Fullerton, W. Wardle, 4,194,424, Cl. 83-870.000.
- Fullmann, Marius; Sawitzki, Friedhelm; and Silber, Dieter, to Licentia Patent-Verwaltungs-G.m.b.H. Gate turn-off thyristor. 4,195,306, Cl. 357-38.000.
- Fulmer, Ray M.: *See—*
  - Symborski, Alex P.; Fulmer, Ray M.; and Thomas, David W., 4,194,896, Cl. 65-3.00R.
- Furuitsu, Satoshi: *See—*
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  - Agui, Wataru; Higosaki, Nobuyuki; Yamanari, Koichiro; Furukawa, Toshio; and Kuyama, Hiroshi, 4,195,028, Cl. 260-42.430.
- G. D. Searle & Co.: *See—*
  - Forman, Hugh M.; and Rauschenberger, Richard A., 4,194,715, Cl. 248-311.10R.
  - Waters, E. Craig, 4,194,386, Cl. 73-3.000.
- G. L. Rexroth GmbH: *See—*
  - Bartholomaus, Reiner, 4,194,394, Cl. 73-207.000.
  - Ewald, Roland; and Lembke, Herbert, 4,194,719, Cl. 251-30.000.
- Gabaldon, Manuel: *See—*
  - Walker, Leon P.; and Gabaldon, Manuel, 4,194,868, Cl. 414-607.000.
- Gabets, Anna P.: *See—*
  - Babina, Margarita D.; Gabets, Anna P.; Pereskokova, Ida I.; and Popova, Galina I., 4,195,019, Cl. 260-17.200.
- GAF Corporation: *See—*
  - Charles, John J.; and Gasman, Robert C., 4,195,000, Cl. 260-22.00D.
  - Coleman, Ernest A., 4,195,134, Cl. 525-65.000.
  - Dixon, Kenneth W., 4,195,142, Cl. 525-340.000.
  - Gasman, Robert C.; and Charles, John J., 4,195,011, Cl. 260-40.00R.
  - Graham, David E.; and Copes, Joseph P., deceased, 4,195,096, Cl. 424-320.000.
  - Timm, Walter C., 4,195,107, Cl. 428-40.000.
- Gaiser, William R., to Broadway Companies, Inc., The. Two-piece, blow molded container with handle. 4,194,641, Cl. 215-100.00A.
- Gajewski, Vincent J.; and Eisenbach, Elliot, to M & T Chemicals Inc. Novel composition for preparing urethane/urea block copolymers. 4,195,150, Cl. 528-52.000.
- Gallacher, Lawrence V., to King Industries, Inc. Solvent-extraction process for recovery and separation of metal values. 4,194,905, Cl. 75-101.0BE.

- Galland, Denis; and Boursault, Jack, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes. Quick-closing multi-way valves. 4,194,535, Cl. 137-636.400.
- Galvin, Aaron A., to American District Telegraph Company. Alarm system having improved false alarm rate and detection reliability. 4,195,286, Cl. 340-501.000..
- Gambacorta, Mario, to S.I.A.P. Societa Industriale Agglomerati e Prodotti Petroliferi S.p.A. Process for producing graphite agglomerates, and products obtained by it. 4,194,901, Cl. 75-48.000.
- Gambro AB: *See—*
  - Jonsson, Ulf L. P., 4,194,974, Cl. 210-90.000.
- Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, to Farmitalia Certo Erba S.p.A. ω-Nor-aromatic-13,14-dehydro-prostaglandins and process for their preparation. 4,195,183, Cl. 560-53.000.
- Garrett Corporation, The: *See—*
  - Matulich, Dan S.; and Saylor, B. Franklin, 4,194,357, Cl. 60-39.020.
- Garrett, Wayne H.; and Neuman, Richard F., to Eaton Corporation. Disc brake housing assembly. 4,194,596, Cl. 188-72.700.
- Garrison, Judd F., to John Thomas Batts, Inc. Garment grip construction for hangers. 4,194,274, Cl. 24-248.00R.
- Gasman, Robert C.; and Charles, John J., to GAF Corporation. Injection molding compositions. 4,195,011, Cl. 260-40.00R.
- Gasman, Robert C.: *See—*
  - Charles, John J.; and Gasman, Robert C., 4,195,000, Cl. 260-22.00D.
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  - Gastrock, Edward A., 4,194,398, Cl. 73-422.0TC.
- Gates, Albert G. R., to Gestetner Limited. Stencil loading in stencil duplicators. 4,194,447, Cl. 101-128.100.
- Gates, William E.: *See—*
  - Pieters, Wim J. M.; Gates, William E.; Carlson, Emery J.; and Wilkalis, John E., 4,194,990, Cl. 252-441.000.
- Gatsis, John G., to UOP Inc. Hydrocarbon sulfide catalyst hydrorefining process utilizing a non-stoichiometric vanadium sulfide catalyst. 4,194,967, Cl. 208-215.000.
- Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., to Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR. Percussion mechanism. 4,194,435, Cl. 91-234.000.
- Gazard, Maryse; and Dubois, Jean-Claude, to Thomson-CSF. Electrolithographic process which makes it possible to improve the sensitivity of masking resins, and a mask obtained by this kind of process. 4,195,108, Cl. 428-195.000.
- Gealer, Roy L.: *See—*
  - Weintraub, Marvin H.; Gealer, Roy L.; Dzieciuch, Matthew A.; and Gealer, Roy L., 4,194,972, Cl. 210-43.000.
  - Weintraub, Marvin H.; Gealer, Roy L.; Dzieciuch, Matthew A.; and Gealer, Roy L., 4,194,972, Cl. 210-43.000.
- Gehm, Robert: *See—*
  - Stutz, Herbert; and Gehm, Robert, 4,195,149, Cl. 528-49.000.
- Gemsjager, Helmut, to Buhler-Miag GmbH. Self-adjusting husker. 4,194,445, Cl. 99-618.000.
- General Atomic: *See—*
  - Ledin, Eric, 4,194,948, Cl. 176-87.000.
- General Electric Company: *See—*
  - Hedel, Kurt K., 4,195,333, Cl. 363-21.000.
  - Hirsch, Harold H., 4,195,247, Cl. 313-330.000.
  - Krause, Werner A., 4,195,198, Cl. 174-94.00S.
  - Mark, Victor, 4,195,157, Cl. 528-174.000.
  - Rabatin, Jacob G., 4,195,228, Cl. 250-483.000.
  - Staff, Bonner W., 4,194,400, Cl. 73-623.000.
  - Stenger, Richard E., 4,194,358, Cl. 60-39.060.
  - Thompson, Richard L., 4,195,332, Cl. 362-391.000.
- General Signal Corporation: *See—*
  - Young, John E. G., 4,194,363, Cl. 60-445.000.
- General Tire & Rubber Company, The: *See—*
  - Gruber, David P., 4,195,008, Cl. 260-29.70H.
  - Sommer, John G., Jr., 4,195,143, Cl. 525-354.000.
- George, Raymond D.; and Stevenson, John, to Foseco International Limited. Alkali metal silicate binder compositions. 4,194,918, Cl. 106-80.000.
- Gerber, Howard L., to Continental Group, Inc., The. Apparatus for induction heating of metal plates with holes. 4,195,214, Cl. 219-10.790.
- Gerber, Samuel M.; and Misner, Robert E., to American Cyanamid Company. Process for preparing 2-chloro-1-methylaminoanthraquinone and plastics containing the same. 4,195,012, Cl. 260-42.210.
- Gerlinger, Frederic, to Kuhn, S.A. Haymaking machine with rotary rake heads. 4,194,348, Cl. 56-377.000.
- Gestetner Limited: *See—*
  - Gates, Albert G. R., 4,194,447, Cl. 101-128.100.
- Giardini, Dante S., to Ford Motor Company. Constant force sheet glass cutting drill assembly. 4,194,322, Cl. 51-81.00R.
- Gibson, Duane M.: *See—*
  - Scott, Lewis A.; and Gibson, Duane M., 4,194,544, Cl. 144-193.00D.
- Gibson, Shirley I.: *See—*
  - Christensen, Robert F., 4,194,627, Cl. 206-545.000.
- Gillert, Winfried: *See—*
  - Baresel, Detlef; Scharner, Peter; Huth, Gerhard; and Gillert, Winfried, 4,194,994, Cl. 252-518.000.
- Gilmore, William J., to Acco Industries Inc. Safety belt anchorage assembly. 4,194,786, Cl. 297-468.000.
- Gingle, Alan R.; and Gingle, Terrance D. System for enhancing the properties of windows and the like. 4,194,331, Cl. 52-203.000.
- Gingle, Terrance D.: *See—*
  - Gingle, Alan R.; and Gingle, Terrance D., 4,194,331, Cl. 52-203.000.
- Giovanni Marchisio & C. S.r.l.: *See—*
  - Marchisio, Giovanni, 4,194,375, Cl. 66-132.00T.
- Gisser, Henry: *See—*
  - Mertwoy, Helen E.; and Gisser, Henry, 4,195,144, Cl. 526-173.000.
- Glasscock, Edwin E.: *See—*
  - Hackney, James W.; and Glasscock, Edwin E., 4,195,192, Cl. 174-40.00R.
- Glavan, Ljiljana. Furniture component systems. 4,194,642, Cl. 217-12.00R.
- Gliemeroth, Georg. Optical fiber wave-guides for signal transmission comprising multiple component glass with an adjusted expansion co-efficient between the core and mantle. 4,194,807, Cl. 350-96.310.
- Gmohling, Werner, to SKW Trostberg Aktiengesellschaft. Desulfurization agent for ferrous melts and method of using the same. 4,194,902, Cl. 75-55.000.
- Goel, Jitendra, to RCA Corporation. Method of making a field effect transistor. 4,194,285, Cl. 29-579.000.
- Goering, Karl: *See—*
  - Evans, Anthony C.; and Goering, Karl, 4,194,597, Cl. 188-73.500.
- Gogins, Laird B., to Power-Matic Corporation. Variable speed transmission. 4,194,407, Cl. 74-117.000.
- Gold, Henry O. Dental tool. 4,194,291, Cl. 433-75.000.
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  - Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.
- Gondouin, Michel. Process for the manufacture of rigid and impervious insulating panels. 4,194,280, Cl. 29-417.000.
- Goosman, Richard. Waste heat recovery device. 4,194,558, Cl. 165-105.000.
- Gorig, Rudolf. Method and apparatus for making drum-shaped cardboard containers. 4,194,440, Cl. 93-39.00C.
- Gorondy, Emery J.: *See—*
  - Edwards, Donald W.; and Gorondy, Emery J., 4,195,303, Cl. 346-74.100.
- Gossard, Arthur C.: *See—*
  - Dingle, Raymond; Gossard, Arthur C.; and Stormer, Horst L., 4,194,935, Cl. 148-175.000.
- Gottschall, Harald. Dry chemical fire extinguishing powder containing alkali metal gluconate. 4,194,979, Cl. 252-7.000.
- Goulding, Terence; and Orton, Michael L., to Imperial Chemical Industries Limited. Fire retardant composition comprising a melamine-aldehyde-phosphate condensate. 4,195,139, Cl. 525-441.000.
- Gouley, Claude A., to Societe Nationale Industrielle Aerospatiale. Device for simulating the locating signals of an ILS beacon. 4,195,300, Cl. 343-109.000.
- Gozzo, Franco; Abbruzzese, Luigi; and Siddi, Giorgio, to Montedison S.p.A. Dichloroacetamides which are antidotes for protecting maize against the toxic action of herbicidal esters of N,N-disubstituted glycines, methods for preparing the antidotes, and compositions comprising them. 4,195,036, Cl. 260-561.0HL.
- Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, to Hauni-Werke Korber & Co. KG. Method and apparatus for conditioning burley or greenleaf tobacco. 4,194,515, Cl. 131-135.000.
- Grabbe, Dimitry; and Patterson, Ronald, to AMP Incorporated. Lead frame and chip carrier housing. 4,195,193, Cl. 174-52.0FP.
- Graber, Harold J. Shank and coulter mounting clamp. 4,194,576, Cl. 172-763.000.
- Gracovetsky, Serge: *See—*
  - Lucas, John M.; and Gracovetsky, Serge, 4,194,840, Cl. 356-429.000.
- Graham, David E.; and Copes, Joseph P., deceased (by Copes, Anna M., legal representative), to GAF Corporation. Carboxylic amides as fungicides to eumycotina in phanerogamia plant life. 4,195,096, Cl. 424-320.000.
- Graham, Robert O.; Rauenbuehler, John A.; and Snowdon, Albert C., to Eaton Corporation. Contactor having higher fault current withstandability. 4,195,212, Cl. 200-243.000.
- Gramer, Eben J.; and Kugler, William E. Method and apparatus for installing solar collector panels. 4,194,497, Cl. 126-432.000.
- Gransell, Ake; Jansson, Sven A.; and Sporrong, Malte, to Rederiaktiebolaget Nordstjernan. Method and apparatus for ultrasonic cleaning of component parts. 4,194,922, Cl. 134-1.000.
- Grant, Frederic F., to Bell & Howell Company. Tape advancing methods and apparatus. 4,194,661, Cl. 226-95.000.
- Graphics Equipment International Corp.: *See—*
  - Boyer, Harold E., 4,194,412, Cl. 74-554.000.
- Great Neck Saw Manufacturers, Inc.: *See—*
  - Roe, Justus G., 4,194,703, Cl. 242-107.200.
- Greco, Alberto: *See—*
  - Corbellini, Margherita; and Greco, Alberto, 4,194,992, Cl. 252-442.000.
- Greene & Kellogg, Inc.: *See—*
  - McCombs, Norman R.; and Vrana, Edward E., 4,194,890, Cl. 55-18.000.

- Greier, Josef: *See—*
  - Kirchweger, Karl; Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,194,484, Cl. 123-195.00C.
- Gretz, Thomas J., to Scott & Fetzer Company, The. Liquid-tight connector. 4,194,768, Cl. 285-178.000.
- Grey, Michael O., to NCR Corporation. Locating and maintaining a hub member on a shaft. 4,194,847, Cl. 400-320.000.
- Gribnau, Thomas: *See—*
  - Hildebrand, Dietrich; and Gribnau, Thomas, 4,195,128, Cl. 435-178.000.
- Griffith, John D., to Bonas Machine Company Limited. Loom shuttle. 4,194,539, Cl. 139-196.300.
- Griffth, James R.; and 0'Rear, Jacques G., to United States of America, Navy. Alkanediamide-linked polyphthalocyanines coordinated with $SnCl_2$. 4,195,166, Cl. 528-270.000.
- Grigat, Ernst: *See—*
  - Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, 4,195,132, Cl. 521-155.000.
- Grimaldi, Anthony J. Gravity orthopedic device. 4,194,500, Cl. 128-75.000.
- Grimm, Werner, to Huizinga, Jan Jakob. Lock coupling for safety belts in motor vehicles. 4,194,764, Cl. 280-801.000.
- Groh, Allen R.; Karlov, Frank J.; and Happ, Lawrence R., to Shure Brothers, Incorporated. Phonograph pick-up transducer using a one-piece bearing and inertial damper fabricated from different materials. 4,194,744, Cl. 274-37.000.
- Groothuis, Michel: *See—*
  - Thomi, Michel; Groothuis, Michel; and Meylan, Serge, 4,194,353, Cl. 368-38.000.
- Groult, Alain: *See—*
  - Tournier, Herve; and Groult, Alain, 4,194,986, Cl. 252-102.000.
- Grove, John L., to JLG Industries, Inc. Truck mounted crane and method of constructing same. 4,194,639, Cl. 212-59.00R.
- Grove, John L.; and Wagner, Gregg A., to JLG Industries, Inc. Scissors linkage workman's platform. 4,194,723, Cl. 254-9.90C.
- Grubb, Daniel B., to AMP Incorporated. Connector holding fixture. 4,194,276, Cl. 29-56.600.
- Gruber, David P., to General Tire & Rubber Company, The. Latex extended with grafted mineral oil. 4,195,008, Cl. 260-29.70H.
- Gryl, Frank J., Jr.; and Mahler, James A., to Western Electric Company, Incorporated. Inductive coil module. 4,195,201, Cl. 178-46.000.
- GTE Laboratories Incorporated: *See—*
  - Cameron, Frank L., 4,195,282, Cl. 340-347.0AD.
  - Meslener, George J., 4,195,237, Cl. 307-261.000.
- GTE Sylvania Incorporated: *See—*
  - Bamberg, William I., 4,195,251, Cl. 315-73.000.
  - Doyle, Richard F.; and Myers, Edward T., 4,195,278, Cl. 336-90.000.
  - Marchetti, Charles R., 4,195,264, Cl. 328-134.000.
- Guaglione, Giovanni P.: *See—*
  - Aslan, Wilfred A.; Guaglione, Giovanni P.; McCloud, James R.; and Meier, Henry G., 4,195,211, Cl. 200-153.00D.
- Gubser, William D.: *See—*
  - Callaghan, William I.; Dawson, Dennis E.; Gubser, William D.; and Vero, Joseph A., 4,194,720, Cl. 251-77.000.
- Gudmestad, Ragnar, to Artos Engineering Company. Apparatus and method for stripping wire leads. 4,194,281, Cl. 29-867.000.
- Gudorf, James L., to Mead Corporation, The. Charge plate and method of manufacture. 4,195,304, Cl. 346-75.000.
- Guell, Jose M. D., to Jumberca, S.A. Process for knitting a single-faced pile fabric. 4,194,374, Cl. 66-93.000.
- Guerin, Bernard: *See—*
  - Deleens, Gerard; Guerin, Bernard; and Poulain, Claude, 4,195,015, Cl. 260-45.75C.
- Guillaume, Emile A. H., to Zelacolor Systems Establishment. Unit for reproducing transparent originals, or the like. 4,194,834, Cl. 355-67.000.
- Guillaume, Jacques: *See—*
  - Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,195,081, Cl. 424-263.000.
- Gulf Oil Corporation: *See—*
  - Miller, J. Blaine, 4,194,788, Cl. 299-2.000.
- Gulf Research and Development Company: *See—*
  - Schulz, Johann G. D.; and Sabourin, Edward T., 4,195,185, Cl. 562-407.000.
  - Schulz, Johann G. D.; and Sabourin, Edward T., 4,195,186, Cl. 562-407.000.
- Gulf & Western Manufacturing Company: *See—*
  - Huzyak, Paul, 4,194,383, Cl. 72-245.000.
- Gulick, Anne M.: *See—*
  - Barner, Robert P.; Gulick, Anne M.; deVeer, John A.; and Oblonsky, Jan G., 4,195,351, Cl. 364-900.000.
- Gurwicz, David; and Melocik, Grant C., to Caterpillar Tractor Co. Control circuit for a D.C. motor. 4,195,254, Cl. 318-334.000.
- Guse, Rolf: *See—*
  - Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,195,345, Cl. 364-470.000.
- Guttmann, Emil J., to Cole-Parmer Instrument Company. Electronic brake for AC motors. 4,195,255, Cl. 318-762.000.
- H. H. Robertson Company: *See—*
  - Fork, Frank W., 4,194,332, Cl. 52-220.000.
- Haapsaari, Timo: *See—*
  - Huostila, Markku; and Haapsaari, Timo, 4,194,947, Cl. 162-207.000.
- Haberhauer, Helmuth, to Hoechst Aktiengesellschaft. Electrophotographic apparatus for developing latent electrostatic charge images. 4,194,466, Cl. 118-657.000.
- Haberhauer, Helmuth: *See—*
  - Holz, Rudolf; and Haberhauer, Helmuth, 4,194,828, Cl. 355-3.0DD.
- Hackney-Glasscock, Inc.: *See—*
  - Hackney, James W.; and Glasscock, Edwin E., 4,195,192, Cl. 174-40.00R.
- Hackney, James W.; and Glasscock, Edwin E., to Hackney-Glasscock, Inc. Safety disconnect switch for suspended cables. 4,195,192, Cl. 174-40.00R.
- Haganuma, Tomoyuki: *See—*
  - Abe, Shintaro; and Haganuma, Tomoyuki, 4,195,353, Cl. 364-900.000.
- Hagen, Edward L., to Uniroyal, Inc. Polyurethane spray composition containing lactone viscosity modifier. 4,195,148, Cl. 528-48.000.
- Hager, Adolph G.; and Krzyzkowski, Philip F., to United States of America, Army. Method and apparatus for frit-sealing high temperature CRT faceplate to conventional CRT envelope. 4,194,643, Cl. 220-2.10A.
- Hager, James D.: *See—*
  - Fischer, David J.; McCandless, James A.; and Hager, James D., 4,194,814, Cl. 351-160.00R.
- Hahn, Guerry L.: *See—*
  - Baker, Gerald S.; and Hahn, Guerry L., 4,194,718, Cl. 251-14.000.
- Hajimoto, Yoshioki: *See—*
  - Hara, Toshitami; Hajimoto, Yoshioki; Shirato, Yoshiaki; and Matsushima, Massaki, 4,194,812, Cl. 350-357.000.
- Hale, Peter: *See—*
  - Marsh, Robert A.; Mackie, Gordon J.; and Hale, Peter, 4,195,077, Cl. 424-70.000.
- Hall, Leo M., to University of Alabama, The Board of Trustees of the. Albumin-dye complex for fatty acid determination. 4,195,126, Cl. 435-11.000.
- Hall, Lowell R., to Caterpillar Tractor Co. Control valve with bypass means. 4,194,532, Cl. 137-596.000.
- Hallstedt, Karl G. A.: *See—*
  - Svensson, Bengt H.; Lindberg, Lars G.; and Hallstedt, Karl G. A., 4,194,796, Cl. 308-9.000.
- Hamada, Hideo: *See—*
  - Usui, Keizaburo; Hayama, Isao; Hamada, Hideo; and Yamamuro, Sigeaki, 4,194,608, Cl. 192-0.092.
- Hamer, David E.: *See—*
  - DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,195,027, Cl. 260-397.200.
- Hamer, George D.: *See—*
  - Downing, Brian Y.; and Hamer, George D., 4,195,115, Cl. 428-482.000.
- Hamilton, Cecil E. Apparatus for releasably retaining articles in pockets and the like. 4,194,271, Cl. 24-3.00R.
- Hammann, Ingeborg: *See—*
  - Hoffmann, Hellmut; Klauke, Erich; and Hammann, Ingeborg, 4,195,082, Cl. 424-216.000.
- Hammond, Kenneth G.; and Schlicht, Raymond C., to Texaco Inc. Polyurethane of neopentyl glycol-phosphosulfurized polyolefin and lubricant containing same. 4,194,981, Cl. 252-46.700.
- Hampshire, Michael J.; Poole, Norman J.; and Parkes, John, to Ward & Goldstone Limited. Sound generator. 4,195,284, Cl. 340-384.00E.
- Hana, Norman A.: *See—*
  - Drennan, Herman R.; and Hana, Norman A., 4,195,047, Cl. 264-17.000.
- Hance, Sammy M. Concrete lifter. 4,194,726, Cl. 254-133.00R.
- Hanisch, Horst: *See—*
  - Buning, Robert; Hanisch, Horst; Hass, Hansjurgen; and Rodder, Karl-Martin, 4,195,141, Cl. 525-328.000.
- Hannibal, Alan J., to Lord Corporation. Flexible drive coupling. 4,194,372, Cl. 64-11.00R.
- Hans List: *See—*
  - Claassen, Peter; Zeiringer, Rudolf; and List, Helmut, 4,194,401, Cl. 73-730.000.
  - Kirchweger, Karl; Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, 4,194,484, Cl. 123-195.00C.
- Happ, Lawrence R.: *See—*
  - Groh, Allen R.; Karlov, Frank J.; and Happ, Lawrence R., 4,194,744, Cl. 274-37.000.
- Hara, Toshitami; Hajimoto, Yoshioki; Shirato, Yoshiaki; and Matsushima, Massaki, to Canon Kabushiki Kaisha Toshitama Hara. Electrochromic device. 4,194,812, Cl. 350-357.000.
- Harada, Takao; Wada, Nobuhide; Ohashi, Hideaki; Koike, Wataro; and Yazawa, Chihiro, to Ihara Chemical Industry Co., Ltd. 4-Alkoxy-3,5-diamino-α,α,α-trifluoromethyl-benzene and manufacture thereof and hardener for polyurethane elastomer thereof. 4,195,037, Cl. 260-575.000.
- Haraszti, Ibolya: *See—*
  - Minner, Willy; Sieber, Paul; and Haraszti, Ibolya, 4,195,314, Cl. 455-185.000.
- Harata, Motowo: *See—*
  - Shiomi, Masanao; Yokoya, Yuuji; and Harata, Motowo, 4,194,760, Cl. 280-661.000.
- Harden, Harry J.: *See—*
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- Hardesty, George K. C.: *See—*
  - Dice, Harry E., Sr., 4,194,379, Cl. 70-421.000.
- Hargraves, Melvin J.; and Peters, Clifford M., to W-K-M Wellhead Systems, Inc. Control valve having integral visual indicator for fluid safety systems. 4,194,529, Cl. 137-557.000.
- Harjar, Martin J., to Nordson Corporation. Electrostatic spray coating gun. 4,194,696, Cl. 239-707.000.

- Harms, Jack L.; and Seberg, Charles H., to Abbott Laboratories. Winged catheter placement assembly. 4,194,504, Cl. 128-214.400.
- Harp, Raymond T.: *See—*
  - Smith, Walter A.; and Harp, Raymond T., 4,195,339, Cl. 364-200.000.
- Harris, William R., Jr. Open vehicle lighting system utilizing detachable vehicle operator helmet mounted light. 4,195,328, Cl. 362-72.000.
- Hart, C. Arthur, to Research Triangle Institute. Air drying of refractory hardwoods. 4,194,298, Cl. 34-94.000.
- Hartdegen, Frank J.; and Swann, Wayne E., to W. R. Grace & Co. Process for immobilizing proteins. 4,195,127, Cl. 435-174.000.
- Hartwig, Karl; and Waibel, Gottfried, to AGFA-Gevaert, A.G. Optical copier. 4,194,831, Cl. 355-3.00R.
- Hashmall, Frank, to L. M. Rabinowitz & Co., Inc. Apparatus for processing hook and eye fasteners. 4,194,937, Cl. 156-73.100.
- Haslhofer, Hubert, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Apparatus for supporting two universal joint shafts and equipment comprising a strip-treating stand adapted to be driven by said universal joint shafts. 4,194,279, Cl. 29-281.500.
- Hass, Hansjurgen: *See—*
  - Buning, Robert; Hanisch, Horst; Hass, Hansjurgen; and Rodder, Karl-Martin, 4,195,141, Cl. 525-328.000.
- Hass, Martin A., to Hass, Martin A. Artificial teeth that minimize stresses on denture supporting tissue. 4,194,288, Cl. 433-197.000.
- Hatch, David A., to PINTEK, Inc. Connector for flat ribbon cable. 4,194,803, Cl. 339-99.00R.
- Hatherly, David G., to Erco Industries Limited. Process for producing chlorate and chlorate cell construction. 4,194,953, Cl. 204-95.000.
- Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, to Kao Soap Co., Ltd. Method for increasing flexural strength of cement compositions. 4,194,919, Cl. 106-90.000.
- Hauni-Werke Korber & Co. KG.: *See—*
  - Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, 4,194,515, Cl. 131-135.000.
- Hausen, Peter; and Schulz, Klaus-Dieter, to Hoesch Werke Aktiengesellschaft. Method of producing steel with the lowest possible sulfur content by desulfurization of pig iron with magnesium coke. 4,194,903, Cl. 75-58.000.
- Havlick, Richard S.: *See—*
  - Dostal, Gerald A.; and Havlick, Richard S., 4,194,784, Cl. 297-126.000.
- Hawrylo, Frank Z., to RCA Corporation. Ohmic contact for P type indium phosphide. 4,195,308, Cl. 357-67.000.
- Hayama, Isao: *See—*
  - Usui, Keizaburo; Hayama, Isao; Hamada, Hideo; and Yamamuro, Sigeaki, 4,194,608, Cl. 192-0.092.
- Hayashi, Masaki; Kori, Seiji; and Okada, Takanori, to Ono Pharmaceutical Co. Ltd. Trans-Δ^2-prostaglandin analogues. 4,195,182, Cl. 180-53.000.
- Hayashi, Takao; Sakanaka, Yasuhiro; and Shimizu, Akihiko, to Toyo Soda Manufacturing Company, Ltd. Process for producing powdery rubber. 4,194,999, Cl. 260-17.00R.
- Heath, Richard C., to Heath, Richard Charles. Fire extinguishers. 4,194,569, Cl. 169-26.000.
- Heath, Richard Charles: *See—*
  - Heath, Richard C., 4,194,569, Cl. 169-26.000.
- Hecht, Gert: *See—*
  - Schonwald, Siegfried; Schoning, Rudolf; Breyer, Eberhard; and Hecht, Gert, 4,194,798, Cl. 308-189.00R.
- Hedel, Kurt K., to General Electric Company. DC to DC voltage converter. 4,195,333, Cl. 363-21.000.
- Hedrich, Eberhard. Gear-shift control for bicycle transmission. 4,194,408, Cl. 74-217.00B.
- Heitkamper, Peter: *See—*
  - Koster, Johannes; Heitkamper, Peter; Fuhrmann, Peter; and Porkert, Helmut, 4,195,032, Cl. 260-453.0PH.
- Heller, Alwin: *See—*
  - Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, 4,195,158, Cl. 528-230.000.
- Heller, Robert D., to Medical Plastics Laboratory, Inc. Anti-choking manikin. 4,194,303, Cl. 35-17.000.
- Helm Products, Inc.: *See—*
  - Lisowski, Walter E., 4,194,459, Cl. 114-221.00R.
- Henkel Corporation: *See—*
  - Floyd, Don E., 4,195,152, Cl. 528-87.000.
- Hennequin, Petrus J., to Hunter Douglas International N.V. End piece for the bottom rail of a venetian blind. 4,194,551, Cl. 160-178.00R.
- Henning, James E.: *See—*
  - Crosby, Edward G.; Henning, James E.; and Hornbeck, Frederick C., 4,195,114, Cl. 428-404.000.
- Henrion, Michael Andre R.; and van Brussel, Marcel A., to International Standard Electric Corporation. Signal transfer system for time division switching systems. 4,195,205, Cl. 370-10.000.
- Hentze, Bernhard K. Chain guard and methods of making and using the same. 4,194,413, Cl. 74-611.000.
- Herpers, Ferdinand J.; Kroll, Harley E.; Carlson, Alfred D.; and Dodge, Paul D., to Tennant Company. Scrubbing machine with water regeneration. 4,194,263, Cl. 15-353.000.
- Herrera, Alberto P.; and Vieto, Sebastian A. Insecticidal use of orange juice essence oil. 4,195,080, Cl. 424-186.000.
- Herres, Norbert: *See—*
  - Hinterkeuser, Wilhelm; Herres, Norbert; and Reitemeyer, Paul, 4,194,872, Cl. 425-72.00R.
- Herron, David K.; and Whitesitt, Celia A., to Eli Lilly and Company. 1,3-Disubstituted 2-azetidinone antibitotics. 4,195,021, Cl. 260-239.00A.
- Herzig, Eberhard: *See—*
  - Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
- Hess, Donald J.: *See—*
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- Hess, Gerald W., to Chambers Corporation. Oven hinge mechanism including detent lock. 4,194,321, Cl. 49-389.000.
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- Hetterich, Hermann: *See—*
  - Tilch, Gerhard; Friedrich, Wolfgang; Dobhan, Herbert; Hetterich, Hermann; Horling, Peter; and Finzel, Sigismund, 4,194,752, Cl. 280-11.280.
- Hewitt, William L., to Cam-Stat Incorporated. Intermittent pilot ignition system. 4,194,875, Cl. 431-45.000.
- Heyman, Joseph S., to United States of America, National Aeronautics and Space Administration. CdS Solid state phase insensitive ultrasonic transducer. 4,195,244, Cl. 310-311.000.
- Hickerson, Frederick R. Fluid control valve. 4,194,694, Cl. 239-533.100.
- Hicks, Bradford W., to Eaton Corporation. Geared torque selector. 4,194,586, Cl. 180-24.090.
- Hidaki, Ichiro. Four-cycle spark ignition internal combustion engine. 4,194,473, Cl. 123-119.00A.
- Hightower, Roger W. Folding step for pickup trucks. 4,194,754, Cl. 280-166.000.
- Higosaki, Nobuyuki: *See—*
  - Agui, Wataru; Higosaki, Nobuyuki; Yamanari, Koichiro; Furukawa, Toshio; and Kuyama, Hiroshi, 4,195,028, Cl. 260-42.430.
- Hildebrand, Dietrich; and Gribnau, Thomas, to Bayer Aktiengesellschaft. Polymeric carrier bound ligands. 4,195,128, Cl. 435-178.000.
- Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., to Dynetics Engineering Corp. Verifying insertion system apparatus and method of operation. 4,194,685, Cl. 235-375.000.
- Hille, Eduard. Apparatus for laying fiber fleeces or the like on a moving withdrawal belt. 4,194,270, Cl. 19-163.000.
- Hillery, Herbert V., to United States of America, Navy. Tuned electrolytic detector. 4,195,280, Cl. 367-171.000.
- Hillery, Herbert V., to United States of America, Navy. Variable frequency acoustic filter. 4,195,361, Cl. 367-149.000.
- Hillmann, Hans; and Springer, Engelbert, to Vacuumschmelze GmbH. Superconducting composite conductor and method of manufacturing same. 4,195,199, Cl. 174-128.00S.
- Hindersinn, Raymond R.: *See—*
  - Dorfman, Edwin; Hindersinn, Raymond R.; and Schwartz, Willis T., Jr., 4,195,014, Cl. 260-45.75R.
- Hinterkeuser, Wilhelm; Herres, Norbert; and Reitemeyer, Paul, to Reifenhauser KG. Apparatus for the cooling, calibrating and straightening of a plate-shaped continuously extruded synthetic-resin strand. 4,194,872, Cl. 425-72.00R.
- Hirakushi, Shuzo: *See—*
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- Hirsch, Harold H., to General Electric Company. X-ray target with substrate of molybdenum alloy. 4,195,247, Cl. 313-330.000.
- Hitachi Cable, Ltd.: *See—*
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- Hitachi Chemical Company, Ltd.: *See—*
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- Hitachi Denshi Kabushiki Kaisha: *See—*
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  - Otofuji, Kiyoshi, 4,195,240, Cl. 307-362.000.
- Hitachi, Ltd.: *See—*
  - Ataka, Saburo; Inao, Kiyohisa; Tada, Kanetosi; Okamura, Yoshinori; and Kimura, Isamu, 4,195,230, Cl. 250-483.000.
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  - Izumida, Yukihiro; Sasaki, Kitaro; and Miyamoto, Yoshinobu, 4,195,246, Cl. 313-292.000.
  - Kajiwara, Toshiyuki, 4,194,382, Cl. 72-243.000.
  - Kimura, Tomoaki; and Nishino, Tadashi, 4,194,553, Cl. 164-87.000.
  - Sato, Takashi, 4,195,238, Cl. 307-270.000.
- Hitachi Metals: *See—*
  - Iwata, Masao, 4,194,932, Cl. 148-102.000.
- Hocker, Eitel: *See—*
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- Hodnett, C. Leroy. Wood scoop. 4,194,778, Cl. 294-9.000.
- Hodr, Miloslav; Holub, Josef; and Stefek, Jiri, to Vyzkumny ustav bavlnarsky. Arrangement for guiding a weft thread end under tension toward a fabric fell in travelling-wave looms. 4,194,537, Cl. 139-194.000.
- Hoechst Aktiengesellschaft: *See—*
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  - Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,879, Cl. 8-39.00B.
  - Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,880, Cl. 8-41.00B.

- Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,881, Cl. 8-41.00B.
- Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,882, Cl. 8-41.00B.
- Bodenbenner, Kurt; and von Plessen, Helmold, 4,194,952, Cl. 203-12.000.
- Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, 4,195,158, Cl. 528-230.000.
- Fuchs, Hermann; and Filzinger, Klaus, 4,194,883, Cl. 8-41.00B.
- Haberhauer, Helmuth, 4,194,466, Cl. 118-657.000.
- Holz, Rudolf; and Haberhauer, Helmuth, 4,194,828, Cl. 355-3.0DD.
- Hunger, Klaus; and Ribka, Joachim, 4,195,020, Cl. 260-157.000.
- Kleiner, Hans-Jerg; and Dursch, Walter, 4,195,035, Cl. 260-545.00P.
- Schermann, Walter; Holst, Arno; and Fischer, Wilhelm, 4,194,995, Cl. 260-14.000.
- Wacker, Adolf, 4,195,125, Cl. 435-2.000.

- Hoesch Werke Aktiengesellschaft: *See—*
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- Hofbauer, Rupert; and Svoboda, Josef, to TMC Corporation. Testing apparatus. 4,194,387, Cl. 73-9.000.
- Hoffmann, Hellmut; Klauke, Erich; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating arthropods with 0-alkyl-0-trifluoromethylsulphonylphenyl-thiono (thiol)-phosphoric acid esters. 4,195,082, Cl. 424-216.000.
- Hoffmann, Karl-Heinz: *See—*
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- Hoffmann, Kurt, to Siemens Aktiengesellschaft. Process for the production of a single transistor memory cell. 4,194,283, Cl. 29-571.000.
- Hoffmann-La Roche Inc.: *See—*
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  - Wells, Robert J.; and Murphy, Peter T., 4,195,179, Cl. 542-444.000.
- Hohm, Reinhard: *See—*
  - Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, 4,194,515, Cl. 131-135.000.
- Holbrook, Fred D.; and Holbrook, Perry, to Columbia Machine, Inc. Method and apparatus for washing mixing containers. 4,194,925, Cl. 134-24.000.
- Holbrook, Perry: *See—*
  - Holbrook, Fred D.; and Holbrook, Perry, 4,194,925, Cl. 134-24.000.
- Holst, Arno: *See—*
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- Holtey, Thomas O.: *See—*
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- Holub, Josef: *See—*
  - Hodr, Miloslav; Holub, Josef; and Stefek, Jiri, 4,194,537, Cl. 139-194.000.
- Holz, Rudolf; and Haberhauer, Helmuth, to Hoechst Aktiengesellschaft. Process and apparatus for developing an electrostatic latent image. 4,194,828, Cl. 355-3.0DD.
- Honda Giken Kogyo Kabushiki Kaisha: *See—*
  - Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, 4,194,587, Cl. 180-90.000.
- Honda, Makoto: *See—*
  - Sato, Yasushi; Ibaragi, Toshio; Ishihara, Masanobu; and Honda, Makoto, 4,195,136, Cl. 525-71.000.
- Honeywell, Inc.: *See—*
  - Troutman, Gary L., 4,195,204, Cl. 370-84.000.
- Honeywell Information Systems Inc.: *See—*
  - Joyce, Thomas F., 4,195,340, Cl. 364-200.000.
  - Joyce, Thomas F.; and Panepinto, William, Jr., 4,195,341, Cl. 364-200.000.
  - Joyce, Thomas F.; and Holtey, Thomas O., 4,195,342, Cl. 364-200.000.
  - Joyce, Thomas F., 4,195,343, Cl. 364-200.000.
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  - Italiaander, Albertus; Kruk, Arie; Nat, Willem G.; and Rees, Nicolaas M. J., 4,194,434, Cl. 91-20.000.
- Hooker Chemicals & Plastics Corp.: *See—*
  - Dorfman, Edwin; Hindersinn, Raymond R.; and Schwartz, Willis T., Jr., 4,195,014, Cl. 260-45.75R.
  - Walker, Leigh E., 4,195,137, Cl. 525-317.000.
- Hoover Universal, Inc.: *See—*
  - Lambarth, Edwin H., 4,195,053, Cl. 264-533.000.
- Hopkins, David A., to Valeron Corporation, The. Face milling cutter. 4,194,860, Cl. 407-42.000.
- Hopper, Thomas P., to Insulating Shade (Limited Partnership). Apparatus for insulating against conductive, convective and radiant heat transmission. 4,194,550, Cl. 160-121.00R.
- Horie, Satoru: *See—*
  - Sakai, Koichi; Horie, Satoru; Kitahara, Shinji; and Suzuki, Kozo, 4,195,203, Cl. 179-1.0GD.
- Horimoto, Masayuki: *See—*
  - Kubota, Shin-ichi; and Horimoto, Masayuki, 4,194,977, Cl. 210-231.000.
- Horling, Peter: *See—*
  - Tilch, Gerhard; Friedrich, Wolfgang; Dobhan, Herbert; Hetterich, Hermann; Horling, Peter; and Finzel, Sigismund, 4,194,752, Cl. 280-11.280.
- Hormann, Karl; and Weigand, Hans, to Kugelfischer Georg Schafer & Co. Bearing-race ring with lubricant and cooling channels. 4,194,797, Cl. 308-187.000.
- Hornaman, E. Chris: *See—*
  - Sexsmith, Frederick H.; and Hornaman, E. Chris, 4,195,140, Cl. 525-523.000.
- Hornbeck, Frederick C.: *See—*
  - Crosby, Edward G.; Henning, James E.; and Hornbeck, Frederick C., 4,195,114, Cl. 428-404.000.
- Hoshino, Yasutaka; and Scott, Fredric W., to Cornell Research Foundation, Inc. Propagation of feline infectious peritonitis virus in tissue cultures. 4,195,130, Cl. 435-235.000.
- Hotto, Robert: *See—*
  - Lester, Robert W.; and Hotto, Robert, 4,194,833, Cl. 355-14.0CU.
- Houdaille Industries, Inc.: *See—*
  - Snow, John P.; and Callahan, James J., 4,194,593, Cl. 184-7.00D.
- Houghton, Joseph Y., co-trustees: *See—*
  - Burke, Oliver W., Jr., deceased; and Humphreys, Victor T., 4,194,920, Cl. 106-308.00M.
- Howmet Corporation: *See—*
  - Biebuyck, Lawrence F., 4,194,776, Cl. 292-346.000.
- Hoy, John; Emby, Gordon N.; and Meerholz, Edgar F. Veterinary compositions and method for controlling anthropod ectoparasites. 4,195,083, Cl. 424-200.000.
- Hoy, Kenneth L.: *See—*
  - Knopf, Robert J.; and Hoy, Kenneth L., 4,195,167, Cl. 528-408.000.
- Hoyt, Donald L.: *See—*
  - Bousaid, Issam S.; Hoyt, Donald L.; and Korstad, Ralph J., 4,194,562, Cl. 166-245.000.
- Hrivnak, John G., to Sandvik Conveyor GmbH. Conveyor-belt system. 4,194,614, Cl. 198-487.000.
- Hsu, Mitchell M. C. Self-aligning ring joint for joining concrete pipes having ends adapted for use therewith. 4,194,766, Cl. 285-110.000.
- Huang, Liang H.: *See—*
  - Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,195,079, Cl. 424-122.000.
- Huang, Tracy J.: *See—*
  - Chung, Harold S.; Johnson, George C.; and Huang, Tracy J., 4,194,969, Cl. 209-5.000.
- Hudson, Thomas J.; Huni, Jean-Paul R.; Potocnik, Vinko; and MacMillan, Donald W., to Alcan Research and Development Limited. Electrolytic reduction cells. 4,194,959, Cl. 204-243.00R.
- Huffman, William A.; Lowrey, R. Dean; Nicholson, Geoffrey C.; and Wittnebel, Bruce, to Minnesota Mining and Manufacturing Company. Inhibitor removing bath for direct positive color photographic development. 4,194,911, Cl. 430-357.000.
- Hughes Aircraft Company: *See—*
  - Prince, Paul R., 4,195,273, Cl. 333-165.000.
- Hughes, Michael P.: *See—*
  - Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., 4,195,188, Cl. 562-549.000.
- Huizinga, Jan Jakob: *See—*
  - Grimm, Werner, 4,194,764, Cl. 280-801.000.
- Humphreys, Victor T.: *See—*
  - Burke, Oliver W., Jr., deceased; and Humphreys, Victor T., 4,194,920, Cl. 106-308.00M.
- Humphries, Richard L., to Kliklok Corporation. Leakproof container. 4,194,676, Cl. 229-16.00A.
- Hunger, Klaus; and Ribka, Joachim, to Hoechst Aktiengesellschaft. Dichloro-phenyl-azo-acetoacetylamino-benzimidazolone pigments. 4,195,020, Cl. 260-157.000.
- Huni, Jean-Paul R.: *See—*
  - Hudson, Thomas J.; Huni, Jean-Paul R.; Potocnik, Vinko; and MacMillan, Donald W., 4,194,959, Cl. 204-243.00R.
- Hunter Douglas International N.V.: *See—*
  - Hennequin, Petrus J., 4,194,551, Cl. 160-178.00R.
- Huostila, Markku; and Haapsaari, Timo, to Oy Nokia Ab & Valmet Oy. Transferring a web from a pick-up fabric to a flow-through drying wire. 4,194,947, Cl. 162-207.000.
- Hurd, Donald J.; and Morgan, Gerard J., III. Plastic locking ring and method of making. 4,194,772, Cl. 292-256.650.
- Hurlemann, Ernst: *See—*
  - Zellweger, Jurg; and Hurlemann, Ernst, 4,194,433, Cl. 89-190.000.
- Hurler, Herbert T.: *See—*
  - Edwards, William J.; and Hurler, Herbert T., 4,194,456, Cl. 112-176.000.
- Hurlock, John R.; and Ballweber, Edward G., to Nalco Chemical Company. Phosphorus acid to stabilize quaternized polyacrylamide. 4,195,003, Cl. 260-29.4UA.
- Hutchins, Ned M.: *See—*
  - Studebaker, Irving G.; and Hutchins, Ned M., 4,194,789, Cl. 299-2.000.
- Huth, Gerhard: *See—*
  - Baresel, Detlef; Scharner, Peter; Huth, Gerhard; and Gillert, Winfried, 4,194,994, Cl. 252-518.000.
- Huzyak, Paul, to Gulf & Western Manufacturing Company. Modular transducer assembly for rolling mill roll adjustment mechanism. 4,194,383, Cl. 72-245.000.
- Hysell, Ellen M.: *See—*
  - Billings, Ronald P.; and Hysell, Ellen M., 4,194,965, Cl. 208-113.000.
- I.E.I. Proprietary Limited: *See—*
  - Cole, Martin T., 4,195,289, Cl. 340-554.000.
- I-T-E Imperial Corporation: *See—*
  - Aslan, Wilfred A.; Guaglione, Giovanni P.; McCloud, James R.; and Meier, Henry G., 4,195,211, Cl. 200-153.00D.

- Ibaragi, Toshio: *See—*
  - Sato, Yasushi; Ibaragi, Toshio; Ishihara, Masanobu; and Honda, Makoto, 4,195,136, Cl. 525-71.000.
- Ibigawa Electric Industry Ltd.: *See—*
  - Moriya, Yoshiro; Ikai, Kazuhito; and Tanaka, Makoto, 4,194,914, Cl. 106-18.140.
- Ichisaka, Teruo; and Ikegami, Tadao, to Chlorine Engineers Corp., Ltd. Method of making a bipolar electrode. 4,194,670, Cl. 228-179.000.
- ICI Americas Inc.: *See—*
  - Earley, Roger A., 4,195,189, Cl. 568-730.000.
  - Markiewitz, Kenneth H.; and Restaino, Alfred J., 4,195,146, Cl. 526-261.000.
- Ida, Masatoshi, to Olympus Optical Co., Ltd. Apparatus for detecting information index signal from magnetic tape. 4,195,319, Cl. 360-72.100.
- Ide, Tsuneyuki; Takagi, Ken-ichi; Watanabe, Michio; Ohhira, Seiichi; Fukumori, Masahito; and Kondo, Yoshikazu, to Toyo Kohan Co., Ltd. Hard alloyed powder and method of making the same. 4,194,900, Cl. 75-0.50C.
- Ihara Chemical Industry Co., Ltd.: *See—*
  - Harada, Takao; Wada, Nobuhide; Ohashi, Hideaki; Koike, Wataro; and Yazawa, Chihiro, 4,195,037, Cl. 260-575.000.
- Iida, Takamitsu: *See—*
  - Fukui, Saburo; Yamamoto, Tsutomu; and Iida, Takamitsu, 4,195,129, Cl. 435-182.000.
- Ikai, Kazuhito: *See—*
  - Moriya, Yoshiro; Ikai, Kazuhito; and Tanaka, Makoto, 4,194,914, Cl. 106-18.140.
- Ikegai Tekko Kabushiki Kaisha: *See—*
  - Yamamoto, Tamotsu, 4,195,250, Cl. 318-561.000.
- Ikegami, Tadao: *See—*
  - Ichisaka, Teruo; and Ikegami, Tadao, 4,194,670, Cl. 228-179.000.
- Imada, Yusuke, to Sanyo Kiki Kabushiki Kaisha. Speedup device for reciprocating cylinders. 4,194,436, Cl. 91-420.000.
- Imai, Hirokatsu: *See—*
  - Matsumoto, Chiaki; Imai, Hirokatsu; and Okawa, Masaru, 4,194,730, Cl. 266-275.000.
- Imperial Chemical Industries Limited: *See—*
  - Bobbin, Eldred G. E., 4,195,168, Cl. 528-495.000.
  - Goulding, Terence; and Orton, Michael L., 4,195,139, Cl. 525-441.000.
  - Punja, Nazim, 4,195,033, Cl. 260-464.000.
  - Sheard, Dennis R.; and Taylor, Roger W., 4,195,112, Cl. 428-288.000.
- Inao, Kiyohisa: *See—*
  - Ataka, Saburo; Inao, Kiyohisa; Tada, Kanetosi; Okamura, Yoshinori; and Kimura, Isamu, 4,195,230, Cl. 250-483.000.
- Indiana University Foundation: *See—*
  - Rhine, Samuel A.; Thompson, Joseph F.; and Palmer, Catherine G., 4,194,513, Cl. 128-750.000.
- Ing. C. Olivetti & Co., S.p.A.: *See—*
  - Chelin, Cesare; and Costa, Armando, 4,195,321, Cl. 360-98.000.
- Ingalls, Charles C. Harvest separator. 4,194,346, Cl. 56-328.00R.
- Inoue, Mitsuhiro; and Maeda, Yo, to Hitachi Chemical Company, Ltd. Frame of a game racket. 4,194,738, Cl. 273-73.00C.
- Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, to Kao Soap Co., Ltd. Hydroxyalkyl-etherified glycolipid ester. 4,195,177, Cl. 536-116.000.
- Inoue, Takemi: *See—*
  - Sato, Masato; and Inoue, Takemi, 4,194,460, Cl. 115-73.000.
- Institut Francais du Petrole: *See—*
  - Mimoun, Hubert; and Charpentier, Robert, 4,195,039, Cl. 260-597.00R.
- Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR: *See—*
  - Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,194,435, Cl. 91-234.000.
- Institut Gornogo Dela Sibirskogo Otdelenia Nauk SSSR: *See—*
  - Mukhin, Zhores G.; Vlasov, Vladimir N.; and Mikhailov, Alexei P., 4,194,611, Cl. 193-2.00B.
- Instron Corporation: *See—*
  - De Nicola, Joseph P., 4,194,402, Cl. 73-859.000.
- Instytut Przemyslu Farmaceutycznego: *See—*
  - Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.
- Insulating Shade (Limited Partnership): *See—*
  - Hopper, Thomas P., 4,194,550, Cl. 160-121.00R.
- Intel Corporation: *See—*
  - Yen, Yao T., 4,195,258, Cl. 324-73.0AT.
- International Business Machines Corporation: *See—*
  - Andresen, Rolf, 4,195,320, Cl. 360-78.000.
  - Barner, Robert P.; Gulick, Anne M.; deVeer, John A.; and Oblonsky, Jan G., 4,195,351, Cl. 364-900.000.
  - Cox, Allen R.; Pascual, Rafael; and Rigbey, Leonard J., 4,195,322, Cl. 360-103.000.
  - Crosby, Edward G.; Henning, James E.; and Hornbeck, Frederick C., 4,195,114, Cl. 428-404.000.
  - Feistel, Horst, 4,195,196, Cl. 178-22.000.
  - Feistel, Horst, 4,195,200, Cl. 178-22.000.
  - Jambotkar, Chakrapani G., 4,195,307, Cl. 357-56.000.
- International Flavors & Fragrances Inc.: *See—*
  - Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,099, Cl. 426-536.000.
  - Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,100, Cl. 426-536.000.
- International Lead Zinc Research Organization, Inc.: *See—*
  - Radtke, Schrade F.; Carr, Dodd S.; and Kronstein, Max, 4,195,002, Cl. 260-29.20E.
- International Nickel Company, Inc., The: *See—*
  - Luch, Daniel, 4,195,117, Cl. 428-626.000.
- International Standard Electric Corporation: *See—*
  - Henrion, Michael Andre R.; and van Brussel, Marcel A., 4,195,205, Cl. 370-10.000.
- International Telephone and Telegraph Corporation: *See—*
  - Friese, Egon F., 4,195,219, Cl. 219-388.000.
  - November, Milton H., 4,194,385, Cl. 73-1.00R.
  - Okerblom, Charles L., 4,194,722, Cl. 251-305.000.
  - VanEtten, James P., 4,195,299, Cl. 343-103.000.
- Intersil, Inc.,: *See—*
  - Bingham, David, 4,195,266, Cl. 330-9.000.
- Iowa State University Research Foundation, Inc.: *See—*
  - Kraus, George A., 4,195,026, Cl. 260-346.110.
- Irick, Gether, Jr.; and Wang, Richard H. S., to Eastman Kodak Company. Piperidinyl hydrogen 2-hydroxyalkyl phosphates and metal salts thereof which compounds are useful as ultraviolet stabilizers for organic compositions. 4,194,989, Cl. 252-400.00A.
- Ishihara, Masanobu: *See—*
  - Sato, Yasushi; Ibaragi, Toshio; Ishihara, Masanobu; and Honda, Makoto, 4,195,136, Cl. 525-71.000.
- Ishii, Toshiaki; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Elevator landing control apparatus. 4,194,594, Cl. 187-29.00R.
- Ishikawa, Masaoki. Method for converting an analog voltage to a digital value free from conversion errors, and an integrating type analog-to-digital converter capable of eliminating conversion errors. 4,195,283, Cl. 340-347.0NT.
- Ishizaka, Teisuke: *See—*
  - Satoh, Akira; and Ishizaka, Teisuke, 4,194,414, Cl. 74-674.000.
- Italiaander, Albertus; Kruk, Arie; Nat, Willem G.; and Rees, Nicolaas M. J., to Hoogovens Ijmuiden, B.V. Device for controlling a longitudinally movable driving means. 4,194,434, Cl. 91-20.000.
- Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, to Canon Kabushiki Kaisha. Device for confirming the depth of focus of a camera. 4,194,819, Cl. 354-43.000.
- Ito, Tadashi: *See—*
  - Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.
- Ito, Thomas I.: *See—*
  - Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.
- Itoh, Takahisa, to Toyo Kogyo Co., Ltd. Foldable seat structures for automobiles. 4,194,782, Cl. 296-65.00R.
- Itzuka, Haruhiko: *See—*
  - Kato, Fumiaki; Itzuka, Haruhiko; Sugasawa, Fukashi; and Matsumoto, Junichiro, 4,194,417, Cl. 74-866.000.
- Iwai, Kazuhiro: *See—*
  - Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, 4,194,587, Cl. 180-90.000.
- Iwai, Shinji: *See—*
  - Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.
- Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, to Nissan Motor Company, Limited. Governor having ability of removing dust from working fluid in automatic transmission. 4,194,518, Cl. 137-15.000.
- Iwaoka, Kazuo; Toh, Tagao; and Fukada, Minoru, to Matsushita Electric Industrial Co., Ltd. Catalyst element for cleaning exhaust gases. 4,195,063, Cl. 422-180.000.
- Iwata, Masao, to Hitachi Metals. Fe/Cr/Co Permanent magnetic alloys and method of production thereof. 4,194,932, Cl. 148-102.000.
- Izumida, Yukihiro; Sasaki, Kitaro; and Miyamoto, Yoshinobu, to Hitachi, Ltd. Support structure for directly-heated cathode of cathode ray tube. 4,195,246, Cl. 313-292.000.
- J. M. Voith GmbH: *See—*
  - Pfalzer, Lothar; and Fischer, Siegbert, 4,194,968, Cl. 209-3.000.
- J. R. Pierson Building Systems Limited: *See—*
  - Peirson, John R.; and Lynch, Deane A. L., 4,194,328, Cl. 52-86.000.
- Jablonski, Werner: *See—*
  - Mallek, Heinz; Ermisch, Dorothee; and Jablonski, Werner, 4,194,455, Cl. 110-251.000.
- Jackson, Robert V., to McCulloch Corporation. Self generating ignition system. 4,194,482, Cl. 123-148.0CC.
- Jaeggi, Knut A.: *See—*
  - Frei, Jurg; Jaeggi, Knut A.; Ostermayer, Franz; and Schroter, Herbert, 4,195,090, Cl. 424-263.000.
- Jaffe, Michael L.: *See—*
  - Davis, Herbert L.; Jaffe, Michael L.; LaNieve, Herman L., III; and Powers, Edward J., 4,195,052, Cl. 264-210.500.

Davis, Herbert L.; Jaffe, Michael L.; and Besso, Michael M., 4,195,161, Cl. 528-309.000.

Jagenberg Werke Aktiengesellschaft: *See—*

Knoll, Heiko; and Kurth, Wilfried, 4,194,421, Cl. 83-62.100.

Jager, Klara B. E., heir: *See—*

Jager, Valentin, deceased; and Jager, Klara B. E., heir, 4,194,404, Cl. 74-44.000.

Jager, Tilo: *See—*

Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,194,284, Cl. 29-509.000.

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Jahns, Hans O., to Exxon Production Research Company. Method for reducing frost heave of refrigerated gas pipelines. 4,194,856, Cl. 405-130.000.

Jakobs, Ewa: *See—*

Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Jambotkar, Chakrapani G., to International Business Machines Corporation. Fabricating integrated circuits incorporating high-performance bipolar transistors. 4,195,307, Cl. 357-56.000.

Jamet, Michel: *See—*

Bertrand, Pierre; Jamet, Michel; Strub, Jacques; and Walter, Eric, 4,195,337, Cl. 364-106.000.

Jansen, Philip: *See—*

Swanson, George G.; Strom, Robert E.; and Jansen, Philip, 4,194,300, Cl. 34-217.000.

Jansen, Rolf: *See—*

Paulsen, Hans; Jansen, Rolf; and Stadler, Peter, 4,195,173, Cl. 536-17.00R.

Jansson, Sven A.: *See—*

Gransell, Ake; Jansson, Sven A.; and Sporrong, Malte, 4,194,922, Cl. 134-1.000.

Jaros, Philip W. Latching device. 4,194,773, Cl. 292-267.000.

Jasper, Mark F., to American Hospital Supply Corporation. Shipping container and blank for forming same. 4,194,678, Cl. 229-23.00R.

Jennings, Frederick A.; and Bowen, Thomas C., to Sportscoach Corporation. Shock isolation coupling. 4,194,373, Cl. 64-14.000.

Jervis B. Webb Company: *See—*

MacMunn, George D.; and Kavieff, Shelden M., 4,195,347, Cl. 364-478.000.

JFL Development Company: *See—*

Martuch, Leon L., 4,194,936, Cl. 156-67.000.

JLG Industries, Inc.: *See—*

Grove, John L., 4,194,639, Cl. 212-59.00R.

Grove, John L.; and Wagner, Gregg A., 4,194,723, Cl. 254-9.90C.

Joekel, Alfred, to Balcke-Durr Aktiengesellschaft. Device for the cold working of heat exchanger tubing for the attachment of spiral fins. 4,194,381, Cl. 72-100.000.

John Thomas Batts, Inc.: *See—*

Garrison, Judd F., 4,194,274, Cl. 24-248.00R.

Johns-Manville Corporation: *See—*

Byrd, Carlisle O., Jr., 4,194,282, Cl. 29-451.000.

Johnson, Archie L. Car washing method and apparatus. 4,194,923, Cl. 134-6.000.

Johnson, Edwin L.: *See—*

Peniston, Quintin P.; and Johnson, Edwin L., 4,195,175, Cl. 536-20.000.

Johnson, George C.: *See—*

Chung, Harold S.; Johnson, George C.; and Huang, Tracy J., 4,194,969, Cl. 209-5.000.

Johnson & Johnson: *See—*

Ness, Irving S.; and Fechillas, Michael R., 4,194,507, Cl. 128-287.000.

Johnson, Stanley N.: *See—*

Kenny, Peter; and Johnson, Stanley N., 4,194,790, Cl. 299-79.000.

Johnson, Thomas L. Tool holder and components thereof. 4,194,713, Cl. 248-231.000.

Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., to Swift & Company. Handling pork loins. 4,194,267, Cl. 17-52.000.

Jones, Eric. M., to Karl Storz Endoscopy-America, Inc. Lamp changing module. 4,195,331, Cl. 362-368.000.

Jones, Howard: *See—*

Mulvey, Dennis; Jones, Howard; and Zimmerman, Morris, 4,195,023, Cl. 548-209.000.

Jones, John F.: *See—*

Li, George S.; and Jones, John F., 4,195,135, Cl. 525-69.000.

Jones, Russell L.; Keller, George E., II; and Wells, Rex C., to Union Carbide Corporation. Rapid pressure swing adsorption process with high enrichment factor. 4,194,892, Cl. 55-58.000.

Jonsson, Ulf L. P., to Gambro AB. Pressure monitoring device. 4,194,974, Cl. 210-90.000.

Jordi, Albert P.: *See—*

Thery, Jean P.; Alban, Claude M.; and Jordi, Albert P., 4,194,572, Cl. 169-66.000.

Jordon, Walter L. Self balancing diabolo top with attachment for vertical spinning. 4,194,316, Cl. 46-60.000.

Joy Manufacturing Company: *See—*

Bailey, Edward A.; and Ordway, James F., 4,194,579, Cl. 175-57.000.

Joyce, Thomas F., to Honeywell Information Systems Inc. First in first out activity queue for a cache store. 4,195,340, Cl. 364-200.000.

Joyce, Thomas F.; and Panepinto, William, Jr., to Honeywell Information Systems Inc. Initialization of cache store to assure valid data. 4,195,341, Cl. 364-200.000.

Joyce, Thomas F.; and Holtey, Thomas O., to Honeywell Information Systems Inc. Multi-configurable cache store system. 4,195,342, Cl. 364-200.000.

Joyce, Thomas F., to Honeywell Information Systems Inc. Round robin replacement for a cache store. 4,195,343, Cl. 364-200.000.

JSJ Corporation: *See—*

Kihnke, Lee S.; and Kruse, Gary, 4,194,341, Cl. 53-282.000.

Jumberca, S.A.: *See—*

Guell, Jose M. D., 4,194,374, Cl. 66-93.000.

Jumel, Yves, to Saft-Societe des Accumulateurs Fixes et de Traction. Non-aqueous electrolyte lithium battery with improved storage life. 4,195,123, Cl. 429-194.000.

Jung, Dieter, to Klockner-Werke AG. Compensation for differing heights of different molds clamped between the mold-clamping plates of an injection-molding machine. 4,195,048, Cl. 264-40.100.

Junzo Ozaki: *See—*

Yasuda, Mieji, 4,194,397, Cl. 73-314.000.

K-Tron International, Inc.: *See—*

Bullivant, Kenneth W.; and Van Ostenbridge, Ron, 4,194,649, Cl. 222-55.000.

Kabushiki Kaisha Fujikoshi: *See—*

Satoh, Akira; and Ishizaka, Teisuke, 4,194,414, Cl. 74-674.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*

Kitagawa, Hiroshi, 4,194,425, Cl. 84-1.010.

Kabushiki Kaisha Meidensha: *See—*

Yoshida, Susumu; and Kimura, Kiyomitu, 4,195,257, Cl. 324-73.00R.

Kagan, Moisei R.: *See—*

Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K., 4,194,945, Cl. 162-135.000.

Kaiser Aluminum & Chemical Corporation: *See—*

Mack, Thomas A., 4,194,388, Cl. 73-37.000.

Kaiser, Mark E.; and Smith, Harry A., to Dow Chemical Company, The. Novel 2-amido- or 2-amino-alkyl ethers of polyhydric polyphenols and process for preparing same. 4,195,154, Cl. 528-98.000.

Kaiser, Thomas J., to Champion International Corporation. Paperboard corner protective device. 4,194,630, Cl. 206-586.000.

Kajiwara, Toshiyuki, to Hitachi, Ltd. Rolling mill. 4,194,382, Cl. 72-243.000.

Kakizaki, Kimio: *See—*

Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,194,384, Cl. 72-325.000.

Kakugo, Masahiro: *See—*

Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, 4,195,145, Cl. 526-137.000.

Kakuichi Co. Ltd.: *See—*

Tanaka, Kenichi, 4,194,942, Cl. 156-433.000.

Kakutani, Nobuyasu, to Sharp Kabushiki Kaisha. Combined electronic digital scale and calculator storing selectable programs. 4,195,348, Cl. 364-562.000.

Kalasek, Karl, to Vereinigte Edelstahlwerke Aktiengesellschaft, Firma. Sterilization apparatus for infusion solutions or the like, filled in containers. 4,195,061, Cl. 422-109.000.

Kalfoglou, George, to Texaco Inc. Surfactant oil recovery method for use in high temperature formations containing water having high salinity and hardness. 4,194,565, Cl. 166-275.000.

Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia. Device for discrete control of thyristor-pulse converters. 4,195,236, Cl. 307-252.00K.

Kalinichenko, Anatoly Y., to Vsesojuzny Nauchno-Issledovatelsky Institut Vagonostroenia. Digital control device for multiphase thyristor-pulse d.c. converter. 4,195,336, Cl. 363-137.000.

Kameyama, Shoji: *See—*

Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.

Kanazawa, Tadashi: *See—*

Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.

Kano, Gota: *See—*

Takagi, Hiromitsu; Kano, Gota; and Teramoto, Iwao, 4,194,927, Cl. 148-1.500.

Kansai Paint Co., Ltd.: *See—*

Fukui, Saburo; Yamamoto, Tsutomu; and Iida, Takamitsu, 4,195,129, Cl. 435-182.000.

Kao Soap Co., Ltd.: *See—*

Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.

Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,195,177, Cl. 536-116.000.

Karamian, Narbik A. Method for assaying endotoxins. 4,195,225, Cl. 250-373.000.

Karl Mayer Textilmaschinen Fabrik GmbH: *See—*

Kohl, Karl, 4,194,943, Cl. 156-441.000.

Karl Storz Endoscopy-America, Inc.: *See—*

Jones, Eric. M., 4,195,331, Cl. 362-368.000.

Karlov, Frank J.: *See—*

Groh, Allen R.; Karlov, Frank J.; and Happ, Lawrence R., 4,194,744, Cl. 274-37.000.

Karlsson, Ulf R., to L-LT-Produkter. Boot blank. 4,194,308, Cl. 36-9.00R.

Kastinger, Hermann. Ski boot. 4,194,309, Cl. 36-117.000.

Kato, Fumiaki; Itzuka, Haruhiko; Sugasawa, Fukashi; and Matsumoto, Junichiro, to Nissan Motor Company, Limited. Apparatus for improving fuel economy of multi-cylinder I. C. engine followed by automatic transmission via hydrokinetic unit. 4,194,417, Cl. 74-866.000.

Kato, Kunioki: *See—*

Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.

Katona, Joseph W., to Mills Products, Inc. Self-sealing solar collector shield. 4,194,334, Cl. 52-397.000.

Kaufman, Jacquelyn: *See—*

Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.

Kavieff, Shelden M.: *See—*

MacMunn, George D.; and Kavieff, Shelden M., 4,195,347, Cl. 364-478.000.

Kawagoe, Hiroshi: *See—*

Ohsawa, Mitsuo; and Kawagoe, Hiroshi, 4,194,743, Cl. 274-1.00E.

Kawai Musical Instrument Mfg. Co. Ltd.: *See—*

Deutsch, Ralph; and Deutsch, Leslie J., 4,194,426, Cl. 84-1.240.

Deutsch, Ralph, 4,194,427, Cl. 84-1.240.

Kawai, Shigeyuki: *See—*

Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.

Kawakatsu, Yasuyuki: *See—*

Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.

Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, to Seitetsu Kagaku Co., Ltd. Process for producing p-hydroxybenzaldehyde. 4,195,041, Cl. 260-600.00R.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*

Sato, Masato; and Inoue, Takemi, 4,194,460, Cl. 115-73.000.

Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,194,930, Cl. 148-16.600.

KB-Denver, Inc.: *See—*

Pounds, Walter R.; and Dunlap, Bill D., 4,195,210, Cl. 200-159.00A.

Kearns, Paul. Johnny bolt cutter. 4,194,286, Cl. 30-226.000.

Keirns, Michael L.: *See—*

Martin, Ernest N.; and Keirns, Michael L., 4,194,651, Cl. 222-108.000.

Keirsey, James L.: *See—*

Baker, Clifford B.; and Keirsey, James L., 4,194,519, Cl. 137-15.100.

Keller, George E., II: *See—*

Jones, Russell L.; Keller, George E., II; and Wells, Rex C., 4,194,892, Cl. 55-58.000.

Keller Research & Development, Inc.: *See—*

Keller, Russell E., 4,194,861, Cl. 408-109.000.

Keller, Russell E., to Keller Research & Development, Inc. Compact dowel hole spacing and drilling device. 4,194,861, Cl. 408-109.000.

Kelly, Leonard. Method and apparatus for sorting radioactive material. 4,194,634, Cl. 209-589.000.

Kelsey Hayes Co.: *See—*

Evans, Anthony C.; and Goering, Karl, 4,194,597, Cl. 188-73.500.

Kempka, Dorothy E. Garbage can lock. 4,194,774, Cl. 292-304.000.

Kennametal Inc.: *See—*

Montgomery, Robert H., Jr.; and Oaks, Seibert S., 4,194,791, Cl. 299-86.000.

Kennington, Frank W.; and Dimitracopoulos, Panayotis C. Quadrant drive. 4,194,415, Cl. 74-805.000.

Kenny, Peter; and Johnson, Stanley N., to Coal Industry (Patents) Ltd. Rock cutting tip inserts. 4,194,790, Cl. 299-79.000.

Kepler, James L., to Allis-Chalmers Corporation. Spherical valve seal piston detecting and locking arrangement. 4,194,528, Cl. 137-554.000.

Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung: *See—*

Mallek, Heinz; Ermisch, Dorothee; and Jablonski, Werner, 4,194,455, Cl. 110-251.000.

Kesling, Haven S., Jr.; and Zehner, Lee R., to Atlantic Richfield Company. Preparation of unsaturated monoesters by catalytic oxidative carbonylation of diolefins. 4,195,184, Cl. 560-207.000.

Kesling, Peter C. Method for molding air holes into a tooth positioning and retaining appliance. 4,195,046, Cl. 264-16.000.

Keyes Fibre Company: *See—*

Lowery, Louie R., 4,194,781, Cl. 294-61.000.

Khalandovsky, Idel N.: *See—*

Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K., 4,194,945, Cl. 162-135.000.

Khorunzhy, Anatoly I.: *See—*

Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K., 4,194,945, Cl. 162-135.000.

Kidd, Al J. Remotely controlled aircraft. 4,194,317, Cl. 46-76.00R.

Kihnke, Lee S.; and Kruse, Gary, to JSJ Corporation. Hand operated filling and sealing device. 4,194,341, Cl. 53-282.000.

Kilburn, James E.: *See—*

Safranko, John W.; Burnett, Craig R.; and Kilburn, James E., 4,194,924, Cl. 134-12.000.

Killebrew, John G.: *See—*

Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., 4,194,267, Cl. 17-52.000.

Killmeyer, Charles W., to PPG Industries, Inc. Apparatus for making pultruded product. 4,194,873, Cl. 425-93.000.

Kimbrough, Laurence B.; and Van Renssen, Marinus, to RCA Corporation. Apparatus for applying sealing material to a cathode-ray tube. 4,194,463, Cl. 118-409.000.

Kimura, Isamu: *See—*

Ataka, Saburo; Inao, Kiyohisa; Tada, Kanetosi; Okamura, Yoshinori; and Kimura, Isamu, 4,195,230, Cl. 250-483.000.

Kimura, Kiyomitu: *See—*

Yoshida, Susumu; and Kimura, Kiyomitu, 4,195,257, Cl. 324-73.00R.

Kimura, Tomoaki; and Nishino, Tadashi, to Hitachi, Ltd. Cooling and guide method and apparatus in a continuous casting machine. 4,194,553, Cl. 164-87.000.

Kimura, Yoshiharu: *See—*

Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,195,177, Cl. 536-116.000.

Kimura, Yukichi: *See—*

Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.

King Industries, Inc.: *See—*

Gallacher, Lawrence V., 4,194,905, Cl. 75-101.0BE.

King, John F.: *See—*

Unsworth, William; King, John F.; and Bradshaw, Stephen L., 4,194,908, Cl. 75-168.00J.

King, Ray J., to Wisconsin Alumni Research Foundation. Apparatus for measuring microwave electromagnetic fields. 4,195,262, Cl. 455-67.000.

Kingsford, Ted I., to Plough, Inc. Adjustable cosmetic wiper. 4,194,848, Cl. 401-5.000.

Kinta, Manzo: *See—*

Inoue, Shigeo; Kimura, Yoshiharu; and Kinta, Manzo, 4,195,177, Cl. 536-116.000.

Kirchweger, Karl; Fachbach, Heinz; Thien, Gerhard; and Greier, Josef, to Hans List. Internal combustion engine having a noise suppressing encapsulation. 4,194,484, Cl. 123-195.00C.

Kirillov, Viktor I.: *See—*

Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., 4,195,236, Cl. 307-252.00K.

Kiscaden, Roy W.: *See—*

Reed, Terry J.; Smith, Jack R.; and Kiscaden, Roy W., 4,195,231, Cl. 290-40.00R.

Kitagawa, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Key code generator. 4,194,425, Cl. 84-1.010.

Kitahara, Shinji: *See—*

Sakai, Koichi; Horie, Satoru; Kitahara, Shinji; and Suzuki, Kozo, 4,195,203, Cl. 179-1.0GD.

Kiwala, Jacob: *See—*

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,099, Cl. 426-536.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,100, Cl. 426-536.000.

Klauke, Erich: *See—*

Hoffmann, Hellmut; Klauke, Erich; and Hammann, Ingeborg, 4,195,082, Cl. 424-216.000.

Klein, Gustave J., to Revlon, Inc. Device in permanent waving. 4,194,294, Cl. 33-178.00B.

Kleiner, Hans-Jerg; and Dursch, Walter, to Hoechst Aktiengesellschaft. Alkane-bisalkyl-phosphinic anhydrides and process for the manufacture of alkane-phosphonic anhydrides and alkane-bis alkyl-phosphinic anhydrides. 4,195,035, Cl. 260-545.00P.

Klie, Wolfgang: *See—*

Reidelbach, Willi; Renner, Hermann; and Klie, Wolfgang, 4,194,763, Cl. 280-784.000.

Kliklok Corporation: *See—*

Humphries, Richard L., 4,194,676, Cl. 229-16.00A.

Kling, Knut A., to Sandvik Aktiebolag. Axial bearing for rotary drill bit. 4,194,794, Cl. 308-3.800.

Klinger AG: *See—*

Deinlein-Kalb, Hans, 4,194,390, Cl. 73-61.00R.

Klockner-Werke AG: *See—*

Jung, Dieter, 4,195,048, Cl. 264-40.100.

Klomp, Franciscus M.; and Overmars, Marinus, to U.S. Philips Corporation. Packaged electric lamp. 4,194,623, Cl. 206-418.000.

Klose, Karl: *See—*

Bergmann, Udo; and Klose, Karl, 4,195,223, Cl. 250-216.000.

Knickerbocker, Robert H., to Siemon Company, The. Wire installing tool. 4,194,256, Cl. 7-107.000.

Knoll, Heiko; and Kurth, Wilfried, to Jagenberg Werke Aktiengesellschaft. Safety system for the drive of a synchronous cross cutter. 4,194,421, Cl. 83-62.100.

Knop, Hans G., to Dr. Ing. Rudolf Hell GmbH. Circuit arrangement for recognizing and adjusting color components. 4,194,839, Cl. 356-407.000.

Knopf, Robert J.; and Hoy, Kenneth L., to Union Carbide Corporation. Gradient polymers of two or more cyclic, organic, ring-opening, addition polymerizable monomers and methods for making same. 4,195,167, Cl. 528-408.000.

Knopf, Robert J.: *See—*

Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., 4,195,160, Cl. 528-297.000.

Knotek, Jaroslav: *See—*

Svoboda, Josef; Weigl, Erwin; Krob, Erwin; Stritzl, Karl; and Knotek, Jaroslav, 4,194,758, Cl. 280-605.000.

Knowles, Daniel H., to Corning Glass Works. Optical waveguide coating assembly. 4,194,462, Cl. 118-405.000.

Knox, Benjamin H.: *See—*
Frankfort, Hans R. E.; and Knox, Benjamin H., 4,195,051, Cl. 264-176.00F.

Kobayashi, Masahiro; and Yabuhara, Tadao, to Otsuka Chemical Co., Ltd. Process for stabilizing aqueous solution of acrylic or methacrylic hydrazide polymers. 4,195,007, Cl. 260-29.6HN.

Kober, Marvin, to O.K. Machine and Tool Corporation. Battery-powered wire wrapping tool and wrapping bit. 4,194,700, Cl. 242-7.170.

Kohl, Karl, to Karl Mayer Textilmaschinen Fabrik GmbH. Modified warp knitting machine for the production of netting by heat sealed weft insertion. 4,194,943, Cl. 156-441.000.

Kohler, Jurgen: *See—*
Schiek, Burkhard; and Kohler, Jurgen, 4,195,271, Cl. 333-161.000.

Koike, Wataro: *See—*
Harada, Takao; Wada, Nobuhide; Ohashi, Hideaki; Koike, Wataro; and Yazawa, Chihiro, 4,195,037, Cl. 260-575.000.

Koleske, Joseph V.: *See—*
Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., 4,195,160, Cl. 528-297.000.

Kolobanov, Nikolai I.: *See—*
Borodin, Valerian A.; Sudakova, Lidia M.; and Kolobanov, Nikolai I., 4,194,538, Cl. 139-194.000.

Kolodziejczyk, Pawel: *See—*
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Komuro, Katsusuke: *See—*
Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, 4,194,587, Cl. 180-90.000.

Kondo, Yoshikazu: *See—*
Ide, Tsuneyuki; Takagi, Ken-ichi; Watanabe, Michio; Ohhira, Seiichi; Fukumori, Masahito; and Kondo, Yoshikazu, 4,194,900, Cl. 75-0.50C.

Konig, Klaus: *See—*
Reichmann, Wolfgang; Konig, Klaus; and Koster, Johannes, 4,195,031, Cl. 260-453.00P.

Kono, Masao: *See—*
Tani, Tatsuo; Ota, Sakae; and Kono, Masao, 4,194,837, Cl. 355-75.000.

Kooijmans, Petrus G.: *See—*
Van Acker, Eduard M. A. A. J.; Kooijmans, Petrus G.; and de Heer, Aart, 4,195,004, Cl. 260-29.6TA.

Kordt, Hans-Herbert: *See—*
Fitzler, Arno; and Kordt, Hans-Herbert, 4,194,801, Cl. 339-19.000.

Kori, Seiji: *See—*
Hayashi, Masaki; Kori, Seiji; and Okada, Takanori, 4,195,182, Cl. 180-53.000.

Korstad, Ralph J.: *See—*
Bousaid, Issam S.; Hoyt, Donald L.; and Korstad, Ralph J., 4,194,562, Cl. 166-245.000.

Kortbeek, Andras G. Th. G.; van der Nat, Adrianus A.; van der Linden Lemmers, Wilhelmina J. M.; and Sjardijn, Willem, to Shell Oil Company. Preparation of violet $TiCl_3$. 4,195,069, Cl. 423-492.000.

Kosmowski, Wojciech, to American Delphi, Inc. Shredder. 4,194,698, Cl. 241-236.000.

Koster, Johannes; Heitkamper, Peter; Fuhrmann, Peter; and Porkert, Helmut, to Bayer Aktiengesellschaft. Process for continuously working up solutions of the type accumulating in the phosgenation of monoamines. 4,195,032, Cl. 260-453.0PH.

Koster, Johannes: *See—*
Reichmann, Wolfgang; Konig, Klaus; and Koster, Johannes, 4,195,031, Cl. 260-453.00P.

Kostermeier, Karl H., to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW). Cutter block arrangement for wood chipping machines. 4,194,545, Cl. 144-230.000.

Kotval, Peshotan S.; and Strock, Harold B., to Union Carbide Corporation. Process for the production of refined metallurgical silicon. 4,195,067, Cl. 423-348.000.

Kowszyk-Gindifer, Zuzanna: *See—*
Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.

Koyo Seiko Company Limited: *See—*
Manabe, Shigeru; and Hirakushi, Shuzo, 4,194,411, Cl. 74-492.000.

Kozuka, Mikio: *See—*
Ootani, Toshihiro; Kozuka, Mikio; Takeda, Ryuichiro; and Kurihara, Hideaki, 4,194,946, Cl. 162-156.000.

Kraess, Henri; and Bloch, Paul, to Societe Anonyme dite: La Telephonie Industrielle et Commerciale - Telic. Multiple electromagnetic relay. 4,195,275, Cl. 335-120.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Puthawala, Anwer, 4,194,842, Cl. 366-76.000.

Krambrock, Wolfgang; and Lubbehusen, Paul, to Waeschle Maschinenfabrik GmbH. Method and apparatus for mixing loose material. 4,194,845, Cl. 366-159.000.

Krantz, Tibor; and Farge, Jean C., to Noranda Mines Limited. Wear resistant low alloy white cast iron. 4,194,906, Cl. 75-125.000.

Kratzer, Reinhold H.: *See—*
Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.

Kraus, George A., to Iowa State University Research Foundation, Inc. Substituted furans from butenolides. 4,195,026, Cl. 260-346.110.

Krause, Werner A., to General Electric Company. Busway ground bus joint. 4,195,198, Cl. 174-94.00S.

Kress, George H.; and Delany, James F. Variable terrain vehicle. 4,194,584, Cl. 180-9.24R.

Kressel, Henry: *See—*
Ettenberg, Michael; and Kressel, Henry, 4,195,269, Cl. 332-7.510.

Krob, Erwin: *See—*
Svoboda, Josef; Weigl, Erwin; Krob, Erwin; Stritzl, Karl; and Knotek, Jaroslav, 4,194,758, Cl. 280-605.000.

Kroll, Harley E.: *See—*
Herpers, Ferdinand J.; Kroll, Harley E.; Carlson, Alfred D.; and Dodge, Paul D., 4,194,263, Cl. 15-353.000.

Kronstein, Max: *See—*
Radtke, Schrade F.; Carr, Dodd S.; and Kronstein, Max, 4,195,002, Cl. 260-29.20E.

Kronwitter, Lotte, nee Staiber: *See—*
Messing, Manfred, 4,194,458, Cl. 114-39.000.

Krouse, Philip E.: *See—*
Margalit, Nehemiah; and Krouse, Philip E., 4,195,122, Cl. 429-194.000.

Kruger, Hermann, to Volkswagenwerk Aktiengesellschaft. Compact V-type internal combustion engine. 4,194,469, Cl. 123-54.00R.

Kruk, Arie: *See—*
Italiaander, Albertus; Kruk, Arie; Nat, Willem G.; and Rees, Nicolaas M. J., 4,194,434, Cl. 91-20.000.

Krumkalns, Eriks V.: *See—*
Benefiel, Robert L.; and Krumkalns, Eriks V., 4,194,899, Cl. 71-76.000.

Krupp-Koppers GmbH: *See—*
Richter, Jurgen; Purrer, Alois; and Eisenhut, Werner, 4,194,686, Cl. 235-376.000.

Kruse, Gary: *See—*
Kihnke, Lee S.; and Kruse, Gary, 4,194,341, Cl. 53-282.000.

Kruzhanov, Jury V.; Dubinin, Viktor P.; Ovchinnikov, Viktor S.; and Safronov, Vladimir E. Semiconductor matrix for integrated read-only storage. 4,195,354, Cl. 365-105.000.

Krzyzkowski, Philip F.: *See—*
Hager, Adolph G.; and Krzyzkowski, Philip F., 4,194,643, Cl. 220-2.10A.

Kubiatowicz, James F., to Custom Concepts, Incorporated. Door alarm toy. 4,194,461, Cl. 116-77.000.

Kubota, Shin-ichi; and Horimoto, Masayuki, to Kurita Machinery Manufacturing Company Limited. Expressing plate for use in filter press. 4,194,977, Cl. 210-231.000.

Kuck, John H., to United States of America, Navy. Pulse doppler-radio proximity fuze. 4,195,295, Cl. 343-7.0PF.

Kuehner, Richard: *See—*
Bahel, Vijay O.; Kuehner, Richard; and Rosenberg, Richard H., 4,194,368, Cl. 62-238.000.

Kugelfischer Georg Schafer & Co.: *See—*
Hormann, Karl; and Weigand, Hans, 4,194,797, Cl. 308-187.000.

Kugler, William E.: *See—*
Gramer, Eben J.; and Kugler, William E., 4,194,497, Cl. 126-432.000.

Kuhlman Corporation: *See—*
Macemon, Herbert J., 4,194,806, Cl. 339-263.00R.

Kuhn, S.A.: *See—*
Gerlinger, Frederic, 4,194,348, Cl. 56-377.000.

Kuhner, Gehard: *See—*
Rothbuhr, Lothar; Kuhner, Gehard; and Dittrich, Gunther, 4,195,068, Cl. 423-455.000.

Kumata, Ken; and Namikawa, Hiroshi, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Reversibly photosensitive glass. 4,194,916, Cl. 106-47.00R.

Kume, Kazunari; and Nomura, Yasushi, to Citizen Watch Co., Ltd. Electronic timepiece. 4,194,351, Cl. 368-82.000.

Kummer, Joseph T., to Ford Motor Company. Fuel cell. 4,195,119, Cl. 429-38.000.

Kunise, Satoru: *See—*
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,194,930, Cl. 148-16.600.

Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, to Texas Instruments Incorporated. Median spaced dummy cell layout for MOS random access memory. 4,195,357, Cl. 365-210.000.

Kurihara, Hideaki: *See—*
Ootani, Toshihiro; Kozuka, Mikio; Takeda, Ryuichiro; and Kurihara, Hideaki, 4,194,946, Cl. 162-156.000.

Kurita Machinery Manufacturing Company Limited: *See—*
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Kurr, George W.; and Myers, Michael, to Federated Metals Corporation. Corrosion resistant URD cable. 4,195,197, Cl. 174-78.000.

Kurth, Wilfried: *See—*
Knoll, Heiko; and Kurth, Wilfried, 4,194,421, Cl. 83-62.100.

Kuster, Charles W.; and Renshaw, Floyd H., to AMP Incorporated. Junction box. 4,195,194, Cl. 174-59.000.

Kutno, Irving L.: *See—*
Smith, Douglas J.; and Kutno, Irving L., 4,194,305, Cl. 35-42.000.

Kuusik, Uno, to Chrysler Corporation. Two stage hydraulic governor. 4,194,520, Cl. 137-54.000.

Kuwahara, Heikichi: *See—*
Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,194,384, Cl. 72-325.000.

Kuyama, Hiroshi: *See—*
Agui, Wataru; Higosaki, Nobuyuki; Yamanari, Koichiro; Furukawa, Toshio; and Kuyama, Hiroshi, 4,195,028, Cl. 260-42.430.

Kwan, Larry I.: *See—*
Marhic, Michel E.; Epstein, Max; and Kwan, Larry I., 4,194,808, Cl. 350-96.320.

Kwiecinski, James R., to Westinghouse Electric Corp. Polyester-amide-imide wire coating powder. 4,195,159, Cl. 528-288.000.

L-LT-Produkter: *See—*
Karlsson, Ulf R., 4,194,308, Cl. 36-9.00R.

L. M. Rabinowitz & Co., Inc.: *See—*
Hashmall, Frank, 4,194,937, Cl. 156-73.100.

La Telemecanique Electrique: *See—*
Bouteille, Daniel; Thomasse, Andre; and Petrimaux, Eric, 4,194,533, Cl. 137-624.180.

Laforest, Jacqueline S., nee Boutillier du Retail; Mignonac, Sylviane S. J., nee Mondon; Thuillier, Germaine, nee Nachmias; and Bessin, Pierre A. R., to Albert Rolland S.A. Furoyl- and thenoyl-aryloxyalkyl carboxylic acid derivatives, their preparation and their use in therapy. 4,195,093, Cl. 424-275.000.

Laging, Jerry D. Apparatus for pressure testing pipe. 4,194,389, Cl. 73-46.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes: *See—*
Galland, Denis; and Boursault, Jack, 4,194,535, Cl. 137-636.400.

Lake Chemical Co.: *See—*
Lytton, Donald B., 4,195,001, Cl. 260-28.00R.

Lalanne, Jean; Nivert, Jean-Pierre; and Tarascou, Daniel, to Societe Nationale Elf Aquitaine. Method for incinerating sludges. 4,194,454, Cl. 110-238.000.

Lambarth, Edwin H., to Hoover Universal, Inc. Method and apparatus for blow molding containers. 4,195,053, Cl. 264-533.000.

Lane, John E., to Parks-Cramer Company. Apparatus and method for gathering and displaying information. 4,194,349, Cl. 57-265.000.

Lange, Wilfried, to Fa. Dieter Haubold Industrielle Nagelgerate. Strip of joined fastening elements and method for its manufacture. 4,194,621, Cl. 206-343.000.

LaNieve, Herman L., III: *See—*
Davis, Herbert L.; Jaffe, Michael L.; LaNieve, Herman L., III; and Powers, Edward J., 4,195,052, Cl. 264-210.500.

Laptev, Lev N.: *See—*
Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K., 4,194,945, Cl. 162-135.000.

Larsen, Harold S.: *See—*
Struckman, Edmund E.; and Larsen, Harold S., 4,194,525, Cl. 137-438.000.

Lavagnino, Edward R.: *See—*
Day, William A.; and Lavagnino, Edward R., 4,195,025, Cl. 260-345.300.

Lavik, Ingvar, to A/S Finsam Industries Ltd. Apparatus for producing ice. 4,194,367, Cl. 62-138.000.

Lawrence, William A. P.; and Welchel, Robert J., to Elevator Equipment Co. Pressure and temperature compensating hydraulic valve. 4,194,534, Cl. 137-625.390.

Layden, Lawrence M.; and Thomson, James R., to Airco, Inc. Shape cutting apparatus. 4,194,727, Cl. 266-58.000.

Leach, George S.: *See—*
O'Connell, Timothy R.; and Leach, George S., 4,195,356, Cl. 365-189.000.

Leblanc, Marc; and Lepretre, Bernard, to Regie Nationale des Usines Renault. Breaker signal pick-up and shaping circuit. 4,194,481, Cl. 123-148.00E.

Ledin, Eric, to General Atomic. Locking support for nuclear fuel assemblies. 4,194,948, Cl. 176-87.000.

Ledman, Dale A.; and Spector, George. Love box. 4,194,629, Cl. 206-573.000.

Lee, Fred S., to Magnex Corporation. Thin film magnetic recording heads. 4,195,323, Cl. 360-113.000.

Leesona Corporation: *See—*
West, George A.; Arends, Albert W.; and Pickard, George L., 4,194,663, Cl. 226-139.000.

Leicht, John R., to Xerox Corporation. Moving permanent magnet limited motion actuator. 4,195,277, Cl. 335-229.000.

Lembeck, William. Food processor and auxiliary mixing bowl therefor. 4,194,697, Cl. 241-92.000.

Lembke, Herbert: *See—*
Ewald, Roland; and Lembke, Herbert, 4,194,719, Cl. 251-30.000.

Lemcoe, Meyer M.: *See—*
United States of America, National Aeronautics and Space Administration; Lemcoe, Meyer M.; and Pattee, Harry E., 4,195,279, Cl. 338-2.000.

Lemieux, Raymond U.; and Ratcliffe, R. Murray, to Chembiomed Ltd. Synthesis of 2-amino-2-deoxyglycoses and 2-amino-2-deoxyglycosides from glycals. 4,195,174, Cl. 536-18.000.

Lepretre, Bernard: *See—*
Leblanc, Marc; and Lepretre, Bernard, 4,194,481, Cl. 123-148.00E.

Lermann, Peter: *See—*
Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
Stemme, Otto; Lermann, Peter; and Fauth, Gunter, 4,194,821, Cl. 354-86.000.

Les Produits Associes LPA SA: *See—*
Woog, Philippe-Guy E., 4,195,329, Cl. 362-120.000.

Lester, Robert W.; and Hotto, Robert, to Static Systems Corporation. Electronic typewriter having an electronic display. 4,194,833, Cl. 355-14.0CU.

Leupelt, Uwe, to Siemens Aktiengesellschaft. Double reflector antenna with feed horn protection. 4,195,302, Cl. 343-704.000.

Levecque, Marcel A.; Battigelli, Jean A.; and Plantard, Dominique, to Saint-Gobain Industries. Method for making fibers from glass or other attenuable materials. 4,194,897, Cl. 65-5.000.

Levine, Robert Allan: *See—*
Bromberg, John R., 4,194,669, Cl. 228-120.000.

Lewis, Gary D., to Energy Conversion Devices, Inc. System for developing heat responsive film. 4,194,826, Cl. 354-299.000.

Lewis, Robert P., to Faser Industries. Sterilizable package and a method of packaging for sterilization. 4,194,622, Cl. 206-363.000.

Li, George S.; and Jones, John F., to Standard Oil Company. Thermoplastic nitrile resin blends. 4,195,135, Cl. 525-69.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Fullmann, Marius; Sawitzki, Friedhelm; and Silber, Dieter, 4,195,306, Cl. 357-38.000.
Minner, Willy; Sieber, Paul; and Haraszti, Ibolya, 4,195,314, Cl. 455-185.000.

Liebman, Arno J. Cardiac patient support. 4,194,732, Cl. 269-323.000.

Lindberg, Lars G.: *See—*
Svensson, Bengt H.; Lindberg, Lars G.; and Hallstedt, Karl G. A., 4,194,796, Cl. 308-9.000.

Lindenthal, Hans: *See—*
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Lion Dentifrice Co. Ltd., The: *See—*
Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.

Lipp, Ellis P.: *See—*
Petre, Mark L.; and Lipp, Ellis P., 4,195,208, Cl. 200-63.00R.

Lipschutz, Paul, to Neiman S.A. Apparatus for the electrolytic treatment of metallic parts. 4,194,957, Cl. 204-199.000.

Lisowski, Walter E., to Helm Products, Inc. Boats hardware system. 4,194,459, Cl. 114-221.00R.

List, Helmut: *See—*
Claassen, Peter; Zeiringer, Rudolf; and List, Helmut, 4,194,401, Cl. 73-730.000.

Littelfuse, Inc.: *See—*
Bukala, Alexander E., 4,195,285, Cl. 340-402.000.

Littlefield, Herrick B., to Polyproducts Corp. Universal hub for geodesic domes. 4,194,851, Cl. 403-218.000.

Lixenfeld, Manfred: *See—*
Pahl, Arnold; van der Kolk, Hans-Jurgen; and Lixenfeld, Manfred, 4,194,361, Cl. 60-388.000.

Loafman, James R. Bowling aid device. 4,194,736, Cl. 273-54.00B.

Logan, Ralph A.; and Tsang, Won-Tien, to Bell Telephone Laboratories, Incorporated. Method for fabricating junction lasers having lateral current confinement. 4,194,933, Cl. 148-171.000.

Lohmann, Robert P.: *See—*
Brookman, Edward T.; Lohmann, Robert P.; and Markowski, Stanley J., 4,194,359, Cl. 60-39.360.

Lohrbach, Mervin; and Peeples, Richard, to Champion International Corporation. Self-locking container. 4,194,679, Cl. 229-39.00R.

Lombard, Serge; and Borg, Patrick, to ATO Chimie. Measuring adhesive force. 4,194,392, Cl. 73-150.00A.

Lombardi, Claudio; and Belletti, Lorenzo, to Fiat Societa per Azioni. Device for feeding Otto cycle engines with lean combustible mixtures. 4,194,476, Cl. 123-122.00H.

Long, Gary N.: *See—*
Earls, David E.; and Long, Gary N., 4,194,891, Cl. 55-26.000.

Long, William J., to United States Gypsum Company. Polymeric adhesive-coated paper and gypsum wallboard prepared therewith. 4,195,109, Cl. 428-198.000.

Lord Corporation: *See—*
Damico, Dennis J.; and Martin, Brian, 4,194,940, Cl. 156-331.000.
Hannibal, Alan J., 4,194,372, Cl. 64-11.00R.
Sexsmith, Frederick H.; and Hornaman, E. Chris, 4,195,140, Cl. 525-523.000.

Lorenz, Karl: *See—*
Bonora, Anthony C.; and Lorenz, Karl, 4,194,324, Cl. 51-131.500.

Lovgren, Anders, to Alfred Lovgrens Byggnads Ab. Upwardly openable door. 4,194,549, Cl. 160-84.00R.

Lowery, Louie R., to Keyes Fibre Company. Automatic packing. 4,194,781, Cl. 294-61.000.

Lowrey, R. Dean: *See—*
Huffman, William A.; Lowrey, R. Dean; Nicholson, Geoffrey C.; and Wittnebel, Bruce, 4,194,911, Cl. 430-357.000.

Lubbehusen, Paul: *See—*
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Lubieniecki, Eugene, to North American Car Association. Loading and unloading valves. 4,194,523, Cl. 137-238.000.

Lubrizol Corporation, The: *See—*
Coleman, Lester E., 4,194,985, Cl. 252-51.50A.
Ripple, David E., 4,194,886, Cl. 44-70.000.

Lucas Industries Limited: *See—*
Cranmore, John W., 4,194,850, Cl. 403-140.000.

Lucas, James H.; and Berg, David A., to Allis-Chalmers Corporation. Adjustable lift link for a three-point hitch. 4,194,757, Cl. 280-461.00A.

Lucas, John M.; and Gracovetsky, Serge. Sensor contact. 4,194,840, Cl. 356-429.000.
Lucas, Richard L.; and Allen, John J., to Midland-Ross Corporation. Air pressure regulator. 4,194,522, Cl. 137-116.500.
Luch, Daniel, to International Nickel Company, Inc., The. Process for electroplating directly plateable plastic with nickel-iron alloy strike and article thereof. 4,195,117, Cl. 428-626.000.
Lykes Pasco Packing Co. Dispenser Manufacturing Div.: *See—*
Nottke, James E.; and Ruebel, Jack K., 4,194,650, Cl. 222-57.000.
Lynch, Deane A. L.: *See—*
Peirson, John R.; and Lynch, Deane A. L., 4,194,328, Cl. 52-86.000.
Lynes, Inc.: *See—*
Balkanli, Hayati, 4,195,349, Cl. 364-571.000.
Lytton, Donald B., to Lake Chemical Co. Formulations and process for effecting stoppage of leaks of liquid from tanks, pipes and the like. 4,195,001, Cl. 260-28.00R.
M & T Chemicals Inc.: *See—*
Gajewski, Vincent J.; and Eisenbach, Elliot, 4,195,150, Cl. 528-52.000.
Mabuchi Motor Co., Ltd.: *See—*
Mabuchi, Takaichi, 4,195,242, Cl. 310-239.000.
Mabuchi, Takaichi, to Mabuchi Motor Co., Ltd. Brush device. 4,195,242, Cl. 310-239.000.
Macemon, Herbert J., to Kuhlman Corporation. Connector. 4,194,806, Cl. 339-263.00R.
Mack, Thomas A., to Kaiser Aluminum & Chemical Corporation. Can testing device. 4,194,388, Cl. 73-37.000.
Mackie, Gordon J.: *See—*
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MacMillan, Donald W.: *See—*
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MacMunn, George D.; and Kavieff, Shelden M., to Jervis B. Webb Company. Buffer apparatus for article processing systems. 4,195,347, Cl. 364-478.000.
Madsen, Rud F., to Aktieselskabet de Danske Sukkerfabrikker. Cooler for mixtures of crystals and crystallizing liquid in the production of sugar and related products. 4,194,557, Cl. 165-94.000.
Maeda, Takeo: *See—*
Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.
Maeda, Tatsuo, to Toyo Kogyo Co., Ltd. Locking means for automobile doors. 4,194,377, Cl. 70-360.000.
Maeda, Yo: *See—*
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Maehara, Toshifumi, to Akebono Brake Industry Co. Ltd. Deceleration sensing type proportioning valve. 4,194,792, Cl. 303-24.00F.
Maes, Robert L. M. E.: *See—*
Drop, Peter C.; de Rop, Walter J. R.; and Maes, Robert L. M. E., 4,195,253, Cl. 316-1.000.
Maestri, Giordano B. Pneumatic stapler. 4,194,665, Cl. 227-112.000.
Mager, George E.: *See—*
Tu, George K.; Mager, George E.; Baker, Lamar T.; and Markle, Robert E., 4,195,352, Cl. 364-900.000.
Magil, Paul; and Word, William F., III, to Paul Alan Magil & Associates. Electrical receptacle for use in alarm system. 4,195,290, Cl. 340-568.000.
Magner, Richard W. Two-cycle internal combustion engine having boost port. 4,194,470, Cl. 123-73.00A.
Magnex Corporation: *See—*
Lee, Fred S., 4,195,323, Cl. 360-113.000.
Mahler, James A.: *See—*
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Makiguchi, Sadao: *See—*
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Mal, M. Kumar; and Tarkan, Stuart E., to Chromalloy American Corporation. Sintered P/M products containing pre-alloyed titanium carbide additives. 4,194,910, Cl. 75-236.000.
Maleev, Vladimir V.: *See—*
Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., 4,195,236, Cl. 307-252.00K.
Malev, Oleg A.; Khalandovsky, Idel N.; Kagan, Moisei R.; Laptev, Lev N.; Vaikhansky, Semen S.; Khorunzhy, Anatoly I.; and Afanasiev, Valery K. Filtering material and process for producing same. 4,194,945, Cl. 162-135.000.
Malina, Ludek: *See—*
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Malki, Khaldoun W.: *See—*
Martin, James R.; and Malki, Khaldoun W., 4,195,062, Cl. 422-168.000.
Mallek, Heinz; Ermisch, Dorothee; and Jablonski, Werner, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Method of and furnace for burning waste material. 4,194,455, Cl. 110-251.000.
Malloy, John F., to Norton Company. Polyurethane adhesive composition and use thereof. 4,194,618, Cl. 206-205.000.
Maly, George P., to Union Oil Company of California. Method of increasing the permeability of subterranean reservoirs. 4,194,566, Cl. 166-307.000.
Mamonov, Nikolai D.: *See—*
Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,195,097, Cl. 426-61.000.
Manabe, Shigeru; and Hirakushi, Shuzo, to Koyo Seiko Company Limited. Steering column support assembly. 4,194,411, Cl. 74-492.000.
Maniscalco, Joseph P.: *See—*
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,070, Cl. 423-498.000.
Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,071, Cl. 423-498.000.
Manitowoc Company, Inc., The: *See—*
Morrow, James G., Sr.; Anderson, Michael C.; and Siehr, Richard L., 4,194,638, Cl. 212-46.00R.
Mannesmann Aktiengesellschaft: *See—*
Schrewe, Hans, 4,194,555, Cl. 164-438.000.
Marais, Lionel R., to Compagnie Francaise des Petroles. Method and apparatus for balancing pressures in an oil well. 4,194,567, Cl. 166-311.000.
Marcade, Roque D., to Whirlpool Corporation. Selection acknowledgement system for a laundry appliance. 4,195,232, Cl. 307-130.000.
Marchetti, Charles R., to GTE Sylvania Incorporated. Noise detection circuit. 4,195,264, Cl. 328-134.000.
Marchisio, Giovanni, to Giovanni Marchisio & C. S.r.l. Apparatus for adjusting the thread feed rate of a circular knitting machine. 4,194,375, Cl. 66-132.00T.
Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, deceased (by Woolf, Helga, executrix), to Allied Chemical Corporation. Fluorinated polyalkylene polyamides as stain repellents. 4,195,105, Cl. 427-386.000.
Margalit, Nehemiah; and Krouse, Philip E., to ESB Technology Company. Additive for high drain rate lithium cells. 4,195,122, Cl. 429-194.000.
Margolin, Jed. Random dot generator for raster scan video displays. 4,195,293, Cl. 340-732.000.
Marhic, Michel E.; Epstein, Max; and Kwan, Larry I., to Northwestern University. Wave guide for surface wave transmission of laser radiation. 4,194,808, Cl. 350-96.320.
Mark, Victor, to General Electric Company. Polycarbonate compositions having improved barrier properties. 4,195,157, Cl. 528-174.000.
Mark, Werner J.: *See—*
Cook, Lloyd A.; Reynolds, Kim A.; and Mark, Werner J., 4,194,667, Cl. 228-4.100.
Markiewitz, Kenneth H.; and Restaino, Alfred J., to ICI Americas Inc. Esters of carboxy amino phenyl isocyanurates and vinylidene carbonyl oxy alkanols. 4,195,146, Cl. 526-261.000.
Markle, Robert E.: *See—*
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Markowski, Stanley J.: *See—*
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Markus, Harold; and McCaughey, Joseph M., to United States of America, Army. Active armor. 4,194,431, Cl. 89-36.00A.
Marsh, Brian: *See—*
Wright, Donald C.; Marsh, Brian; and Wiechers, Willem, 4,194,898, Cl. 65-114.000.
Marsh, Robert A.; Mackie, Gordon J.; and Hale, Peter, to Procter & Gamble Company, The. Detergent compositions comprising modified proteins. 4,195,077, Cl. 424-70.000.
Martelli, Guglielmo. Device for picking up semi-rigid sheet-like elements from a magazine and transferring them onto a conveyor. 4,194,442, Cl. 93-53.0SD.
Martin, Brian: *See—*
Damico, Dennis J.; and Martin, Brian, 4,194,940, Cl. 156-331.000.
Martin, Ernest N.; and Keirns, Michael L., to Societe d'Assistance Technique pour Produits Nestle S.A. Dispensing and mixing means for water and dehydrated coffee. 4,194,651, Cl. 222-108.000.
Martin, Ernest N. Mixer. 4,194,843, Cl. 366-138.000.
Martin, James R.; and Malki, Khaldoun W., to Combustion Engineering, Inc. Flue gas scrubbing. 4,195,062, Cl. 422-168.000.
Martin, Kenneth R.; and Drown, Clifford F., to Drown, Clifford F. Life vest safety harness. 4,194,257, Cl. 9-342.000.
Martin, Michael G.; Carver, Ronald M.; and Cafer, James E. Retractable fish stringer. 4,194,315, Cl. 43-55.000.
Martuch, Leon L., to JFL Development Company. Method of making a fishing line indicator. 4,194,936, Cl. 156-67.000.
Marx, Thomas O., to Atwood Vacuum Machine Company. Gas spring and method of filling the same. 4,194,731, Cl. 267-65.00R.
Masaki, Masaru; and Yotsutani, Akio, to Nippon Electric Co., Ltd. Selective call radio communication receiver. 4,195,263, Cl. 455-343.000.
Masegian, Gregory. Chainmate. 4,194,724, Cl. 254-88.000.
Mathis, James C.: *See—*
McCoy, Roy G.; and Mathis, James C., 4,195,287, Cl. 340-521.000.
Matsumoto, Chiaki; Imai, Hirokatsu; and Okawa, Masaru, to Foseco Trading AG. Molten metal handling vessels. 4,194,730, Cl. 266-275.000.
Matsumoto, Hajime: *See—*
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Matsushima, Massaki: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Takagi, Hiromitsu; Kano, Gota; and Teramoto, Iwao, 4,194,927, Cl. 148-1.500.
Matsuura, Norio. Device for retaining scaffold member. 4,194,849, Cl. 403-49.000.
Matsuyama, Kiyoshi: *See—*
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, 4,195,145, Cl. 526-1[illegible]7.000.
Matsuzaki, Yoshiaki, to Nihon Radiator Co., Ltd. Oil cooler and method for forming it. 4,194,560, Cl. 165-141.000.
Matteson, Lawrence J.; and Shonts, David J., to Eastman Kodak Company. Electronic flash unit for fill-flash photography. 4,194,818, Cl. 354-33.000.
Matthies, Bruce J.: *See—*
Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., 4,194,852, Cl. 403-299.000.
Matulich, Dan S.; and Saylor, B. Franklin, to Garrett Corporation, The. Auto ignition temperature control system. 4,194,357, Cl. 60-39.020.
Mauldin, Herbert N. Paver attachment. 4,194,854, Cl. 404-110.000.
Mavko, Edward M.: *See—*
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Robbins, David J.; and Bimberg, Dieter H., 4,195,226, Cl. 250-363.00R.
Mayer, Frank: *See—*
Mayerovitch, Myron D., 4,194,498, Cl. 126-450.000.
Mayerovitch, Myron D., to Mayer, Frank. Solar collector cell and roof flashing assembly and method of constructing a roof with such an assembly. 4,194,498, Cl. 126-450.000.
Mazzilli, Nick. Thermo wrist watch. 4,194,356, Cl. 368-11.000.
McCalmont, Arnold M., to Technical Communications Corporation. Voice privacy system with amplitude masking. 4,195,202, Cl. 179-1.50S.
McCandless, James A.: *See—*
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McCaughey, Joseph M.: *See—*
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McChesney, Richard M.; and Turner, Robert K., to Outboard Marine Corporation. Automatic fuel priming system. 4,194,483, Cl. 123-187.50R.
McClinton, John L.: *See—*
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McCloud, James R.: *See—*
Aslan, Wilfred A.; Guaglione, Giovanni P.; McCloud, James R.; and Meier, Henry G., 4,195,211, Cl. 200-153.00D.
McCombs, Norman R.; and Vrana, Edward E., to Greene & Kellogg, Inc. Pressure swing adsorption process and system for gas separation. 4,194,890, Cl. 55-18.000.
McCoy, Roy G.; and Mathis, James C. Fire and absence detection and alarm system for bed occupants. 4,195,287, Cl. 340-521.000.
McCracken, Donald G., to Aeroquip Corporation. Rotary joint. 4,194,767, Cl. 285-134.000.
McCulloch Corporation: *See—*
Jackson, Robert V., 4,194,482, Cl. 123-148.0CC.
McDaniel, Jerome D.: *See—*
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McDougal, Thomas L. Controlled clearance seal. 4,194,745, Cl. 277-27.000.
McFarlin, Bill E. Keyboard musical instrument. 4,194,428, Cl. 84-236.000.
McIntyre, Newman, to McIntyre Packaging Company. Apparatus for packaging shoelaces: especially of the round type. 4,194,340, Cl. 53-119.000.
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McIntyre, Newman, 4,194,340, Cl. 53-119.000.
McMillan, Moses W.: *See—*
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Mead Corporation, The: *See—*
Gudorf, James L., 4,195,304, Cl. 346-75.000.
Mead, John F., to Plessy Handel und Investments A.G. Coupling of optic-waveguide elements. 4,195,045, Cl. 264-1.000.
Medical Plastics Laboratory, Inc.: *See—*
Heller, Robert D., 4,194,303, Cl. 35-17.000.
Meerholz, Edgar F.: *See—*
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Meier, Henry G.: *See—*
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Melander, Clarence, to East Wind Industries, Inc. Wearable ventilation system. 4,194,247, Cl. 2-2.000.
Melbye, Hartvig E.: *See—*
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Gurwicz, David; and Melocik, Grant C., 4,195,254, Cl. 318-334.000.
Menke, Joseph T., to United States of America, Army. Technique for passivating stainless steel. 4,194,929, Cl. 148-6.15R.
Merck & Co., Inc.: *See—*
Atkinson, Joseph G.; Belanger, Patrice C.; Remy, David C.; and Rooney, Clarence S., 4,195,091, Cl. 424-267.000.
Mulvey, Dennis; Jones, Howard; and Zimmerman, Morris, 4,195,023, Cl. 548-209.000.
O'Rourke, Edward C.; and Fullerton, W. Wardle, 4,194,424, Cl. 83-870.000.
Stone, Clement A., 4,195,085, Cl. 424-248.510.
Mertwoy, Helen E.; and Gisser, Henry, to United States of America, Army. Copolymers of alpha-n-alkylstyrenes and styrene. 4,195,144, Cl. 526-173.000.
Meslener, George J., to GTE Laboratories Incorporated. Unipolar to bipolar converter. 4,195,237, Cl. 307-261.000.
Messenger, Joseph U., to Mobil Oil Corporation. Drilling technique. 4,194,580, Cl. 175-61.000.
Messing, Manfred, to Kronwitter, Lotte, nee Staiber. Windsurfer with auxiliary propulsion equipment. 4,194,458, Cl. 114-39.000.
Messrs. Leonhard Kurz: *See—*
Spatle, Wilfried, 4,194,944, Cl. 156-540.000.
Metallgesellschaft Aktiengesellschaft: *See—*
Wanner, Dieter, 4,194,889, Cl. 55-7.000.
Metzger, Carl; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. 1,3,4-Thiadiazole compounds and herbicidal compositions. 4,195,181, Cl. 544-316.000.
Meyer, Rolf-Volker; Dhein, Rolf; and Fahnler, Friedrich, to Bayer Aktiengesellschaft. Activated anionic polymerization of lactams with liquid isocyanatoallophanate activator. 4,195,163, Cl. 528-315.000.
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Midland-Ross Corporation: *See—*
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Mignonac, Sylviane S. J., nee Mondon: *See—*
Laforest, Jacqueline S., nee Boutillier du Retail; Mignonac, Sylviane S. J., nee Mondon; Thuillier, Germaine, nee Nachmias; and Bessin, Pierre A. R., 4,195,093, Cl. 424-275.000.
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Mikulesky, Penny R.: *See—*
Mikulesky, Thomas L., 4,194,693, Cl. 239-390.000.
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Miller, Donald L., to Facet Enterprises, Inc. Wear compensated electromagnetic clutch device. 4,194,610, Cl. 192-111.00A.
Miller, J. Blaine, to Gulf Oil Corporation. Method of forming a rubblized in-situ retort. 4,194,788, Cl. 299-2.000.
Miller, Kenneth G., to Respiratory Care, Inc. Humidifier-nebulizer. 4,195,044, Cl. 261-142.000.
Miller, Paul H.; and Schafer, Tillman H. Automatic echo detection and classification system. 4,195,359, Cl. 367-94.000.
Miller, Roy W., to Pullman Incorporated. Railway hopper car door operating mechanism. 4,194,450, Cl. 105-253.000.
Miller, William V., to Shell Oil Company. Method and device for controlling insects on livestock. 4,195,075, Cl. 424-14.000.
Milliken Research Corporation: *See—*
Deal, James F., III, 4,194,993, Cl. 252-541.000.
Reynolds, James R., 4,194,540, Cl. 139-291.00R.
Mills Products, Inc.: *See—*
Katona, Joseph W., 4,194,334, Cl. 52-397.000.
Milo, Joseph V., to Universal Valve Co., Inc. Restrictive vent. 4,194,530, Cl. 137-587.000.
Mimoun, Hubert; and Charpentier, Robert, to Institut Francais du Petrole. Heterogeneous phase oxidation of olefins to ketones. 4,195,039, Cl. 260-597.00R.
Mims, Herman D. Cookie capper apparatus. 4,194,443, Cl. 99-450.400.
Minner, Willy; Sieber, Paul; and Haraszti, Ibolya, to Licentia Patent-Verwaltungs-G.m.b.H. Tuning circuit for high frequency receiving apparatus with residual sideband modulation, especially for television receivers. 4,195,314, Cl. 455-185.000.
Minnesota Mining and Manufacturing Company: *See—*
Bleeker, Lyle A.; and Owen, Richard, 4,194,827, Cl. 355-1.000.
Byram, David C.; and Nowicki, John V., Jr., 4,194,636, Cl. 211-71.000.
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Minoura, Mikio: *See—*
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Misner, Robert E.: *See—*
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Mitchell, Howard E., to Dresser Industries, Inc. Raise boring head with retractable gage cutters. 4,194,578, Cl. 175-53.000.
Mitchell, Kenneth B.: *See—*
Benjamin, Robert F.; and Mitchell, Kenneth B., 4,194,813, Cl. 350-363.000.

- Mitchhart, Ray M.; and Zingl, Hans, to Cooper Industries, Inc. Drill pipe handling mechanism. 4,194,419, Cl. 81-57.330.
- Mitsubishi Denki Kabushiki Kaisha: *See*—
  - Ishii, Toshiaki; and Watanabe, Eiki, 4,194,594, Cl. 187-29.00R.
- Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
  - Uto, Yoshimitsu; Omae, Takashi; Fukaya, Yasuhiro; and Yoshida, Yasuyuki, 4,194,672, Cl. 228-194.000.
  - Yamauchi, Noriyuki; Toko, Yoshiaki; and Ehara, Takao, 4,194,864, Cl. 414-283.000.
- Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
  - Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, 4,194,909, Cl. 75-171.000.
- Miyakawa, Seiichi: *See*—
  - Ohnuma, Teruyuki; Shimizu, Kaoru; Miyakawa, Seiichi; and Oyama, Hajime, 4,194,830, Cl. 355-3.0DD.
  - Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, 4,195,260, Cl. 324-204.000.
- Miyamoto, Kazuaki: *See*—
  - Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.
- Miyamoto, Yoshinobu: *See*—
  - Izumida, Yukihiro; Sasaki, Kitaro; and Miyamoto, Yoshinobu, 4,195,246, Cl. 313-292.000.
- Miyazawa, Hideo, to Stanley Electric Co., Ltd. Sealed beam lamp for automobile. 4,195,245, Cl. 313-113.000.
- Mizokami, Hiroshi: *See*—
  - Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.
- Mizzi Joseph M. Sugar cane harvesters. 4,194,344, Cl. 56-13.900.
- Mlyniec, Kenneth P., to Emerson Electric Co. Pressure responsive electrical switch and means of contact gap setting therefor. 4,195,209, Cl. 200-83.00R.
- Mobil Oil Corporation: *See*—
  - Audeh, Costandi A., 4,194,885, Cl. 44-63.000.
  - Billings, Ronald P.; and Hysell, Ellen M., 4,194,965, Cl. 208-113.000.
  - Braid, Milton, 4,194,980, Cl. 252-45.000.
  - Brown, George L.; and Spencer, Arthur T., 4,195,005, Cl. 260-29.6TA.
  - Brown, George L.; and Spencer, Arthur T., 4,195,006, Cl. 260-29.6TA.
  - Chen, Nai Y.; and Wang, Ikai, 4,194,964, Cl. 208-108.000.
  - Chung, Harold S.; Johnson, George C.; and Huang, Tracy J., 4,194,969, Cl. 209-5.000.
  - Messenger, Joseph U., 4,194,580, Cl. 175-61.000.
- Mohasco Corporation: *See*—
  - Cycowicz, Izchak; and Frimmet, Alfred, 4,194,783, Cl. 297-88.000.
- Moisson, Marc F. L.: *See*—
  - Sovish, Richard C.; and Moisson, Marc F. L., 4,194,750, Cl. 277-208.000.
- Molins Machine Company, Inc.: *See*—
  - Coburn, Robert E., 4,194,662, Cl. 226-110.000.
- Moller, Heinrich; and Hoffmann, Karl-Heinz, to Braun Aktiengesellschaft. Hair dryer. 4,195,217, Cl. 219-370.000.
- Moller, Heinz; and Hess, Joachim, to Robert Bosch GmbH. Contactless control pulse generator for rotary machine timing. 4,195,241, Cl. 310-168.000.
- Monsanto Company: *See*—
  - Anderson, George J.; Santer, J. Owen; and Desmond, Timothy F., 4,195,116, Cl. 428-524.000.
  - Betteken, Joseph C.; and McDaniel, Jerome D., 4,195,064, Cl. 422-191.000.
  - Bleikamp, Roy H., Jr., 4,194,960, Cl. 204-280.000.
  - Perry, Glen D., 4,194,939, Cl. 156-254.000.
- Monte, Anthony J. Fire suppression mechanism for military vehicles. 4,194,571, Cl. 169-61.000.
- Montedison S.p.A.: *See*—
  - Gozzo, Franco; Abbruzzese, Luigi; and Siddi, Giorgio, 4,195,036, Cl. 260-561.0HL.
- Montgomery, Robert H., Jr.; and Oaks, Seibert S., to Kennametal Inc. Grooved earthworking bit and method of enhancing the life thereof. 4,194,791, Cl. 299-86.000.
- Moon, Ronald L., to Varian Associates, Inc. Lattice constant grading in the $Al_yGa_{1-y}As_{1-x}Sb_x$. 4,195,305, Cl. 357-16.000.
- Moore, Frank D.: *See*—
  - Foote, Earl H.; Moore, Frank D.; and Strigle, Ralph F., Jr., 4,195,043, Cl. 261-94.000.
- Moore, James K., to CBS Inc. Method and apparatus for eliminating deadband in digital recursive filters. 4,195,350, Cl. 364-724.000.
- Moran, Steven E., to United States of America, Navy. Scanning focused local oscillator optical heterodyne imaging system. 4,195,221, Cl. 455-609.000.
- Moran, Steven E., to United States of America, Navy. Coherence length gated optical imaging system. 4,195,311, Cl. 358-95.000.
- Moretti, Walter: *See*—
  - Gandolfi, Carmelo; Faustini, Franco; Moretti, Walter; Usardi, Mario M.; and Ceserani, Roberto, 4,195,183, Cl. 560-53.000.
- Morgan, Gerard J., III: *See*—
  - Hurd, Donald J.; and Morgan, Gerard J., III, 4,194,772, Cl. 292-256.650.
- Morgan, Jerome. Cigarette holder. 4,194,516, Cl. 131-174.000.
- Mori, Yasuki: *See*—
  - Tomioka, Shinji; and Mori, Yasuki, 4,195,171, Cl. 536-17.00R.
- Morishita, Tomohiro: *See*—
  - Sakemi, Hiroji; Morishita, Tomohiro; Numata, Hideji; and Ono, Takuro, 4,194,917, Cl. 106-62.000.
- Moriya, Yoshiro; Ikai, Kazuhito; and Tanaka, Makoto, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry; and Ibigawa Electric Industry Ltd. Heat-resisting ceramic fibers and method for manufacture thereof. 4,194,914, Cl. 106-18.140.
- Morrow, James G., Sr.; Anderson, Michael C.; and Siehr, Richard L., to Manitowoc Company, Inc., The. Ring supported tower crane. 4,194,638, Cl. 212-46.00R.
- Morse, Robert L., to Tecumseh Products Company. Accumulator for refrigeration system. 4,194,370, Cl. 62-503.000.
- Morse, Robert L., to Tecumseh Products Company. Refrigeration system with compressor mounted accumulator. 4,194,371, Cl. 62-503.000.
- Morton, Douglas R., Jr., to Upjohn Company, The. Methylenecyclopentane derivatives. 4,195,178, Cl. 542-426.000.
- Morton, Henry H. Alarm system. 4,195,288, Cl. 340-539.000.
- Motion Reflector Industries, Inc.: *See*—
  - Campagna, James V., Jr., 4,194,809, Cl. 350-97.000.
- Motorola, Inc.: *See*—
  - Conner, Leo B., Jr., 4,195,297, Cl. 343-12.00R.
  - Conroy, Peter J., 4,195,301, Cl. 343-700.0MS.
  - Schoeff, John A., 4,195,235, Cl. 307-229.000.
  - Zarkov, Sviataslov, 4,195,268, Cl. 331-116.00R.
- Motosugi, Katsuhiko: *See*—
  - Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.
- Muenchinger, Herman G., to Research Engineering & Manufacturing, Inc. Thread-forming screw with step taper. 4,194,430, Cl. 85-46.000.
- Muhsil, Wilfried: *See*—
  - Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, 4,194,515, Cl. 131-135.000.
- Mukhin, Zhores G.; Vlasov, Vladimir N.; and Mikhailov, Alexei P., to Institut Gornogo Dela Sibirskogo Otdelenia Nauk SSSR. Vibrator for importing vibration to a working platform. 4,194,611, Cl. 193-2.00B.
- Mulvey, Dennis; Jones, Howard; and Zimmerman, Morris, to Merck & Co., Inc. 2-(2-Furoyl)1,2-benzisothiazole-3-one, 2-(2-furoyl) saccharin, and 2-(2-thenoyl) saccharin. 4,195,023, Cl. 548-209.000.
- Murakami, David; and Sommer, Donald J., to Boeing Company, The. Switching power supply having a wide range input capability. 4,195,335, Cl. 363-49.000.
- Murakami, Hiroyashu: *See*—
  - Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.
- Muraoka, Yasuhiko: *See*—
  - Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,195,018, Cl. 260-112.50R.
- Murphy, Peter T.: *See*—
  - Wells, Robert J.; and Murphy, Peter T., 4,195,179, Cl. 542-444.000.
- Murphy, Raymond F., to Exxon Research & Engineering Co. CDB rubber modified thermoplastics. 4,195,133, Cl. 525-71.000.
- Murphy, Robert E.: *See*—
  - Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., 4,194,267, Cl. 17-52.000.
- Muskegon Piston Ring Company: *See*—
  - Nisper, Kenneth J., 4,194,747, Cl. 277-140.000.
- Myer, Roth & Pastor Machinenfabrik GmbH: *See*—
  - Ditges, Gunter, 4,194,541, Cl. 140-147.000.
- Myers, Edward T.: *See*—
  - Doyle, Richard F.; and Myers, Edward T., 4,195,278, Cl. 336-90.000.
- Myers, Harold E.; and Sheetz, Charles E., to FMC Corporation. Dry bin filler. 4,194,343, Cl. 53-493.000.
- Myers, Michael: *See*—
  - Kurr, George W.; and Myers, Michael, 4,195,197, Cl. 174-78.000.
- N. A. Taylor Co., Inc.: *See*—
  - Dostal, Gerald A.; and Havlick, Richard S., 4,194,784, Cl. 297-126.000.
- N L Industries, Inc.: *See*—
  - Foerster, George S.; and Stuhler, Harold A., 4,194,904, Cl. 75-78.000.
  - Perkins, Roderick B., 4,194,915, Cl. 106-38.250.
- Nabisco, Inc.: *See*—
  - Swanson, George G.; Strom, Robert E.; and Jansen, Philip, 4,194,300, Cl. 34-217.000.
- Nachtigahl, Carsten, to Nako Enterprises Ltd. Plumbing test fitting. 4,194,721, Cl. 251-148.000.
- Nagano, Masashi, to Shimano Industrial Company Limited. Front derailleur for a bicycle provided with a swingingly movable chain guide. 4,194,409, Cl. 74-217.00B.
- Nakagawa, Yuji: *See*—
  - Hattori, Kenichi; Iwai, Shinji; Okuyama, Toshio; Nakagawa, Yuji; Maeda, Takeo; and Kawakatsu, Yasuyuki, 4,194,919, Cl. 106-90.000.
- Nakahara, James H.: *See*—
  - Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.
- Nakano, Yoshiyuki; Sato, Akihiko; and Araki, Yoshitaka, to Nippon Kogaku K.K. Spring servo type aperture control device in a camera. 4,194,820, Cl. 354-43.000.
- Nakashima Manufacturing Company, Ltd.: *See*—
  - Ootani, Toshihiro; Kozuka, Mikio; Takeda, Ryuichiro; and Kurihara, Hideaki, 4,194,946, Cl. 162-156.000.

- Nakayama, Wataru: *See*—
  - Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,194,384, Cl. 72-325.000.
- Nako Enterprises Ltd.: *See*—
  - Nachtigahl, Carsten, 4,194,721, Cl. 251-148.000.
- Nalco Chemical Company: *See*—
  - Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,070, Cl. 423-498.000.
  - Allain, Ronald J.; Braithwaite, David G.; and Maniscalco, Joseph P., 4,195,071, Cl. 423-498.000.
  - Hurlock, John R.; and Ballweber, Edward G., 4,195,003, Cl. 260-29.4UA.
  - Rosenberger, Roy R., 4,194,391, Cl. 73-61.400.
- Namikawa, Hiroshi: *See*—
  - Kumata, Ken; and Namikawa, Hiroshi, 4,194,916, Cl. 106-47.00R.
- Narvaez, Henry R. Electrical junction access device. 4,194,644, Cl. 220-3.300.
- Nat, Willem G.: *See*—
  - Italiaander, Albertus; Kruk, Arie; Nat, Willem G.; and Rees, Nicolaas M. J., 4,194,434, Cl. 91-20.000.
- National Research Development Corporation: *See*—
  - Richardson, Edward G.; and Williamson, Keith H., 4,195,325, Cl. 361-56.000.
- National Steel Corporation: *See*—
  - Smith, James T., 4,194,330, Cl. 52-177.000.
- Natzel, Jerome W., to Truth Incorporated. Adjustable roller mechanism. 4,194,266, Cl. 16-99.000.
- NCR Corporation: *See*—
  - Grey, Michael O., 4,194,847, Cl. 400-320.000.
  - Smith, Walter A.; and Harp, Raymond T., 4,195,339, Cl. 364-200.000.
- Nebell, Hans G. T., to Ardal og Sunndal Verk a. s. Arrangement for compensating for detrimental magnetic influence between two or more rows of transverse electrolytic pots or cells for producing aluminum, by electrolytic reduction. 4,194,958, Cl. 204-243.00M.
- Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, to Roussel Uclaf. Treating psychic disorders with tetrahydropyridin-4-yl-1H-indoles. 4,195,081, Cl. 424-263.000.
- Neiman S.A.: *See*—
  - Lipschutz, Paul, 4,194,957, Cl. 204-199.000.
- Neri, Vincenzo. Air and water supply system for dental handpieces. 4,194,289, Cl. 433-101.000.
- Ness, Irving S.; and Fechillas, Michael R., to Johnson & Johnson. Disposable diaper inner facing. 4,194,507, Cl. 128-287.000.
- Neujens, Georges J.: *See*—
  - Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,194,625, Cl. 206-455.000.
- Neuman, Richard F.: *See*—
  - Garrett, Wayne H.; and Neuman, Richard F., 4,194,596, Cl. 188-72.700.
- Newman, Edward S., to Hoffmann-La Roche Inc. Radioimmunoassay of alpha $_1$fetoprotein. 4,195,073, Cl. 424-1.000.
- NGK Spark Plug Co., Ltd.: *See*—
  - Satow, Haruhiko; Ueda, Tadakazu; and Ogasawara, Ikuo, 4,194,486, Cl. 123-210.000.
- Nichols, Robert W.; and Pierce, Stanley L., Jr., to Ford Motor Company. Hydrodynamic torque convertor with double circuit torus flow and lock-up clutch. 4,194,604, Cl. 192-3.300.
- Nicholson, Geoffrey C.: *See*—
  - Huffman, William A.; Lowrey, R. Dean; Nicholson, Geoffrey C.; and Wittnebel, Bruce, 4,194,911, Cl. 430-357.000.
- Niehaves, Kurt: *See*—
  - Schneider, Wolfgang; and Niehaves, Kurt, 4,194,988, Cl. 252-312.000.
- Nielsen, Donald R.: *See*—
  - Bierschenk, Thomas R.; Pettit, Rowland; and Nielsen, Donald R., 4,195,190, Cl. 568-860.000.
- Nielsen, Floyd P.; and Anderson, Bernard O., to Nielsen Industries, Inc. Cow milking system. 4,194,467, Cl. 119-14.030.
- Nielsen Industries, Inc.: *See*—
  - Nielsen, Floyd P.; and Anderson, Bernard O., 4,194,467, Cl. 119-14.030.
- Nihon Radiator Co., Ltd.: *See*—
  - Matsuzaki, Yoshiaki, 4,194,560, Cl. 165-141.000.
- Niklas, Helmut: *See*—
  - Forch, Hans; and Niklas, Helmut, 4,194,748, Cl. 277-152.000.
- Nippon Electric Co., Ltd.: *See*—
  - Masaki, Masaru; and Yotsutani, Akio, 4,195,263, Cl. 455-343.000.
  - Suzuki, Shunichi, 4,195,239, Cl. 307-355.000.
- Nippon Kayaku Kabushiki Kaisha: *See*—
  - Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,195,018, Cl. 260-112.50R.
- Nippon Kogaku K.K.: *See*—
  - Nakano, Yoshiyuki; Sato, Akihiko; and Araki, Yoshitaka, 4,194,820, Cl. 354-43.000.
- Nishi, Tadaaki: *See*—
  - Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.
- Nishida, Mitsuo, to Citizen Watch Co., Ltd. Connection structure for watch case and band. 4,194,355, Cl. 368-282.000.
- Nishino, Tadashi: *See*—
  - Kimura, Tomoaki; and Nishino, Tadashi, 4,194,553, Cl. 164-87.000.
- Nisper, Kenneth J., to Muskegon Piston Ring Company. Three-piece oil control ring. 4,194,747, Cl. 277-140.000.
- Nissan Motor Company, Limited: *See*—
  - Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, 4,194,518, Cl. 137-15.000.
  - Kato, Fumiaki; Itzuka, Haruhiko; Sugasawa, Fukashi; and Matsumoto, Junichiro, 4,194,417, Cl. 74-866.000.
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  - Usui, Keizaburo; Hayama, Isao; Hamada, Hideo; and Yamamuro, Sigeaki, 4,194,608, Cl. 192-0.092.
- Nissan Shatai Co., Ltd.: *See*—
  - Ohsawa, Eiji; and Yoshikawa, Yoshiro, 4,194,396, Cl. 73-311.000.
- Nivert, Jean-Pierre: *See*—
  - Lalanne, Jean; Nivert, Jean-Pierre; and Tarascou, Daniel, 4,194,454, Cl. 110-238.000.
- Nizhnetagilskoe Proizvodstvennoe Obiedinenie "Uralkhimplast": *See*—
  - Babina, Margarita D.; Gabets, Anna P.; Pereskokova, Ida I.; and Popova, Galina I., 4,195,019, Cl. 260-17.200.
- Noakes, Jack E.; and Terner, Leslie L., to Ford Motor Company. Method of increasing the strength of a beta silicon carbide article. 4,195,049, Cl. 264-63.000.
- Noland, Richard D. Filter bag assembly for baghouses. 4,194,894, Cl. 55-379.000.
- Nomura, Yasushi: *See*—
  - Kume, Kazunari; and Nomura, Yasushi, 4,194,351, Cl. 368-82.000.
- Nonnenmacher, Gerhard, to Robert Bosch GmbH. Control system for a hydrostatic drive. 4,194,362, Cl. 60-431.000.
- Nonnenmacher, Gerhard: *See*—
  - Pahl, Arnold; and Nonnenmacher, Gerhard, 4,194,364, Cl. 60-445.000.
- Noranda Mines Limited: *See*—
  - Krantz, Tibor; and Farge, Jean C., 4,194,906, Cl. 75-125.000.
- Nordson Corporation: *See*—
  - Harjar, Martin J., 4,194,696, Cl. 239-707.000.
- North American Car Association: *See*—
  - Lubieniecki, Eugene, 4,194,523, Cl. 137-238.000.
- Northern Telecom Limited: *See*—
  - Walling, Jorg-Hein, 4,194,844, Cl. 366-157.000.
- Northwestern University: *See*—
  - Marhic, Michel E.; Epstein, Max; and Kwan, Larry I., 4,194,808, Cl. 350-96.320.
- Norton Company: *See*—
  - Foote, Earl H.; Moore, Frank D.; and Strigle, Ralph F., Jr., 4,195,043, Cl. 261-94.000.
  - Malloy, John F., 4,194,618, Cl. 206-205.000.
- Nottke, James E.; and Ruebel, Jack K., to Lykes Pasco Packing Co. Dispenser Manufacturing Div. Liquid mixing and aerating system. 4,194,650, Cl. 222-57.000.
- November, Milton H., to International Telephone and Telegraph Corporation. Densitometer calibration method. 4,194,385, Cl. 73-1.00R.
- Nowak, Michael T.; and Rybny, Charles B., to Celanese Corporation. Ultraviolet curable self-pigmented coating composition. 4,194,955, Cl. 204-159.150.
- Nowicki, John V., Jr.: *See*—
  - Byram, David C.; and Nowicki, John V., Jr., 4,194,636, Cl. 211-71.000.
- Numata, Hideji: *See*—
  - Sakemi, Hiroji; Morishita, Tomohiro; Numata, Hideji; and Ono, Takuro, 4,194,917, Cl. 106-62.000.
- N.V. Raychem S.A.: *See*—
  - Brusselmans, Jacques H. F., 4,195,106, Cl. 428-35.000.
  - Sovish, Richard C.; and Moisson, Marc F. L., 4,194,750, Cl. 277-208.000.
- Nyman Mfg. Co.: *See*—
  - Zabner, Adolf; and Bellemore, Norman I., 4,194,645, Cl. 220-306.000.
- O.K. Machine and Tool Corporation: *See*—
  - Kober, Marvin, 4,194,700, Cl. 242-7.170.
- Oaks, Seibert S.: *See*—
  - Montgomery, Robert H., Jr.; and Oaks, Seibert S., 4,194,791, Cl. 299-86.000.
- Oblonsky, Jan G.: *See*—
  - Barner, Robert P.; Gulick, Anne M.; deVeer, John A.; and Oblonsky, Jan G., 4,195,351, Cl. 364-900.000.
- O'Brien, Daniel J.: *See*—
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- Occidental Oil Shale, Inc.: *See*—
  - Studebaker, Irving G.; and Hutchins, Ned M., 4,194,789, Cl. 299-2.000.
- Ochiai, Shiyuichiro: *See*—
  - Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.
- O'Connell, Timothy R.; and Leach, George S., to Electronic Memories and Magnetics Corporation. Sense line termination circuit for semiconductor memory systems. 4,195,356, Cl. 365-189.000.
- Oestreicher, Max: *See*—
  - Fritschi, Bruno; Malina, Ludek; and Oestreicher, Max, 4,194,866, Cl. 414-459.000.
- Offermans, Hubert G., to Thomas Regout N.V. Telescoping guide rail construction. 4,194,793, Cl. 308-3.800.
- Ogasawara, Ikuo: *See*—
  - Satow, Haruhiko; Ueda, Tadakazu; and Ogasawara, Ikuo, 4,194,486, Cl. 123-210.000.
- Oglander, Allen H.; and Shannon, Richard E. Manually operated label dispensing machine. 4,194,646, Cl. 221-73.000.

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Ohhira, Seiichi: *See—*
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Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, to Mitsubishi Kinzoku Kabushiki Kaisha. Forgeable nickel-base super alloy. 4,194,909, Cl. 75-171.000.
Ohnuma, Teruyuki; Shimizu, Kaoru; Miyakawa, Seiichi; and Oyama, Hajime, to Ricoh Company, Ltd. Development apparatus. 4,194,830, Cl. 355-3.0DD.
Ohsawa, Eiji; and Yoshikawa, Yoshiro, to Nissan Shatai Co., Ltd. Automobile fuel gauge system. 4,194,396, Cl. 73-311.000.
Ohsawa, Mitsuo; and Kawagoe, Hiroshi, to Sony Corporation. Record player. 4,194,743, Cl. 274-1.00E.
Ohtsuka, Kunio: *See—*
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, 4,194,518, Cl. 137-15.000.
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Okamoto, Yoshikazu: *See—*
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Okerblom, Charles L., to International Telephone and Telegraph Corporation. Butterfly valve having high performance disc. 4,194,722, Cl. 251-305.000.
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Olympus Optical Co., Ltd.: *See—*
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Osanai, Akira. 4,194,704, Cl. 242-191.000.
Omae, Takashi: *See—*
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Omark Industries, Inc.: *See—*
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Ong, John T. H., to Eli Lilly and Company. Taste-stable aqueous pharmaceutical suspension of tall oil sitosterols and a method for the preparation thereof. 4,195,084, Cl. 424-238.000.
Ono Pharmaceutical Co. Ltd.: *See—*
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Ono, Takuro: *See—*
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Ootani, Toshihiro; Kozuka, Mikio; Takeda, Ryuichiro; and Kurihara, Hideaki, to Asahi Glass Company, Ltd.; and Nakashima Manufacturing Company, Ltd. Process for continuously preparing fiber reinforced cement. 4,194,946, Cl. 162-156.000.
Optical Coating Laboratory, Inc.: *See—*
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O'Rourke, Edward C.; and Fullerton, W. Wardle, to Merck & Co., Inc. Apparatus for longitudinal slicing of cylindrical body. 4,194,424, Cl. 83-870.000.
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Osanai, Akira, to Olympus Optical Co., Ltd. Auto shut-off apparatus for cassette tape recorder. 4,194,704, Cl. 242-191.000.
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Ota, Sakae: *See—*
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Otsuka Chemical Co., Ltd.: *See—*
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Otto, Carl W., to Airco, Inc. Method of preparing bacon slabs for slicing. 4,195,098, Cl. 426-513.000.
Otto, Eberhard; Wehner, Wolfgang; and Wirth, Hermann O., to Ciba-Geigy Corporation. Process for producing organotin compounds. 4,195,029, Cl. 260-429.700.
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Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,194,284, Cl. 29-509.000.
Ouhashi, Isamu. Golf ball retriever. 4,194,779, Cl. 294-19.00A.
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DuBois, Edmund H.; and Sheldon, John D., 4,194,609, Cl. 192-0.096.
McChesney, Richard M.; and Turner, Robert K., 4,194,483, Cl. 123-187.50R.
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Ovchinnikov, Viktor S.: *See—*
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Paaren, Herbert E.: *See—*
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Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., to United States of America, Air Force. Perfluorinated polyalkylether based lubricant composition. 4,194,983, Cl. 252-49.900.
Pagnozzi, Ernesto G.: *See—*
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Pagnozzi, Vincenzo; and Pagnozzi, Ernesto G. Vacuum drying kiln. 4,194,296, Cl. 34-16.500.
Pahl, Arnold; van der Kolk, Hans-Jurgen; and Lixenfeld, Manfred, to Robert Bosch GmbH. Electro-mechanical control system for hydraulic displacement pumps, such as swash plate or eccenter pumps. 4,194,361, Cl. 60-388.000.
Pahl, Arnold; and Nonnenmacher, Gerhard, to Robert Bosch GmbH. Arrangement for controlling the operation of a fluid-displacement machine. 4,194,364, Cl. 60-445.000.
Palmer, Catherine G.: *See—*
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Palmer, John P.: *See—*
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Palmieri, Vincent A.; and Palmieri, John P. Nylon line vegetation cutter feed. 4,194,287, Cl. 30-276.000.
Palovaara, Jaakko, to Valmet 04. Rolls, such as filled calender rolls, having deflection compensation. 4,194,446, Cl. 100-162.00B.
Panepinto, William, Jr.: *See—*
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Parr, Erwin W. Valve. 4,194,589, Cl. 180-271.000.

Parsons, Ronald, to Spencer Wright Industries, Inc. Tufting machine needles. 4,194,457, Cl. 112-222.000.
Pascual, Rafael: *See—*
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Pase, Michael G. Two man volleyball. 4,194,740, Cl. 273-411.000.
Patel, Gordhanbhai N., to Allied Chemical Corporation. Vapor-phase moving-boundary indicator. 4,195,055, Cl. 422-56.000.
Patel, Gordhanbhai N., to Allied Chemical Corporation. Vapor permeation time-temperature indicator. 4,195,056, Cl. 422-56.000.
Patel, Gordhanbhai N., to Allied Chemical Corporation. Vapor-phase moving-boundary indicator. 4,195,057, Cl. 422-56.000.
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Paterson, Malcolm M.; Paxson, William J.; and Christensen, Charles W., to Raytheon Company. Adjustable conveyor. 4,194,633, Cl. 209-152.000.
Paton, W. Donald; and Steenson, Thomas W., to Butler Manufacturing Company. Attachment for mounting concrete wall panels on a building. 4,194,333, Cl. 52-235.000.
Pattee, Harry E.: *See—*
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Paulsen, Hans; Jansen, Rolf; and Stadler, Peter, to Bayer Aktiengesellschaft. Process for preparing pseudo-disaccharides. 4,195,173, Cl. 536-17.00R.
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Payne, Ellis P., to Armstrong Cork Company. Sample display device. 4,194,307, Cl. 35-49.000.
Pearson, Kenneth. Container with built in straw. 4,194,674, Cl. 229-7.00S.
Pechacek, Ctirad; and Sehnal, Richard, to Ustav pro vyzkum motorovych vozidel. Circuit arrangement for the regulation of the transmission stages on an automatic gear changer. 4,194,418, Cl. 74-866.000.
Peeples, Richard: *See—*
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Peirson, John R.; and Lynch, Deane A. L., to J. R. Pierson Building Systems Limited. Building construction. 4,194,328, Cl. 52-86.000.
Peniston, Quintin P.; and Johnson, Edwin L. Process for the manufacture of chitosan. 4,195,175, Cl. 536-20.000.
Pennerstorfer, Walter. Overflow valve. 4,194,251, Cl. 4-199.000.
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Perkins, Roderick B., to N L Industries, Inc. Foundry mold and core wash additives. 4,194,915, Cl. 106-38.250.
Perry, Elijah R.; and Rabinowitz, Mario, to Electric Power Research Institute, Inc. High-voltage DC transmission system and method. 4,195,334, Cl. 363-44.000.
Perry, Glen D., to Monsanto Company. Method of making layered fabrics. 4,194,939, Cl. 156-254.000.
Peter, Heinz: *See—*
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Peters, Charles L., Jr., to Box Innards, Inc. Partition interlock construction. 4,194,675, Cl. 229-15.000.
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Peters, Ronald L., to FMC Corporation. Method and apparatus for shaking trees grown in rows. 4,194,347, Cl. 56-328.0TS.
Peterson, Gordon E., to Union Carbide Corporation. Thin flexible electrodes and the method for producing them. 4,195,121, Cl. 429-127.000.
Peterson, John I., to United States of America, America. Dye-containing polymer composition. 4,194,877, Cl. 8-4.000.
Petre, Mark L.; and Lipp, Ellis P., to Emhart Industries, Inc. Single pole double throw snap switch. 4,195,208, Cl. 200-63.00R.
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Pfahl, Robert C., Jr., to Western Electric Company, Incorporated. Method and apparatus for generating a controllably exposed vapor body for heating articles. 4,194,297, Cl. 34-26.000.
Pfalzer, Lothar; and Fischer, Siegbert, to J. M. Voith GmbH. Method and apparatus for separating magnetic particles from waste paper. 4,194,968, Cl. 209-3.000.
Pfeifer, Josef; and Peter, Heinz, to Ciba-Geigy Corporation. Aliphatic polyamide from disubstituted decane diamine. 4,195,165, Cl. 528-346.000.
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Phibbs, Murray K.; and Sipos, Peter A., to Du Pont of Canada Limited. Process for the manufacture of N-(substituted)-3-aminoacrylonitriles. 4,195,034, Cl. 260-465.00E.
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Zuech, Ernest A., 4,195,042, Cl. 260-604.0HF.
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- Popova, Galina I.: *See—*
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  - Babina, Margarita D.; Gabets, Anna P.; Pereskokova, Ida I.; and Popova, Galina I., 4,195,019, Cl. 260-17.200.
- Poppe, Willy. Foam spring. 4,194,255, Cl. 5-481.000.
- Popplewell, James M.; Acton, Constance F.; and Brock, Andrew J., to Olin Corporation. Corrosion resistant copper base alloys for heat exchanger tube. 4,194,928, Cl. 148-2.000.
- Porkert, Helmut: *See—*
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- Pounds, Walter R.; and Dunlap, Bill D., to KB-Denver, Inc. Switching assemblies. 4,195,210, Cl. 200-159.00A.
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  - Gogins, Laird B., 4,194,407, Cl. 74-117.000.
- Powers, Edward J.: *See—*
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- PPG Industries, Inc.: *See—*
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  - Killmeyer, Charles W., 4,194,873, Cl. 425-93.000.
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  - Tsuei, Chang-Ling, 4,194,252, Cl. 4-199.000.
- Price, Robert; Craig, John W.; Perahia, Avraham; and Melbye, Hartvig E., to Sperry Corporation. High density bias linearized magnetic recording system utilizing Nyquist bandwidth partial response transmission. 4,195,318, Cl. 360-39.000.
- Priddy, Duane B., to Dow Chemical Company, The. Devolatilizing polymers of styrene and acrylic or methacrylic acid. 4,195,169, Cl. 528-500.000.
- Pries, Erich, to Dr. C. Otto & Comp. G.m.b.H. Coke oven quenching car. 4,194,951, Cl. 202-227.000.
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- Prince Corporation: *See—*
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- Prince, Edgar D., to Prince Corporation. Instrument mounting system. 4,194,585, Cl. 180-90.000.
- Prince, Paul R., to Hughes Aircraft Company. CTD charge subtraction transversal filter. 4,195,273, Cl. 333-165.000.
- Procter & Gamble Company, The: *See—*
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- Proudian, Andrew P., to Second Foundation, Inc. Ultrasonic focusing system. 4,194,510, Cl. 128-660.000.
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- Puhich, Joseph M. Programmable bobbin thread detector. 4,195,292, Cl. 340-677.000.
- Pullman Incorporated: *See—*
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  - Miller, Roy W., 4,194,450, Cl. 105-253.000.
  - Yates, Donald B., 4,194,595, Cl. 188-52.000.
- Punja, Nazim, to Imperial Chemical Industries Limited. 1-Acetyl or 1-cyano-2(2,2-dichlorovinyl)-3,3-dimethyl cyclopropane. 4,195,033, Cl. 260-464.000.
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- Puthawala, Anwer, to Kraftwerk Union Aktiengesellschaft. Method for binding liquid-containing radioactive wastes and kneading machine therefor. 4,194,842, Cl. 366-76.000.
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- Pytlarz, Charles P.; and Rost, Richard L., to Zenith Radio Corporation. Lockable adjustment means for self-converging adjustable yoke assembly. 4,195,315, Cl. 358-248.000.
- Q.P. Corporation: *See—*
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- R & R Agri-Products, Inc.: *See—*
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- Rabatin, Jacob G., to General Electric Company. Color contrast radiographic device. 4,195,228, Cl. 250-483.000.
- Rabinovich, Aron A.: *See—*
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- Rabinowitz, Mario: *See—*
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- Rado, William G., to Ford Motor Company. Voltage distributor for a spark ignition engine. 4,194,480, Cl. 123-148.0ND.
- Radtke, Schrade F.; Carr, Dodd S.; and Kronstein, Max, to International Lead Zinc Research Organization, Inc. Water-dispersible coatings containing boron nitride for steel casting dies. 4,195,002, Cl. 260-29.20E.
- Rainwater, Lawrence L., to Sperry Corporation. Dielectric slab polarizer. 4,195,270, Cl. 333-21.00A.
- Randall, Eugene J. Solar collector panel. 4,194,491, Cl. 126-417.000.
- Rangan, Karur S. Machine sortable mailing envelope. 4,194,631, Cl. 206-610.000.
- Rapp, Heinz; Biedermann, Ernst; and Bartel, Siegfried, to AGFA-Gevaert, A.G. Photographic copying machine with carrier structure carrying format masks to and away from the copying station. 4,194,836, Cl. 355-75.000.
- Rassomakhin, Klimenty E.: *See—*
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- Rauschenberger, Richard A.: *See—*
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- Rautenbach, Jacobus J., to Fowler Holdings Limited. Load supporting means and the formation thereof. 4,195,111, Cl. 428-218.000.
- Rauterberg, Ulf, to Siemens Aktiengesellschaft. Electromagnetic relay and method for its adjustment. 4,195,276, Cl. 335-151.000.
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- RCA Corporation: *See—*
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  - Bell, Alan E.; and Bartolini, Robert A., 4,195,313, Cl. 179-100.10G.
  - Christopher, Todd J.; and Tretter, Larry L., 4,195,309, Cl. 358-31.000.
  - D'Amato, Ralph J.; and Stone, Robert P., 4,195,248, Cl. 313-403.000.
  - Davidson, Edmund B., 4,194,912, Cl. 430-322.000.
  - Ettenberg, Michael; and Kressel, Henry, 4,195,269, Cl. 332-7.510.
  - Goel, Jitendra, 4,194,285, Cl. 29-579.000.
  - Hawrylo, Frank Z., 4,195,308, Cl. 357-67.000.
  - Kimbrough, Laurence B.; and Van Renssen, Marinus, 4,194,463, Cl. 118-409.000.
- Rea, David M. Board game apparatus. 4,194,741, Cl. 273-243.000.
- Reddy, Robert R. Telescoping slip-together tubing joint. 4,194,765, Cl. 285-27.000.
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- Reed, Terry J.; Smith, Jack R.; and Kiscaden, Roy W., to Westinghouse Electric Corp. Combined cycle electric power plant having an improved digital/analog hybrid gas turbine control system. 4,195,231, Cl. 290-40.00R.
- Rees, Nicolaas M. J.: *See—*
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- Regie Nationale des Usines Renault: *See—*
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- Reiche, Werner; and Trutzschler, Hans, to Trutzschler GmbH & Co. KG. Apparatus for removing cotton or the like from a bale. 4,194,269, Cl. 19-81.000.
- Reichmann, Wolfgang; Konig, Klaus; and Koster, Johannes, to Bayer Aktiengesellschaft. Process for the continuous production of monoisocyanates. 4,195,031, Cl. 260-453.00P.
- Reid, John D., to United States of America, Navy. Dual channel proximity fuze. 4,195,294, Cl. 343-7.0PF.
- Reid, Lee R.; and Ratliff, Charles R., to Texas Instruments Incorporated. Multiprobe test system and method of using same. 4,195,259, Cl. 324-158.00P.
- Reidelbach, Willi; Renner, Hermann; and Klie, Wolfgang, to Daimler-Benz Aktiengesellschaft. Hollow bearer for vehicles. 4,194,763, Cl. 280-784.000.
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- Reitemeyer, Paul: *See—*
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- Renner, Carl A., to Du Pont de Nemours, E. I., and Company. Process for preparing a methyl-substituted benzaldehyde. 4,195,040, Cl. 260-599.000.
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  - Reidelbach, Willi; Renner, Hermann; and Klie, Wolfgang, 4,194,763, Cl. 280-784.000.
- Renshaw, Floyd H.: *See—*
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- Research Engineering & Manufacturing, Inc.: *See—*
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- Respiratory Care, Inc.: *See—*
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- Restaino, Alfred J.: *See—*
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- Rettkowski, Gale F., to R & R Agri-Products, Inc. Agricultural subsoil implement including flow divider for wheel assemblies. 4,194,573, Cl. 172-400.000.
- Revlon, Inc.: *See—*
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- Reynolds, James R., to Milliken Research Corporation. Water jet loom. 4,194,540, Cl. 139-291.00R.
- Reynolds, Kim A.: *See—*
  - Cook, Lloyd A.; Reynolds, Kim A.; and Mark, Werner J., 4,194,667, Cl. 228-4.100.
- Reynolds, Lionel A. Vibrator devices. 4,194,405, Cl. 74-87.000.
- Rheocast Corporation: *See—*
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- Rhine, Samuel A.; Thompson, Joseph F.; and Palmer, Catherine G., to Indiana University Foundation. Antenatal cell extracting device and method. 4,194,513, Cl. 128-750.000.
- Ribka, Joachim: *See—*
  - Hunger, Klaus; and Ribka, Joachim, 4,195,020, Cl. 260-157.000.
- Richards, Donald L., to Eaton Corporation. Compression fitting. 4,194,770, Cl. 285-206.000.
- Richards, Elmer A., to Eaton Corporation. Blocked transmission. 4,194,410, Cl. 74-339.000.
- Richards, William H. G., to Burroughs Wellcome Co. Synergistic composition for malaria. 4,195,089, Cl. 424-258.000.
- Richardson, Edward G.; and Williamson, Keith H., to National Research Development Corporation. Means for protecting hazardous areas against electrical faults. 4,195,325, Cl. 361-56.000.
- Richter, Jurgen; Purrer, Alois; and Eisenhut, Werner, to Krupp-Koppers GmbH; and Bergwerksverband. Method of monitoring and controlling the travel and operation of the travelling accessory machines in a coking installation. 4,194,686, Cl. 235-376.000.
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  - Ohnuma, Teruyuki; Shimizu, Kaoru; Miyakawa, Seiichi; and Oyama, Hajime, 4,194,830, Cl. 355-3.0DD.
  - Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, 4,195,260, Cl. 324-204.000.
  - Tani, Tatsuo; Ota, Sakae; and Kono, Masao, 4,194,837, Cl. 355-75.000.
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- Rife, Dwight A., to Smith International, Inc. Seal protector for a sealed bearing rock bit. 4,194,795, Cl. 308-8.200.
- Rigbey, Leonard J.: *See—*
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- Rillie, Robert J.: *See—*
  - Dierks, Robert P.; and Rillie, Robert J., 4,195,110, Cl. 428-218.000.
- Ripple, David E., to Lubrizol Corporation, The. Haloalkyl hydroxy-aromatic condensation products as fuel additives. 4,194,886, Cl. 44-70.000.
- Robbins, David J.; and Bimberg, Dieter H., to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Luminescent material and preparation and use thereof. 4,195,226, Cl. 250-363.00R.
- Robert Bosch GmbH: *See—*
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  - Moller, Heinz; and Hess, Joachim, 4,195,241, Cl. 310-168.000.
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  - Pahl, Arnold; van der Kolk, Hans-Jurgen; and Lixenfeld, Manfred, 4,194,361, Cl. 60-388.000.
  - Pahl, Arnold; and Nonnenmacher, Gerhard, 4,194,364, Cl. 60-445.000.
- Roberts, Ronald W., to Tektronix, Inc. Zero delay trigger view. 4,195,252, Cl. 315-392.000.
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- Robertson, George H.: *See—*
  - Wheeler, Ian R.; and Robertson, George H., 4,194,921, Cl. 106-309.000.
- Robinsky, Eli I. Gravitational separator having membrane baffles therein. 4,194,976, Cl. 210-137.000.
- Roche, Olivier C.: *See—*
  - Buresi, Georges; Roche, Olivier C.; and Viallard, Michel B., 4,194,568, Cl. 166-340.000.
- Rodder, Karl-Martin: *See—*
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- Roe, Justus G., to Great Neck Saw Manufacturers, Inc. Tape measure. 4,194,703, Cl. 242-107.200.
- Roger, Jack, to Compagnie Generale des Etablissements Michelin. Tires. 4,194,548, Cl. 152-361.00R.
- Rogers, Scott A. Planetarium educational device. 4,194,306, Cl. 35-44.000.
- Rohm and Haas Company: *See—*
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- Rohr Industries, Inc.: *See—*
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- Rohrer, George A., to Technovation, Inc. Process for manufacturing a ferroelectric device and devices manufactured thereby. 4,195,355, Cl. 365-145.000.
- Rolls-Royce Limited: *See—*
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- Rooney, Clarence S.: *See—*
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- Rosenberg, Richard H.: *See—*
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- Rosenberger, Roy R., to Nalco Chemical Company. Device for determining settling rates of solids or particulate bearing liquid in a continuous process or flowing stream. 4,194,391, Cl. 73-61.400.
- Rosheim, Mark E. Hydraulic servo mechanism. 4,194,437, Cl. 92-120.000.
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- Ross, Donald R., Jr. Trolley rail and flying pickup. 4,194,603, Cl. 191-23.00A.
- Rossler, Eleanor J.; and Przybyla, Franciszek J., to P. R. Mallory & Co. Inc. Hydrogen evolution inhibitors for cells having zinc anodes. 4,195,120, Cl. 429-50.000.
- Rossmann, Kurt: *See—*
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- Rost, Richard L.: *See—*
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- Rothbuhr, Lothar; Kuhner, Gehard; and Dittrich, Gunther, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of furnace black. 4,195,068, Cl. 423-455.000.
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  - Nedelec, Lucien; Guillaume, Jacques; and Dumont, Claude, 4,195,081, Cl. 424-263.000.
- ROVEMA Verpackungsmaschinen GmbH & Co. KG.: *See—*
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- Rubinshtein, Abram: *See—*
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- Rubinshtein, Efim; and Rubinshtein, Abram. Method and device for stamping ball retainers. 4,194,277, Cl. 29-148.40C.
- Ruck, Bernard W.; Stella, Joseph A.; and Bullock, Edward K., to Polaroid Corporation. High speed rotating drive termination system. 4,194,816, Cl. 352-130.000.
- Ruebel, Jack K.: *See—*
  - Nottke, James E.; and Ruebel, Jack K., 4,194,650, Cl. 222-57.000.
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- Rug Specialist Inc.: *See—*
  - Finley, Bill G.; and Finley, Terry L., 4,194,262, Cl. 15-314.000.
- Russell, Alexander H.; and McClinton, John L., to Burns & Russell Company of Baltimore City. Ceramic coated quartz particles. 4,195,010, Cl. 260-40.00R.
- Russell, Walter W.: *See—*
  - Woodhouse, Ronald; and Russell, Walter W., 4,194,893, Cl. 55-168.000.
- Rybny, Charles B.: *See—*
  - Nowak, Michael T.; and Rybny, Charles B., 4,194,955, Cl. 204-159.150.
- S.I.A.P. Societa Industriale Agglomerati e Prodotti Petroliferi S.p.A.: *See—*
  - Gambacorta, Mario, 4,194,901, Cl. 75-48.000.

- Sabel, Hans-Dieter: *See—*
  - Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, 4,195,158, Cl. 528-230.000.
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  - Schulz, Johann G. D.; and Sabourin, Edward T., 4,195,185, Cl. 562-407.000.
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- Safford, John W., Jr., to Abbott Laboratories. Process for producing a soluble rubella antigen. 4,195,074, Cl. 424-12.000.
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  - Kruzhanov, Jury V.; Dubinin, Viktor P.; Ovchinnikov, Viktor S.; and Safronov, Vladimir E., 4,195,354, Cl. 365-105.000.
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  - Jumel, Yves, 4,195,123, Cl. 429-194.000.
- Sahira, Kensyo: *See—*
  - Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, 4,194,909, Cl. 75-171.000.
- Saiki, Junichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with an exhaust gas recirculation system. 4,194,475, Cl. 123-119.00A.
- Saint-Gobain Industries: *See—*
  - Levecque, Marcel A.; Battigelli, Jean A.; and Plantard, Dominique, 4,194,897, Cl. 65-5.000.
- Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, to Lion Dentifrice Co. Ltd., The. 2′,6′-Dihydroxy-9-(2,5-dihydroxyphenyl)octylphenone and its use as an antioxidant. 4,195,101, Cl. 426-546.000.
- Sakaev, Vagiz S.: *See—*
  - Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., 4,195,236, Cl. 307-252.00K.
- Sakai, Koichi; Horie, Satoru; Kitahara, Shinji; and Suzuki, Kozo, to Toko, Inc. Noise cancelling system for FM receiver. 4,195,203, Cl. 179-1.0GD.
- Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, to Ricoh Company, Ltd. Apparatus for sensing deterioration of developing substance including ferromagnetic carrier and non-magnetic toner particles. 4,195,260, Cl. 324-204.000.
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  - Tsukamoto, Takuzo; Sakamoto, Tamotsu; and Okamoto, Yoshikazu, 4,194,465, Cl. 118-658.000.
- Sakamoto, Tomonori: *See—*
  - Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.
- Sakanaka, Yasuhiro: *See—*
  - Hayashi, Takao; Sakanaka, Yasuhiro; and Shimizu, Akihiko, 4,194,999, Cl. 260-17.00R.
- Sakemi, Hiroji; Morishita, Tomohiro; Numata, Hideji; and Ono, Takuro, to Asahi Glass Company, Ltd. Fired ceramic having dense and low thermal expansion characteristics. 4,194,917; Cl. 106-62.000.
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  - Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, 4,194,909, Cl. 75-171.000.
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  - Spiegelberg, Hans, 4,194,624, Cl. 206-441.000.
- Sanders, Fletcher T. Broadhead and field point extractor tool. 4,194,278, Cl. 29-264.000.
- Sandoz Ltd.: *See—*
  - Fehr, Theodor; and Stadler, Paul, 4,195,086, Cl. 424-250.000.
- Sandvik Aktiebolag: *See—*
  - Kling, Knut A., 4,194,794, Cl. 308-3.800.
- Sandvik Conveyor GmbH: *See—*
  - Hrivnak, John G., 4,194,614, Cl. 198-487.000.
- Sanger, Georg; and Franz, Alfred K., to Organisation Europeenne de Recherches. Gas leakage detection apparatus. 4,195,224, Cl. 250-289.000.
- Sansome, Ronald P., to Pitney Bowes Inc. Apparatus and method for correcting imperfection in a polygon used for laser scanning. 4,195,316, Cl. 358-285.000.
- Santer, J. Owen: *See—*
  - Anderson, George J.; Santer, J. Owen; and Desmond, Timothy F., 4,195,116, Cl. 428-524.000.
- Santoro, Giovanni, to Werbetronic AG. Push-button operated device for storing a plurality of positions of a movable member. 4,194,403, Cl. 74-10.330.
- Sanyo Kiki Kabushiki Kaisha: *See—*
  - Imada, Yusuke, 4,194,436, Cl. 91-420.000.
- Sara, Raymond V.: *See—*
  - Elbert, Raymond J.; and Sara, Raymond V., 4,194,673, Cl. 228-219.000.
- Sasaki, Kitaro: *See—*
  - Izumida, Yukihiro; Sasaki, Kitaro; and Miyamoto, Yoshinobu, 4,195,246, Cl. 313-292.000.
- Sasaki, Tadashi: *See—*
  - Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.
- Sato, Akihiko: *See—*
  - Nakano, Yoshiyuki; Sato, Akihiko; and Araki, Yoshitaka, 4,194,820, Cl. 354-43.000.
- Sato, Masato; and Inoue, Takemi, to Kawasaki Jukogyo Kabushiki Kaisha. Vibration absorbed engine exhaust means for motor propelled boats. 4,194,460, Cl. 115-73.000.
- Sato, Takashi, to Hitachi, Ltd. Address buffer circuit in semiconductor memory. 4,195,238, Cl. 307-270.000.
- Sato, Yasushi; Ibaragi, Toshio; Ishihara, Masanobu; and Honda, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Impact-resistant styrene resin composition. 4,195,136, Cl. 525-71.000.
- Satoh, Akira; and Ishizaka, Teisuke, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Fujikoshi. Planetary speed reducer. 4,194,414, Cl. 74-674.000.
- Satow, Haruhiko; Ueda, Tadakazu; and Ogasawara, Ikuo, to Toyo Kogyo Co., Ltd.; and NGK Spark Plug Co., Ltd. Ignition means for rotary piston engines. 4,194,486, Cl. 123-210.000.
- Savage, John M., Jr. Lens clip and cap for led or light unit assembly. 4,195,330, Cl. 362-226.000.
- Savit, Joseph, to AES Technology Systems, Inc. Folded paper edge opening process. 4,194,342, Cl. 53-492.000.
- Sawitzki, Friedhelm: *See—*
  - Fullmann, Marius; Sawitzki, Friedhelm; and Silber, Dieter, 4,195,306, Cl. 357-38.000.
- Saylor, B. Franklin: *See—*
  - Matulich, Dan S.; and Saylor, B. Franklin, 4,194,357, Cl. 60-39.020.
- SCA Development Aktiebolag: *See—*
  - Wiberg, Karl V., deceased; and Wiberg, Anna-Britta, legal representative, 4,194,299, Cl. 34-124.000.
- Scala, Norma, administratrix: *See—*
  - Burke, Oliver W., Jr., deceased; and Humphreys, Victor T., 4,194,920, Cl. 106-308.00M.
- Schad, Anthony G.: *See—*
  - Vinch, Angelo N.; and Schad, Anthony G., 4,194,804, Cl. 339-103.00M.
- Schaefer Equipment Incorporated: *See—*
  - Cale, Roland E., 4,194,599, Cl. 188-231.000.
- Schafer, Tillman H.: *See—*
  - Miller, Paul H.; and Schafer, Tillman H., 4,195,359, Cl. 367-94.000.
- Schandoney, Geraldine: *See—*
  - Wygal, John F.; Schandoney, Geraldine; and Straus, Dorothy L., 4,194,588, Cl. 180-279.000.
- Scharner, Peter: *See—*
  - Baresel, Detlef; Scharner, Peter; Huth, Gerhard; and Gillert, Winfried, 4,194,994, Cl. 252-518.000.
- Schellenberg, Hans; and Vetterli, Walter, to Rieter Machine Works Ltd. Thread deflecting element for a draw-texturing machine. 4,194,350, Cl. 57-352.000.
- Scheller, Thomas: *See—*
  - Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
- Scherer, Richard M., to Chambers Corporation. Oven liner and rack design. 4,194,495, Cl. 126-339.000.
- Schermann, Walter; Holst, Arno; and Fischer, Wilhelm, to Hoechst Aktiengesellschaft. Water vapor absorbing and transmitting adhesive, a process for the manufacture of this adhesive and use thereof. 4,194,995, Cl. 260-14.000.
- Schiek, Burkhard; and Kohler, Jurgen, to U.S. Philips Corporation. Broad-band 180° phase shifter. 4,195,271, Cl. 333-161.000.
- Schievelbein, Vernon H., to Texaco Inc. High conformance enhanced oil recovery process. 4,194,563, Cl. 166-273.000.
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- Schlaf, Helmut: *See—*
  - Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, 4,195,158, Cl. 528-230.000.
- Schley, Kenneth E. Multiple fluid storage container. 4,194,619, Cl. 206-217.000.
- Schlicht, Raymond C.: *See—*
  - Hammond, Kenneth G.; and Schlicht, Raymond C., 4,194,981, Cl. 252-46.700.
- Schmachtel, Florian, to ROVEMA Verpackungsmaschinen GmbH & Co. KG. Flexible tube bagging machine. 4,194,438, Cl. 93-20.000.
- Schmidt, Robert R.: *See—*
  - Metzger, Carl; Eue, Ludwig; and Schmidt, Robert R., 4,195,181, Cl. 544-316.000.
- Schmitt, Frederick L.: *See—*
  - Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,099, Cl. 426-536.000.
  - Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,195,100, Cl. 426-536.000.
- Schmitz, William L., to Vac-O-Cast, Inc. Containerized hypodermic module. 4,194,505, Cl. 128-218.00D.
- Schneider, Wolfgang; and Niehaves, Kurt, to Chemische Werke Huls AG. Method for the production of aqueous, finely dispersed, shelf-stable silicone oil emulsions. 4,194,988, Cl. 252-312.000.
- Schnoes, Heinrich K.: *See—*
  - DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,195,027, Cl. 260-397.200.
- Schoeff, John A., to Motorola, Inc. Analog-to-digital converter system. 4,195,235, Cl. 307-229.000.
- Scholten, Heinz: *See—*
  - Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,195,162, Cl. 528-313.000.
- Schon, Franz: *See—*
  - Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,878, Cl. 8-39.00B.

  - Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,879, Cl. 8-39.00B.
  - Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,880, Cl. 8-41.00B.
  - Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,881, Cl. 8-41.00B.
  - Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, 4,194,882, Cl. 8-41.00B.
- Schoning, Rudolf: *See—*
  - Schonwald, Siegfried; Schoning, Rudolf; Breyer, Eberhard; and Hecht, Gert, 4,194,798, Cl. 308-189.00R.
- Schonwald, Siegfried; Breyer, Eberhard; and Trojahn, Hans-Georg, to Siemens Aktiengesellschaft. Pressure limiting valve. 4,194,527, Cl. 137-543.000.
- Schonwald, Siegfried; Schoning, Rudolf; Breyer, Eberhard; and Hecht, Gert, to Siemens Aktiengesellschaft. Side channel compressor with at least one bearing arranged at the housing cover of the side channel compressor. 4,194,798, Cl. 308-189.00R.
- Schopp, Edgar. Irrigation emitter system. 4,194,695, Cl. 239-542.000.
- Schrewe, Hans, to Mannesmann Aktiengesellschaft. Tundish for continuous casting. 4,194,555, Cl. 164-438.000.
- Schrishuhn, Delbert, Jr. Ski-shoe-attachment apparatus for skateboards. 4,194,753, Cl. 280-13.000.
- Schroder, Staffan H. Method and apparatus for sorting and classifying timber. 4,195,346, Cl. 364-475.000.
- Schroter, Herbert: *See—*
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- Schrotz, Kurt: *See—*
  - Becker, Werner; and Schrotz, Kurt, 4,194,448, Cl. 101-295.000.
- Schubert & Salzer: *See—*
  - Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,195,345, Cl. 364-470.000.
- Schulein, Robert B.: *See—*
  - Anderson, C. Roger; and Schulein, Robert B., 4,194,590, Cl. 181-186.000.
- Schultz, Wilderich C., to Prima International. Foldable purse hanger and whistle. 4,194,714, Cl. 248-308.000.
- Schulz, Johann G. D.; and Sabourin, Edward T., to Gulf Research and Development Company. Process of preparing organic acids. 4,195,185, Cl. 562-407.000.
- Schulz, Johann G. D.; and Sabourin, Edward T., to Gulf Research and Development Company. Process for preparing organic acids. 4,195,186, Cl. 562-407.000.
- Schulz, Klaus-Dieter: *See—*
  - Hausen, Peter; and Schulz, Klaus-Dieter, 4,194,903, Cl. 75-58.000.
- Schuro Heinz Schurmann GmbH & Co.: *See—*
  - Diels, Manfred; Dienstuhl, Karl W.; Jager, Tilo; and Hocker, Eitel, 4,194,284, Cl. 29-509.000.
- Schwab, James J.; and Cooper, Jacob, to Air Pollution Systems, Inc. Electrostatic precipitator. 4,194,888, Cl. 55-2.000.
- Schwartz, Willis T., Jr.: *See—*
  - Dorfman, Edwin; Hindersinn, Raymond R.; and Schwartz, Willis T., Jr., 4,195,014, Cl. 260-45.75R.
- Schwarz, Peter: *See—*
  - Graalmann, Gerhard; Hohm, Reinhard; Schwarz, Peter; and Muhsil, Wilfried, 4,194,515, Cl. 131-135.000.
- Schwetz, Karl A.; and Vogt, Georg, to Elektroschmelzwerk Kempten GmbH. Process for the production of dense sintered shaped articles of polycrystalline boron carbide by pressureless sintering. 4,195,066, Cl. 423-291.000.
- Science Union et Cie, Societe Francaise de Recherche Medicale: *See—*
  - Fontanges, Robert, 4,195,076, Cl. 424-43.000.
- SCM Corporation: *See—*
  - Turpin, Edward T., 4,195,102, Cl. 427-27.000.
- Scott, Douglas R., to Robertshaw Controls Company. Pneumatic control system and parts therefor and methods of making the same. 4,194,687, Cl. 236-87.000.
- Scott & Fetzer Company, The: *See—*
  - Gretz, Thomas J., 4,194,768, Cl. 285-178.000.
- Scott, Fredric W.: *See—*
  - Hoshino, Yasutaka; and Scott, Fredric W., 4,195,130, Cl. 435-235.000.
- Scott, Lewis A.; and Gibson, Duane M., to Omark Industries, Inc. Splitting device. 4,194,544, Cl. 144-193.00D.
- Scott, Raymond G.; and Wysocki, Lawrence S., to Champion International Corporation. Openable container cover. 4,194,680, Cl. 229-43.000.
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- Seberg, Charles H.: *See—*
  - Harms, Jack L.; and Seberg, Charles H., 4,194,504, Cl. 128-214.400.
- Second Foundation, Inc.: *See—*
  - Proudian, Andrew P., 4,194,510, Cl. 128-660.000.
- Segerson, James M.; and Clawson, Bert G. Mechanism for releasably attaching an object to a kite. 4,194,709, Cl. 244-155.00R.
- Seguine, Edward S., to Procter & Gamble Company, The. Method for dewaxing high-resistivity oils. 4,194,956, Cl. 204-186.000.
- Sehnal, Richard: *See—*
  - Pechacek, Ctirad; and Sehnal, Richard, 4,194,418, Cl. 74-866.000.
- Seitetsu Kagaku Co., Ltd.: *See—*
  - Kawamura, Masao; Nishi, Tadaaki; Kato, Kunioki; Mizokami, Hiroshi; and Kanazawa, Tadashi, 4,195,041, Cl. 260-600.00R.
- Seitz, Alan F., to Data Motion, Inc. Sheet feed tractor. 4,194,660, Cl. 226-74.000.
- Seki, Shigeo: *See—*
  - Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,195,170, Cl. 536-10.000.
- Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Doi, Hiroshi; Ochiai, Shiyuichiro; Kawai, Shigeyuki; Miyamoto, Kazuaki; and Sasaki, Tadashi, 4,195,124, Cl. 428-469.000.
- Sekiya, Setsuro: *See—*
  - Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.
- Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Preparation of cationic amine-functional copolymers. 4,195,147, Cl. 526-312.000.
- Selby, Donald W.: *See—*
  - Swindler, David L.; and Selby, Donald W., 4,194,378, Cl. 70-363.000.
- Senco Products, Inc.: *See—*
  - Siegmann, Carl, 4,194,664, Cl. 227-8.000.
- Sessa, Terenzio. Motor vehicle window regulator. 4,194,605, Cl. 192-12.00R.
- Sethi, Gurdip S., to Eastman Kodak Company. Photographic film cartridge assembly and camera. 4,194,822, Cl. 354-121.000.
- Sevastyanov, Boris A.: *See—*
  - Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,195,097, Cl. 426-61.000.
- Sexsmith, Frederick H.; and Hornaman, E. Chris, to Lord Corporation. Adhesive-promoting compositions. 4,195,140, Cl. 525-523.000.
- Sextro, Gunter: *See—*
  - Burg, Karlheinz; Heller, Alwin; Sabel, Hans-Dieter; Schlaf, Helmut; and Sextro, Gunter, 4,195,158, Cl. 528-230.000.
- Shah, Hasmukh T.: *See—*
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- Shah, Raj: *See—*
  - Sekmakas, Kazys; and Shah, Raj, 4,195,147, Cl. 526-312.000.
- Shannon, Richard E.: *See—*
  - Oglander, Allen H.; and Shannon, Richard E., 4,194,646, Cl. 221-73.000.
- Sharkey, Dennis R.: *See—*
  - Briggs, Peter D.; and Sharkey, Dennis R., 4,194,941, Cl. 156-361.000.
- Sharp Kabushiki Kaisha: *See—*
  - Kakutani, Nobuyasu, 4,195,348, Cl. 364-562.000.
- Sharpe, Thomas H. Lift augmenting device for aircraft. 4,194,707, Cl. 244-9.000.
- Shea, Frank J. Fastener for a pay telephone station coin box. 4,194,775, Cl. 292-307.00R.
- Sheard, Dennis R.; and Taylor, Roger W., to Imperial Chemical Industries Limited. Process for molding a non-woven fabric. 4,195,112, Cl 428-288.000.
- Sheetz, Charles E.: *See—*
  - Myers, Harold E.; and Sheetz, Charles E., 4,194,343, Cl. 53-493.000.
- Sheffner, Aaron L. Topical application of thioglycolic acid in the treatment of dermatological conditions. 4,195,095, Cl. 424-317.000.
- Sheldon, John D.: *See—*
  - DuBois, Edmund H.; and Sheldon, John D., 4,194,609, Cl. 192-0.096.
- Shell Oil Company: *See—*
  - Kortbeek, Andras G. Th. G.; van der Nat, Adrianus A.; van der Linden Lemmers, Wilhelmina J. M.; and Sjardijn, Willem, 4,195,069, Cl. 423-492.000.
  - Miller, William V., 4,195,075, Cl. 424-14.000.
  - Van Acker, Eduard M. A. A. J.; Kooijmans, Petrus G.; and de Heer, Aart, 4,195,004, Cl. 260-29.6TA.
- Shibakawa, Riichiro: *See—*
  - Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,195,079, Cl. 424-122.000.
- Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, to Sumitomo Chemical Company, Limited. Process for the purification of highly crystalline polyolefins. 4,195,145, Cl. 526-137.000.
- Shilov, Gennady G.: *See—*
  - Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,195,097, Cl. 426-61.000.
- Shimano Industrial Company Limited: *See—*
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- Shimizu, Akihiko: *See—*
  - Hayashi, Takao; Sakanaka, Yasuhiro; and Shimizu, Akihiko, 4,194,999, Cl. 260-17.00R.
- Shimizu, Kaoru: *See—*
  - Ohnuma, Teruyuki; Shimizu, Kaoru; Miyakawa, Seiichi; and Oyama, Hajime, 4,194,830, Cl. 355-3.0DD.
- Shinbo, Masafu: *See—*
  - Saito, Yutaka; Kimura, Yukichi; Sakamoto, Tomonori; Shinbo, Masafu; and Kameyama, Shoji, 4,195,101, Cl. 426-546.000.
- Shinmura, Tomisaku. Rolling type athletic apparatus. 4,194,751, Cl. 280-11.200.
- Shino, Makoto; Makiguchi, Sadao; Matsumoto, Hajime; Komuro, Katsusuke; Iwai, Kazuhiro; and Tsuchiya, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Indicator meters for automobiles and illumination therefor. 4,194,587, Cl. 180-90.000.

- Shinohara, Makoto: *See—*
  - Watanabe, Makio; Aoyama, Kaneyosi; and Shinohara, Makoto, 4,194,556, Cl. 165-51.000.
- Shiode, Tsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Exposure device. 4,194,835, Cl. 355-67.000.
- Shiomi, Masanao; Yokoya, Yuuji; and Harata, Motowo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Wheel camber adjusting means for vehicles. 4,194,760, Cl. 280-661.000.
- Shirato, Yoshiaki: *See—*
  - Hara, Toshitami; Hajimoto, Yoshioki; Shirato, Yoshiaki; and Matsushima, Massaki, 4,194,812, Cl. 350-357.000.
- Shonts, David J.: *See—*
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- Shur-Line Manufacturing Co., Inc.: *See—*
  - Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., 4,194,852, Cl. 403-299.000.
- Shure Brothers, Incorporated: *See—*
  - Anderson, C. Roger; and Schulein, Robert B., 4,194,590, Cl. 181-186.000.
  - Groh, Allen R.; Karlov, Frank J.; and Happ, Lawrence R., 4,194,744, Cl. 274-37.000.
- Siddi, Giorgio: *See—*
  - Gozzo, Franco; Abbruzzese, Luigi; and Siddi, Giorgio, 4,195,036, Cl. 260-561.0HL.
- Sidor, Edward J.; and Sidor, William E. Golf club holder. 4,194,547, Cl. 150-1.50R.
- Sidor, William E.: *See—*
  - Sidor, Edward J.; and Sidor, William E., 4,194,547, Cl. 150-1.50R.
- Sieber, Paul: *See—*
  - Minner, Willy; Sieber, Paul; and Haraszti, Ibolya, 4,195,314, Cl. 455-185.000.
- Siegert, Louis D.: *See—*
  - Voorheis, Temple S.; and Siegert, Louis D., 4,194,874, Cl. 431-8.000.
- Siegmann, Carl, to Senco Products, Inc. Firing safety for a pneumatic nailer. 4,194,664, Cl. 227-8.000.
- Siehr, Richard L.: *See—*
  - Morrow, James G., Sr.; Anderson, Michael C.; and Siehr, Richard L., 4,194,638, Cl. 212-46.00R.
- Siemens Aktiengesellschaft: *See—*
  - Hoffmann, Kurt, 4,194,283, Cl. 29-571.000.
  - Leupelt, Uwe, 4,195,302, Cl. 343-704.000.
  - Rauterberg, Ulf, 4,195,276, Cl. 335-151.000.
  - Schonwald, Siegfried; Breyer, Eberhard; and Trojahn, Hans-Georg, 4,194,527, Cl. 137-543.000.
  - Schonwald, Siegfried; Schoning, Rudolf; Breyer, Eberhard; and Hecht, Gert, 4,194,798, Cl. 308-189.00R.
  - Udvardi-Lakos, Janos, 4,195,233, Cl. 307-66.000.
- Siemon Company, The: *See—*
  - Knickerbocker, Robert H., 4,194,256, Cl. 7-107.000.
- Silber, Dieter: *See—*
  - Fullmann, Marius; Sawitzki, Friedhelm; and Silber, Dieter, 4,195,306, Cl. 357-38.000.
- Siltec Corporation: *See—*
  - Bonora, Anthony C.; and Lorenz, Karl, 4,194,324, Cl. 51-131.500.
- Simone, Giovanni. Modular reticular bearing structure for domed shelters. 4,194,327, Cl. 52-86.000.
- Simonovitch, Chaim, to Abic, Ltd. Derivatives of naphthyridine. 4,195,087, Cl. 424-256.000.
- Simuro, Ernest G.; Turk, Abraham A.; and Turk, Nathan M. Level and angle attachment for a carpenter's folding ruler. 4,194,295, Cl. 33-458.000.
- Singer Company, The: *See—*
  - Edwards, William J.; and Hurler, Herbert T., 4,194,456, Cl. 112-176.000.
- Sipos, Peter A.: *See—*
  - Phibbs, Murray K.; and Sipos, Peter A., 4,195,034, Cl. 260-465.00E.
- Siwersson, Olle L.: *See—*
  - Tell, Karl G.; Wall, Arne E.; and Siwersson, Olle L., 4,194,615, Cl. 198-502.000.
- Sjardijn, Willem: *See—*
  - Kortbeek, Andras G. Th. G.; van der Nat, Adrianus A.; van der Linden Lemmers, Wilhelmina J. M.; and Sjardijn, Willem, 4,195,069, Cl. 423-492.000.
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  - Tilch, Gerhard; Friedrich, Wolfgang; Dobhan, Herbert; Hetterich, Hermann; Horling, Peter; and Finzel, Sigismund, 4,194,752, Cl. 280-11.280.
- SKW Trostberg Aktiengesellschaft: *See—*
  - Gmohling, Werner, 4,194,902, Cl. 75-55.000.
- Slinkard, William E.; Baylis, Anthony B.; DeGroot, Peter B.; and Hughes, Michael P., to Celanese Corporation. Steam assisted hydrocarbon oxidation process. 4,195,188, Cl. 562-549.000.
- Smirnov, Jury M.: *See—*
  - Babina, Margarita D.; Dunjushkin, Evgeny S.; Popova, Galina I.; Sokolov, Anatoly D.; and Smirnov, Jury M., 4,194,996, Cl. 260-17.200.
- Smith, Douglas J.; and Kutno, Irving L. Articulated travel and educational map with peel-off divisions. 4,194,305, Cl. 35-42.000.
- Smith, Edwin R.: *See—*
  - de Miranda, William R. R.; and Smith, Edwin R., 4,195,195, Cl. 174-68.500.
- Smith, Harry A.: *See—*
  - Kaiser, Mark E.; and Smith, Harry A., 4,195,154, Cl. 528-98.000.
- Smith, Horace L., Jr., to Smitherm Industries, Inc. Particulate solids. 4,194,444, Cl. 99-479.000.
- Smith International, Inc.: *See—*
  - Rife, Dwight A., 4,194,795, Cl. 308-8.200.
- Smith, Jack R.: *See—*
  - Reed, Terry J.; Smith, Jack R.; and Kiscaden, Roy W., 4,195,231, Cl. 290-40.00R.
- Smith, James T., to National Steel Corporation. Nailable steel floor channel with anti-skid surface. 4,194,330, Cl. 52-177.000.
- Smith, Oliver W.; Koleske, Joseph V.; and Knopf, Robert J., to Union Carbide Corporation. Epoxide derivatives of ester diol alkoxylates and compositions thereof. 4,195,160, Cl. 528-297.000.
- Smith, Roy E., to American Color & Chemical Corporation. Method of lowering the color of effluent which contains aryl azo- or aryl nitro-containing compounds. 4,194,973, Cl. 210-50.000.
- Smith, Walter A.; and Harp, Raymond T., to NCR Corporation. Sequential control system. 4,195,339, Cl. 364-200.000.
- Smitherm Industries, Inc.: *See—*
  - Smith, Horace L., Jr., 4,194,444, Cl. 99-479.000.
- Snamprogetti, S.p.A.: *See—*
  - Corbellini, Margherita; and Greco, Alberto, 4,194,992, Cl. 252-442.000.
- Snow, John P.; and Callahan, James J., to Houdaille Industries, Inc. Cyclic lubricant distributor valve. 4,194,593, Cl. 184-7.00D.
- Snowdon, Albert C.: *See—*
  - Graham, Robert O.; Rauenbuehler, John A.; and Snowdon, Albert C., 4,195,212, Cl. 200-243.000.
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  - Kraess, Henri; and Bloch, Paul, 4,195,275, Cl. 335-120.000.
- Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
  - Martin, Ernest N.; and Keirns, Michael L., 4,194,651, Cl. 222-108.000.
- Societe Europeene de Propulsion: *See—*
  - Detalle, Bernard, 4,194,706, Cl. 244-3.230.
- Societe Nationale Elf Aquitaine: *See—*
  - Lalanne, Jean; Nivert, Jean-Pierre; and Tarascou, Daniel, 4,194,454, Cl. 110-238.000.
- Societe Nationale Elf Aquitaine (Production): *See—*
  - Chateau, Georges M.; and Falkner, Chester B., Jr., 4,194,857, Cl. 405-203.000.
- Societe Nationale Industrielle Aerospatiale: *See—*
  - Gouley, Claude A., 4,195,300, Cl. 343-109.000.
- Sokolov, Anatoly D.: *See—*
  - Babina, Margarita D.; Dunjushkin, Evgeny S.; Popova, Galina I.; Sokolov, Anatoly D.; and Smirnov, Jury M., 4,194,996, Cl. 260-17.200.
- Soloway, Natalie. Tropical fish training kit. 4,194,620, Cl. 206-223.000.
- Somerville Belkin Industries Limited: *See—*
  - Zimmermann, John, 4,194,439, Cl. 93-36.050.
- Sommansson, Peter S. E., to Telefonaktiebolaget L M Ericsson. Telephone push button switch assembly having sequential operated contact structure. 4,195,207, Cl. 200-1.00B.
- Sommer, Donald J.: *See—*
  - Murakami, David; and Sommer, Donald J., 4,195,335, Cl. 363-49.000.
- Sommer, John G., Jr., to General Tire & Rubber Company, The. Rubber articles having improved fatigue life. 4,195,143, Cl. 525-354.000.
- Song, Won R.: *See—*
  - Elliott, Robert L.; and Song, Won R., 4,194,984, Cl. 252-51.50A.
- Sony Corporation: *See—*
  - Ohsawa, Mitsuo; and Kawagoe, Hiroshi, 4,194,743, Cl. 274-1.00E.
- Southwest Research Institute: *See—*
  - Benson, Harvey S.; and Wood, Charles D., III, 4,194,574, Cl. 172-430.000.
- Sovish, Richard C.; and Moisson, Marc F. L., to N.V. Raychem S.A. Sealing device with external deformable flanges. 4,194,750, Cl. 277-208.000.
- Spatle, Wilfried, to Messrs. Leonhard Kurz. Feeding apparatus for a film in a hot press stamping machine. 4,194,944, Cl. 156-540.000.
- Spaulding, Tedford H., to Bunker Ramo Corporation. Insulation piercing contacts and connectors. 4,194,802, Cl. 339-97.00P.
- Spector, George: *See—*
  - Ledman, Dale A.; and Spector, George, 4,194,629, Cl. 206-573.000.
- Spehrley, Charles W., Jr.; and Walsh, Brian F., to Xerox Corporation. Staple clinching mechanism. 4,194,666, Cl. 227-155.000.
- Spencer, Arthur T.: *See—*
  - Brown, George L.; and Spencer, Arthur T., 4,195,005, Cl. 260-29.6TA.
  - Brown, George L.; and Spencer, Arthur T., 4,195,006, Cl. 260-29.6TA.
- Spencer Wright Industries, Inc.: *See—*
  - Parsons, Ronald, 4,194,457, Cl. 112-222.000.
- Sperry Corporation: *See—*
  - Price, Robert; Craig, John W.; Perahia, Avraham; and Melbye, Hartvig E., 4,195,318, Cl. 360-39.000.
  - Rainwater, Lawrence L., 4,195,270, Cl. 333-21.00A.
  - Thaxter, James B., 4,195,243, Cl. 310-317.000.
- Spiegelberg, Hans, to Salve S.A. Lockable holder for a multiple plaster pack. 4,194,624, Cl. 206-441.000.
- Spirig, Ernst. Desoldering wick package and improved bobbin utilized therein. 4,194,705, Cl. 242-137.000.
- Spivack, John D., to Ciba-Geigy Corporation. Hindered phenyl phosphites. 4,195,016, Cl. 260-45.85R.

- Sporrong, Malte: *See—*
  - Gransell, Ake; Jansson, Sven A.; and Sporrong, Malte, 4,194,922, Cl. 134-1.000.
- Sportscoach Corporation: *See—*
  - Jennings, Frederick A.; and Bowen, Thomas C., 4,194,373, Cl. 64-14.000.
- Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use of 2-oxabicyclooctane derivatives, for augmenting or enhancing the flavor of foodstuffs. 4,195,099, Cl. 426-536.000.
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- Springer, Engelbert: *See—*
  - Hillmann, Hans; and Springer, Engelbert, 4,195,199, Cl. 174-128.00S.
- Spurrier, Harry A. Cooler chest and dispenser structure. 4,194,647, Cl. 221-97.000.
- Square D Company: *See—*
  - Swindler, David L.; and Selby, Donald W., 4,194,378, Cl. 70-363.000.
- Stackaruk, Arthur. Stackaruk engine. 4,194,479, Cl. 123-148.00C.
- Stadler, Paul: *See—*
  - Fehr, Theodor; and Stadler, Paul, 4,195,086, Cl. 424-250.000.
- Stadler, Peter: *See—*
  - Paulsen, Hans; Jansen, Rolf; and Stadler, Peter, 4,195,173, Cl. 536-17.00R.
- Staff, Bonner W., to General Electric Company. Ultrasonic inspection method. 4,194,400, Cl. 73-623.000.
- Stallion Corporation: *See—*
  - Boley, Robert E., 4,194,393, Cl. 73-151.000.
- Standard Oil Company: *See—*
  - Li, George S.; and Jones, John F., 4,195,135, Cl. 525-69.000.
- Stanley Electric Co., Ltd.: *See—*
  - Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, 4,195,249, Cl. 313-493.000.
  - Miyazawa, Hideo, 4,195,245, Cl. 313-113.000.
- Stanley, Gerald R., to Crown International, Inc. Low-level preamplifier circuit. 4,195,267, Cl. 330-265.000.
- Stanley Works, The: *See—*
  - Cotton, Lawrence M., 4,194,543, Cl. 144-137.000.
- Stanton, Robert. Golf putting training device. 4,194,648, Cl. 221-299.000.
- Stark, Virgil. Solar distillation apparatus. 4,194,949, Cl. 202-180.000.
- Static Systems Corporation: *See—*
  - Lester, Robert W.; and Hotto, Robert, 4,194,833, Cl. 355-14.0CU.
- Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, to AGFA-Gevaert, A.G. Marking of interspersed motion-picture scenes and still shots with interrupt-transport markings. 4,194,817, Cl. 352-169.000.
- Stauffer Chemical Company: *See—*
  - Campbell, Ramsey G., 4,194,514, Cl. 131-17.00R.
- Steenson, Thomas W.: *See—*
  - Paton, W. Donald; and Steenson, Thomas W., 4,194,333, Cl. 52-235.000.
- Stefek, Jiri: *See—*
  - Hodr, Miloslav; Holub, Josef; and Stefek, Jiri, 4,194,537, Cl. 139-194.000.
- Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., to Vsesojuzny Nauchno-Issledovatelsky Institut Myasnoi Promyshlennosti. Method for preparing enzymaytic composition for acceleration of ageing of meat products. 4,195,097, Cl. 426-61.000.
- Stella, Joseph A.: *See—*
  - Ruck, Bernard W.; Stella, Joseph A.; and Bullock, Edward K., 4,194,816, Cl. 352-130.000.
- Stemme, Otto; Lermann, Peter; and Fauth, Gunter, to Agfa-Gevaert Aktiengesellschaft. Camera with film-unit drive. 4,194,821, Cl. 354-86.000.
- Stemme, Otto: *See—*
  - Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
- Stengel, Edgar; and Emde, Friedhelm, to Aeg-Elotherm G.m.b.H. Apparatus for the inductive hardening by quenching of bearing surfaces of a crankshaft. 4,194,728, Cl. 266-125.000.
- Stenger, Richard E., to General Electric Company. Double annular combustor configuration. 4,194,358, Cl. 60-39.060.
- Stenman, Antero E.: *See—*
  - Falk, Alfons B.; Stenman, Antero E.; and Wikland, Svante, 4,194,761, Cl. 280-705.000.
- Stenzenberger, Volkmar: *See—*
  - Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
- Stephenson, Donald K., to Outboard Marine Corporation. Throttling passageway to decrease coast-down time of lawn mower engines. 4,194,485, Cl. 123-198.0DC.
- Stevens, James N. Radially compressed rotary shaft sealing device. 4,194,746, Cl. 277-34.300.
- Stevenson, John: *See—*
  - George, Raymond D.; and Stevenson, John, 4,194,918, Cl. 106-80.000.
- Stevenson, John L.: *See—*
  - Faktor, Marc M.; and Stevenson, John L., 4,194,954, Cl. 204-129.300.
- Stever, Carole A.; and Stever, Robert L. Bug-bopper. 4,194,690, Cl. 239-57.000.
- Stever, Robert L.: *See—*
  - Stever, Carole A.; and Stever, Robert L., 4,194,690, Cl. 239-57.000.
- Stewart, Charles L.: *See—*
  - Gastrock, Edward A., 4,194,398, Cl. 73-422.0TC.
- Stieger, Helmut J. Power take-off arrangements. 4,194,360, Cl. 60-325.000.
- Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., to AGFA-GEVAERT N.V. Radiographic film cassette. 4,194,625, Cl. 206-455.000.
- Stine, Clifford R.; and Wojtecki, Rudolph G., to Eaton Corporation. Composite tubing product. 4,194,536, Cl. 138-149.000.
- Stoffregen, Gunter. Door check device. 4,194,264, Cl. 16-52.000.
- Stokley, Charles O.; and Erbstoesser, Steven R., to Exxon Production Research Company. Placement apparatus and method for low density ball sealers. 4,194,561, Cl. 166-162.000.
- Stone, Clement A., to Merck & Co., Inc. Compositions and methods for treating glaucoma by the topical administration of t-butylamino-3-(4-morpholino-1,2,5-thiadiazol-3-yloxy-2-phopanol hydrogen maleate. 4,195,085, Cl. 424-248.510.
- Stone, Robert P.: *See—*
  - D'Amato, Ralph J.; and Stone, Robert P., 4,195,248, Cl. 313-403.000.
- Stormer, Horst L.: *See—*
  - Dingle, Raymond; Gossard, Arthur C.; and Stormer, Horst L., 4,194,935, Cl. 148-175.000.
- Stoufflet, Rene G.; and Yeou, Victor, to Poclain. Hydraulic motor control. 4,194,365, Cl. 60-468.000.
- Stout, Edward I.: *See—*
  - Fanta, George F.; Stout, Edward I.; and Doane, William M., 4,194,998, Cl. 260-17.4GC.
- Straitz, John F., III, to Combustion Unlimited Incorporated. Liquid burnpits. 4,194,876, Cl. 431-202.000.
- Stratton, Boyd L., to Arvin Industries, Inc. Video recording and playback editing system with displayed cue signals. 4,195,317, Cl. 360-14.000.
- Straus, Dorothy L.: *See—*
  - Wygal, John F.; Schandoney, Geraldine; and Straus, Dorothy L., 4,194,588, Cl. 180-279.000.
- Strigle, Ralph F., Jr.: *See—*
  - Foote, Earl H.; Moore, Frank D.; and Strigle, Ralph F., Jr., 4,195,043, Cl. 261-94.000.
- Stritzl, Karl: *See—*
  - Svoboda, Josef; Weigl, Erwin; Krob. Erwin; Stritzl, Karl; and Knotek, Jaroslav, 4,194,758, Cl. 280-605.000.
- Strock, Harold B.: *See—*
  - Kotval, Peshotan S.; and Strock, Harold B., 4,195,067, Cl. 423-348.000.
- Strom, Robert E.: *See—*
  - Swanson, George G.; Strom, Robert E.; and Jansen, Philip, 4,194,300, Cl. 34-217.000.
- Stromberg, Thore. Nozzle regulating device. 4,194,526, Cl. 137-498.000.
- Strub, Jacques: *See—*
  - Bertrand, Pierre; Jamet, Michel; Strub, Jacques; and Walter, Eric, 4,195,337, Cl. 364-106.000.
- Struckman, Edmund E.; and Larsen, Harold S. Float arm operated valve. 4,194,525, Cl. 137-438.000.
- Studebaker, Irving G.; and Hutchins, Ned M., to Occidental Oil Shale, Inc. Staggered array of explosives for fragmented oil shale formation toward a vertical free face. 4,194,789, Cl. 299-2.000.
- Studenroth, Karl E. Rotary piston internal combustion engine. 4,194,871, Cl. 418-38.000.
- Stuhler, Harold A.: *See—*
  - Foerster, George S.; and Stuhler, Harold A., 4,194,904, Cl. 75-78.000.
- Stumpf, Friedrich: *See—*
  - Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
- Stutz, Herbert; and Gehm, Robert, to BASF Aktiengesellschaft. Hard, rigid, non-elastomeric polyurethane, compositions. 4,195,149, Cl. 528-49.000.
- Su, Kai C.: *See—*
  - Deichert, William G.; Su, Kai C.; and Van Buren, Martin F., 4,195,030, Cl. 260-448.20E.
- Sudakova, Lidia M.: *See—*
  - Borodin, Valerian A.; Sudakova, Lidia M.; and Kolobanov, Nikolai I., 4,194,538, Cl. 139-194.000.
- Sudo, Yoichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Knee protecting device for occupant of vehicle. 4,194,762, Cl. 280-751.000.
- Sugano, Kazuhiko: *See—*
  - Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, 4,194,518, Cl. 137-15.000.
- Suganuma, Hisashi, to Pioneer Electronic Corporation. Temperature compensating circuit for varactor diodes. 4,195,274, Cl. 334-15.000.
- Sugasawa, Fukashi, to Nissan Motor Company, Limited. Control system for hydraulic pressure regulating valve in automatic transmission

connected to multi-cylinder I.C. engine with means for operating the engine on selected cylinders of all. 4,194,416, Cl. 74-859.000.

- Sugasawa, Fukashi: *See—*
  - Kato, Fumiaki; Itzuka, Haruhiko; Sugasawa, Fukashi; and Matsumoto, Junichiro, 4,194,417, Cl. 74-866.000.
- Sugiyama, Keiichi, to Yamaha Hatsudoki Kabushiki Kaisha. Device for admission of secondary air to internal combustion engine intake. 4,194,477, Cl. 123-124.00R.
- Sulzer Brothers Limited: *See—*
  - Augsburger, Walter, 4,194,468, Cl. 122-406.0ST.
- Sumitomo Chemical Company, Limited: *See—*
  - Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, 4,195,145, Cl. 526-137.000.
- Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co., Ltd. Air-fuel ratio control system for an internal combustion engine. 4,194,478, Cl. 123-139.0AW.
- Sundermann, Rudolf; Rottloff, Gunther; and Grigat, Ernst, to Bayer Aktiengesellschaft. Cross-linked plastics based on cyanic acid esters and method of production thereof. 4,195,132, Cl. 521-155.000.
- Sunouchi, Akio: *See—*
  - Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.
- Suozzo, Leonard S. Mechanical shock and sway arrestor. 4,194,598, Cl. 188-134.000.
- Super Sack Manufacturing Corporation: *See—*
  - Williamson, Robert R.; and Derby, Norwin C., 4,194,652, Cl. 222-185.000.
- Suxov, Gennady I.: *See—*
  - Gaun, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennady I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,194,435, Cl. 91-234.000.
- Suzuki, Kozo: *See—*
  - Sakai, Koichi; Horie, Satoru; Kitahara, Shinji; and Suzuki, Kozo, 4,195,203, Cl. 179-1.0GD.
- Suzuki, Masayuki: *See—*
  - Ito, Fumio; Suzuki, Masayuki; Murakami, Hiroyashu; Date, Nobuaki; Ito, Tadashi; and Sunouchi, Akio, 4,194,819, Cl. 354-43.000.
- Suzuki, Shunichi, to Nippon Electric Co., Ltd. Flip-flop comprising two field effect transistors controllably connected to nodes of the flip-flop and then crosswise to serve as a sense amplifier. 4,195,239, Cl. 307-355.000.
- Suzuki, Takatoshi: *See—*
  - Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; and Suzuki, Takatoshi, 4,195,145, Cl. 526-137.000.
- Suzuki, Tooru, to Tokyo Shibaura Electric Co., Ltd. X-ray photographing apparatus. 4,195,229, Cl. 250-445.00T.
- Svensson, Bengt H.; Lindberg, Lars G.; and Hallstedt, Karl G. A., to Aktiebolaget SKF. Device for maintaining a required liquid pressure in a hydrostatic bearing. 4,194,796, Cl. 308-9.000.
- Svirklys, Ferdinand M., to Extrados Company Limited. Plant growing unit. 4,194,320, Cl. 47-59.000.
- Svoboda, Josef; Weigl, Erwin; Krob, Erwin; Stritzl, Karl; and Knotek, Jaroslav, to TMC Corporation. Brake mechanism which can be mounted on a ski. 4,194,758, Cl. 280-605.000.
- Svoboda, Josef, to TMC Corporation. Brake mechanism for a ski. 4,194,759, Cl. 280-605.000.
- Svoboda, Josef: *See—*
  - Hofbauer, Rupert; and Svoboda, Josef, 4,194,387, Cl. 73-9.000.
- Swain, Samuel J. Combinational fireplace unit. 4,194,489, Cl. 126-127.000.
- Swann, Wayne E.: *See—*
  - Hartdegen, Frank J.; and Swann, Wayne E., 4,195,127, Cl. 435-174.000.
- Swanson, George G.; Strom, Robert E.; and Jansen, Philip, to Nabisco, Inc. Apparatus for handling creme filled sandwich cookies. 4,194,300, Cl. 34-217.000.
- Swift & Company: *See—*
  - Johnson, Walter W.; Bernholdt, Harry F.; Murphy, Robert E.; and Killebrew, John G., 4,194,267, Cl. 17-52.000.
- Swindler, David L.; and Selby, Donald W., to Square D Company. Combination lock extraction apparatus. 4,194,378, Cl. 70-363.000.
- Sylla, Jurgen: *See—*
  - Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
- Symborski, Alex P.; Fulmer, Ray M.; and Thomas, David W., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass filaments. 4,194,896, Cl. 65-3.00R.
- Syncro Corporation: *See—*
  - Carmichael, Thomas F., 4,195,256, Cl. 322-90.000.
- Tabayashi, Seiichi, to Toppan Printing Co., Ltd. Consecutive copying and bookbinding method and its apparatus. 4,194,832, Cl. 355-11.000.
- Tabibi, Sohrab: *See—*
  - Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,195,345, Cl. 364-470.000.
- Tada, Kanetosi: *See—*
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- Taffurelli, Felice, to Albertini, Sauro. Device for seamless attachment of buttons. 4,194,272, Cl. 24-90.00R.
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- Takagi, Ken-ichi: *See—*
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- Takano, Motoharu, to Q.P. Corporation. Apparatus for intermittently transferring containers. 4,194,613, Cl. 198-425.000.
- Takeda, Ryuichiro: *See—*
  - Ootani, Toshihiro; Kozuka, Mikio; Takeda, Ryuichiro; and Kurihara, Hideaki, 4,194,946, Cl. 162-156.000.
- Takeuchi, Yuzo: *See—*
  - Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,194,478, Cl. 123-139.0AW.
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- Tanahashi, Toshio: *See—*
  - Amano, Masuo; and Tanahashi, Toshio, 4,194,472, Cl. 123-119.00A.
- Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, to Kawasaki Jukogyo Kabushiki Kaisha. Ion-nitriding process. 4,194,930, Cl. 148-16.600.
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- Tanaka, Makoto: *See—*
  - Moriya, Yoshiro; Ikai, Kazuhito; and Tanaka, Makoto, 4,194,914, Cl. 106-18.140.
- Tani, Tatsuo; Ota, Sakae; and Kono, Masao, to Ricoh Company, Ltd. Original feed apparatus for electrophotographic copying machine. 4,194,837, Cl. 355-75.000.
- Tarascou, Daniel: *See—*
  - Lalanne, Jean; Nivert, Jean-Pierre; and Tarascou, Daniel, 4,194,454, Cl. 110-238.000.
- Tarkan, Stuart E.: *See—*
  - Mal, M. Kumar; and Tarkan, Stuart E., 4,194,910, Cl. 75-236.000.
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  - Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, 4,195,260, Cl. 324-204.000.
- Taylor, Roger W.: *See—*
  - Sheard, Dennis R.; and Taylor, Roger W., 4,195,112, Cl. 428-288.000.
- Technical Communications Corporation: *See—*
  - McCalmont, Arnold M., 4,195,202, Cl. 179-1.50S.
- Technovation, Inc.: *See—*
  - Rohrer, George A., 4,195,355, Cl. 365-145.000.
- Tecumseh Products Company: *See—*
  - Morse, Robert L., 4,194,370, Cl. 62-503.000.
  - Morse, Robert L., 4,194,371, Cl. 62-503.000.
- Teepak, Inc.: *See—*
  - Verellen, Michael; and Thaens, Ghislain, 4,195,054, Cl. 264-558.000.
- Tektronix, Inc.: *See—*
  - Roberts, Ronald W., 4,195,252, Cl. 315-392.000.
- Telefonaktiebolaget L M Ericsson: *See—*
  - Sommansson, Peter S. E., 4,195,207, Cl. 200-1.00B.
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  - Herpers, Ferdinand J.; Kroll, Harley E.; Carlson, Alfred D.; and Dodge, Paul D., 4,194,263, Cl. 15-353.000.
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  - Takagi, Hiromitsu; Kano, Gota; and Teramoto, Iwao, 4,194,927, Cl. 148-1.500.
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- Terraillon, Paul. Timer. 4,194,354, Cl. 368-276.000.
- Terzian, Berj A. Compact, multi-functional digital time displays. 4,194,352, Cl. 368-239.000.
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  - Waddill, Harold G., 4,195,153, Cl. 528-94.000.
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  - Bousaid, Issam S.; Hoyt, Donald L.; and Korstad, Ralph J., 4,194,562, Cl. 166-245.000.
  - Chou, Kechia J., 4,194,982, Cl. 252-47.500.
  - Hammond, Kenneth G.; and Schlicht, Raymond C., 4,194,981, Cl. 252-46.700.
  - Kalfoglou, George, 4,194,565, Cl. 166-275.000.
  - Schievelbein, Vernon H., 4,194,563, Cl. 166-273.000.
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- Texas Instruments Incorporated: *See—*
  - Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, 4,195,357, Cl. 365-210.000.
  - Reid, Lee R.; and Ratliff, Charles R., 4,195,259, Cl. 324-158.00P.

- Textron Inc.: *See—*
  - Edson. Sydney. 4.194.637. Cl. 211-96.000.
- Thaens. Ghislain: *See—*
  - Verellen. Michael: and Thaens. Ghislain. 4.195.054. Cl. 264-558.000.
- Thames. Jimmy. Grave digging apparatus. 4.194.311. Cl. 37-192.00A.
- Thaxter. James B., to Sperry Corporation. Piezoelectric wafer mover. 4.195.243. Cl. 310-317.000.
- Thermacore. Inc.: *See—*
  - Eastman. George Y.. 4.194.559. Cl. 165-105.000.
- Thermo Electron Corporation: *See—*
  - Rounbehler. David P.: and Fine. David H.. 4.194.884. Cl. 23-232.00R.
- Thery. Jean P.: Alban. Claude M.: and Jordi. Albert P.. to Compagnie Francaise des Petroles. S.A. Fire extinguishing apparatus for large oil storage reservoirs. 4.194.572. Cl. 169-66.000.
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  - Kirchweger. Karl: Fachbach. Heinz: Thien. Gerhard: and Greier. Josef. 4.194.484. Cl. 123-195.00C.
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  - Symborski. Alex P.: Fulmer. Ray M.: and Thomas. David W.. 4.194.896. Cl. 65-3.00R.
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  - Offermans. Hubert G.. 4.194.793. Cl. 308-3.800.
- Thomasse. Andre: *See—*
  - Bouteille. Daniel: Thomasse. Andre: and Petrimaux. Eric. 4.194.533. Cl. 137-624.180.
- Thomi. Michel: Groothuis. Michel: and Meylan. Serge. to Compagnie des Montres Longines Francillon SA. Analog display calendar watch. 4.194.353. Cl. 368-38.000.
- Thompson. Gerald L.. to Eli Lilly and Company. 4-Desacetoxy-4α-hydroxyvinblastine and related compounds. 4.195.022. Cl. 260-244.400.
- Thompson. Joseph F.: *See—*
  - Rhine. Samuel A.: Thompson. Joseph F.: and Palmer. Catherine G.. 4.194.513. Cl. 128-750.000.
- Thompson. Richard L.. to General Electric Company. Luminaire hoist safety device with automatic brake means adjacent top cable guide. 4.195.332. Cl. 362-391.000.
- Thompson. Thomas K.. to Owens-Corning Fiberglas Corporation. Fluid flow method and apparatus used in manufacture of glass fibers. 4.194.895. Cl. 65-2.000.
- Thompson. Woodrow F. Adjustable golf putter. 4.194.739. Cl. 273-79.000.
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  - Gazard. Maryse: and Dubois. Jean-Claude. 4.195.108. Cl. 428-195.000.
- Thomson. James R.: *See—*
  - Layden. Lawrence M.: and Thomson. James R.. 4.194.727. Cl. 266-58.000.
- Thor. Gary. Shotgun ammunition container. 4.194.657. Cl. 224-252.000.
- Thorneburg Hosiery Co.. Inc.: *See—*
  - Thorneburg. James L.. 4.194.249. Cl. 2-239.000.
- Thorneburg. James L.. to Thorneburg Hosiery Co.. Inc. Jogging and running athletic sock. 4.194.249. Cl. 2-239.000.
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  - Laforest. Jacqueline S.. nee Boutillier du Retail: Mignonac. Sylviane S. J.. nee Mondon: Thuillier. Germaine. nee Nachmias: and Bessin. Pierre A. R.. 4,195,093. Cl. 424-275.000.
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- Tillotson. Richard. Swimmer's wallet. 4.194.655. Cl. 224-191.000.
- Timm. Walter C.. to GAF Corporation. Self-adhesive plastic tile. 4.195.107. Cl. 428-40.000.
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  - Boon. Bruce T. E.: and Timmins. Armand P.. 4.194.859. Cl. 406-172.000.
- TMC Corporation: *See—*
  - Hofbauer. Rupert: and Svoboda. Josef. 4.194.387. Cl. 73-9.000.
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  - Iwaoka. Kazuo: Toh. Tagao: and Fukada. Minoru. 4.195.063. Cl. 422-180.000.
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  - Sakai. Koichi: Horie. Satoru: Kitahara. Shinji: and Suzuki. Kozo. 4,195,203. Cl. 179-1.0GD.
- Toko. Yoshiaki: *See—*
  - Yamauchi. Noriyuki: Toko. Yoshiaki: and Ehara. Takao. 4.194.864. Cl. 414-283.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Shiode. Tsuyoshi. 4.194.835. Cl. 355-67.000.
- Tokyo Shibaura Electric Co.. Ltd.: *See—*
  - Suzuki. Tooru. 4.195.229. Cl. 250-445.00T.
- Tomioka. Shinji: and Mori. Yasuki. to Abbott Laboratories. Derivatives of an antibiotic XK-62-2 and process for the production thereof. 4.195.171. Cl. 536-17.00R.
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  - Watanabe. Saburo. 4.194.318. Cl. 46-202.000.
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  - Celmer. Walter D.: Cullen. Walter P.: Oscarson. John R.: Huang. Liang H.: Shibakawa. Riichiro: and Tone. Junsuke. 4.195.079. Cl. 424-122.000.
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  - Tabayashi. Seiichi. 4.194.832. Cl. 355-11.000.
- Tornay. Edmund G.. to Energy Transportation Group. Inc. Slam prevention in liquid pumping. 4.194.870. Cl. 417-53.000.
- Torrez. Kay A. Floor-supported cushion assembly and method of making same. 4.194.254. Cl. 5-420.000.
- Tournier. Herve: and Groult. Alain. to Union Generale de Savonnerie. Powdered or flaked washing compositions adapted to automatic laundry machines. 4.194.986. Cl. 252-102.000.
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- Toyo Kogyo Co.. Ltd.: *See—*
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  - Maeda. Tatsuo. 4.194.377. Cl. 70-360.000.
  - Satow. Haruhiko: Ueda. Tadakazu: and Ogasawara. Ikuo. 4.194.486. Cl. 123-210.000.
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  - Ide. Tsuneyuki: Takagi. Ken-ichi: Watanabe. Michio: Ohhira. Seiichi: Fukumori. Masahito: and Kondo. Yoshikazu. 4.194.900. Cl. 75-0.50C.
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  - Hayashi. Takao: Sakanaka. Yasuhiro: and Shimizu. Akihiko. 4.194.999. Cl. 260-17.00R.
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  - Amano. Masuo: and Tanahashi. Toshio. 4.194.472. Cl. 123-119.00A.
  - Saiki. Junichi. 4.194.475. Cl. 123-119.00A.
  - Satoh. Akira: and Ishizaka. Teisuke. 4.194.414. Cl. 74-674.000.
  - Shiomi. Masanao: Yokoya. Yuuji: and Harata. Motowo. 4.194.760. Cl. 280-661.000.
  - Sudo. Yoichi. 4,194.762. Cl. 280-751.000.
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- Tremblay. Gerald J. Solar heating apparatus. 4.194.492. Cl. 126-425.000.
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- Trombley. Wayne E.. to Dow Corning Corporation. Semi-scleral contact lens. 4.194.815. Cl. 351-160.00R.
- Troutman. Gary L.. to Honeywell. Inc. Signal mixer circuit. 4.195.204. Cl. 370-84.000.
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  - Natzel. Jerome W.. 4.194.266. Cl. 16-99.000.
- Trutzschler GmbH & Co. KG: *See—*
  - Reiche. Werner: and Trutzschler. Hans. 4.194.269. Cl. 19-81.000.
- Trutzschler. Hans: *See—*
  - Reiche. Werner: and Trutzschler. Hans. 4.194.269. Cl. 19-81.000.
- TRW. Inc.: *See—*
  - Baichtal. James R.. 4,195.206. Cl. 370-14.000.
- Tsai. Min H.. to Unitek Corporation. Gold alloys for fusion to porcelain. 4,194,907. Cl. 75-134.00N.
- Tsang. Won-Tien: *See—*
  - Logan. Ralph A.: and Tsang. Won-Tien. 4.194.933. Cl. 148-171.000.
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  - Kuo. Chang-Kiang: and Tsaur. Shyh-Chang. 4.195.357. Cl. 365-210.000.
- Tschudin. Arlow H. Paper towel dispenser. 4.194.658. Cl. 225-65.000.
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  - Shino. Makoto: Makiguchi. Sadao: Matsumoto. Hajime: Komuro. Katsusuke: Iwai. Kazuhiro: and Tsuchiya. Yoshikazu. 4.194.587. Cl. 180-90.000.
- Tsuei. Chang-Ling. to Price-Pfister Brass Mfg. Co. Bistable trip overflow lever. 4.194.252. Cl. 4-199.000.
- Tsukamoto. Takuzo: Sakamoto. Tamotsu: and Okamoto. Yoshikazu. to Fuji Xerox Co.. Ltd. Magnetic brush developer device. 4.194.465. Cl. 118-658.000.
- Tu. George K.: Mager. George E.: Baker. Lamar T.: and Markle. Robert E.. to Xerox Corporation. Split programmable logic array. 4.195.352. Cl. 364-900.000.
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  - Simuro. Ernest G.: Turk. Abraham A.: and Turk. Nathan M.. 4.194.295. Cl. 33-458.000.
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- Turpin. Edward T.. to SCM Corporation. Aqueous polyester coatings. 4.195.102. Cl. 427-27.000.
- Tutco. Inc.: *See—*
  - Parkinson. Truman D.. 4.194.261. Cl. 15-250.070.
- Tyner. Frederick C. Energy absorbing basketball goal/backboard unit. 4.194.734. Cl. 273-1.50R.

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Ullven, Adolf G. Person-lifting device. 4,194,253, Cl. 5-84.000.
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Elbert, Raymond J.; and Sara, Raymond V., 4,194,673, Cl. 228-219.000.
Jones, Russell L.; Keller, George E., II; and Wells, Rex C., 4,194,892, Cl. 55-58.000.
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Paciorek, Kazimiera J. L.; Kratzer, Reinhold H.; Kaufman, Jacquelyn; Ito, Thomas I.; and Nakahara, James H., 4,194,983, Cl. 252-49.900.
Safranko, John W.; Burnett, Craig R.; and Kilburn, James E., 4,194,924, Cl. 134-12.000.
Tracy, Daniel J.; Palmer, John P.; and O'Brien, Daniel J., 4,194,708, Cl. 244-15.000.
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Figge, Irving E.; and Dean, Edward H., 4,194,938, Cl. 156-212.000.
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Lemcoe, Meyer M.; and Pattee, Harry E. Attaching of strain gages to substrates. 4,195,279, Cl. 338-2.000.
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Hillery, Herbert V., 4,195,361, Cl. 367-149.000.
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Moran, Steven E., 4,195,221, Cl. 455-609.000.
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De Grijs, Johan C., 4,194,493, Cl. 126-442.000.
Drop, Peter C.; de Rop, Walter J. R.; and Maes, Robert L. M. E., 4,195,253, Cl. 316-1.000.
Fouilloy, Jean-Pierre, 4,195,222, Cl. 250-213.0VT.
Klomp, Franciscus M.; and Overmars, Marinus, 4,194,623, Cl. 206-418.000.
Schiek, Burkhard; and Kohler, Jurgen, 4,195,271, Cl. 333-161.000.
Williams, John C., 4,195,296, Cl. 343-8.000.
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Corcokios, Nicholas, 4,194,869, Cl. 415-216.000.
Unitek Corporation: *See—*
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Universal Valve Co., Inc.: *See—*
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Hall, Leo M., 4,195,126, Cl. 435-11.000.
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Boney, William G., 4,195,191, Cl. 585-706.000.
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Morton, Douglas R., Jr., 4,195,178, Cl. 542-426.000.
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- Williams, George J.; and Boyer, Robert C., to Ecolaire Incorporated. Method for constructing a steam condenser. 4,194,671, Cl. 228-183.000.
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  - Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, deceased, 4,195,105, Cl. 427-386.000.
- Woolf, Helga, executrix: *See—*
  - Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, deceased, 4,195,105, Cl. 427-386.000.
- Word, William F., III: *See—*
  - Magil, Paul; and Word, William F., III, 4,195,290, Cl. 340-568.000.
- Workman, Erwin F., Jr., to Abbott Laboratories. Stabilized platelet factor 4 immunoassay standards. 4,195,072, Cl. 424-1.000.
- Wright, Andrew C. W., to Dzus Fastener Co., Inc. Quick release fasteners. 4,194,429, Cl. 85-5.00P.
- Wright, Donald C.; Marsh, Brian; and Wiechers, Willem, to Pilkington Brothers Limited. Method and apparatus for treatment of articles in a fluidized bed. 4,194,898, Cl. 65-114.000.
- Wygal, John F.; Schandoney, Geraldine; and Straus, Dorothy L. Motor vehicle fire prevention device. 4,194,588, Cl. 180-279.000.
- Wysocki, Lawrence, to Champion International Corporation. Carton with pour spout made from the carton material. 4,194,677, Cl. 229-17.00R.
- Wysocki, Lawrence S.: *See—*
  - Scott, Raymond G.; and Wysocki, Lawrence S., 4,194,680, Cl. 229-43.000.
  - Scott, Raymond G.; and Wysocki, Lawrence S., 4,194,681, Cl. 229-43.000.
- Xerox Corporation: *See—*
  - Leicht, John R., 4,195,277, Cl. 335-229.000.
  - Spehrley, Charles W., Jr.; and Walsh, Brian F., 4,194,666, Cl. 227-155.000.
  - Tu, George K.; Mager, George E.; Baker, Lamar T.; and Markle, Robert E., 4,195,352, Cl. 364-900.000.
- Yabuhara, Tadao: *See—*
  - Kobayashi, Masahiro; and Yabuhara, Tadao, 4,195,007, Cl. 260-29.6HN.
- Yamaguchi, Toshio, to Diesel Kiki Company, Ltd. Electro-magnetic spring-wound clutch. 4,194,607, Cl. 192-84.00T.
- Yamaha Hatsudoki Kabushiki Kaisha: *See—*
  - Endo, Yoshinori, 4,194,474, Cl. 123-119.00A.
  - Sugiyama, Keiichi, 4,194,477, Cl. 123-124.00R.
- Yamamori, Eiji: *See—*
  - Arai, Akihiro; and Yamamori, Eiji, 4,194,824, Cl. 354-173.000.
- Yamamori, Takahiro: *See—*
  - Iwanaga, Kazuyoshi; Sugano, Kazuhiko; Ohtsuka, Kunio; and Yamamori, Takahiro, 4,194,518, Cl. 137-15.000.
- Yamamoto, Tamotsu, to Ikegai Tekko Kabushiki Kaisha. Automatic measuring and tool position compensating system for a numerically controlled machine tool. 4,195,250, Cl. 318-561.000.
- Yamamoto, Tsutomu: *See—*
  - Fukui, Saburo; Yamamoto, Tsutomu; and Iida, Takamitsu, 4,195,129, Cl. 435-182.000.
- Yamamuro, Sigeaki: *See—*
  - Usui, Keizaburo; Hayama, Isao; Hamada, Hideo; and Yamamuro, Sigeaki, 4,194,608, Cl. 192-0.092.
- Yamanari, Koichiro: *See—*
  - Agui, Wataru; Higosaki, Nobuyuki; Yamanari, Koichiro; Furukawa, Toshio; and Kuyama, Hiroshi, 4,195,028, Cl. 260-42.430.
- Yamauchi, Noriyuki; Toko, Yoshiaki; and Ehara, Takao, to Mitsubishi Jukogyo Kabushiki Kaisha. Three-dimensional automatic warehouse equipment. 4,194,864, Cl. 414-283.000.
- Yamazaki, Isamu, to Agency of Industrial Science and Technology, The President of the. Computer system with a configuration monitor. 4,195,344, Cl. 364-200.000.
- Yasuda, Mieji, to Junzo Ozaki. Apparatus for indicating the level of a fluid. 4,194,397, Cl. 73-314.000.
- Yasuda, Shuntaro: *See—*
  - Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,195,170, Cl. 536-10.000.
- Yates, Donald B., to Pullman Incorporated. Dead lever anchoring means for railway car brake rigging. 4,194,595, Cl. 188-52.000.
- Yazawa, Chihiro: *See—*
  - Harada, Takao; Wada, Nobuhide; Ohashi, Hideaki; Koike, Wataro; and Yazawa, Chihiro, 4,195,037, Cl. 260-575.000.
- Yellin, Kathleen F. Combination body rest and totebag. 4,194,601, Cl. 190-2.000.
- Yen, Yao T., to Intel Corporation. Logic analyzer for integrated circuits, microcomputers, and the like. 4,195,258, Cl. 324-73.0AT.
- Yeou, Victor: *See—*
  - Stoufflet, Rene G.; and Yeou, Victor, 4,194,365, Cl. 60-468.000.
- Yetter Manufacturing Company: *See—*
  - Whalen, Bernard F., 4,194,575, Cl. 172-551.000.
- Yokoya, Yuuji: *See—*
  - Shiomi, Masanao; Yokoya, Yuuji; and Harata, Motowo, 4,194,760, Cl. 280-661.000.
- Yonezawa, Noboru: *See—*
  - Ohmura, Taizo; Sakonooka, Akihiko; Sahira, Kensyo; and Yonezawa, Noboru, 4,194,909, Cl. 75-171.000.
- Yoshida, Mitunari: *See—*
  - Ariga, Kazuo; Oinuma, Norimasa; and Yoshida, Mitunari, 4,195,249, Cl. 313-493.000.
- Yoshida, Susumu; and Kimura, Kiyomitu, to Kabushiki Kaisha Meidensha. Testing apparatus for a circuit assembly. 4,195,257, Cl. 324-73.00R.
- Yoshida, Yasuyuki: *See—*
  - Uto, Yoshimitsu; Omae, Takashi; Fukaya, Yasuhiro; and Yoshida, Yasuyuki, 4,194,672, Cl. 228-194.000.
- Yoshikawa, Yoshiro: *See—*
  - Ohsawa, Eiji; and Yoshikawa, Yoshiro, 4,194,396, Cl. 73-311.000.
- Yoshioka, Osamu: *See—*
  - Takita, Tomohisa; Fujii, Akio; Fukuoka, Takeyo; Muraoka, Yasuhiko; Yoshioka, Osamu; and Umezawa, Hamao, 4,195,018, Cl. 260-112.50R.
- Yotsutani, Akio: *See—*
  - Masaki, Masaru; and Yotsutani, Akio, 4,195,263, Cl. 455-343.000.
- Young, John E. G., to General Signal Corporation. Fluid horsepower control system. 4,194,363, Cl. 60-445.000.
- Youngblood, John W. Tow bar for vehicles. 4,194,755, Cl. 280-402.000.
- Yu, Ho Y.: *See—*
  - Blaske, Theodore A.; and Yu, Ho Y., 4,194,934, Cl. 148-174.000.
- Yuen, Raymond C., to Burroughs Corporation. Decoder for a prom. 4,195,358, Cl. 365-230.000.
- Zabner, Adolf; and Bellemore, Norman I., to Nyman Mfg. Co. Container cover construction. 4,194,645, Cl. 220-306.000.
- Zado, Frank M., to Western Electric Co. Soldering flux. 4,194,931, Cl. 148-25.000.
- Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
  - Umezawa, Hamao; Umezawa, Sumio; Seki, Shigeo; Fukatsu, Shunzo; and Yasuda, Shuntaro, 4,195,170, Cl. 536-10.000.
- Zalles, Robert I. Liquid purifying apparatus. 4,194,950, Cl. 202-185.00R.
- Zanner, Johann: *See—*
  - Staudacher, Frank; Stemme, Otto; Lermann, Peter; Went, Werner; Stenzenberger, Volkmar; Herzig, Eberhard; Stumpf, Friedrich; Scheller, Thomas; Sylla, Jurgen; Winkler, Friedrich; and Zanner, Johann, 4,194,817, Cl. 352-169.000.
- Zarkov, Sviataslov, to Motorola, Inc. Crystal oscillator including adjustable auto transformer for neutralizing crystal capacitance. 4,195,268, Cl. 331-116.00R.
- Zehner, Lee R.: *See—*
  - Kesling, Haven S., Jr.; and Zehner, Lee R., 4,195,184, Cl. 560-207.000.
- Zeiringer, Rudolf: *See—*
  - Claassen, Peter; Zeiringer, Rudolf; and List, Helmut, 4,194,401, Cl. 73-730.000.
- Zelacolor Systems Establishment: *See—*
  - Guillaume, Emile A. H., 4,194,834, Cl. 355-67.000.
- Zellweger, Jurg; and Hurlemann, Ernst, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Breechblock for an automatic firing weapon. 4,194,433, Cl. 89-190.000.
- Zenith Radio Corporation: *See—*
  - Pytlarz, Charles P.; and Rost, Richard L., 4,195,315, Cl. 358-248.000.
- Zerillo, Samuel D., to Centronics Data Computer Corp. Dot matrix printing device employing a novel image transfer technique to print on single or multiple ply print receiving materials. 4,194,846, Cl. 400-124.000.
- Zielinski, Jan: *See—*
  - Falkowski, Leonard; Kowszyk-Gindifer, Zuzanna; Plociennik, Zofia; Zielinski, Jan; Dahlig, Halina; Golik, Jerzy; Jakobs, Ewa; Kolodziejczyk, Pawel; Bylec, Elzbieta; Roslik-Kaminska, Danuta; Wagner, Wladyslawa; Pawlak, Jan; and Borowski, Edward, 4,195,172, Cl. 536-17.00R.
- Zimmerman, Morris: *See—*
  - Mulvey, Dennis; Jones, Howard; and Zimmerman, Morris, 4,195,023, Cl. 548-209.000.
- Zimmermann, John, to Somerville Belkin Industries Limited. Method of making collapsible paperboard cup. 4,194,439, Cl. 93-36.050.
- Zimmermann, Robert A. Coating system. 4,195,009, Cl. 260-31.20N.
- Zimmermann, Waldemar, to Friedr. Fingscheidt GmbH. Door holder. 4,194,265, Cl. 16-82.000.
- Zingl, Hans: *See—*
  - Mitchhart, Ray M.; and Zingl, Hans, 4,194,419, Cl. 81-57.330.
- Zuech, Ernest A., to Phillips Petroleum Company. Rhodium hydroformylation catalyst. 4,195,042, Cl. 260-604.0HF.
- Zufich, Anthony C. Backpack and frame apparatus. 4,194,656, Cl. 224-211.000.
- Zusman, Bertram. Pedestal house with cantilevered cross truss construction. 4,194,326, Cl. 52-73.000.
- Zweekly, Raymond T., to Valeron Corporation, The. Indexable insert drill. 4,194,862, Cl. 408-224.000.
- Zwingman, Robert L., to Burroughs Corporation. Method and apparatus for measuring the stripe width and collapse field of magnetic materials. 4,195,261, Cl. 324-210.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF MARCH, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., to Rohm and Haas Company. Arthropodicidal and nematocidal phosphoramidates. Re. 30,240, Cl. 424-211.000.
Born, Billy L., to Stoelting Brothers Company. Wing type agitator. Re. 30,237, Cl. 366-261.000.
Conway, Walter D.: *See—*
  Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., Re. 30,241, Cl. 560-73.000.
Eisenstein, Reuben: *See—*
  Kuettner, Klaus E.; Eisenstein, Reuben; and Sorgente, Nino, Re. 30,239, Cl. 424-95.000.
Kilbourn, Edward E.: *See—*
  Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., Re. 30,240, Cl. 424-211.000.
Kuettner, Klaus E.; Eisenstein, Reuben; and Sorgente, Nino. Cell proliferation and tissue invasion inhibitor. Re. 30,239, Cl. 424-95.000.
Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., to Sterling Drug Inc. Esters of 3-(hydroxy or hydroxymethyl)-4-hydroxyphenyl aminomethyl ketones. Re. 30,241, Cl. 560-73.000.
O'Mara, James H.: *See—*
  Specht, Edward H.; and O'Mara, James H., Re. 30,238, Cl. 44-62.000.
Rohm and Haas Company: *See—*
  Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., Re. 30,240, Cl. 424-211.000.
  Specht, Edward H.; and O'Mara, James H., Re. 30,238, Cl. 44-62.000.
Sorgente, Nino: *See—*
  Kuettner, Klaus E.; Eisenstein, Reuben; and Sorgente, Nino, Re. 30,239, Cl. 424-95.000.
Specht, Edward H.; and O'Mara, James H., to Rohm and Haas Company. Additives to improve the flow of heavy fuels and crude oils. Re. 30,238, Cl. 44-62.000.
Sterling Drug Inc.: *See—*
  Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., Re. 30,241, Cl. 560-73.000.
Stoelting Brothers Company: *See—*
  Born, Billy L., Re. 30,237, Cl. 366-261.000.
Ting, Hui-Tzeng. Clean spark ignition internal combustion engine. Re. 30,236, Cl. 123-32.0SP.
Tullar, Benjamin F.: *See—*
  Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., Re. 30,241, Cl. 560-73.000.
Weiler, Ernest D.: *See—*
  Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., Re. 30,240, Cl. 424-211.000.
Weir, William D.: *See—*
  Aller, Harold E.; Kilbourn, Edward E.; Weiler, Ernest D.; and Weir, William D., Re. 30,240, Cl. 424-211.000.

LIST OF PLANT PATENTEES

F. Harmon Saville, Nor'East Miniature Roses: *See—*
  Schwartz, Ernest, deceased, 4,513, Cl. 8.000.
Longoria, Gilbert R. Plant of the Araceae family. 4,514, 3-25-80, Cl. 88.000.
Schwartz, Ernest, deceased (by Schwartz, Hazel E., executrix), to F. Harmon Saville, Nor'East Miniature Roses. Rose plant. 4,513, 3-25-80, Cl. 8.000.
Schwartz, Hazel E., executrix: *See—*
  Schwartz, Ernest, deceased, 4,513, Cl. 8.000.

LIST OF DESIGN PATENTEES

Aamoth, Gerald R.: *See—*
  McKinsey, Kevin P.; and Aamoth, Gerald R., 254,544, Cl. D13-12.000.
Abelson, Mildred. Double ring. 254,537, 3-25-80, Cl. D11-34.000.
Airway Industries, Inc.: *See—*
  Davis, Michael, 254,525, Cl. D3-71.000.
Alley, Carl H.; and Alley, Michael B. Rocking toy. 254,561, 3-25-80, Cl. D21-68.000.
Alley, Michael B.: *See—*
  Alley, Carl H.; and Alley, Michael B., 254,561, Cl. D21-68.000.
Amirault, Gerald A. Vision shield for a student typist or the like. 254,520, 3-25-80, Cl. D2-234.000.
Armstrong, Douglas. Straw dispenser. 254,530, 3-25-80, Cl. D7-75.000.
Arnoff, Philip J., to Transco Plastics Corporation. Combined cutting board and colander. 254,529, 3-25-80, Cl. D7-46.000.
Atari, Inc.: *See—*
  McKinsey, Kevin P.; and Aamoth, Gerald R., 254,544, Cl. D13-12.000.
Bangor Punta Operations, Inc.: *See—*
  Moreton, John, 254,522, Cl. D2-427.000.
Bell Telephone Laboratories, Incorporated: *See—*
  Genaro, Donald M.; Stokes, Rembert R.; and Sylvester, Gordon E., 254,554, Cl. D18-12.000.
Berman, James S.; and Stegmaier, Sigurd, to Citibank, N.A. Customer activated terminal enclosure. 254,546, 3-25-80, Cl. D14-42.000.
Biosig Inc.: *See—*
  Moffat, James G.; and Lekhtman, Gregory, 254,569, Cl. D24-17.000.
Brown, Rohn A. Fan. 254,565, 3-25-80, Cl. D23-155.000.
Chmela, John F. Dart. 254,559, 3-25-80, Cl. D21-49.000.
Circuit Assembly Corp.: *See—*
  Thomas, Philip J.; Lang, Roger D.; and McAllister, John A., 254,553, Cl. D15-123.000.
CITC Industries, Inc.: *See—*
  Cohen, William J., 254,524, Cl. D3-30.000.
Citibank, N.A.: *See—*
  Berman, James S.; and Stegmaier, Sigurd, 254,546, Cl. D14-42.000.
Cohen, William J., to CITC Industries, Inc. Carrying carton for shoes or the like. 254,524, 3-25-80, Cl. D3-30.000.
Comind S.p.A.: *See—*
  Margiaria, Giorgio; and Gay, Francesco, 254,543, Cl. D12-169.000.
Cummins, Kevin T., to Kemtron Operations Pty. Ltd. Portable fan housing. 254,566, 3-25-80, Cl. D23-155.000.
Davis, Michael, to Airway Industries, Inc. Luggage case. 254,525, 3-25-80, Cl. D3-71.000.
Davis, Wesley B.; and Dierker, Jeffrey A., to F. W. Bell, Inc. Gun for determining current or power in an electrical conductor. 254,536, 3-25-80, Cl. D10-79.000.
Dierker, Jeffrey A.: *See—*
  Davis, Wesley B.; and Dierker, Jeffrey A., 254,536, Cl. D10-79.000.
Dolphin Camper Company: *See—*
  Mertes, Wayne M., 254,539, Cl. D12-99.000.
Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., to Rubbermaid Commercial Products Inc. Card file drawer. 254,526, 3-25-80, Cl. D6-191.000.
Dowd, Allyn C.; and Stiller, Miles N., to Massey-Ferguson Inc. Hydraulic hose guard for use with excavating machines or the like. 254,548, 3-25-80, Cl. D15-28.000.
Dunlap, Don W.: *See—*
  Kramer, Ernest W.; and Dunlap, Don W., 254,519, Cl. D2-190.000.

Evans, David M.; and Scherer, Henry W., to S & C Electric Company. High voltage fuse end fitting. 254,545, 3-25-80, Cl. D13-35.000.
F. W. Bell, Inc.: *See—*
  Davis, Wesley B.; and Dierker, Jeffrey A., 254,536, Cl. D10-79.000.
Fiat Societa per Azioni: *See—*
  Margiaria, Giorgio; and Gay, Francesco, 254,543, Cl. D12-169.000.
Gay, Francesco: *See—*
  Margiaria, Giorgio; and Gay, Francesco, 254,543, Cl. D12-169.000.
Genaro, Donald M.; Stokes, Rembert R.; and Sylvester, Gordon E., to Bell Telephone Laboratories, Incorporated. Folding keyboard pad. 254,554, 3-25-80, Cl. D18-12.000.
Gentry, Richard W. Parts cleaning and de-greasing machine. 254,549, 3-25-80, Cl. D15-34.000.
Gist, Alfred. Locking device to prevent removal of sliding windows and doors. 254,533, 3-25-80, Cl. D8-331.000.
Glynn, John H.; and Glynn, Patrick J. Roofing safety bracket. 254,534, 3-25-80, Cl. D8-356.000.
Glynn, Patrick J.: *See—*
  Glynn, John H.; and Glynn, Patrick J., 254,534, Cl. D8-356.000.
Goodyear Tire & Rubber Company, The: *See—*
  Hitzky, Leon J., 254,542, Cl. D12-151.000.
  Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; and Roberts, Charles W., 254,541, Cl. D12-147.000.
Grubb, Lawrence: *See—*
  Johnson, Phillip; Grubb, Lawrence; and Simpson, Danny E., 254,560, Cl. D21-63.000.
Hampshire, James F.: *See—*
  Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., 254,526, Cl. D6-191.000.
Han, Robert K. S. Building. 254,573, 3-25-80, Cl. D25-18.000.
Healthco, Inc.: *See—*
  McDonald, Francis J., 254,570, Cl. D24-12.000.
Henson, John C., to Henson-Kickernick,Inc. Brassiere. 254,517, 3-25-80, Cl. D2-24.000.
Henson-Kickernick,Inc.: *See—*
  Henson, John C., 254,517, Cl. D2-24.000.
Hitzky, Leon J., to Goodyear Tire & Rubber Company, The. Tire. 254,542, 3-25-80, Cl. D12-151.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
  Miyachi, Einosuke; and Okuno, Tsutomu, 254,540, Cl. D12-110.000.
Honeywell Inc.: *See—*
  Mack, John C., Jr.; and Peterson, Dean M., 254,568, Cl. D24-8.000.
Jacobsen Manufacturing Company: *See—*
  Karsten, Lee L., 254,547, Cl. D15-18.000.
Johnson & Johnson: *See—*
  Johnson, Phillip; Grubb, Lawrence; and Simpson, Danny E., 254,560, Cl. D21-63.000.
Johnson, Logan W., to Minnesota Mining & Manufacturing Company. Tape dispenser. 254,556, 3-25-80, Cl. D19-69.000.
Johnson, Phillip; Grubb, Lawrence; and Simpson, Danny E., to Johnson & Johnson. Crib toy or similar article. 254,560, 3-25-80, Cl. D21-63.000.
Johnson, Robert L. Vacuum breaking tee. 254,564, 3-25-80, Cl. D23-40.000.
Karsten, Lee L., to Jacobsen Manufacturing Company. Lawn mower hand grip. 254,547, 3-25-80, Cl. D15-18.000.
Katz, Marcella M., to Katz, Marcella M. Sandal. 254,521, 3-25-80, Cl. D2-270.000.
Kean, Wallace R.; and Rouse, Melvin R. Mixing palette. 254,555, 3-25-80, Cl. D19-35.000.
Kelley, Eugene M. Wrench. 254,532, 3-25-80, Cl. D8-29.000.
Kemtron Operations Pty. Ltd.: *See—*
  Cummins, Kevin T., 254,566, Cl. D23-155.000.
Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; and Roberts, Charles W., to Goodyear Tire & Rubber Company, The. Tire. 254,541, 3-25-80, Cl. D12-147.000.
Kosmos International Ltd.: *See—*
  McCrae, Ian S., 254,535, Cl. D10-2.000.
Kramer, Ernest W.; and Dunlap, Don W., to Medical Associates International, Inc. Vest. 254,519, 3-25-80, Cl. D2-190.000.
Lang, Roger D.: *See—*
  Thomas, Philip J.; Lang, Roger D.; and McAllister, John A., 254,553, Cl. D15-123.000.
Lekhtman, Gregory: *See—*
  Moffat, James G.; and Lekhtman, Gregory, 254,569, Cl. D24-17.000.
Lindner, Daniel J.: *See—*
  Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; and Roberts, Charles W., 254,541, Cl. D12-147.000.
Lundgren, George A. Boat hull. 254,538, 3-25-80, Cl. D12-62.000.
Lynch, John E.: *See—*
  Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E.; and Roberts, Charles W., 254,541, Cl. D12-147.000.
Mack, John C., Jr.; and Peterson, Dean M., to Honeywell Inc. Container for storage and dispensing of medical test strips or similar article. 254,568, 3-25-80, Cl. D24-8.000.
Mahan, John A., to Northern Telecom Limited. Enclosure for a telephone jumper-wire interface unit. 254,552, 3-25-80, Cl. D24-99.000.
Margiaria, Giorgio; and Gay, Francesco, to Comind S.p.A.; and Fiat Societa per Azioni. Vehicle body rear bumper unit. 254,543, 3-25-80, Cl. D12-169.000.
Marlin Fiberglass: *See—*
  Reineman, Richard G., 254,571, Cl. D24-38.000.
  Reineman, Richard G., 254,572, Cl. D24-38.000.
Massey-Ferguson Inc.: *See—*
  Dowd, Allyn C.; and Stiller, Miles N., 254,548, Cl. D15-28.000.
McAllister, John A.: *See—*
  Thomas, Philip J.; Lang, Roger D.; and McAllister, John A., 254,553, Cl. D15-123.000.
McCrae, Ian S., to Kosmos International Ltd. Combined time clock and biorhythm calculator. 254,535, 3-25-80, Cl. D10-2.000.
McDonald, Francis J., to Healthco, Inc. Air turbine handpiece. 254,570, 3-25-80, Cl. D24-12.000.
McKinsey, Kevin P.; and Aamoth, Gerald R., to Atari, Inc. Video game control unit. 254,544, 3-25-80, Cl. D13-12.000.
Medical Associates International, Inc.: *See—*
  Kramer, Ernest W.; and Dunlap, Don W., 254,519, Cl. D2-190.000.
Meibaum, Raymond K., to Sunmark, Inc. Candy tablet. 254,516, 3-25-80, Cl. D1-1.000.
Mertes, Wayne M., to Dolphin Camper Company. Van. 254,539, 3-25-80, Cl. D12-99.000.
Minnesota Mining & Manufacturing Company: *See—*
  Johnson, Logan W., 254,556, Cl. D19-69.000.
Miyachi, Einosuke; and Okuno, Tsutomu, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 254,540, 3-25-80, Cl. D12-110.000.
Moffat, James G.; and Lekhtman, Gregory, to Biosig Inc. Housing for a portable hand-held, digital, heart rate indicator device. 254,569, 3-25-80, Cl. D24-17.000.
Moreton, John, to Bangor Punta Operations, Inc. Belt buckle. 254,522, 3-25-80, Cl. D2-427.000.
Nihizer, George F. Fish gripping tool. 254,563, 3-25-80, Cl. D22-31.000.
Northern Telecom Limited: *See—*
  Mahan, John A., 254,552, Cl. D24-99.000.
Nunis, Richard A., to Walt Disney Productions. Coin-operated auto race amusement device. 254,557, 3-25-80, Cl. D21-01.000.
Okuno, Tsutomu: *See—*
  Miyachi, Einosuke; and Okuno, Tsutomu, 254,540, Cl. D12-110.000.
Oneida Ltd.: *See—*
  Richmond, Colin B., II, 254,531, Cl. D7-137.000.
Pearo, John M. Physical exerciser. 254,562, 3-25-80, Cl. D21-195.000.
Peterson, Dean M.: *See—*
  Mack, John C., Jr.; and Peterson, Dean M., 254,568, Cl. D24-8.000.
Raintree Buckles & Jewelry, Inc.: *See—*
  Van Brouwer, Ryk, 254,523, Cl. D2-431.000.
Reichman, Louis. Set of modular display cases for writing implements. 254,528, 3-25-80, Cl. D6-157.000.
Reineman, Richard G., to Marlin Fiberglass. Hydrotherapy spa. 254,571, 3-25-80, Cl. D24-38.000.
Reineman, Richard G., to Marlin Fiberglass. Hydrotherapy spa. 254,572, 3-25-80, Cl. D24-38.000.
Rice, James A. Game die. 254,558, 3-25-80, Cl. D21-41.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 254,531, 3-25-80, Cl. D7-137.000.
Roberts, Charles W.: *See—*
  Kolowski, Michael A.; Lindner, Daniel J.; Lynch, John E., and Roberts, Charles W., 254,541, Cl. D12-147.000.
Rouse, Melvin R.: *See—*
  Kean, Wallace R.; and Rouse, Melvin R., 254,555, Cl. D19-35.000.
Rubbermaid Commercial Products Inc.: *See—*
  Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., 254,526, Cl. D6-191.000.
S & C Electric Company: *See—*
  Evans, David M.; and Scherer, Henry W., 254,545, Cl. D13-35.000.
Scherer, Henry W.: *See—*
  Evans, David M.; and Scherer, Henry W., 254,545, Cl. D13-35.000.
Schneider, Ruth. Pet house. 254,574, 3-25-80, Cl. D30-1.000.
Simpson, Danny E.: *See—*
  Johnson, Phillip; Grubb, Lawrence; and Simpson, Danny E., 254,560, Cl. D21-63.000.
Smith, Judson L. Automatic towel rinsing machine. 254,550, 3-25-80, Cl. D15-39.000.
Stegmaier, Sigurd: *See—*
  Berman, James S.; and Stegmaier, Sigurd, 254,546, Cl. D14-42.000.
Stiller, Miles N.: *See—*
  Dowd, Allyn C.; and Stiller, Miles N., 254,548, Cl. D15-28.000.
Stokes, Rembert R.: *See—*
  Genaro, Donald M.; Stokes, Rembert R.; and Sylvester, Gordon E., 254,554, Cl. D18-12.000.
Strignano, Joseph R. Track light. 254,575, 3-25-80, Cl. D26-66.000.
Sunmark, Inc.: *See—*
  Meibaum, Raymond K., 254,516, Cl. D1-1.000.
Sylvester, Gordon E.: *See—*
  Genaro, Donald M.; Stokes, Rembert R.; and Sylvester, Gordon E., 254,554, Cl. D18-12.000.
Taggart, Paula. Child's chest or back tote. 254,518, 3-25-80, Cl. D2-25.000.
Terek, Greg P.: *See—*
  Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., 254,526, Cl. D6-191.000.
Thomas, Philip J.; Lang, Roger D.; and McAllister, John A., to Circuit Assembly Corp. Multi-contact electrical connector fixture press. 254,553, 3-25-80, Cl. D15-123.000.
Transco Plastics Corporation: *See—*
  Arnoff, Philip J., 254,529, Cl. D7-46.000.
Turner, Luis A. Spinning wheel. 254,551, 3-25-80, Cl. D15-66.000.
Van Brouwer, Ryk, to Raintree Buckles & Jewelry, Inc. Belt buckle. 254,523, 3-25-80, Cl. D2-431.000.
Van Koert, John. Mirror frame or the like. 254,527, 3-25-80, Cl. D6-241.000.
Wagner, Clyde. Solar powered portable fan. 254,567, 3-25-80, Cl. D23-155.000.
Walt Disney Productions: *See—*
  Nunis, Richard A., 254,557, Cl. D21-01.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 25, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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84	4,194,253
420	4,194,254
481	4,194,255
CLASS 7	
107	4,194,256
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250.07	4,194,261
314	4,194,262
353	4,194,263
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99	4,194,266
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163	4,194,270
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222	4,194,273
248 R	4,194,274
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100	4,194,275
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56.6	4,194,276
148.4 C	4,194,277
264	4,194,278
281.5	4,194,279
417	4,194,280
451	4,194,282
509	4,194,284
571	4,194,283
579	4,194,285
867	4,194,281
CLASS 30	
226	4,194,286
276	4,194,287
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30 C	4,194,292
178 B	4,194,294
448	4,194,293
458	4,194,295
CLASS 34	
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26	4,194,297
94	4,194,298
124	4,194,299
217	4,194,300
CLASS 35	
9 C	4,194,302
9 R	4,194,301
17	4,194,303
25	4,194,304
42	4,194,305
44	4,194,306
49	4,194,307
CLASS 36	
9 R	4,194,308
117	4,194,309
128	4,194,310
CLASS 37	
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CLASS 44	
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70	4,194,886
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CLASS 47	
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309	4,194,887
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86	4,194,327
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145	4,194,329
177	4,194,330
203	4,194,331
220	4,194,332
235	4,194,333
397	4,194,334
419	4,194,335
481	4,194,336
713	4,194,337
721	4,194,338
745	4,194,339
CLASS 53	
119	4,194,340
282	4,194,341
492	4,194,342
493	4,194,343
CLASS 55	
2	4,194,888
7	4,194,889
18	4,194,890
26	4,194,891
58	4,194,892
168	4,194,893
379	4,194,894
CLASS 56	
13.9	4,194,344
17.5	4,194,345
328 R	4,194,346
328 TS	4,194,347
377	4,194,348
CLASS 57	
265	4,194,349
352	4,194,350
CLASS 60	
39.02	4,194,357
39.06	4,194,358
39.36	4,194,359
325	4,194,360
388	4,194,361
431	4,194,362
445	4,194,363
	4,194,364
468	4,194,365
483	4,194,366
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138	4,194,367
238	4,194,368
371	4,194,369
503	4,194,370
	4,194,371
CLASS 64	
11 R	4,194,372
14	4,194,373
CLASS 65	
2	4,194,895
3 R	4,194,896
5	4,194,897
114	4,194,898
CLASS 66	
93	4,194,374
132 T	4,194,375
CLASS 69	
48	4,194,376
CLASS 70	
360	4,194,377
363	4,194,378
421	4,194,379
CLASS 71	
76	4,194,899
CLASS 72	
64	4,194,380
100	4,194,381
243	4,194,382
245	4,194,383
325	4,194,384
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1 R	4,194,385
3	4,194,386
9	4,194,387
37	4,194,388
46	4,194,389
61 R	4,194,390
61.4	4,194,391
150 A	4,194,392
151	4,194,393
207	4,194,394
304 C	4,194,395
311	4,194,396
314	4,194,397
422 TC	4,194,398
486	4,194,399
623	4,194,400
730	4,194,401
859	4,194,402
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10.33	4,194,403
44	4,194,404
87	4,194,405
110	4,194,406
117	4,194,407
217 B	4,194,408
	4,194,409
339	4,194,410
492	4,194,411
554	4,194,412
611	4,194,413
674	4,194,414
805	4,194,415
859	4,194,416
866	4,194,417
	4,194,418
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0.5 C	4,194,900
48	4,194,901
55	4,194,902
58	4,194,903
78	4,194,904
101 BE	4,194,905
125	4,194,906
134 N	4,194,907
168 J	4,194,908
171	4,194,909
236	4,194,910
CLASS 81	
57.33	4,194,419
CLASS 82	
2.7	4,194,420
CLASS 83	
62.1	4,194,421
581	4,194,422
589	4,194,423
870	4,194,424
CLASS 84	
1.01	4,194,425
1.24	4,194,426
	4,194,427
236	4,194,428
CLASS 85	
5 P	4,194,429
46	4,194,430
CLASS 89	
36 A	4,194,431
41 C	4,194,432
190	4,194,433
CLASS 91	
20	4,194,434
234	4,194,435
420	4,194,436
CLASS 92	
120	4,194,437
CLASS 93	
20	4,194,438
36.05	4,194,439
39 C	4,194,440
51 HW	4,194,441
53 SD	4,194,442
CLASS 99	
450.4	4,194,443
479	4,194,444
618	4,194,445
CLASS 100	
162 B	4,194,446
CLASS 101	
128.1	4,194,447
295	4,194,448
CLASS 104	
172 B	4,194,449
CLASS 105	
253	4,194,450
416	4,194,451
CLASS 106	
1.22	4,194,913
18.14	4,194,914
38.25	4,194,915
47 R	4,194,916
62	4,194,917
80	4,194,918
90	4,194,919
308 M	4,194,920
309	4,194,921
CLASS 108	
138	4,194,452
CLASS 109	
56	4,194,453
CLASS 110	
238	4,194,454
251	4,194,455
CLASS 112	
176	4,194,456
222	4,194,457
CLASS 114	
39	4,194,458
221 R	4,194,459
CLASS 115	
73	4,194,460
CLASS 116	
77	4,194,461
CLASS 118	
405	4,194,462
409	4,194,463
501	4,194,464
657	4,194,466
658	4,194,465
CLASS 119	
14.03	4,194,467
CLASS 122	
406 ST	4,194,468
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32 SP	Re.30,236
54 R	4,194,469
73 A	4,194,470
119 A	4,194,472
	4,194,473
	4,194,474
	4,194,475
119 EC	4,194,471
122 H	4,194,476
124 R	4,194,477
139 AW	4,194,478
148 C	4,194,479
148 CC	4,194,482
148 E	4,194,481
148 ND	4,194,480
187.5 R	4,194,483
195 C	4,194,484
198 DC	4,194,485
210	4,194,486
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61	4,194,487
112	4,194,488
127	4,194,489
141	4,194,490
319	4,194,494
339	4,194,495
417	4,194,491
425	4,194,492
430	4,194,496
432	4,194,497
442	4,194,493
450	4,194,498
CLASS 128	
24 R	4,194,499
75	4,194,500
	4,194,501
79	4,194,502
130	4,194,503
214.4	4,194,504
218 D	4,194,505
283	4,194,506
287	4,194,507
295	4,194,508
350 R	4,194,509
660	4,194,510
696	4,194,511
742	4,194,512
750	4,194,513
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17 R	4,194,514
135	4,194,515
174	4,194,516
261 R	4,194,517
CLASS 134	
1	4,194,922
6	4,194,923
12	4,194,924
24	4,194,925
29	4,194,926
CLASS 137	
15	4,194,518
15.1	4,194,519
54	4,194,520
67	4,194,521
116.5	4,194,522
238	4,194,523
240	4,194,524
438	4,194,525
498	4,194,526
543	4,194,527
554	4,194,528
557	4,194,529
587	4,194,530
596	4,194,531
	4,194,532
624.18	4,194,533
625.39	4,194,534
636.4	4,194,535
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194	4,194,537
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291 R	4,194,540
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2 Z	4,194,542
137	4,194,543
193 D	4,194,544
230	4,194,545
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46	4,194,546
CLASS 148	
1.5	4,194,927
2	4,194,928
6.15 R	4,194,929
16.6	4,194,930
25	4,194,931
102	4,194,932
171	4,194,933
174	4,194,934
175	4,194,935
CLASS 150	
1.5 R	4,194,547
CLASS 152	
361 R	4,194,548
CLASS 156	
67	4,194,936
73.1	4,194,937
212	4,194,938
254	4,194,939
331	4,194,940
361	4,194,941
433	4,194,942
441	4,194,943
540	4,194,944
CLASS 160	
84 R	4,194,549
121 R	4,194,550
178 R	4,194,551
CLASS 162	
135	4,194,945
156	4,194,946
207	4,194,947
CLASS 164	
71	4,194,552
87	4,194,553
301	4,194,554
438	4,194,555
CLASS 165	
51	4,194,556
94	4,194,557
105	4,194,558
	4,194,559
141	4,194,560
CLASS 166	
162	4,194,561
245	4,194,562
273	4,194,563
274	4,194,564
275	4,194,565
307	4,194,566
311	4,194,567
340	4,194,568
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26	4,194,569

46	4,194,570
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66	4,194,572
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400	4,194,573
430	4,194,574
551	4,194,575
763	4,194,576
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40 R	4,195,192
52 FP	4,195,193
59	4,195,194
68.5	4,195,195
78	4,195,197
94 S	4,195,198
128 S	4,195,199
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4.51	4,194,577
53	4,194,578
57	4,194,579
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92	4,194,581
321	4,194,582
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87	4,194,948
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22	4,195,196
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46	4,195,201
CLASS 179	
1 GD	4,195,203
1.5 S	4,195,202
100.1 G	4,195,312
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9.24 R	4,194,584
24.09	4,194,586
53	4,195,182
90	4,194,585
	4,194,587
190	4,194,583
271	4,194,589
279	4,194,588
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186	4,194,590
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CLASS 184	
7 D	4,194,593
CLASS 187	
29 R	4,194,594
CLASS 188	
52	4,194,595
72.7	4,194,596
73.5	4,194,597
134	4,194,598
231	4,194,599
296	4,194,600
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2	4,194,601
57	4,194,602
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23 A	4,194,603
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0.092	4,194,608
0.096	4,194,609
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18 A	4,194,606
84 T	4,194,607
111 A	4,194,610
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4 R	4,194,612
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487	4,194,614
502	4,194,615
778	4,194,616
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83 R	4,195,209
153 D	4,195,211
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180	4,194,949
185 R	4,194,950
227	4,194,951
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12	4,194,952
CLASS 204	
95	4,194,953
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159.15	4,194,955
186	4,194,956
199	4,194,957
243 M	4,194,958
243 R	4,194,959
280	4,194,960
286	4,194,961
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299 R	4,194,963
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45	4,194,617
205	4,194,618
217	4,194,619
223	4,194,620
343	4,194,621
363	4,194,622
418	4,194,623
441	4,194,624
455	4,194,625
509	4,194,626
545	4,194,627
570	4,194,628
573	4,194,629
586	4,194,630
610	4,194,631
626	4,194,632
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108	4,194,964
113	4,194,965
132	4,194,966
215	4,194,967
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3	4,194,968
5	4,194,969
152	4,194,633
263	4,194,970
467	4,194,971
589	4,194,634
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50	4,194,973
90	4,194,974
108	4,194,975
137	4,194,976
231	4,194,977
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71	4,194,636
96	4,194,637
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46 R	4,194,638
59 R	4,194,639
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6	4,194,640
100 A	4,194,641
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12 R	4,194,642
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10.69	4,195,213
10.79	4,195,214
91.21	4,195,215
121 P	4,195,216
370	4,195,217
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388	4,195,219
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2.1 A	4,194,643
3.3	4,194,644
306	4,194,645
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73	4,194,646
97	4,194,647
299	4,194,648
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55	4,194,649
57	4,194,650
108	4,194,651
185	4,194,652
402.25	4,194,653
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45 H	4,194,654
191	4,194,655
211	4,194,656
252	4,194,657
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65	4,194,658
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35	4,194,659
74	4,194,660
95	4,194,661
110	4,194,662
139	4,194,663
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8	4,194,664
112	4,194,665
155	4,194,666
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4.1	4,194,667
6 A	4,194,668
120	4,194,669
179	4,194,670
183	4,194,671
194	4,194,672
219	4,194,673
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16 A	4,194,676
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23 R	4,194,678
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43	4,194,680
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45 EC	4,194,682
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15	4,194,683
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26	4,194,684
CLASS 235	
92 T	4,195,220
375	4,194,685
376	4,194,686
CLASS 236	
87	4,194,687
CLASS 237	
53	4,194,688
CLASS 239	
2 S	4,194,689
57	4,194,690
63	4,194,691
265.39	4,194,692
390	4,194,693
533.1	4,194,694
542	4,194,695
707	4,194,696
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92	4,194,697
182	4,194,710
236	4,194,698
	4,194,699
CLASS 242	
7.17	4,194,700
58.3	4,194,701
86.5 R	4,194,702
107.2	4,194,703
137	4,194,705
191	4,194,704
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9	4,194,707
15	4,194,708
155 R	4,194,709
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49	4,194,711
68 R	4,194,712
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308	4,194,714
311.1 R	4,194,715
575	4,194,716
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192	4,194,717
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213 VT	4,195,222
216	4,195,223
289	4,195,224
363 R	4,195,226
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445 T	4,195,229
483	4,195,228
	4,195,230
505	4,195,227
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14	4,194,718
30	4,194,719
77	4,194,720
148	4,194,721
305	4,194,722
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7	4,194,979
45	4,194,980
46.7	4,194,981
47.5	4,194,982
49.9	4,194,983
51.5 A	4,194,984
	4,194,985
102	4,194,986
	4,194,987
312	4,194,988
400 A	4,194,989
441	4,194,990
	4,194,991
442	4,194,992
518	4,194,994
541	4,194,993
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126	4,194,725
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17 R	4,194,999
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17.4 GC	4,194,998
17.5	4,194,997
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29.6 TA	4,195,004
	4,195,005
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29.7 H	4,195,008
31.2 N	4,195,009
40 R	4,195,010
	4,195,011
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42.33	4,195,013
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